Federal, Provincial and Indigenous information requests (IRs) to Canadian Nuclear Laboratories on the Whiteshell Reactor-1 revised draft environmental impact statement (EIS) submitted January 2025

Annex 1

Federal, Provincial and Indigenous follow-up information requests on the Draft Revised Environmental Impact Statement, August 2025 (Commencement of round 3 (R3) follow-up and new information requests)

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
IR 2_R2	Sagkeeng First Nation (SFN)	EIS - General	Context: Sagkeeng First Nation is a signatory to Treaty 1, not Treaty 3. Sagkeeng First Nation has established Treaty rights throughout Treaty 1 territory, and inherent Aboriginal rights in parts of Treaty 3 Territory, particularly that part of Treaty 3 which is generally within the borders of Manitoba. In 2007, Sagkeeng First Nation filed a statement of claim in the Manitoba Court of Queen's Bench (as it was then known) asserting unextinguished Aboriginal Title to that part of its traditional territory which is outside of the boundaries of Treaty 1. The Whiteshell facility is situated on that land which Sagkeeng First Nation's ancestors used and occupied since time immemorial, and which was never ceded or surrendered by Sagkeeng First Nation. The site is within the area to which Sagkeeng First Nation claims unextinguished Aboriginal title. The fact that the land in question is part of Sagkeeng First Nation's title territory means that Sagkeeng First Nation expects a much greater level of engagement and consultation, including that its consent will be required before the project proceeds.	CNL should revise Table 4.2.2-1, and the Executive Summary, to reflect the information provided by Sagkeeng First Nation.	**Incorporated**: Canadian Nuclear Laboratories (CNL) has revised Table 4.2.2-1 The Indigenous Nations identified as Having Potential Interest in the Project of the Environmental Impact Statement (EIS) (WSP 2025) to reflect information provided by Sagkeeng First Nation about their established and asserted Treaty rights. If additional information regarding Sagkeeng First Nation's statement of claim in the Manitoba Court of the Queen's Bench is available before filing the Final EIS, the EIS will be updated accordingly. The Executive Summary doesn't contain the level of detail that Sagkeeng First Nation is requesting to include, but rather it provides a high-level summary of Indigenous engagement that has occurred. However, CNL values the information provided by Sagkeeng First Nation. This information will be included in Section 1.3 Project Location of the EIS (WSP 2025). CNL is committed to continuing to engage with Sagkeeng First Nation in the manner they so choose, as is reflected in the existing contribution agreement. CNL understands the existing contribution agreement to be the mechanism for working with Sagkeeng First Nation and will be updated as determined appropriate by both parties. Through the IR process, Sagkeeng First Nation and CNL have agreed to meet going forward on topics where Sagkeeng First Nation and CNL will work collaboratively going forward. Although the federal position is that consent is not required for the Project to proceed, CNL will work with Sagkeeng First Nation towards the achievement of that principle to the extent possible.	**Partially Accepted - Follow-up IR 2_R3 below**

[1] Unless otherwise stated, the section noted refers to the draft EIS.

[2] Where IR contents note "See also related IR(s)", responses from CNL may be similar or provided in a single detailed response, but it was preferred to keep original IRs distinct.

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					Change to EIS: Table 4.2.2-1 The Indigenous Nations identified as Having Potential Interest in the Project in the EIS (WSP 2025) has been updated to state: • Asserted and/or established Aboriginal and Treaty rights exist in the vicinity of the WL site. • Occupy one reserve located 52 kilometres (km) north of the WL site, and downstream along the Winnipeg River. • Existing relationship and interest in the Whiteshell Laboratories (WL) site. • Sagkeeng has asserted Treaty Rights throughout Treaty 1 territory, and inherent Indigenous Rights in parts of Treaty 3 Territory, particularly that part of Treaty 3 which is generally within the borders of Manitoba. The WL site is situated on that land which Sagkeeng's ancestors used and occupied since time immemorial, and which was never ceded or surrendered by Sagkeeng. • The site is within the area to which Sagkeeng claims unextinguished Indigenous title, a proceeding for which is ongoing in the Manitoba Court of King's Bench. "Sagkeeng First Nation has established Treaty rights throughout Treaty 1 Territory, and inherent Aboriginal rights in parts of Treaty 3 Territory, particularly that part of Treaty 3 which is generally within the borders of Manitoba. The Whiteshell facility is situated on that land which Sagkeeng First Nation's ancestors used and occupied since time immemorial, and which was never ceded or surrendered by Sagkeeng First Nation. The site is within the area to which Sagkeeng claims unextinguished Aboriginal title, a proceeding for which is ongoing in the Manitoba Court of King's Bench." Section 1.3 Project Location has been updated as follows: "Sagkeeng First Nation reserve is located where the Winnipeg River empties into Lake Winnipeg and their traditional territory encompasses land within Treaty 1 along with land north and west of the Winnipeg River, falling within four Treaty areas (Sagkeeng First Nation 2015): Treaty 1 (1871), Treaty 2 (1871), Treaty 3 (1873) and Treaty 5 (1875). Sagkeeng First Nation is a signatory to Treaty 1 and has established Treaty rights throughout Treaty 1 territory, and inherent Aboriginal rights in parts of	

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					Treaty 3 Territory, particularly that part of Treaty 3 which is generally within the borders of Manitoba. In 2007, Sagkeeng First Nation filed a statement of claim in the Manitoba Court of Queen's Bench asserting unextinguished Aboriginal Title to that part of its traditional territory which is outside of the boundaries of Treaty 1. The Whiteshell facility is situated on that land which Sagkeeng First Nation's ancestors used and occupied since time immemorial, and which was never ceded or surrendered by Sagkeeng First Nation. The site is within the area to which Sagkeeng First Nation claims unextinguished Aboriginal title." **References**: Sagkeeng First Nation. 2015. Sagkeeng O-Pimatiziiwin 2 Traditional Knowledge Study Manitoba-Minnesota Transmission Line Project. July 2015. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 2_R3	SFN	EIS General	Partially adequate response. Sagkeeng thanks CNL for its response. The additional information provided in the updated EIS is appreciated. Edits were made to Table 4.2.2-1 as requested. While CNL's response is generally adequate, the response also suggests that "the federal position is that consent is not required for the Project to proceed", which Sagkeeng completely disagrees with as it is not consistent with Canada's constitutional obligations. This further raises additional Information Requirements that need to be addressed. Sagkeeng and CNL appear to disagree on whether Sagkeeng's Free, Prior and Informed Consent is required for the WR-1 ISD Decommissioning Project to proceed. Sagkeeng considers this FPIC mandatory; CNL appears not to.	Sagkeeng provides the following Follow-Up Information Requirements for CNL: A: Can CNL confirm whether the ISD proposal would create a permanent hazardous waste disposal facility out of WR-1 on Sagkeeng's traditional territory? B: If that is the case, can CNL confirm whether it believes Section 29.2 of UNDRIP, with its positive consent requirement for the creation of a permanent hazardous waste disposal facility on an Indigenous Nations territory, applies? C: Can CNL provide its current understanding of the implications of the findings of the federal Court in KFN		

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				vs. CNL, re: the role of UNDRIP, UNDA and FPIC in CNSC environmental assessments, and how the ruling applies in relation to the WR-1 assessment? Sagkeeng provides the following Follow-up Information Requirement for CNSC: Can CNSC provide its current understanding of the implications of the findings of the federal Court in KFN vs. CNL, re: the role of UNDRIP, UNDA and FPIC in CNSC environmental assessments, and how the ruling applies in relation to the WR-1 assessment?		
IR 4_R2	Black River First Nation and Hollow River First Nation (BR/HWFN)	EIS Section 6.0	**Context**: The proponent has not provided a stand-alone section in the EIS that discusses the effects on the health and socio-economic conditions of Aboriginal peoples resulting from a change in the environment. While the proponent has provided a rationale to discuss impacts on Indigenous peoples (as well as Indigenous VCs, concerns and interests) in each portion of the assessment instead of all in a single section, as requested, this approach has contributed to several species of interest identified by Black River First Nation and Hollow Water First Nation being missed or ignored in the EIS. The following Indigenous "Valued Components" were specifically identified by Black River First Nation and Hollow Water First Nation and compiled in their list of Species and Topics of Interest provided to CNL, but were not specifically mentioned in the EIS' discussion on VCs: • Sunfish • Catfish • Wild Rice (although the EIS does say in the body of the text that "wild rice does not grow in close proximity to WR-1 and therefore was not added to the Human Health Assessment" (6-4)	The EIS should be revised to clearly address all of the species of interest highlighted by Indigenous communities and the rationale for either: A) including them as part of other Valued Components or B) not including them in the assessment, in a manner similar to table 6.6.3-2, which includes rationale for why specific Indigenous "Valued Components" that were also highlighted by BRFN and HWFN were not assessed for the terrestrial environment (such as White-tailed Deer, Moose, Elk, Porcupine, Fox, Lynx, Marten, Fisher, Weasel, Chipmunks, Rabbit, Squirrel, Beaver, Muskrat, Grouse, Geese, Ducks and Waterfowl).	**Incorporated:** As discussed in Section 6.5.3 Valued Components (VCs), the Traditional Knowledge and Land Use Studies (Firelight Research and Sagkeeng First Nation 2018; Black River First Nation, Brokenhead Ojibway Nation, and Hollow Water First Nation 2019; and Shared Value Solutions 2019) identified specific fish species of concern, as well as habitats supporting life history requirements including spawning, nursery, rearing and foraging. Sagkeeng First Nation; the Manitoba Métis Federation; Brokenhead Ojibway Nation, Black River First Nation, and Hollow Water First Nation; and Wabaseemoong Independent Nations identified sturgeon and sturgeon spawning grounds, pickerel, pike, **catfish**, **sunfish**, sucker, goldeye, whitefish, perch, carp, and bass as species for inclusion in the assessment. A coarse-filtered approach was used to determine effects on the aquatic environment. At the broadest level, fish and fish habitat was selected to assess effects on both fish species and fish habitat. Assessing effects using this coarse-filtered approach means that many biodiversity elements were addressed together (i.e., measurement indicators). Measurement indicators for the aquatic assessment include: • Changes to quality and/or quantity of fish habitat	**Accepted**

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			• Seagull eggs The EIS also does not contain a thorough understanding of Traditional Medicines as VCs. Black River and Hollow Water identified a number of medicines of interest, including muskeg tea, willow, seneca root, rose hips, cedar, poplar, and weekay. The only one of these medicines that seems to have been considered in the updated EIS is weekay, which was added to the diet of a Harvester in the Human Health Assessment. The EIS does say that "medicines are not considered within the aquatic environment assessment, but rather as part of Human and Ecological Health (Section 6.7)." However, within Section 6.7 Human and Ecological Health, there is no mention of medicines other than a reference to "consuming plants" and another reference to weekay in table 6.7.1-1. Table 6.7.1-2: Valued Components for the Human Health Risk Assessment describes Harvesters as "Indigenous or traditional users of the area who may be exposed through harvesting of country foods," but does not mention medicines. To ensure that the EIS addresses all of the topics and species of interest highlighted by Indigenous communities, it may be helpful to insist that the final EIS includes a stand-alone section that shows how each species or topic of interest raised by Indigenous communities is addressed or is not addressed by other Valued Components in the EIS, as was requested in the original expectations to address the comment.		• Changes in benthic macroinvertebrate community structure (diversity, abundance) • Changes in fish community structure (diversity, abundance) • Changes in fish flesh radiochemistry As such, multiple species and habitat types are captured by this type of assessment. As the reviewer notes, Traditional Knowledge and Land Use Studies identified medicines, such as weekay, as being important to Indigenous Communities. Medicines are considered within the Human Health assessment (Section 6.7.1 Human Health) as an exposure pathway and not a VC (the VCs are public health and worker health [see Table 6.7.1-2 Valued Components for the Human Health Risk Assessment of the Draft EIS; WSP 2025]). Medicinal plants including cedar and weekay are included in the health risk assessment for the harvester in the closure phase (see Section 4.1.3 Selection of Exposure Pathways in the Environmental Risk assessment (ERA) [Ecometrix 2024]). As described in Section 6.7.1.7.1 Application Case – Closure Phase under the "Receptor Selection and Characterization" subheading, Canadian Nuclear Laboratories (CNL) conducted an Indigenous food intake survey to understand the types and quantities of local food consumed, in addition to the information provided in the Traditional Knowledge, Land Use and Occupancy Studies. Bioaccumulation factors used in modelling radionuclide uptake into plants are defined for broad types of plants, such as aquatic plants, or forage plants. Modelling for a specific medicinal plant species is generally not possible. Section 6.8.1.5.2.2.1 Historical and Present Day Traditional Land Use provides a summary of traditional land use by Black River First Nation and Hollow Water First Nation from the *api migizik pii pa gilot – When Eagles Call Traditional Knowledge and Land Use Study for the WR-1 Nuclear Reactor In Situ Decommissioning Project* (Black River First Nation, Brokenhead Ojibway Nation and Hollow Water First Nation 2019). Although medicinal species are briefly discussed there is no direct mention of medicines of interest, such as muskeg tea, willow, seneca root, cedar, poplar, and weekay (rose hips are mentioned). A statement has been added to specifically make mention to these medicines of interest.	

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					CNL has not provided a standalone section specifically for Indigenous VCs. CNL has instead highlighted Indigenous content in every section of the assessment. This includes specific summary tables at the beginning of each assessment section (Sections 6.2 to 6.9) to summarize how Indigenous VCs have been incorporated, and exactly where the information can be found within the section. **Change to EIS:** Section 6.5.3 Valued Components has been updated to include the following text: "Traditional Knowledge and Land Use Studies (Firelight Research and Sagkeeng First Nation 2018, Black River First Nation, Brokenhead Ojibway Nation, and Hollow Water First Nation 2019, and Shared Value Solutions 2019) and Indigenous engagement with Sagkeeng First Nation, the Manitoba Métis Federation, Brokenhead Ojibway Nation, Black River First Nation, Hollow Water First Nation, and Wabaseemoong Independent Nations identified additional VCs for consideration in the aquatic effects assessment, including sunfish, catfish, and seagull eggs. A coarse-filtered approach was used to determine effects on the aquatic environment. At the broadest level, fish and fish habitat was selected to assess effects on both fish species and fish habitat. Assessing effects using this coarse-filtered approach means that many biodiversity elements were addressed together (i.e., measurement indicators). As such, multiple species and habitat types are captured by this type of assessment, including those identified by Indigenous Groups (i.e., sunfish, catfish, and seagull eggs)." Section 6.7.1.7.1.1 has been updated to include the following text: "Traditional Knowledge and Land Use Studies (Black River First Nation, Brokenhead Ojibway Nation, and Hollow Water First Nation 2019) and Indigenous engagement with Brokenhead Ojibway Nation, Black River First Nation and Hollow Water First Nation identified additional species for consideration (in addition to weekay) in the human health assessment. This included muskeg tea, willow, seneca root, rose hips, cedar, and poplar. These species were not included in the Closure assessment as bioaccumulation factors used in modelling radionuclide uptake into plants are defined for broad types of plants, such as aquatic plants, or forage plants. Therefore, modelling for a specific medicinal plant species is generally not possible. As such, the terrestrial plants selected for inclusion	

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					in the ERA modelling (Table 6.7.1-9) are considered to be representative of a Harvester's diet component." Section 6.7.1.7.2.1 has been updated to include the following text: "Traditional Knowledge and Land Use Studies (Black River First Nation, Brokenhead Ojibway Nation, and Hollow Water First Nation 2019) and Indigenous engagement with Brokenhead Ojibway Nation, Black River First Nation and Hollow Water First Nation identified additional species for consideration (in addition to weekay) in the human health assessment. This included muskeg tea, willow, seneca root, rose hips, cedar, and poplar. These species were not included in the Post-closure assessment as bioaccumulation factors used in modelling radionuclide uptake into plants are defined for broad types of plants, such as aquatic plants, or forage plants. Therefore, modelling for a specific medicinal plant species is generally not possible. During post-closure, aquatic release (groundwater flow to the Winnipeg River) is the relevant pathway; therefore, terrestrial pathways, including the country foods muskeg tea, willow, seneca root, rose hips, cedar, and poplar are not evaluated for the harvester in post-closure. Harvesters will ingest aquatic-related country foods such as weekay, fish and waterfowl, as well as moose that drink from the Winnipeg River." Section 6.8.1.5.2.2.1 Historical and Present Day Traditional Land Use was revised to include the following text: **Subheading Black River First Nation** "Harvesting medicines are also important to the Black River First Nation traditions, and were also discussed in the traditional knowledge and land use study (Black River First Nation, Brokenhead Ojibway Nation and Hollow Water First Nation 2019): "Long ago, there were no roads. We travelled by boat to get to the hospital to see the doctor. So our people from long ago used traditional medicine to cure the sickness. Now, you can't find anything very much to use for that. Nowadays you run to the hospital and you don't really know what they give you. But with traditional [medicine], they knew what they were giving us. They had all different kinds. If I had an earache, they had something for that; toothache, something for that. All the different sicknesses. But then in those days too there was no cancer. Because people lived off the land." (p.32)."	

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					Subheading Hollow Water First Nation "In that whole area, in that whole area of the Lac du Bonnet, Bird River … we would catch fish … [our father] used to catch sturgeon, and that's what we lived on … But I know that my dad used to come up into the Silver Falls area, up that way. There's an area just above the—between the two dams, I guess. And there used to be a lot of sturgeon there. (S07 2018)" (p.34)."' **References**: WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024. Firelight Research Inc. and Sagkeeng Anicinabe. 2018. Sagkeeng Anicinabe Land Use and Occupancy Study Specific to Canadian Nuclear Laboratories' Proposed In Situ Decommissioning of the WR-1 Reactor at Whiteshell Laboratories. Rachel Olson PhD and Firelight Research Inc., with the Sagkeeng Anicinabe. December 2018. SVS (Shared Value Solutions). 2019. Whiteshell Reactor #1 Decommissioning, Manitoba Métis Traditional Knowledge, Land Use and Occupancy Study. January 2019. BRFN, BON and HWFN (Black River First Nation, Brokenhead Ojibway Nation and Hollow Water First Nation). 2019. api migizik pii pa giiot – When Eagles Call Traditional Knowledge and Land Use Study for the WR-1 Nuclear Reactor In Situ Decommissioning Project. November 2019.	
IR 5_R2	Health Canada (HC)	Figure 6.4.2-2, Pg .513 Figure 6.4.2-3, Pg 523	**Context:** The proponent's response to Information Request (IR) #5 indicates that labels on Figures 6.5.4-2 and 6.5.4-3 of the EIS have been updated to include the EcoMetrix reference. However, the updates do not appear to have been made. **Rationale:** There are inconsistencies in the figure labels in the proponent's IR response and the EIS update.	Update the figure labels as indicated or change the response to the IR.	**Incorporated:** Canadian Nuclear Laboratories' (CNL's) response to Information Request (IR) 5 (Round 1) indicated that the citations being referred to were meant to indicate the hydroelectric dam location and sampling locations were provided by EcoMetrix in 2017, not that they came from a 2017 EcoMetrix reference. There is no document to refer to. To try to clarify this, CNL committed to updating titles for Figures 6.4.2-2 and 6.4.2-3 to: Figure 6.4.2-2 "Hydroelectric Dam Location – Hydroelectric Dam Locations Provided by EcoMetrix"	**Accepted**

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					Figure 6.4.2-3 "Sampling Locations Provided by EcoMetrix", in the Environmental Impact Statement (EIS) (Golder 2022). However, to better clarify this, CNL has determined that the Reference list in the Legend of these figures should be updated rather than the figure titles. **Change to EIS:** The Reference List in the legend for Figure 6.4.2-2 was updated to include '*5. Hydroelectric Dam Location – Hydroelectric Dam Locations Provided by EcoMetrix'*. The Reference List in the legend for Figure 6.4.2-3 was updated to include *"3. Sampling Locations Provided by EcoMetrix".* **References**: Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
IR 9_R2	CNSC	EIS: Executive Summary – Indigenous engagement	**Context:** The response to IR #9 indicates that "A summarized set of key interests and concerns, as well as summary of CNL responses to those interests and concerns were added to the Executive summary of the Environmental Impact Assessment (EIS, Golder 2022)". Based on the wording of the concerns and responses, it is not always clear whether all the Indigenous Nations and communities who raised the concern received the response from CNL. For example, under the heading "waste management" it states "The First Nations and Manitoba Métis Federation were interested to know how much radioactive waste would remain on the Whiteshell Laboratories site…." The response provided indicates "In response, Canadian Nuclear Laboratories informed Sagkeeng First Nation that all waste materials (radioactive and non-radioactive)…." Similarly, under the heading "Historical Siting and Operations of the Whiteshell Laboratories site" it states "The First Nations and the Manitoba Métis Federation identified concerns regarding	Revise the text in the executive summary to ensure it is clear that all of the Indigenous Nations and communities who raised concerns regarding waste management and historical siting / operations received a response from CNL.	**Incorporated:** The terminology "First Nations" refers to the Sagkeeng First Nation, Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation, and Wabaseemoong Independent Nations. When this term is used in the Executive Summary it means that all or some of the above First Nations identified this issue and concern. This was intentional to reduce the amount of text included in the Executive Summary, which is intended to be a high-level summary of the Environmental Impact Statement (EIS). The Manitoba Métis Federation (MMF) is always referred to specifically. The Indigenous Engagement section of the Executive Summary was revised to clarify the terminology "First Nations" and to include the specifics of the response to each First Nation and the MMF. With respect to "Waste Management" and "Historical Siting and Operations of the Whiteshell Laboratories site", the reviewer is correct that only the response to Sagkeeng First Nation was included in the Executive Summary. The intent was to provide a specific example, however, CNL acknowledges that this is not clear in the text. The Executive Summary has been updated to include the responses to the other First Nations with respect to waste management, historical siting and operations of the Whiteshell Laboratories (WL) site.	**Accepted**

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			the lack of engagement during the siting and operations of the Whiteshell Laboratories site which began in the early 1960s. " and the response provided indicates "While this is out of scope of the Whiteshell Reactor 1 assessment, Canadian Nuclear Laboratories and Sagkeeng First Nation are working through a subcommittee to incorporate this concern" From this, it appears that each First Nation and MMF raised the concern regarding waste management and historical siting /operations, but CNL only provided a response to Sagkeeng First Nation. Rationale: The executive summary needs to demonstrate that each Indigenous Nation and community who raised the issue received a response from CNL.		**Change to EIS:** The Indigenous Engagement section of the Executive Summary has been revised to: 'As part of its corporate, environmental, and social responsibility, Canadian Nuclear Laboratories is committed to ongoing engagement and relationship building with the First Nations (i.e., Sagkeeng First Nation, Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation, Wabaseemoong Independent Nations) and the Manitoba Métis Federation throughout the course of the environmental assessment process for the Project and ongoing Whiteshell Laboratories closure.' With respect to waste management, the Indigenous Engagement section of the Executive Summary has been revised to include: 'CNL participated in community meetings with Black River First Nation, Hollow Water First Nation, and Brokenhead Ojibway Nation where waste management was discussed and provided the following information that all waste materials are sorted, verified and transported using licensed containers, and depending on the waste type, to a licensed hazardous waste management facility. Radioactive materials will be shipped in licensed waste containers. CNL hosted Wabaseemoong for a tour of their waste management facilities and answered questions about waste management and transportation of waste. CNL provided information to the community on waste management at the site and proposed plans for waste transportation. The MMF and CNL held meetings with a similar focus on waste management, particularly in the context of WR-1 alternatives. CNL also facilitated awareness of CNL's waste management practices in July 2020, when the Manitoba Métis Federation were on site at WL to observe a waste shipment from pre-job to completion of loading.' With respect to historical siting and operations of the WL site, the Indigenous Engagement section of the Executive Summary has been revised to include: 'CNL has acknowledged this concern, and recognizes historical siting remains relevant to ethical relations with the First Nations and the Manitoba Métis Federation in the present. The EIS provides information on traditional land use by First Nations and the Red River Métis, and includes	

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					discussion of impacts on communities as a result of the establishment of the WL site.' The following text that provides a specific example for Sagkeeng First Nation has been removed. ~~'CNL and Sagkeeng First Nation are working through a subcommittee to incorporate this concern in the Environmental Impact Statement. Regarding Sagkeeng First Nation's concern on historical cumulative effects, Canadian Nuclear Laboratories has incorporated feedback from Sagkeeng First Nation regarding historical siting issues where possible and agreed that this topic will be discussed at the technical working group.'~~ **References**: N/A	
IR 10_R2	SFN	EIS - General	**Context:** In its response on public and stakeholder engagement ("contingency planning"), CNL notes that: "Members of the public requested information on how the Project design accounts for the risk that in situ does not operate as planned. Canadian Nuclear Laboratories explained that the Whiteshell Reactor Disposal Facility will include multiple barriers, including the waste form, a specialized grout formulation, the existing the Whiteshell Reactor 1 facility walls, a concrete cap and engineered cover, and the surrounding geosphere. In the very unlikely case that degradation of these barriers occurs earlier than predicted, the surface and ground water monitoring system will detect contamination migration." It is not clear what the appropriate contingency plan will be and its likelihood of success in a case of containment failure. One option presented by CNL has been to cut out the grouted facility in chunks if there is a containment failure, but in Sagkeeng First Nation's review of the draft EIS, we could find no evidence presented re: the likely efficacy, safety and environmental risks associated with such a contingency plan.	CNL is requested to provide further detail on its preferred continency plan in the case of containment failure, and how this scenario is accounted for in its Project Plan.	**Resolved As:** Canadian Nuclear Laboratories (CNL) is committed to achieving continual improvement in environmental performance through its management systems. CNL has outlined the adaptive management approach and the current, and proposed follow-up monitoring programs in Section 11.2 Adaptive Management of the Environmental Impact Statement (EIS; Golder 2022). Section 3 Project Description of the EIS (Golder 2022) outlines the proposed Project, its design features, and the justification for how the facility will be passively safe (no human intervention needed), even in the event of failure of more or more barriers in the facility. Section 6.7.1.7.2 Application Case – Post-Closure Phase of the EIS indicates that even under failure conditions, the facility will still be protective of people and the environment. To clarify, the EIS does not identify segmentation and removal of the grout block as a planned contingency as this is considered a highly unlikely and would only be contemplated under an extreme and unexpected situation. If such an extreme and unexpected situation were to arise CNL would be required to develop a strategy and associated mitigation plan based on the appropriate information and circumstances that contributed to the scenario as part of its long term adaptive management process.	**Partially Accepted – Follow-up IR 10_R3 below**

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					CNL has an overall monitoring program as outlined Section 11.1 Integrated Environmental Monitoring Program of the EIS (WSP 2025). Whiteshell Laboratories' Integrated Environmental Monitoring Program (CNL 2020) is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the site and the outcomes of the Comprehensive Study Report (AECL 2001). The Monitoring and Surveillance Plan will be integrated into the existing EAFMP for the Whiteshell Laboratories (WL) site and confirm the effectiveness of mitigations. Section 11.1.1 Environmental Assessment Follow-Up Program of the EIS (WSP 2025) describes the specific items that will be monitored to validate the assessment results. If the Environmental Assessment Follow-up Program for the Project identifies that adverse environmental effects are greater than predicted or results for any monitored contaminants of potential concern are above the established limits, then CNL will investigate the results, which may include additional sampling and analysis to help determine/confirm the source and extent of the contamination. CNL would also evaluate whether they result in changes to the conclusions in this EIS. If changes are confirmed, then CNL will evaluate the need for revised mitigation actions and management practices to manage effects, with engagement Sagkeeng First Nation for openness and transparency. Further to this, in October of 2022 CNL/AECL and the Sagkeeng First Nation signed a contribution agreement for the Community Environmental Monitoring Program (CEMP) to fulfill the scope of a Sagkeeng First Nation Indigenous monitoring and guardian program called the Niigan Aki Program. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard. A three year extension to the contribution agreement was signed in August of 2023. CNL commits to the adaptive management approach outlined in Section 11.2 of the EIS (Golder 2022) that includes identifying unplanned conditions, assessing the magnitude and scope, and providing the underlying data for determining the appropriate mitigative actions. In the unlikely event adaptive management identifies the need for adjustments, the type of action taken would be highly dependent on the scope and cause of the situation. Examples of adaptive management might include increased or modified monitoring, collection and treatment of	

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					contaminated water/soil, installation of additional barriers, or remediation or removal of the Whiteshell Reactor Disposal Facility. CNL has assessed the impacts of barrier and containment failure on the facility as part of its overall assessment for safety of the facility. Based on that assessment, there is a very low likelihood that any action will be required. Institutional controls are proposed to be in place for at least 100 years post closure, and the continuation of these controls would be based on regulatory input. Stopping or adjusting the frequency of a monitoring activity would occur once it can be shown that an effect has stabilized or has been reduced to a level where it is no longer considered significant by regulatory requirements or community concerns, including those shared by Sagkeeng First Nation. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL. 2020. Whiteshell Laboratories Integrated Monitoring Program Framework. WL-509200-OV-001. Revision 1. December 2020. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 10_R3	SFN	EIS - General	**Partially adequate response.** **Context:** CNL suggests now that segmentation and removal of the grout block as a contingency is considered highly unlikely, and lays out a conceptual planning process for consideration of the loss of	Sagkeeng provides the following Follow-Up Information Requirements for CNL: A: CNL identifies that Sagkeeng would be engaged in consideration of revised		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			containment scenario in the future. Sagkeeng remains concerned that there is no detailed viable backup plan in case of containment failure, only a series of "maybes" that are not assessed for viability, cost, time to implement, and degree of likely success.	mitigation actions and management actions to manage effects in case effects are higher than predicted. CNL also identifies that the CEMP/Niigan Aki may be a vehicle of continued monitoring in relation to the Project. How long in the future is CNL committed to funding Niigan Aki in relation to the Project? B: CNL commits to Institutional Control being in place for at least 100 years post closure. Has CNL received any new information from Sagkeeng and other Indigenous groups about their preferred length of Institutional Controls and has CNL updated its proposed Institutional Control period recommendation as a result of those inputs? C: CNL refers to the possible mitigation approach in an adaptive management scenario of "collection and treatment of contaminated water/soil and installation of additional barriers", as possible options short of removal of the WRDF. Can CNL provide more information about what the options are for "collection and treatment of contaminated water/soil and installation of additional barriers" in a scenario where greater than expected radiological release occurs, and how much this might cost? Obviously, a range of costs is reasonable given it is uncertain when and at what scale such		

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				adaptive management scenarios may need to be implemented.		
IR 11_R2	MMF	EIS – General and Section 11	Context: The MMF acknowledges that this text outlining commitments for follow-up monitoring, does represent the most fleshed out description of how CNL plans to act on commitments for environmental monitoring made to the MMF. However, in detailing the prospective changes to the follow-up monitoring, CNL continue to make weak or otherwise intangible commitments to "address Nation- specific interests and concerns related to monitoring at the site." The MMF would like to draw attention to the language ". *Some of the key elements of the initiative may include",* which continues to fall short of the MMF's expectations for understanding how follow-up monitoring will appropriately address concerns and impacts. Further, while CNL has made changes to the Executive Summary to begin fleshing out their commitments, MMF has concerns that throughout the remainder of the EIS, CNL continue to lack substance in detailing monitoring approaches.	CNL is expected to provide a detailed description of the status of the EAFMP including but not limited to how MMF will be engaged in the development, implementation and evaluation of this program.	**Incorporated:** Canadian Nuclear Laboratories (CNL) has an overall monitoring program as outlined Section 11.1 Integrated Environmental Monitoring Program of the Environmental Impact Statement (EIS) (WSP 2025). Whiteshell Laboratories' Integrated Environmental Monitoring Program (CNL 2020) is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the site and the outcomes of the Comprehensive Study Report (AECL 2001). The Monitoring and Surveillance Plan will be integrated into the existing EAFMP for the Whiteshell Laboratories (WL) site and confirm the effectiveness of mitigations. Section 11.1.1 Environmental Assessment Follow-Up Program of the EIS (WSP 2025) describes the specific items that will be monitored to validate the assessment results. CNL and the Manitoba Métis Federation (MMF) signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the WL site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. The specific timelines and milestones for engagement will be determined cooperatively with the MMF. At present, CNL commits to holding and resourcing regular update meetings with representatives from MMF on the Project and restoration of the Whiteshell site. In addition, this will include at a minimum an annual meeting to determine the MMF's desired role in monitoring for the upcoming year. CNL will work with the Community Liaison and the MMF to share monitoring results/outcomes to the communities in ways at are appropriate for community distribution. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the CNSC as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with	**Partially Accepted – Follow-up IR 11_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods. **Change to EIS:** Section 4.2.4.2 was revised to include the following text: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this EIS captures the engagement and the relationship progression up until the end for January 2024, it should be noted that in 2024 February, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. Canadian Nuclear Laboratories aspires to rebuild a productive partnership with the MMF to enable full participation of Red River Métis Citizens in the various projects, licensing, economic benefits and environmental protection opportunities. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site.' Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring of the EIS (WSP 2025) was edited as follows to include the specific commitments on involvement and timeline. 'CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild	

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					foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					the agreement and renewal periods. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.' Section 6.9.6.2.2 was revised to the following text:	

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					Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References**: AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL (Canadian Nuclear Laboratories). 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. CNL. 2020. Whiteshell Laboratories' Integrated Monitoring Framework. WL-509200-OV-001. Revision 1. December 2020. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
IR 11_R3	MMF	EIS – General and Section 11	**Partially accepted.** **Context:** The MMF seek binding and tangible commitments from CNL aimed at ensuring confidence of Red River Métis Citizens in the Whiteshell Laboratories decommissioning program is maintained through the long term. This includes several aspects of the MMF-CNL relationship, as well as the site owner AECL, in identifying not only programming that addresses immediate issues which have been identified through the EA process, but also ensuring mechanisms exist to self assess the relationship - as well as the confidence of Red River Métis Citizens in the Whiteshell Laboratories decommissioning, able to evolve and adapt to meet the needs of future Citizens. It is disappointing that circumstances led to the MMF ending its support of the 2023 Multi-Year Memorandum of Agreement. However, there are many important aspects of that agreement surrounding appropriate engagement pathways, information sharing, and environmental monitoring events that must continue. Included in the ongoing engagement between CNL and the MMF is acknowledgement of the MMF's concerns and lack of consent for in-situ decommissioning methodologies for the disposal of WR-1. Nonetheless, the MMF considers CNL's approach of minimizing and dismissing the MMF's concerns throughout the EA process concerning in-situ decommissioning, as an example of how CNL continuously fails to appropriately characterize the needs of the MMF in their decision making and operational function. It is important for CNSC to recognize CNL's representation of the MMF's engagement within the context in which they exist. The MMF and CNL signed a multi-year memorandum of agreement (MOA), which was designed to advance the relationship between the MMF and CNL. However, as demonstrated by the MMF's withdrawal of support for this MOA, CNL has failed to	The MMF requests further elaboration from CNL on how it will ensure the confidence of Red River Métis Citizens is maintained in long-term commitments and programming surrounding WR-1 decommissioning and postdecommissioning efforts. This framework should specifically describe how these commitments will be maintained in the face of future relationship uncertainty, as well as how programming with self-assessment and evolve to meet the needs of future Red River Métis Citizens.		

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			maintain the confidence of the MMF in ensuring that its interests will be appropriately represented and considered by CNL. The MMF is concerned that if CNL were to structure commitments to the MMF in the form of an agreement such as the MOA, these commitments could be nullified in the future if such an agreement were to dissolve as a result of a loss of confidence by either party. To date, and as reflected by the EIS and CNL's responses to the MMF's IRs, a significant gap remains in describing the framework of how the MMF-CNL relationship will evolve post approval. The MMF recognizes CNL's stated commitment to "involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development", however, again we feel this commitment is static and does not work to continually assess confidence of Red River Métis Citizens in the Whiteshell Laboratories decommissioning program. This is echoed in other commitments, such as CNL's commitment to "augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis Citizens through reporting." We generally agree that such an open-ended commitment as presented creates opportunity for the evolution the MMF seeks in long-term confidencebuilding/maintaining programming; however, the open-ended nature of this commitment creates vagueness in how it may be interpreted and implemented in the future. As a result, the MMF remains skeptical that such programming can respond to future biophysical issues and corresponding psycho-social needs of Red River Métis Citizens far into the future.			

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IR 11_R2	SFN	EIS – General and Section 11	Context: CNL has incorporated a description in its Executive Summary to help the reader to learn and understand the project's proposed follow up and monitoring program. All of the information added by CNL is necessary but is not a sufficient, fulsome description of what is needed to ensure Sagkeeng First Nation have a prominent role in environmental and follow up monitoring. Sagkeeng First Nation requests further information on the status of the Environmental Assessment Follow Up and Monitoring Program (EAFMP) and how the committed-to Sagkeeng First Nation Community Environmental Monitoring Program will be integrated into the development and implementation of it. Any EAFMP developed for the Project must have a focus on VCs that may be impacted as estimated by either CNL or Sagkeeng First Nation, specifically including CULTRP; and include Community Environmental Monitoring Program indicators, parameters, thresholds, and responses within it. Any EAFMP that doesn't meet these two expectations is deficient.	CNL is expected to provide a detailed description of the status of the EAFMP including but not limited to how Sagkeeng First Nation's Community Environmental Monitoring Program will be engaged in the development and implementation of this program, how Indigenous Knowledge indicators, parameters, thresholds and responses will be incorporated into the EAFMP, and whether and how CNL is committed to dealing with Indigenous requests for co-development/co-approvals of the EAFMP. In addition, CNL is requested to identify whether it is committed to include in the EAFMP follow-up monitoring plans for valued components where Indigenous groups disagree with the estimations made by CNL that the Project will not impact on that VC, including Indigenous health and well-being and current use of lands and resources for traditional purposes.	**Incorporated:** Canadian Nuclear Laboratories (CNL) has an overall monitoring program as outlined in Section 11.1 Integrated Environmental Monitoring Program of the Environmental Impact Statement (EIS; Golder 2022). Whiteshell Laboratories' Integrated Environmental Monitoring Program (CNL 2020) is based on the Environmental Assessment Follow Up Monitoring Program (EAFMP) for decommissioning of the stie and the outcomes of the Comprehensive Study Report (AECL 2001). The Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 will be integrated into the existing EAFMP for the Whiteshell Laboratories (WL) site (CNL 2018), and provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted in the environmental assessment and confirm the effectiveness of mitigations. Section 11.1.1 Environmental Assessment Follow-Up Program of the EIS (Golder 2022) describes the specific items that will be monitored to validate the assessment results. CNL has committed to augment this overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and AECL have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. The Sagkeeng First Nation CEMP is intended in part to address where CNL and Sagkeeng First Nation have divergent conclusions on the outcomes of the EIS, and as such can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission	**Partially Accepted – Follow-up IR 11_R3 Below**

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					go forward at this time, without their commitments in the draft commitment list. At the time of this response, no specific agreement has been reached between CNL and Sagkeeng First Nation for longer term arrangements; however, CNL has committed engaging with Sagkeeng First Nation through the lifecycle of the Project, the Whiteshell site, and CNL more broadly. It is expected that this will include continued involvement of Sagkeeng First Nation in monitoring in the way that is most meaningful to them. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods. **Change to EIS:** Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring of the EIS (was revised to include the specific commitments on involvement and timeline. 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. CNL is committed to continuing to engage with Sagkeeng First Nation in the manner they so choose. An additional amended contribution agreement was also entered into by CNL, AECL and Sagkeeng First Nation to support Sagkeeng First Nation's participation in the Project, and to provide incremental benefit to WL Site. CNL believes that the CEMP and communication of results of that monitoring in the community is intended in part to support the Sagkeeng First Nation Healing and Resiliency Action Plan scope of work which was a recommendation of the psycho-social impact assessment. CNL has agreed	

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					to implement this Healing and Resiliency Action Plan in part to acknowledge the difference in the conclusions of the EIS held by Sagkeeng First Nation, and to support learning and reconciliation. CNL staff have also participated in trauma-informed engagement training provided by Sagkeeng First Nation and will continue to be involved in and learn from processes Sagkeeng First Nation may want to implement into the future. At this time, no specific agreement has been reached between CNL and the Sagkeeng First Nation for longer term arrangements; however, CNL has committed to involve the Sagkeeng First Nation in monitoring in a way that is most meaningful to them. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'The Sagkeeng First Nation is located downstream from the WL site and therefore has a different relationship to the Project, which is reflected in CNL's commitments. **CNL has committed to augment the overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and AECL have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP**.' Section 6.9.6.2.2 was revised to include the following text: 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP.'	

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					Section 6.9.7 has been updated to include "Specifically for Sagkeeng First Nation, CNL/AECL and the Sagkeeng First Nation signed a contribution agreement for the Community Environmental Monitoring Program to fulfill the scope of a Sagkeeng First Nation Indigenous monitoring and guardian program called the Niigan Aki Program. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard." **References**: AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL (Canadian Nuclear Laboratories). 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. CNL. 2020. Whiteshell Laboratories' Integrated Monitoring Framework. WL-509200-OV-001. Revision 1. December 2020. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
IR 11_R3	SFN	EIS – General and Section 11	**Partially adequate response.** **Context:** CNL commits to engage further with Sagkeeng on these topics and to its credit has done so though, as noted by CNL, no new commitments have been finalized. Ongoing discussions can only be treated by the assessment body (and Sagkeeng in its own consent decision-making process) as evidence of intent, and not as evidence of likely outcomes. As yet, specific details of how the CEMP/Niigan Aki will be integrated into the EAFMP, and over what time period and with what scope of monitoring and collaboration, are not provided. CNL's commitment to "involve the Sagkeeng First Nation in monitoring in a way that is most meaningful to them", while conceptually laudible, is not measurable or enforceable without more detailed, concrete	Sagkeeng provides the following Follow-Up Information Requirements for CNL: A: What is CNL's estimated time frame for provision of further information about commitments developed to deal with Sagkeeng Issues and Concerns. Is CNL committed to providing a detailed Sagkeeng commitment list, vetted by Sagkeeng in advance, at least 3 months prior to any CNL hearing date on WR-1? B: Is CNL committed to providing an updated draft EAFMP at least three		

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			commitments, and cannot be treated as evidence at this time. The time frame for which CNL has committed to supporting Niigan Aki is framed as three years in the response, and likely requires updating. Sagkeeng notes for the record that reference to "their commitments" as being in the possession of Sagkeeng, as seen at left and in several other places in CNL's response, is inaccurate. CNL is the party responsible for making commitments to mitigation, monitoring and accommodation. Sagkeeng may or may not agree with said CNL commitments and even if Sagkeeng does agree to them, the ultimate committing party is CNL, not Sagkeeng. CNL in the future should refer to "CNL commitments made in response to Sagkeeng issues and concerns" and not to Sagkeeng as the committing party. In addition, Sagkeeng has not "expressed a desire to see the EIS submission go forward at this time" as suggested by CNL; this could be read to suggest that Sagkeeng supports the proposed alternative means and the assessment that is embedded in the EIS, which is not the case. It is correct, however, to state that Sagkeeng does not oppose the resubmission of the EIS at this time, notwithstanding the extensive disagreements on subjects of high substance to regulatory and consent decision-making. This disclaimer is relevant for every instance in CNL's responses where the same verbatim paragraph on commitments is provided; we will not reiterate it in every instance for the follow-up IR.	months prior to any CNL hearing date on WR-1, including updates on the topics requested by Sagkeeng at left, and clear evidence that the updates have been developed in collaboration with Sagkeeng and verified by Sagkeeng? See also IR 10_R2_R3, which requests further information from CNL on its proposed time length of support for Sagkeeng monitoring.		
IR 12_R2	CNSC	Section 1.2 Project Overview, Pg 1-10, last paragraph	**Context:** CNSC staff have reservations with some aspects of CNL's Decommissioning Safety Assessment Report, Golder 2021b (DSAR), which is used as the main supporting reference to CNL's response. **Rationale:** Time frames need definition. The hazardous lifetime of the waste is long, tens of thousands of year, due to the presence of long-lived radioisotopes. Due to that long hazardous lifetime, the IAEA (SSG-29) in general does not recommend near surface disposal for this type of waste.	CNL is expected to: A. Address issues for time frame definitions B. Address issues related to the long-term performance of the multiple barrier system C. Address issues related to scenario definition Additional information requested in IRs 189_R2, 190_R2, IR 191_R2, IR 192_R2	**Resolved As:** **A.** Canadian Nuclear Laboratories (CNL) has evaluated the hazard of the Whiteshell Reactor Disposal Facility (WRDF) inventory and summarized the predicted potential impacts (Golder 2021a). When determining the Assessment Timeframe, CNL followed the approach listed in Section 7.2 of REGDOC 2.11.1-Volume 11 (CNSC 2021), where timeframes should consider the following: • Time frames establish boundary conditions for longevity and performance of barriers to isolate and contain the waste; • Time of the peak radiological impact predicted by the safety assessment;	**Follow-up IR 12_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			There are remaining issues about the longevity of the different components of the multiple barrier system to provide containment and isolation during the hazardous life of the waste. For example, the grout would likely be cracked in the long term and its permeability could be substantially higher than the one assumed in the DSAR. Scenarios' definition is not entirely conservative. For example, in the normal evolution scenario, well use for drinking water and domestic consumption could be included. CNL however considered this as a bounding scenario, and based on low yield, discarded domestic consumption from the well in this scenario. Furthermore, the position of the well assumed to be midway between the footprint of the WRDF and the river is not conservative. As for the human intrusion scenario, which is a major scenario in support of near surface disposal, the impact on an on-site receptor was not considered.	and IR 211_R2 are related and should address these issues.	• Normal (expected) evolution of the disposal system, in consideration of the decay of the radiological substances associated with the waste and the stability of the host medium or site; • Type and severity of events considered in the safety assessment; • Use of appropriate natural analogs; and • Site-specific natural background levels of radiological and non-radiological contaminants. CNL has described its definition of hazardous lifetime, being the period over which peak potential releases and impacts from the facility may occur under normal evolution. The assessment examines the source term, its decay, and the degradation of barriers over time (Golder 2021b) and has shown the time and exposure pathway that demonstrate the highest hazard from the WRDF, occur within the 10,000-year assessment timeframe. It also shows that this highest hazard condition does not produce an unacceptable risk to the public (Ecometrix 2024). In fact, the contributions from the WRDF during normal evolution, and under most disruptive events, are well below the public dose limit of 1 mSv/a, and even more so below the background dose rates (~4 mSv/a for Winnipeg). As such, the barriers, which have lifetimes of thousands of years, and whose degradation over time are built into the normal evolution scenario, are commensurate with the hazardous life of the waste. CNL has made comparisons to natural analogues in its evaluation of long-term glacial events (DSAR Section 5.4.3.2.6 Glaciation). Furthermore, CNL has addressed the uncertainty in predicting longer term events that fall outside of the 10,000-year timeframe, by looking at various sensitivity cases which examine the more rapid degradation of the facility barriers, and looking at long term natural glaciation and its impacts. The result in both cases show there is no unacceptable hazard to receptors (Golder 2023), and thus the uncertainty associated with the assessment timeframe is not significant to the outcome of the assessment. As a result, no change is needed to the timeframe or the assessment. **B.** CNL has acknowledged the uncertainty regarding the longevity of the multi-barrier system. CNL has examined the potential impacts of that uncertainty on the assessment outcomes by examining the model sensitivity to variations in the lifetime of the barriers. For example, The "WRDF Barrier Failure" Disruptive Event (described in Section	

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					6.7.1.7.2.2, on page 6-379 of the EIS) specifically examines the failure of the existing concrete foundation. That is, a total deterioration of the grout and concrete foundations to the same hydraulic conditions as the surrounding geosphere pathways. CNL believes this is appropriate, as the surrounding geosphere will govern the flow of groundwater in the facility. The outcome of this Disruptive Case showed that the barrier failure/lifetime had only minimal impact on the results, and thus the uncertainty associated with the barrier lifetime did not require further investigation. CNL has indicated in the EIS and supporting technical documents, that the deterioration of the various barriers over time is a part of the Normal Evolution Scenario and is incorporated into the model calculations, but that through the sensitivity, or disruptive event analyses, the uncertainty associated with it is not significant to the assessment. Sensitivity analyses are used in the Groundwater Flow and Solute Transport Modelling Report (Golder 2021b) to examine model and parameter uncertainty and their impacts on the model outputs. Those are further refined into disruptive and bounding cases in the Environmental Risk Assessment (Ecometrix 2024) and Decommissioning Safety Assessment (Golder 2021a), which discuss and address the uncertainty through conservatism in those scenarios. The results demonstrate that the uncertainties are not expected to have significant impacts on the outcomes of the assessment. **C.** CNL provided justification for why a well scenario is not part of the normal evolution for the Whiteshell Laboratories (WL) site (Section 5.4.3.2.5 Well in Plume; Golder 2021a). Due to the local hydrogeological conditions at the main campus, and in the Project transport path, combined with the proximity to the Winnipeg River, make it unlikely that a well would be the primary domestic water source. However, since it is plausible, it is discussed as a disruptive event and considered a bounding case (Section 5.4.3.2.5 Well in Plume; Golder 2021a). To address the FPIRT Round 2 IRs, 11 additional sensitivity simulations were completed with the WR-1 groundwater flow and solute transport models, including two scenarios related to the Well in Plume disruptive event giving consideration to a potential future well 100 metres (Scenario 19) and 10 metres (Scenario 20) downgradient of the WRDF (WSP 2024).	

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					CNL will further address this information request by addressing IRs 189_R2, 190_R2, IR 191_R2, IR 192_R2 and 211_R2. **Change to EIS**: No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024. CNSC. 2021. REGDOC 2.11.1-Volume III Safety Case for the Disposal of Radioactive Waste Version 2. January 2021. Golder. 2021a. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021. Golder. 2021b. WR-1 Groundwater Flow and Solute Transport Modelling. Canadian Nuclear Laboratories Document No. WLDP-26000-REPT-005. Revision 4. December 2021. Golder. 2023. WR-1 Grout Scale Up Test Report. WLDP-26000-TR-002881. October 2023 (Accepted January 2024). WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024.	
IR 12_R3	CNSC	Section 1.2 Project Overview, Pg 1-10, last paragraph	**Context:** CNL's selection of its post closure assessment timeframe is still lacking proper justification. CNL also does not address CNSC's issue with the unrealistic assumptions and lack of conservatism of the currently presented human intrusion scenario.	CNSC staff expect CNL to revise its assessment timeframe by comparing radioactivity at the source vs. applicable ore bodies (see IR 189_R2). CNSC staff also expect CNL to revise the human intrusion scenario, assuming the intruder takes a core from the reactor components and that the solute mass would still mainly reside in the reactor. See IR 189_R for more details.		

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IR 13_R2	MMF	EIS - Section 1.3	**Context:** The MMF note that the nuance used by CNL to describe the National homeland of the Red River Métis is dated and Manitoba-centric. For example the revised text states: "*The Red River Métis is widely dispersed throughout the province and highly mobile in regard to geographic extent of traditional resource use (Barkwell 2016)." At face value this is a true statement, but suggests that a) the Red River Métis is singular, rather than a Nation, and b) that the* Red River Métis are limited to the political boundaries of Manitoba, which is incorrect as the National homeland of the Red River Métis extends from the Northwest Territories to Ontario.	MMF is requesting additional information be incorporated into the text to better speak to the National homeland of the Red River Métis. ***CNL is to refer to text provided in MMF's original submission to the CNSC as the text is too lengthy to provide in tabular format.***	**Incorporated:** Information provided in the Manitoba Métis Federation's (MMF's) original submission to the Canadian Nuclear Safety Commission (CNSC) has been incorporated into the Environmental Impact Statement (EIS) to better speak to the National homeland of the Red River Métis. A summary of the submission has been incorporated into Section 1.3, while a more fulsome discussion has been included into Section 6.8.1.5.2.2.1 Historical and Present Day Traditional Land Use. **Change to EIS:** <u>Section 1.3 Project Location (new text)</u> 'The Red River Métis have been known by many names throughout history, such as Bois Brûlés, Flower Beadwork People, Otipemisiwak (The People Who Own Themselves), Riel's People, Les Michif, and Manitoba Métis – from the beginning, they have all referred to the same people – the Red River Métis. The Red River Métis possess Aboriginal rights, including pre-existing Aboriginal collective rights and interests in lands recognized and affirmed by section 35 of the Constitution Act, 1982. As affirmed by the Supreme Court of Canada, such rights are "recognize[d] as part of the special aboriginal relationship to the land" (R. v. Powley. 2003) and are grounded on a "communal Aboriginal interest in the land that is integral to the nature of the Métis distinctive community and their relationship to the land" (MMF v. Canada 2013). In particular, the MMF-Manitoba Harvesting Agreement signed in 2012 recognizes that Métis rights include hunting, trapping, fishing and gathering for food and domestic use, including for social and ceremonial purposes and for greater certainty, Métis harvesting includes the harvest of timber for domestic purposes throughout an area spanning approximately 169,584 km² (the Métis Recognized Harvesting Area; MMF-Manitoba Harvesting Agreement). According to the Métis Law of the Harvest (MMF 2013), harvest includes hunting, trapping, fishing and gathering for food and domestic use, including sharing, social and ceremonial purposes, of fish, big-game, small game, furbearers, game-bird (upland and migratory), berries, mushrooms, medicinal and other plants including wild rice and firewood or timber. Plant harvesting has been undertaken for food, crafts and medicines and has included birch, cedar, dandelion, milkweed, berries, wood products, roots, nuts and mushrooms. These activities were typically undertaken in the summer months and are known to occur in areas southwest of the Project.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Métis citizens documented numerous fishing spots along the Winnipeg River downstream of the Project. Species fished include sauger, pickerel/walleye, jackfish/northern pike, sturgeon, and perch.' <u>Section 6.8.1.5.2.2.1 Historical and Present Day Traditional Land Use (new text)</u> 'The Red River Métis have been known by many names throughout history, such as Bois Brûlés, Flower Beadwork People, Otipemisiwak (The People Who Own Themselves), Riel's People, Les Michif, and Manitoba Métis – from the beginning, they have all referred to the same people – the Red River Métis. The Red River Settlement, which is present day Winnipeg, Manitoba, was the birthplace of the Red River Métis and continues to be the heart of the Red River Métis Homeland. This independent Red River Métis population constituted a historic rights-bearing community in present day Manitoba and beyond within the Northwest. Since the early 1800s, the Red River Métis has asserted themselves as a distinct Indigenous collective with rights and interests in its Homeland. The Red River Métis share a language, national symbols, and culture, including music, dance, and dress. In early times, the Red River Métis were mostly nomadic. Later, they established permanent settlements centered on hunting, trading and agriculture (Marcus 2011). The Red River Métis were employed by both of the fur trade's major players, the Hudson's Bay Company and the Northwest Company. At the same time, however, the Red River Métis became extensively involved in the buffalo hunt. The fur trade was vital to the ethnogenesis of the Red River Métis and was active in Manitoba from at least the late 1770s, and numerous posts and outposts were established along cart trails and waterways throughout the North-West. These trails and waterways were crucial transportation networks for the fur trade (Jones 2014) and were the foundation of the Red River Métis' extensive use of the lands and waters throughout the province. In the early 20th century, the Red River Métis continued to significantly participate in the commercial fisheries and in trapping activities, which is well documented in Provincial government records. The Crown, as represented by the Manitoba Government, has recognized some aspects of the Red River Métis' harvesting rights through a negotiated agreement: The MMF-Manitoba Points of Agreement on Métis Harvesting (the MMF-Manitoba Harvesting Agreement). This Agreement recognizes that collectively held Métis Harvesting Rights, within the meaning of Section	

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					35 of the Constitution Act, 1982, exist within the Recognized Métis Harvesting Zone, and that these rights may be exercised by Red River Métis Rights Holders consistent with Métis customs, practices and traditions (MMF-Manitoba Harvesting Agreement). As affirmed by the Supreme Court of Canada, such rights are "recognize[d] as part of the special aboriginal relationship to the land" (R. v. Powley. 2003) and are grounded on a "communal Aboriginal interest in the land that is integral to the nature of the Métis distinctive community and their relationship to the land" (MMF v. Canada 2013). In particular, the MMF-Manitoba Harvesting Agreement recognizes that Métis rights include hunting, trapping, fishing and gathering for food and domestic use, including for social and ceremonial purposes and for greater certainty, Métis harvesting includes the harvest of timber for domestic purposes throughout an area spanning approximately 169,584 km² (the Métis Recognized Harvesting Area; MMF-Manitoba Harvesting Agreement). Importantly, courts have also recognized that Métis harvesting rights may not be limited to Unoccupied Crown Lands (R. v. Kelley 2007). Unlike First Nations in Manitoba, whose commercial rights were converted and modified by treaties and the Natural Resources Transfer Agreement (NRTA) (R. v. Horseman 1990), the Métis' pre-existing customs, practices, and traditions, including as they relate to commerce and trade, were not affected by the NRTA (R. v. Blais 2003) and continue to exist and be protected as Aboriginal rights. First Nations' treaty rights in Manitoba are, for example, inherently limited by the Crown's power to take up lands (Mikisew Cree First Nation v Canada 2005). Métis rights, in contrast, are not tempered by the "taking up" clauses found in historic treaties with First Nations. Métis rights must be respected as they are, distinct from First Nations' rights and unmodified by legislation or agreements. According to the Métis Law of the Harvest, Métis harvesters may harvest throughout Recognized Métis Harvesting Area on all unoccupied provincial Crown Lands in Manitoba and occupied provincial Crown lands, including provincial parks, wherever First Nation Members are allowed to harvest; and on any privately owned lands in Manitoba on which that Métis Harvester has been given permission by the owner or occupant, or reserve lands with permission of Band Council (MMF v Canada 2013).' **References**:	

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					Marcus, Joseph. 2011. Alberta v. Cunningham: The Substantive Power of Section 15(2). The Court.ca. R. v. Powley. 2003. SCC 43, 2 SCR 207. Accessed on 2023-12-15. MMF v. Canada. 2013. Manitoba Métis Federation Inc. v. Canada (Attorney General). [2013] 1 SCR 623, Case 33880. MMF. 2013. Metis Laws of the Harvest. 3rd Edition. August 2013. R. v. Kelley. 2007. Court of Queen's Bench of Alberta (Canada) 413 A.R. 269 (QB). R. v. Horseman. 1990. CanLII 96 (SCC), [1990] 1 SCR 90. Accessed on 2023-12-15. R. v. Blais. 2003. SCC 44 (CanLII), [2003] 2 SCR 236. Accessed on 2023-12-15. Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage). 2005. SCC 69 (CanLII), [2005] 3 SCR 388. Accessed on 2023-12-15. Jones, G.. 2014. Historical Research Report on Métis Presence in the Nelson-Hayes River System. Prepared for Manitoba Métis Federation. https://www.ourcommons.ca/Content/Committee/421/TRAN/Brief/BR8708979/br-external/ManitobaMetisFederationInc-e.pdf	
IR 13_R2	Sagkeeng First Nation	EIS – Section 1.3	Context: See IR 2_R2 for context	The revised portion of section 1.3 should be further revised to include the information provided in response to IR 2_R2 above. There should be no discussion of the land the site is on that doesn't clearly state that it is on land to which Sagkeeng First Nation has claimed unextinguished aboriginal title.	**Incorporated:** Canadian Nuclear Laboratories (CNL) will revise Section 1.3 of the Environmental Impact Statement (EIS; Golder 2022) to reflect the information provided by Sagkeeng First Nation about their established and asserted Treaty rights. If additional information is available before filing the Final EIS regarding Sagkeeng First Nation's statement of claim in the Manitoba Court of the King's Bench, the EIS will be updated to reflect this. CNL is committed to continuing to engage with Sagkeeng First Nation in the manner they so choose, as is reflected in the existing contribution agreement. CNL understands the existing contribution agreement to be the mechanism for working with Sagkeeng First Nation and will be updated as determined appropriate by both parties. To date, CNL has engaged with Sagkeeng First Nation in the manner specified by Sagkeeng First Nation and will continue to engage with Sagkeeng First Nation in the manner Sagkeeng First Nation chooses, as reflected in the existing contribution agreement. Through the Information Request (IR) process, Sagkeeng First Nation and CNL have agreed to meet	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					going forward on topics where Sagkeeng First Nation and CNL will work collaboratively going forward. **Change to EIS:** Section 1.3 Project Location has been updated as follows: 'Sagkeeng First Nation reserve is located where the Winnipeg River empties into Lake Winnipeg and their traditional territory encompasses land within Treaty 1 along with land north and west of the Winnipeg River, falling within four Treaty areas (Sagkeeng First Nation 2015): Treaty 1 (1871), Treaty 2 (1871), Treaty 3 (1873) and Treaty 5 (1875). Sagkeeng First Nation is a signatory to Treaty 1 and has established Treaty rights throughout Treaty 1 territory, and inherent Aboriginal rights in parts of Treaty 3 Territory, particularly that part of Treaty 3 which is generally within the borders of Manitoba. In 2007, Sagkeeng First Nation filed a statement of claim in the Manitoba Court of Queen's Bench asserting unextinguished Aboriginal Title to that part of its traditional territory which is outside of the boundaries of Treaty 1. The Whiteshell facility is situated on that land Sagkeeng First Nation's ancestors used and occupied since time immemorial, and which was never ceded or surrendered by Sagkeeng First Nation. The site is within the area to which Sagkeeng First Nation claims unextinguished Aboriginal title.' **References**: Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. Sagkeeng First Nation. 2015. Sagkeeng O-Pimatiziiwin 2 Traditional Knowledge Study Manitoba-Minnesota Transmission Line Project. July 2015.	
IR 14_R2	MMF	EIS - Section 1.3	Context: While CNL does include language speaking to harvest practices of the Red River Métis, they fail in describing subsistence and commercial fishing as it relates to the Whiteshell Laboratories site. MMF also notes that CNL refers to the Red River Métis as singular in the sentence "*The Red River Métis is widely dispersed throughout*" however, proper grammatical context suggest this is	For this section to be useful, CNL is expected to provide appropriate context for how both historically and contemporarily Red River Métis citizens rely on the Winnipeg River, and surrounding environments for subsistence and commercial fishing, rather than simply implying that as a people the Red River Métis engage in	**Incorporated:** Section 6.5.5.2.2 Fish Community of the Environmental Impact Statement (EIS) (WSP 2025) notes that historically there was a commercial sturgeon fishery on the Winnipeg River; however, the fishery ended with the construction of the Seven Sisters Dam. In addition, the location of the dam removed an important spawning site and nursery. Canadian Nuclear Laboratories (CNL) acknowledges that the commercial fishery was important to the Red River Métis citizens.	**Accepted**

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			plural. The MMF requests this be corrected in all instances.	these activities.	Commercial fishing is not included in the existing environment for land and resource use because there is currently no commercial fishery on the Winnipeg River. CNL acknowledges that according to the Traditional Knowledge, Land Use and Occupancy Study (SVS 2019) completed by the Manitoba Métis Federation for the Project, citizens have fished the Winnipeg River within the past 10 years for personal use, which can include subsistence. Three are fishing areas in the Winnipeg River east of the Whiteshell Laboratories (WL) Site, and to the north and south of the WL site. The inclusions of this knowledge do not affect the outcomes of the assessment. **Change to EIS:** Section 1.3 Project Location (WSP 2025) was updated to include: 'Historically, populations supported a commercial fishery and prior to construction of the Seven Sisters Generating Station there was an important Lake Sturgeon spawning and nursery area located below the Seven Sisters Generating Station site (COSEWIC 2006). This commercial fishery was important to the Red River Métis into the early 20th century (Shared Value Solutions 2019).' Section 6.5.5.2.2 Fish Community (WSP 2025) was updated to include: 'Historically, populations supported a commercial fishery and prior to construction of the Seven Sisters Generating Station (situated approximately 7.5 km upstream of the WL site; see Figure 6.5.5-1) there was an important Lake Sturgeon spawning and nursery area located below the Seven Sisters Generating Station site (COSEWIC 2006). **This commercial fishery was important to the Red River Métis into the early 20th century (Shared Value Solutions 2019).'** Section 6.8.1.5.2.2.1 Historical and Present Day Traditional Land Use (WSP 2025) was updated to include: 'Historically, populations supported a commercial fishery and prior to construction of the Seven Sisters Generating Station (situated approximately 7.5 km upstream of the WL site; see Figure 6.5.5-1) there was an important Lake Sturgeon spawning and nursery area located below the Seven Sisters Generating Station site (COSEWIC 2006). This commercial fishery was important to the Red River Métis into the early 20th century (Shared Value Solutions 2019).' **References**:	

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					WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025. COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2006. COSEWIC assessment and update status report on the Lake Sturgeon Acipenser fulvescens in Canada. Gatineau QC: Committee on the Status of Endangered Wildlife in Canada. 107 p. Available at https://www.sararegistry.gc.ca/virtual_sara/files/cosewic/sr_Lake_Sturgeon_0807_e.pdf SVS (Shared Value Solutions). 2019. Whiteshell Reactor #1 Decommissioning, Manitoba Métis Traditional Knowledge, Land Use and Occupancy Study. January 2019.	
IR 14_R2	Sagkeeng First Nation	EIS, Section 1.3 and 6.8.1.5.2.2.1, pg. 6-451	**Context:** The highlighted text added to the EIS indicates that the preferred fishing area for Sagkeeng First Nation members was near Catfish Creek and at Point au Mitasse on Lake Winnipeg. This information is based on a report from 2000. The TKLUOS conducted by Sagkeeng First Nation from 2018 indicates the fishing is undertaken all throughout the territory. For example on Page 34, "In that whole area, in that whole area of the Lac du Bonnet, Bird River … we would catch fish … [our father] used to catch sturgeon, and that's what we lived on … But I know that my dad used to come up into the Silver Falls area, up that way. There's an area just above the—between the two dams, I guess. And there used to be a lot of sturgeon there. (S07 2018) There's a lot of pickerel in there [Winnipeg River], so that was kind of a delicacy besides the sturgeon, eh? Most of the time … if you got sturgeon, they wouldn't cook it or do anything with it there. They'd always take it home and freeze it and whatever, keep for the winter kind of thing. Or send it to Winnipeg with the other family members, the ones that are going back to Winnipeg. (S17 2018) Well, we used to go fishing down the bank [at Pine Falls] for the pickerel and the jackfish … The pickerel, but they call it walleye ... Yeah, that was our staple. (S07 2018)"	CNL is expected to revise this section accordingly to indicate full use of the territory by Sagkeeng First Nation members for subsistence fishing. If this requires further engagement of the Proponent with Sagkeeng First Nation, this can be accommodated by contacting our Community Liaison.	**Incorporated:** Canadian Nuclear Laboratories (CNL) acknowledges that the Sagkeeng First Nation makes full use of their territory for subsistence fishing. **Change to EIS:** Section 6.8.1.5.2.2.1 of the Environmental Impact Statement (Golder 2022) was updated to acknowledge the full use of the territory by Sagkeeng First Nation members: "In that whole area, in that whole area of the Lac du Bonnet, Bird River … we would catch fish … [our father] used to catch sturgeon, and that's what we lived on … But I know that my dad used to come up into the Silver Falls area, up that way. There's an area just above the—between the two dams, I guess. And there used to be a lot of sturgeon there. (S07 2018)" And: "Well, we used to go fishing down the bank [at Pine Falls] for the pickerel and the jackfish … The pickerel, but they call it walleye ... Yeah, that was our staple. (S07 2018)". **References:** Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			Sagkeeng First Nation notes that just because an area is preferred, it does not mean that it is the exclusive location of fishing by Sagkeeng First Nation members.			
IR 24_R2	ECCC	Section 2.5, pg 2-14 to 2-47	**Context:** IR 24_R2 requested a systematic evaluation of alternative means for carrying out the project which explains the assessment of the preferred alternatives. The detailed description of criteria to be used in comparing the alternative means in Section 2.5 of the revised EIS generally explained how criteria were considered. Issues remain in Sections 2.5 and 2.6 of the EIS related to the assessment of alternative means. Some of these issues have been touched upon in Section 2.8 of the EIS (Sagkeeng's Alternative Means Assessment – Approach and Findings). Relevant issues in the alternative means assessment include: • The approach taken by the Proponent tended to overemphasize minor differences that skewed the selection process. For example, Table 2.7-2 lists risk of emissions as the sole comparative criteria for public safety during the closure phase. Despite the Proponent stating that effective mitigative measures are available for all alternatives, options #1 and #2 were scored as "least favourable" while in-situ disposal was scored as "most favourable". • The weighting of some criteria under emphasizes the post-closure phases compared to the closure phase for public safety and biophysical criteria. The post-closure phases will represent a substantially longer timeframe for potential environmental and public exposure to contamination. • For biophysical criteria in the institutional control and post-institutional control phases, the assessment considers options #1 and #2 to have equivalent or higher environmental risk compared in-situ decommissioning. However, this assumes that no alternative disposal site could be found that is preferrable to the Whiteshell WR-1 site. An example of a preferable location would be one that is above the groundwater table and not near a river.	CNL is to reconsider how criteria for alternatives means are evaluated in Sections 2.5 and 2.6 of the EIS to account for the following issues: A. The public safety criteria during the closure phase should fully account for mitigation measures for all alternatives. Specifically related to the mitigation measures for air emissions. B. The institutional control and post-institutional control phases for biophysical criteria should be more heavily weighted compared to the closure phase. C. For the institutional control and post-institutional control phases for biophysical impacts, the potential for a preferable long-term storage location should be considered. Specifically due to the Whiteshell WR-1 location being under the groundwater table and near a river.	**Resolved As:** Canadian Nuclear Laboratories (CNL) received similar feedback from Sagkeeng First Nation as part of the alternative means workshop held in February 2019 and Sagkeeng First Nation's alternatives assessment (Sagkeeng Anicinabe 2020). CNL reflected on the weighting, and how the alternatives were assessed, and made the decision not to adjust the alternatives assessment. CNL reiterates that the alternative means assessment is not intended to be an exercise in achieving consensus among regulators, stakeholder, government, Indigenous nations, the public and the proponent. It is intended to document the rationale for the decision the proponent makes on the preferred alternative from the proponent's perspective, for assessment in the Environmental Assessment (EA). CNL has made clear, which alternatives are considered to be feasible and why, how CNL has incorporated feedback on that assessment to demonstrate all input was considered, and the criteria and scoring CNL attributed to the alternatives as the proponent of the Project. **A.** The mitigations to releases during decommissioning are largely the same for each alternative: Using best practices and standard procedures, monitoring during work to identify unforeseen conditions, and utilizing equipment such as filters and collection points to prevent inadvertent releases. The assessment indicates that the key trigger for a release event would be a cutting or opening of a reactor system (e.g., tanks, pipes, and pumps) or movement/handling of materials that are contaminated. Risk from these is a function of frequency and potential consequence. The key difference between the alternatives from a release to the public perspective, is the frequency of the cuts and handling/transport events. In Situ Disposal (ISD) has the fewest potential events at a similar consequence level, thus having lower risk. To attain an equal level of risk, alternatives with more cutting or handling events must reduce the potential impacts of a release even further than what standard decommissioning mitigations already provide.	**Follow-up IR 24_R3 below**

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			Rationale: In the alternatives assessment, the criteria, weighting, and scoring should objectively assess potential alternatives with a focus on the issues of highest potential impact. Potential deficiencies in the assessment should be corrected to improve the accuracy of the alternatives assessment.		**B.** Adjusting the weighting of the Institutional Control (IC) and Post-IC periods does not make a material difference to the outcomes of the assessment. During the IC and Post-C periods, ISD ranks equal or higher in all biophysical criteria according to CNL's assessment. **C.** CNL has been clear that the assessment can only make general assumptions about the potential for a future Intermediate Level Waste (ILW) disposal facility. CNL and the nuclear industry as a whole have historically put faith in the assumption that a disposal path for waste in Canada is consistently on the horizon. The Comprehensive Study Report (AECL 2001), approved by the CNSC in 2002, also based the assessment on the assumption that a facility would be in place at the time of decommissioning. After 20 years, and multiple failed attempts across the industry to seek approval to construct such a facility, it is prudent to rethink that assumption. CNL is also faced with the expectations of international best practice to shorten deferment periods, and not place undue burden on future generations. Over emphasizing the certainty of a future facility is not a conservative decision in this case, based on historical events, and no clear future plans. CNL as the proponent has identified it's preferred alternative and carried that alternative forward into the assessment. While CNL appreciates that not all parties will reach the same preferred alternative, it is not a requirement of the regulations to achieve consensus on the alternative means. CNL however is working diligently and in good faith with all interested regulators, Indigenous communities, and stakeholders, to identify their interests and concerns in the Project, and work to address them. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001.	

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					Sagkeeng Anicinabe. 2020. Alternative Means Assessment for the Environmental Assessment of Canadian Nuclear Laboratories' Proposed WR-1 Reactor Decommissioning Project. 13 October 2020.	
IR 24_R3	Environment and Climate Change Canada (ECCC)	Section 2.5: Alternative Means of Carrying out the Project (p. 2-14 to 2-47)	**Context:** In IR 24, ECCC requested that CNL provide a systematic evaluation of the alternative means assessment to justify the selection of the preferred alternative for the decommissioning of Whiteshell Reactor No. 1 (WR-1). This is needed because the insitu decommissioning of the WR-1, fundamentally goes against the recommendations in the International Atomic Energy Agency (IAEA) Safety Standard Guide (SSG47) for the Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities. The IAEA guidance indicates that good/best practice is immediate dismantling as the preferred option, and deferred dismantling as the only acceptable alternative for decommissioning of nuclear reactor facilities. Section 5.2 of the IAEA standard also states that "No action (leaving the facility after operation as it is and waiting for decay of the radioactive inventory) and entombment (encasing all or part of the facility in a structurally long-lived material) are not acceptable decommissioning strategies". However, Section 5.17 of the IAEA standard states that entombment "might be considered as a last option for managing facilities that have been damaged in an accident, if other options are not possible owing to the high exposures of workers or technical difficulties." "If entombment is selected, it will impose a burden on future generations owing to the need for long term monitoring of the site and owing to possible future actions necessary to prevent and reduce leakages of radioactive material from the facility." ECCC understands that domestically the IAEA standard is not binding to the Proponent, or to the Government of Canada. However, it should be noted that the IAEA guidance (both the	CNL's response IR 24_R2 is as follows: "CNL [Canadian Nuclear Laboratories] as the proponent has identified its preferred alternative and carried that alternative forward into the assessment. While CNL appreciates that not all parties will reach the same preferred alternative, it is not a requirement of the regulations to achieve consensus on the alternative means." CNL has not provided sufficient information to justify the long-term safety of their preferred alternative (Alternative #3) in comparison to the Alternatives (#1 and #2) which align with the recommendations of the IAEA guidance. ECCC requests that CNL provide this missing information, so that Alternative #3 can be evaluated accordingly, or that CNL consider other alternatives.		

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			2014 and 2018 versions) remained consistent on the topic of entombment as an alternative. As such, it is important to provide a robust alternative means assessment to justify why it would be appropriate to go against the international best practice. Furthermore, in the CNSC REGDOC, the alternatives of In-Situ Disposal (ISD) and entombment as decommissioning strategies, as well as affiliated guidance on if/when they could be used, is not provided. In the absence of specific guidance for ISD/entombment in Canada, ECCC is deferring to the international standard (IAEA guidance). **Rationale:** The latest response to IR 24_R2 provided by the Proponent, is consistent with their previous response on this topic. ECCC had requested additional justification on why Alternatives #1 (Deferred Dismantling and Removal) and #2 (Immediate Dismantling and Removal) were scored as least favourable. The Proponent draws this conclusion on the basis that the risk of radioactive emissions during the closure phase is the sole comparative criteria due to potential risk to worker and public safety. The risk of containment failure in the post-closure phase (institutional and postinstitutional control periods), which is not applicable to Alternatives #1 or #2, has not been sufficiently addressed for the alternatives. As such, the Proponent has not adequately evaluated and weighted the risk of containment failure in the alternative means assessment. The basis on which the Proponent has made the selection of Alternative #3 (ISD) is based on the monitoring and mitigation that would be available during the closure phase and does not address any potential effects resulting from containment failure in the post-closure phase. Furthermore, while greater radiological and conventional contaminant releases may occur during the closure phase, in Alternatives #1 and #2, existing effective decontamination, and well-established mitigation measures for radiation exposure to prevent adverse effects on human/worker health or the environment during closure activities were not considered.			

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			Therefore, the justification for the results of the alternatives assessment, summarized in Table 2.7-2: Summary of the Evaluation of Alternatives - Assessment of Alternatives, remains inadequate. Under both Alternatives #1 and #2, any risk due to containment failure would be eliminated in the post closure and post-institutional control phases of the Project. This is not reflected in the scoring, where for the Public Safety and Environmental-Biophysical criteria, the scoring is considered equal or less than Alternative #3. Therefore, ECCC's advice remains that the Proponent has not adequately addressed the requests for information on the long-term safety of Alternative #3 and the Proponent's justification for the preferred use of Alternative #3 does not adequately support rejecting the SSG-47 IAEA guidance and recommended best practices. ECCC's view is that if Alternative #3 is selected, there is a high likelihood of long-term residual effects. Long-lived radionuclides, radioactive contaminants, and heavy metals contained within WR1, are highly likely to enter the environment, including the Winnipeg River. **References:** IAEA (International Atomic Energy Agency). 2018. Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities: Specific Safety Guide. No. SSG-47 IAEA (International Atomic Energy Agency). 2014. Decommissioning of Facilities: General Safety Requirements. IAEA Safety Standards, General Safety Requirements Part 6, No. GSR Part 6, Vienna REGDOC-2.11.2, Decommissioning, Canadian Nuclear Safety Commission, Date modified: 2023-11-28 https://www.cnsc-ccsn.gc.ca/eng/acts-and-regulations/regulator			
IR 39_R2	CNSC	Section 3.4.6.2	**Context:**	CNL is expected to perform their analyses (non-exhaustive list: groundwater flow and solute transport	**Incorporated:**	**Follow-up IR 39_R3 below**

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			In Section 3.4.6.2 of the EIS, it is mentioned that "Since there is no expectation for grout to completely penetrate and fill every void space, the existence of voids and cold joints is not detrimental to the overall safety of the system" and that "the structure will be filled to eliminate as many void spaces as is reasonably achievable". **Rationale:** This statement that the existence of voids and cold joints is not detrimental to the overall safety of the system has not been demonstrated. In particular, the hydraulic conductivity and diffusivity values used for both the concrete foundation and the grout may not be conservative, including in the sensitivity analyses performed. In particular, the hydraulic conductivity and diffusivity values used for both the concrete foundation and the grout are actually far from being conversative, including in the sensitivity analyses performed. This may impact CNL analyses related to (non-exhaustive list) the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the Whiteshell Reactor Disposal Facility, or WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects. Suggestions for mitigation and follow-up measures: Further, the grouting process and grout placement should actually be planned to completely fill the below-grade areas to ensure the adequacy of the assumptions made in the analyses.	modelling, the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the Whiteshell Reactor Disposal Facility, or WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects) with adequate values for the Hydraulic Conductivity and Diffusivity of the grout and existing concrete structures, and revise their conclusions accordingly. Additional information requested in IR 40_R2 and IR 204_R2 are related and should address these issues.	A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to the groundwater flow and solute transport modelling and consideration to expanding the range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the EIS. Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of higher estimates of the diffusivity (Sensitivity Scenarios 25 and 26) and hydraulic conductivity (Sensitivity Scenario 27 and 28) of the grout and concrete structures (i.e., the subject of IR 40_R2 and IR 48_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). To address the concern with respect to diffusivity, two additional sensitivity scenarios (Scenarios 25 and 26) were completed with an increased diffusivity for the Whiteshell Reactor Disposal Facility (WRDF) foundation. To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results of the additional sensitivity scenarios were passed through the Dose model (EcoMetrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The Environmental Impact Statement (EIS) was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. With respect to the fill of the facility, and CNL's statement regarding the existence of voids, CNL wishes to clarify. CNL does indeed plan to	

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					systematically and effectively fill as many voids as practical. However it is not credible to set a 100% fill as a target, because it is impossible to reliably verify. CNL's intent was to acknowledge that voids may exist, and account for them in the analysis. **Change to EIS**: Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021a). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic	

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					conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings are evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8 has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The Hazard Quotients (HQs) for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on	

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					background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates	

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					from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References**: Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021a. WR-1 Groundwater Flow and Solute Transport Modelling. Canadian Nuclear Laboratories Document No. WLDP-26000-REPT-005. Revision 4. December 2021. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024.	
IR 39_R3	CNSC	Throughout submission	**Context and Rationale:**	Cracks, cold joints and voids are preferential pathways for		

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			The request of IR 39_R2 was for CNL to perform their analyses (non-exhaustive list: groundwater flow and solute transport modelling, the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the Whiteshell Reactor Disposal Facility, or WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects) with adequate values for the Hydraulic Conductivity and Diffusivity of the grout and existing concrete structures, and revise their conclusions accordingly. CNL has solely performed two additional sensitivity analyses (in the groundwater flow and solute transport modelling report) to tentatively address the request, by using hydraulic conductivity (HC) values for the grout of $1.5x10^{-6}$ m/s in Scenario 27 and $1x10^{-4}$ m/s for the grout in Scenario 28. CNL concludes that the results of these sensitivity analyses show that the increased mass loadings resulting from these analyses have no significant impact on the outcomes of the assessment, projected doses from the project being still orders of magnitude below public dose limits and project dose constraints. CNSC staff concerns and requests have not been addressed and therefore, CNL response is not acceptable.	groundwater movement, hydraulic conductivity and diffusivity are highly dependent on the cracking patterns (including crack openings) and on the logistics of the pours (i.e. voids left unfilled, cold joints developed, etc.). The values for the Hydraulic Conductivity of the grout and existing concrete structures in CNL's Normal Evolution Scenario (NES) are far from being conservative and are even not representative of the current condition of the existing structures and of the actual expected condition of the barriers, due to the presence of cracks (already existing, and expected to occur at early age after pouring for the grout). This does not provide confidence in the results of CNL analyses and in CNL's ensuing conclusions. Therefore, CNL is requested to revise the NES by using values for Hydraulic Conductivity and Diffusivity that account for the cracked condition of the concrete structures and grout as well as of the cold joints and voids, along with their respective uncertainty. The literature review summarized in (Androuët, 2024) should be a		

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				good starting point to select such values. Further, CNL is requested to update the sensitivity analyses performed as well to reflect the changes made to the NES. The ranges of values considered for Hydraulic Conductivity and Diffusivity for existing concrete structures and grout must be re-evaluated in the sensitivity analyses. Also, when evaluating the impacts of other parameters, the baseline values for Hydraulic Conductivity and Diffusivity must be updated to the updated values of the NES as requested above. In addition, a series of analyses may somehow be related to the results of the groundwater flow and solute transport modelling (non-exhaustive list: surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the Whiteshell Reactor Disposal Facility, or WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc.) and therefore, CNL is requested to: A. comprehensively evaluate which analyses required to		

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				be updated as per the above, B. update these analyses and, C. revise their conclusions, as applicable, to account for the results of the NES to be updated as per CNSC staff request. In addition, CNL is requested to evaluate the potential cumulative effects as well as potential direct and indirect impacts related to the impact of the changes in Hydraulic Conductivity and Diffusivity, which have yet to be assessed by CNL in their revised submission. CNL shall also ensure that due consideration be given to events and scenarios occurring in combination. **Reference:** Androuët, C. (2024). *Impact of hydraulic conductivity, diffusion, and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects* Proceedings of the International Conference on Decommissioning Challenges: Role and importance of		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
				innovations (DEM 2024), Avignon, France.		
IR 40_R2	ECCC	Section 3.4.6.2. Pg 3-3	**Context:** IR 40 was about the formation of cold joints when pouring grout and the potential for these cold joints to create preferential pathways for groundwater. The Proponent states in their response that "…a step function was developed for grout degradation, that assumes the grout to degrade in 500 year increments and reach its fully degraded stage by 2000 years." Details of the step function are provided in Section 4.1.4 of the Groundwater Flow and Solute Transport Modelling Report, with numerical values summarized in Table 4-4. The grout performance specification for hydraulic conductivity is 9.5x10-10 m/s. The step function begins with a higher base case hydraulic conductivity for the grout of 5.0x10-8 m/s, which the Proponent considered conservative. The model then increases the hydraulic conductivity over time by applying a multiplier to the initial hydraulic conductivity of the grout. Additionally, Scenario 14 in the Groundwater Flow and Solute Transport Modelling Report considered a scenario where the hydraulic conductivity of the grout is increased to 5.0x10-7 m/s after 100 years, which matches the highest value of the surrounding geological units. CNL also stated in their response, "The grout was modelled as an equivalent porous medium, so there are no expectations for the grout in terms of bonding of lifts or minimization of cold joints." This statement is incorrect, there is an expectation for the grout in terms of bonding of lifts and minimization of cold joints, which should be reflected in the parameter values (ie: hydraulic conductivity) selected as model inputs for the equivalent porous media model being utilized. ECCC notes that if large fractures occur due to poor bonding or cold joints, that water will preferentially flow through these fractures rather than through	Explain the use of multipliers and the resulting hydraulic conductivities applied in the step function of the model when increasing the hydraulic conductivity over time. This can be demonstrated by considering fractured flow as a potentially dominant transport mechanism when determining the hydraulic conductivity values used in the equivalent porous media approach. Consideration of fractured flow should include the context that cold joints throughout the grout will increase the likelihood of large fractures. Please IR 39_R2 and IR 204_R2 as the IRs are related.	**Incorporated:** A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of higher estimates of the diffusivity (Sensitivity Scenarios 25 and 26) and hydraulic conductivity (Sensitivity Scenario 27 and 28) of the grout and concrete structures (i.e., the subject of IR 39_R2 and IR 48_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). To address the concern with respect to diffusivity, two additional sensitivity scenarios (Scenarios 25 and 26) were completed with an increased diffusivity for the Whiteshell Reactor Disposal Facility (WRDF) foundation. To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). The assumed step	**Follow-up IR 40_R3 below**

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			the low hydraulic conductivity grout. Flow through fractures is an important flow mechanism that should be accounted for in any modelling approach. While using an equivalent porous media approach simplifies the model, it must still reflect the physical reality to have value as a predictive tool. **Rationale:** ECCC notes that the transport of contaminants out of the Whiteshell Reactor Disposal Facility by groundwater transport is the most likely pathway for contaminants to reach surface water. When using an equivalent porous media approach to model the transport of groundwater, the hydraulic conductivities used in the model must account for all potentially prominent transport mechanisms for the equivalent region modeled, including fracture flow. The multipliers used in the step function to increase hydraulic conductivity over time must be substantiated with evidence that accurately reflects the likely flow mechanisms for groundwater passing though grout that has degraded for hundreds to thousands of years. Given the propensity of grout to fracture and considering that cold joints throughout the grout increases the odds of large fractures, ECCC considers it likely that fracture flow will become the dominant mechanism of contaminant transport over time. Large fractures could result in a hydraulic conductivity in the equivalent porous media model that is drastically higher than the hydraulic conductivities considered in the step function nd also higher than the surrounding subsurface material. Failure to consider the potential for fracture flow to become the dominant transport mechanism of contaminants out of the grout causes the current hydeogeological model to be unreliable in predicting contaminant transport in groundwater and subsequently to surface water and other receptors.		function is summarized in Table 4-4 and illustrated on the plot included on Figure 4-2 (in which the assumed timescales are drawn generally based on information provided in Walton et al. 1990). In the long term, it is anticipated that the grout will degrade and the hydraulic conductivity will increase as a result of this degradation. As noted in the literature there are many factors that contribute to the degradation of grout over time and the ability to model its performance is limited as a result of the uncertainty associated with these factors (Walton et al. 1990; Clifton et al. 1995). Contributing factors to degradation include sulphate and magnesium attack (leading to expansion and disruption of the cement), reinforcement corrosion through chloride attack, leaching, carbonation, alkali aggregate reaction, freeze/thaw and cracking. The extent to which degradation of concrete will occur as the result of these contributing factors is dependent on the environmental conditions surrounding the concrete, which are uncertain (Walton et al. 1990; Clifton et al. 1995). CNL's understanding of the reviewer's concern (expressed in IR50_R2, IR201_R2, IR207_R2 and IR220_R2) was that the geo-pathway condition could be more permeable than assessed in the Normal Evolution Scenario or the above Sensitivity Scenarios (including the potential for fracture flow), leading to shorter travel times to the Winnipeg River and higher impacts in groundwater downgradient of the facility than assessed to date. To address this concern, two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Appendix B of the attached technical memorandum (WSP 2024) illustrates the condition assessed in Scenarios 21 and 22, including the assumptions developed to characterize the fracture conditions in the transport model. The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS**:	

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					Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project [Androuet 2024]). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition.	

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					The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings is evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The	

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					maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (EcoMetrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024).	

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					For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References**: Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safey Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Clifton et al. 1995. Long-term performance of engineered concrete barriers. Building and Fire Research Laboratory. National Institute of Standards and Technology publication 5690. July 1995. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. 23 December 2021. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Waste. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Walton et al. 1990. Models for Estimation of Service Life of Concrete Barriers in Low-Level Radioactive Waste Disposal. Idaho National Engineering Laboratory, EG&G Idaho Inc. September 1990.	

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IR 40_R3	ECCC	Technical Memo – Whiteshell Reactor 1 (WR-1) Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations (Consolidated) ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis	**Context:** The latest response from the Proponent (IR 40_R2) details additional steps that the Proponent has undertaken to consider a wider range of parameters used to simulate contaminant transport, and its consequences on an Environmental Risk Assessment (ERA). The Proponent provided two technical memos: (a) Technical Memo - Whiteshell Reactor 1 (WR-1) Groundwater Flow and Solute Transport Modelling - Additional Sensitivity Simulations Rev 0, and (b) Technical memo - ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. The additional steps include considerations for the monolith at the Whiteshell Reactor Disposal Facility (WRDF), the geo-pathway between WRDF and the Winnipeg River, and the risk assessment undertaken based on the simulated fluxes from the groundwater flow and transport model. A. WRDF monolith: The Environmental Impact Statement (EIS) plans for the grouted structure to be below the water table; therefore, the long-term behavior of the specially formulated grouts and existing structures, in terms of groundwater flow and solute transport, need to be adequately assessed and understood. Although Scenario 28 essentially assumed immediate degradation of the grout to a long-term higher permeability condition, there is a very large variability in the anticipated durability of entombing the structures. Insufficient studies and/or analogs to support the parameter assignments in the Normal Evolution have been assessed, and a clear notion of the average expected lifecycle of the grout fracturing is unknown (Androuet, 2024). Additionally, the Proponent did not address the transition from a non-inertial type of flow (Darcy type) and isotropy to inertial flow (Navier-Stokes type) and anisotropy, that will increase the rate of transport many orders of magnitude (Bernard et al, 2003; Yeh, et al., 2004). Without this information the Proponent has not convincingly demonstrated how fracturing will occur within	CNL is expected to: A. WRDF monolith: A more accurate understanding of the durability of the monolith is required for estimating the timing and magnitude of fluxes of contaminants exiting the WRDF towards the Winnipeg River. ECCC requests that CNL clarity on the average expected timing of grout fracturing; and b) over the course of the life of the monolith, consider the transition from a non-inertial and isotropic type (Darcy type) flow, to inertial (Navier-Stokes type) and anisotropic flow, which will increase the rate of transport many orders of magnitude. B. Geo-pathway: ECCC requests that the Proponent: a) provide a wider range of scenarios for simulated fracture apertures based on existing data and/or additional field data; b) provide scenarios with a higher density of fractures; and c) based on additional scenarios above, provide updated groundwater and contaminant fluxes to the Winnipeg River. C.Toxicological Risk Assessment: The maximum mass loading from the groundwater flow and transport model for radionuclide and metals was used as input for the Risk Analysis. ECCC's view is that the simulated fracture apertures were too small, and that larger fractures would lead to shorter		

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			the WRDF monolith and its timing on effects of receptors downgradient. B. Geo-pathway: Section 6.3.2.8: Prediction Confidence and Uncertainty of the EIS, states that ''two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024)''. The revised groundwater flow and transport model considers fractured flow; however, the two new simulated scenarios are limited in their ability to test potential contaminant flow to the Winnipeg River. Minimal justification is presented for using a very small fracture aperture of 0.000123 m for all apertures in both Scenarios 21 and 22. The fracture aperture used is based on Davison (1980), which describes fractures within 3 boreholes. Looking at the data from Davison (1980) more closely, one observes open fractures much larger than 0.0001123 m in two of the 3 test locations. Available data on fracture apertures is sparse and additional field data would give more confidence in the simulated fracture aperture value presented. It is not clear why this relatively small fracture aperture was used and why larger fractures, similar to the larger ones seen in Davison (1980), were not simulated. Additionally, clarity on why the fracture aperture was not varied in the model should be provided given that, as the grout degrades, it is likely that the fracture aperture will increase due to fluid-rock interaction (e.g. Cheng, C., & Milsch, H., 2020; Ghassemi & Kumar, 2007; ITRC, 2025). C. Toxicological Risk Assessment: It is noted that the Ecometrix 2024 Risk Analysis Report bases its input on the solute transport model, and that the contaminant flux from potentially larger fracture apertures is not considered. The maximum mass loading from the groundwater flow and transport model for radionuclide and metals was used as input for the Risk Analysis. ECCC's view is that the simulated fracture apertures are not sufficiently conservative and that larger fractures, as seen in Davison (1980),	travel times and higher maximum concentrations to the Winnipeg River and higher impacts in groundwater downgradient of the WRDF. ECCC requests that the Proponent provide an updated risk assessment based on the additional scenarios recommended above. **Without the information requested, ECCC is unable to provide further advice at this time**		

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			would lead to shorter travel times to the Winnipeg River and higher impacts in groundwater downgradient of the WRDF. **Rationale:** The normal evolution scenario for the WRDF grout fracturing is highly uncertain, and the Proponent did not address the transition from a non-inertial type of flow (Darcy type) and isotropy to inertial flow (Navier-Stokes type) and anisotropy, which will occur over time and increase the rate of transport many orders of magnitude. Current average scenarios for geo-pathway fracturing are too constrained and likely underestimate fracture aperture. A better understanding of the expected fracturing occurring at the WRDF Monolith and the geo-pathway will aid in estimating the timing and magnitude of contaminant fluxes from the WRDF to the Winnipeg River. Information obtained from the analysis suggested above should then be used as input for the Toxicological ERA model. **References:** Androuët, Cédric. (2024). Impact of hydraulic conductivity, diffusion, and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France - 2024, May 27- 29 https://www.researchgate.net/publication/380910637_Impact_of_hydraulic_conductivity_diffusion_and_selfhealing_of_cracked_cementitiousbased_materials_on_the_groundwater_flow_and_solute_transpor t_modelling_for_in-situ_decommissioning_projects Bernardi, C., Hecht, F, Pironneau O., 2003. COUPLING DARCY AND STOKES EQUATIONS FOR POROUS MEDIA WITH CRACKS, ESAIM: M2AN ESAIM: Mathematical Modelling and Numerical Analysis Vol. 39, No 1, 2005, pp. 7–35 DOI: 10.1051/m2an:2005007			

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			https://www.esaimm2an.org/articles/m2an/pdf/2005/01/m2an0481.pdf Cheng, C., & Milsch, H. (2020). Evolution of Fracture Aperture in Quartz Sandstone under Hydrothermal Conditions: Mechanical and Chemical Effects. Minerals, 10(8), 657 https://doi.org/10.3390/min10080657 Davison, C.C. (1980). Physical Hydrogeological Measurements Conducted in Boreholes WN-1, WN-2 and WN-4 to Assess the Local Hydraulic Conductivity and Hydraulic Potential of a Granitic Rock Mass. Prepared by National Hydrology Research Institute, Inland Waters Directorate, Environment Canada. Prepared for Atomic Energy of Canada Limited, Whiteshell Nuclear Research Establishment, Pinawa, Manitoba Ghassemi, A. & Kumar, G.S. (2007); Changes in fracture aperture and fluid pressure due to thermal stress and silica dissolution/precipitation induced by heat extraction from subsurface rocks. Geothermics vol 36, Issue 2, 2007, pages 115-140			
IR 48_R2	CNSC	Sections 3.5.4.1 and 3.4.9.1.1	**Context:** CNSC staff is not satisfied with some aspects of CNL response. The technical content related to CNL response is significantly too wide to be assessed through this IR only and is therefore also being addressed through new requests to CNL (in addition to this IR). Amongst these, the issues related to the performance of the geosphere are discussed in IRs 82_R2 ,83_R2, 84_R2, 85_R2, 148_R2, 153_R2, 201_R2 and 207_R2. **Rationale:** Some of the assumptions in CNL analyses (including in the sensitivity analyses) may actually be far from being conservative and may even not be representative of the current condition of the existing structure, which does not provide confidence in the results of the predictive simulations.	CNL is to provide information on the technical information/research from academia and existing projects with similar challenges (nuclear or non nuclear) that are being used to justify barrier performance. CNL is to ensure that solely materials that are technically comparable to the materials of the WR-1 ISD project are considered.	**Incorporated:** A number of the Federal Provincial Indigenous (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of higher estimates of the diffusivity (Sensitivity Scenarios 25 and 26) and hydraulic conductivity (Sensitivity Scenario 27 and 28) of the grout and concrete structures (i.e., the subject of IR 39_R2 and IR 48_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024).	**Follow-up IR 48_R3 below**

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			Further, most of the literature reviewed to support CNL assumptions is not directly comparable. Some critical parameters vary significantly from those of the WR-1 ISD project and have a major impact on the assumptions made: • The literature review regarding the hydraulic conductivity of cementitious materials has included cementitious-based materials with significantly different water to binder ratios, type and content in cementitious materials, etc., which prevent them from being comparable with the materials of the WR-1 ISD project. • Also, the major impact of cracks on hydraulic conductivity (and diffusivity, to a lesser extent) has not been considered. • Further, durability of the cementitious materials has been justified by relying on the durability of natural cements and roman concretes, and without considering the latest developments in knowledge within the field of cementitious materials and concrete technology. Natural cements and roman concretes are significantly different from modern cementitious materials. Great care must be taken when trying to use this analogue information to assess the long-term stability of modern, specially formulated, cement-based materials, and roman concretes are much more durable than their modern equivalent. Also, the majority of these materials were not subjected to most of the degradation mechanisms that would potentially affect the cementitious materials at the WR-1 ISD project (e.g. sulfate, magnesium and chloride attacks, potential alkali-aggregate reactions and delayed ettringite formation, early-age cracking, etc.) and therefore, these cannot be used as a robust argument of barrier performance. In addition, the conclusion that "Degradation of grout or cementitious material performance contributes to the overall groundwater flow through the WRDF but ultimately does not control the performance of the WRDF (Section 6 of the GWFSTMR)" is invalid, given that it was based on wrong and unconservative assumptions (e.g. hydraulic conductivity and		To address the concern with respect to diffusivity, two additional sensitivity scenarios (Scenarios 25 and 26) were completed with an increased diffusivity for the Whiteshell Reactor Disposal Facility (WRDF) foundation. To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). The assumed step function is summarized in Table 4-4 and illustrated on the plot included on Figure 4-2 (in which the assumed timescales are drawn generally based on information provided in Walton et al. 1990). In the long term, it is anticipated that the grout will degrade and the hydraulic conductivity will increase as a result of this degradation. As noted in the literature there are many factors that contribute to the degradation of grout over time and the ability to model its performance is limited as a result of the uncertainty associated with these factors (Walton et al. 1990; Clifton et al. 1995). Contributing factors to degradation include sulphate and magnesium attack (leading to expansion and disruption of the cement), reinforcement corrosion through chloride attack, leaching, carbonation, alkali aggregate reaction, freeze/thaw and cracking. The extent to which degradation of concrete will occur as the result of these contributing factors is dependent on the environmental conditions surrounding the concrete, which are uncertain (Walton et al. 1990; Clifton et al. 1995). CNL's understanding of the reviewer's concern (expressed in IR50_R2, IR201_R2, IR207_R2 and IR220_R2) was that the geo-pathway condition could be more permeable than assessed in the Normal Evolution Scenario or the above Sensitivity Scenarios (including the potential for fracture flow), leading to shorter travel times to the Winnipeg River and higher impacts in	

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			diffusivity of the grout). Also, in section 3.4.9.1.1, it is mentioned that "*the assumed step function used in the WR-1 assessment*" with regards to concrete bioshield, grout fill, and foundation concrete degradation "*is considered justified*". This assertion may not be claimed, given the fact that the hydraulic conductivity and diffusivity values used for both the existing concrete structures and the grout, including through the assumed step function, are actually far from being conservative, including in the sensitivity analyses performed. Further, the proposed step function has not been justified by supporting technical and scientific background and documentation. The uncertainty in the long-term behavior of modern cementitious materials is very high and therefore, the most conservative approach shall prevail. Typical concrete structures are designed for a lifetime of 50 to 75 years. For specific structures designed for a lifetime of 100 to 120 years, more severe requirements in terms of performance are prescribed. A lifetime of the durability of the grout (and remaining lifetime of the building foundation) of more than 100 years has yet to be demonstrated and no technical justification has been provided regarding the proposed first increase in hydraulic conductivity to occur after 500 years, followed by another increase at 1000 years, and so on. This will very likely impact CNL analyses related to (non-exhaustive list) the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects. **References:** J. J. Cramer, "Natural Analogs in Support of the Canadian Concept for Nuclear Fuel Waste Disposal", AECL Research, August 1994. J. P. Oleson, C. Brandon, S. M. Cramer, R. Cucitore, E. Gotti, and R. L. Hohlfelder, "The ROMACONS Project: a Contribution to the Historical and Engineering Analysis of Hydraulic Concrete in Roman Maritime Structures", The International Journal of		groundwater downgradient of the facility than assessed to date. To address this concern, two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Appendix B of the attached technical memorandum (WSP 2024) illustrates the condition assessed in Scenarios 21 and 22, including the assumptions developed to characterize the fracture conditions in the transport model. The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS**: Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and	

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			Nautical Archaeology, vol. 33, no. 2, pp. 199-229, 2004, doi: 10.1111/j.1095-9270.2004.00020.x. L. M. Seymour, "Hot mixing: Mechanistic insights into the durability of ancient Roman concrete", Science Advances, vol. 9, no. 1, 2023, doi: 10.1126/sciadv.add1602. J.-P. Ollivier and A. Vichot, La durabilité des bétons - Bases scientifiques pour la formulation de bétons durables dans leur environnement (Concrete durability - Scientific basis for the design of durable concretes in their environment). Paris, France: Eyrolle, 2008, p. 844		upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project [Androuet 2024]). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings are evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose	

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					constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024).	

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					The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References**: Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safey Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Clifton et al. 1995. Long-term performance of engineered concrete barriers. Building and Fire Research Laboratory. National Institute of Standards and Technology publication 5690. July 1995. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021.	

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					Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Waste. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team .November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. 20 June 2024. Walton et al. 1990. Models for Estimation of Service Life of Concrete Barriers in Low-Level Radioactive Waste Disposal. Idaho National Engineering Laboratory, EG&G Idaho Inc. September 1990.	
IR 48_R3	CNSC	Sections 3.5.4.1 and 3.4.9.1.1	**Context:** CNL response is similar to the response provided to comment IR 39_R2, thus please see CNSC staff response to comment IR 39_R3. In addition, CNL has not provided any additional information nor analysis to support the long-term behavior and deterioration of the grout and concrete structures. The rationale used by CNL to justify for the very long-term durability and longevity of the cementitious-based materials, as well as of the proposed degradation timescales, is not acceptable. CNL has discussed at a very high level how they expect that the performance of the NPDDF grout and concrete structures, existing and new (i.e. concrete cap), could potentially perform their barrier functions for thousands of years. However, the discussion is based solely on assumptions and expectations, and does not contain any detailed quantitative analyses.	CNL is requested to revise their response by taking into account the results of the analyses which have been required to be updated (see comment IR 39_R2 and 39_R3). Further, demonstration of the long-term durability should actually involve a combination of extensive, exhaustive and detailed laboratory testing and modeling effort, accounting for the latest knowledge on degradation of cementitious-based material, which has not been provided as part of the EIS submission. This effort shall take into consideration the ageing effects and degradation mechanisms to which the cementitious-based materials will be subjected in a holistic and exhaustive fashion, with due consideration given to uncertainties.		

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IR 50_R2	CNSC	Section 3.5.4.1.5 Local Geosphere Pg 3-37	Context: Boreholes 16-7E and 16-8A drilled near the west of WR-1 suggest a potentially shallow fracture zone may exist at the site. However, the extent of fracturing and hydraulic conductivity of the potential fracture zone are unknown. This is one of the primary uncertainties in the geological, hydrogeological, and geomechanical models of the WR-1 site. Rock cores from borehole 16-7E showing zones of rubblized cores in shallow bedrock and the loss of cores in borehole 16-8A in shallow bedrock indicate potentially high hydraulic conductivity of this potential fracture zone that could act as a primary flow pathway and impacts on peak mass loading rates and/or earlier arrival of peaks. Rational: The uncertainty associated with this potential fracture zone is well-known to CNL and CNL proposes to address the uncertainty with a sensitivity study in the Solute Transport Model. Sensitivity Study #1 'Preferential Pathway' examines the effects of an undiscovered pathway between WR-1 and the discharge with enhanced hydraulic connection. However, it is not clear how Sensitivity Study #1 "Preferential Pathway" can conservatively bound the potential effects of this fracture zone given its extent and hydraulic conductivity are unknown.	CNL is expected to provide further information on the characteristics of the fracture zone and compare the characteristics with Sensitivity Study #1 'Preferential Pathway' to demonstrate that Sensitivity Study #1 'Preferential Pathway' can bound the effects from this fracture zone.	**Incorporated:** A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of higher estimates of the diffusivity (Sensitivity Scenarios 25 and 26) and hydraulic conductivity (Sensitivity Scenario 25s and 26) of the grout and concrete structures (i.e., the subject of IR 39_R2, IR 40_R2, IR 48_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). CNL's understanding of the reviewer's concern (expressed in IR50_R2, IR201_R2, IR207_R2 and IR220_R2) was that the geo-pathway condition could be more permeable than assessed in the Normal Evolution Scenario or the above Sensitivity Scenarios (including the potential for fracture flow), leading to shorter travel times to the Winnipeg River and higher impacts in groundwater downgradient of the facility than assessed to date. To address this concern, two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Appendix B of the attached technical memorandum (WSP 2024) illustrates the condition assessed in Scenarios 21 and 22, including the assumptions developed to characterize the fracture conditions in the transport model. The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS**: Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher	

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					grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings are evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is	

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					considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. **References**: Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safey Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Golder. 2021. WR-1 Groundwater Flow and Solute Transport Modelling. Canadian Nuclear Laboratories Document No. WLDP-26000-REPT-005, Revision 4. December 2021. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024.	
IR 52_R2	MMF	Section 4.2.5	**Context:** CNL provided an outline of all engagement initiatives that apply to First Nation and the Manitoba Métis Federation between now and submitting the final EIS, including "Commitments Dialogue" and "Community Specific Information Sessions". The MMF agrees that these are important activities, and appreciates that CNL commits to carrying out these engagements, the relative timing of these engagements is important, as they may influence the MMF's level of comfort with various commitments and	It is requested that CNL provide approximate timelines, or milestone dates to complement the provided engagement opportunities.	**Incorporated:** CNL and the Manitoba Métis Federation (MMF) signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and Canadian Nuclear Laboratories (CNL). The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the WL site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian	**Follow-up IR 52_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			proposed activities.		Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. The specific timelines and milestones for engagement will be determined cooperatively with the MMF. At present, CNL commits to holding and resourcing regular update meetings with representatives from MMF on the Project and restoration of the Whiteshell site. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. CNL will continue to meet with the MMF to continue advancing these commitments. **Change to EIS:** Section 4.2.4.2 was revised to include the following text: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this EIS captures the engagement and the relationship progression up until the end for January 2024, it should be noted that in 2024 February, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. Canadian Nuclear Laboratories aspires to rebuild a productive partnership with the MMF to enable full participation of Red River Métis Citizens in the various projects, licensing, economic benefits and environmental protection opportunities.' **References**:	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					N/A	
IR_52_R3	MMF	Section 4.2		**See response to IR 11_R3**		
IR 53_R2	MMF	Section 4.2	Context: The MMF still seeks clarity in understanding the pathways in which CNL will meaningfully address concerns raised through the Environmental Assessment. To this end, we need to understand all of the proposed opportunities for dialogue and collaboration in determining resolutions both during and following the Environmental Assessment. As presented information provided in Table 4.2-1 and Section 4.2 don't provide any meaningful information regarding the workplan, opportunities or shared goals in advancing dialogue, as per REGDOC 3.2.2.	The MMF requests that CNL provide in as much detail as possible an engagement work plan for engaging with the MMF that includes: A. engagement opportunity, B. description of opportunity and end goals, and C. timeline for engagement. This workplan should be co-drafted with the MMF an designed to working towards meaningful resolution on outstanding matters.	**Incorporated:** Canadian Nuclear Laboratories (CNL) and the Manitoba Métis Federation (MMF) signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the Whiteshell Laboratories (WL) site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. The specific timelines and milestones for engagement will be determined cooperatively with the MMF. At present, CNL commits to holding and resourcing regular update meetings with representatives from MMF on the Project and restoration of the Whiteshell site. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the CNSC as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. CNL will continue to meet with the MMF to continue advancing these commitments. **Change to EIS:** Section 4.2.4.2 was revised to include the following text: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year	**Follow-up IR 53_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					contribution agreement. While this EIS captures the engagement and the relationship progression up until the end for January 2024, it should be noted that in 2024 February, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. Canadian Nuclear Laboratories aspires to rebuild a productive partnership with the MMF to enable full participation of Red River Métis Citizens in the various projects, licensing, economic benefits and environmental protection opportunities.' **References**: N/A	
IR_53_R3	MMF	Section 4.2		**See response to IR 11_R3**		
IR 54_R2	CNSC	Section 4 and appendix 4.0-1.3.12	**Context:** In Appendix 4, there is a summary of Indigenous engagement table for Grand Council Treaty #3. However, a summary of engagement is not provided in Section 4 of the EIS. CNSC staff recommend providing a summary of the engagement conducted with Grand Council Treaty #3 in Section 4 of the EIS. Rationale: To be consistent throughout the EIS, a summary of engagement with Grand Council Treaty #3 should be included in Section 4 of the EIS in addition to in Appendix 4.	Provide a summary of the engagement conducted with Grand Council Treaty #3 in Section 4 of the EIS.	**Incorporated:** Canadian Nuclear Laboratories has revised Section 4 of the Environmental Impact Statement to reflect engagements with Grand Council Treaty #3. **Change to EIS:** Section 4.2.4.9 has been added to reflect the engagements with Grand Council Treaty #3. Appendix 4 has been updated to reflect recent engagements with Grand Council Treaty #3. **References:** N/A	**Accepted**
IR 55_R2	CNSC	Section 4.2.4.4.1	**Context:** The summary of engagement for Wabaseemoong Independent Nations states "CNL sent a copy of CNL's monitoring program schedule on August 30, 2022 and requested Wabaseemoong Independent Nations to identify any activities of interest. CNL followed up with an e-mail on September 23, 2022, regarding recent discussions about meeting with the Wabaseemoong Independent Nations leadership team and doing a site tour. CNL reaffirmed their interest to meet and coordinate those activities.	Clarify whether Wabaseemoong Independent Nations has responded to the recent correspondence from August and September 2022. Provided details to demonstrate if they have provided any indication on engagement preferences or level of interest recently.	**Resolved As:** Canadian Nuclear Laboratories (CNL) followed up with an email on September 23, 2022, to Wabaseemoong Independent Nations, regarding recent discussions about meeting with the Wabaseemoong Independent Nations leadership team and doing a site tour. CNL reaffirmed their interest to meet and coordinate those activities. CNL also requested Wabaseemoong Independent Nations to identify any specific monitoring activities that they wish to be involved with, from the list provided to them on August 30, 2022. No response was received; however, CNL has continued to keep	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			CNL also requested Wabaseemoong Independent Nations identify any specific monitoring activities that they wish to be involved with, from the list provided to them on August 30, 2022." However, it is not clear whether Wabaseemoong Independent Nations responded to any of this correspondence. Rationale: Additional information is required to understand whether Wabaseemoong Independent Nations has responded to above mentioned engagement opportunities and recent level of interest in the project.		Wabaseemoong Independent Nations informed on the Project and provide opportunities to meet with them. In April 2023, Wabaseemoong Independent Nations responded that their engagement with CNL was through Grand Council Treaty #3. CNL has been information sharing and met with Grand Council Treaty #3 throughout 2023. This regular engagement is still ongoing. CNL is still open supporting Indigenous participation in environmental monitoring at the Whiteshell site. CNL plans to invite Wabaseemoong Independent Nations in the further establishment of this initiative. **Change to EIS:** Section 4.2.4.4 Wabaseemoong Independent Nations has been updated to summarize past and ongoing engagement with the Wabaseemoong Independent Nations. Section 4.2.4.9 Grand Council Treaty #3 (New Section) has been added to summarize past and ongoing engagement with Grand Council Treaty #3. **References**: N/A	
IR 56_R2	BR/HWFN	EIS – Section 4.4	**Context:** The response says, "Yes, CNL has provided Indigenous Nations with the opportunity to participate in the development of mitigation measures"; however, Black River First Nation and Hollow Water First Nation were not involved in the development of mitigation measures related to the in-situ decommissioning of the WR-1 Reactor. We acknowledge that the communities have been able to participate in monitoring activities at the Whiteshell Laboratories site and that CNL has been open to adapting their ongoing monitoring plans to including plants and mushrooms that are of interest to our Nations. However, we have not had robust discussions regarding the development, implementation, or review of mitigation measures or post-closure monitoring plans for the site. Indeed, a key message from our Traditional Knowledge and Land Use Occupancy Study (TKLUOS) titled "api migizik pii pa gilot – When Eagles Call Traditional Knowledge and	If CNL is claiming they provided Indigenous Nations with the opportunity to participate in the development of mitigation measures, they should provide specific examples of how Indigenous Nations participated in the development of these measures. If there are no mitigation measures aside from monitoring related to the in-situ decommissioning plans (as alluded to in the second paragraph of the response), CNL should clarify their response to reflect this statement and say how they incorporated recommendations from Indigenous communities in their long-term monitoring plans. In our perspective, this has not occurred.	**Resolved As:** Through engagement, Canadian Nuclear Laboratories (CNL) discussed the issues and concerns identified by Black River First Nation/Hollow Water First Nation (BRFN/HWFN). Discussions were broad in nature, and identified concerns regarding releases from the Project and the potential impacts to traditional land and resource use. In many instances these concerns could be addressed through mitigation already planned as part of the Project design. Neither CNL nor BRFN/HWFN identified any additional specific mitigations as an outcome of engagement; however CNL acknowledged community uncertainty around mitigation and monitoring. Due to these uncertainties, CNL has committed to involving BRFN/HWFN in future monitoring in a way that is most meaningful to those communities. CNL has documented this and all other commitments it has made to the BRFN/HWFN in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission as part of the licence application. **Change to EIS:**	**Follow-up IR 56_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			Land Use Study for the WR-1 Nuclear Reactor In Situ Decommissioning Project" (Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation 2019) was that there is a need for robust long-term legacy monitoring of the site, with results shared and understood by members of the First Nations. Recommendations in the report called for a) funding for the First Nations to contract independent monitoring—including traditional knowledge monitoring—of the site (which we understand is one of CNL's core commitments to the Nations going forward) and b)if the reactor is left in place, that long term monitoring must be extended beyond the proposed 100 years of institutional control to a minimum of 1,000 years. This key recommendation has not been reflected in CNL's post-closure phase monitoring plans as shown in the EIS.		No specific changes to the EIS due to this Information Request (IR); however, related IRs noted in the request may have changes associated with them. **References**: N/A	
IR 56_R3	BR/HWFN	EIS – Section 4.4	**Context:** CNL has stated in the EIS that they have provided Indigenous Nations with the opportunity to participate in the development of mitigation measures. However, the Nations were not involved in original discussions around mitigation measures related to the in-situ decommissioning of the WR1 reactor. BRFN / HWFN acknowledge that the communities have been able to participate in monitoring activities at the Whiteshell Laboratories Site (led by CNL), that CNL has been open to adapting their ongoing monitoring plans to include plants, mushrooms, etc. that are of interest to our Nations, and that CNL has made commitments to support the Nations in developing their own environmental monitoring programs in the future. However, a key message from our Traditional Knowledge and Land Use Occupancy Study (TKLUOS) titled "api migizik pii pa gilot – When Eagles Call Traditional Knowledge and Land Use Study for the WR-1 Nuclear Reactor In Situ Decommissioning Project" (Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation 2019) was that there is a need for robust long-term legacy monitoring of the site, which included	CNL is requested to explain their position for using the 0 to 100-year minimum as the temporal boundary for institutional control, despite requests by the First Nations to significantly increase the period of post-closure monitoring and the fact that requirements for other near surface disposal projects are typically in the range of 100 to 300 years. The EIS should acknowledge that First Nations have made the request for a longer institutional control period than the proposed "0 to 100 years (minimum)" and that Indigenous Traditional Knowledge has recommended a more cautious approach to long-term legacy monitoring of the site.		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			support for independent monitoring of the site by First Nations. The Nations recommended that if the reactor is left in place, monitoring must be extended beyond the EIS's proposed 0-100 years of institutional control "to a minimum of 1,000 years" (p. 70). BRFN and HWFN acknowledge that the EIS typically identifies the 100-year institutional control period as "a minimum"; however, based on Indigenous Traditional Knowledge, the Nations have requested that this minimum length of time be increased to account for the potential long-term human and environmental risks related to in-situ decommissioning. This key recommendation of extending the required institutional control monitoring period beyond 100 years has still not been reflected in CNL's post-closure phase monitoring plans as shown in the EIS, even though the EIS notes that other near surface disposal projects have set institutional control periods in the range of 100 to 300 years (p. 3-2).			
IR 56_R2	MMF	EIS – Section 4.4	**Context**: The MMF is concerned about how CNL has incorporated feedback and insight from Indigenous groups into the development, implementation and review of mitigation measures. In part the MMF recognizes the fundamental difference in position between the MMF and CNL in the potential for residual effect, with CNL of the position that "as the EIS (Golder 2022) does not predict residual adverse effects to be significant, physical mitigation activities proposed by CNL are limited and largely focus on follow-up monitoring to confirm the predicted performance", whereas the MMF and others maintain that there are indeed residual adverse effects, or at least the potential for them over a sufficiently long enough time scale. This feedback has not been incorporated into the effects assessment and is carried through the identification (or lack thereof) mitigation measures.	CNL has made several commitments to the MMF regarding long-term monitoring, CNL is requested to engage with MMF to document the commitments that address MMF concerns and include Métis knowledge be incorporated in long-term monitoring and management plans.	**Resolved As:** Canadian Nuclear Laboratories (CNL) acknowledges that they have different conclusions than the Manitoba Métis Federation (MMF) on whether the Project will have long-term residual effects. This is acknowledged in Section 6.8.1.6.2.2. of the Environmental Impact Statement (EIS). Due to this divergence in conclusions, CNL has committed to involving MMF in future monitoring in a way that is most meaningful to those communities. CNL and the MMF signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and CNL which included commitments towards monitoring. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the WL site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF.	**Follow-up IR 56_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: N/A	
IR 56_R3	MMF	EIS – Section 4.4	**Context:** CNL has not clearly illustrated how they will integrate adaptive management into the Environmental Assessment Follow-Up Monitoring Program in the event that their predictions underestimate contaminants able to enter surface waters. The MMF requests that CNL outline an adaptive management framework approach for collecting information, interpretation, triggering action, and implementing a response in the event that surface water contaminant predictions are inaccurate. This framework should be shared with the MMF to allow for consideration of its components.	The MMF request CNL clearly articulate their adaptive management strategy in the event that surface water contaminant predictions are inaccurate.		
IR 56_R2	SFN	EIS – Section 4.4	Context: In its IR response, CNL states that "CNL has provided Indigenous Nations with the opportunity to participate in the development of mitigation measures and will provide Indigenous Nations with the opportunity to participate in the implementation and review of mitigation measures". This is not a generally creditable assertion. The EIS provides minimal evidence that CNL has actually engaged Sagkeeng First Nation in the development of mitigation and/or accommodation measures. No formal mitigation meetings have been held between Sagkeeng First Nation and CNL beyond the development of a Community Environmental Monitoring Program and discussions about a Healing and Resiliency Action Plan. Other than these items, Sagkeeng First Nation has not been invited by CNL to date to develop, implement or review any other mitigation measures or examine their efficacy. In addition,	CNL is requested to identify what mitigation measures has Sagkeeng First Nation been consulted on other than the two examples noted above, and in what forums, and provide a list of all mitigation and accommodation measures Sagkeeng First Nation (and Sagkeeng First Nation -developed studies) has recommended in relation to the WR-1 facility and how they have been addressed to date.	**Resolved As:** Through engagement, Canadian Nuclear Laboratories (CNL) discussed the issues and concerns identified by Sagkeeng First Nation. Discussions were broad in nature, and identified concerns identified by the community. CNL acknowledges that there was no specific engagement with Sagkeeng First Nation where mitigation was explicitly addressed and developed. In many instances CNL found that concerns could be addressed through mitigation already planned as part of the Project design elements (e.g., centralized infrastructure), environmental best practices, management policies, programs, plans, and procedures, which include spill response and emergency response. The Project environmental design features and mitigations are provided within each discipline section, under the "Project Interactions and Mitigation" heading, and described in Section 3 Project Description. These environmental design features and mitigations were developed iteratively between the Project's environmental and project development teams.	**Follow-up IR 56_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			CNL has chosen to completely reject Sagkeeng First Nation's primary impact mitigation recommendation, to revert to the approved full removal decommissioning plan for WR-1.		Minimization techniques and technology were also identified and implemented collaboratively between Project teams. To accommodate the divergence in conclusions of the Environmental Impact Statement (EIS), CNL has further committed to implementing Sagkeeng First Nation's Community Environmental Monitoring Program, the Niigan Aki Program. This includes commitment to Sagkeeng First Nation's Healing and Resiliency Action Plan scope inclusive of communication of monitoring to results to Sagkeeng First Nation members. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. At the time of this response, no specific agreement has been reached between CNL and Sagkeeng First Nation for longer term arrangements; however, CNL has committed to involve Sagkeeng First Nation in monitoring in the way that is most meaningful to them. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods. **Change to EIS:** No changes to the EIS are required to address this IR. **References:** N/A	
IR 56_R3	SFN	EIS – Section 4.4	**Not accepted, recognizing that a more fulsome response is pending.** **Context:** Sagkeeng's information requirement remains outstanding, notwithstanding that Sagkeeng has not pushed for the information in the revised EIS, so as not to slow down the EA process. Sagkeeng fully expects that CNL will include all	Sagkeeng provides the following Follow-Up Information Requirements for CNL: A: Can CNL confirm that it will include all commitments it has made in response to Sagkeeng issues and concerns in the next version of the EIS		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			commitments it has made in response to Sagkeeng issues and concerns in the next version of the EIS or in a supplemental filing prior to the CNSC hearing. Sagkeeng notes that CNL's response indicates that the mitigation and other commitments found in the EIS was primarily to exclusively developed by internal CNL "Project teams", and CNL makes minimal reference to vetting and verification of the likely adequacy of those mitigation, monitoring and accommodation measures by affected Indigenous peoples. For example, CNL's "finding" that concerns could be addressed through mitigation already planned as part of the Project design elements, does not show evidence of Indigenous engagement or verification. This is not a "do it yourself" exercise. Sagkeeng requests below that CNL commit to improve the role of affected Indigenous peoples in the verification of commitment adequacy prior to the hearing phase of this EA. Sagkeeng notes for the record that reference to "their commitments" as being in the possession of Sagkeeng, as seen at left, is inaccurate. CNL is the party responsible for making commitments to mitigation, monitoring and accommodation. Sagkeeng may or may not agree with said CNL commitments and even if Sagkeeng does agree to them, the ultimate committing party is CNL, not Sagkeeng. CNL in the future should refer to "CNL commitments made in response to Sagkeeng issues and concerns" and not to Sagkeeng as the committing party.	or in a supplemental filing at least 3 months prior to any CNSC hearing on the WR-1 proposal? B: Can CNL confirm that it will verify with Sagkeeng any proposed commitments CNL deems relevant to dealing with Sagkeeng issues and concerns in advance of any supplemental filing (which could include an updated EIS), and include Sagkeeng comments in the supplemental filing whereever Sagkeeng's perspective on the adequacy of the commitment to address one or more Sagkeeng issues and concerns, differs from that of CNL?		
IR 58_R2	CNSC	EIS: Appendix 4.0 Summary of Interests and Concerns Table	Context: Although CNL has provided information about the verification process to ensure Indigenous Nations and communities concerns and CNL's responses are accurately reflected, it is not always clear in the Interests and concerns tables whether the status of the interest or concern has been validated or agreed upon with the Indigenous Nations and community. For example, the status often says "CNL has addressed this concern to the extent possible" but it is not clear whether the Indigenous Nation or community agrees that the interest or concern has been addressed.	In the interest and concerns tables, provide clarification on whether the Indigenous Nations and communities are in agreement when the statement is made that the interests and concerns have been addressed to the extent possible. If the interest or concern is not fully addressed, provide a rationale as to why it hasn't been fully addressed. Clarify what is meant by "addressed to	**Incorporated**: Canadian Nuclear Laboratories (CNL) has been working with all Indigenous communities to address their specific interests and concerns with the project. CNL has documented the actions CNL has taken to date on each interest or concern, and how those actionresultt or did not result in changes to the Environmental Impact Statement (EIS). The status of each interest and concern is unique to each nation, and reflects the mutual agreement of CNL and each Nation of the actual status. In most cases, CNL has indicated that the issue or concerns has been addressed within the scope of the Project, by CNL, to the extent it can be at this time. It also reflects the next steps to be taken by CNL for each interest and concern, recognizing that the overwhelming majority of the interests and concerns will continue to be	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			At times, it will indicate that the concern is addressed to extent possible at this time and will be fully addressed in the future when certain activities/ mitigation is undertaken. However, other times it is not always clear what is meant by "to the extent possible". For example, it is unclear whether the concern has only been partially addressed, if CNL believes they have addressed it but the Indigenous Nation or community disagrees, if the concern is out of scope or outside CNL's capability etc. More information is needed to understand what is meant by "to the extent possible". Rationale: More detail is required to understand whether the Indigenous Nations and communities agree that the interests and concerns have been addressed to the extent possible. If CNL is not able to fully address the interest or concern raised, this must be clearly documented and a rationale provided.	the extent possible".	discussed as part of ongoing engagement and co-operation over the lifecycle of the project. These next steps are captured as commitments and documented in the CNL Commitments List. **Change to EIS:** The Interest and Concerns Tables in Appendix 4.0-1 have been revised to be current as of July 31, 2024, and have been reviewed and verified as accurate by each community. **References**: N/A	
IR 58_R2	MMF	Appendix 4.0 Summary of Interests and Concerns Table	Context: See IR 9, IR 10, IR 28, and IR 56 for additional context, however, the MMF is of the opinion that CNL's commitments to continually working with the MMF and others to resolve concerns is not within itself adequate to respond and address our concerns. This in part is because of the inherent link between actions associated with post-approval monitoring, participation, oversight, economic opportunity, education, training and other matters to which CNL has committed is essential to minimizing or mitigating the concerns the MMF maintains.	Commitments within themselves are not meaningful, rather in order to address these concerns CNL must work now with the MMF to identify an action plan for resolving activities that can be conducted before the approval of this project, and reserve a clear scope of actions that must be defined following the approval. As present, the MMF only has commitments from CNL to work with the MMF create a plan in the future.	**Resolved As:** Canadian Nuclear Laboratories (CNL) and the Manitoba Métis Federation (MMF) signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the Whiteshell Laboratories (WL) site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. The specific timelines and milestones for engagement will be determined cooperatively with the MMF. At present, CNL commits to holding and resourcing regular update meetings with representatives from MMF on the Project and restoration of the Whiteshell site. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the CNSC as part of the licence application. On December 6, 2023, MMF sent verification	**Follow-up IR 58_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. CNL will continue to meet with the MMF to continue advancing these commitments. **Change to EIS:** Section 4.2.4.2 was revised to include the following text: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this EIS captures the engagement and the relationship progression up until the end for January 2024, it should be noted that in 2024 February, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. Canadian Nuclear Laboratories aspires to rebuild a productive partnership with the MMF to enable full participation of Red River Métis Citizens in the various projects, licensing, economic benefits and environmental protection opportunities.' **References**: N/A	
IR 58_R3	MMF	Appendix 4.0		See response to IR 11_R3		
IR 60_R2	CNSC	Section 5.2.2, pg 5-15	Context: CNL's revised document includes generalized information regarding the tone of media articles and it does not explain any parameters used to quantify the analysis.	CNL is to provide more details about the tones observed and the relevant articles for those tones. Explain how CNL determined the tones of the published items and any other items the analysis would have revealed.	**Resolved As:** The purpose of including media coverage in the Environmental Impact Statement (EIS) was to demonstrate the effectiveness or outcome of Canadian Nuclear Laboratories' (CNL) efforts at sharing project information and informing the public on the Project through the media. A description of the efforts made to share information is a requirement of the Generic EIS Guidelines (pg. 14; CNSC 2016a) and informing the public on the project is a	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					requirement of REGDOC 3.2.1: Public Information and Disclosure. (CNSC 2018a). For the proponent to analyse the perceived tone of a media article would be very subjective and not address any requirement of the Generic EIS Guidelines or REGDOC 3.2.1. REGDOC-3.2.1, Public Information and Disclosure does outline specific requirements on media coverage in Section 2.2.3: "The media may reflect and influence public opinion. Therefore, the media analysis should describe the amount and nature of media coverage related to the facility or activity, and the media involved (e.g., television, print, blogs and other social media). In addition, the support or concern that has been expressed with relation to the licence application, licensed facility or activities should be described." CNL's analysis meets the recommendations for analysis including sharing the amount, nature and type of media involved, as well as subject. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **Change to SER TSD:** Information on media coverage over the span of the project has been included in Section 3.15. **References:** Canadian Nuclear Safety Commission (CNSC). 2016a. Generic Guidelines for the Preparation of an Environmental Impact Statement, May 2016. Canadian Nuclear Safety Commission (CNSC). 2018c. REGDOC-3.2.1, Public and Aboriginal Engagement: Public Information and Disclosure, May 2018.	
IR 61_R2	CNSC	Section 5.3.4, pg 5-18	Context: CNL's revised document includes generalized process for responding to public inquiries however it does not address how it ensures responses are shared in a timely manner.	CNL is to provide more details about the turnaround time for responses, include details such as acknowledgement of receipt and any parameters used to determine the response time.	**Incorporated:** The Environmental Impact Statement (EIS; WSP 2025) has been updated to revise the text in Section 5 to provide more details regarding the received information requests and response methods. The Stakeholder Engagement Report (SER; CNL 2024) has also been updated to reflect the changes made in the EIS. **Change to EIS:** CNL has revised the following text in Section 5.2.21:	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					"When requests for information were received (e.g., via email, letters, formal comment cards submitted at an open house), they were electronically logged and assigned to appropriate subject matter experts. Once the response was received from the subject matter experts, it is then issued for final internal review. The response was electronically recorded and returned to the originator via the same stream it was received. If the request received was for copies of the EIS supporting documentation, the files were deposited in a Secure File Transfer Protocol site and the login information forwarded to the originator. CNL also deliver hard copies of the EIS, when requested. CNL aims to fully close inquiries in as timely a manner as possible and most inquiries are closed within weeks." **Change to SER TSD:** Section 3.21 of the SER has been updated with the following text: "When requests for information were received (e.g., via email, letters, formal comment cards submitted at an open house), they were electronically logged and assigned to appropriate subject matter experts. Once the response was received from the subject matter experts, it is then issued for final internal review. The response was electronically recorded and returned to the originator via the same stream it was received. If the request received was for copies of the EIS supporting documentation, the files were deposited in a Secure File Transfer Protocol site and the login information forwarded to the originator. CNL also deliver hard copies of the EIS if requested." **References:** WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025. CNL. 2024. Environmental Assessment Stakeholder Engagement Report – WR-1 In Situ Decommissioning. WLDP-26000-REPT-010. Revision 6. December 2024.	
IR 65_R2	CNSC	Section 6.1.3.2 Temporal Boundaries pg 6-15	Context: The response is partially acceptable. The revised EIS provides a preliminary monitoring program that focuses mainly on impact on the geosphere and biosphere. It seems that CNL intends to	CNL should define indicators for the corrosion rate of the calandria components. These indicators are measurable parameters that are	**Resolved As:** The Environmental Impact Statement (EIS; WSP 2025) references the Waste Form Synthesis Report (Arcadis 2021) which provides the corrosion rates	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			use piezometers in the surrounding rock and overburden to monitor groundwater flow and contamination. The long-term impact of the facility is primarily dependent on the corrosion resistance of the calandria components. In case the corrosion rate of the calandria's components is higher than expected, those piezometers would not likely detect this deviation during the institutional control period.	indicative of the corrosion process (for example pH, redox potential, etc. in the vicinity of the calandria). CNL should provide in the detailed monitoring program methods to measure those indicators, at locations as close to the potentially corrodible components as possible, in order to allow early detections of any performance deviations.	that have been used in the postclosure safety assessments for WR-1 for the three classes of alloy. Direct monitoring of conditions within the grouted facility is problematic for several reasons: • Installation of monitoring equipment creates potential large pathways into the grouted facility. • Expected lifetime of monitoring instruments is not sufficient to reliably provide monitoring data. • Conditions in the grouted facility are conservatively assumed for the assessment, including the assumption that the facility will resaturate with water instantly and allow for corrosion to occur. In reality, it may take decades for resaturation to complete. • Monitoring data that could indicate corrosion may be occurring will not be verifiable without excavation of the facility and removal of the barriers. Canadian Nuclear Laboratories (CNL) proposes the most practical means of monitoring actual performance of the Whiteshell Reactor Disposal Facility (WRDF) is through near field groundwater monitoring as it provides more reliable and clear indications of the actual conditions, and can be directly compared to the predictions of the EIS for assessment for further action. As the assessment has looked at conservative corrosion rates, conservative re-saturation periods for the WRDF, conservative source terms, and conservative release pathways, it is expected that even if accelerated corrosion were to occur, it would be unlikely to require intervention. Further the rate at which contaminants move through the groundwater is very slow, and CNL's commitment to install a groundwater monitoring well closer to WRDF than the current perimeter well nests, will provide ample time to detect, assess and mitigate (if necessary) any unexpected conditions. **Change to EIS**: No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: Arcadis. 2021. NPD and WR-1 In Situ Decommissioning Projects Waste Form Synthesis Report. 64-508760-REPT-017. Revision 1. July 2021.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 66_R2	ECCC	Section 6.2.1.7.2, pg 6-58 to 6-66	Context: Related to the emission of radiological and non-radiological air contaminants. The response to the IR states, "Dispersion modelling was completed to estimate the ground level concentrations for the Application Case for the air quality indicator compounds. As noted in Section 6.2.17.2 (Application Case Results) of the EIS (Golder 2022), the predicted ground level concentrations for the Application Case are below applicable air quality guidelines and/or standards." Table 6.2.1-14 states "Concentrations at the Local Study Area Boundary for the Base Case and Application Case" which indicates a 1-hour standard for NO2 concentrations of 400 µg/m3 based on the Manitoba Ambient Air Quality Standards (AAQC) as referenced in Table 13 of Appendix 6.2-1. This table in the appendix only considers Canadian Ambient Air Quality Standards (CAAQS) in effect through 2013. Since then, updates to the CAAQS1 have resulted in a stricter 1-hour standard of 42 ppb (approximately 79 µg/m3) for2025 using the metric of the 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations. Rationale: The CAAQS for NO2 have been updated since previous versions of the EIS were provided.	CNL is expected to: A. assess the dispersion modelling results using the updated metrics for the 1-hour NO_2 CAAQS for 2025, and update Table 6.2.1-14 accordingly. B. indicate how dispersion modelling conservatisms impact outcomes due to Project-related NO_2 emissions.	**Incorporated:** The original assessment took a conservative "worst case" approach that was intended to simplify the calculations and provide the greatest flexibility in future operations by demonstrating that if the maximum emissions were below a Point of Impingement criteria at all receptor locations, the project was not likely to have a significant impact on the local air quality. This approach has been accepted in the past for similar Environmental Impact Statements (EIS's). At the request of the reviewers, the assessment has been updated to focus on a regional approach using the Canadian Ambient Air Quality Standards (CAAQS). This required re-evaluating some of the conservative assumptions used in the original approach since more information is now known on the actual construction schedule and updating the dispersion model used to reflect the fact that the CAAQS are based on a monitoring assessment at an ambient air monitoring location. **A.** Where applicable, the 2025 CAAQS (CCME 2020 a,b) values have been included in the assessment and are now used as the applicable criteria for comparing to the application case predicted concentrations to assess significance. In addition, there have been changes made to some of the emissions assumptions (Appendix 6.2-2). In the original assessment, all four generators were assessed as operating simultaneously during their routine one-hour testing to derive a maximum emission rate for the one hour averaging period and this value was inputted into a screening value to obtain a maximum concentration at point of impingement (POI). This has been updated to assess the actual operating scenario of one generator tested at a time for up to one hour. For the daily and annual averaging periods, all four generators will continue to be assessed as operational for one hour each over the course of 24 hours. Non-road tailpipe emission factors from construction equipment have been updated to use Tier 4 emission standards from the United States Environmental Protection Agency (US EPA 2018) "Exhaust and Crankcase	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b". Similarly, emission factors for the generators, previously obtained from US EPA AP-42 (2011) for NOx and CO, have been updated to use Tier 4 non-road engine standards (Appendix 6.2-2). For each indicator compound and respective averaging period, maximum POI concentrations at the Canadian Nuclear Laboratories (CNL) property boundary were combined with both the minimum and maximum background concentrations and compared to the lowest criteria. All indicator compounds were below the applicable criteria at the CNL property boundary, except for Suspended Particulate Matter (SPM) and PM10 on the 24-hour averaging period. The SPM result was above the MAAQC Maximum Acceptable Level Concentration but remains below the MAAQC Maximum Tolerable Level Concentration while the PM10 result was above the MAAQC Maximum Acceptable Level Concentration. However, for both SPM and PM10, all receptor locations above their respective criteria were located in close proximity to the CNL property boundary along Ara Mooradian Way, north of Hwy 211 and on property controlled by CNL. All sensitive receptors (residences) had POI concentrations below their respective guideline. This updated assessment addresses the reviewers' comments and supports the original assessment that the project will not cause a significant impact to the local air quality. **B.** As noted in Section 6.2.1.8 Prediction Confidence and Uncertainty, the Application Case (i.e., during the closure phase, Project Stages 1 to 3) were assumed to occur simultaneously. It is conservatively assumed that all non-road equipment is operating simultaneously during the daytime operating hours for Project Stages 1 to 3 and for the entire duration of these three stages. In reality, it is unlikely that all equipment would operate simultaneously and that the same type of equipment will operate simultaneously for different components of these stages. The modelling assessment includes all operations occurring simultaneously and continuous over the entire modelling period. Project activities were modelled as a volume source. Modelling the emissions as a volume source is conservative since this model source type does not take advantage of favourable dispersion characteristics such as plume buoyancy and initial exit velocity of emissions from the propane fired boiler, batch mixing plant or similar equipment. Further, the dispersion modelling source dimensions selected for the volume source result in a	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					dispersion modelling source which is smaller than the corresponding real-life source. This is conservative since estimated emissions occur over a smaller area, and thus, are more concentrated (and therefore less dispersed) at the point of release. **Change to EIS:** Section 6.2.1.5.1 Methods in the EIS and Section 3.1.1 Applicable Guidelines in Appendix 6.2-1 has been updated as follows: 'The CAAQSs have been developed under the Canadian Environmental Protection Act, 1999 and include standards for PM2.5, NO2, SO2 and ozone that must be achieved by 2020, as well as more stringent standards for NO2, SO2 and ozone that must be achieved by 2025. In 2015 the standard was phased in, with the final standard phase in date in 2025 (Government of Canada 2013). Similar to the NAAQOs, the CAAQSs are not regulatory limits, but rather, are used as national targets for PM2.5, NO2, SO2 and ozone, excluding Quebec (CCME 2014).' Section 6.2.1.7.2 Subheading Predicted Modelling Concentrations has been updated as follows: 'All indicator compounds were below the applicable criteria at the CNL property boundary, except for SPM and PM10 on the 24-hour averaging period. The SPM result was above the MAAQC Maximum Acceptable Level Concentration but remains below the MAAQC Maximum Tolerable Level Concentration while the PM10 result was above the MAAQC Maximum Acceptable Level Concentration. However, for both SPM and PM10, all receptor locations above their respective criteria were located in close proximity to the CNL property boundary along Ara Mooradian Way, north of Hwy 211 and on property controlled by CNL. All sensitive receptors (residences) had POI concentrations below their respective guideline.' Table 6.2.1-6 Summary of the Applicable Manitoba and Federal Objectives and Criteria has been updated to include 2025 CAAQS. Table 6.2.1-14 Concentrations at the Local Study Area Boundary for the Minimum Base Case and the Application Case has been updated to include 2025 CAAQS. Table 6.2.1-15 Concentrations at the Local Study Area Boundary for the Maximum Case and the Application Case has been updated to include 2025 CAAQS.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Section 6.2.1.9.2 Determination of Significance has been updated to include the most recent results. 'The magnitude of changes to indicator compound emissions are predicted to be low to moderate for PM2.5, NO2, SO2, and CO as the predicted concentrations of each of these indicator compounds from the Application Case are below their relevant guideline/standard. The magnitude of changes to indicator compound emissions for SPM and PM10 are predicted to be high as the predicted concentrations for these two indicator compounds from the Application Case are above their relevant guideline/standard. However, the locations of these predicted high concentrations are limited to a small area just outside the LSA and contained within the RSA, along Ara Mooradian Way north of Hwy 211 in a restricted area.' Appendix 6.2-1, Appendix 6.2-2 and Appendix 6.2-3 have been updated to reflect the revisions described above. **References:** US EPA. 2018. Exhaust and Crankcase Emission Factors for Nonroad Compression Ignition Engines in MOVES2014b. US EPA, Office of Transportation and Air Quality. Available at https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=541846&Lab=OTAQ US EPA. 2011. Compilation of Air Pollutant Emission Factors. Volume 1: Stationary Point and Area Sources. Chapter 13.2.1: Paved Roads. Document AP 42. US EPA, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina. Available at https://www3.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf CCME. 2020a. Guidance Document on Achievement Determination for Canadian Ambient Air Quality Standards for Nitrogen Dioxide. PN 1608. Available at https://ccme.ca/en/res/gdadforcaaqsfornitrogendioxide_en1.0.pdf. CCME. 2020b. Guidance Document on Achievement Determination for Canadian Ambient Air Quality Standards for Sulphur Dioxide. PN 1610. Available at https://ccme.ca/en/res/gdadforcaaqsforsulphurdioxide_en1.0.pdf. Government of Canada. 2013. Canadian Ambient Air Quality Standards. Canada Gazette Part 1, Vol 147, 21.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CCME. 2014. Canada Wide Standards for Particulate Matter and Ozone, 2012 Final Report. Winnipeg MB: Canadian Council of Ministers of the Environment. ISBN: 978-1-77202-009-0. Available at https://publications.gc.ca/collections/collection_2015/ec/En108-1-6-2012-eng.pdf	
IR 70_R2	ECCC and CNSC	Table 6.2.1-14. pg 6-63, Section 6.2.1.3.1 Spatial Boundaries Appendix 6.2-1 Baseline Air Quality and Meteorology pg 6-30 1	Context: IR 70 related to the justification for spatial boundaries for the atmospheric environment. The response to the IR states, "Potential effects in the atmospheric environment remain close to the emission sources, which were centered around Whiteshell Reactor 1 (WR-1) and will decrease with distance. The size of the [local study area] LSA and [regional study area] RSA capture the maximum potential effect for both areas and do not underestimate the potential effects; therefore, the LSA and RSA were not expanded." Table 6.2.1-14 "Concentrations at the Local Study Area Boundary for the Base Case and Application Case" shows maximum 1-hour NO_2 concentrations within the LSA of 212.49 µg/m3. As referenced in the context section of IR# 66, updated 1-hour CAAQS for NO_2 are 42 ppb (approximately 79 µg/m3). Thus, exceedances of the updated CAAQS are modelled to extend beyond the boundaries of the LSA. The response stated that "the maximum predicted air quality results at the LSA boundary are presented" but it is unclear where this information is presented and how the air quality data support the rationale that the LSA boundary is protective of maximum potential effects, as stated in the response. Rational: The CAAQS for NO_2 have been updated since previous versions of the EIS were provided. Assessment of the Project's impacts for nearby communities including Lac du Bonnet and Pinawa should utilize the most recent standards.	CNL is expected to: A. assess the dispersion modelling results using the metrics for the 1-hour NO_2 CAAQS and determine the spatial extent of modelled exceedances for the 2025 CAAQS. B. adjust the LSA to encompass the 2025 1-hour CAAQS for NO_2. C. indicate how dispersion modelling conservatisms may ensure that the Project is not likely to have significant impacts due to Project-related NO_2 emissions. D. clarify where the maximum predicted air quality results at the LSA boundary are presented.	**Incorporated:** The original assessment took a conservative "worst case" approach that was intended to simplify the calculations and provide the greatest flexibility in future operations by demonstrating that if the maximum emissions were below a Point of Impingement criteria at all receptor locations, the project was not likely to have a significant impact on the local air quality. This approach has been accepted in the past for similar Environmental Impact Statements (EIS's). At the request of the reviewers, the assessment has been updated to focus on a regional approach using the Canadian Ambient Air Quality Standards (CAAQS). This required re-evaluating some of the conservative assumptions used in the original approach since more information is now known on the actual construction schedule and updating the dispersion model used to reflect the fact that the CAAQS are based on a monitoring assessment at an ambient air monitoring location. **A.** Where applicable, the 2025 CAAQS (CCME 2020 a,b) values have been included in the assessment and are now used as the applicable criteria for comparing to the application case predicted concentrations to assess significance. In addition, there have been changes made to some of the emissions assumptions (Appendix 6.2-2). In the original assessment, all four generators were assessed as operating simultaneously during their routine one-hour testing to derive a maximum emission rate for the one hour averaging period and this value was inputted into a screening value to obtain a maximum concentration at point of impingement (POI). This has been updated to assess the actual operating scenario of one generator tested at a time for up to one hour. For the daily and annual averaging periods, all four generators will continue to be assessed as operational for one hour each over the course of 24 hours.	**Follow-up IR 70_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Non-road tailpipe emission factors from construction equipment have been updated to use Tier 4 emission standards from the United States Environmental Protection Agency (US EPA 2018) “Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b”. Similarly, emission factors for the generators, previously obtained from US EPA AP-42 (2011) for NOx and CO, have been updated to use Tier 4 non-road engine standards (Appendix 6.2-2). For each indicator compound and respective averaging period, maximum POI concentrations at the Canadian Nuclear Laboratories (CNL) property boundary were combined with both the minimum and maximum background concentrations and compared to the lowest criteria. All indicator compounds were below the applicable criteria at the CNL property boundary, except for Suspended Particulate Matter (SPM) and PM10 on the 24-hour averaging period. The SPM result was above the MAAQC Maximum Acceptable Level Concentration but remains below the MAAQC Maximum Tolerable Level Concentration while the PM10 result was above the MAAQC Maximum Acceptable Level Concentration. However, for both SPM and PM10, all receptor locations above their respective criteria were located in close proximity to the CNL property boundary along Ara Mooradian Way, north of Hwy 211 and on property controlled by CNL. All sensitive receptors (residences) had POI concentrations below their respective guideline. This updated assessment addresses the reviewers’ comments and supports the original assessment that the project will not cause a significant impact to the local air quality. • All NO2 point of impingement concentrations are below the 2025 1-hour CAAQS inside along the CNL property boundary, and withing the Local Study Area (LSA) and Regional Study Area (RSA); therefore, no adjustment to the LSA is required. • As noted in Section 6.2.1.8 Prediction Confidence and Uncertainty, the Application Case (i.e., during the closure phase, Project Stages 1 to 3) were assumed to occur simultaneously. It is conservatively assumed that all non-road equipment is operating simultaneously during the daytime operating hours for Project Stages 1 to 3 and for the entire duration of these three stages. In reality, it is unlikely that all equipment would operate simultaneously and that the same type of equipment will operate simultaneously for different components of these stages. The modelling assessment includes	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					all operations occurring simultaneously and continuous over the entire modelling period. Project activities were modelled as a volume source. Modelling the emissions as a volume source is conservative since this model source type does not take advantage of favourable dispersion characteristics such as plume buoyancy and initial exit velocity of emissions from the propane fired boiler, batch mixing plant or similar equipment. Further, the dispersion modelling source dimensions selected for the volume source result in a dispersion modelling source which is smaller than the corresponding real-life source. This is conservative since estimated emissions occur over a smaller area, and thus, are more concentrated (and therefore less dispersed) at the point of release. • As stated in Section 6.2.1.4.1 Spatial Boundaries, to provide a conservative assessment, the maximum predicted air quality results at the LSA boundary are presented and are considered to be representative of the highest concentrations at ground-level of contaminants expected outside the LSA from Project activities. The maximum predicted concentrations at the LSA boundary for the Base Case and Application Case are presented in Table 6.2.1-15. **Change to EIS:** Section 6.2.1.5.1 Methods in the EIS and Section 3.1.1 Applicable Guidelines in Appendix 6.2-1 has been updated as follows: 'The CAAQSs have been developed under the Canadian Environmental Protection Act, 1999 and include standards for PM2.5, NO2, SO2 and ozone that must be achieved by 2020, as well as more stringent standards for NO2, SO2 and ozone that must be achieved by 2025. In 2015 the standard was phased in, with the final standard phase in date in 2025 (Government of Canada 2013). Similar to the NAAQOs, the CAAQSs are not regulatory limits, but rather, are used as national targets for PM2.5, NO2, SO2 and ozone, excluding Quebec (CCME 2014).' Section 6.2.1.7.2 Subheading Predicted Modelling Concentrations has been updated as follows: 'All indicator compounds were below the applicable criteria at the CNL property boundary, except for SPM and PM10 on the 24-hour averaging period. The SPM result was above the MAAQC Maximum Acceptable Level Concentration but remains below the MAAQC Maximum Tolerable Level	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Concentration while the PM10 result was above the MAAQC Maximum Acceptable Level Concentration. However, for both SPM and PM10, all receptor locations above their respective criteria were located in close proximity to the CNL property boundary along Ara Mooradian Way, north of Hwy 211 and on property controlled by CNL. All sensitive receptors (residences) had POI concentrations below their respective guideline.' Table 6.2.1-6 Summary of the Applicable Manitoba and Federal Objectives and Criteria has been updated to include 2025 CAAQS. Table 6.2.1-14 Concentrations at the Local Study Area Boundary for the Minimum Base Case and the Application Case has been updated to include 2025 CAAQS. Table 6.2.1-15 Concentrations at the Local Study Area Boundary for the Maximum Case and the Application Case has been updated to include 2025 CAAQS. Section 6.2.1.9.2 Determination of Significance has been updated to include the most recent results. 'The magnitude of changes to indicator compound emissions are predicted to be low to moderate for PM2.5, NO2, SO2, and CO as the predicted concentrations of each of these indicator compounds from the Application Case are below their relevant guideline/standard. The magnitude of changes to indicator compound emissions for SPM and PM10 are predicted to be high as the predicted concentrations for these two indicator compounds from the Application Case are above their relevant guideline/standard. However, the locations of these predicted high concentrations are limited to a small area just outside the LSA and contained within the RSA, along Ara Mooradian Way north of Hwy 211 in a restricted area.' Appendix 6.2-1, Appendix 6.2-2 and Appendix 6.2-3 have been updated to reflect the revisions described above. **References:** US EPA. 2018. Exhaust and Crankcase Emission Factors for Nonroad Compression Ignition Engines in MOVES2014b. US EPA, Office of Transportation and Air Quality. Available at https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=541846&Lab=OTAQ US EPA. 2011. Compilation of Air Pollutant Emission Factors. Volume 1: Stationary Point and Area Sources. Chapter 13.2.1: Paved Roads. Document	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					AP 42. US EPA, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina. Available at https://www3.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf CCME. 2020a. Guidance Document on Achievement Determination for Canadian Ambient Air Quality Standards for Nitrogen Dioxide. PN 1608. Available at https://ccme.ca/en/res/gdadforcaaqsfornitrogendioxide_en1.0.pdf. CCME. 2020b. Guidance Document on Achievement Determination for Canadian Ambient Air Quality Standards for Sulphur Dioxide. PN 1610. Available at https://ccme.ca/en/res/gdadforcaaqsforsulphurdioxide_en1.0.pdf. Government of Canada. 2013. Canadian Ambient Air Quality Standards. Canada Gazette Part 1, Vol 147, 21. CCME. 2014. Canada Wide Standards for Particulate Matter and Ozone, 2012 Final Report. Winnipeg MB: Canadian Council of Ministers of the Environment. ISBN: 978-1-77202-009-0. Available at https://publications.gc.ca/collections/collection_2015/ec/En108-1-6-2012-eng.pdf.	
IR 70_R3	CNSC	Table 6.2.1-14. pg 6-63, Section 6.2.1.3.1 Spatial Boundaries Appendix 6.2-1 Baseline Air Quality and Meteorology pg 6-30 1	**Context:** CNL has not indicated which specific sections of the EIS have been updated to address CNSC staff's expectations A-D.	CNSC staff expect CNL to provide direct responses and references to where each of the four expectations (A-D) are addressed in the EIS.		
IR 71_R2	ECCC	Appendix 6.2-2	**Context:** IR 71 related to air emissions, including GHGs, associated with different steps in the closure phase. Appendix 6.2-2 includes assumptions that contribute towards the calculations for air pollutant emission estimates from off-road and on-road vehicles.	CNL should, if available, provide: A. further details on each off-road engine in all phases of the Project, such as engine make, model and the model year.	**Incorporated:** **A&B:** This detailed information is not yet available, but assumptions are provided in Table 4 of Section 3.0 of Appendix 6.2-2. In the original assessment, all four generators were assessed as operating simultaneously during their routine one-hour testing to derive a maximum	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			Rationale: The methodology for calculating the emissions from on site vehicles and trucks transporting waste is acceptable, however to verify the validity of the emission estimates, additional information related to engine and vehicle specifications is required. Without the requested details, ECCC will be unable to advice the CNSC on the accuracy of GHG emission predictions. Suggestions for mitigation and follow up measures: ECCC encourages the Proponent to use engines that meet the most stringent emission standard, which is Tier 4 for compression-ignition engines (mobile and stationary), during all phases of the Project. The Regulations require that all stationary compression-ignition engines in Canada that were manufactured after June 4, 2021 must meet US EPA Tier 4 emission standards, with the exception of backup or emergency engines, and engines used in remote locations. In these cases engines may be Tier 3, or Tier 2 under specific conditions. The Proponent should provide information on whether or not the Project site meets the definition of "remote location". Remote location means a geographic area that is serviced neither by: (a) an electrical distribution network that is under the jurisdiction of the North American Electric Reliability Corporation or the main Newfoundland and Labrador electrical distribution networks; nor (b) a natural gas distribution network.	B. individual vehicle descriptions for on-road trucks, such as vehicle make, model, model year, fuel type, the emission rating, etc. for all phases of the Project	emission rate for the one hour averaging period and this value was inputted into a screening value to obtain a maximum concentration at point of impingement. This has been updated to assess the actual operating scenario of one generator tested at a time for up to one hour. For the daily and annual averaging periods, all four generators will continue to be assessed as operational for one hour each over the course of 24 hours. Non-road tailpipe emission factors from construction equipment have been updated to use Tier 4 emission standards from the United States Environmental Protection Agency (US EPA) "Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b". Similarly, emission factors for the generators, previously obtained from US EPA AP-42 for NOx and CO, have been updated to use Tier 4 non-road engine standards. **Change to EIS:** Table 6.2.1-11 and 6.2.1-12 provide the updated results for emissions rates. Table 4 of Section 3.0 of Appendix 6.2-2 has been updated to use Tier 4 emission standards from the US EPA *'Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b'*. Similarly, emission factors for the generators, previously obtained from US EPA AP-42 for NOx and CO, have been updated to use Tier 4 non-road engine standards. Section 4.1.6 Emergency Power Generators of Appendix 6.2-2 has been updated to include the following text: 'Crank case emission factors for non road Engine Modelling (Compression Ignition) – US EPA 009d [July 2018]; Crank case document) were used to calculate the exhaust (tailpipe) emissions of NOx and CO from the generators. The emission factor for SO2 were obtained from US EPA AP 42 Chapter 3.3 – Gasoline and Diesel Industrial Engines (US EPA 1996). The emission factor is provided in pound per horsepower-hour (lb/hp-hr). This was converted to kilograms per kilowatt-hour (kg/kW-hr) by multiplying by 0.608 as per Note (a) in Table 3.3-1 of the US EPA Chapter 3.3. To assess the worst-case scenario for daily emissions, it was assumed there is one hour testing per day. Emissions were estimated for contaminants that have limits with averaging periods less than 1 hour (i.e., NOx, CO and SO2). It was assumed that all generators comply with Tier 4 emission standards.'	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Tables 11 to 14 of Section 5.1 of Appendix 6.2-2 provide the updated results for emissions rates. **References:** US EPA. 1996. Compilation of Air Pollutant Emission Factors. Volume 1: Stationary Point and Area Sources. Chapter 3.3: Gasoline and Diesel Industrial Engines. Document AP 42. US EPA, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina. Available at: https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf. US EPA. 2018. Exhaust and Crankcase Emission Factors for Nonroad Compression Ignition Engines in MOVES2014b. US EPA, Office of Transportation and Air Quality. Available at https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=541846&Lab=OTAQ.	
IR 79_R2	CNSC	Section 6.2.1.9 Monitoring and Follow-up, pg 6-56 to 6-57	**Context:** The response does not address the information request for monitoring of radiological and certain non-radiological (e.g., lead, PCBs) air contaminants. The referenced ECCC station located in Winnipeg (65 Ellen Street) does not monitor radiological contaminants or metals in air (see Table 6.2.1-8). Therefore, this data cannot be used to verify predicted air concentrations for those contaminants. However, Table 6.2.1-17 on monitoring and follow up for air quality, states that "confirmatory monitoring of total suspended particulates (PM_{10}) and radioactivity will be conducted during demolishing and other dust generating activities." And section 6.7 on human and ecological health does address some parameters: alpha, beta and gamma radiation monitoring of filters; passive tritium monitoring at 4 stations; contaminants of concern (e.g., lead, asbestos, tritium) in air displaced from grouting the below-grade structure (see Table 11.1-1).	CNSC staff expect CNL to provide further details on the confirmatory monitoring of total suspended particulates (PM_{10}) and radioactivity listed in Table 6.2.1-17 and to consider initiating monitoring to establish baseline before decommissioning activities begin.	**Incorporated:** Originally, Winnipeg was conservatively selected to represent the background air quality since no local monitoring was available and these measured values would not underestimate the local conditions. Three background air quality stations have been added to the assessment. These stations are more representative of the Project location in terms of population, urbanization, and land use. All three stations have background data for each indicator compound identified in the air quality assessment, except for carbon monoxide and suspended particulate matter (SPM). The three stations, located in Flin Flon, Mb, Estevan, Sk, and Buffalo Narrows, Sk, are now assessed alongside the two currently assessed stations in Winnipeg, Mb and Assiniboine, Mb, to provide range of background concentrations for each indicator compound. Using the methodology of comparing to the minimum and maximum background concentration values from this dataset presents a range of potential Project effects on the air quality in the region, as well as a range of maximum potential point of impingement concentrations from Project activities. Whiteshell Laboratories' (WL) Integrated Environmental Monitoring Program (CNL 2020) is designed to track radiological and non-radiological contaminants throughout the different compartments of the geosphere, atmosphere, and biosphere and consists of three distinct programs: the Effluent Verification Monitoring Program (EVMP), the Environmental	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Monitoring Program (EMP), and the Groundwater Monitoring Program (GWMP). The Management and Monitoring of Emissions, Environmental Protection Programs, Protection and Monitoring of Groundwater, and WL Environmental Assessment Follow-up Program outline the general requirements of each of the three monitoring programs (i.e., EVMP, GWMP, EMP). The existing Environmental Assessment Follow-up Program for the WL site (CNL 2018) is being implemented under Licence No. NRTEDL-W5-8.00/2024. The Program serves to evaluate the risk to relevant human and non-human biota receptors resulting from exposure to contaminants and stressors related to the WL site and its activities, and recommends further monitoring (i.e., through the EVMP, GWMP, and EMP) or assessment as needed based on the results, to clarify risks or reduce uncertainties (WSP 2025). As part of the Environmental Assessment Follow-up Monitoring Program (EAFMP), a commitment was made to evaluate the impact that decommissioning activities might have on ambient air quality. Of specific concern was the possible generation of fine dusts that operations, such as building demolition, might produce (CNL 2018). WL employs outdoor environmental air samplers and when demolition projects are taking place, 24-hour monitoring is provided, when possible. The detailed results of the monitoring of radioactive material in airborne emissions from the WL site are in WL-514300-ACMR-2018 (Table 21; CNL 2019). The main sources of airborne radioactive effluents, as a result of ongoing work and historical activities at WL site (i.e., Buildings 100, 200, and 300) are sampled continuously throughout the year (CNL 2019a). The air monitoring data for radioactivity concentrations in the air were at background levels and well below alert levels of 0.03 Bq/m3 alpha or 10 Bq/m3 for beta for all filters collected (CNL 2018). For tritium, the maximum releases were all below the administrative limit (1.52E10 Bq/week) for the facility and well below the Action Level (7.62E10 Bq/week) and DRL (1.65E15 Bq/week) (CNL 2019). The annual ambient gamma radiation at WL and the surrounding area is monitored by six Ambient Radiation Monitoring Stations (ARMS) that have been monitored since 1966 (CNL 2019b). Average ambient gamma radiation at the perimeter and Pinawa locations has remained at levels below the background value of 1,200 μGy/a [Table 17; CNL 2023].	

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					Monitoring of potential atmospheric effluent exposure pathways did not indicate any measurable dose contributions from the site activities in excess of natural background levels. This is also consistent with effluent monitoring results, which indicated that airborne emissions were very small (2.3 x 10-6 mSv/a; CNL 2019). Non-radiological airborne emissions from the WL site are compiled on an annual basis. Criteria Air Contaminants (CACs) consist of carbon monoxide, oxides of nitrogen, sulphur dioxide, total (filterable) particulate matter (PM), and particulate matter below 10 microns (PM10), particulate matter below 2.5 microns (PM2.5), and Volatile Organic Compounds. Dust emissions from excavation projects were estimated based on a calculation for total particulate matter generated per excavation day. Monitoring results indicate that all CAC's are below the NPRI Reporting Threshold (CNL 2019a). **Change to EIS:** Section 3.2 of Appendix 6.2-1 has been updated with the following revisions: "The Flin Flon, Estevan and Buffalo Narrows air quality monitoring stations are located approximately 645 km, 512 km and 1,036 km away from the project, respectively. These stations are the three closest stations in proximity to the project location that are located in areas more characteristic of the Project location in terms of population, urbanization, and land use when compared to the 65 Ellen Street and Assiniboine stations and that include all indicator compounds, with the exception of CO and SPM." "Ideally, an air quality monitoring station would be within close proximity of the Project with a similar geographical siting and similar influences; however, the NAPS program focuses on areas that are affected by local sources and not on remote un-affected areas like the WL site. Therefore, for the Project**, all six of the stations, except for Experimental Lake, will be considered in the assessment to produce a range of background air quality concentrations that will be used in the assessment."** The relative locations of the **five** air monitoring stations selected to describe the background air quality for the LSA and RSA (i.e., 65 Ellen Street, Assiniboine, **Flin Flon, Estevan and Buffalo Narrows**) are provided in Table 15 and the station locations are shown on Figure 1. For this assessment, data from 2009 to 2013 was used for the **65 Ellen Street and Assiniboine stations**, which is the most recent five-year period at the time of the **original** assessment for which all data are available and quality assured by ECCC. **For**	

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					the Flin Flon, Estevan and Buffalo Narrows stations, data from 2017-2021 was used which is the most recent five-year period at the time of the updated assessment for which all data are available and quality assured by ECCC." Table 15 and 16 of Appendix 6.2-1 have been updated to include three new background ambient air stations. Section 3.3.1 Comparison of Monitored Data by Indicator Compound of Appendix 6.2-1 has been updated to include the results from the addition of the three new background ambient air stations. **References:** CNL. 2019. Whiteshell Laboratories Annual Compliance Monitoring Report for 2018. WL-00583-ACMR-2018. Revision 0. April 2019. CNL. 2023. Environmental Monitoring in 2022 at Whiteshell Laboratories. WL-509243-ACMR-2022. Revision 0. June 2023. CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. CNL. 2020. Whiteshell Laboratories Integrated Monitoring Program Framework. WL-509200-OV-001. Revision 1. December 2020. WSP. 2024. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. December 2024.	
IR 82_R2	CNSC	Section 6.3.1 Geology, pg 6-71 to 6-106	**Context:** The response is partially acceptable. Erosional features have been found along the banks of the Winnipeg River and the erosion potential of the Winnipeg Riverbanks near the WR-1 site is considered to be moderate.	As there are no measurements and analyses of the riverbank erosion rate, CNL is required to monitor in the EA follow-up program the erosion rate of the Winnipeg Riverbank near the WR-1 site.	**Resolved As:** The Geosynthesis Report (CNL 2022) discusses the potential for migration of the Winnipeg River, and the features that suggest it may be geologically controlled, and less subject to migration in overburden. However, there is also some evidence of shore erosion. In either case, significant migration would not be expected in the near term, based on the evidence of geologic control features, and the absence of significant river migration at the Whiteshell Laboratories (WL) site over its <60 year operating history. Because of this, there is not expected to be any potential for significant impacts on the release of short-lived contaminants, such as tritium. In all cases, the changes in potential peak release rates, were not significant enough to indicate release rates would result in an exceedance of any regulatory dose limits. The increase in mass loading is directly proportional	**Partially addressed. Follow-up IR 82_R3**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					to the dose rate estimate. The increase in mass loading for each contaminant, when compared to the dose rate estimate in the Environmental Risk Assessment (ERA; Ecometrix 2024), was not large enough to increase the dose rate to exceed the regulatory limit. Canadian Nuclear Laboratories (CNL) will perform qualitative visual inspection for obvious signs of major erosion as part of its monitoring and Surveillance Plan, and note any significant changes in riverbank structures for consideration through the adaptive management aspects of the program CNL to determine if or when additional action would be necessary. This will be captured as a commitment by CNL in the Commitments List. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: CNL 2022. Geosynthesis for WR-1 Environmental Impact Statement. WLDP-26400-041-000. Revision 3. January 2022. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. December 2024.	
IR 82_R3	CNSC	Section 6.3.1 Geology, pg 6-71 to 6-106 and Commitments List	**Partially Accepted** **Context:** The preliminary draft Commitments List appears to have not captured this commitment.	CNL is requested to ensure this commitment is captured in the Commitments List and provide the Commitments List to CNSC for review and verification.		
IR 90_R2	ECCC	Sections 6.4.1.4. and 6.4.2.9. pg 6-167 and 6-232	**Context:** IR 90 requested that the LSA include a reasonable portion of the Winnipeg River that is influenced by significant outfalls associated with WR-1. The IR also requested that point discharges and water sampling stations be identified on Figure 6.4.1-1. CNL has provided a justification that changes to the hydrology of the Winnipeg River are not due to the Project as released water volumes are negligible compared to the river. CNL also states that groundwater impacts to the river currently and during	Include the Winnipeg River as part of the LSA due to the potential for contamination of the river. Relevant sections in the EIS should to updated with information related to the LSA including the Winnipeg River.	**Incorporated:** The following text is provided in Sections 6.4.1.4.1, 6.4.2.4.1, and 6.5.4. 'The LSA [local study area] was selected to represent an area that is likely to be directly affected by the Project. The LSA was based on the area of the WL [Whiteshell Laboratories] main campus that is currently drained by roadside ditches and storm sewers. **The LSA does not include the Winnipeg River as direct effects to surface water quality from the Project on the Winnipeg River are anticipated to be negligible. Conversely, indirect effects to the surface water quality of the Winnipeg River may occur as a result of**	**Partially accepted. Follow-up IR 90_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			closure phases are also negligible and further, indicates that in the post-closure phase the outfall station will be taken offline while site stormwater and groundwater will continue to flow to the Winnipeg River. However, Table 6.4.2-18 in the EIS clearly states that there is a predicted residual adverse effect for surface water quality as follows, " [the] release of chemical and radiological contaminants in the long-term during the post-closure phase from the Project, which can alter surface water and sediment quality". The EIS indicates that the Proponent will be conducting water quality monitoring in the Winnipeg River to monitor for any potential impacts to water quality due to the Whiteshell Reactor Disposal Facility and to verify predictions made in the EIS. Section 6.4.2.9 and elsewhere in the EIS reference downstream monitoring stations in the Winnipeg River. Rationale: Surface water quality must remain protective of aquatic life. While the Proponent indicates that volumes of contaminated water reaching the river are small compared to the volume of the river, reliance on dilution should not be considered when assessing impacts to aquatic life. As indicated in the EIS, the Project does have the potential to impact surface water quality during all phases of the Project and therefore should be included in the delineation of the LSA and assessed appropriately. For example, the LSA includes the outfall, which is not included among the sampling station locations. However, it may be appropriate to monitor the outfall for water quality during the closure phase and for a short period of time at the beginning of the post-closure phase to verify the closure of the outfall. Suggestions for mitigation and follow up measures: Follow-up monitoring should be included to verify predictions regarding the potential impacts of the Project during all phases.		**changes to groundwater quality resulting from the Project. As such, the Winnipeg River is considered as part of the RSA (see description below).** • The RSA [regional study area] defined as the area within which maximum geographical extent of potential indirect effects of the Project may interact with the effects of other existing or reasonably foreseeable projects. For example, **indirect effects on surface water quality from the Project include potential seepage of groundwater into the Winnipeg River. The plume from the discharged effluent during operation was previously assessed to hug the east bank of the river (AECL 1973) and it is assumed that a groundwater seep in relatively the same area will behave similarly.** Therefore, the south boundary of the RSA extends from the west shore of the Winnipeg River to the east fence on the property line about 400 m north of Provincial Highway 211. The eastern boundary of the RSA follows the fence on the property line to the north property line. The north boundary follows the north fence on the property line about 1.6 km and then turns north for about 400 m before turning west and extending to the west side of the Winnipeg River. This is to include the first farm (Farm A) downstream on the east bank because this is the most conservative potential water user. The west boundary follows the west bank of the Winnipeg River.' The assessment of effects of the Project on surface water are presented in **Section 6.4.2 Surface Water Quality** of the Environmental Impact Statement (EIS; WSP 2025). Effects of the release of chemical and radiological contaminants in the long-term during the post-closure phase from the Project on surface water is considered to be a primary pathway (Section 6.4.2.6.2.3 Primary Pathways). As such, this pathway is carried forward to the residual effects analysis (Section 6.4.2.7 Residual Effects Analysis). Results of the residual effects analysis are presented in Section 6.4.2.7.2 Application Case Results. Overall, the assessment of potential effects determined there are no residual adverse effects on surface water and sediment quality from changes in groundwater quality. As part of Canadian Nuclear Laboratories' (CNL's) licence (NRTEDL W5 8.00/2024) with the Canadian Nuclear Safety Commission (CNSC), CNL will implement an Environmental Assessment Follow up Monitoring Program for the Project to verify the accuracy of environmental effects and determine the effectiveness of mitigation that has or is to be implemented. This monitoring will be integrated with that for the existing Environmental	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Assessment Follow-up Program for the WL site, where practical. It is proposed that these same monitoring locations be used to support the Environmental Assessment Follow up Monitoring Program for the Project, coordinating with the existing program, where practical. In addition to the sampling locations, CNL will add a surface water quality sampling location in the vicinity of the groundwater seepage flow path in the Winnipeg River prior to post-closure. **Change to EIS:** Section 6.4.2.9 Monitoring and Follow-up has been revised to include the commitment to add a surface water quality sampling location in the vicinity of the groundwater seepage flow path in the Winnipeg River prior to post-closure. 'It is proposed that these same monitoring locations be used to support the Environmental Assessment Follow up Monitoring Program for the Project, coordinating with the existing program, where practical**. In addition, CNL will add a surface water quality sampling location in the vicinity of the groundwater seepage flow path in the Winnipeg River prior to post-closure.** Follow up monitoring during the post closure phase is summarized in Table 6.4.2 17.' **References:** AECL (Atomic Energy of Canada Limited). 1973. Occurrence, Radioactivity, and Diversity of Winnipeg River Benthic Organisms in the Vicinity of Whiteshell Nuclear Research Establishment. Atomic Energy of Canada Limited Report, AECL-4221. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 90_R3	ECCC	EIS Figure 6.4.1-1: Spatial Boundaries and Drainage Patterns for the Surface Water Assessment (p. 6-170)	**Context:** ECCC is satisfied with CNL's response, however ECCC notes that CNL has not identified the point discharges and water sampling stations on Figure 6.4.1-1, as previously requested.	ECCC requests that CNL identify the point discharges and water sampling stations on Figure 6.4.1-1.		
IR 93_R2	CNSC	Table 6.4.2-	**Context:**	CNL is expected to:	**Resolved As:**	**Accepted**

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		7 Pg 6-183	Response is partially acceptable. CNSC staff identified two matters for clarification pertaining to (A) monitoring methodology and (B) long-term monitoring. These items are discussed in detail below: Discrepancy with revised Section 3.4.9.2 (Post-Closure Activities): The text states that "the monitoring program will focus on groundwater contamination, though other sampling methods may also be included such as short-term air monitoring or vegetation samples to confirm that the Environmental Assessment Follow-up Program is comprehensive and appropriate". However, in Table 11.1-1 of the EIS, the Terrestrial Environment section indicates that monitoring and follow-up programs are not identified. The trigger for initiation of these monitoring activities does not appear to be provided in Table 11.1-1. Finally, it is unclear under which EIS Section the "short-term" post-closure air monitoring would fall (Human and Ecological Health or Atmospheric Environment). Long-term Monitoring: It is stated in CNL's response that "During the 100-year period, the peak release rate and dose rate from those contaminants are also expected to have occurred". As shown in Figure 8.2.4-1 (PDF page 244/504) in the decommissioning safety assessment report, peak dose occurs at approximately year 1,000. It is also stated in Section 3.4.9.2 that "During institutional control, long-term monitoring and maintenance activities will continue". It is not clear how long the "long-term monitoring and maintenance" program would last (for example, will it extend beyond the institutional control period and cover the period when peak dose occurs?).	**A.** Clarify what would trigger short-term air monitoring and vegetation samples, and how these activities fit into the Environmental Assessment Follow-up Program. **B.** Clarify the duration of the long-term monitoring and provide justification for the duration.	**A.** The reviewer is correct and that monitoring and follow-up programs are not identified for vegetation as there are no predicted residual effects to vegetation. As stated in Table 11.1-1 Environmental Assessment Follow-up and Monitoring Programs [EAFMP] Proposed for the Project (Golder 2022), 'although not required for the Project specifically, current Environmental Assessment Follow-up Program for the WL [Whiteshell Laboratories] site includes collection of vegetation within the vicinity of the WL site and garden crop samples upstream and downstream from the site. This monitoring will also verify the accuracy of environmental effects and determine the effectiveness of mitigation that has or is to be implemented. CNL [Canadian Nuclear Laboratories] will continue to carry out the existing Environmental Assessment Follow-up Program for the WL site as it is a requirement of CNL's current licence (NRTEDL-W5-8.00/2024) with the CNSC [Canadian Nuclear Safety Commission].' The statement regarding "vegetation samples" is in reference to the existing EAFMP, which already includes the sampling of vegetation. However, this plan will be augmented to include a harvest sample collection plan to collect information wild foods, medicines, and wood to be led by the Manitoba Métis Federation (MMF) and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Therefore, the vegetation sampling referred to in Section 3.4.9.2 (Golder 2022) is a result of social commitments and not residual effects, which is why it is not included in Table 11.1-1. The reference to "short-term air monitoring" is also associated with the existing EAFMP. The Monitoring and Surveillance Plan for the Project includes monitoring of air quality, which will be integrated with that for the existing EAFMP for the WL site. Air quality monitoring for the Project will be completed during the Closure Phase, when there are Project activities that could affect air quality. The post-closure phase is not expected to result in airborne effluent, as the grouting will have been completed, the above-grade building will have been completely decommissioned and a concrete cap and engineered soil cover will have been installed over the Whiteshell Reactor Disposal Facility (WRDF). "Short-term" was meant to denote the Closure Phase.	

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					CNL acknowledges that the above explanation is not clearly represented by the current text in Section 3.4.9.2. As such, the text in Section 3.4.9.2 has been revised to be consistent with Section 11.1.1 Environmental Assessment Follow-up Program (WSP 2025). • The site will be under institutional control for 100 years. The main potential release mechanism during post-closure is via leakage through the WRDF to groundwater and subsequent migration of groundwater to surface water at the Winnipeg River. For assessment purposes, a period of 100 years (from 2027 to 2127) of institutional control was selected. This timeframe is based on the results of the groundwater flow and solute transport model, and the expected quantities of contaminants within the WRDF over time. For prominent contaminants of concern, such as tritium (hydrogen 3) and cobalt-60, the total activity of these nuclides remaining in the WRDF after 100 years quickly decreases to zero (Figure 3.4.9-4 [see figure below]). During the 100-year period, the peak release rate and dose rate from those contaminants are also expected to have occurred. Sampling during institutional control will verify these short-term results or signal the need for intervention. This monitoring program will be in place for the entirety of the institutional control phase. The post-institutional control phase is an assumed eventuality, though the exact time is uncertain. CNL has used 100 years as an assumption for assessment purposes but in reality it may not occur for many hundreds or thousands of years. It represents a hypothetical future time after which control and knowledge of the site is lost.	

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					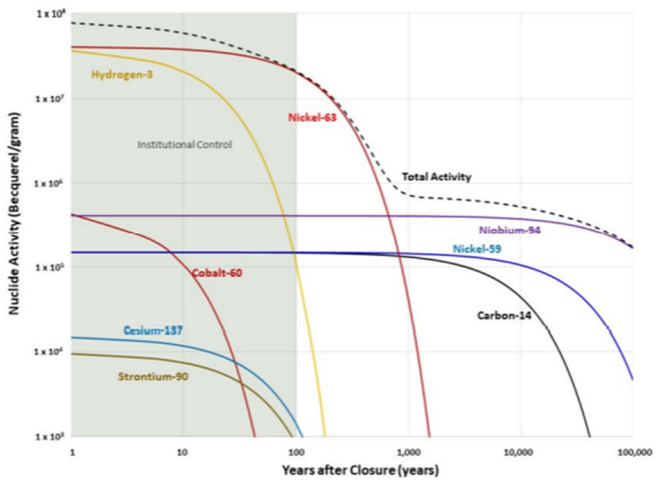 **Change to EIS:** Section 3.4.9.2 has been revised to be consistent with Section 11.1.1 Environmental Assessment Follow-up Program. The following text has been deleted: "CNL operates an Environmental Assessment Follow-up Program at the WL site that will be revised to include activities to manage monitoring for the Project. It will reflect the priorities and requirements that are necessary to sufficiently assess the ongoing performance of the WRDF. Since the groundwater flow surrounding WRDF is downward toward the bedrock, contamination releases, if any, would be expected to also be driven deeper with the groundwater. As such, the monitoring program will focus on groundwater contamination, though other sampling methods may also be included such as short-term air monitoring or vegetation samples to confirm that the Environmental Assessment Follow-up Program is comprehensive and appropriate." The following text has been added:	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					"CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the WL Site (the Project) and integrate it into the existing Environmental Assessment Follow-up Program for the WL site. The Monitoring and Surveillance Plan will document the Environmental Assessment Follow-up activities for the Project and will include sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the environmental assessment and confirm the effectiveness of mitigations. Wherever possible, existing programs (i.e., EMVP, GWMP, and EMP) will be adapted to meet the objectives of monitoring the prediction in the environmental assessment for the Project." **References:** Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 94_R2	CNSC	Section 6.4.2.5.2.1 No Linkage Pathways Pg 6-186	**Context:** Response is partially acceptable. CNSC staff identified two matters for clarification pertaining to (A) release of wastewater and (B) paths for wastewater. It is stated in the updated text that release of wastewater to the ditch system only occurs when "wastewater is below levels of concern for all contaminants". The updated text also identifies several paths for the wastewater, including transfer to the wastewater treatment centre, domestic drain … or sent for evaporation/solidification. It is not clear if the more intensive treatment options (wastewater treatment centre and evaporation/solidification facility) are located on site.	CNL is expected to provide: **A.** the criteria used to determine if wastewater is below level of concern. • the criteria used to determine where the wastewater should be directed.	**Incorporated:** **A.** For waste water, all results for radionuclides must be below the Derived Release Limits (DRLs; WL-509211-RRD-001 [CNL 2021a]). All results for non-radionuclides are compared against Whiteshell Laboratories (WL's) Administrative and Action Levels for WL Non-Radiological Effluent (CNL 2021b). **B.** Currently, wastewater from decommissioning activities is collected and tested and based on the results, is directed either to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, evaporation and/or solidification and disposal according to (CNL 2021c) "Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites 900-509200-MCP-005". This process follows the requirements in CNL's Management and Monitoring of Emissions (CNL 2022). Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants (see A above). **Change to EIS:**	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					As per IR 106_R2, CNL has changed the No Linkage Pathway (Section 6.4.2.6.2.1 in the EIS; Golder 2022) 'During closure activities, there is the potential for the transport of site runoff to the Winnipeg River' to Secondary Pathway (Section 6.4.2.6.2.2 of the EIS). A reference to the DRL document and WL's Administrative and Action Levels for WL Non-Radiological Effluent (WL-509200-STD-017; CNL 2021b]) was added to the above-mentioned pathway in Section 6.4.2.6.2.2 Secondary Pathway of the EIS (WSP 2025). 'Currently, wastewater from decommissioning activities is collected and tested and based on the results, is directed either to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, evaporation and/or solidification and disposal according to CNL's "Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites 900-509200-MCP-005 (CNL 2021c). This process follows the requirements in CNL's Management and Monitoring of Emissions (CNL 2022). Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants. **References:** CNL. 2021a. Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 6. January 2021. CNL. 2021b. Administrative and Action Levels for WL Non-Radiological Effluent. WL-509200-STD-017. Revision 0. June 2021. CNL 2021c. Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites. 900-509200-MCP-005. Revision 1. February 2021. CNL. 2022. Management and Monitoring of Effluents and Emissions. 900-509200-STD-009. Revision 1. December 2022. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	

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IR 99_R2	ECCC	Section 6.4.2.9. and Figure 6.4.2-3. Pg 6-232 and 6-205	**Context:** IR#99 related to surface water quality monitoring in the near-field receiving environment. In response to this IR, the Proponent has not provided additional information on surface water quality sampling in the near-field. Instead, they have stated that the monitoring program will include testing from groundwater wells near the Whiteshell Reactor Disposal Facility to confirm that changes to groundwater quality are in line with model predictions. The rationale provided is that groundwater monitoring will allow CNL to monitor releases long before they enter the river due to the slow movement of the groundwater. Rationale: Monitoring in near-field surface water is the preferred sampling approach to confirm the presence or absence of impacts to the Winnipeg River. The groundwater monitoring proposed by the Proponent may provide early detection of future impacts to surface water by validating predictions from the hydrogeology model, if the monitoring program is sufficiently robust. As noted previously and confirmed in CNL's response to IR 100, CNL intends to conduct water quality monitoring in the Winnipeg River to evaluate whether the quality of the water is affected by the Whiteshell Reactor Disposal Facility, though the proposed sampling is downriver and subject to considerable dilution. Section 6.4.2.9 of the EIS states that an existing downstream monitoring station 2km downriver at the site boundary will be used for monitoring. However, ECCC notes that additional near-field surface water monitoring stations exist, as depicted in Figure 6.4.2-3 of the EIS. The close proximity of the existing near-field monitoring stations to the Whiteshell Reactor Disposal Facility make them perferrable to the proposed monitoring station 2km downriver for verifying potential surface water impacts. The Proponent did not clearly indicate if these near-field monitoring stations will continue to be monitored. The primary pathway of effects to surface water quality is from	CNL is expected to: A. provide information on surface water quality monitoring. B. EA follow-up program activities to include near-field surface water sampling locations to verify water quality predictions at location where groundwater discharges to the Winnipeg River. C. clarify if the current near-field surface water monitoring stations depicted in Figure 6.4.2-3 will continue to be monitored during all phases of the Project. D. explain how the proposed surface water quality monitoring locations are sufficient to confirm predictions for surface water quality in the Winnipeg River.	**Incorporated**: **A.** As indicated in Section 6.4.2.9 Monitoring and Follow-up of the Environmental Impact Statement (EIS; Golder 2022) and associated Table 6.4.2-17 Monitoring and Follow-up Programs for Surface Water Quality, surface water monitoring will be integrated into the existing environmental monitoring program at Whiteshell, which is compliant with Canadian Standards Association (CSA) N288.4 (Environmental Monitoring Programs.at Nuclear Facilities and Uranium Mines and Mills (CSA 2019)). As part of the existing monitoring program, monthly composite samples are collected at four locations in the Winnipeg River: near Pinawa about 17 km upstream of the Outfall; 2 km downstream at the Whiteshell Laboratories (WL) boundary (Location K11); 10 km downstream at the Lac du Bonnet water intake; and 28 km downstream at the Great Falls generating station (CNL 2020). The surface water sampling location K11 is identified as "DS" on Figure 6.4.2-3 Annual Reporting Water and Sediments Sampling Locations on the Winnipeg River of the EIS (WSP 2025). The rest of the nearfield locations on Figure 6.4.2-3 are sediment sampling locations. Canadian Nuclear Laboratories (CNL) agrees to add a surface water sampling location in the near-field, closer to the location where groundwater discharges to the Winnipeg River, prior to the post-closure phase. **B.** CNL agrees as part of the Environmental Assessment Follow-up Monitoring Program (EAFMP) for the Project, to add a surface water sampling location in the near-field, closer to the location where groundwater discharges to the Winnipeg River, prior to the post-closure phase. **C.** The current near-field locations identified in response to a) above will continue to be monitored during all Phases of the Project. CNL has agreed to add additional surface water sampling location closer to the location where groundwater discharges to the Winnipeg River, prior to the post-closure phase. **D.** see response a) through c) above. **Change to EIS:** Figure 6.4.2-3 was updated to clarify which locations are sediment vs surface water.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			the release of contaminants into groundwater as grout and reactor components gradually deteriorate. Given this pathway, near-field surface water quality monitoring that samples water prior to dilution is required to detect any potential changes within the Winnipeg River and to confirm model predictions in the future.		Section 6.4.2.9 Monitoring and Follow-up was updated to include: 'In addition, CNL will add a surface water sampling location in the vicinity of the groundwater seepage flow path in the Winnipeg River prior to Post-closure.' **References**: Canadian Nuclear Laboratories (CNL). 2020. Whiteshell Laboratories Annual Compliance Monitoring Report for 2019 under Licence NRTEDL-W5-8.00/2024. WL-514300-ACMR-2019. Revision 0. April 2020. CSA. 2019. CSA N288.4 Environmental Monitoring Programs at Nuclear Facilities and Uranium Mines and Mills. January 2019. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 101_R2	ECCC	Tables 6.4.2-14. Pg 6-227 ERA Tables 7--17 and 7-19, Pg 7.34 to 7.35	**Context:** IR 101 requested that the Environmental Risk Assessment (ERA) include the maximum groundwater concentrations predicted for non-radiological contaminants and polychlorinated biphenyls (PCBs) in the groundwater predictions during the post-closure phase. Additionally, details of what is expected to be released from all potential final points of control during the closure phase were requested. ECCC accepts the clarification that no PCBs would remain on site above exemption quantities. It is assumed that the Proponent is referring to the PCB Regulations under Canadian Environmental Protection Act (CEPA). ECCC also acknowledges that benthic invertebrates were included in the ERA on the basis that these organisms are relatively sessile and may be directly impacted near groundwater discharge areas in the river. The additional risk assessment for benthic invertebrates in the ERA shows that in the vicinity of the groundwater discharge areas, their radiation dose is more than half of	CNL is expected to: A. Demonstrate that the groundwater discharges to the Winnipeg River are not acutely lethal by comparing pre-dilution concentrations to acute threshold values and performing a risk assessment. B. Monitoring and follow-up plans for the aquatic environment and surface water in the EIS be expanded to include monitoring of effects of groundwater discharges on aquatic organisms in the river.	**Resolved As:** **A.** A comparison of undiluted groundwater predictions to acute toxicity threshold values cannot demonstrate with certainty that groundwater discharge to the Winnipeg River is not acutely lethal to benthic invertebrates, because a concentration gradient will exist across the shallow sediment. As noted in Environmental Risk Assessment (ERA) Section 7.4.2 Risk Estimation for Non-Radiological COPCs [contaminants of potential concern] (Ecometrix 2024), concentrations in a zone just above the substrate (Table 7-9 Exposure Point Concentrations for Non-Radiological COPCs for Ecological Receptors during Post-Closure) are below chronic toxicity thresholds, while the undiluted groundwater concentrations in the deeper substrate are well above those thresholds. The undiluted groundwater concentrations also exceed short-term water quality guidelines for Cd (1 µg/L at hardness H=50 mg/L) (CCME) and for Pb (34 µg/L at H=50 mg/L) (USEPA). The concentration gradient with depth in the substrate cannot be modelled with any certainty. However, given the erosional nature of sediments near the Whiteshell Reactor Disposal Facility (WRDF), benthic invertebrates are unlikely to reside at a depth where exposure to pure groundwater could occur.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			the threshold at 5.71 mGy/d (Table 7-17 of ERA) for the post-closure phase. The hazard quotients (HQ) assessment for conventional COPC's show significant exceedances with HQ's of 35.7 for Cadmium, 19.2 for HB-40 and 5.9 for Lead (table 7-19 of ERA). However, it is not clear what phases of the Project the HQ assessment relates to. These HQ exceedances may not result in acutely lethal conditions for fish near the groundwater discharges but the ERA has not demonstrated this. The Canadian Council of the Ministers of the Environment (CCME) provides guidelines for establishing site specific water quality criteria* that requires the discharge to be not acutely lethal at the point of discharge. Rationale: The ERA has not adequately demonstrated that the groundwater discharges are not acutely lethal. Furthermore, there is no indication that the follow-up program for the Project would include acute toxicity bioassays of the groundwater for any phase of the Project. Acute toxicity bioassays of groundwater would be appropriate to verify that water being discharged to surface water is not acutely lethal at the point of discharge during the closure phase, and post-closure phase under institutional control. Suggestions for mitigation and follow up measures: ECCC suggests that acute toxicity assessment of groundwater is conducted as part of the follow-up monitoring program to verify predictions of no acute toxicity effects on fish frequenting the areas in the river where groundwater is discharging. * https://ccme.ca/en/res/guidance-on-the-site-specific-application-of-water-quality-guidelines-in-canada-en.pdf		**B.** Follow-up monitoring plans are discussed in ERA Section 8.2 Recommendations for the Follow-up Monitoring Program (Ecometrix 2024). They include monitoring of groundwater quality, and water and sediment quality, and benthic community composition, at locations adjacent to, upstream and downstream of the WRDF. Section Follow-up monitoring that continues during institutional control should include groundwater sampling and analysis to confirm predicted groundwater concentrations near the point of discharge to the Winnipeg River. Canadian Nuclear Laboratories (CNL) commits to collecting additional baseline data on benthics in the vicinity of the outfall in order to further support CNLs proposed monitoring plan. Sediments will be monitored but benthics will only be monitored if sediment concentrations indicate changes that would warrant adaptive management of the Monitoring program. Changes to surface water quality from the Project are predicted to be negligible and will likely not be detectable in the river or in biota. **Change to EIS:** Table 11.1-1 has been revised to include benthic invertebrate analysis. 'Benthic invertebrate analyses will be completed if parameters in water and/or sediment are above predictions and/or applicable guidelines.' **Change to ERA:** No changes to the ERA are required to address this IR. **References:** CCME. Canadian Environmental Quality Guidelines. http://ccme.ca/en/summary-table USEPA. National Recommended Water Quality Criteria – Aquatic Life Criteria Table. http://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria –table. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024.	
IR 103_R2	ECCC	ERA Table 7—16, Pg 7.34	**Context:** IR 103 requested that the Proponent include conservatism in the radiological dose calculation for Lake Sturgeon. The response	CNL is expected to:	**Resolved As:** **A,** As indicated in Section 7.2.1 Exposure Points in the Environmental Risk Assessment (ERA; Ecometrix 2024), ecological receptors such as fish and	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			from the Proponent partially addressed the request by providing clarification that caesium-137 sediment concentrations for the near field outfall and Farm A as a far-field location from 2010 to 2018 were used for dose calculations. The near-field caesium-137 sediment concentration was determined to be 323 Bq/kg (dry weight), which is assumed to be the average of the 2010 to 2018 data. The far-field sediment concentration was stated to be 34 Bq/kg (dry weight). However, Table 7-16 "Summary of Total Dose for Post Closure Ecological Receptors and Comparison to Dose Benchmarks", in the ERA demonstrates a single dose for Lake Sturgeon. It is not clear from the response or the ERA whether the single dose in Table 7-16 is based on an average between the near- and far-field stations, or only considers one of the stations. **Rationale:** For conservatism and to ensure that any discharges into the river are not acutely lethal, the data from the near field station should be specifically assessed for dose to Lake Sturgeon to demonstrate a worst case scenario. The dose based on the data from the far-field station should also be calculated to assess potential population level effects.	A. Clarify the dose presented in Table 7-16 of the ERA, specifically, how the near-field Outfall and far-field (Farm A) sediment data were used for the dose calculation. B. Calculate the dose separately for both the near-field and far-field sediment conditions for the Lake Sturgeon and present in the ERA.	aquatic plants in the post-closure phase were assumed to be located where the groundwater seep enters the Winnipeg River. Lake Sturgeon were not assessed at the far-field farm location. The dose presented in Table 7-16 Summary of Total Dose for Post-Closure Ecological Receptors and Comparison to Dose Benchmarks, represents the dose in the near-field using a Cs-137 sediment concentration of 323 Bq/kg dry weight. **B.** The predicted dose to the Lake Sturgeon in the near-field is considered a conservative representation of the dose to the Lake Sturgeon in the far-field. Additional calculations are considered unwarranted. **Change to ERA:** No changes to the ERA are required to address this IR. **References**: Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024.	
IR 104_R2	CNSC		**Context:** CNSC staff acknowledge the updated more detailed information on benthic studies provided in the ERA and EIS. However, from this information CNSC staff has noted that there is lack of baseline monitoring data for benthic invertebrates and sediment, as well as a lack of clarity on how the effects on sediment and benthic invertebrates from future groundwater (GW) seepage has been considered in the ERA/EIS. The most recent data collected on benthic invertebrates was in a study conducted in 2000 that found caesium-137 levels in clam shells and soft tissues collected downstream of the WL outfall to be slightly elevated compared to upstream. It does not appear benthic invertebrates have been characterized beyond that	CNL is expected to: A. Provide information on how the groundwater to sediment pathway was included in the calculations to determine the HQs for pathways related to sediment exposure. B. Provide information on how the suspected hazardous COPCs in groundwater from the seepage entering Winnipeg River and	**Resolved As:** **A.** Section 6.4.2.7.1 N/A Methods in the Environmental Impact Statement (EIS; WSP 2025) explains in detail how groundwater mass loadings were converted to groundwater release rates for use in the IMPACT model. Section 6.4.2.7.1.2 Dispersion Modeling of the EIS (Golder 2022), then presents the dispersion equation used for the river and the input parameters. Section 6.4.2.7.2 Application Case of the EIS explains that the resulting surface water concentrations after groundwater loadings are added, is then multiplied by a partition coefficient (Kd) to estimate sediment concentrations. The predicted sediment concentrations are shown in Table 6.4.2-15 Predicted Maximum Radionuclide Concentrations in Sediment at the Nearfield and Farm A Intake and Table 6.4.2-16 Predicted Non-Radionuclide Concentrations in Sediment at the Nearfield and Farm A Intake of the EIS (WSP 2025). These sediment concentrations were then	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			study (i.e. for other COPCs levels, or abundance, diversity, etc. metrics), nor is there any baseline data measured in sediment for the COPCs expected in the GW plume (e.g., cadmium, lead, HB-40, xylene). It appears the only measured and semi-recent sediment data was for Cs-137 from 2000. The ERA states "Sediment and/or benthic community monitoring may be appropriate at the groundwater seep, and upstream and downstream". Suggestions for mitigation and follow up measures: CNSC staff recommend to perform this monitoring in the future; however, it may also be beneficial to have more complete baseline sediment and benthic invertebrate data to compare the results to as the groundwater plume may affect sediment and benthic invertebrates in the future. In addition, its not clear how the pathway from groundwater seepage to sediment has been assessed in the EIS/ERA. From the example calculations provided in the ERA it appears a KD value is used to calculate the sediment concentration from the expected surface water concentrations, however its not clear how groundwater seepage (for both diluted and undiluted) was accounted for. In addition, it appears from the EA follow up program (WL-509246-STD-001_revision_0_), that only Gross α/β, Sr-90, Tritium, Uranium, γ-spec will be analyzed in Winnipeg River surface water, and only Gross α/β, γ-spec, Sr-90 for the sediments. Under Fish and Fish Habitat section it states "Follow-up monitoring during the post-closure phase to confirm radionuclide concentrations in surface water quality will also verify the accuracy of environmental effects for the aquatic environment."	potentially accumulating in the surface water and sediment (cadmium, lead, HB-40, xylene) will be monitored. Provide rational as to why only radionuclides are proposed for follow-up monitoring.	used for radiological dose and hazard quotient (HQ) calculations for ecological receptors. **B.** Section 8.2 Recommendations for the Follow-Up Monitoring Program of the Environmental Risk Assessment (ERA; Ecometrix 2024) indicates that future monitoring of sediment and benthic invertebrates would include tritium, C-14, cadmium, HB-40, and xylenes but the details would be developed at that time. "The future monitoring program should be designed to confirm ERA predictions, to the extent possible. This confirmation would occur within the period of institutional control, so that appropriate actions can be taken if results are not as predicted. **Radionuclides and non-radionuclides to be monitored in future should be detectable within 100 years of WR-1 decommissioning, based on predictions. Candidates for monitoring therefore include tritium, C-14, cadmium, HB-40 and xylenes**. Lead is not expected to be detectable during the 100 years of institutional control; therefore, there will be little benefit in monitoring for lead. The proposed follow up monitoring in the EIS (Table 11.1-1) looks at groundwater concentrations and surface water. Groundwater monitoring is the primary mechanism for evaluating the performance of the system against predictions. The existing Environmental Monitoring program at the Whiteshell Laboratories (WL) site already includes routine sampling of groundwater, surface water and river sediment. Follow-up monitoring that continues during institutional control would include groundwater sampling and analysis to confirm predicted groundwater concentrations near the point of discharge to the Winnipeg River. Canadian Nuclear Laboratories (CNL) commits to collecting additional baseline data on benthics in the vicinity of the outfall in order to further support CNL's proposed monitoring plan. Sediments will be monitored but benthics will only be monitored if sediment concentrations indicate changes that would warrant adaptive management of the Environmental Assessment Follow-up and Monitoring program. Upstream and downstream samples of surface water and fish in the river might also be taken to confirm that there are no measurable upstream-downstream differences, as expected. Changes to surface water quality from the Project are predicted to be negligible and will likely not be detectable in the river or in biota. **Change to EIS:** Table 11.1-1 has been revised to include benthic invertebrate analysis.	

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					'Benthic invertebrate analyses will be completed if parameters in water and/or sediment are above predictions and/or applicable guidelines.' **References**: Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 106_R2	CNSC	6.5.5.2 Results Table 6.5.5-1	Context: Response is partially acceptable; however it is still not clear why liquid discharge (even if controlled) wouldn't be considered in the EIS as a secondary pathway and in the ERA for the closure phase assessment. It can be assumed that there will be some level of COPCs in the discharge/run-off pathways and this should be discussed within the EIS/ERA (e.g., the expected concentrations of COPCs in the discharges, concentrations expected in the river, dose to receptors, etc.).	CNL is to provide justification for the exclusion of this pathway in the closure phase.	**Incorporated**: Canadian Nuclear Laboratories (CNL) acknowledges that while no direct releases to water are expected from the Project during closure, there may be some indirect releases to the Winnipeg River from aerial deposition to soil and subsequent stormwater runoff. Stormwater runoff from the WR-1 study area will be collected and directed to the Process Outfall. The discharge from the Process Outfall is composed of stormwater runoff from paved roadways or around buildings, cooling water used in process and experimental facilities, and holding tank discharges including those from the new active liquid waste treatment system tanks based in Building 100 and Building 300. Effluent from the Process Outfall is subject to monitoring prior to release under CNL's Whiteshell Laboratories' (WLs) Radioactive and Non-Radioactive Effluent Verification Monitoring Program (EVMP; CNL 2023). All results for radionuclides must be below the Derived Release Limits (DRLs; CNL 2021a). All results for non-radionuclides are compared against WL's Administrative and Action Levels for WL Non-Radiological Effluent (CNL 2021b). The additional loadings of runoff during the closure phase are anticipated to be negligible compared to existing conditions. Using Sr-90 as an example, demolition activities during closure will result in releases to air that are deposited on soil. The maximum predicted Sr-90 soil concentration on the WL site from demolition activities is 0.165 Bq/kg dw and the soil pore water concentration is 0.0024 Bq/L (calculated in IMPACT using the equations from Canadian Standards Association (CSA) N288.1-14; CSA 2014). As a	**Accepted**

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[1]</th><th>Context and Rationale</th><th>Information Requirement (IR)[2]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>conservative assumption, it was assumed that all the pore water mass is mobilized as runoff in the local study area (29ha – see Section 6.4.1.4 Assessment Boundaries in the Environmental Impact Statement (EIS); Golder 2022). Runoff was calculated as follows:
• Runoff (m^3/yr) = Runoff Coefficient*Net Precip*Drainage Area
The precipitation rate from the DRL report is 565 mm/yr and the evapotranspiration rate from the National Atlas of Canada is approximately 400 mm/yr; therefore, the net precipitation rate is 165 mm/yr. The runoff coefficient used was 0.23 for an averaged sloped soil and grassed area.
Runoff was estimated to be 1.1E+04 m^3/yr. Therefore Sr-90 loadings would be 2.4 Bq/m^3*1.1E+04 m^3/yr = 2.64E+04 Bq/yr = 2.18E+03 Bq/month.
The monthly Sr-90 loadings to the Process Outfall based on the 2019 Annual Monitoring Report is 4.96E+06 Bq/month. Therefore, the additional Sr-90 loadings from demolition activities would be 0.04% of existing loadings; therefore, the additional loadings from the Project by runoff were considered negligible.
The following table is a summary identifying all potential exposure pathways with justification for those not included in the HHRA during closure (i.e., secondary pathways). Primary exposure pathways are considered in the HHRA for the Closure Phase. Secondary exposure pathways would have a negligible residual effect on human health relative to baseline conditions and/or guideline values.
<table>
<tr><th>Potential Exposure Pathway</th><th>Primary or Secondary Pathway</th><th>Comments</th></tr>
<tr><td>Inhalation</td><td>Primary</td><td>Assessed in ERA</td></tr>
<tr><td>Incidental ingestion (soil)</td><td>Primary</td><td>Assessed in ERA</td></tr>
<tr><td>Food ingestion (terrestrial plants,</td><td>Primary</td><td>Assessed in ERA</td></tr>
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IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information

terrestrial animals)		
Drinking water (well water)	Primary	Assessed in ERA
External exposure (soil, air)	Primary	Assessed in ERA
Food ingestion (fish)	Secondary	No direct releases to water. Indirect releases of stormwater runoff will be directed to the Process Outfall, managed, and monitored prior to release. Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (0.04% for Sr-90 of existing loading).
Drinking water (river water)	Secondary	Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (see above).
External exposure (sediment)	Secondary	Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (see above).

Change to EIS:

Section 6.5.6.2.2 has been expanded to include management of stormwater runoff during closure as a secondary pathway and provides rationale of why the additional loadings from the Project to the Winnipeg River are considered negligible.

"During closure activities, there is the potential for the transport of site runoff to the Winnipeg River.

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					The LSA [local study area] drains to the Winnipeg River. During closure phase activities, specifically those that are demolition related, there is the potential for the transport of site runoff to the Winnipeg River in the vicinity of the WL site. Site runoff may be compromised by various activities such as the mobile batch plant (increased pH and suspended solids levels), crushing masonry (increased pH and suspended solids levels) and cutting steel (increased metal levels). Currently, wastewater from decommissioning activities is collected and tested and based on the results, is directed either to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, evaporation and/or solidification and disposal according to CNL's Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites 900-509200-MCP-005 (CNL 2021c). This process follows the requirements in CNL's Management and Monitoring of Effluents and Emissions (CNL 2022). Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants). to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, During the closure phase, existing stormwater management systems at the WL site will remain in place to manage site runoff from precipitation. For example, surface water runoff from the site is collected by storm sewers and is discharged to the Winnipeg River. Stormwater is routinely monitored to confirm that stormwater quality is normal. In addition, containment barriers will be constructed where necessary to provide for the collection, control of and treatment of contaminated water and to reduce surface water runoff during decommissioning and reclamation activities. Surface water quality is also assessed at locations where surface water leaves the WL site's boundary and in water bodies affected by discharges. Concentrations of radiological and non radiological contaminants are measured and compared against existing provincial or federal surface water quality guidelines or standards. It is also noted that closure phase activities will occur well away from the river and its riparian zone and therefore no direct changes in surface water quality will result. As per CNL's Management of Land, Habitat and Wildlife (CNL 2024), any work within 30 m of rivers, streams and lakes will have preventative and mitigation measures in place. General provisions adopted for work at CNL sites in or near a watercourse incorporate appropriate sediment retention measures such as	

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					silt curtains and straw bales. Consequently, this interaction was determined to have no linkage to effects to surface water quality in the Winnipeg River. Assuming these best management practices are followed and that the current surface water management facilities remain in place during building demolition, this mitigation is expected to be effective. As such, changes to surface water quality in the Winnipeg River are expected to result in negligible effects on the maintenance of self sustaining and ecologically effective fish populations, including species at risk." A reference to the DRL document and WL's Administrative and Action Levels for WL Non-Radiological Effluent (WL-509200-STD-017; CNL 2021b]) has been added to the above-mentioned pathway in Section 6.4.2.6.2.2 Secondary Pathway of the EIS (WSP 2025). **References**: CNL. 2021a. Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 6. January 2021. CNL. 2021b. Administrative and Action Levels for WL Non-Radiological Effluent. WL-509200-STD-017. Revision 0. June 2021. CNL 2021c. Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites. 900-509200-MCP-005. Revision 1. February 2021. CNL. 2022. Management and Monitoring of Effluents and Emissions. 900-509200-STD-009. Revision 1. December 2022. CNL. 2023. WL Effluent Verification Monitoring Plan. WL-509200-PLA-001. Revision 1. September 2023. CNL. 2024. Management of Land Habitat and Wildlife. 900-509200-STD-006. Revision 1. January 2024. CSA. 2014. CSA N288.1-14: Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	

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<tr><td>IR 109_R2</td><td>CNSC</td><td>Section 6.7.1.7.1.1

Table 7.1.2-3 (Decommissioning Safety Assessment Report)</td><td>Context:
On-site workers directly performing ISD activities will be Nuclear Energy Workers (NEWs), protected by the radiation protection and health and safety programs in place under the WL Decommissioning Licence. An assessment of the radiological hazards and risks to these NEWs performing closures activities, exposure mitigating measures and monitoring of their doses is provided in Section 7.1.2.1.1 of the Decommissioning Safety Assessment Report (DSAR; Golder 2021). Further, Table 7.1.2-3 provides a brief hazard description for each work package related to the decommissioning of the WR-1 and estimate of doses. The radiological hazards and external radiological dose rates used for dose calculations are based on the WR-1 radiological hazard surveys. The work times for specific decommissioning work tasks were based on WL Projects resource estimates for various work groups.

Although the methodology for the dose estimates is described, the proponent did not provide the dose calculations for deriving the dose estimates.

Rationale:
The method(s) used to estimate effective, equivalent, and committed dose (both individual and collective are required to be verified. Sample dose calculations should be included, to confirm use of acceptable input data.</td><td>CNL is to provide the dose calculations for deriving the dose estimates for NEWs, as presented in Table 7.1.2-3 of the Decommissioning Safety Assessment Report (DSAR; Golder 2021).</td><td>Resolved As:
The dose estimates for Nuclear Energy Workers (NEWs) which are presented in Table 7.1.2-3 of the Decommissioning Safety Assessment Report (DSAR; Golder 2021), are summarized from the Detailed Decommissioning Plan (DDP; CNL 2021). The DDP (CNL 2021) references the memo ‘WR-1 In-Situ Decommissioning Dose Estimates’ (CNL 2019) which provided the dose calculations in further detail. A summary of the dose calculations from the memo (CNL 2019) is provided below.
Table 1 and Table 2 provide a summary of the most recent personal alarming dosimeter dose data for personnel performing work in various elevations and rooms of WR-1 during radiological characterization and couponing of reactor systems performed 2017 to 2018. This work involved access and work within many of the In Situ Disposal (ISD) and non-ISD rooms which would be accessed as part of the ISD decommissioning activities and provides an indication of levels of radiation hazards and doses that could be encountered.
Table 1 WR-1 Characterization PAD [personal alarming dosimeter] Record Summary (2017-2018)
<table>
<tr><th>Total number of Entries</th><th>Number of Workers*</th><th>Total work time (hours)</th><th>Worked time h/day</th><th>Total Dose mrem</th><th>Average Dose Rate mrem/h</th><th>Max Dose in a Day mrem</th><th>Max Dose Rate in a Day mrem/h</th></tr>
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IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information

Ops	4	53.3	12.5%	13.3	2	31
TOTAL	25	426	100%	17	0	111

Significant portion of the above dose was in rooms and areas inside the proposed ISD envelope. These areas contain the more active and higher radiological dose rate areas of WR-1. Greater portion of the tasks in Work Plan packages associated with ISD decommissioning is outside the ISD envelope. The dose rates outside the ISD are significantly lower than 0.2 mrem/h (2 µSv/h) and typically near ambient background radiation (0.015 to 0.020 µrem/h, or 0.15 to 0.20 µSv/h).

The radiological hazards and external radiological dose rates used for calculations of dose estimates are based on Table 3 in the Reactor Radiological Characterization Summary and Radiological Inventory Estimates document (CNL 2020). This table is based on the documented room end-state conditions at the completion of Phase I decommissioning, bi-annual compliance surveys and a comprehensive characterization campaign of radiological and non-radiological hazards within ISD rooms was performed during the calendar years of 2013 and 2014 (AECL 2014).

The work times for the packages listed above are based on Whiteshell Laboratories (WL) Projects resource estimates for various work groups for the various stages of decommissioning. The dose estimates are calculated based on the following assumptions and calculations:

Actual field radiological work is 30% of total assigned resourcing hours per job category, remaining portion of the assigned hours are expected to be for preparation of work in non-active areas (e.g., prejob briefs, planning the work to be performed, and donning protection equipment).

- Work time (Hours) = Resource Hours by trade x 0.30

- General average dose rate in the room/area data is used to calculate the Collective dose for the job category for each work plan task
  - Collective Dose (p-mSv) = Avg. Dose rate x Work Time
- The individual dose for each task is calculated based on the number of persons expected to be assigned to perform that job to obtain dose/person/task
  - Individual Dose (mSv) = Collective Dose/number of workers

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information

					• Total Collective Dose for each stage of the work plan are then summarized based on the above criteria
					  ○ Total Collective Dose (p-mSv) = Sum of Collective Dose for each trade category
					• Delays in performing work while working in the field have potential to increase individual and collective doses. The Upper End Collective and Individual doses (1.5 times the base) estimates are based on these considerations and act as buffer for conservative dose planning purposes.
					  ○ Upper End Collective Dose (p-mSv) = Collective Dose x 1.5
					  ○ Upper End Individual Dose (mSv) = Individual Dose x 1.5
					Change to EIS:
					A reference to CNL. 2019. WR-1 In-Situ Decommissioning Dose Estimates, RP-2019-024, WLDP-26400-611-000, December 2019, was added to Section 6.7.1.7.1.1 Methods.
					Change to DSAR:
					No changes to the DSAR are required.
					References:
					AECL. 2014. WL WR-1 Facility Decommissioning Hazards and Risk Overview. WLDP-26000-041-000. March 2014.
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					CNL. 2020. WR-1 Reactor Radiological Characterization Summary and Radiological Inventory Estimates. WLDP-26100-041-000 Revision 2. October 2020.
					CNL. 2021. Whiteshell Laboratories Detailed Decommissioning Plan: Volume 6 – Whiteshell Reactor #1: Building 100. WLDP-26400-DDP-001. Revision 5. October 2021.
					Golder. 2021. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021.	

IR 116_R2	CNSC	Section 6.7.1.7.1.1	Context:		**Resolved As:**	**Accepted**

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Rationale:
Refer to rationale provided to IR 109_R2</td><td>Provide additional information as requested in IR 109_R2, as it relates to IR 116_R2.</td><td>The dose estimates for Nuclear Energy Workers (NEWs), which are presented in Table 7.1.2-3 of the Decommissioning Safety Assessment Report (DSAR; Golder 2021), are summarized from the Detailed Decommissioning Plan (DDP; CNL 2021). The DDP (CNL 2021) references the memo ‘WR-1 In-Situ Decommissioning Dose Estimates’ (CNL 2019) which provided the dose calculations in further detail. A summary of the dose calculations from the memo (CNL 2019) is provided below.

Table 1 and Table 2 provide a summary of the most recent personal alarming dosimeter dose data for personnel performing work in various elevations and rooms of WR-1 during radiological characterization and couponing of reactor systems performed 2017 to 2018. This work involved access and work within many of the In Situ Disposal (ISD) and non-ISD rooms which would be accessed as part of the ISD decommissioning activities and provides an indication of levels of radiation hazards and doses that could be encountered.

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IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Significant portion of the above dose was in rooms and areas inside the proposed ISD envelope. These areas contain the more active and higher radiological dose rate areas of WR-1. Greater portion of the tasks in Work Plan packages associated with ISD decommissioning is outside the ISD envelope. The dose rates outside the ISD are significantly lower than 0.2 mrem/h (2 µSv/h) and typically near ambient background radiation (0.015 to 0.020 µrem/h, or 0.15 to 0.20 µSv/h). The radiological hazards and external radiological dose rates used for calculations of dose estimates are based on Table 3 in the Reactor Radiological Characterization Summary and Radiological Inventory Estimates document (CNL 2020). This table is based on the documented room end-state conditions at the completion of Phase I decommissioning, bi-annual compliance surveys and a comprehensive characterization campaign of radiological and non-radiological hazards within ISD rooms was performed during the calendar years of 2013 and 2014 (AECL 2014). The work times for the packages listed above are based on Whiteshell Laboratories (WL) Projects resource estimates for various work groups for the various stages of decommissioning. The dose estimates are calculated based on the following assumptions and calculations: Actual field radiological work is 30% of total assigned resourcing hours per job category, remaining portion of the assigned hours are expected to be for preparation of work in non-active areas (e.g., prejob briefs, planning the work to be performed, and donning protection equipment). • Work time (Hours) = Resource Hours by trade x 0.30 General average dose rate in the room/area data is used to calculate the Collective dose for the job category for each work plan task • Collective Dose (p-mSv) = Avg. Dose rate x Work Time The individual dose for each task is calculated based on the number of persons expected to be assigned to perform that job to obtain dose/person/task • Individual Dose (mSv) = Collective Dose/number of workers Total Collective Dose for each stage of the work plan are then summarized based on the above criteria	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					• Total Collective Dose (p-mSv) = Sum of Collective Dose for each trade category Delays in performing work while working in the field have potential to increase individual and collective doses. The Upper End Collective and Individual doses (1.5 times the base) estimates are based on these considerations and act as buffer for conservative dose planning purposes. • Upper End Collective Dose (p-mSv) = Collective Dose x 1.5 • Upper End Individual Dose (mSv) = Individual Dose x 1.5 **Change to EIS**: A reference to CNL. 2019. WR-1 In-Situ Decommissioning Dose Estimates, RP-2019-024, WLDP-26400-611-000, December 2019, was added to Section 6.7.1.7.1.1 Methods. **Change to the DSAR:** No changes to the DSAR are required. **References:** AECL. 2014. WL WR-1 Facility Decommissioning Hazards and Risk Overview. WLDP-26000-041-000. March 2014. CNL. 2019. WR-1 In-Situ Decommissioning Dose Estimates, RP-2019-024. WLDP-26400-611-000. December 2019. CNL. 2020. WR-1 Reactor Radiological Characterization Summary and Radiological Inventory Estimates. WLDP-26100-041-000 Revision 2. October 2020. CNL. 2021. Whiteshell Laboratories Detailed Decommissioning Plan: Volume 6 – Whiteshell Reactor #1: Building 100. WLDP-26400-DDP-001. Revision 5. October 2021. Golder. 2021. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021.	
IR 120_R2	ECCC	Section 6.5.6.2., Pg 6-262	**Context:** IR 120 requested the development of an ecological conceptual model for the existing conditions that includes aquatic biota linkages, to consider the influences of existing	Provide clarification regarding the exclusion of aquatic pathways in the ecological conceptual model for the closure phase with respect to potential	**Incorporated**: CNL acknowledges that while no direct releases to water are expected from the Project during closure, there may be some indirect releases to the	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			discharges to the Winnipeg River on the river's water quality. ECCC recognizes that the Proponent has developed an ecological conceptual model for the existing conditions as well as for the post closure phase of the Project. ECCC also acknowledges that the Proponent has provided clarity that the outfall is the same discharge station as the Whiteshell Laboratories site process water outfall. However, the provided justification is inadequate to exclude aquatic pathways during the closure phase from the ecological conceptual model. **Rationale:** The IR response states that the only potential discharges from the Project would be to the atmosphere and that no discharges to the Winnipeg River or other surface waters are expected during the closure phase. However, changes to the EIS indicate that "during closure phase activities…there is the potential for the transport of site runoff to the aquatic environment in the Winnipeg River".	for the transport of site runoff to the aquatic environment in the Winnipeg River.	Winnipeg River from aerial deposition to soil and subsequent stormwater runoff. Stormwater runoff from the WR-1 study area will be collected and directed to the Process Outfall. The discharge from the Process Outfall is composed of stormwater runoff from paved roadways or around buildings, cooling water used in process and experimental facilities, and holding tank discharges including those from the new active liquid waste treatment system tanks based in Building 100 and Building 300. Effluent from the Process Outfall is subject to monitoring prior to release under Canadian Nuclear Laboratories' (CNL's) Whiteshell Laboratories (WL) Radioactive and Non-Radioactive Effluent Verification Monitoring Program (EVMP; CNL 2023). All results for radionuclides must be below the Derived Release Limits (DRLs; CNL 2021a). All results for non-radionuclides are compared against WL's Administrative and Action Levels for WL Non-Radiological Effluent (CNL 2021b). The additional loadings of runoff during the closure phase are anticipated to be negligible compared to existing conditions. Using Sr-90 as an example, demolition activities during closure will result in releases to air that are deposited on soil. The maximum predicted Sr-90 soil concentration on the WL site from demolition activities is 0.165 Bq/kg dw and the soil pore water concentration is 0.0024 Bq/L (calculated in IMPACT using the equations from Canadian Standards Association (CSA) N288.1-14; CSA 2014). As a conservative assumption, it was assumed that all the pore water mass is mobilized as runoff in the local study area (29ha – see Section 6.4.1.4 Assessment Boundaries in the Environmental Impact Statement (EIS); Golder 2022). Runoff was calculated as follows: • Runoff (m^3/yr) = Runoff Coefficient*Net Precip*Drainage Area The precipitation rate from the DRL report is 565 mm/yr and the evapotranspiration rate from the National Atlas of Canada is approximately 400 mm/yr; therefore, the net precipitation rate is 165 mm/yr. The runoff coefficient used was 0.23 for an averaged sloped soil and grassed area. Runoff was estimated to be 1.1E+04 m^3/yr. Therefore Sr-90 loadings would be 2.4 Bq/m^3*1.1E+04 m^3/yr = 2.64E+04 Bq/yr = 2.18E+03 Bq/month. The monthly Sr-90 loadings to the Process Outfall based on the 2019 Annual Monitoring Report is 4.96E+06 Bq/month. Therefore, the additional Sr-90 loadings from demolition activities would be 0.04% of existing loadings; therefore, the additional loadings from the Project by runoff were considered negligible.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Change to EIS: As per IR 99_R2, CNL has changed the No Linkage Pathway (Section 6.4.2.6.2.1 in the EIS; Golder 2022) "During closure activities, there is the potential for the transport of site runoff to the Winnipeg River" to Secondary Pathway (Section 6.4.2.6.2.2 of the EIS WSP 2024). This change was also made to Section 6.5.6.2.2 Secondary Pathways and Section 6.7.6.2.2. **'During closure activities, there is the potential for the transport of site runoff to the Winnipeg River.** The LSA drains to the Winnipeg River. During closure phase activities, specifically those that are demolition related, there is the potential for the transport of site runoff to the Winnipeg River in the vicinity of the WL site. Site runoff may be compromised by various activities such as the mobile batch plant (increased pH and suspended solids levels), crushing masonry (increased pH and suspended solids levels) and cutting steel (increased metal levels). Currently, wastewater from decommissioning activities is collected and tested and based on the results, is directed either to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, evaporation and/or solidification and disposal according to CNL's Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites 900-509200-MCP-005 (CNL 2021c). This process follows the requirements in CNL's Management and Monitoring of Emissions (CNL 2022). Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants. During the closure phase, existing stormwater management systems at the WL site will remain in place to manage site runoff from precipitation. For example, surface water runoff from the site is collected by storm sewers and is discharged to the Winnipeg River. Stormwater is routinely monitored to ensure that stormwater quality is normal. In addition, containment barriers will be constructed where necessary to provide for the collection, control of and treatment of contaminated water and to reduce surface water runoff during decommissioning and reclamation activities. Surface water quality is also assessed at locations where surface water leaves the WL site's boundary and in water bodies affected by discharges. Concentrations of radiological and non radiological contaminants	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					are measured and compared against existing provincial or federal surface water quality guidelines or standards. It is also noted that closure phase activities will occur well away from the river and its riparian zone and therefore no direct changes in surface water quality will result. As per CNL's Management of Land, Habitat and Wildlife (CNL 2024), any work within 30 m of rivers, streams and lakes will have preventative and mitigation measures in place. General provisions adopted for work at CNL sites in or near a watercourse incorporate appropriate sediment retention measures such as silt curtains and straw bales. Consequently, this interaction was determined to have no linkage to effects to surface water quality in the Winnipeg River. Assuming these best management practices are followed and that the current surface water management facilities remain in place during building demolition, this mitigation is expected to be effective. As such, this pathway is determined to result in a negligible effect on surface water quality.' A reference to the DRL document and WL's Administrative and Action Levels for WL Non-Radiological Effluent (WL-509200-STD-017; CNL 2021b]) has been added to the above-mentioned pathway in Section 6.4.2.6.2.2 Secondary Pathway of the EIS (WSP 2024). **References**: Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2024. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. December 2024. CNL. 2021a. Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 6. January 2021. CNL. 2021b. Administrative and Action Levels for WL Non-Radiological Effluent. WL-509200-STD-017. Revision 0. June 2021. CNL 2021c. Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites. 900-509200-MCP-005 Revision 1. February 2021. CNL. 2022. Management and Monitoring of Effluents and Emissions. 900-509200-STD-009. Revision 1. December 2022. CNL. 2023. WL Effluent Verification Monitoring Plan. WL-509200-PLA-001. Revision 1. September 2023.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CNL. 2024. Management of Land Habitat and Wildlife. 900-509200-STD-006. Revision 1. January 2024. CSA. 2014. CSA N288.1-14: Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities.	
IR 124_R2	Sagkeeng First Nation	EIS - General	**Context:** CNL has added information on the Sagkeeng First Nation Traditional Knowledge and Land Use Occupancy Study, the Psychosocial Impact Assessment Report (PSIA), and the Sagkeeng First Nation Alternative Means Assessment into the refiled draft EIS. Some of these inputs can be characterized as Indigenous Knowledge. However, there are problems in the incorporation of Sagkeeng First Nation Knowledge in a couple areas in particular: A. There is minimal evidence that these Sagkeeng First Nation inputs have led to changes in the project plan or commitment to mitigation or accommodation measures, other than CNL's support for the Sagkeeng First Nation Community Environmental Monitoring Program and contemplated support for the Sagkeeng First Nation Healing and Resiliency Action Plan. The identification of VC's and baseline conditions are not the sole purpose of sharing Indigenous Knowledge. Sagkeeng First Nation has indicated that Sagkeeng First Nation inputs must also be considered and help inform the project plan and any mitigation measures. B. There is no evidence that CNL seriously considered inputs from Sagkeeng First Nation Indigenous Knowledge holders (embodied in all three of the Sagkeeng First Nation studies) that the ISD approach to decommissioning would have measurable long-term adverse effects on Sagkeeng First Nation's traditional use and occupancy extending at least into the Local Study Area and possibly into the Regional Study Area, and similarly that there would be measurable adverse effects on Sagkeeng First Nation population health, well-being, and rights. CNL has chosen to summarily ignore these inputs in its	A. CNL is expected to identify what changes have been made to the project plan, mitigation or accommodation measures committed to by the proponent, as a result of the information provided in the TKLUOS, the PSIA, the Sagkeeng First Nation Alternatives Assessment, and draft EIS inputs from Sagkeeng First Nation. B. CNL is expected to identify whether and if so, how Sagkeeng First Nation Indigenous Knowledge and Indigenous Knowledge holders were integrated into the effects characterization process for Indigenous health and CULRTP.	**Resolved As:** **A.** Canadian Nuclear Laboratories (CNL) has incorporated the information that it received from Sagkeeng First Nation in the form of the written studies, and oral feedback, both from Elders and Community members, and consultants and representatives of Sagkeeng First Nation. In some instances, CNL disagreed with the conclusions made by Sagkeeng First Nation and its consultant, and similarly Sagkeeng First Nation disagreed with some of the conclusions made by CNL. For transparency, different perspectives on the Project and the conclusions of the Environmental Impact Statement (EIS) have been presented. CNL has included all the information it has obtained and has discussed how that information informed the Project. CNL has acknowledged that the receipt of this information has not resulted in fundamental shifts to the Project itself, which continues to be the in-situ disposal of the WR-1 reactor. To accommodate the discrepancies in conclusions between the parties CNL has committed to augment this overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and AECL have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. The agreement also provides funding a Community Liaison position, Healing and Resilience Action Plan (HARP), and a Technical Working Group process with capacity for reviewing the draft EIS sections. These programs and initiatives have been identified by Sagkeeng First Nation as being important to address this concern. The contribution agreement also outlines the parameters for a leadership table between Sagkeeng First Nation, CNL and Atomic Energy of Canada Limited (AECL). CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in	**Partially accepted. Follow-up IR 124_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			estimation (unsupported by Sagkeeng First Nation and in contrary to Sagkeeng First Nation's provided evidence) that there will be no measurable adverse effects on "current use of lands and resources for traditional purposes" (CULRTP). This indicates that the most important part of the EIS, the effects characterization process, has ignored Indigenous Knowledge inputs entirely. Sagkeeng First Nation notes that the deficiencies in CNL's response likely arise, at least in part, from the original IR focusing on the role of traditional knowledge only in the identification of VCs, which is an extremely narrow interpretation of the role that traditional knowledge should play in EIS development. This issue needs to be rectified in follow-up IRs.		monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods. CNL and Sagkeeng First Nation established a dispute resolution mechanism that was rooted in the Anishinaabe teachings on finding resolutions and forms part of the contribution agreement. An additional amended contribution agreement was also entered into by CNL, AECL and Sagkeeng First Nation to support Sagkeeng First Nation's participation in the Project, and to provide incremental benefit to Whiteshell Laboratories (WL) Site. CNL believes that the CEMP and communication of results of that monitoring in the community is intended in part to support the of the Sagkeeng First Nation Healing and Resiliency Action Plan scope of work which was a recommendation of the psycho-social impact assessment. CNL has agreed to implement this Healing and Resiliency Action Plan in part to acknowledge the difference in the conclusions of the EIS held by Sagkeeng First Nation, and to support learning and reconciliation. For example, CNL staff have also participated in trauma-informed engagement training provided by Sagkeeng First Nation's consultants. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. **B.** Sagkeeng First Nation's Alternative Means Assessment for the Environmental Assessment of Canadian Nuclear Laboratories' Proposed WR-1 Reactor Decommissioning Project (Sagkeeng Anicinabe and Firelight Research Inc 2020), Psychosocial Impact Assessment (Narratives Inc 2020), and Traditional Knowledge and Land Use (TKLU) Study (Firelight Research Inc. and Sagkeeng Anicinabe 2018) were all considered and incorporated into the EIS. Information was incorporated into the description of the environment, inclusive of the historical factors that have contributed to socio-economic conditions and community well-being. Table 6.9.1.6-1 specifically acknowledges "The presence of long-lived radioactive material as part of ISD may affect community well-being for Indigenous Nations through	

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					the changes to the suitability of the site for future uses, the continued inability to exercise stewardship and governance over land and resource management decisions." This resulted in a change to the pathways assessment from the original EIS, from having no-linkage, to being a secondary pathway in the draft EIS (Golder 2022). Secondary pathways are those considered as pathways where effects can be mitigated. Only primary pathways carried forward to the characterization of residual effects. **Change to EIS**: Changes have been made throughout the EIS to incorporate information provided by Sagkeeng First Nation. **References**: Sagkeeng Anicinabe and Firelight Research Inc. 2020. Sagkeeng First Nation's Alternative Means Assessment for the Environmental Assessment of Canadian Nuclear Laboratories' Proposed WR-1 Reactor Decommissioning Project. Firelight Research Inc. and Sagkeeng Anicinabe. 2018. Sagkeeng Anicinabe Land Use and Occupancy Study Specific to Canadian Nuclear Laboratories' Proposed In Situ Decommissioning of the WR-1 Reactor at Whiteshell Laboratories. Rachel Olson PhD and Firelight Research Inc., with the Sagkeeng Anicinabe. December 2018. Narratives (Narratives Inc.). 2020. Sagkeeng Anicinabe Psychosocial Impact Assessment. Prepared for Sagkeeng First Nation. October 2020. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
IR 124_R3	SFN	EIS - General	**Partially adequate response.** **Context:** A: CNL refers to some additional mitigation, monitoring and accommodation measures it has committed to as a result of some Sagkeeng studies, most notably the psycho-social impact assessment. To Sagkeeng's knowledge, there are no additional mitigation measures added between the 2022 and 2025 EIS, relevant to dealing with Sagkeeng's issues and concerns. We have posed a follow-up IR below to allow CNL to clarify this. CNL	Sagkeeng provides the following Follow-Up Information Requirements for CNL: CNL is to specifically identify all new commitments that were not in the 2022 EIS, relevant to Sagkeeng's issues and concerns, that are included in the 2025 version of the EIS.		

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			also has " acknowledged that the receipt of this information has not resulted in fundamental shifts to the Project itself, which continues to be the in-situ disposal of the WR-1 reactor", which is an existential issue when compared against the findings of all three Sagkeeng studies that found heightened potential for adverse proposal. In other words, CNL has over time (but not apparently updating this since 2022; see IR below) applied incremental improvements in mitigation and accommodation measures that unfortunately are not dealing with the fundamental problem – the faulty project plan of shifting from the approved full removal plan for WR-1 to ISD. The quantum of mitigation and accommodation committed to is not nearly enough to offset this fundamental flaw in the decommissioning plan. B: CNL has integrated additional material from Sagkeeng into the EIS over time. Sagkeeng appreciates this but is disappointed that this integration has effects – potentially significant in nature – with the ISD led to little or no changes in the findings of the effects characterization and significance estimation process, even on topics like traditional use, Indigenous culture, and Indigenous health, where Indigenous peoples' understandings should be given heightened weighting. While CNL does not explicitly state as much in its response (despite the clearly stated Information Request from Sagkeeng), it is clear that Sagkeeng Anicinabe First Nation Indigenous Knowledge and Indigenous Knowledge holders were not integrated into the effects characterization process for Indigenous health and current use of lands and resources for traditional purposes (CULRTP, sometimes also called traditional land and resource use). CNL points to a single additional "secondary" pathway identified based on inputs from Sagkeeng, whereas Sagkeeng has found heightened adverse effects pathways that are not amenable to mitigation by the commitments made to date by the Proponent (i.e., "primary" pathways) in relation to CULRTP, Indigenous health, and Indigenous culture. Sagkeeng notes that this single additional			

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			"secondary" pathway was not verified by Sagkeeng and is not credible as a secondary pathway only; there is minimal if any evidence that mitigation currently on offer by CNL will reduce impacts on Sagkeeng's community well-being is a substantial way. In light of CNL's findings being so far off (and so far below) those of Sagkeeng, no serious claim can be made by CNL that it integrated Indigenous Knowledge and Indigenous Knowledge holders into its effects characterization process. At this time, Sagkeeng is willing to stand on the evidence it has provided, some of which CNL has integrated into the EIS (though CNL has also either refuted or ignored this evidence in its own assessment), and Sagkeeng will present this evidence to the Commission, and rely on this evidence in its own FPIC decision. At the same time, Sagkeeng continues to be willing to meet and work with CNL toward acceptable changes to the Project plan.			
IR 125_R2	MMF	EIS - General	**Context:** The MMF is concerned that while there has been ongoing engagement between the MMF and CNL, including the development of a Traditional Knowledge and Land Use Occupancy Studies, there remains a disconnect in how traditional land use activities are conducted on the land and nearby waters, and the impacts they will face as a result of this project. For CNL to effectively consider the information that the MMF has provided, it is necessary for CNL to demonstrate in the EIS a thorough understanding of effects of decisions made about WR-1 and how they will ultimately influence traditional land use practices through the lens of a Red River Métis citizen.	For CNL to effectively consider the information that the MMF has provided, it is necessary for CNL to demonstrate in the EIS a thorough understanding of effects of decisions made about WR-1 and how they will ultimately influence traditional land use practices through the lens of a Red River Métis citizen.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has made updates to the Environmental Impact Statement (EIS) based on feedback on the draft EIS along with continued engagement with the Manitoba Métis Federation (MMF) as that draft was revised. This included providing additional details on the Red River Métis as a distinct Indigenous group governed by the Manitoba Métis Federation (see R1 IR_02 and Section 6.8.1.5.2.2.1 of the EIS; WSP 2025). While the existing environment section of the EIS (Section 6.8.1.5.2.2.1) distinguishes uses among different Indigenous groups, the effects assessment considers the Valued Component (VC) Traditional Land and Resource Use by Indigenous Communities broadly, in part because the measurement indicators for the VC relate to the availability of plants, fish, wildlife (i.e., the supporting resources which as distinct from who may use them), in addition to the traditional uses themselves. Similarly, the pathways analysis for the VC (Table 6.8.1.6-1) is focused on the drivers of potential change or effects pathways, and not on the potential changes to each individual resource user or Indigenous group. From CNL's analysis, the Project is expected to have a negligible effect to traditional land and resource use from a western scientific lens. Section 6.8.1.6.2 noted there are not anticipated to be any threshold exceedances in	**Partially accepted. Follow-up IR 125_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					harvested receptors through atmospheric releases and waterborne dispersion of contaminants. In addition, the mitigation proposed to minimize Project effects on surface water quality, the aquatic environment, and the terrestrial environment, are anticipated to eliminate or mitigate any potential adverse effects to the resources on which traditional land and resource use are dependent. Section 6.8.1.6.2 similarly acknowledges a difference in conclusions of the EIS, with the MMF expressing concern that the Project will affect the health of fish, birds and deer over time, with the potential for Red River Métis to change their traditional land use practices as a result of the Project. To address the divergence in conclusions of the EIS to those of the MMF, CNL has committed to augment this overall monitoring program based on how the MMF wish to be involved. The first is through a harvest sample collection plan to collect information wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for Red River Métis citizens through reporting. Results of this monitoring will be reported back to Red River Métis citizens by the MMF. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF Monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF January 2024. CNL and the MMF signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the Whiteshell Laboratories (WL) site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's	

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					decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. **Change to EIS:** Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring in the EIS (WSP 2025) was edited as follows to include the specific commitments on involvement and timeline. 'CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.	

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					At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their	

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					consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.' Section 6.9.6.2.2 was revised to the following text: Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. ~~CNL and the Manitoba Métis Federation have also been working together to develop the draft multi-year relationship agreement that will help to mitigate the Manitoba Métis Federation's concerns on the Project and ensure the Manitoba Métis Federation and its citizens are involved in environmental monitoring, communication initiatives, and other key initiatives.~~ The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References**:	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 125_R3	MMF	EIS - General	**Context:** The MMF continues to emphasize the intrinsic link between potential adverse biophysical effects, the resulting psychosocial and behavioural impacts on Red River Métis Citizens, and the ultimate effect on the exercise of section 35 rights. The MMF has clearly stated that there is no fundamental difference between realized and perceived biophysical effects if both result in adverse impacts on how Red River Métis Citizens view, use, and exercise their rights in relation to the Whiteshell Laboratories. Where perceptions of risk or harm (e.g., fear of wildlife contamination due to hazardous or radioactive materials) cause Métis Citizens to avoid areas, alter their behaviours, or experience anxiety, these effects must be treated with the same seriousness as measurable biophysical impacts. The MMF attributes such perceived effects, when unsubstantiated by monitoring, largely to gaps in communication or insufficient engagement. The MMF seeks to ensure that, regardless of the decommissioning strategy ultimately implemented, CNL will work collaboratively with the MMF to develop and maintain an adaptive and evolutionary program that meaningfully responds to Red River Métis Citizens' concerns over the full life of the project, including the extended institutional control period (~300 years). The MMF sees the following as essential elements of this program: 1. Ongoing opportunities for the MMF and Red River Métis Citizens to identify emerging concerns or issues. 2. Collaborative planning between the MMF and CNL to develop or adapt monitoring and surveillance programs to gather information on identified concerns.	CNL is requested to: 1. Describe in detail how CNL intends to ensure that its mitigation, monitoring, and adaptive management frameworks will remain adaptive and evolutionary throughout the entire decommissioning and institutional control period, specifically addressing the capacity to respond to both realized and perceived effects that may impact Red River Métis Citizens' section 35 rights. 2. Provide details on the mechanisms, governance structures, and dedicated resources that will be put in place to: a. Enable ongoing identification of concerns by the MMF and Red River Métis Citizens. b. Support collaborative planning with the MMF to adapt monitoring and surveillance in response to concerns. c. Ensure transparent communication of monitoring results, management measures, and their outcomes to Red River Métis Citizens in a culturally appropriate and accessible manner.		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			3. Analysis and implementation of adaptive management to address the root causes of concerns or issues. 4. Clear and transparent communication of monitoring and surveillance results, any adaptive management measures taken, and the success of interventions. 5. Regular re-evaluation to determine if interventions have addressed concerns effectively or if further action is required. While the MMF acknowledges that elements of this structure are referenced in the EIS through mitigation and follow-up monitoring measures, we are concerned that the proposed framework lacks sufficient flexibility to evolve alongside the project's needs, the long institutional control period, and the unique nature of radioactive waste management	d. Evaluate the effectiveness of interventions and determine when additional actions are needed. 3. Explain how CNL intends to address perceived effects that may not be substantiated by monitoring data but nonetheless have demonstrable psychosocial or behavioural impacts on Red River Métis Citizens' ability to exercise their rights. 4. Clarify how CNL will ensure that the program remains funded, supported, and capable of evolving for the duration of the project, including the institutional control period, in line with MMF's expectations for building and maintaining Red River Métis Citizens' confidence in the safety and sustainability of the decommissioning strategy.		
IR 149_R2	CNSC	Section 11.0 Pg 11-1 to 11-3	**Context:** The response is partially acceptable. Upon evaluation of the revised text in Section 11.0, CNSC staff identified three matters for clarification pertaining to (A) surface water quality monitoring, (B) baseline data requirements, and (C) CSA Standards. These items relate to guidance provided in the CNSC's Generic Guidelines for the Preparation of an Environmental Impact Statement as well as REGDOC 2.9.1, and are discussed in detail below: Surface water: The EIS states that no new surface water quality monitoring is proposed for the project. It is unclear if relevant chemical and radiological contaminants associated with the WRDF are included in the monitoring program in its current form. Monitoring of these contaminants is an important part of	CNL is expect to: A. Provide clarification as to how radiological and non-radiological COPCs associated with the WRDF will be monitored in surface water. B. Provide the sources of information for baseline data, and how this information will be incorporated into the follow up monitoring program. If data gaps currently exist, the plan to address them should be provided. If this information is provided elsewhere,	**Incorporated:** **A.** As stated in Section 6.4.2.9 Monitoring and Follow-up (WSP 2025): As part of CNL's [Canadian Nuclear Laboratories'] licence (NRTEDL W5 8.00/2024) with the CNSC [Canadian Nuclear Safety Commission], CNL will implement an Environmental Assessment Follow up Monitoring Program for the Project to verify the accuracy of environmental effects and determine the effectiveness of mitigation that has or is to be implemented. This monitoring will be integrated with that for the existing Environmental Assessment Follow-up Program for the WL[Whiteshell Laboratories] site, where practical. The existing Environmental Assessment Follow up Monitoring Program (EAFMP) for the WL site includes collecting water samples at one location 17 km upstream near Pinawa (US on Figure 6.4.2 3), 2 km downstream at the site boundary (DS on Figure 6.4.2 3), 10 km downstream at the town of Lac du Bonnet water intake (LB on Figure 6.4.2 3) and 28 km downstream at the	**Partially accepted. Follow-up IR 149_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			confirming the effectiveness of mitigation and verifying the effects predicted in the EA. Baseline data requirements: Section 11 of the EIS does not provide information as to how baseline data is collected or integrated into follow up monitoring. As per Section 11 of the Generic EIS Guidelines, "The applicant should also design the follow-up program to incorporate pre-project information that would provide the baseline data; compliance data, such as established environmental quality criteria; regulatory documents, standards or guidelines; and real-time data consisting of observed data gathered in the field", and "The monitoring design must include a statistical evaluation of the adequacy of existing baseline data to provide a benchmark for testing project effects, and the need for any additional pre-construction or pre-operational monitoring to establish a firmer project baseline". IAEA SSG-31 also identifies that baseline monitoring is required before and during the construction stage and during pre-operational periods. Considering this guidance from the CNSC and the IAEA the text must be revised. please revise text to identify the sources of information for baseline data, and how this information will be incorporated into the follow up monitoring plan. If data gaps currently exist, the plan to address them should be provided. If this information is provided elsewhere, a summary should be provided in Section 11. CSA Standards: In Section 11.1.1 of the EIS, the CSA standards for environmental (288.4) and effluent (288.5) monitoring identified are out of date.	a summary should be provided in Section 11. C. Correct section 11.1.1.with the most current correct this with the most recent versions of these standards: • N288.4 was most recently updated in 2019. N288.4-19; CSA N288.4:19 | Product | CSA Group • N288.5 was most recently updated in 2022. N288.5-22; CSA N288.5:22 | Product | CSA Group	Great Falls generating station (CNL 2016c; Figure 6.4.2 2). Surficial sediment is also collected at two locations upstream, at the outfall and nine locations downstream (CNL 2016a; Figure 6.4.2 3). In addition, CNL has committed to collecting cores in depositional areas in 2026, 2046 and 2066 at Sylvia Lake and upstream and downstream of the waterbody at Lac du Bonnet**,** which are part of the Winnipeg River system. It is proposed that these same monitoring locations be used to support the Environmental Assessment Follow up Monitoring Program for the Project, coordinating with the existing program, where practical. **In addition, CNL will add a surface water quality sampling location in the vicinity of the groundwater seepage flow path in the Winnipeg River prior to post-closure.** CNL will identify key parameters for monitoring that a relevant to the objectives of the monitoring and surveillance plan; to confirm the predictions of the EIS. Key Parameters would start with: H-3 – Significant inventory, mobile, expected to peak during first 100 years. C-14 – nuclide responsible for peak dose, of interest for long term monitoring. Nb-94 – Consistent with releases from reactor components and indication of corrosion rates and releases. HB-40 – unique material to WR-1 wastes. Cd and Pb – Only non-rad parameters that exceeded screening levels against guidelines in the ERA (Ecometrix 2024). Follow up monitoring during the post closure phase is summarized in Table 6.4.2 17 and Table 11.1-1. **B.** The existing annual follow-up and monitoring program for the WL site will be used to verify the effects predictions in the Environmental Impact Statement (EIS). As described in Part A, baseline collection and ongoing monitoring of the above parameters will be completed as part of the EAFMP implemented for WR-1. **C.** Section 11.1.1 and all other instances in the EIS were updated with the most recent versions of the standards. **Change to EIS:** The most recent standards for CSA N288.4-19 and CSA N288.5-22 were updated in relevant sections of the EIS. **References:**	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CNL. 2016a. Annual Safety Report: Environmental Monitoring in 2015 at Whiteshell Laboratories. WL-509243-ASR-2015. June 2016. CNL. 2016c. Annual Safety Report: Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-ASR-2015. June 2016. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision-6. November 2024.	
IR 149_R3	CNSC	Section 11.0 Pg 11-1 to 11-3	**Context:** With regard to Part B, CNL's response indicates that the existing EAFMP for the WL site will be integrated with the EAFMP for WR-1 to provide baseline data and establish a firmer project baseline. But this is not clearly stated in the EIS.	CNL is to clearly stated in the EIS by adding text to Section 11 and/or Section 6.4.2.9 that the existing EAFMP for the WL site will be integrated with the EAFMP for WR-1 to provide baseline data and establish a firmer project baseline.		
IR 149_R2	MMF	Sections 11.1, 11.2 and 11.3	**Context:** As per the direction from Section 12 of CNSC's *Generic EIS Guidelines* (p.19), CNL must outline in the EIS: roles and responsibilities to be played by the proponent, regulatory agencies, Aboriginal peoples, local and regional organizations and others in the design, implementation and evaluation of the program results, information management and reporting (reporting frequency, methods and format), description of any contingency procedures or plans or adaptive management provisions. From the perspective of the MMF, CNL continues to make well intentioned commitments to collaboratively develop monitoring and follow-up plans. The MMF agrees with the direction from the *Generic EIS Guidelines* in requesting provisional plans, as this information is essential to understanding how this project will ultimately impact the rights and interests of the Red River Métis, and further, establish a level of confidence that will ensure appropriate measures are in place to monitoring and intervene if effects are not as predicted.	CNL is to provide evidence that meaningful details of those plans including duration, roles, responsibilities, and how specifically these plans will work to address the outstanding concerns of the MMF.	**Incorporated:** Canadian Nuclear Laboratories (CNL) has an overall monitoring program as outlined Section 11.1 Integrated Environmental Monitoring Program of the Environmental Impact Statement (EIS; WSP 2025). The environmental monitoring program is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the Whiteshell Laboratories (WL) site and the outcomes of the Comprehensive Study Report (CSR; AECL 2001. CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the WL site, and it will be integrated into the existing EAFMP (CNL 2018). The EAFMP will provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the Environmental Assessment (EA) and confirm the effectiveness of mitigations. Table 11.1-1 *Environmental Assessment Follow-up and Monitoring Programs Proposed for the Project* of the EIS (WSP 2025) describes the specific items that need to be monitored to validate the assessment results. In addition, CNL has committed to augment this overall monitoring program based on how the Manitoba Métis Federation (MMF) wish to be involved. The first is through a harvest sample collection plan to collect information	**Partially accepted. Follow-up IR 149_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. Further to this, the CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF Monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. CNL and the MMF signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the WL site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. At the time of this response, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF/Red River Métis in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. **Change to EIS:** Section 11.4 was edited as follows to include the specific commitments on involvement and timeline:	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					'CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.'	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Section 6.9.6.2.2 was revised to the following text: Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. ~~CNL and the Manitoba Métis Federation have also been working together to develop the draft multi-year relationship agreement that will help to mitigate the Manitoba Métis Federation's concerns on the Project and ensure the Manitoba Métis Federation and its citizens are involved in environmental monitoring, communication initiatives, and other key initiatives.~~ The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References**: AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL (Canadian Nuclear Laboratories). 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
149_R2	MMF	Sections 11.1, 11.2 and 11.3		See response to IR 125_R3		
149_R2	Sagkeeng First Nation	Section 11.1.1	**Context:** Sagkeeng First Nation notes that CNL has provided additional information which provides details on the scope, objectives and approach of the EAFMP. In Section 11.1.1, CNL states here that "CNL will engage with First Nations… on the inclusion of Traditional Knowledge in the Environmental Assessment Follow Up Program." In November, 2021, Sagkeeng First Nation provided the following comment that has not been meaningfully followed up on in the revised draft EIS: "There is a need for more detail on the 'conceptual' monitoring and follow up program that has quite a bit of detail on what will be monitored, when, for how long, etc. and the role and responsibility of Sagkeeng First Nation . This level of detail is needed to better understand how effects will be managed, what 'working collaboratively' means and without this information, Sagkeeng First Nation have too much uncertainty to make an informed decision [on the adequacy of the EAFMP.]" At pg. 11-10 of the revised draft EIS, CNL indicates that "Monitoring and follow-up programs are not specifically identified for land and resource use." Sagkeeng First Nation's position is that in cases of uncertainty, such as the disagreement between the parties on whether measurable adverse effects on CULRTP will occur in the Project Case, the EAFMP needs to be applied to the VC where this uncertainty has been identified. CULTRP must be subject to follow up monitoring. Further, the IR response shows evidence of integrating only Indigenous concerns, not Indigenous peoples, into the EAFMP. Additional focus must be placed on the integration of Indigenous peoples and parameters.	CNL is requested to: A. Engage with Sagkeeng First Nation prior to providing more detail on the EAFMP which explains how Indigenous Knowledge objectives, criteria, thresholds and responses will be integrated into the EAFMP, and explain the degree to which the Sagkeeng First Nation CEMP will be integrated into the EAFMP. B. Identify whether CNL is committed to supporting the conduct of additional TKLUOS work by Sagkeeng First Nation to verify EIS (and Sagkeeng First Nation) predictions re: impacts on CULRTP.	**Incorporated:** Canadian Nuclear Laboratories (CNL) has an overall monitoring program as outlined Section 11. 1 of the Environmental Impact Statement (EIS; Golder 2022). The program is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the site and the outcomes of the initial Comprehensive Study Report (CSR; AECL 2001). CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the WL site, which will be integrated into the existing EAFMP which will serve to provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the environmental assessment and confirm the effectiveness of mitigations. Section 11 of the EIS (Golder 2022) describes the specific items that need to be monitored to validate the assessment results. CNL has committed to augment this overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and Atomic Energy of Canada Limited (AECL) have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. An additional amended contribution agreement was also entered into by CNL, AECL and Sagkeeng First Nation to support Sagkeeng First Nation's participation in the Project (e.g., Community Liaison Committee, Technical Working Groups, review of the draft Environmental Impact Statement), and to provide incremental benefit to the Whiteshell Laboratories (WL) Site. The mechanisms established through the Sagkeeng First Nation CEMP and commitment to implement Sagkeeng First Nation's Healing and Resiliency Action Plan, which include plans for robust communication of results with	**Partially accepted. Follow-up IR 149_R2 below**

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			With the above in mind, the best way to determine actual effects is through the use the Sagkeeng First Nation Community Environmental Monitoring Program (Niigan Aki). Further information is required in this IR response which explains the degree to which the Community Environmental Monitoring Program will be integrated into the EAFMP. A proper CULTRP baseline must be established, which has not been done through the TKLUOS, which was a single study with a limited portion of Sagkeeng First Nation members, and the next step is to monitor against the baseline. This is essential for the EAFMP.		Sagkeeng First Nation citizens, are appropriate steps to address the divergence of conclusions between the EIS and Sagkeeng First Nation relative to potential effects of the Project of traditional and cultural practices. At this time, CNL does not anticipate the need to conduct any additional Traditional Knowledge and Land Use Occupation Study (TKLUOS) or Current Use of Land and Resources for Traditional Purposes (CULRTP) baseline work to verify the outcomes of the EIS. The Sagkeeng First Nation CEMP is intended in part to address where CNL and Sagkeeng First Nation have divergent conclusions on the outcomes of the EIS, and as such can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods. This will include working to resolve how Sagkeeng First Nation monitoring results will be tracked and reported over time, how these results might influence overall monitoring and adaptive management, and discussion on appropriate thresholds and actions. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. CNL and Sagkeeng First Nation established a dispute resolution mechanism that was rooted in the Anishinaabe teachings on finding resolutions and forms part of the contribution agreement. Sagkeeng First Nation has not yet provided their expectations in this regard, but CNL is committed to incorporating a wide variety of pathways forward based on Sagkeeng First Nation preferences. **Change to EIS:**	

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					Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring of the EIS (Golder 2022) was revised as follows to include the specific commitments on involvement and timeline. 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. CNL is committed to continuing to engage with Sagkeeng First Nation in the manner they so choose. An additional amended contribution agreement was also entered into by CNL, AECL and Sagkeeng First Nation to support Sagkeeng First Nation's participation in the Project, and to provide incremental benefit to WL Site. CNL believes that the CEMP and communication of results of that monitoring in the community is intended in part to support the Sagkeeng First Nation Healing and Resiliency Action Plan scope of work which was a recommendation of the psycho-social impact assessment. CNL has agreed to implement this Healing and Resiliency Action Plan in part to acknowledge the difference in the conclusions of the EIS held by Sagkeeng First Nation, and to support learning and reconciliation. CNL staff have also participated in trauma-informed engagement training provided by Sagkeeng First Nation and will continue to be involved in and learn from processes Sagkeeng First Nation may want to implement into the future. At this time, no specific agreement has been reached between CNL and the Sagkeeng First Nation for longer term arrangements; however, CNL has committed to involve the Sagkeeng First Nation in monitoring in a way that is most meaningful to them. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First	

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					Nation, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'The Sagkeeng First Nation is located downstream from the WL site and therefore has a different relationship to the Project, which is reflected in CNL's commitments. **CNL has committed to augment the overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and AECL have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP**.' Section 6.9.6.2.2 was revised to include the following text: 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP.' Section 6.9.7 has been updated to include "Specifically for Sagkeeng First Nation, CNL/AECL and the Sagkeeng First Nation signed a contribution agreement for the Community Environmental Monitoring Program to fulfill the scope of a Sagkeeng First Nation Indigenous monitoring and guardian program called the Niigan Aki Program. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard." **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
IR 149_R3	SFN	EIS - Section 11.1.1	**Partially adequate response.** **Context:** A: Some progress is potentially being made between Sagkeeng and CNL on issues of future monitoring, including the Environmental Assessment Follow-up Monitoring Program (EAFMP). The development of Niigan Aki and initial funding for it has been helpful in building a relationship and thinking about future possibilities. That said, much of CNL's response material is forward-looking and therefore unverifiable as it is not concrete in nature. In relation to the ongoing need for more engagement with Sagkeeng and more incorporation of Indigenous Knowledge into the EAFMP, see above IR 10_R3, IR 11_R3. B: CNL indicates it does not anticipate the need to conduct any additional TKLUOS or CULRTP "baseline work to verify the outcomes of the EIS". For greater clarity, Sagkeeng notes that IR149_R2 (B) (Sagkeeng) asked CNL to identify whether it was committed to supporting the conduct of additional TKLUOS work by Sagkeeng to verify EIS (and divergent Sagkeeng) predictions re: impacts on CULRTP. Sagkeeng, by refering to "verify(ing)… predictions" was speaking of EAFMP level, post Project implementation monitoring activities, to see what impacts on CULRTP are like during and after Project implementation. This can be in the form of occasional updating of existing TKLUOS data for the Project-affected area, preferably conducted by CEMP/Niigan Aki Guardians themselves. Only through such a mechanism can it be determined whether in a future with the Project (whether it is ISD or some other remediation plan that is actually implemented), Sagkeeng community members are more, less, or the same able and willing to harvest, travel through, and make use of the PDA, LSA and RSA. It is possible that CNL had interpreted Sagkeeng's request to be something	Sagkeeng provides the following Follow-Up Information Requirements for CNL: Is CNL committed to building into Project monitoring, Sagkeeng-led monitoring for any VCs where Sagkeeng and CNL disagree on the likelihood, magnitude and significance of impacts (these include CULRTP, culture, and Indigenous health and well-being)? If so, what mechanism does CNL propose for such follow-up monitoring and if not the EAFMP, CNL is requested to provide a rationale for why not.		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			that needs to occur before the Project proceeds when in fact Sagkeeng is wondering whether such a mechanism can and will be built into the EAFMP for the Project.			
IR 150_R2	MMF	EIS - Section 11.4	Context: Refer to context provided to IR 149_R2	Provide additional information as requested in IR 149_R2, as it relates to IR 150_R2.	**Incorporated:** Canadian Nuclear Laboratories (CNL) has an overall monitoring program as outlined Section 11.1 Integrated Environmental Monitoring Program of the Environmental Impact Statement (EIS; WSP 2025). The environmental monitoring program is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the Whiteshell Laboratories (WL) site and the outcomes of the Comprehensive Study Report (CSR; AECL 2001). CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the WL site, and it will be integrated into the existing EAFMP (CNL 2018). The EAFMP will provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the EA and confirm the effectiveness of mitigations. Table 11.1-1 Environmental Assessment Follow-up and Monitoring Programs Proposed for the Project of the EIS (WSP 2025) describes the specific items that need to be monitored to validate the assessment results. In addition, CNL has committed to augment this overall monitoring program based on how the Manitoba Métis Federation (MMF) wish to be involved. The first is through a harvest sample collection plan to collect information wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. Further to this, the CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF Monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the	**Partially accepted. Follow-up IR 150_R3**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					MMF in January 2024. CNL will continue to meet with the MMF to continue advancing these commitments. CNL and the MMF signed a five-year memorandum of understanding that establishes a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the WL site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. At the time of this response, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF/Red River Métis in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods. **Change to EIS:** Section 11.4 was edited as follows to include the specific commitments on involvement and timeline: 'CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request	

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					to have an additional groundwater monitoring well installed at a location closer to the WRDF [Whiteshell Reactor Disposal Facility]. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.' Section 6.9.6.2.2 was revised to the following text: Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. ~~CNL and the Manitoba Métis Federation have also been working together to develop the draft multi-year relationship agreement that will help to mitigate the Manitoba Métis Federation's concerns on the Project and ensure the Manitoba Métis Federation and its citizens are involved in environmental monitoring, communication initiatives, and other key initiatives.~~ The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References**: AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL (Canadian Nuclear Laboratories). 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
150_R3	MMF	EIS - Section 11.4		See response to IR 125_R3		
150_R2	Sagkeeng First Nation	EIS - Section 11.4	Context: CNL has indicated in its response that it will be collaborating with interested Indigenous communities on monitoring activities	In addition to responding meaningfully to Sagkeeng First Nation's expectation at IR 149_R2, further detail is required	**Incorporated:**	**Partially accepted. Follow-up IR 150_R3**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			at the WL site. Funding for Sagkeeng First Nation's CEMP is a great start to collaboration on this item. However, we require additional information on how the CEMP will be integrated into all Project monitoring, including the EAFMP. Traditional Knowledge is not an input just to identify species who then can be subject to technical monitoring for radiological characteristics. The idea that monitoring will be limited to radiological dosage is not adequate to capture TK about the quality, quantity or willingness to harvest of different species of animals and plants, that will be central to a meaningful TK enriched monitoring program. Sagkeeng First Nation has raised this issue in the past with CNL. Sagkeeng First Nation noted the following in comments to CNL on the EAFMP, dated November 1, 2021: "CNL should identify whether it is committed to joint development of truly collaborative EAFMP and other monitoring and management systems for the facility. At this point, our general comment is that the Monitoring and Follow-up Programs material is premature because it does not adequately capture the required Indigenous component of the system." Sagkeeng First Nation is also concerned about the absence of detail re: how risks will be communicated to Indigenous communities in a way that is meaningful to them, regardless of what decommissioning strategy is imposes at the WR-1 facility. Missing from Section 11 of the revised draft EIS is proper discussion on community engagement, disseminating results of monitoring programs and how CNL will seek input. In prior comments sent to CNL on November 1, 2021, Sagkeeng First Nation stated: "Missing from [the material in Section 11] is any discussion of risk communication. This should be one of the key objectives of any EAFMP for WR-1. Further discussion on joint objectives is required. In addition, further discussion in this section on risk communication – the communication of results of monitoring in a way that has meaning and credibility to Indigenous peoples - is critical." Minimal discussion on this has occurred in the interim and this remains a gap in the EIA. Further, greater discussion of Indigenous Objectives, Indicators, Thresholds and Responses, and where they will be integrated,	in Section 11 to reflect that there will be an Indigenous-led IK driven component to monitoring at and around the site, expand the level of detail on the scope and duration of that work, and tie it explicitly to an Indigenous-led Risk Communication Strategy. See additional new IRs on risk communication in the Table 3. CNL is requested to provide details on how it plans to engage Sagkeeng First Nation in the development and implementation of Objectives, Indicators, Thresholds and Responses, in the EAFMP.	Canadian Nuclear Laboratories (CNL) has an overall monitoring program as outlined Section 11.1 of the Environmental Impact Statement (EIS; Golder 2022). The program is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the site and the outcomes of the initial Comprehensive Study Report (CSR; AECL 2001). CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the Whiteshell Laboratories (WL) site, which will be integrated into the existing EAFMP which will serve to provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the environmental assessment and confirm the effectiveness of mitigations. Section 11 of the EIS (Golder 2022) describes the specific items that need to be monitored to validate the assessment results. CNL has committed to augment this overall monitoring based on the interests and feedback received from Sagkeeng First Nation. The Sagkeeng First Nation Community Environmental Monitoring Program (CEMP) is intended in part to address where CNL and Sagkeeng First Nation have divergent conclusions on the outcomes of the EIS, and CNL would welcome an Indigenous-led Indigenous Knowledge (IK) component of that to occur around the site. The contribution agreement with Sagkeeng First Nation outlines commitments to Indigenous independent monitoring, and the initial scope of work for a CEMP which will be directed by Sagkeeng First Nation and undertaken by Niigan Aki. Additionally, CNL, Atomic Energy of Canada Limited (AECL) and Sagkeeng First Nation have entered discussions on the parameters of their future relationship; the implementation of an Indigenous-led risk communications program has been prioritized. Risk communications will be designed to improve Indigenous understanding of the site and vicinity risk to the health and edibility of country food and water sources (including radiation, impact pathway identification, monitoring results, and plain language reporting about the safety of country food and water sources), as well as sharing CNL's annual reports with the community. The contribution agreement entered into by CNL, AECL and Sagkeeng First Nation to support Sagkeeng First Nation's participation in the Project includes a Community Liaison Committee, a Technical Working Groups, a technical review of the draft EIS, and parameters for a leadership table. It is anticipated that these mechanisms will support Sagkeeng First Nation's inputs to the EAFMP. CNL and Sagkeeng First Nation will continue to	**Below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			and the role of Indigenous groups in monitoring and making adaptive management decisions, is required in the EAFMP.		discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods. This will include working to resolve how Sagkeeng First Nation monitoring results will be tracked and reported over time, how these results might influence overall monitoring and adaptive management, and discussion on appropriate thresholds and actions. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:** Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring of the EIS (Golder 2022) was revised as follows to include the specific commitments on involvement and timeline: 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. CNL is committed to continuing to engage with Sagkeeng First Nation in the manner they so choose. An additional amended contribution agreement was also entered into by CNL, AECL and Sagkeeng First Nation to support Sagkeeng First Nation's participation in the Project, and to provide incremental benefit to WL Site.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CNL believes that the CEMP and communication of results of that monitoring in the community is intended in part to support the Sagkeeng First Nation Healing and Resiliency Action Plan scope of work which was a recommendation of the psycho-social impact assessment. CNL has agreed to implement this Healing and Resiliency Action Plan in part to acknowledge the difference in the conclusions of the EIS held by Sagkeeng First Nation, and to support learning and reconciliation. CNL staff have also participated in trauma-informed engagement training provided by Sagkeeng First Nation and will continue to be involved in and learn from processes Sagkeeng First Nation may want to implement into the future. At this time, no specific agreement has been reached between CNL and the Sagkeeng First Nation for longer term arrangements; however, CNL has committed to involve the Sagkeeng First Nation in monitoring in a way that is most meaningful to them. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'The Sagkeeng First Nation is located downstream from the WL site and therefore has a different relationship to the Project, which is reflected in CNL's commitments. **CNL has committed to augment the overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and AECL have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP**.' Section 6.9.6.2.2 was revised to include the following text: 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					activities, and commitment to detailed work planning on an annual basis. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP.' Section 6.9.7 has been updated to include "Specifically for Sagkeeng First Nation, CNL/AECL and the Sagkeeng First Nation signed a contribution agreement for the Community Environmental Monitoring Program to fulfill the scope of a Sagkeeng First Nation Indigenous monitoring and guardian program called the Niigan Aki Program. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard." **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
IR 150_R3	SFN	EIS - Section 11.4	Partially adequate response. Context: Sagkeeng notes that despite them covering related but distinct topics, CNL's responses to IR 149_R2 and 150_R2 are seemingly identical. Sagkeeng recognizes that CNL has made efforts to better understand the needs of Sagkeeng in relation to monitoring and risk communication over the past couple of years. And CNL has provided seed funding for the CEMP/ Niigan Aki for its first three years and the level of engagement toward collaborative potential mitigation, monitoring and accommodation measures has improved over time. With that said, no additional commitments relevant to Sagkeeng's issues and concerns have been finalized yet. And, at this point in the Project's assessment the level of detail re: Indigenous role in monitoring, Indigenous-led risk communication strategy development, and improving the EAFMP remains very low. Unless and until commitments are firmed up on these topics,	The following follow-up IRs above are relevant to increasing this confidence: IR10_R3 and IR 11_R3		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			Sagkeeng will not have the requisite confidence that impacts – both those measurable by science and observable / experienced by Indigenous peoples - will be properly monitored for, mitigated against and communicated to Sagkeeng members.			
IR 155_R2	CNSC	ERA - General	**Context:** Reference COG 2013, Appendix G9 Transfer from Atmosphere to Lake Water, states: "The transfer of radionuclides from atmosphere to lake water is considered to be negligible. This is due mainly to the much greater flow rates in the lake as compared to small inland ponds. The rationale is outlined in detail in the following paragraphs. The rationale is developed for lakes but is also applicable to rivers, since flow rates for rivers are even greater than for lakes." This is consistent with the presented rationale. It is acceptable to not include Winnipeg River in the ERA. However, in the ERA, section 2.3.6 "Aquatic Habitat and Biota" it is stated that the site also contains two sewage lagoons that support aquatic plants and animals, as well as man-made ditches which carry water at least seasonally and could therefore support aquatic plants and animals whose suitable habitat includes e.g., temporary wetlands. One specific example would be emergent macrophytes. These aquatic habitats would not be addressed by the presented rationale surrounding transfer of radionuclides from atmosphere to large waterbodies (Winnipeg River).	CNL is to provide evidence that the pathway of atmospheric deposition on the sewage lagoons and ditches is assessed in the EcoRA, taking into account respective aquatic receptors.	**Resolved As:** The Lagoon system was commissioned when the Whiteshell Laboratories (WL) site was established, is located ~300 m north of the main plant site, and is approximately 9.6 hectares. The Lagoon receives liquid wastes from lavatories, showers and non-active drains from the WL site and treats it to a quality acceptable for release (i.e., as treated water) into the environment. The environmental impacts of the lagoon were assessed in the WL site-wide Environmental Risk Assessment (ERA; KGS 2024). Human receptors are not expected to be exposed to the lagoon and therefore are not discussed further. Measured water and sediment concentrations from the lagoon were used in the site-wide ERA to determine dose and risk to aquatic receptors in the lagoon such as aquatic plants and benthic invertebrates. Table 146 of the site-wide ERA shows that the total dose (95th percentile) for aquatic plants and benthic invertebrates at the lagoon are 5.27E-01 mG/d and 1.41E-01 mGy/d, respectively. Using the IMPACT-DRL model, atmospheric deposition to the lagoon during demolition activities during closure was modelled. The maximum predicted dose to aquatic plants (1.44E-05 mGy/d) and benthic invertebrates (1.15E-05 mGy/d) in the lagoon from demolition activities during closure are between 0.003% to 0.008% of the existing dose to aquatic receptors in the lagoon from the site-wide ERA. Therefore, the impact to the on-site lagoon from atmospheric deposition during closure is considered negligible and not assessed further. **Change to ERA:** No changes are proposed to the ERA to address this IR. **References:** KGS, Ecometrix, and Novatox. 2024. Canadian Nuclear Laboratories Whiteshell Laboratories Site-Wide Environmental Risk Assessment. 20-2964-001. WLD-03710-ENA-002370. Revision 1. October 2024.	**Partially accepted. Follow-up IR 155_R3**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
IR 155_R3	CNSC	ERA - General	**Partially accepted** **Context:** The rationale provided in CNL 's response that the pathway of atmospheric deposition on the sewage lagoons and ditches is negligible and therefore not considered further is acceptable. However, it should be included in the EIS and/or a refeM15rence should be provided as to where in EIS it has been discussed, for completeness and transparency.	CNL is expected to include their rationale in the EIS and/or provide a reference to where in the EIS it has been discussed.		
IR 156_R2	HC	Section 6.4.2.5.2.2, pdf pg 526	**Context:** As part of Health Canada's comments on the previous iteration of the EIS (December 2017), the department recommended the proponent provide a complete list of radionuclides identified through gamma spectroscopy analysis of the Winnipeg River sediment sampled at upstream and downstream locations of the WL effluent outfall. The revised EIS states that gamma spectroscopy identified the presence of two radionuclides, caesium-137 and potassium-40, in sediment samples from the Winnipeg River (Section 6.4.2.5.2.2). **Rationale:** The EIS does not clarify the presence of naturally occurring radioactive materials (NORM) in the U-238 chain, such as Pa-234m, Pb-214, Bi-214, Pb-210, nor provide a complete list of radionuclides from the gamma spectroscopy analysis.	CNL is to provide a complete list of radionuclides identified through the gamma spectroscopy, including NORM in the U-238 chain.	**Incorporated:** Values for sediment samples from the Winnipeg River are published in Canadian Nuclear Laboratories' (CNL's) annual environmental monitoring report for example: "ENVIRONMENTAL MONITORING IN 2021 AT WHITESHELL LABORATORIES WL-509243-ACMR-2021 Rev. 0" (CNL 2022). The data provided in the annual reports includes: • Table 25: Gross Alpha Activity in Winnipeg River Sediments, 2016 to 2021 • Table 26: Gross Beta Activity in Winnipeg River Sediments, 2016 to 2021 • Table 27: Potassium-40 in Winnipeg River Sediments, 2016 to 2021 • Table 28: Cesium-137 Activity in Winnipeg River Sediments, 2016 to 2021 • Figure 17: Cesium-137 Activity (Bq/kg) in Winnipeg River Sediments, 2016 to 2021 • Table 51: Field Data, Winnipeg River Sediment Samples, 2021 The raw data from the lab contains the full spread of radionuclides, including the raw data for U-238, Pa-234m, Pb-214, Bi-214, Pb-210. The full list analyzed included: Am-241, Cs-134, Cs-137, Co-60, Zn-65, Ra-228, Pb-210, Th-230, Th-227, Th-228, Th-234, U-235, K-40, Tl-208, Ra-226, Bi-214, Bi-212, Be-7, Ac-228, Pb-212.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					Results for radionuclides in the U-238 decay chain were all less than the detection limit (Th-230 = <1000 Bq/kg, Th-234 = <200 Bq/kg, Ra-226 = <100 Bq/kg, Bi-214 = <100 Bq/kg, Pb-210 = <100 Bq/kg). Results for radionuclides in the Th-232 decay chain were all less than the detection limit (Ra-228 = <100 Bq/kg, Ac-228 = <200 Bq/kg, Th-228 = <100 Bq/kg, Pb-212 = <100 Bq/kg, Bi-212 = <100 Bq/kg). The other radionuclides identified by the reviewer have very short half-lives. **Change to EIS:** The following text has been added to Section 6.4.2.5.2.2 of the EIS. 'The alpha activity in these samples is due to naturally occurring isotopes such as uranium-238 or thorium-232 and their progeny, as both upstream and downstream samples contain similar levels. **All radionuclides measured in sediment in the Uranium-238 and Thorium-232 decay chain were below detection limits.'** **References:** CNL. 2022. 2021 Progress Report on the Environmental Assessment Follow-up Program for Whiteshell Laboratories. WL-509243-ACMR-2021 Revision 0. June 2022.	
IR 157_R2	CNSC	ERA - Section 2.0 Site Description	Context: Given that the on-site soil concentrations were estimated/modeled it is important to substantiate these predictions with relevant information. The response, however, does not appear to indicate that the ERA provides an adequate description of local soils which may be impacted by the ISD. For example, it is stated that soil characteristics "are presented, with references, in Appendix B". This statement is somewhat confusing as Appendix B, for example, presents a couple of soil parameters for sand (page 309) whereas clay soil only is considered for the ERA modeling (section 4.2.5). Further, it is indicated in section 2.3.4.1 that the WR-1 site surficial geology includes the upper organic complex (as well as sandy soil is mentioned in section 2.3.7) and therefore it is not clear why clay soil only was selected to represent the WR-1 site for soil concentration modeling in the ERA.	CNL is to expand their response in order to substantiate the soil concentration estimates (modeling) in the ERA with adequate description of local soils including the soil characterization components indicated in the original CNSC comment.	**Resolved As:** The physical and chemical soil characteristics initially requested in Information Request (IR) 157 included: soil type, soil texture, bulk soil density, etc. The soil characteristics are presented in Appendix B Exposure Factors Used in Calculations of the Environmental Risk Assessment (ERA; Ecometrix 2024) in the table titled "Input Parameters for Soil/Clay: Other Data" (reproduced below). These parameters are for clay, consistent with the values for clay from Canadian Standards Association (CSA) N288.1-14 (CSA 2014).	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information

Parameter Name	Unit	Value	Reference	Loc Ref
Dry Bulk Density	kg(dw)/L	1.4	CSA N288.1-14	cl. 6
Water Content	[]	0.3	CSA N288.1-14	cl. 6
Mixing Depth	m	0.2	CSA N288.1-14	cl. 6
Infiltration Rate	m3/m2/s	1.205E-08	CSA N288.1-14	cl. 6
Erosion Rate	kg(dw)/m2/s	0.00000005	CSA N288.1-14	cl. 6
Plant Yield	kg(fw)/m2	1	CSA N288.1-14	Tab
Plant Harvest Index	[]	0.8	CSA N288.1-14	Tab
Plant Cropping Frequency	1/s	3.17E-08	CSA N288.1-14	cl. 6
Plant Dry Fresh Weight Ratio	[]	0.1	CSA N288.1-14	Tab

The selection of clay soil is consistent with past and present studies at the Whiteshell Laboratories (WL) site including the Derived Release Limits (CNL 2021), the Hydrogeology Study Report (Dillon 2018), and the geosynthesis describing local soil composition (CNL 2022).Canadian Nuclear Laboratories (CNL) considers the ERA to have sufficient detail in Section 2.3.4.1 Surficial Geology of the ERA (Ecometrix 2024) to justify the selection of clay soil type.

Change to ERA:

No changes are proposed to the ERA to address this IR.

References:

Canadian Nuclear Laboratories (CNL). 2021. Derived Release Limits for CNL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 6. January 2021.

CNL. 2022. Geosynthesis for WR-1 Environmental Impact Statement. WLDP-26400-041-000. Revision 3. January 2022.

Dillon Consulting Ltd. (Dillon). 2018. WR-1 Hydrogeological Study Report. WDLP-26000-REPT-004. Prepared for Canadian Nuclear Laboratories. November 2018.

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[1]</th><th>Context and Rationale</th><th>Information Requirement (IR)[2]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>CSA. 2014. CSA N288.1-14: Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities.

Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024.</td><td></td></tr>
<tr><td>IR 166_R2</td><td>HC</td><td>EIS Table 3-6, pdf pg. 45 to 46</td><td>Context:
During Health Canada’s review of the previous iteration of the EIS (December 2017), the department noted that “(s)everal of the half-lives identified for radionuclides in Table 3-6 do not seem to correspond to the known values for physical half-life, including Pu-238, Pu-241, Am-241, and C-60. Using these values in calculations to support the assessment would lead to incorrect conclusions.”

Rationale:
The proponent’s response to Health Canada’s IR #166 (December 2022) indicates that Table 3-6 is revised to correct the entry errors related to half-life values for radionuclides and that the correct half-life values are used in the modelling calculation. However, some entry errors remain in the updated EIS (Table 3-6). For example, the half-life value for uranium-235 in Table 3-6 (7E+07 years) is substantially different from the correct value (7.04E+08 years).

References:
Health Canada. 2017. Guidance for evaluating human health impacts in environmental assessment: radiological impacts. Available at: https://publications.gc.ca/collections/collection_2017/sc-hc/H129-54-4-2017-eng.pdf

Brookhaven National Laboratories. 2019. NuDat 3.0. Available at: https://www.nndc.bnl.gov/nudat3/indx_sigma.jsp</td><td>CNL is to use the correct half-life values in an updated Follow-Up Program report, and/or any other future project documents.</td><td>Incorporated:

Canadian Nuclear Laboratories (CNL) notes this Information Request (IR) is referring to Table 3-6 of the Environmental Risk Assessment, rather than the Environmental Impact Statement.

The reference used to obtain the half-lives for the radionuclides referenced in Table 3-6 Estimated Radionuclide Inventory in Primary Heat Transport System Following Shutdown (Bq) of the ERA (Ecometrix 2024) is from the Evaluated Nuclear Structure Data File, National Nuclear Data Center, Brookhaven National Laboratory (http://t2.lanl.gov/nis/data/endf/decayVII.1.html). This is referenced in Canadian Standards Association (CSA) N288.1-14 (CSA 2014).

The half-lives in Table 3-6 were reconfirmed, with a few minor adjustments due to rounding. The only change is for the half-life of U-235, which should be 7.04E+08 years. The correct half-life was used for modelling as the change is an editorial change to Table 3-6. The half lives for Am-241, Co-60, Pu-238, Pu-241 match what is in the reference with some minor differences due to rounding.

Change to ERA:

The updated Estimated Radionuclide Inventory in Primary Heat Transport System Following Shutdown (Bq) is shown below.

Table 3-6: Estimated Radionuclide Inventory in Primary Heat Transport System Following Shutdown (Bq)
<table>
<tr><th>Radionuclide</th><th>$t_{1/2}$ (years)</th><th>10 years</th><th>30 years</th><th>50 years</th></tr>
<tr><td>Sr-90</td><td>28.8</td><td>5.10E+11</td><td>3.10E+11</td><td>1.90E+11</td></tr>
<tr><td>Cs-137</td><td>30.1</td><td>7.60E+11</td><td>4.80E+11</td><td>3.00E+11</td></tr>
<tr><td>Eu-154</td><td>8.6</td><td>1.90E+10</td><td>3.90E+09</td><td>8.10E+08</td></tr>
</table>
</td><td>Accepted</td></tr>
</table>

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information

Eu-155	4.8	7.90E+09	4.80E+08	2.90E+07
Tc-99	2.11E+05	1.30E+08	1.30E+08	1.30E+08
I-129	1.57E+07	2.80E+05	2.80E+05	2.80E+05
U-235	7.04E+08	5.76E+05	5.76E+05	5.76E+05
U-238	4.50E+09	1.24E+07	1.24E+07	1.24E+07
Np-237	2.14E+06	9.40E+05	1.10E+06	1.20E+06
Np-239	0.0065	1.90E+07	1.90E+07	1.90E+07
Pu-238	88	2.90E+09	2.50E+09	2.10E+09
Pu-239	24110	6.10E+09	6.10E+09	6.10E+09
Pu-240	6561	8.70E+09	8.70E+09	8.70E+09
Pu-241	14.3	5.30E+11	2.00E+11	7.70E+10
Am-241	433.6	1.10E+10	2.10E+10	2.50E+10
Am-243	7370	1.90E+07	1.90E+07	1.90E+07
Cm-244	18.1	4.40E+08	2.10E+08	9.60E+07
Co-60[1]	5.3	3.33E+09	2.43E+08	1.78E+07
Ag-108m[1]	438	-	1.62E+06	1.50E+06

Change to EIS:

No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them.

References:

Los Alamos National Lab. Evaluated Nuclear Structure Data File, National Nuclear Data Center, Brookhaven National Laboratory (http://t2.lanl.gov/nis/data/endf/decayVII.1.html)

Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision-6. November 2024.

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CSA. 2014. CSA N288.1-14: Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities.	
IR 168_R2	CNSC	ERA - Section 3.2.1 pg 3.16	**Context:** The response is partially acceptable. It is stated that the estimated contribution of radon from WR-1 to the soil is negligible or trivial particularly when compared to the natural levels of Rn-222 in the soils in Canada and the Canadian Shield. This statement needs to be supported with relevant parameters, values, and calculations. Also, the Health Canada radon guideline of 200 Bq/m^3 in dwellings is applicable to naturally occurring radon but not meant and should not be used for the CNSC regulated activities given that exposures to anthropogenic environmental radon concentrations less than 200 Bq/m^3 could result in exceedance of the annual public dose limit of 1mSv.	It is expected that CNL will modify their response to support the statement that "the estimated contribution of radon from WR-1 to the soil is negligible or trivial particularly when compared to the natural levels of Rn-222 in the soils in Canada and the Canadian Shield". CNL should avoid the use of HC radon guideline of 200 Bq/m^3 considering the context provided.	**Resolved As:** From the total inventory of approximately 100 Bq Rn-222 (Table 4-2 Mass Inventories at 50 Years Following WR-1 Shutdown of the Groundwater Flow and Solute Transport Modelling Report; Golder 2021), and the total grout volume of 10,000 m3, the volumetric concentration of Rn-222 at source is estimated to be 0.01 Bq/m3. This is negligible in comparison to the average natural concentration of Rn-222 in soil gas (from 11 to 28 kBq/m3 among five Canadian cities; Chen et al. 2012). The Environmental Risk Assessment (ERA) has made no comparison to the Health Canada guideline for radon concentration in dwellings of 200 Bq/m3. **Change to ERA:** No changes are proposed to the ERA to address this IR. **References:** Chen, J., D. Moir, K. MacLellan, E. Leigh, D. Nunez, S. Murphy and K. Ford. 2012. Soil radon measurements in Canadian cities. Radiation Protection Dosimetry 151(1): 172-174. Golder. 2021. WR-1 Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021.	**Accepted**
IR 169_R2	MMF	ERA - Section 4.0	**Context:** The MMF appreciates the addition of language regarding an Indigenous Harvester as a human receptor within the Human Health Risk Assessment. It is however, unclear whether within this assessment information how information provided from Red River Métis citizens was handled differently from members of *Sagkeeng First Nation.*	The MMF's preference is for CNL to provide separate scenarios for Métis and First Nation human receptors, however, if CNL can demonstration that the Harvester example is sufficiently conservative to cover any possible risk scenario, the MMF would be supportive of this approach.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has been clear that the Harvester model is sufficiently conservative for either Indigenous Harvester, based on the information provided by the Manitoba Métis Federation (MMF) in its Traditional Knowledge Study (SVS 2019). CNL compared the frequency of consumption of harvested foods by both First Nations and Métis to the standards used for the CNL Dose Model. The results showed that First Nations harvester receptors had the highest consumption rates for harvested foods. In the Dose model, ingestion of foods leads to dose, so using a higher ingestion rate will estimate a higher	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					dose to a receptor. Using a smaller ingestion rate will estimate a lower dose to the receptor. CNL used the higher ingestion rates (not the Métis ingestion rates) to estimate the dose to a harvester. These results are encompassing of the Métis Harvester. Section 6.7.1.6.1 "Methods" for the Human Health Assessment in the Environmental Impact Statement (EIS; WSP 2025) states: "The intake rates from the Manitoba Métis Federation survey were lower than the intake rates identified by the Sagkeeng First Nation. Therefore, the Harvester receptor in the model uses the intake rates from the Sagkeeng First Nation Indigenous food intake survey, and is considered to be a conservative reflection of potential health effects to a Harvester." **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **Change to the ERA:** The ERA (Ecometrix 2024) was revised to include Appendix E Comparison of Traditional Food Diets, directly comparing the intake rates of the MMF and Sagkeeng First Nation survey results. **References:** SVS (Shared Value Solutions). 2019. Whiteshell Reactor #1 Decommissioning, Manitoba Métis Traditional Knowledge, Land Use and Occupancy Study. January 2019. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision-6. November 2024.	
IR 172_R2	BR/HWFN	ERA - Section 4.1.3	**Context:** While the ERA has been improved by separating medicinal plants from berries, the assessment of medicinal plants is still not satisfactory. BRFN and HWFN identified a number of medicines of interest, including muskeg tea, willow, Seneca root, rose hips, and poplar, but only weekay and cedar are referenced in the ERA. The approach in the ERA incorrectly treats all medicinal	BR/HWFN is requesting that the ERA consider the unique attributes of different kinds of medicinal plants in its assessment.	**Resolved As:** Based on the Food Intake Survey (CNL 2018) cedar and weekay were the most commonly used medicinal plants and had higher average intake rates. For this reason, they were selected as representative medicinal plants. Bioaccumulation factors used in modelling radionuclide uptake into plants are defined for broad types of plants, such as aquatic plants, or	**Partially accepted. Follow-up IR 172_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			plants as the same, even though the pathways, potential levels of radionuclides, and community intake rates for weekay are very different from, for example, Seneca root, mushrooms, or muskeg tea.		forage plants. Modelling for a specific medicinal plant species is generally not possible. **Change to ERA:** No changes are proposed to the Environmental Risk Assessment (ERA) to address this IR. **References**: Canadian Nuclear Laboratories (CNL). 2018. Aboriginal Food Intake Survey. Memo from Jesse Gordon to Brian Wilcox. WLDP-26000-021-000, September 2018.	
IR 172_R3	BR/HWFN	Environmental Risk Assessment (ERA)-Section 4.1.3	**Partially accepted.** **Context:** BRFN and HWFN requested that the ERA consider the unique attributes of different kinds of medicinal plants in its assessment. CNL responded that "cedar and weekay were the most commonly used medicinal plants and had higher average intake rates. For this reason, they were selected as representative medicinal plants. Bioaccumulation factors used in modelling radionuclide uptake into plants are defined for broad types of plants, such as aquatic plants, or forage plants. Modelling for a specific medicinal plant species is generally not possible." BRFN / HWFN understand that it may not be possible to model for specific medicinal plant species and appreciate that cedar and weekay—the most commonly used medicinal plants in the Indigenous Food Intake Survey—were used as the basis for the analysis. However, further clarification of the ERA's methodology is required.	CNL's reply indicates that the ERA does not run modelling for specific medicinal plant species; rather, cedar and weekay were selected as representatives to model the radiological and chemical effects on medicinal plants from terrestrial and aquatic environments. However, the ERA does not fully explain the methodology used to create the models. For example, pages 304 to 308 of the ERA provide tables showing the input parameters for weekay, which, in part, appear to be derived from other aquatic plants like seaweed and phytoplankton (see p. 306 & 307). BRFN and HWFN request clarification on the assumptions used in this methodology, and justification that these assumptions are appropriate, especially as these findings directly inform the conclusions and recommendations in the ERA (Section 8.0).		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
				BRFN and HWFN also request information on any other medicinal plant species identified through Indigenous Knowledge could, in theory, have a significantly higher ability to accumulate contaminants or radionuclides than the aquatic or forage plants currently included in the assessment. If so, BRFN and HWFN would request that the ERA consider the species with the highest ability to accumulate contaminants in addition to the aquatic or forage plants currently covered in the assessment.		
IR 174_R2	CNSC	ERA - Section 4.2.2 Pg 4.10 to 4.11	**Context:** Response is partially acceptable, however, it is still not clear why aquatic pathways, such as assessment of fish consumption, wouldn't need be considered during the closure phase. It can be assumed that there will be some level of COPCs in the discharge/run-off during the closure phase contributing to an aquatic pathway.	See CNSC's IR 106_R2 as this IR response will impact the need to consider aquatic pathways in the closure phase, which may require including fish consumption in the risk assessment during the closure phase.	**Incorporated**: Canadian Nuclear Laboratories (CNL) acknowledges that while no direct releases to water are expected from the Project during closure, there may be some indirect releases to the Winnipeg River from aerial deposition to soil and subsequent stormwater runoff. Stormwater runoff from the WR-1 study area will be collected and directed to the Process Outfall. The discharge from the Process Outfall is composed of stormwater runoff from paved roadways or around buildings, cooling water used in process and experimental facilities, and holding tank discharges including those from the new active liquid waste treatment system tanks based in Building 100 and Building 300. Effluent from the Process Outfall is subject to monitoring prior to release under CNL's Whiteshell Laboratories (WL) Radioactive and Non-Radioactive Effluent Verification Monitoring Program (EVMP; CNL 2023). All results for radionuclides must be below the Derived Release Limits (DRLs; CNL 2021a). All results for non-radionuclides are compared against WL's Administrative and Action Levels for WL Non-Radiological Effluent (CNL 2021b). The additional loadings of runoff during the closure phase are anticipated to be negligible compared to existing conditions. Using Sr-90 as an example, demolition activities during closure will result in releases to air that are deposited on soil. The maximum predicted Sr-90 soil concentration on the WL site from demolition activities is 0.165 Bq/kg dw and the soil pore water concentration is 0.0024 Bq/L (calculated in IMPACT using the equations from Canadian Standards Association (CSA) N288.1-14;	**Accepted**

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[1]</th><th>Context and Rationale</th><th>Information Requirement (IR)[2]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>
CSA 2014). As a conservative assumption, it was assumed that all the pore water mass is mobilized as runoff in the local study area (29ha – see Section 6.4.1.4 Assessment Boundaries in the Environmental Impact Statement (EIS); Golder 2022). Runoff was calculated as follows:
• Runoff (m^3/yr) = Runoff Coefficient*Net Precip*Drainage Area
The precipitation rate from the DRL report is 565 mm/yr and the evapotranspiration rate from the National Atlas of Canada is approximately 400 mm/yr; therefore, the net precipitation rate is 165 mm/yr. The runoff coefficient used was 0.23 for an averaged sloped soil and grassed area.
Runoff was estimated to be 1.1E+04 m^3/yr. Therefore Sr-90 loadings would be 2.4 Bq/m^3*1.1E+04 m^3/yr = 2.64E+04 Bq/yr = 2.18E+03 Bq/month.
The monthly Sr-90 loadings to the Process Outfall based on the 2019 Annual Monitoring Report is 4.96E+06 Bq/month. Therefore, the additional Sr-90 loadings from demolition activities would be 0.04% of existing loadings; therefore, the additional loadings from the Project by runoff were considered negligible.
The following table is a summary identifying all potential exposure pathways with justification for those not included in the HHRA during closure (i.e., secondary pathways). Primary exposure pathways are considered in the HHRA for the Closure Phase. Secondary exposure pathways would have a negligible residual effect on human health relative to baseline conditions and/or guideline values.
<table>
<tr><th>Potential Exposure Pathway</th><th>Primary or Secondary Pathway</th><th>Comments</th></tr>
<tr><td>Inhalation</td><td>Primary</td><td>Assessed in ERA</td></tr>
<tr><td>Incidental ingestion (soil)</td><td>Primary</td><td>Assessed in ERA</td></tr>
<tr><td>Food ingestion (terrestrial plants, terrestrial animals)</td><td>Primary</td><td>Assessed in ERA</td></tr>
<tr><td>Drinking water (well water)</td><td>Primary</td><td>Assessed in ERA</td></tr>
</table>
</td><td></td></tr>
</table>

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[1]</th><th>Context and Rationale</th><th>Information Requirement (IR)[2]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>External exposure (soil, air)</td><td>Primary</td><td>Assessed in ERA</td></tr>
<tr><td>Food ingestion (fish)</td><td>Secondary</td><td>No direct releases to water. Indirect releases of stormwater runoff will be directed to the Process Outfall, managed, and monitored prior to release. Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (0.04% for Sr-90 of existing loading).</td></tr>
<tr><td>Drinking water (river water)</td><td>Secondary</td><td>Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (see above).</td></tr>
<tr><td>External exposure (sediment)</td><td>Secondary</td><td>Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (see above).</td></tr>
</table>
Change to EIS:
Section 6.7.1.6 has been expanded to include management of stormwater runoff during closure as a no linkage pathway and provides rationale of why the additional loadings from the Project to the Winnipeg River are considered negligible.
“During closure activities, there is the potential for the transport of site runoff to the Winnipeg River.
The LSA drains to the Winnipeg River. During closure phase activities, specifically those that are demolition related, there is the potential for the transport of site runoff to the Winnipeg River in the vicinity of the WL site. Site runoff may be compromised by various activities such as the mobile
</td><td></td></tr>
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IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					batch plant (increased pH and suspended solids levels), crushing masonry (increased pH and suspended solids levels) and cutting steel (increased metal levels). Currently, wastewater from decommissioning activities is collected and tested and based on the results, is directed either to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, evaporation and/or solidification and disposal. This process follows the requirements in CNL's Management and Monitoring of Emissions (CNL 2022). Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants. During the closure phase, existing stormwater management systems at the WL site will remain in place to manage site runoff from precipitation. For example, surface water runoff from the site is collected by storm sewers and is discharged to the Winnipeg River. Stormwater is routinely monitored to confirm that stormwater quality is normal. In addition, containment barriers will be constructed where necessary to provide for the collection, control of and treatment of contaminated water and to reduce surface water runoff during decommissioning and reclamation activities. Surface water quality is also assessed at locations where surface water leaves the WL site's boundary and in water bodies affected by discharges. Concentrations of radiological and non radiological contaminants are measured and compared against existing provincial or federal surface water quality guidelines or standards. It is also noted that closure phase activities will occur well away from the river and its riparian zone and therefore no direct changes in surface water quality will result. As per CNL's Management of Land, Habitat and Wildlife (CNL 2024), any work within 30 m of rivers, streams and lakes will have preventative and mitigation measures in place. General provisions adopted for work at CNL sites in or near a watercourse incorporate appropriate sediment retention measures such as silt curtains and straw bales. Consequently, this interaction was determined to have no linkage to effects to surface water quality in the Winnipeg River. Assuming these best management practices are followed and that the current surface water management facilities remain in place during building demolition, this mitigation is expected to be effective. As such, changes to surface water quality in the Winnipeg River are expected to result in negligible effects to human health."	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					A reference to the DRL document and WL's Administrative and Action Levels for WL Non-Radiological Effluent (WL-509200-STD-017; CNL 2021b) has been added to the above-mentioned pathway in Section 6.4.2.6.2.2 Secondary Pathway of the EIS (WSP 2025). **References**: Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision-6. November 2024. CNL. 2022. Management and Monitoring of Emissions. 900-509200-STD-009. Revision 1. December 2022. CNL. 2021a. Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 6. January 2021. CNL. 2021b. Administrative and Action Levels for WL Non-Radiological Effluent. WL-509200-STD-017. Revision 0. June 2021. CNL. 2023. WL Effluent Verification Monitoring Plan. WL-509200-PLA-001. Revision 1. September 2023. CNL. 2024. Management of Land, Habitat and Wildlife. 509200-STD-006. Revision 1. January 2024. CSA. 2014. CSA N288.1-14: Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 177_R2	Health Canada	ERA Appendix B, pdf pg.281 to 504	**Context:** Appendix B of the ERA indicates that exposure factors for calcium (Ca)-41 are derived from strontium (Sr). However, Ca is often used as a surrogate for Sr, but not the other way around. Similarly, while there are sufficient environmental data available for lead (Pb), its exposure factor is derived from a surrogate [i.e., tin (Sn)].	Provide rationale for the use of surrogates to derive exposure factors for Ca, and Pb. Discuss additional uncertainties associated with the approach. Alternatively, consider the use of stable forms of the target elements in place of the selected surrogates, if data is available.	**Resolved As:** Surrogate elements values are only applied for Bioaccumulation Factors (BAF) and Sorption Coefficients (Kd). Dose Conversion Factors use values specific to the nuclides. Surrogate element values of BAF and Kd from Canadian Standards Association (CSA) N288.1-14 (CSA 2014) were used for the elements Ca and Pb because the latter elements are not included in CSA N288.1-14, but reasonable surrogate element values are available in CSA N288.1-14. This ensured that parameter values were available for the	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			Rationale: It is unclear why surrogate elements are used to derive exposure factors for radionuclides that are deemed to have sufficient environmental data available to support the direct estimation of exposure factors. The approach may increase uncertainties associated with the calculated health risks.		biota or media categories that are represented in the CSA N288.1-14 model. Some elements, such as Ca, are not well represented in partitioning studies. Note that all the partitioning values taken from CSA N288.1-14 are based on stable element studies. **Change to ERA:** No changes are proposed to the Environmental Risk Assessment (ERA) to address this IR. **References**: Canadian Standards Association (CSA). 2014. Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities. CSA N288.1-14.	
IR 178_R2	MMF	ERA - Section 5.1.1	**Context:** Refer to context provided to IR 169_R2	Provide additional information as requested in IR 169_R2, as it relates to IR 178_R2.	**Resolved As**: Canadian Nuclear Laboratories (CNL) has been clear that the Harvester model is sufficiently conservative for a First Nation and a Métis Harvester, based on the information provided by the Manitoba Métis Federation (MMF) in its Traditional Knowledge Study (SVS 2019). CNL compared the frequency of consumption of harvested foods by both First Nation and Métis to the standards used for the CNL Dose Model. The results showed that First Nation harvester receptors had the highest consumption rates for harvested foods. In the Dose model, ingestion of foods leads to dose, so using a higher ingestion rate will estimate a higher dose to a receptor. Using a smaller ingestion rate will estimate a lower dose to the receptor. CNL used the higher ingestion rates (not the Métis ingestion rates) to estimate the dose to a harvester. These results are encompassing of the Métis Harvester. Section 6.7.1.6.1 “Methods” for the Human Health Assessment in the EIS states: “The intake rates from the Manitoba Métis Federation survey were lower than the intake rates identified by the Sagkeeng First Nation. Therefore, the Harvester receptor in the model uses the intake rates from the Sagkeeng First Nation Indigenous food intake survey and is considered to be a conservative reflection of potential health effects to a Harvester.” **Change to EIS:**	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					No specific changes to the Environmental Impact Statement (EIS) due to this IR; however, related IRs noted in the request may have changes associated with them. **Change to ERA:** The Environemtnal Risk Assessment (ERA) (Ecometrix 2024) was revised to include Appendix E Comparison of Traditional Food Diets, directly comparing the intake rates of the MMF and Sagkeeng First Nation survey results. **References**: SVS (Shared Value Solutions). 2019. Whiteshell Reactor #1 Decommissioning, Manitoba Métis Traditional Knowledge, Land Use and Occupancy Study. January 2019. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024.	
IR 179_R2	MMF	ERA	**Context:** The MMF notes that dust is a potential source of radioactive and non-radioactive contaminants that may influence the terrestrial plant exposure pathway.	MMF agrees with IR 179 in that this should be included as an exposure pathway.	**Resolved As:** Potentially radioactive dust, or other non-radioactive hazardous dust is considered during the closure phase. During closure, construction and demolition activities have the potential to generate dust and airborne emissions. The Environmental Impact Statement (EIS) assesses this pathway during the closure phase. In the Environmental Risk Assessment (ERA), atmospheric deposition on terrestrial plants is considered an important pathway in the closure phase where there is an ongoing air source during grouting and demolition activities. The conceptual model for the harvester in Figure 4-3 of the ERA shows the source -> air -> terrestrial plants pathway. Information Request (IR) 179 was specifically requesting this pathway be included during the post-closure phase. During the post-closure phase, there is no construction or demolition activities occurring any longer. There are no activities that have the potential to generate contaminated dust or airborne emissions. As such, this pathway was not included in the post-closure phase, though it is included in the closure phase. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					References: N/A	
IR 180_R2	BR/HWFN	ERA	**Context:** CNL's response does not clearly indicate how the intake rates used in the analysis are directly related to the Indigenous Food Intake Survey and other data sources used, including the Traditional Knowledge and Land Use Occupancy Study (TKLUOS) by Black River First Nation, Brokenhead Ojibway Nation, and Hollow Water First Nation, which is referenced in CNL's response.	CNL is expected to clarify how the intake rates assumed in the ERA are based on the results from in the Indigenous Food Intake Survey. For example, one survey respondent from Sagkeeng First Nation said they consumed 13 servings of fish per week, significantly more than the average of 2.98 servings per week. Do the intake rates in the ERA for a harvester consider the maximum potential consumption by an individual harvester or is it based off of averages from multiple harvesters? Local community members will want to have the assurance that food, including fish, harvested from in and around the site will be safe to eat, even in significant quantities. Also, the response says, "Additional Traditional knowledge on harvested foods was shared . . . **by Broken Head Ojibway, Black River and Hollow Water First Nations through their Traditional Use Study** . . . "; however, it does not say how the information from the Traditional Knowledge and Land Use Occupancy Study (TKLUOS) by Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation actually informed this analysis. CNL is to provide details on how this TKLUOS was used and how the intake rates in the analysis relate to potential	**Incorporated**: The information from the Traditional Knowledge and Land Use Occupancy Study (TKLUOS) by Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation was used to inform Canadian Nuclear Laboratories (CNL's) understanding of the traditional land use as well as types of harvesting (e.g., fishing, harvesting berries, wild rice, harvesting medicines, hunting and trapping). The species identified were considered in the Valued Component (VC) and ecological receptor selection, as well as the exposure pathway selection. For example, the TKLUOS identified weekay and cedar as important medicinal plants. As such, these species were selected as representative medicinal plants in a harvestor's diet. In addition, moose was added as a VC to the ecological health assessment given the species importance to Indigenous people, including Black River and Hollow Water First Nations. A reference to the TKLUOS will be added to Section 6.7 (WSP 2025) of the Environmental Impact Statement (EIS) and the Environmental Risk Assessment (ERA) (Ecometrix 2024). The harvester diet in the ERA is based on the Sagkeeng First Nation Indigenous Food Intake Survey and was processed to determine the average from multiple harvesters. The information provided in the Sagkeeng First Nation Indigenous Food Intake Survey was number of servings per week for different food items. The results from all respondents were averaged together to determine the average number of servings per week for each food item. A serving size was 75 g for birds, mammals, and fish, and a serving size was 90 g for berries and 56 g for medicinal plants. The average number of servings per week by food item was then converted into an ingestion rate of g/day using the above serving sizes. **Change to EIS:** The following reference was added to Section 6.7 of the EIS: "BRFN, BON and HWFN (Black River First Nation, Brokenhead Ojibway Nation and Hollow Water First Nation). 2019. api migizik pii pa giiot –	**Partially accepted. Follow-up IR 180_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
				harvesters from Black River First Nation and Hollow Water First Nation communities. The Traditional Knowledge and Land Use Occupancy Study (TKLUOS) by Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation titled "api migizik pii pa gilot – When Eagles Call Traditional Knowledge and Land Use Study for the WR-1 Nuclear Reactor In Situ Decommissioning Project" (2019) should be added to the References section if it is referenced in the response.	When Eagles Call Traditional Knowledge and Land Use Study for the WR1 Nuclear Reactor In Situ Decommissioning Project. November 2019." **References**: Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 180_R3	BR/HWFN	ERA	**Context:** BRFN / HWFN commented in IR 180_R2; "CNL's response does not clearly indicate how the intake rates used in the analysis are directly related to the Indigenous Food Intake Survey and other data sources used, including the Traditional Knowledge and Land Use Occupancy Study (TKLUOS) by Black River First Nation, Brokenhead Ojibway Nation, and Hollow Water First Nation, which is referenced in CNL's response." CNL responded by saying that the information provided in the TKLUOS by BRFN, HWFN, and BON was used to inform CNL's understanding of the traditional land use as well as types of harvesting (e.g. fishing, harvesting berries, etc.). These were considered in the VC and ecological receptor selection and the exposure pathway selection. CNL also mentioned that the harvester diet in the Environmental Risk Assessment (ERA) is based on the average diet from multiple harvesters (in terms of servings per week from different food items). The average number of servings per week by food	Based on CNL's reply, the harvester diet in the ERA is based on the average diet from multiple harvesters (in terms of servings per week from different food items) found in the Indigenous Food Intake Survey. These averages are used to generate conclusions about the safety of foods and medicines—and consequently human health—for the closure and post-closure time periods. In terms of the post-closure phase, for example, the ERA concludes that for Harvesters: • "The total radiation dose during the post-closure phase is well below the public dose limit of 1 mSv/a, and the dose constraint for the Project of 0.25 mSv/a for maximum release rates", and • "The HQs for the Harvester are below the acceptable risk		

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			item was then converted into an ingestion rate of g/day using the serving sizes. BRFN and HWFN expressed concern that the average intake methodology used in this section does not satisfactorily address the potential concerns related to the harvester diet. For example, one survey respondent from Sagkeeng First Nation said they consumed 13 servings of fish per week, significantly more than the average of 2.98 servings per week that was used in this analysis. BRFN/HWFN members want to have the assurance that food and medicines harvested from in and around the site will be safe to eat, even in significant quantities.	level of 0.2 for all pathways for cadmium and lead, with the exception of lead from ingestion of weekay collected in the Winnipeg River near the WRDF. This exceedance is from background concentrations of the lead in the Winnipeg River and not related to releases from the WRDF." (8.1) BRFN and HWFN request that these conclusions in the ERA would be calculated again based on the *maximum* number of servings per week for each food type observed in the Indigenous Food Intake Survey, rather than the *average* number of servings per week. This would help provide assurance to BRFN / HWFN members that food and medicines harvested from in and around the site will be safe to ingest in the post-closure phase, even in significant quantities.		
IR 180_R2	MMF	ERA	**Context:** CNL fails to address the IR directly as they do not provide a comparison of consumption rates from Indigenous Food Intake Surveys, and what is provided as a recommended parameter by the Canadian Standards Associate N288.6.	CNL is expected to provide sufficient comparison, and apply the more conservative intake rates in order to inform the estimate dose to harvester receptors.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has been clear that the Harvester model is sufficiently conservative for a First Nation and a Métis Harvester, based on the information provided by the Manitoba Métis Federation (MMF) in its Traditional Knowledge Study (SVS 2019). The Harvester diet in the Environmental Risk Assessment (ERA) is based on the Sagkeeng First Nation Indigenous Food Intake Survey. The MMF survey was received later on and then compared against the diet that was used in the ERA. The conclusions showed that the ingestion rates for the MMF were lower than the Sagkeeng First Nation, so the existing diet for the harvester used in the ERA was considered conservative and bounding.	**Accepted**

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[1]</th><th>Context and Rationale</th><th>Information Requirement (IR)[2]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>
Ecometrix processed the data from the MMF survey and used the following assumptions:

A serving size was 75 g for birds, mammals, fish. A serving size was 90 g for berries and 56 g for medicinal plants – these are the same assumption that were used for the Sagkeeng First Nation data.
The number of servings for each food item were obtained from Table 1 and Table 2 of Shared Value Solutions report “Whiteshell Reactor Decommissioning Community Feedback Report”. These tables are the food frequency tables and were used to determine the average number of servings per week per food item (see table below).
The average number of servings per week by food item was then converted into an ingestion rate of g/day using the serving size identified in bullet #1 above.
The food items were grouped together into fish, deer, ducks/geese, fruits and berries, weekay, cedar.

The results in this table are from the MMF survey. The data from the MMF survey were used to determine the average servings per week.
<table>
<tr><th>MMF – Food Items</th><th>Serving Size (g)</th><th>avg servings/ wk</th><th>Ingestion Rate g per wk</th><th>Ingestion Rate g per day</th></tr>
<tr><td>Deer</td><td>75</td><td>0.8</td><td>56.3</td><td>8.0</td></tr>
<tr><td>Moose</td><td>75</td><td>0.5</td><td>36.3</td><td>5.2</td></tr>
<tr><td>Geese</td><td>75</td><td>0.05</td><td>3.5</td><td>0.5</td></tr>
<tr><td>Ducks</td><td>75</td><td>0.1</td><td>8.6</td><td>1.2</td></tr>
<tr><td>Grouse</td><td>75</td><td>0.2</td><td>14.4</td><td>2.1</td></tr>
<tr><td>Other Birds</td><td>75</td><td>0.003</td><td>0.2</td><td>0.03</td></tr>
<tr><td>Fish</td><td>75</td><td>0.1</td><td>8.3</td><td>1.2</td></tr>
<tr><td>Pike</td><td>75</td><td>0.3</td><td>18.8</td><td>2.7</td></tr>
<tr><td>Pickerel</td><td>75</td><td>1.3</td><td>100.6</td><td>14.4</td></tr>
</table>
</td><td></td></tr>
</table>

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					<table><tr><td>Berries</td><td>90</td><td>0.4</td><td>31.6</td><td>4.5</td></tr><tr><td>Medicinal Plants</td><td>56</td><td>0.8</td><td>42.0</td><td>6.0</td></tr></table> Section 6.7.1.6.1 “Methods” for the Human Health Assessment in the Environmental Impact Statement (EIS) states: “The intake rates from the Manitoba Métis Federation survey were lower than the intake rates identified by the Sagkeeng First Nation. Therefore, the Harvester receptor in the model uses the intake rates from the Sagkeeng First Nation Indigenous food intake survey, and is considered to be a conservative reflection of potential health effects to a Harvester.” A new Appendix in the ERA (Appendix E) was added to show the comparison between the Sagkeeng First Nation ingestion rates and MMF ingestion rates. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **Change to ERA:** The ERA was updated to include Appendix E which is the Comparison of Traditional Food Diets. **References:** SVS (Shared Value Solutions). 2019. Whiteshell Reactor #1 Decommissioning, Manitoba Métis Traditional Knowledge, Land Use and Occupancy Study. January 2019.	
IR 181_R2	CNSC	ERA - Table 6-3, pg 6.5	Context: Response is partially acceptable, however, it is still not clear why aquatic VECs wouldn’t need to be considered during the closure phase. It can be assumed that there will be some level of COPCs in the discharge/run-off during the closure phase contributing to an aquatic pathway affecting aquatic VECs.	See CNSC’s response to IR 106_R2 as this IR response will impact the need to consider aquatic pathways in the closure phase, which may require adding fish as VEC during the closure phase.	**Incorporated**: Canadian Nuclear Laboratories (CNL) acknowledges that while no direct releases to water are expected from the Project during closure, there may be some indirect releases to the Winnipeg River from aerial deposition to soil and subsequent stormwater runoff. Stormwater runoff from the WR-1 study area will be collected and directed to the Process Outfall. The discharge from the Process Outfall is composed of stormwater runoff from paved roadways or around buildings, cooling water used in process and experimental facilities, and holding tank discharges including those from the new active liquid waste treatment system tanks based in Building 100 and Building 300. Effluent from the Process Outfall is subject to monitoring	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					prior to release under CNL's Whiteshell Laboratories (WL) Radioactive and Non-Radioactive Effluent Verification Monitoring Program (EVMP; CNL 2023). All results for radionuclides must be below the Derived Release Limits (DRLs; CNL 2021a). All results for non-radionuclides are compared against WL's Administrative and Action Levels for WL Non-Radiological Effluent (CNL 2021b). The additional loadings of runoff during the closure phase are anticipated to be negligible compared to existing conditions. Using Sr-90 as an example, demolition activities during closure will result in releases to air that are deposited on soil. The maximum predicted Sr-90 soil concentration on the WL site from demolition activities is 0.165 Bq/kg dw and the soil pore water concentration is 0.0024 Bq/L (calculated in IMPACT using the equations from Canadian Standards Association (CSA) N288.1-14; CSA 2014). As a conservative assumption, it was assumed that all the pore water mass is mobilized as runoff in the local study area (29ha – see Section 6.4.1.4 Assessment Boundaries in the Environmental Impact Statement (EIS); Golder 2022). Runoff was calculated as follows: • Runoff (m^3/yr) = Runoff Coefficient*Net Precip*Drainage Area The precipitation rate from the DRL report is 565 mm/yr and the evapotranspiration rate from the National Atlas of Canada is approximately 400 mm/yr; therefore, the net precipitation rate is 165 mm/yr. The runoff coefficient used was 0.23 for an averaged sloped soil and grassed area. Runoff was estimated to be 1.1E+04 m^3/yr. Therefore Sr-90 loadings would be 2.4 Bq/m^3*1.1E+04 m^3/yr = 2.64E+04 Bq/yr = 2.18E+03 Bq/month. The monthly Sr-90 loadings to the Process Outfall based on the 2019 Annual Monitoring Report is 4.96E+06 Bq/month. Therefore, the additional Sr-90 loadings from demolition activities would be 0.04% of existing loadings; therefore, the additional loadings from the Project by runoff were considered negligible. The following table is a summary identifying all potential exposure pathways with justification for those not included in the HHRA during closure (i.e., secondary pathways). Primary exposure pathways are considered in the HHRA for the Closure Phase. Secondary exposure pathways would have a negligible residual effect on human health relative to baseline conditions and/or guideline values.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL			Accepted/ Request for follow-up information
					Potential Exposure Pathway	**Primary or Secondary Pathway**	**Comments**	
					Inhalation	Primary	Assessed in ERA	
					Incidental ingestion (soil)	Primary	Assessed in ERA	
					Food ingestion (terrestrial plants, terrestrial animals)	Primary	Assessed in ERA	
					Drinking water (well water)	Primary	Assessed in ERA	
					External exposure (soil, air)	Primary	Assessed in ERA	
					Food ingestion (fish)	Secondary	No direct releases to water. Indirect releases of stormwater runoff will be directed to the Process Outfall, managed, and monitored prior to release. Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (0.04% for Sr-90 of existing loading).	
					Drinking water (river water)	Secondary	Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (see above).	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information

External exposure (sediment)	Secondary	Additional loadings of runoff from the Project during closure are negligible compared to existing conditions (see above).

Change to EIS:

Section 6.7.1.6 has been expanded to include management of stormwater runoff during closure as a no linkage pathway and provides rationale of why the additional loadings from the Project to the Winnipeg River are considered negligible.

"During closure activities, there is the potential for the transport of site runoff to the Winnipeg River.

The LSA drains to the Winnipeg River. During closure phase activities, specifically those that are demolition related, there is the potential for the transport of site runoff to the Winnipeg River in the vicinity of the WL site. Site runoff may be compromised by various activities such as the mobile batch plant (increased pH and suspended solids levels), crushing masonry (increased pH and suspended solids levels) and cutting steel (increased metal levels).

Currently, wastewater from decommissioning activities is collected and tested and based on the results, is directed either to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, evaporation and/or solidification and disposal. This process follows the requirements in CNL's Management and Monitoring of Emissions (CNL 2022). Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants.

During the closure phase, existing stormwater management systems at the WL site will remain in place to manage site runoff from precipitation. For example, surface water runoff from the site is collected by storm sewers and is discharged to the Winnipeg River. Stormwater is routinely monitored to confirm that stormwater quality is normal.

In addition, containment barriers will be constructed where necessary to provide for the collection, control of and treatment of contaminated water and to reduce surface water runoff during decommissioning and reclamation activities. Surface water quality is also assessed at locations

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					where surface water leaves the WL site's boundary and in water bodies affected by discharges. Concentrations of radiological and non radiological contaminants are measured and compared against existing provincial or federal surface water quality guidelines or standards. It is also noted that closure phase activities will occur well away from the river and its riparian zone and therefore no direct changes in surface water quality will result. As per CNL's Management of Land, Habitat and Wildlife (CNL 2024), any work within 30 m of rivers, streams and lakes will have preventative and mitigation measures in place. General provisions adopted for work at CNL sites in or near a watercourse incorporate appropriate sediment retention measures such as silt curtains and straw bales. Consequently, this interaction was determined to have no linkage to effects to surface water quality in the Winnipeg River. Assuming these best management practices are followed and that the current surface water management facilities remain in place during building demolition, this mitigation is expected to be effective. As such, changes to surface water quality in the Winnipeg River are expected to result in negligible effects to human health." A reference to the DRL document and WL's Administrative and Action Levels for WL Non-Radiological Effluent (WL-509200-STD-017; CNL 2021b) has been added to the above-mentioned pathway in Section 6.4.2.6.2.2 Secondary Pathway of the EIS (WSP 2025). **References**: Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision-6. November 2024. CNL. 2022. Management and Monitoring of Emissions. 900-509200-STD-009. Revision 1. December 2022. CNL. 2021a. Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 6. January 2021. CNL. 2021b. Administrative and Action Levels for WL Non-Radiological Effluent. WL-509200-STD-017. Revision 0 June 2021. CNL. 2022. Management and Monitoring of Effluents and Emissions. 900-509200-STD-009. Revision 1. December 2022. CNL. 2023. WL Effluent Verification Monitoring Plan. WL-509200-PLA-001. Revision 1. September 2023. CNL. 2024. Management of Land, Habitat and Wildlife. 509200-STD-006. Revision 1. January 2024.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					CSA. 2014. CSA N288.1-14: Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 187_R2	CNSC	DSAR - Section 2.3.1.1 Section 2.3.1.7, Table 2.3.1-1, pg 42, 46	**Context:** As the corrosion rate of the reactor core is the primary parameter limiting radionuclide migration, the safety significance of this barrier is very high. Considering this, confidence in the selected corrosion rate applied in the groundwater flow and transport model and post-closure safety assessment is of primary importance. Suggestions for mitigation and follow up measures: One such line of evidence can be provided using EA follow-up studies and monitoring (see IR 65_R2), to continue to assess the long-term corrosion rate of similar materials over the course of the closure and institutional control period. An example would be a commitment to conduct a long-term corrosion study or accelerated corrosion studies of similar materials, and under similar geochemical conditions as those expected at the WR-1 site.	As the uncertainty associated with the corrosion rate of slow corroding materials is high, as it is difficult to test, several supporting lines of evidence to demonstrate confidence in safety is required.	**Resolved As:** The Environmental Impact Statement (EIS; WSP 2025) references the Waste Form Synthesis Report (Arcadis 2021) which provides the corrosion rates that have been used in the postclosure safety assessments for WR-1 for the three classes of alloy. Direct monitoring of conditions within the grouted facility is problematic for several reasons: • Installation of monitoring equipment creates potential large pathways into the grouted facility. • Expected lifetime of monitoring instruments is not sufficient to reliably provide monitoring data. • Conditions in the grouted facility are conservatively assumed for the assessment, including the assumption that the facility will resaturate with water instantly and allow for corrosion to occur. In reality, it may take decades for resaturation to complete. • Monitoring data that could indicate corrosion may be occurring will not be verifiable without excavation of the facility and removal of the barriers. Canadian Nuclear Laboratories (CNL) proposes the most practical means of monitoring actual performance of the Whiteshell Reactor Disposal Facility (WRDF) is through near field groundwater monitoring as it provides more reliable and clear indications of the actual conditions and can be directly compared to the predictions of the EIS for assessment for further action. As the assessment has looked at conservative corrosion rates, conservative re-saturation periods for the WRDF, conservative source terms, and	**Partially accepted. Follow-up IR 187_R3**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					conservative release pathways, it is expected that even if accelerated corrosion were to occur, it would be unlikely to require intervention. Further the rate at which contaminants move through the groundwater is very slow, and CNL's commitment to install a groundwater monitoring well closer to WRDF than the current perimeter well nests, will provide ample time to detect, assess and mitigate (if necessary) any unexpected conditions. **Changes to EIS**: No changes have been made to the EIS as result of this IR. **References**: Arcadis 2021. NPD and WR-1 In Situ Decommissioning Projects Waste Form Synthesis Report. 64-508760-REPT-017. Revision 1. July 2021. WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
IR 187_R3	CNSC	DSAR - Section 2.3.1.1 Section 2.3.1.7, Table 2.3.1-1, pg 42, 46	**Partially accepted** **Context:** CNSC staff reviewed the stated conservative scenario regarding corrosion rate, cited as Section 4.1.3 of (Golder 2021) in groundwater flow and solute transport model. The CNSC staff is not convinced that double the rate of those listed in Section 4.1.3 in Golder (2021) is conservative enough to represent the corrosion of various components in low alkaline groundwater, but under potential of rich in oxygen conditions. This particularly applies to carbon steel, which is shown to corrode in the rate of stated 1e-5 m/yr under normal scenarios, but will be sped up naturally under high oxygen, and medium level of Cl (hydrogeological study shows Cl as high as 82 mg/L in monitoring wells). Doubling the rate to 2E-5 m/yr does not represent a conservative scenario.	CNL is expected to further justify the selection of representative values for the assessment of uncertainties associated with corrosion of the components since it is closely related to the source term.		
IR 188_R2	CNSC	DSAR - Section 2.3.1.2, para 2 Section 2.3.1.7, Table 2.3.1-1 Barrier		Please provide additional information as requested in IR 204_R2 and 211_R2, as it relates to IR 188_R2.	**Incorporated**: A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
		Performance, Pg 42, 46			lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of higher estimates of the diffusivity (Sensitivity Scenarios 25 and 26) and hydraulic conductivity (Sensitivity Scenario 27 and 28) of the grout and concrete structures (i.e., the subject of IR 39_R2 and IR 48_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). To address the concern with respect to diffusivity, two additional sensitivity scenarios (Scenarios 25 and 26) were completed with an increased diffusivity for the Whiteshell Reactor Disposal Facility (WRDF) foundation. To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). The assumed step function is summarized in Table 4-4 and illustrated on the plot included on Figure 4-2 (in which the assumed timescales are drawn generally based on information provided in Walton et al. 1990). In the long term, it is anticipated that the grout will degrade and the hydraulic conductivity will increase as a result of this degradation. As noted in the literature there are many factors that contribute to the degradation of grout over time and the ability to model its performance is limited as a result of the uncertainty associated with these factors (Walton et al. 1990; Clifton et al. 1995). Contributing factors to degradation include sulphate and magnesium	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					attack (leading to expansion and disruption of the cement), reinforcement corrosion through chloride attack, leaching, carbonation, alkali aggregate reaction, freeze/thaw and cracking. The extent to which degradation of concrete will occur as the result of these contributing factors is dependent on the environmental conditions surrounding the concrete, which are uncertain (Walton et al. 1990; Clifton et al. 1995). The results are summarized in Section 6.3.2.8. *The overall impact of the mass loadings are evaluated in Ecometrix (2024) technical memorandum to determine the potential impact of these results on human and ecological health. The results indicate that estimated doses to human receptors from radionuclides in the sensitivity scenario are below the public dose limit of 1 mSv/year and the dose constraint of 0.25 mSv/year. As such, the uncertainty in these parameters is acceptable.* **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26).	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings is evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these	

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					receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20	

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					mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safey Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Clifton et al. 1995. Long-Term Performance of Engineered Concrete Barriers. NISTIR 5690. July 1995. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024.	

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					Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf. Walton et al. 1990. Models for Estimation of Service Life of Concrete Barriers in Low-Level Radioactive Waste Disposal. Idaho National Engineering Laboratory, EG&G Idaho Inc. September 1990.	
IR 189_R2	CNSC	DSAR - Section 2.4.3, Figure 2.4.3-1 Time, Pg 58 to 62	**Context:** Although CNL provides a number of arguments and lines-of-evidence to support their selection of the proposed assessment timeframe of 10,000 years, several key arguments are missing, which could influence the selection of an adequate assessment timeframe and are required to provide a complete assessment on an adequate assessment timeframe. The radioactive inventory indicates a substantial amount of ILW, and long-lived radioisotopes. A key supporting argument, in determining the adequacy of the assessment timeframe, is to assess the total radioactive inventory at the site along with its natural decay overtime, and to compare it to local background concentrations, and a suitable natural analogue. CNL has done this work in supporting their argument that a scenario for glaciation is not required. However, this should be a primary supporting argument to justify selection of the assessment timeframe. In addition, the selected assessment timeframe should demonstrate that the design lifetime of the engineered (e.g., wasteform) and/or natural barriers is commensurate with the hazardous life of the waste, in order to provide confidence that	CNL is to provide arguments to support their assessment timeframe, by considering the total inventory of the radioactive waste on site and its decay overtime, and assessing the point that it reaches local background, or a suitable natural analogue / natural uranium deposit.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has evaluated the hazard of the Whiteshell Reactor Disposal Facility (WRDF) inventory and summarized the predicted potential impacts (Golder 2021a). When determining the Assessment Timeframe, CNL followed the approach listed in Sections 7.2 and 8.1.3.2 of REGDOC 2.11.1-Volume III (CNSC 2021), where timeframes associated with a Post-Closure Safety Assessment Shall consider the following: • time of the peak radiological impact predicted by the safety assessment • normal (expected) evolution of the disposal system, in consideration of the decay of the radiological substances associated with the waste and of the stability of the host medium or site • type and severity of events considered in the safety assessment and Should consider: • hazardous lifetime of the contaminants associated with the waste • duration of the operational period (before the disposal facility reaches its end state) • design life of engineered barriers • duration of both active and passive institutional controls	**Follow-up IR 189_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			some level of containment will be provided during the peak hazard.		• frequency of natural events and human-induced environmental changes (e.g., seismic occurrence, flood, drought, glaciation, climate change) • the degree of protection and isolation required against inadvertent intrusion over the long term No explicit definition of "Hazardous Lifetime" is provided by Canadian Nuclear Safety Commission (CNSC) regulations or guidance for the purpose of selecting an assessment timeframe. The use of natural analogues or comparison to background concentrations, while being acceptable arguments to justify a timeframe selection, are not requirements. The requirement is that the assessment encompasses the "time of the peak radiological impact predicted by the safety assessment." CNL has described its definition of hazardous lifetime, being the period over which peak potential releases and impacts from the facility may occur under normal evolution. The assessment examines the source term, its decay, and the degradation of barriers over time (Golder 2021b), and has shown the time and exposure pathway that demonstrate the highest hazard from the WRDF, occur within the 10,000 year assessment timeframe. It also shows that this highest hazard condition does not produce an unacceptable risk to the public (Ecometrix 2024). In fact, the contributions from the WRDF during normal evolution, and under most disruptive events, are well below the public dose limit of 1mSv/a, and even more so below the background dose rates (~4mSv/a for Winnipeg). As such, the barriers, which have lifetimes of thousands of years, and whose degradation over time are built into the normal evolution scenario, are commensurate with the hazardous life of the waste. CNL has made comparisons to natural analogues in its evaluation of long-term glacial events (Decommissioning Safety Assessment Report Section 5.4.3.2.6 Glaciation). Furthermore, CNL has addressed the uncertainty in predicting longer term events that fall outside of the 10,000 year timeframe, by looking at various sensitivity cases which examine the more rapid degradation of the facility barriers, and looking at long term natural glaciation and its impacts. The result in both cases show there is no unacceptable hazard to receptors (Golder 2021a), and thus the uncertainty associated with the assessment	

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					timeframe is not significant to the outcome of the assessment. As a result, no change is needed to the timeframe or the assessment. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024. CNSC. 2021. REGDOC 2.11.1-Volume III Safety Case for the Disposal of Radioactive Waste_Version 2. January 2021. Golder. 2021a. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021. Golder. 2021b. WR-1 Groundwater Flow and Solute Transport Modelling. Canadian Nuclear Laboratories Document No. WLDP-26000-REPT-005. Revision 4. December 2021.	
IR 189_R3	CNSC	DSAR - Section 2.4.3, Figure 2.4.3-1 Time, Pg 58 to 62	**Context:** The assessment timeframe of 10,000 years does not encompass the period of maximum impact as illustrated in the DSAR. The total radioactivity, even in comparison with Prairie Flats, does not approach background until after 50,000 years. The time frame of 10,000 years was used for other CNL disposal projects, for which regulatory reviews have been completed (NSDF) or are under way. Comparing the timeframes and the overall radioactivity based on the WR1 inventory suggests the WR1 assessment timeframe, if using the same approach, should be much longer.	CNL should reconsider a longer timeframe for post closure safety assessments that relate to the inventory planned for disposal.		
IR 190_R2	CNSC	DSAR - Section 2.4.3 Section 2.4.5.2.6 Natural Analogues, Pg 58 to 62 and 71 to 77	**Context:** For timeframe, see context to IR 189_R2. CNL is generally using surficial uranium deposits as an analogue for the future evolution of the WR1 ISD proposal. Further, they are specifically employing surficial uranium deposits as an	The use of a natural analogue, such as Prairie Flats uranium deposit, as a suitable analogue for the WR-1 reactor should be fully assessed and justified in CNL's documentation, in particularly with respect to staff reservations as described in context to IR 12_R2.	**Resolved As:** The use of natural analogues or comparison to background concentrations, while being acceptable arguments to justify a timeframe selection, are not requirements. The requirement is that the assessment encompasses the "time of the peak radiological impact predicted by the safety assessment." Natural analogues are not used in the selection of the assessment time	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			analogue for comparison with respect to the "composition and activity of the WR1 reactor". This application of natural analogues has implications for long-term containment and isolation to be provided by the selected disposal option, and assessment of its suitability for the waste source term.	The Maqarin natural analogue is shown to share some characteristics with the proposed WR-1 design. CNL is requested to assess the impact of an alkaline plume over the long-term. For additional context see new IR 220_R2.	frame. As such, this information request is resolved as it related to assessment time frames. Canadian Nuclear Laboratories (CNL) has made comparisons to natural analogues in its evaluation of long-term glacial events (Decommissioning Safety Assessment Report Section 5.4.3.2.6 Glaciation; Golder 2021a). In a glaciation scenario, when the Whiteshell Reactor Disposal Facility (WRDF) would theoretically be excavated, and scattered in a surficial deposit, the comparison is appropriate. CNL has prepared an assessment of the potential for an alkaline plume along the groundwater pathway (Golder 2021b), as it relates to corrosion and solubility rates for lead. The results indicated that there is no significant alkaline plume expected. **Change to EIS:** No specific changes to the Environmental Impact Statement (EIS) due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** Golder. 2021a. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021. Golder 2021b. Potential for an Alkaline Plume – Technical Memorandum GAL-063-20145046. WLDP-26000-041-000. Revision 0. December 2021.	
IR 191_R2	CNSC	DSAR - Table 2.4.5-2, pg 66	**Context:** The response provided by CNL is partially acceptable in its current form. In evaluating the updated DSAR with a particular focus on the three (3) bounding scenarios introduced in Section 5.4.3 and effects analysis in Sections 8.6.1 – 8.6.3, CNSC staff identified two issues related to the definition of, and underlying assumptions for, the Well-in-Plume scenario. It is important to understand definitions and assumptions relating to bounding assessments given their role providing limiting or worst-case predictions, particularly for the Well-in-Plume scenario, where the predicted dose exceeds the lower IAEA reference level for	A. CNSC staff request that CNL provide further justification as to why the shallow bedrock unit (or both basal till and shallow bedrock units) was not considered for the Well in Plume scenario, clarify and substantiate assumptions made relating to the yield for the hypothetical groundwater wells, and address the issues raised above regarding the assumed well screen radius. See bedrock aquifer map at	**Part A:** **Incorporated:** In accordance with REGDOC 2.11.1 Volume III, the normal evolution scenario is based on reasonable extrapolation of current site features and receptor lifestyles (CNSC 2021). Given the relatively low hydraulic conductivity encountered in both the till and bedrock in the vicinity of WR-1, the original Decommissioning Safety Assessment Report (DSAR) evaluation considered that the main water supply source in the event of future land use to the west of the site would be the Winnipeg River, with only the drinking water source being derived from a groundwater well. Common practice in the area is for shoreline residents to draw water from	**Partially accepted. Follow-up IR 191_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
			Disruptive Events (1 mSv/a) for five (5) out of six (6) considered receptors. They are described in further detail below. CNSC staff have identified the following items which require further clarification/elaboration from CNL: A. Assumptions regarding well: It is unclear why the basal till unit was selected for this scenario, especially given that the shallow bedrock unit was identified in the GWFSTMR as the primary pathway for contamination from the WRDF and has a higher average hydraulic conductivity (7.4E-07 m/s for shallow bedrock vs. 7.3E-08 m/s for the basal till, as per the hydrogeological study report). In fact, a bedrock aquifer map of southern Manitoba (Rutulis, 1986; Province of Manitoba | Environment, Climate and Parks (gov.mb.ca) identified that the yield for shallow bedrock aquifers in the area typically ranges from 0.01 to 0.5 L/s, which is much higher than the 0.002 L/s reported in Section 5.4.3.2.5 of the DSAR. Further to this point, anecdotal evidence based on inability to obtain groundwater from sampling in 2018 and 2019 is not sufficient to support the current assumptions on low yield, particularly given that there is currently no monitoring well installed in the shallow bedrock unit along the flow pathway from the proposed WRDF to the Winnipeg River (see new IR 220_R2). Additionally, it is unclear why a well screen with a radius of 0.051 m instead of a 0.1 m is selected for the drinking water well. B. Placement of Well in Plume: IAEA SSG-23 recommends that: "5.29. Normally, it is assumed that the representative person is located within the region of potential radionuclide contamination in the accessible biosphere giving rise to the highest radiological impact". It is therefore unclear to CNSC staff why the well is selected to be located half-way between the WRDF and the Winnipeg River, instead of immediately adjacent to the downgradient side of the WRDF, for this bounding scenario.	Province of Manitoba | Environment, Climate and Parks (gov.mb.ca) B. CNSC staff request that CNL conduct a sensitivity analysis to evaluate the effective dose implications associated with the location of the well (i.e., how do dose predictions change based on the position of the drinking water well relative to the WRDF). C. Given that the possibility of the Well in Plume scenario was deemed unlikely to occur within the 100-year Institutional Control period (see Section 5.4.3.2.5 of the DSAR), CNL is to confirm that lands with access restrictions during institutional control will include the downgradient area of the potential contaminated groundwater plume emanating from the WRDF.	the river, rather than drill wells. This is consistent with the expectation that river water would be easier, and thus more likely, for a self sufficient farmer to access, than a deep granitic bedrock well. With respect to the drinking water source, it was assumed in the DSAR that the supply well was in the direct line of the seepage pathway from the WR-1 to the Winnipeg River. Recognizing the potential uncertainty in the location and well yield of a future (potential) water supply well, and the concerns expressed in Federal Provincial Indigenous Review Team (FPIR)T Round 2 Information Request (IR) 191 (Part B), two additional groundwater flow and solute transport simulations were completed exploring the sensitivity of the results to potential future well locations being in closer proximity to WR-1. Sensitivity Scenario 19 considered a well location 100 metres from WR-1, while Sensitivity Scenario 20 considered a well location 10 metres from the edge of WR-1. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). The implications of the well distance on the effective dose to the receptors is discussed in Part B of the response. **Change to EIS:** The Environmental Impact Statement (EIS) has been updated to include the additional Sensitivity Scenarios in the groundwater flow and transport modelling assessment, through summarizing the Technical Memorandum referenced below to Section 6.3.2.8 Prediction Confidence and Uncertainty. The overall results of the groundwater flow and transport modelling (now totalling 29 Sensitivity Scenarios in addition to the Normal Evolution Scenario) were considered in the context of the overall risk assessment completed for the Project, as summarized by Ecometrix (2024) and included in Section 6.7.1.7.2 Application Case of the updated EIS. **Part B:** **Incorporated**: The Well in Plume scenario assumption in the DSAR was consideration of placement of a drinking water well halfway between the Whiteshell Reactor Disposal Facility (WRDF) and the Winnipeg River (approximately 250 m downgradient of the WRDF). As identified in Part A above, two additional groundwater flow and solute transport simulations were completed to explore a well in closer proximity to the WR-1 than previously assessed in the DSAR. Sensitivity Scenario 19 considered a well	

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[1]</th><th>Context and Rationale</th><th>Information Requirement (IR)[2]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td>C. Institutional Control: Section 3.4.9.2 of the EIS (Post-closure activities) “Some lands will have restrictions on future use and/or development to ensure there are no adverse effects to the safety assessment and modelling assumptions associated with the WRDF”.</td><td></td><td>location 100 metres from WR-1, while Sensitivity Scenario 20 considered a well location 10 metres from the edge of WR-1. An evaluation of the impacts to human health were considered by Ecometrix (2024) from the worst case loadings between Sensitivity Scenario 19 (100 m from WR-1) and Sensitivity Scenario 20 (10 m from WR-1). Consistent with the DSAR, a future on-site farm resident drinking from the well during post-closure was considered. At a closer distance between 10 and 100 m from the WR-1, the maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula). All doses are below the upper IAEA reference level of 20 mSv/a (IAEA 2011) for all receptors, except for the 3-month-old (formula) where the dose is predicted to be above 20 mSv/a.
<table>
<tr><th>Age Group</th><th>Sensitivity Scenario 19/20 Well in Plume (10-100m from WR-1) Total Dose (mSv/a)</th><th>DSAR Well in Plume (250 m from WR-1) Total Dose (mSv/a)</th></tr>
<tr><td>Adult</td><td>5.92E+00</td><td>2.54E+00</td></tr>
<tr><td>Child</td><td>2.80E+00</td><td>1.34E+00</td></tr>
<tr><td>Infant (nursing)</td><td>4.23E-03</td><td>4.23E-03</td></tr>
<tr><td>Infant (formula)</td><td>3.44E+00</td><td>1.96E+00</td></tr>
<tr><td>3-month-old (nursing)</td><td>2.98E+00</td><td>3.29E+00</td></tr>
<tr><td>3-month-old (formula)</td><td>2.44E+01</td><td>4.02E+00</td></tr>
</table>
Notes: Bold cells indicate exceedance of the lower IAEA reference level of 1 mSv/a. Shaded cells indicate exceedance of the upper IAEA reference level of 20 mSv/a
For non-radionuclides, similar to the DSAR hazard quotients for cadmium and lead exceed the target value of 0.2 for the adult and toddler based on the groundwater drinking water pathway. The magnitude of exceedance is higher for the well at a closer distance between 10 and 100 m from the WR-1, compared to 250 m from the WR-1. Overall, this assessment is</td><td></td></tr>
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					conservative and unlikely to occur as it is based on the assumption that the groundwater well is situated in the plume at the time of maximum loadings for all constituents. **Change to EIS:** The EIS has been updated to include the additional Sensitivity Scenarios in the groundwater flow and transport modelling assessment. The assessment of dose and risk implications is summarized in Ecometrix (2024). **Part C:** **Resolved As:** As per the current unpublished draft of the end-state plan shown below, the lands with access and or use restrictions (industrial use) during institutional control will include the downgradient area of the potential contaminated groundwater plume emanating from the WRDF.	

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					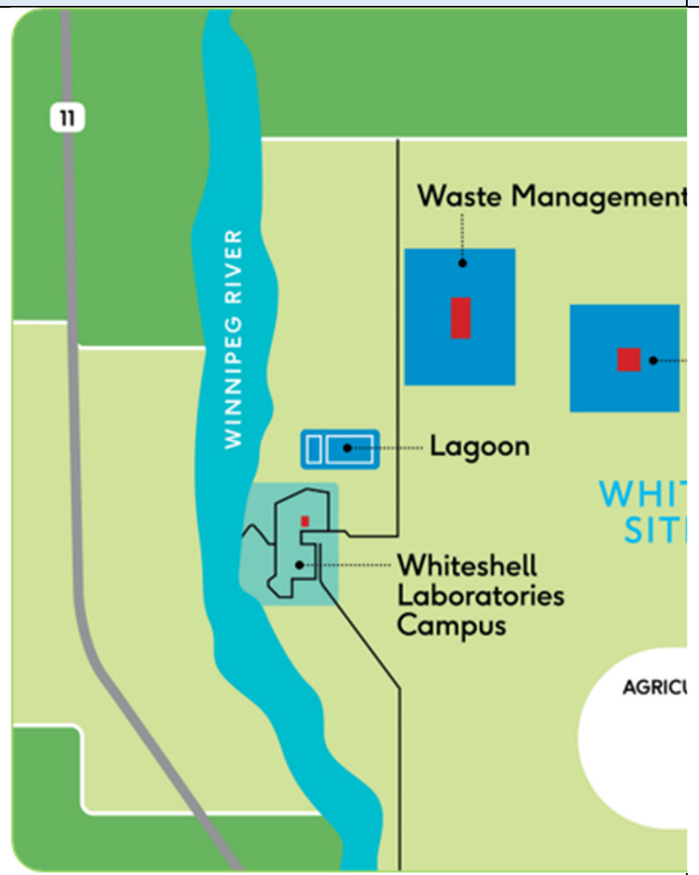 **Change to EIS:** No change to the EIS is required in response to this IR. **References:** CNSC. 2021. REGDOC 2.11.1-Volume III Safety Case for the Disposal of Radioactive Waste_Version 2. January 2021.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
					IAEA. 2011 . Disposal of Radioactive Waste. Specific Safety Requirements No. SSR-5. Vienna: International Atomic Energy Agency. ISBN 978-92-0-103010-8. Available at https://www.iaea.org/publications/8420/disposal-of-radioactive-waste. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024.	
IR 191_R3	CSNC	DSAR - Table 2.4.5-2, pg 66	**Partially accepted** **Context:** CNL's latest responses in Part A and Part B (Column H) have addressed CNSC's comments in Part B (Column G). However, CNSC's comments in Part A (Column G) have not addressed in the latest response provided by CNL. Moreover, it is not clear if the unpublished draft of the end-state plan is included in the EIS. If it is not, CNL's is expected to clarify in the EIS that lands with access restrictions during institutional control will include the downgradient area of the potential contaminated groundwater plume emanating from the WRDF. In addition, it is stated in the "Well in Plume" Scenario (EIS Section 6.7.1.8.1.4, page 6-389) that “The maximum estimated total dose for on-site farm residents who drink groundwater from a well in plume is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (EcoMetrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all	CNL is expected to address the following comment (Part A of CNSC's IR 191_R2): CNSC staff request that CNL provide further justification as to why the shallow bedrock unit (or both basal till and shallow bedrock units) was not considered for the Well in Plume scenario, clarify and substantiate assumptions made relating to the yield for the hypothetical groundwater wells, and address the issues raised above regarding the assumed well screen radius. See bedrock aquifer map at https://gov.mb.ca/sd/research-data-and-maps/maps/index.html?wg=groundwater. Also, if the unpublished draft of the end-state plan is included in the EIS, CNL's is expected to clarify in the EIS that lands with access restrictions during institutional control will include the downgradient area of the potential		

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			receptors, except the nursing infant who drinks cow's milk (EcoMetrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (EcoMetrix 2024)." The IAEA (2011) states that "(d) If human intrusion were expected to lead to a possible annual dose of more than 20 mSv (see Ref. [7], Table 8) to those living around the site, then alternative options for waste disposal are to be considered, for example, disposal of the waste below the surface, or separation of the radionuclide content giving rise to the higher dose. (e) If annual doses in the range 1–20 mSv (see Ref. [7], Table 8) are indicated, then reasonable efforts are warranted at the stage of development of the facility to reduce the probability of intrusion or to limit its consequences by means of optimization of the facility's design." The range 1-20 mSv/a as mentioned in the IAEA SSR-5 is applicable to human intrusion, while CNL apply this range to the "well in plume" scenario. CNL are requested to justify the applicability of the range of 1–20 mSv/a to the "well in plume" scenario. Additionally, assuming the range of 1-20 mSv/a is applicable in this scenario (if justified), the maximum dose "realistically"	contaminated groundwater plume emanating from the WRDF. Additionally, CNL are requested to justify the applicability of the range of 1–20 mSv/a to the "well in plume" scenario. Even if the range of 1-20 mSv/a is applicable to this scenario (if justified), CNL is requested to justify if the "realistically" estimated dose to the 3-month-old provide enough safety margin, considering uncertainties involved in the estimation.		

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			estimated above is right at the limit/max of the 1-20 mSv/a range. Considering uncertainties involved in the estimation process, there are not any safety margin provided in this scenario.			
IR 192_R2	CNSC	DSAR - Section 2.4.5 Normal Evolution Scenario, Pg 63 to 79	Context: A. Selection of critical receptors: The response is partially acceptable, however the following additional information is requested: • It is CNSC staff purview that the use of well water by a hypothetical permanent resident remains a reasonable activity as part of the Normal Evolution Scenario (NES). Additional information is required to further support whether or not the use of a deep well is considered reasonable by receptors as part of the NES. This information should consider the influence of climate change on the well water yield rates. For example, based on current climate change model predictions, would an increase in annual precipitation provide sufficient water for non-potable uses to be feasible? CNL staff should provide additional supporting information, or consider incorporating a receptor that uses well water in their NES. • For the Human Intrusion Scenario, although the scenario did consider a trespasser, CNL did not consider a permanent resident living on the site, who may be exposed to the contaminated material spread on the surface. This for instance could be the case if, once the exploration activities were abandoned, a person established a permanent residence on the site. The Human Intrusion Scenario is considered to be the most bounding, as its purpose is to demonstrate whether sufficient isolation has been provided between the receptors and the waste. This is especially important for intermediate level waste	A. CNL should provide additional supporting information, or consider incorporating a receptor that uses well water in their NES. B. CNL is expected to provide additional information looking at the assessment results of a Human Intrusion Scenario, and the potential impacts to a permanent resident, such as the farmer in the NES, and follow criteria as per REGDOC 2.11.1 vol III. C. The response on the performance of the natural barrier system is partially acceptable**.** Additional information requested in IR 50_R2 should address this area.	**Part A:** **Incorporated**: In accordance with REGDOC 2.11.1 Volume III, the normal evolution scenario is based on reasonable extrapolation of current site features and receptor lifestyles (CNSC 2021). Given the relatively low hydraulic conductivity encountered in both the till and bedrock in the vicinity of WR-1, the original Decommissioning Safety Assessment Report (DSAR) evaluation considered that the main water supply source in the event of future land use to the west of the site would be the Winnipeg River, with only the drinking water source being derived from a groundwater well. Common practice in the area is for shoreline residents to draw water from the river, rather than drill wells. This is consistent with the expectation that river water would be easier, and thus more likely, for a self sufficient farmer to access, than a deep granitic bedrock well. The well yields are driven largely by the hydrogeological conditions and properties of the overburden and bedrock, including hydraulic conductivity. As such, changes to precipitation rates as a result of climate change, are unlikely to significantly alter the well capacity. **Part B:** The human intrusion scenario looks at an exploratory borehole into the facility, and the spoils of that exploration being left at the surface. As such, the spoils of this work are not contaminated soil, and are not suitable for use in growing crops. Similarly they are not large rocks suitable for construction materials or as support structures. More likely, the spoils would be considered a nuisance material and removed from the area prior to any farming and piled or discarded out of the way of normal use areas. As such, the scenario for a trespasser, who only occasionally spends time near the rocky spoils, would still be appropriate for a farmer receptor during post closure. The trespasser receptor has been renamed as a 'nearby resident' in the Environmental Impact Statement (EIS) to better reflect the applicability of the scenario.	**Accepted** ***** *Accepted as IR was addressed, but CNSC staff noted that the section referenced and text added in the EIS were different than what is in IR response (Section 6.3.2.8).*

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			disposal facilities being proposed that are near-surface and is key for demonstrating safety. REGDOC 2.11.1 volume III, provides the following criteria to be used when assessing a Human Intrusion Scenario, based on IAEA SSR-5 and ICRP recommendations: (c) In relation to the effects of inadvertent human intrusion after closure, if such intrusion is expected to lead to an annual dose of less than 1 mSv to those living around the site, then efforts to reduce the probability of intrusion or to limit its consequences are not warranted. (d) If human intrusion were expected to lead to a possible annual dose of more than 20 mSv to those living around the site, then alternative options for waste disposal are to be considered; for example, disposal of the waste below the surface, or separation of the radionuclide content giving rise to the higher dose. (e) If annual doses in the range of 1 to 20 mSv are indicated, then reasonable efforts are warranted, at the facility development stage, to reduce the probability of intrusion or to limit its consequences by means of optimization of the facility's design (A) Performance of the engineered barrier system: The response is acceptable (B) Performance of the natural barrier system: The response is partially acceptable. Additional information is required as requested in IR 50_R2.		**Part C:** A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by CNL in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the EIS. Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of higher estimates of the diffusivity (Sensitivity Scenarios 25 and 26) and hydraulic conductivity (Sensitivity Scenario 25s and 26) of the grout and concrete structures (i.e., the subject of IR 39_R2, IR 40_R2, IR 48_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum WSP (2024). The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate additional sensitivity scenarios to further assess the peak loadings to the Winnipeg River (WSP 2024). Four additional sensitivity scenarios (Scenarios 23 to 26) were completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). Scenarios 27 and 28 were also completed to further assess the sensitivity of the grout hydraulic conductivity: 1) a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27); as well as an extreme upper bound	

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					assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project Androuet 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024).' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2.	

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					The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that	

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					peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safey Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. CNSC. 2021. REGDOC 2.11.1-Volume III Safety Case for the Disposal of Radioactive Waste_Version 2. January 2021. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	
IR 201_R2	CNSC	GWFSTMR and WR-1 Hydrogeological Study Report	**Context:** The response provided by CNL is partially acceptable. A number of CNSC staff's concerns remain unaddressed in the response provided by CNL. The rationale and impetus for recharge and anisotropy values in the groundwater flow and solute transport model are unclear. Points for further clarification/justification are discussed in detail below:	A. Interflow: CNL is expected to justify the clay - clay till – basal sand-fractured bedrock (with the K value for each hydro-stratigraphic unit increasing from top to bottom) is an appropriate configuration to generate interflow (i.e., among 5-11 mm/yr, only 0.8	**Part A through E:** **Incorporated**: A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in	**Partially accepted. Follow-up IR 201_R3 below**

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			(A) Regarding the infiltration rate: The initial IR requested that the value for recharge used (e.g., 0.8 mm/yr) be justified. From the GWFSTMR and the response from CNL, the justification provided by CNL indicates that the recharge value (i) is generated through calibration and yields acceptable error statistics, and (ii) is deemed comparable to the 5 – 11 mm/yr estimated by Thorne and Hawkins (2004). CNSC staff do not find these lines of evidence to be sufficient. This item is of importance, given the role that recharge plays in contaminant fate and transport. The bullets below highlight main concerns: • Interflow: It is stated in the GWFSTMR that "It should be noted that the above estimate includes a component of "interflow", which represents shallow infiltration that does not reach the water table". • Conservatism: In Section 3.4 of the GWFSTMR, the text states that "the Thorne and Hawkins (2004) estimate (of 5 – 11 mm/yr recharge) is reflective of the WL site in general (including the coarser grained unconsolidated deposits found in the vicinity of the WMA), whereas the infiltration rate applied in the model is specific to the clay-dominated soils encountered at surface within the model domain". (B) Regarding the sumps: The response provided by CNL states that comparisons were carried out between sump elevation, hydrostratigraphic units, and groundwater elevation at all sump locations. This information is not provided in the GWFSTMR, geosynthesis report, or the hydrogeological study report. (C) Regarding the K_h:K_v ratio and model calibration: The initial IR provided requested that the anisotropy used in the model be justified. From the response from CNL, the justification provided indicates that the K_h:K_v values used were (i) necessary to achieve an acceptable model calibration, and (ii) are (qualitatively) consistent with geological descriptions of the laminated nature of surficial deposits. CNSC staff do not find these lines of evidence to be sufficient. Anisotropy values within the model	mm/yr ends up as net infiltration into the groundwater table). Conservatism: CNL is requested to provide supporting evidence that an infiltration rate of 0.8 mm/year is appropriate for clay dominated soils in the study area. Thorne and Hawkins (2004) estimated that recharge represented 1 – 2% of annual precipitation (5 – 11 mm/yr) for the Dead Creek watershed, whereas Robertson and Cherry (1985) estimated that recharge represented 2 – 14% (11 – 74 mm/yr) of annual precipitation in the vicinity of the WMA. Conversely, the value used in the model represents <0.01% of annual precipitation (526 mm per year). As shown in Scenarios #2 and 10 in the sensitivity analysis, increases to recharge can increase peak mass loading and reduce travel times for contaminants such as tritium, Cl-36, and I-129. CNSC staff request that CNL provide further explanation and justification how the recharge values (0.8 mm/year for cover and soil, 2 mm/year for backfill) selected for the normal evolution scenario (NES) are conservative. As outlined in Section 7.5 of REGDOC 2.11.1 (Vol. 3), *"The licensee or applicant shall ensure that the safety case demonstrates how uncertainties are managed; for example, by […] using conservative assumptions to bound the uncertainties and showing that there remains a*	either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the EIS. Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, including consideration of increased recharge into the regional area surrounding WR-1 (i.e., the main subject of IR 201_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). CNL recognizes the non-uniqueness of the model calibration process, and therefore that uncertainties exist with respect to the input parameters for the groundwater flow and solute transport models. As noted in the responses to FPIRT Round 1 IRs, the values derived for the Normal Evolution Scenario stemmed from model calibration to observed groundwater levels and sump inflow rates in the vicinity of WR-1. To address the concerns about these calibration parameters with respect to recharge rates, an additional Sensitivity Scenario (#29) was completed whereby the regional recharge rates were assigned at 11 mm/yr (an increase from the 0.8 mm/yr assigned in the Normal Evolution Scenario). A recharge rate of 11 mm/yr aligns with the upper bound developed by Thorne and Hawkins (2004) from hydrological studies in the WR-1 area. To accommodate the increased recharge in the additional Sensitivity Scenario 29, an alternate set of hydraulic conductivities needed to be assigned in order to achieve a reasonable calibration to groundwater elevations in the vicinity of WR-1. An automated parameter estimation technique was used to arrive at a revised set of hydraulic conductivities, the results of which are presented in Appendix F of the above-noted Technical Memorandum (WSP 2024). While the overall calibration fit under these set of input parameters is not viewed as being as close as that achieved for the Normal Evolution Scenario (primarily because of the increased inflows to the sump at the WR-1 building relative to those measured in the field), the resulting parameter set was considered reasonable for consideration in the expanded set of Sensitivity Scenarios completed in response to IR201_R2. While the above considers an expanded range of parameter inputs for the regional conditions outside of the WR-1 footprint, the original set of Sensitivity Simulations is considered to bound the potential range for recharge into the WR-1 area itself (i.e., considering the effects of climate change, extreme precipitation events and/or flooding). This includes	

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			can affect recharge, which in turn influences contaminant fate and transport. The bullets below highlight CNSC staff's main concerns: <u>Absence of local K_v values:</u> The K values discussed in Section 2.4.2 (Hydraulic Conductivity) of the GWFSTMR represent horizontal conductivity (K_H) values. It is unclear from the GWFSTMR or the hydrogeological study report if there are any measurements of vertical conductivity (K_v) available to justify values used in the model, as well as corresponding anisotropy ratios. • <u>Groundwater levels used for calibration:</u> In their response, CNL states that the anisotropy ratio used was necessary in order to calibrate to groundwater elevations. However, it is stated in other reports (e.g. the geosynthesis and hydrogeological study reports) that there is significant uncertainty associated with groundwater elevation measurements due to seasonal variations, and in clay and clay-till units because these may not have fully stabilized following groundwater sampling and/or hydraulic testing. • <u>Non-uniqueness of model calibration:</u> In their response, CNL states that the use of a high anisotropy ratio was necessary to achieve acceptable calibration with the WR-1 sump. However, in their report regarding the WMA, Robertson and Cherry (1985) state that while previous authors invoked a strong anisotropy (500:1) in order to reproduce vertical gradients, this was not representative of actual geological conditions. Rather, these authors found that layering of permeability with depth in conjunction with moderate anisotropy (~50:1) represented more realistic conditions and yielded a better match with field data.	*sufficient margin for safety requirements to be met".* **B.** Information regarding sumps is not provided in the GWFSTMR, geosynthesis report, or the hydrogeological study report. CNL is to include this information to support the conclusion that other sumps do not impact the basal sand groundwater flow conditions. **C.** Absence of local K_v values: CNL is to present and discuss K_V values in the reports to support assertions that the values used in the model are reasonable. REGDOC 2.9.1, Appendix B.4 specifies that applicants should identify both vertical and lateral permeabilities in aquifers and aquitards. Groundwater levels used for calibration: Please indicate if, and how, these uncertainties were considered when calibrating groundwater flow models for the WRDF. Non-uniqueness of model calibration: CNL is to indicate if, and how, these uncertainties with groundwater levels were considered when calibrating groundwater flow models for the WRDF. As well CNL is indicate why a similar resolution was not explored for non-uniqueness of model calibration, as this could have impacts on	Sensitivity Scenario 2 (which considered a flooded WR-1 resulting in an infiltration rate into WR-1 of 135 mm/yr) and Sensitivity Scenario 10 (which considered an order of magnitude increase to the infiltration through the backfill to 20 mm/yr). The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The Environmental Impact Statement (EIS) was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26).	

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				infiltration and contaminant transport in the basal sand/upper bedrock. **Additionally, CNL is expected to clarify the following questions:** D. Supporting data: In Section 3.4.9.1.6 of the EIS, it is stated that "The detailed design (AECOM 2020) of engineered cover was confirmed to limit groundwater recharge through vertical infiltration to 0.8 mm/year". However, the document in question (AECOM, 2020), simply reports that infiltration ≤0.8 mm/yr throughout the 100-year design life is a performance requirement. Please provide technical documentation from laboratory/field testing, analogue sites, or operational experience demonstrating that this performance criterion is achievable. Similarly, what is the rationale for defining the infiltration value for pervious backfill as 2 mm/yr? E. Consideration of climate change: Table 4-4 shows the stepwise variation in cover recharge through time, which is intended to account for grout degradation. It is unclear if the impacts of increasing precipitation associated with climate change throughout the modelling period are accounted for, given that current climate trends predict an overall increase in precipitation (Changes in precipitation - Canada.ca). Please indicate if the potential impacts of climate change on recharge rates have been considered for the model. This	With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project [Androuet 2024]). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings are evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.1.3 has been updated to include the following summary: 'The groundwater solute transport model for the Project was updated to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of .25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these	

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				requirement is highlighted in REGDOC 2.11.1 (Vol. III), "a normal evolution scenario should include expected conditions or events such as, earthquakes, climate shifts or the onset of glaciation".	receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River.' **References:** Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safey Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Thorne and Hawkins. 2004. Hydrological Processes and Water Balance for the Dead Creek Watershed of Southeastern Manitoba. Proceedings form Northern Research Basins Water Balance, Victoria, Canada. March 2004. IAHS Publ. 290.164p. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geopathway Sensitivity Analysis. November 2024.	

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					Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
IR 201_R3	CNSC	GWFSTMR and WR-1 Hydrogeological Study Report	**Partially accepted** **Context:** Regarding Part A: CNL considered the increased recharge rate in a sensitivity analysis (Scenario 29). When comparing the current "base case" (i.e., the model based on the current calibration result) with Scenario 29, which one is more representative of the actual conditions? If the parameters obtained through the calibration process for Scenario 29 are used for the "normal evolution scenario", what is the difference in the results when comparing with the results from the current "normal evolution scenario"? Regarding Part B: CNSC's comments are not addressed in the latest response provided by CNL in IR 201_R2 Regarding Part C: CNSC staff's concerns regarding Kv and uncertainties in groundwater level used in the calibration remain unaddressed. Regarding Part D: CNSC staff's concerns regarding infiltration rate through the engineered cover and backfill remain unaddressed. Regarding Part E: CNSC staff's concerns regarding climate change remain unaddressed.	CNL is requested to clarify, when comparing the current "base case" (i.e., the model based on the current calibration result) with Scenario 29, if the current "base case" is more representative of the actual conditions, particularly considering the representativeness of the recharge rate; and to provide justification. CNL is expected to address CNSC staff's comments in Part A, B, C, D and E of IR 201_R2 provided in 2023.		
IR 204_R2	CNSC	GWFSTMR - Section 4.1.4, Pg 67	**Context:** In their response CNL states that “the grout is not intended to act as a barrier to contaminant release.” And then states that the “property of the grout important to the modelling is the hydraulic conductivity, which determines how quickly water can	As part of a requirement for a multiple-barrier approach, in accordance with REGDOC 2.11.1 volume III, CNL should clarify whether the grout IS a barrier, and if so, what safety functions it is providing. CNL should provide	**Incorporated**: The role of the grout in the Whiteshell Reactor Disposal Facility (WRDF) is relatively minor. The grout is effectively used to as a means to stabilize the structure and prevent subsidence over time. The grout is not credited as having an effect on contaminant containment, either as a barrier to	**Accepted**

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			move through the grout to the foundation wall, which affects the rate of contaminant migration through the foundation wall." This by definition infers that the grout provides some barrier function, by helping to control the rate of contaminant migration. CNL states in their response that, an Instant Degradation Scenario was modelled (Scenario 14), whereby the grout and foundation hydraulic conductivity is assumed to instantly degrade following the institutional control period, to that of the surrounding soil. It is not clear if this is a conservative approach, and whether the grout when fully degraded, is expected to have a lower permeability than the nearby soil. In addition, the grout and other cementitious materials are fractured medium. The values of hydraulic conductivity depend on size and frequency of the fractures. No information has been provided to as to the formation of fractures, and how those fractures will contribute to preferential flow (either through direct modelling of flow through the fracture network, OR through the use of an equivalent porous media).	additional information to support their assumption that the fully degraded grout is expected to have an equal to or lower permeability than the nearby soil/bedrock. CNL is requested to provide additional information on the potential for the grout to form a fracture network, and the impact that fracture flow will have to containment. Please see IR 39_R2 and IR 40_R2 as the issues are related.	releases, or as a source of preferential chemical conditions for corrosion control. This conservatively assesses the potential impacts of the Project, and allows the grout to have beneficial impacts, such as containment and low corrosion conditions, without requiring the same level of rigour expected of a barrier which is expressly utilized in the assessment to achieve the desired results. While plans are in place to ensure a robust and effective grouting program for WR-1, this Information Request (IR), as well as a number of other Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs), requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by CNL in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, Canadian Nuclear Laboratories (CNL) completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project [Androuet 2024]). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition.	

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					The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a	

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					farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for	

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					all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References**: WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	

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					IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	
IR 205_R2	CNSC	GWFSTMR - Section 4.1.4, Pg 67	**Context:** CNL has provided some reasonable arguments and lines of evidence to test the robustness of the grout and building foundation in ensuring safety, through the use of both a bounding scenario (Instant Degradation Scenario was modelled (Scenario 14)), as well as a sensitivity analysis on the degradation rate of the grout. However, the grout and other cementitious materials are fractured medium. Those values of hydraulic conductivity depend on size and frequency of the fractures. No information has been provided to as to the formation of fractures, and how those fractures will contribute to preferential flow (either through direct modelling of flow through the fracture network, OR through the use of an equivalent porous media).	CNL is to provide information on the formation of fractures, and how those fractures will contribute to preferential flow (either through direct modelling of flow through the fracture network, OR through the use of an equivalent porous media).	**Incorporated**: While plans are in place to ensure a robust and effective grouting program for WR-1, this Information Request (IR), as well as a number of other Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs), requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition.	**Accepted**

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					The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a	

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					farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for	

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					all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	

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					IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	
IR 206_R2	CNSC	GWFSTMR - Section 4.1.5, Pg 67	**Context:** Similar to CNLs response to IR 205, CNL has provided some reasonable arguments and lines of evidence to test the robustness of the building foundation in ensuring safety, through the use of a bounding scenario where the foundation was removed (Scenario 15). However, the building foundation and other cementitious materials are fractured medium. Those values of hydraulic conductivity depend on size and frequency of the fractures. No information has been provided to as to the formation of fractures, and how those fractures will contribute to preferential flow (either through direct modelling of flow through the fracture network, OR through the use of an equivalent porous media).	CNL is to provide information on the formation of fractures, and how those fractures will contribute to preferential flow (either through direct modelling of flow through the fracture network, or through the use of an equivalent porous media).	**Incorporated:** While plans are in place to ensure a robust and effective grouting program for WR-1, this Information Request (IR,) as well as a number of other Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs), requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition.	**Accepted**

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					The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: ''In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a	

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					farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for	

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IR 207_R2	CNSC	GWFSTMR - Section 5.1 Table 5-4, Pg 90, 97, 109	**Context:** The response provided by CNL is partially acceptable in its current form. A detailed understanding of the parameterization and conceptualization of Scenario 1 is important, given that outcomes from Scenario 1 are used to support the argument that the equivalent porous media concept is conservative for the model. In their response, CNL indicates that the preferential pathway "… could be an unsealed or improperly sealed pipeline, a "utility" channel, or an unknown geological feature. Because the geometry and orientation of such a feature is unknown, this was implemented in the solute transport model by increasing the pathway flow between WR-1 and the Winnipeg River by a factor of 10". CNSC staff's comments are provided below: **(A) Simulation of fracture flow:** Given that the model assumes there are no discrete features (Table 3-1), how would this method account for open channel or fracture flow between WR-1 and the Winnipeg River, where there would be little to no attenuation of contaminant transport through interaction with the geological matrix (i.e. solute partitioning) during rapid travel times? How did the measures taken (10-fold increase in flow rate) impact groundwater velocity (where mean advective travel time is 100 years in the NES) and solute retardation (adsorption was considered for the bedrock pathway)? **(B) Hydraulic conductivity of bedrock**: As indicated in Section 3.3.4 of the GWFSTMR, the hydraulic conductivity (K) value assigned for the model is 5E-07 m/s. This document does not report any measured values for K in bedrock in Figure 3-2, nor does the Geosynthesis Report include any measured K values for	A. CNL is to provide further clarification and explanation as to how these items were accounted for, and how Scenario 1 is deemed to adequately integrate these concerns. This is important given that this Scenario represents the largest increase in mass loading rate for most radionuclides in the sensitivity analysis outside the increasing of mass inventory. B. CNL is to provide further material substantiating the use of the given K value (5E-07 m/s) in bedrock, derived either through information available from previous site investigations, or through further in-situ testing and characterization. CNL should directly address the assessment of uncertainty considered in Scenario 11 of the sensitivity analysis – how was a twofold increase in K judged to be conservative, and to adequately represent upper bound conditions? C. CNSC staff request that CNL report calculated predicted radiation doses and risks from migration of radionuclides/hazardous substances	**Part A and B:** **Incorporated:** A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of higher estimates of the diffusivity (Sensitivity Scenarios 25 and 26) and hydraulic conductivity (Sensitivity Scenario 25 and 26) of the grout and concrete structures (i.e., the subject of IR 39_R2, IR 40_R2, IR 48_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of	**Partially accepted. Follow-up IR 207_R3 below**

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			shallow or deep bedrock. Table 3-1 in Section 3.3 in the Hydrogeological Study Report indicates that three (3) single-well response tests were carried out at boreholes 16-2, 16-4, and 16-7 in 2016, with an average of 7.4E-07 m/s. However, results for two of these tests appear unreliable (results reported as <1.3E-07 with no indication as to why). With only one reliable value (1.96E-06 m/s) reported in the documentation provided, the dataset for K in bedrock does not appear to be statistically robust and is not nearly as comprehensive as that for the clay, clay-till, and basal sand units. Additionally, the sensitivity analysis (Scenario 11) only considers a twofold increase of K in the upper bedrock. This concerns CNSC staff, given that the shallow bedrock unit is conceptualized as the main pathway for contaminant transport in the model. **(C) Predicted dose and hazard quotients:** Peak mass loading rates for radiological and non-radiological COPCs (Table 5-3), as well as simulated groundwater flow rates (Table 5-4) are reported for the scenarios (including Scenario 1) outlined in the sensitivity analysis in the GWFSTMR. The impacts of sensitivity analyses on predicted dose and hazard quotients are discussed qualitatively in Section 6 of the DSAR. However, CNSC staff cannot find any text wherein outcomes from the sensitivity analyses are explicitly compared to acceptance criteria outlined in Section 5.2 of the DSAR. CNSC staff also note that this information is also not presented in a format which would allow for comparison (i.e. peak mass loading cannot be directly compared with radiological dose limits or water quality guidelines). It appears that risks associated with radiological dose and hazardous substance exposure are compared to acceptance criteria only for the normal evolution and bounding (WRDF Barrier Failure, Human Intrusion, and Well in Plume) scenarios in the DSAR. Section 8.1.5.2 in REGDOC 2.11.1 (Vol. III) states that "*It is expected that the comparison between the safety assessment end points and the acceptance criteria will explicitly take the uncertainty in the safety assessment into account […] for deterministic safety assessments* (such as the one undertaken for the WRDF)*, the range of uncertainty in the*	based on results from the sensitivity analysis scenarios and compare them to (i) the acceptance criteria outlined in Section 5.2 of the DSAR for the facility timeframe, and (ii) the normal evolution scenario. This includes anticipated radiological and hazardous substance doses to humans and non-human biota, as well as comparison of maximum predicted concentrations of radionuclides and hazardous substances at the groundwater seepage zone in the Winnipeg River to applicable federal/provincial water quality guidelines. These results should be discussed quantitatively and/or summarized in a table. If doses for radiation or hazardous substances are not calculated for a certain scenario because they are adequately described within the context of another scenario, appropriate rationale and justification should be provided.	the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS**: Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on	

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					The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume	

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					from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **Part C:** **Resolved As:** The sensitivity cases presented in the EIS and supporting documentation are not intended to be an exploration of the expected variation in specific parameters, or known ranges of uncertainty in a particular system. The sensitivity analyses are intended to explore how impactful a change to a key parameter is on the outcomes of the model. This allows CNL to focus their attention on parameters that have the ability to most significantly impact the model results. For example, the sensitivity analyses demonstrated that parameters such as hydraulic conductivity or sorption rates, were less important to the overall output than corrosion rates of the waste form. CNL used this information to determine that additional scrutiny and review of the selected corrosion rates was needed, and CNL produced a Waste Form Synthesis Report to support and justify the selection of conservative corrosion rates for the waste form. CNL assessed and characterized uncertainty and ranges of potential parameter values through the use of bounding scenarios. These scenarios look at events that would most likely result in the highest doses to a	

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					receptor, such that the Normal Evolution Scenario, and any uncertainty or variation in the parameters would be less than the bounding doses. CNL has thus accounted for uncertainty in the dose estimates and assessment outcomes. CNL has however, taken steps to perform additional sensitivity studies in response to Information Requests from the FPIRT (see part A&B above). CNL has carried these additional sensitivities cases to a dose end point as a result of FPIRT interest. This is not to say that CNL agrees all of these sensitivity cases represent realistic or likely scenarios, but instead are intended to succinctly demonstrate that the normal evolution scenario that CNL has presented is realistic, and appropriately conservative, and explores those aspects of uncertainty that are capable of impacting the results of the assessment. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: Golder. 2021. WR-1 Groundwater Flow and Solute Transport Modelling. Canadian Nuclear Laboratories Document No. WLDP-26000-REPT-005. Revision 4. December 2021. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024.	

IR	Reviewer	Reference to EIS, or supporting document[1]	Context and Rationale	Information Requirement (IR)[2]	Response from CNL	Accepted/ Request for follow-up information
IR 207_R3	CNSC	GWFSTMR - Section 5.1 Table 5-4, Pg 90, 97, 109	**Partially accepted** **Context:** CNSC staff's comments in Part B in IR 201_R2 remain unaddressed. Regarding Part C: CNL indicates in their response that "CNL assessed and characterized uncertainty and ranges of potential parameter values through the use of bounding scenarios". If a bounding approach was used, the applicant should provide a detailed rationale for the selection of each bounding scenario. The simulation results for these bounding scenarios should also be provided.	CNL is requested to address CNSC staff's comments in Part B provided in IR 201_R2 from 2023. Regarding Part C: CNL is expected to provide a detailed rationale for the selection of each bounding scenario to address uncertainty of relevant parameters, and the simulation results for these bounding scenarios.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
209_R2	CNSC	CNL Whiteshell Reactor 1 - Phase 1000 Grout Formulation Testing Report	**Context:** This report investigated mechanical and dynamic (set, flow etc.) properties of fresh grout and cured grout, following appropriate ASTM standards. This report did not provide information about characterization of shrinkage, cracking, and corresponding hydraulic conductivity enhancement with respect to cracking induced during curing stage. Enhancement of hydraulic conductivity has been observed and well documented for grout formulation of in-situ disposal of decommissioned reactors (Reigel et al. 2012; Staub et al. 2011; Ralph et al. 2010; Dixon et al. 2009). For instance, at the Savannah River site, a study by SRNL (Ralph et al. 2010) compared the hydraulic conductivity of core samples taken from the as-built grouted reactor vault, and simulant grout prepared in the lab. The results showed that the as-built vault samples were much more permeable than the lab samples. The average hydraulic conductivity result for vault	CNSC staff expect CNL to provide further information about the characteristics of shrinkage and cracking, and the enhancement of hydraulic conductivity of grout during curing stage.	**Incorporated**: Canadian Nuclear Laboratories (CNL) has conducted further testing as part of the WR-1 Grout Scale up Testing Report (Golder 2023). The preliminary results from the hydraulic conductivity testing did not pass the acceptability criteria, and therefore, warranted further testing. The results from the additional testing passed the acceptability criteria. Upon investigation, CNL determined that the preliminary results that did not pass the criteria, were due to the concrete cores being taken too early from the grout block, and were still increasing in strength. The extraction process likely damaged the cores and skewed the hydraulic conductivity results. The second set of cores taken from the same test block, after the grout had sufficiently cured were extracted and passed without issue. A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by CNL in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the Project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary:	**Accepted**

[3] Unless otherwise stated, the section noted refers to the draft EIS.

[4] Where IR contents note "See also related IR(s)", responses from CNL may be similar or provided in a single detailed response, but it was preferred to keep original IRs distinct.

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			samples is 2~3 orders of magnitude greater than that of the simulated grout sample with an average of 4.1×10-9 cm/s. The cause of the permeability enhancement for grout is likely the formation of fractures resulting from processes like thermal-cracking, drying shrinkage, autogenous shrinkage etc. that a cementitious grout will develop during the curing stage. The magnitude of permeability enhancement depends on the crack aperture and frequency. It is unclear how and to what extent the shrinkage and cracking of grout will develop in curing stage. Therefore, there is a need for further investigation, to ensure a better understanding of the fracture characteristics (e.g. aperture, frequency, comnnectivity…) and its impact on its hydraulic conductivity. **References:** Reigel MM, Edwards TB, Pickenheim BR. 2012. Operational and Compositional Factors that Affect the Performance Properties of ARP / MCU Saltstone Grout. Savannah River National Laboratory. February 2012.		'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings are evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Staub AV, Marzolf AD, Cozzi AD. 2011. Low-Level Cementous Waste Sample Retrieval and Analysis at Savannah River site – 11149. In proceedings of WM2011 Conference, February 27-March 3, 2011, Phoenix AZ. Dixon, K. L., J. R. Harbour, M. A. Phifer, 2009. Hydraulic and Physical Properties of ARP/MCU Saltstone Grout, SRNL-STI-2009-00419 Rev. 0. Savannah River Nuclear Solutions, LLC. Ralph L. Nichols Kenneth L. Dixon. 2010. Permeability Testing of Simulated Saltstone Core and Vault 4 Cell E Saltstone. SRNL-STI-2010-00657, Revision 0		the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in	

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					the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Golder. 2023. WR-1 Scale up Test Report. WLDP-26000-TR-002881. June 2023. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024.	
210_R2	CNSC	GWFSTMR – Section 4.1.4 General	**Context:** In Section 4.1.4, it is mentioned that "Recognizing that not all of the areas within the building will be fully penetrated by the grout, and some voids will remain after final grout placement, a higher value of 5.0E-08 m/s was selected to represent the grout in the WRDF models (i.e., a factor of 50 times greater than the maximum value specified by CNL's grout fill requirements (CNL 2017b) and 50 times greater than the maximum measured value at Savannah River)". Further, in Section 4.1.5, it is	In order to propose adequate values for the hydraulic conductivity (and, to a lesser extent, for diffusivity), evaluating the expected crack openings, cracking patterns as well as cold joints interface details should be performed through modeling considering settlement, shrinkage (including restrained shrinkage), thermal and humidity conditions as well as pouring processes. Assessing the hydraulic	**Incorporated:** Canadian Nuclear Laboratories (CNL) has conducted further testing as part of the WR-1 Grout Scale up Testing Report (Golder 2023). The preliminary results from the hydraulic conductivity testing did not pass the acceptability criteria, and therefore, warranted further testing. The results from the additional testing passed the accepability criteria. Upon investigation, CNL determined that the preliminary results that did not pass the criteria, were due to the concrete cores being taken too early from the grout block, and were still increasing in strength. The extraction process likely damaged the cores and skewed the hydraulic conductivity results. The second set of cores taken from the same test block, after the grout had sufficiently cured were extracted and passed without issue. A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by CNL in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific	**Follow-up IR 210_R3 below**

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			mentioned that "grout is not expected to completely penetrate and fill every void space. However, the existence of voids and cold joints is not critical to overall safety of the system". In the same section, the report states that "the hydraulic conductivity applied to the building foundation (i.e., the primary barrier) in the model at the beginning of the simulation was specified to be $5x10^{-10}$ m/s. This value is approximately 5 times higher than the highest measured value obtained as a part of testing of the foundation materials". **Rationale:** This statement that the existence of voids and cold joints is not detrimental to the overall safety of the system is untrue. Further, the Hydraulic Conductivity of concrete structures (including the grout) is highly dependent on the cracking pattern of the elements. Typical data available in the literature show a significant rise of the Hydraulic Conductivity between sound (non-cracked) or 0.4 mm-cracked specimens typically of about 5 orders of magnitude. Cracks in the grout and in the existing structure control the	conductivity (and, to a lesser extent, the diffusivity) of the mix-design when subjected to various crack openings, cracking patterns and cold joints details is required to allow for the use of adequate and representative values into CNL analyses. This may impact CNL analyses related to (non-exhaustive list) the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects. Further, the grouting process and grout placement should actually be planned to completely fill the below-grade areas to ensure the adequacy of the assumptions made in the analyses.	parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the Project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geopshere pathway. With respect to the fill of the facility, and CNL's statement regarding the existence of voids, CNL wishes to clarify. CNL does indeed plan to systematically and effectively fill as many voids as practical. However it is not credible to set a 100% fill as a target, because it is impossible to reliably verify. CNL's intent was to acknowledge that voids may exist, and account for them in the analysis. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26).	

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			Hydraulic Conductivity throughout the material. Therefore, the hydraulic conductivity and diffusivity values used for both the concrete foundation and the grout are actually far from being conservative, including in the sensitivity analyses performed. These values may even not be representative of the current condition of the existing structure when cracks are taken into consideration. In addition, the impact of cold joints generated by the pouring process (in lifts) would create preferential pathways for groundwater movements. Along with the cracks in the grout and in the existing structures to be filled out, these cold joints would control the Hydraulic Conductivity throughout the material. It is unclear from the documentation provided what will be the length of time for the proposed disposal facility to resaturate once grouting of the facility will be completed. It is also unclear what will be the length of time for the proposed disposal facility to start being in contact with groundwater.		With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings is evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event	

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					The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecoetrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** Golder. 2023. WR-1 Scale up Test Report. WLDP-26000-TR-002881. June 2023. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commissioning, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024.	

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					Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	
210_R3	CNSC	GWFSTMR – Section 4.1.4 General	**Context:** CNL's response is similar to the response provided to comment IR 39_R2 and there CNL is to refer to CNSC staff IR 39_R3. In addition, CNL has not addressed CNSC staff concern regarding the statement that the existence of voids and cold joints is not detrimental to the overall safety of the system is untrue.	CNL is requested to revise their response by taking into account the results of the analyses which have been required to be updated (see IR 39_R2 and 39_R3), and to address CNSC staff concern regarding the statement that the existence of voids and cold joints is not detrimental to the overall safety of the system is untrue. A science and evidence-based demonstration (in particular, not relying only on assumptions) of CNL statement is expected.		
211_R2	CNSC	GWFSTMR – Section 4.2.2.4, Pg 75 to 77	**Context:** References for sorption coefficients used in the solute transport model are (i) Ticknor and Vandergraaf (1996, 1994), which is a compilation of coefficients for modelling theoretical nuclear fuel waste in the Lac du Bonnet granite based on lab results, literature surveys, and analogues, as well as (ii) Stenge and Peterson (1989), for	CNSC staff request that CNL provide further justification regarding the suitability and conservatism of sorption and diffusion coefficients used for predictive solute transport modelling. Please discuss the rationale supporting use of linear vs. non-linear sorption isotherms in the context of the WRDF, as	**Incorporated**: A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of expanded ranges for the sorption and diffusion applied in the modelling to reflect uncertainty in these input parameters; i.e., the subject of IR 211_R2. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024).	**Follow-up IR 211_R3 below**

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			materials with <10% clay content and pH between 5 and 9. These documents were not shared with CNSC staff. As such, it is difficult for us to evaluate the suitability and conservatism of the sorption coefficients used for predictive modelling. For example, do the coefficients used account for potential impacts on groundwater pH from concrete or KOH? Were the geological materials considered in these studies similar to those at the WRDF site? Do the ranges of concentrations used to calculate the sorption coefficients match or exceed those expected in the geosphere around the proposed WRDF? Additionally, no justification is provided regarding the use of a linear sorption isotherm over a non-linear sorption isotherm (e.g. Freundlich or Langmuir isotherms). Similarly, the diffusivity in cementitious-based materials and concrete structures (including the grout) depends on the cracking pattern of the elements. Cracks in the grout and in the existing structure control the diffusivity throughout the material. It is unclear if the diffusivity values used for both the concrete foundation and the	well as how the effects of crack openings and cracking patterns were considered for diffusivity values.	The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the Project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. With respect to the adsorption isotherms, the solute transport modelling has considered linear isotherms for all parameters. It is recognized that for some solutes the adsorption isotherm may be non-linear, though Sheppard and Thibault (1990) note that at usual environmental concentrations the differences between linear and non-linear isotherms are often very small. Further, it is also recognized that a Kd approach is an empirical approximation of the underlying physical-chemical processes that affect attenuation along the flow path between WR-1 and the Winnipeg River. To address this overall uncertainty in the sorption process within the groundwater flow and solute transport model simulations, a wide range was considered for the Kd parameter in the additional Sensitivity Simulations referred to above. This includes Sensitivity Simulations 23 and 24 which incorporate an expanded upper and lower bound for the Kd along the geo pathway. The following references will be provided as part of the EIS submission. Vandergraaf TT, Ticknor KV. 1994. A Compilation and Evaluation of Sorption Coefficients Used in the Geosphere Model of SYVAC for the 1990 Assessment of the Whiteshell Research Area. AECL-10546. September 1994. Ticknor KK, Vandergraaf TT. 1996. A Revised Compilation of Sorption Coefficients for Use in Geosphere Models in Performance Assessments of Used Fuel Disposal in Granitic Environments. AECL-11343. August 1996. Strenge DL, Peterson SR. 1989. Chemical data bases for the Multimedia Environmental Pollutant Assessment System (MEPAS). Version 1, Battelle Memorial Institute. December 1989. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26).	

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			grout take into account the effects of crack openings and cracking patterns to allow for the use of adequate and representative values into CNL analyses. **References:** Vandergraaf TT, Ticknor KV. 1994. A Compilation and Evaluation of Sorption Coefficients Used in the Geosphere Model of SYVAC for the 1990 Assessment of the Whiteshell Research Area. AECL-10546. September 1994. Ticknor KK, Vandergraaf TT. 1996. A Revised Compilation of Sorption Coefficients for Use in Geosphere Models in Performance Assessments of Used Fuel Disposal in Granitic Environments. AECL-11343. August 1996. Stenge DL, Peterson SR. 1989. Chemical Data Bases for the Multimedia Environmental Pollutant Assessment System (MEPAS). Version 1, Battelle Memorial Institute. December 1989.		With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings is evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event	

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					The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. 20 June 2024. Sheppard, M. I., and D.H. Thibault. Default Soil Solid/Liquid Partition Coefficients, Kds, for Four Major Soil Types: A Compendium. Environmental Research Branch, Whiteshell Nuclear Research Establishment, Atomic Energy of Canada Limited, Pinawa, Manitoba. In Health Physics Vol. 59, No. 4 (October). Pp. 471-482, 1990. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021.	

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					IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024.	
211_R3	CNSC	GWFSTMR	**Context:** CNL response regarding cementitious-based materials and concrete structures is similar to the response provided to comment IR 39_R2, thus please see CNSC staff IR 39_R3. In addition, CNL has not addressed CNSC staff concern regarding the diffusivity in cementitious-based materials and concrete structures (including the grout), being dependent on the cracking pattern of the elements.	CNL is requested to revise their response by taking into account the results of the analyses which have been required to be updated (see IR 39_R2 and 39_R3), and to address CNSC staff concern regarding the diffusivity in cementitious-based materials and concrete structures (including the grout), being dependent on the cracking pattern of the elements.		
212_R2	CNSC	EIS - Section 11	**Context:** In the monitoring programs presented in Section 11.0 with regards to groundwater and surface water quality monitoring, CNL has not described any corrective action that they plan to implement should the monitoring program identify contamination and/or degradation of groundwater and/or surface water quality higher than expected, or non-	CNL is to develop and provide a formal Corrective Action Plan to ensure that events such as those mentioned in CNSC staff comment would be controlled and their potential effects mitigated.	**Resolved As:** Corrective actions for the valued components are provided under the “Trigger for Further Action” heading in the “Project Phase, Potential Effect and Conceptual Monitoring Program” column in Table 11.1-1. As part of Canadian Nuclear Laboratories’ (CNL’s) licence (NRTEDL-W5-8.00/2024), environmental monitoring of the Whiteshell Laboratories (WL) site is required. It is anticipated that the monitoring at the WL site and surrounding area will continue to proceed in accordance with CNL’s existing Environmental Monitoring Program. This includes sampling and analysis of ambient air, surface water and groundwater, including the Winnipeg River, sediment, vegetation, garden produce, game animals and fish. CNL commits to the adaptive management approach outlined in Section 11.2 of the Environmental Impact Statement (EIS; WSP 2025) that includes identifying unplanned conditions, assessing the magnitude and scope, and providing the underlying data for determining the appropriate mitigative actions. If the Environmental Assessment Follow-up Program for the Project identifies that adverse environmental effects are greater than predicted or results for any monitored	**Follow-up IR 212_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			compliance with regulatory requirements, other than including additional sampling and analysis to determine/confirm the source and extent of the contamination.		contaminants of potential concern are above the established limits, then CNL will investigate the results, which may include additional sampling and analysis to help determine/confirm the source and extent of the contamination. CNL would also evaluate whether they result in changes to the conclusions in this EIS. If changes are confirmed, then CNL will evaluate the need for revised mitigation actions and management practices to manage effects, with engagement Indigenous Communities for openness and transparency. CNL has examined a range of scenarios that could be expected to impact the normal evolution of the facility, as well as the expected normal evolution itself which includes the expected degradation of the facility over time. The comment speaks to an event that is unforeseen at this time that would result in a condition that has not been identified through the assessments. By their nature, these events would be unknown, and thus no specific formal action plan can be committed to at this time, as the type of action taken would be highly dependent on the scope and cause of the situation. Examples might include increased or modified monitoring, collection and treatment of contaminated water/soil, installation of additional barriers, or remediation or removal of the Whiteshell Reactor Disposal Facility. A formal corrective action plan would only be drafted once a condition is identified, and a likely cause and extent is determined. Institutional controls are proposed to be in place for at least 100 years post closure, and the continuation of these controls would be based on regulatory input. Stopping a monitoring activity would occur once it can be shown that an effect has stabilized or has been reduced to a level where it is no longer considered significant by regulatory requirements or community concerns. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
212_R3	CNSC	EIS - Section 11	**Context:** CNL has provided examples of types of actions that would potentially be implemented in a situation as described in the comment, and has focused their response on the fact that corrective actions to be implemented would be highly dependent on the scope and cause of the situation.	CNL is requested to assess the elements referred to in the "Context" column. CNL is also requested to respond to the specific requests outlined in the "Context" column with regards to the effectiveness of existing and new barriers, and to		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Nevertheless, CNL has not addressed what would be some situations that are considered to have the highest probability of occurrence, and what corrective actions would be implemented for these situations. It is crucial to have such scenarios evaluated ahead of times to ensure that adequate measures could be implemented, should there be a need for it. In addition, for all existing and new barriers, a plan should be provided explaining how the effectiveness of the barriers will be monitored. Should this be performed through environmental monitoring, limits / acceptable levels should be established for environmental monitoring results in order to indirectly demonstrate the satisfactory performance of the barriers. When determining the ability for waste to migrate from its original position of immobilization inside the facility structure towards the environment, site-specific	the use of remote sensing technology to monitor the structural health of the barriers.		

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			data and studies that support the analytical models should be used. This analysis should be established in a verifiable and traceable way, prior to a licence decision, and should be subject to confirmation at implementation phase (i.e., it should not be conducted during the implementation phase). In addition, contingency planning and mitigation measures should be in placed (and provided to the CNSC) in case limits / acceptable levels for environmental monitoring are exceeded. In considering the aforementioned points, please provide a plan that shows how the effectiveness of all existing and new barriers will be monitored. Also, please clarify if and how remote sensing technology is to be used to monitor the structural health of the barriers.			
213_R2	CNSC	Section 3.4.9.1.1 and NPD and WR-1 In Situ Decommissioning Projects - Waste Form Synthesis Report	**Context:** In section 3.4.9.1.1 of the EIS, it is mentioned that "The ISD environment is expected to be alkaline". Also, in Section 1.0 of the NPD and WR-1 In Situ Decommissioning Projects -	CNL is to consider how (qualitatively and quantitatively) the potential local reduction in pH of the environment will affect the corrosion rates of the embedded	**Resolved As:** The Waste Form Synthesis Report (Arcadis 2021) discusses the impact of the low pH environment on corrosion rates from a general standpoint, as a means to identify the conservatism that was actually implemented in the assessment. As stated in Section 5.3 of the Decommissioning Safety Assessment Report (DSAR) (Golder 2021), "The release of contaminants from the wasteform is a slow process controlled by the dissolution of metal components. The rate of dissolution or degradation of the wasteform is dependent on the groundwater chemistry, the surface area of the	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Waste Form Synthesis Report, it is mentioned that "The rate of release of this inventory is expected to be low […] because of the grouting of the facilities with cementitious materials, which results in slow corrosion rates due to the resulting alkaline conditions in the cement pore water". Similarly, in the rest of the report, it is assumed that the grout "will ensure an alkaline environment at the surface of the metallic waste forms". Further, in Section 3.0 of the report, it mentions that "the focus is on the general corrosion behaviour of the different metallic waste forms", ignoring the "localized corrosion [that] may occur for carbon and stainless steel under aerobic conditions", because "this is most likely only after the pH of the grout pore water has dropped to near-neutral values". However, cracks, which are expected to appear in the grout very soon after pouring, will be the preferential pathway for groundwater movement. Such cracks filled with groundwater will locally reduce the pH of the environment (in particular as such cracks are very likely to appear at the interface between the grout and the metallic waste forms) and therefore, the	components and how this may impact the contamination through preferential pathways of groundwater movement.	wasteform and the corrosion resistance of the wasteform. For the wasteform, approach #2 (assume barrier properties are set to the most bounding conservative value in the barrier life cycle irrespective of time) was taken. The safety assessment does not examine the changes in groundwater chemistry over time, and instead uses the more conservative long term chemistry (neutral pH) as the initial condition. The release rate from the wasteform is corrosion controlled. As a result, there is no change in the wasteform release rate over time, and the release rate from the wasteform is bounded." **Change to EIS:** No changes to the EIS are required in response to this IR. **References:** Golder. 2021. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021. Arcadis 2021. NPD and WR-1 In Situ Decommissioning Projects Waste Form Synthesis Report. 64-508760-REPT-017. Revision 1. July 2021.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			corrosion rates selected might not be sufficiently conservative.			
214_R2	CNSC	Sections 6.3.2 and 6.4.2 of EIS	**Context:** In Section 6.3.2 and Section 6.4.2, CNL has not detailed the hydraulic conductivity, diffusivity and absorption characteristics of the existing concrete structures and of the grout, and how these may affect the hydrogeology and the surface water. **Rationale:** The hydraulic conductivity and diffusivity values used for both the existing concrete structures and the grout, including through the assumed step function, are actually far from being conservative, including in the sensitivity analyses performed. This may impact CNL analyses related to (non-exhaustive list) the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects.	CNL is to perform their analyses (non-exhaustive list: groundwater flow and solute transport modelling, the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the Whiteshell Reactor Disposal Facility, or WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects) with adequate values for the Hydraulic Conductivity and Diffusivity of the grout and existing concrete structures, and adequate and realistic assumptions regarding the expected degradation of the grout and concrete structures, and revise their conclusions accordingly.	**Incorporated**: A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity and diffusivity of the grout and concrete structures to reflect uncertainty in these input parameter; i.e., the subject of IR 214_R2. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project Androuet 2024. In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results from this simulation relative to the Normal Evolution Scenario are provided in WSP 2024. As shown in WSP 2024, a significant (and early) degradation of the grout leads to an increase in the peak loadings at the Winnipeg River although the magnitude of the increase is negligible for most of the Contaminants of Potential concern (COPCs), with only a few COPCs resulting in an increase of more than 100% (Gd, Gd152 and Xylene). With respect to peak loadings at the Winnipeg River, the outputs are less sensitive to the assumptions applied for the grout in comparison to their sensitivity to other input parameters considered in the overall (expanded) set of Sensitivity Scenarios (where peak loadings increase by over 10,000% for some parameters; and more than 250% for Gd, Gd152 and Xylene as summarized in the Technical Memorandum referred to in the References below). This incremental increase from the higher grout hydraulic conductivity on the assessed peaks in the EIS is not viewed as being significant with respect to the overall findings of the Environmental Ris Assessment (ERA). Gd-152 has a minor contribution to total dose for both human and ecological receptors. The concentration of gadolinium in groundwater is well below screening values. While the concentration of xylene in groundwater exceeds screening values, the hazard quotient acceptable risk level is not exceeded for both human and ecological receptors. Overall, the findings for the ERA for these constituents are unchanged.	**Follow-up IR 214_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					The results of the additional sensitivity scenarios were passed through the dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings is evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024a. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	
214_R3	CNSC	Sections 6.3.2 and 6.4.2 of EIS	**Context:** CNL response is based on the results of CNL analyses which have been required to be updated, see CNSC IR 39_R3	CNL is requested to revise their response by taking into account the results of the analyses which have been required to be updated (see IR 39_R3).		
215_R2	CNSC	Sections 10.2.2 and 10.5 of EIS	**Context:** The potential increase in groundwater flow through the ISD facility due to extreme rainfall events, snowmelts and	CNL is expected to assess how the potential increase in groundwater flow through the ISD facility due to extreme rainfall events,	**Incorporated**: A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear	**Follow-up IR 215_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			flooding, and to climate change, and how this may increase the degradation of the concrete and grout release of contaminants as well as increase the potential consequential increase on the release of contaminants degradation of the concrete and grout, has not been addressed.	snowmelts and flooding, and to climate change, may increase the degradation of the concrete and grout as well as potentially increase the release of contaminants.	Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity and diffusivity of the grout and concrete structures to reflect uncertainty in these input parameters as well as increased recharge rates in the regional area surrounding WR-1 (i.e., the subject of IR 215_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to local recharge into the facility, the original set of sensitivity simulations already has considered an extreme upper bound by essentially assuming the WR-1 is flooded through the assignment of a fixed head boundary condition above WR-1 (Sensitivity Scenario 2). This resulted in an infiltration rate of 135 mm/yr into the facility (considered to provide a bounding case for addressing potential risks for changes in recharge due to climate change, flooding and/or extreme precipitation events). The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					from a recent CNSC research project (Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings are evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
215_R3	CNSC	Sections 10.2.2 and 10.5 of EIS	**Context:** CNL response is based on the results of CNL analyses which have been required to be updated, see CNSC IR 39_R3.	CNL is requested to revise their response by taking into account the results of the analyses which have been required to be updated (see IR 39_R3).		
216_R2	CNSC	Section 10.2.4 of EIS	**Context:** It is mentioned that "it is unlikely that [wind/tornadoes] could affect the concrete cap and engineered cover". **Rationale:** This statement/assumption has not been supported by any technical assessment.	CNL is to provide relevant and appropriate supporting documents and justification to ensure that wind/tornadoes are unlikely to affect the concrete cap and engineered cover.	**Resolved As:** Section 2.3 of the Design Requirements - Design of the Concrete Cap and Engineered Cover of the Whiteshell Reactor 1 (WR-1) Disposal Facility (AECOM 2023) covers hazards such as high wind and tornado generated missiles which are accounted for in the Cap and Cover design (AECOM 2020) in Sections 5.2 (Protection Against Environmental Hazards), and Section 16 (Loads, Load Combinations and Service Life). As stated in Section 10.2.4 Tornado/Extreme Wind' of the Environmental Impact Statement (EIS): 'Tornadoes are recognized as a hazard to the facilities on the WL [Whiteshell Laboratories] site, including the Project. Between 1868 and 1990 at least 75 tornadoes or tornado groups have occurred in Manitoba with two of these tornadoes passing near the WL site in 1978 (AECL 2001, Section 6.5). Between 1980 and 2009 there were 283 confirmed tornadoes in Manitoba, two of which passed within 10 km of the WL site (2005 at Lac du Bonnet and 2007 at Seven Sisters Falls). Based on the most recent period of data available (1980 to 2009), the frequency for a tornado strike on the property is estimated to be 5.4 × 10-5 per year and a return period of 2 × 105 years (Cheng et al. 2013). There is, therefore, a low probability of a tornado affecting the WL site.' **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. AECOM. 2023. Design Requirements - Design of the Concrete Cap and Engineered Cover of the Whiteshell Reactor 1 (WR-1) Disposal Facility WLDP-26000-DR-002 Revision 1. AECOM. 2020. Design of the Concrete Cap and Engineered Cover of the Whiteshell Reactor 1 (WR-1) Disposal Facility. AECOM. WLDP-26000-235-000. Revision 0. Cheng et al. 2013. Probability of Tornado Occurrence across Canada. Journal of Climate 26(23): 9415-9428.	**Accepted**
217_R2	CNSC	4.1.4 of GWFSTMR	**Context and Rationale:** As part of the licensing review of the Design Description for WR-1	CNL is to provide clarity whether the grout may be subjected to freeze-thaw	**Incorporated**: While "freeze/thaw" is noted in Section 4.1.4 of the Groundwater Flow and Solute Transport Modelling Report (GWFSTMR; Golder 2021) as one of the potential contributing factors to future degradation of the grout, this specific	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Disposal Facility (Rev 0 - WLDP-26000-DD-001), CNL assured that "the engineered soil cover has been designed with sufficient thickness to protect both the concrete cap and the grouted building below from freeze-thaw action". Therefore, in the last paragraph of Section 4.1.4, it is unclear why freeze/thaw is included as a contributing factor to degradation of the grout. Should the grout be subjected to freeze-thaw action, its design would require to be adapted to sustain such degradation mechanisms, which would affect other characteristics and parameters of the grout.	action or not alongside supporting documentation as well as details on how CNL expects to ensure that the associated degradation mechanism are addressed and mitigated.	process is expected to have a minor to negligible effect on the performance (e.g., hydraulic conductivity) of the grout over time. The author was intending to identify potential mechanism of degradation, not specific expected processes. During decommissioning, mixing and placement of the grout is planned for the summer months only, so there will be no "freeze/thaw" action during this period. In the longer term, Canadian Nuclear Laboratories (CNL) has specifically included a requirement for appropriate freeze/thaw protection in the Cap and Cover Design (AECOM 2023a, AECOM 2023b), and the majority of the grout will lie below the depth of freezing (estimated at ~ 2.3 (Dow Tech 2008, Soliman et al. 2008) metres depth in the area of the site); therefore it would have no effect on conditions within the building envelope or the upper levels where the grout is to be placed underneath the main concrete floor. Notwithstanding the above, CNL completed a number of additional sensitivity scenarios with the groundwater flow and solute transport model which considered increased grout hydraulic conductivity several orders of magnitude greater than assessed in the Normal Evolution Scenario as part of the overall response to Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs). The parameter assignments considered and the results of the additional sensitivity scenarios are provided in a separate Technical Memorandum (WSP 2024). **Change to EIS**: No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: AECOM. 2023a. Design Plan - Design of the Concrete Cap and Engineered Cover of the Whiteshell Reactor 1 (WR-1) Disposal Facility WLDP-26000-DP-002 Revision 1. AECOM. 2023b. Design Requirements - Design of the Concrete Cap and Engineered Cover of the Whiteshell Reactor 1 (WR-1) Disposal Facility WLDP-26000-DR-002 Revision 1. WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Dow Tech Solution 605.0. 2008. Calculating Insulation Needs to Fight Frost Heave by Comparing Freezing Index and Frost Depth. https://images.finehomebuilding.com/app/uploads/2009/11/26195138/Dow_Freezing_Indices_and_Degree_Day_Maps.pdf Soliman, et al. 2008. A Simplified Model to Predict Frost Penetration in Manitoba Soils http://conf.tac-atc.ca/english/resourcecentre/readingroom/conference/conf2008/docs/x1/soliman.pdf	
218_R2	CNSC	Section 5.0 of GWFSTMR	The report includes several sensitivity analyses, aimed to gain an understanding of the	CNL is to perform their analyses (non-exhaustive list: groundwater flow and	**Incorporated**:	**Follow-up IR 218_R3 below**

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			potential impact of the uncertainty associated with the modelling process and the results of the predictive simulations in the forecast simulations. However, given that hydraulic conductivity and diffusivity values of the cementitious-based materials used in CNL analyses were not adequate and far from being conservative, the results of the sensitivity analyses may not be satisfactory as this may have a very significant impact on the results of the sensitivity analyses performed. In addition, some other assumptions in the sensitivity analyses may actually be far from being conservative and do not provide confidence in the results of the predictive simulations.	solute transport modelling, the surface water quality (due to the groundwater flowing to the Winnipeg River after having encountered the Whiteshell Reactor Disposal Facility, or WRDF), the aquatic environment assessment, the terrestrial environment assessment, the human health assessment, etc. as well as their potential cumulative effects) with adequate values for the Hydraulic Conductivity and Diffusivity of the grout and existing concrete structures, and revise their conclusions accordingly. CNL shall also provide science-based and technically-sound justification for the assumptions made in their analyses, including in the sensitivity analyses. Finally, CNL shall revise their conclusions accordingly following the abovementioned.	A number of the Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs) requested additional information with respect to effects on the groundwater flow and solute transport modelling results giving consideration to an expanded range of input parameter values that lie outside of the range assessed by Canadian Nuclear Laboratories (CNL) in either the Normal Evolution Scenario or the series of 18 Sensitivity Scenarios completed in the Environmental Impact Statement (EIS). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29) as part of the FPIRT Round 2 IRs, some of which included consideration of an enhancement to the hydraulic conductivity and diffusivity of the grout and concrete structures to reflect uncertainty in these input parameter (i.e., the subject of IR 218_R2). The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). With respect to the performance of the grout, the Normal Evolution Scenario in the EIS considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). To address the concern with respect to hydraulic conductivity, two additional sensitivity scenarios were completed giving consideration to: a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28 (note: this extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent Canadian Nuclear Safety Commission (CNSC) research project Androuet 2024. In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. With respect to diffusivity, Sensitivity Scenarios 25 and 26 assess alternate (conservative) estimates for this input parameter in the model (as discussed in the separate Technical Memorandum prepared in response to the IRs (WSP 2024)). The results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The EIS was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary: 'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024).	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project [Androuet 2024]). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings is evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2.	

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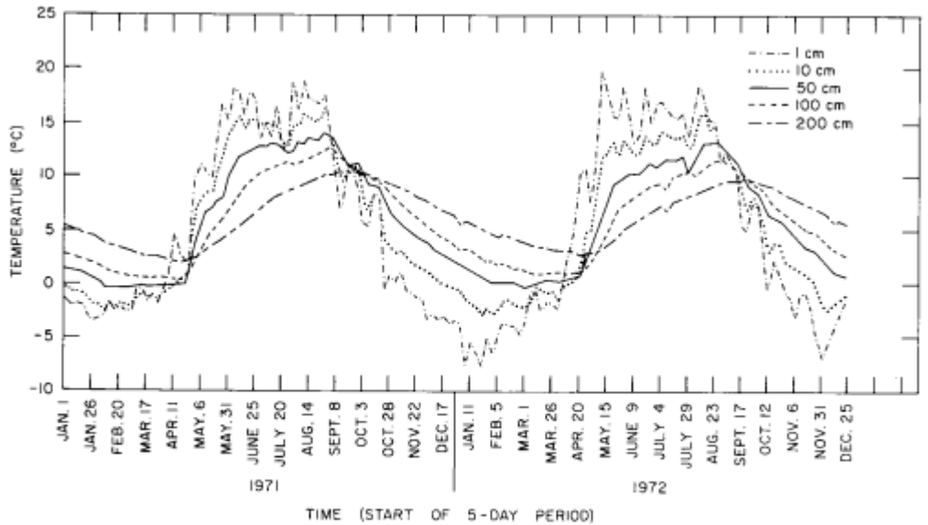
					The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	
218_R3	CNSC	GWFSTMR	**Context**: CNL response is based on the results of CNL analyses which have been required to be updated, see CNSC IR 39_R3.	CNL is requested to revise their response by taking into account the results of the analyses which have been required to be updated (CNSC IR 39_R3).		
219_R2	CNSC	Section 2 of EIS	**Context:** It is mentioned that "it is assumed that the wastes will be at ambient temperature, assumed here to be in the range 5-20°C". **Rationale:** This range of temperatures would deserve to be verified and confirmed, given the corrosion rates are dependent on the temperature.	CNL is to verify that the range of temperatures to which the wastes will be subjected are actually as assumed and that this will not affect the corrosion rates.	**Resolved As:** It is to be noted that this information request is referring to Section 2 of the Waste Form Synthesis Report (Arcadis 2021), instead of the Environmental Impact Statement (EIS). As per Section 3.1.2.6 – 'Effect of Temperature' of the Nuclear Power Demonstration (NPD) and WR-1 In Situ Disposal Projects Waste Form Synthesis Report (Arcadis 2021): "Many of the corrosion studies discussed above were conducted at either room temperature or modestly elevated temperature (in the range 30-50°C). Fujisawa et al. (1997) report measurements down to a temperature of 15°C, which is more typical of the mean near sub-surface temperature relevant to the in situ disposal of NPD and WR-1. The corrosion rate in a synthetic cement pore-water solution at pH 12.6 increased with increasing temperature, exhibiting Arrhenius behaviour with an activation energy of 100 kJ/mol. Based on this temperature dependence, the relative corrosion rates at temperatures of 25°C (typical experimental temperature), 15°C, and 5°C (typical of the near-sub-surface temperatures) would be 1:0.25:0.055. Thus, corrosion rates under likely sub-surface temperatures could be approximately an order of magnitude lower than those measured experimentally at room temperature." Further, subsurface soil temperatures have been studied at the Whiteshell Laboratories (WL)site previously (Reimer 1980). The work looked at shallower depths of soil with more regular variation and impact from surface air temperatures. It showed average temperatures in the range of 5-10 degrees Celsius, with increasing temperature stability with depth. This falls within the assumed range and aligns with the discussion of the Waste Form Synthesis Report (Arcadis 2021).	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					 Fig. 1. Observed 5-day average soil temperatures at 1, 10, 50, 100 and 200 cm under grass (zero tillage) (snow) at WNRE. **Change to EIS:** No changes to the EIS are required in response to this IR. **References**: Arcadis. 2021. NPD and WR-1 In Situ Decommissioning Projects Waste Form Synthesis Report. 64-508760-REPT-017. Revision 1. July 2021. Fujisawa et al. 1997. The Corrosion Behavior of Iron and Aluminum under Waste Disposal Conditions. Mat. Res. Soc. Symp. Proc. 465, 675-682. Available for purchase at: https://link.springer.com/article/10.1557/PROC-465-675 Reimer, A. and Shaykewich, C. F. 1980. Estimation of Manitoba Soil Temperatures from Atmospheric Meteorological Measurements https://cdnsciencepub.com/doi/pdf/10.4141/cjss80-033.	

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220_R2	CNSC	Geosynthesis Report (Section 2.4.2; Section 6.1), Pg 26 to 33 & 114 to 116	**Context:** There is currently no groundwater monitoring well installed in the shallow bedrock unit along the flowpath from the WRDF to the Winnipeg River. This is concerning, given that the shallow bedrock unit is identified as the dominant flowpath to the Winnipeg River in the GWFSTMR. While there are other bedrock wells on the Main Campus (i.e. Nests #2, 4, and 7), the only monitoring wells along the flowpath from the WRDF to the Winnipeg River (Nest #5 and 6, as shown in Figure 2-10 of the Geosynthesis report) are screened in overburden. As such, little information relating to bedrock topography, aquifer characteristics or baseline groundwater quality is available for the shallow bedrock unit flowpath downgradient of the proposed WRDF. Page 37 of the Hydrogeological Study Report reads “Groundwater flow in the shallow bedrock is likely controlled by the complex networks of fractures, and the distribution of the three monitoring wells in the shallow bedrock (i.e. Nests #2, 4 and 7) may not facilitate full resolution of groundwater flow patterns”, and Page 114 of the Geosynthesis report	CNSC staff request that CNL explicitly discuss and consider the need to carry out additional field investigations to reduce uncertainty associated with groundwater flow patterns in bedrock, bedrock topography, and the presence of a potential fracture zone towards the Winnipeg River. If uncertainty relating to the fracture zone is to be reduced through evaluation of existing cores, CNL should clarify when this will be done.	**Incorporated**: As pictured in Figure 3-17 of the WR-1 Hydrogeological Study Report (Dillon 2018), four bedrock boreholes have been advanced into the bedrock around the Project site, with nested monitoring well completions that include monitoring in the upper bedrock. One at nest #2 to the east of the campus, Nest 7 to the south west, Nest 4 to the north west, and Nest 8 (deepest of the boreholes) to the west (directly in the expected groundwater flow path). This compliments additional drilling and monitoring of the bedrock in the area surrounding WR-1. Canadian Nuclear Laboratories (CNL) recognizes there is some variability in the bedrock surface and hydraulic properties of the bedrock in the area of the site, however the uncertainty in the rate of groundwater flow, and therefore the rate of solute transport in this pathway following decommissioning of the facility, is considered to be conservatively addressed in the Sensitivity Scenarios completed in the application (in particular the expanded parameter ranges considered in the responses to Federal Provincial Indigenous Review Team (FPIRT) Round 2 Information Requests (IRs)). The Sensitivity Scenarios addressing the potential range in input parameters for the bedrock geopathway are as follows: Sensitivity Scenario 1 - considers a “preferential pathway” between WR-1 and the Winnipeg River, essentially assigning a flow rate a factor of 10 greater than the Normal Evolution Scenario. Sensitivity Scenario 11 – considers an increase in the hydraulic conductivity of the geopathway to $1x10^{-6}$ m/s, a factor of two greater than that applied in the Normal Evolution Scenario. Sensitivity Scenario 16 – considers a reduction in the geopathway length between WR-1 and the Winnipeg River by a factor of 2 relative to the Normal Evolution Scenario. Sensitivity Scenario 21 - considers the bedrock geopathway as a series of 5 discrete parallel fractures, extending from WR-1 to the Winnipeg River. Sensitivity Scenario 22 - considers the bedrock geopathway as a series of 10 discrete parallel fractures, extending from WR-1 to the Winnipeg River. Sensitivity Scenario 29 - considers an increase to the hydraulic conductivity of the geopathway to $4.1x10^{-6}$ m/s, from the $5x10^{-7}$ m/s assigned in the Normal Evolution Scenario. Based on the above, CNL does not plan on carrying out any additional field investigations to support the assessment, though has prepared a Technical Memorandum (WSP 2024) outlining the specific parameter assignments and results of the additional Sensitivity Scenarios 21, 22 and 29 for the bedrock geopathway. Additionally, the results of the additional sensitivity scenarios were passed through the Dose model (Ecometrix 2024). The dose models confirmed that the increased mass loadings resulting from the additional sensitivity cases for fractured flow, have no significant impact on the outcomes of the assessment. Doses from the project are still projected to be orders magnitude below public dose limits, and project dose constraints. The Environmental Impact Statement (EIS) was updated to reflect these sensitivity cases, and how they sufficiently address the uncertainty surrounding the geosphere pathway. **Change to EIS:** Section 6.3.2.8 Prediction Confidence and Uncertainty has been updated to include the following summary:	**Follow-up IR 220_R3 Below**

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			acknowledges this dearth of information, stating that "the primary uncertainty in the geological model is the potential for the presence of a fracture zone towards the Winnipeg River, an understanding of structural controls on the river trace and the impact of bedrock topography on basal sand-bedrock transport. Some of this uncertainty may be reduced through determination of fracture orientation and dips in the existing cores obtained from the WL site". This information would greatly improve characterization of local hydrogeological conditions, aid in solute transport model parameterization and validation, provide a means of collecting baseline groundwater quality downgradient of the proposed WRDF, and inform future environmental monitoring. However, rather than collecting further information through borehole drilling/site characterization, or from existing cores, CNL posits in Table 6-2 of the Geosynthesis that this uncertainty can be addressed through a sensitivity study in the Solute Transport Model. **Rational:**		'In 2024, groundwater flow and solute transport modelling was completed to evaluate 11 additional sensitivity scenarios (Scenarios 19 through 29) to further assess the peak loadings to the Winnipeg River (WSP 2024). This modelling was done giving consideration to an expanded range of input parameter values that lie outside of the range assessed in the Normal Evolution Scenario and the 18 Sensitivity Scenarios completed in the draft EIS (Golder 2022). Based on this, CNL completed a series of 11 additional groundwater flow and solute transport simulations (Sensitivity Scenarios 19 through 29), some of which included consideration of an enhancement to the hydraulic conductivity of the grout to reflect uncertainty in this input parameter. The specific parameter assignments and results of the additional Sensitivity Scenarios are provided in a separate Technical Memorandum (WSP 2024). Two additional sensitivity scenarios were completed giving consideration to a fractured flow condition in the bedrock pathway ranging from a parallel set of 5 fractures (Scenario 21) to a parallel set of 10 fractures (Scenario 22) (WSP 2024). Four sensitivity scenarios (Scenarios 23 to 26) were also completed giving consideration to: updated lower bound (Scenario 23) and upper bound (Scenario 24) adsorption co efficients for the bedrock geo-pathway (based on additional literature review); and increased diffusivity for the WRDF foundation (Scenarios 25 and 26). With respect to the performance of the grout, the Normal Evolution Scenario in the draft EIS (Golder 2022) considered a gradual degradation of the hydraulic conductivity over time due to fracturing based on information in the technical literature (Section 4.1.4 of Golder 2021). Two additional sensitivity scenarios were completed giving consideration to a grout hydraulic conductivity at the maximum value from the scale-up testing (i.e., 1.5x10-6 m/s in Scenario 27; WSP 2024); as well as an extreme upper bound assumption of 1x10-4 m/s for the grout in Scenario 28. This extreme upper bound assumption lies at the upper end of the range of hydraulic conductivities noted for cracked grout in core samples from a recent CNSC research project Androuet 2024). In both Scenarios 27 and 28, the higher grout K's were applied at the beginning of the simulation; essentially assuming immediate degradation of the grout to a long-term higher permeability condition. The results indicate that the expanded set of parameter inputs results in increased mass loading estimates to the environment for some scenarios relative to those assessed in the Draft EIS submitted December 2022. The overall impact of the increased mass loadings is evaluated in an addendum to the Environmental Risk Assessment (Ecometrix 2024) to determine the potential impact of these results on human and ecological health.' Section 6.7.1.8.has been updated to include the following: 6.7.1.8.1.3 Sensitivity Scenario – Fractured Geo-Pathway WSP updated the groundwater solute transport model for the Project to expand the sensitivity analysis in consideration of the geo-pathway as a fractured bedrock pathway for the purposes of solute transport (i.e., advection and dispersion along the fractures, with diffusion into the rock matrix [WSP 2024]). The intent of the sensitivity analysis in the groundwater solute transport model was to explore model sensitivity to various input parameters, and the analysis does not necessarily reflect a plausible scenario. The total radiation dose to all human receptors during post-closure for the geo-pathway sensitivity scenario is predicted to be well below the regulatory public dose limit of 1 mSv/yr and the dose constraint of 0.25 mSv/yr (Ecometrix 2024). Including background Cs-137, the maximum percent of public dose limit is 0.55% and the maximum percent of dose constraint is 2.2%. Overall, since the radiation dose estimates would be below	

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			CNSC staff disagree with the assertion that the uncertainties discussed in this comment can be appropriately addressed through a sensitivity study. CNSC requirements for geological/hydrogeological information in Environmental Assessments are presented in Appendix B.4 of REGDOC 2.9.1, as well as Section 8.5 of the Generic Guidelines for the Preparation of an Environmental Impact Statement. Specifically, these documents state that "The applicant or licensee should present a geological model that incorporates all overburden and bedrock information. If extrapolation is required to derive the stratigraphy, the applicant or licensee should explicitly discuss the uncertainties and the need for additional field investigations to reduce those uncertainties".		the public dose limit and the dose constraint, no discernable health effects are anticipated due to exposure of these receptors to radioactive releases from the Project for the geo-pathway sensitivity analysis scenario (Ecometrix 2024). The HQs for the harvester, on-site farm, and Farm A are below the acceptable risk level of 0.2 for cadmium, chromium, and xylene for all pathways for the toddler and adult. The HQs for the harvester, on-site farm and Farm A are above the acceptable risk level of 0.2 for lead for ingestion of weekay for the harvester (toddler), and from drinking water from the Winnipeg River for the on-site farm (toddler and adult) and Farm A (toddler and adult) (Ecometrix 2024). The HQs for all receptors are based on background plus Project exposure. If only the Project contribution is considered, all HQs for all receptors are well below the acceptable risk level of 0.2. The dose is conservative as it is based on the maximum mass loadings for each COPC provided in the groundwater solute transport model. The maximum dose for each radionuclide was assessed at a single point in time, corresponding to the peak loading rate from groundwater to the Winnipeg River. 6.7.1.8.1.4 Sensitivity Scenario – Modified Well in Plume Disruptive Event The on-site farm receptors were also evaluated based on a modification to the Well in Plume scenario from the DSAR to consider placement of a drinking water well at a distance closer than previously assumed downgradient of the WRDF. Consistent with the Well in Plume scenario in the DSAR, the focus is on human health because it is assumed that the on-site Farmer would obtain drinking water from a groundwater well in the groundwater plume from the WRDF. The maximum mass loadings from a well location at 100 m (Scenario 19) and 10 m (Scenario 20) were converted to groundwater concentrations using the anticipated flowrate through the bedrock pathway for the time period of maximum mass loadings (Ecometrix 2024). To bound the assessment, the worst case loadings between the 100 m and 10 m distance were considered. The maximum estimated total dose for on-site farm residents who drink groundwater from a well in the WRDF is estimated to be 2.44E+01 mSv/a for the new on-site farm (3-month-old who drinks formula) (Ecometrix 2024). The main contribution to total dose is from Pu-240 and Pu-239 from drinking groundwater (the internal water pathway). Consistent with the DSAR, for disruptive events, a reference level ranging from 1 mSv/a to 20 mSv/a has been defined (IAEA 2011). The total radiological dose to the on-site farmer receptors that drink groundwater from a well in the plume from WRDF exceeds the lower IAEA reference level of 1 mSv/a for all receptors, except the nursing infant who drinks cow's milk (Ecometrix 2024). All doses are below the upper IAEA reference level of 20 mSv/a for all receptors, except for the 3-month-old (formula) where the dose is 24.4 mSv/a. The results are based on the conservative assumption that the on-site residents are exposed to the maximum groundwater concentrations for all COPCs in the plume at the same time. Realistically, predicted dose rates from individual radionuclides peak at different times over the post-closure phase. Therefore, considering only the contributions of radionuclides that peak at similar timeframes, the maximum dose to the 3-month old would be approximately 20 mSv/a (considering only Pu-239 and Pu-240) (Ecometrix 2024). For non-radionuclides, the hazard quotients for cadmium and lead exceed the target value for the adult and toddler, based on the drinking water pathway. Risk could not be ruled out for the on-site farm residents drinking groundwater in	

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					the plume of WRDF. The hazard quotients for cadmium and lead for all other pathways are below the target value (0.2 per medium) for both adult and toddler. **References:** WSP. 2024. Whiteshell Reactor 1 (WR-1): Groundwater Flow and Solute Transport Modelling – Additional Sensitivity Simulations Completed to Address Information Requests from the Federal, Provincial and Indigenous Review Team. November 2024. Ecometrix. 2024. ERA Modelling for Bedrock Geo-Pathway Sensitivity Analysis. November 2024. Dillon Consulting Ltd. (Dillon). 2018. WR-1 Hydrogeological Study Report. WDLP-26000-REPT-004. Prepared for Canadian Nuclear Laboratories. November 2018. Golder. 2021. Groundwater Flow and Solute Transport Modelling Report. Revision 4. December 2021. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000ENA-001. Revision 4. December 2022. Androuet, Cedric. 2024. Impact of hydraulic conductivity, diffusion and self-healing of cracked cementitious-based materials on the groundwater flow and solute transport modelling for in-situ decommissioning projects. Canadian Nuclear Safety Commission, 280 Slater St., Ottawa. Presented at DEM 2024 – International Conference on Decommissioning Challenges, Avignon, France. May 2024. IAEA. 2011. Disposal of Radioactive Wate. Specific Safety Requirements No. SSR-5. Available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf.	
IR 220_R3	CNSC	Geosynthesis Report (Section 2.4.2; Section 6.1), Pg 26 to 33 & 114 to 116	**Context:** CNL's response to IR-207_R2, it is stated that "The sensitivity cases presented in the EIS and supporting documentation are not intended to be an exploration of the expected variation in specific parameters, or known ranges of uncertainty in a particular system....CNL assessed and characterized uncertainty and ranges of potential parameter values through the use of bounding scenarios." In contrast, CNL indicates in their response here	CNL is expected to collect data (carry out additional field investigations) along the major pathway to verify the key assumptions used in the safety assessment and reduce uncertainty associated with groundwater flow patterns in bedrock, bedrock topography, and the presence of a potential fracture zone towards the Winnipeg River.		

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			to this IR-220_R2 that the sensitivity scenarios addressed the potential range in input parameters for the bedrock geopathway. It is therefore not clear to CNSC staff if the scenarios presented in CNL's response address uncertainties and concerns raised by CNSC staff. Most importantly, the shallow bedrock is identified as the major pathway from the WRDF to the Winnipeg River; however there is no monitoring well being installed on that pathway for monitoring/verification. Doing sensitivity analysis to justify not installing monitoring wells is not considered best practice. As in IAEA SSG-31, the monitoring program should: 2.13. iii) verify that the key assumptions made and model used to assess safety are consistent with actual conditions 4.3……..the responses of the disposal system should be monitored and the results should be compared to predictions… Therefore, data along the major pathway need to be collected to verify that the actual impact is within the prediction envelope of			

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			the safety case/safety assessment.			
221_R2	CNSC	EIS – Sections 3.1.2.2, 5.0	**Context:** It is unclear why the corrosion rate of carbon steel in aerobic conditions for the WR-1 project do not align with the rate selected for the NPD project as summarized in Table 1, and why a non-conservative corrosion rate (as illustrated in Section 3.1.2.2 and Section 5.0) has been selected. In addition, the corrosion rate estimations for carbon steel in the CNL document were mainly based on H_2 evolution. The conservativeness of this estimation method might need to be justified when oxygen presents in the environment. Because corrosion of metals can be viewed as the partial processes of oxidation and reduction. The oxidation (anodic) reaction constitutes the corrosion of metals, and the reduction (cathodic) reaction depends on the environment. There could be 2 different cathodic reactions in aqueous systems: $2H^+ + 2e^- \rightarrow H_2$	CNL is to provide clarity with regards to the conservativeness of the corrosion rates for carbon steel (including for the corrosion rate of carbon steel in aerobic conditions) considering CNSC staff comments.	**Resolved As:** It is to be noted that this information request is referring to Sections 3.1.2.2 and 5.0 of the Waste Form Synthesis Report (Arcadis 2021), instead of the Environmental Impact Statement (EIS). The Waste Form Synthesis Report directly discusses the justification for the different rates, and the different modelling approaches. This report was also accepted by the Canadian Nuclear Safety Commission (CNSC) in October of 2021 (CNSC 2021). The values for the Nuclear Power Demonstration Reactor (NPD) and WR-1 were derived by two independent parties that lead to similar results, providing confidence in the similar values. The WR-1 assessment assumes neutral pH groundwater conditions, and the selected value is reflective of that condition. This conservative assumption ignores the high pH environment and probable anaerobic conditions that would be expected in reality, and would significantly reduce corrosion of carbon steels. The report states: "The corresponding rate for WR-1 was selected to represent an assumption of perpetual aerobic and neutral pH conditions (Golder 2021), to represent long term conditions without accounting for the lower corrosion rates associated with a higher pH environment. This assumption implies that the carbon steels should no longer be considered as being passivated, though actual conditions imply passivation will occur for the period that the grout pH remains alkaline. The selected corrosion rate of 10 µm/y (Table 1) aligns well with the expected range of values for non-passivated carbon steel presented in Figure 5 and Figure 6 above. The selected value is conservative based on the expected alkaline conditions and any remaining uncertainty is expected by the Project to be of little consequence due to the low overall inventory associated with carbon steel materials in WR-1..." Further, the difference between the WR-1 and NPD values is a factor of 4. If the WR-1 assessment were to adjust the selected corrosion rate to match NPD, the difference in the conclusions of the model is inconsequential, as the predicted impacts of the Project are many orders of magnitude below regulatory limits. A four fold increase in corrosion releases would not impact the assessment results. The two values were derived from different parties, with different literature reviews, and arrived at effectively the same value. This provides confidence in the predicted rates. As stated in Section 5.3 of the Decommissioning Safety Assessment Report (DSAR; Golder 2021), 'The release of contaminants from the wasteform is a slow process controlled by the dissolution of metal components. The rate of dissolution or degradation of the wasteform is dependent on the groundwater chemistry, the surface area of the wasteform and the corrosion resistance of the wasteform. For the wasteform, approach #2 (assume barrier properties are set to the most bounding conservative value in the barrier life cycle irrespective of time) was taken. The safety assessment does not examine the changes in groundwater chemistry over time, and instead uses the more conservative long term chemistry (neutral pH) as the initial condition. The release rate from the wasteform is corrosion controlled. As a result, there is no change in the wasteform release rate over time, and the release rate from the wasteform is bounde.' **Change to EIS:**	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			$O_2 + 2H_2O + 4e^- \rightarrow 4OH^-$ Only the corrosion process with the first cathodic reaction generates H_2. Therefore, the estimation based on H_2 evolution may not be conservative when oxygen presents in the environment. Rationale: Given the significant uncertainty in the overall assessments related to the WR-1 ISD project, the most conservative assumptions shall always prevail.		No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** Arcadis. 2021. NPD and WR-1 In Situ Decommissioning Projects Waste Form Synthesis Report. 64-508760-REPT-017. Revision 1. July 2021. CNSC. 2021. Letter to Mr. Brian Wilcox RE: CNL – Nuclear Power Demonstration (NPD) Closure Project: CNSC Staff Review of Rev. 1 of the Waste Form Synthesis Report. E-Doc 6656299. 64-CNNO-21-0012-L. October 2021. Golder. 2021. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021.	
222_R2	CNSC	EIS - Section 3	**Context:** Stainless steels include austenitic, ferritic, martensitic, and duplex stainless steels; their corrosion resistances are different. In general, the uniform corrosion resistances of ferritic, martensitic, and duplex stainless steels are lower than that of austenitic stainless steels. **Rationale:** However in this CNL document, the corrosion rate estimation is based on the test results from austenitic stainless steels only.	If there are ferritic, martensitic, or duplex stainless steels in NPD or WR-1, the applicability of this estimation needs to be justified.	**Resolved As:** The Calandria is constructed of 304L Stainless Steel, and the Fuel Channels are constructed of 304L and 347 Stainless Steel (AECL 1975) (CNL 2018). There is no other major reactor component composed of stainless steel. Both 304L and 347 Stainless Steels are austenitic. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **Reference:** AECL. 1975. WR-1 Reactor Handbook. WNRE-188. June 1975. CNL. 2018. Analysis of Scrape Samples from Selected WR-1 Fuel Channels. WLDP-26000-041-000-0006. November 2018.	**Accepted**
223_R2	Health Canada	EIS - Table 6.2.1-14, pdf pg.381 Appendix 6.2-1,	**Context:** A) The maximum 1-hr and annual nitrogen dioxide (NO2) concentrations at the boundary	**CNL is expected to:** Develop a continuous monitoring program for	**Resolved As:** **A&B:**	**Follow-up IR 223_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
		Table 13, pdf pg.1285 Section 6.2.1.5, pdf pg.362 Table 6.2.1-9, pdf pg.368	of the Local Study Area (LSA) are predicted to be 212.49 µg/m3 and 28.06 µg/m3, respectively, in the Application Case (i.e., in the baseline plus project effects assessment scenario) (Table 6.2.1-14). The proponent's screening of the predicted NO_2 levels indicates that the levels are below the selected air quality criteria values for NO2. However, the screening results appear to have resulted from comparing the predicted values to the outdated Canadian National Ambient Air Quality Objective (NAAQO) for 1-hr NO2 (400 µg/m3) and Manitoba Ambient Air Quality Criteria (AAQC) for annual "Desirable" NO_2 level (30 µg/m3; EIS Appendix 6.2-1, Table 13) rather than to current and more protective values defined in the 2025 Canadian Ambient Air Quality Standards (CAAQS) (78.96 and 23 µg/m3 for 1-hr and annual NO_2 respectively). Since the last EIS review in September 2017, the 2025 CAAQS came into effect replacing the previous NAAQOs. The CAAQS screening values are also more protective than the Manitoba AAQC. Health Canada notes that the predicted 1-hr and	ambient air concentrations of NO_2 during the closure phase, in addition to PM2.5, to allow a comparison with the corresponding CAAQS values [see HC- 04 (R2) in the Advice Table to find more about the use of appropriate statistics and averaging periods associated with CAAQS]. In the absence of reliable baseline data for PM2.5 and NO_2 , use the CAAQS management levels as trigger levels to implement additional mitigation/adaptive management measures. Identify potential mitigation measures to be implemented in the event that monitoring results show contaminant levels greater than the trigger levels and a communication plan to share with nearby communities.	Originally, Winnipeg was conservatively selected to represent the background air quality since no local monitoring was available and these measured values would not underestimate the local conditions. Three background air quality stations have been added to the assessment. These stations are more representative of the project location in terms of population, urbanization, and land use. All three stations have background data for each indicator compound identified in the air quality assessment, except for carbon monoxide and suspended particulate matter (SPM). The three stations, located in Flin Flon, Mb, Estevan, Sk, and Buffalo Narrows, Sk, are now assessed alongside the two currently assessed stations in Winnipeg, Mb and Assiniboine, Mb, to provide range of background concentrations for each indicator compound. Using the methodology of comparing to the minimum and maximum background concentration values from this dataset presents a range of Project effects on the air quality in the region, as well as a range of maximum potential point of impingement concentrations from Project activities. Where applicable, the 2025 Canadian Ambient Air Quality Standards (CAAQS) values have been included in the assessment and are now used as the applicable criteria for comparing to the application case predicted concentrations in order to assess significance. For both NO2 and PM2.5, the maximum potential point of impingement concentrations from the applicable case resulted in concentrations below their respective 2025 CAAQS inside the Local Study Area (LSA) but outside the Canadian Nuclear Laboratories (CNL) property boundary. Since the closure phase is expected to produce less emissions than the application case, continuous monitoring is not required for comparison to the CAAQS. To control the radiological air emissions, the criteria for moving from enclosed decontamination to open-air demolition is determined using the WL Open Air Demolition Technical Basis document (CNL 2020). This document outlines the methodology by which the remaining activity that is left in the building for the demolition is correlated to the method of demolition and doses to adjacent receptors are determined. Based on the dose constraints and Derived Air Concentrations a screening level will be assigned to the demolition work, ranging from Level 1 where no additional modeling or special precautions are necessary to Level 3, where in-depth modeling will be required and demolition controls will be subject to approval by the Radiation Protection and Environmental Protection program managers. Generally, open-air demolition is not performed above Level 3 dose constraints. **C:** To control the non-radiological air emissions, CNL Environmental Protection staff follow CNL's Management and Monitoring of Emissions (CNL 2022) protocol. CNL has also committed to Total Suspended Particulate (TSP) monitoring during demolition as part of the Environmental Assessment Follow-up Program (CNL 2018). Specifically, Ambient Air Quality is measured during site building demolitions. This is part of CNL's commitment as part of the existing site licence and the Comprehensive Study Report (AECL 2001). The Ambient Air Quality Criteria for the province of Manitoba is 400 ug/m3 for a 24-hour period set in the Objectives and Guidelines for Various Air Pollutants: Ambient Air Quality Criteria (Manitoba Conservation 2006). This level was set by Manitoba Conservation to protect the health of the general public. The filters that are used to determine the TSP are also monitored for alpha, beta and gamma radiation to confirm no unexpected release of radioactivity, with an alert level set at 0.03 Bq/m3 alpha or 100 Bq/m3 for beta (Manitoba Conservation 2006). These levels were set to confirm that radioactivity in air concentrations remained well below 8 DAC/hr. Workplace air samplers are used in areas where worker exposure to radioactivity may be a concern.	

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			annual NO_2 concentrations are about 269% and 108% of the relevant CAAQS values, respectively. B) Baseline air contaminant concentrations are characterized based on National Air Pollution Surveillance monitoring data from an urban population centre (i.e., City of Winnipeg, Section 6.2.1.5) that have already reached 75% and 80% of the CAAQS thresholds for annual PM2.5 and NO2, respectively (Table 6.2.1-9). **Rationale:** There remain uncertainties associated with the use of superceded and less protective air quality screening criteria (i.e., NO_2), and the use of elevated baseline levels (i.e., PM2.5 and NO2). The uncertainties can be addressed by applying the most protective criteria (e.g., CAAQS) and conducting NO_2 monitoring during the closure phase. Additionally, there may be the potential that the follow-up monitoring of PM2.5 and NO_2 may mask the incremental health risks by attributing project contributions to background levels, thus potentially		To mitigate both radiological and non-radiological contamination dispersion, CNL has established decontamination practices and contamination control techniques. These have been used during other open-air demolition of nuclear facilities at the WL site and provided effective means of controlling fugitive air emissions. Mitigation of fugitive emissions includes the use of contamination immobilization agents, containment, ventilation and high efficiency particulate air (HEPA) filters to control generation of airborne emissions during decontamination or removal of contaminated systems or structures. Dust suppression methods during building demolition and soil remediation will be implemented to control airborne emissions and nuisance dust. **Change to EIS:** Section 3.2 of Appendix 6.2-1 has been updated with the following revisions: "The Flin Flon, Estevan and Buffalo Narrows air quality monitoring stations are located approximately 645 km, 512 km and 1,036 km away from the project, respectively. These stations are the three closest stations in proximity to the project location that are located in areas more characteristic of the Project location in terms of population, urbanization, and land use when compared to the 65 Ellen Street and Assiniboine stations and that include all indicator compounds, with the exception of CO and SPM." Section 6.2.1.5.1 Methods in the EIS and Section 3.1.1 Applicable Guidelines in Appendix 6.2-1 has been updated as follows: 'The CAAQSs have been developed under the Canadian Environmental Protection Act, 1999 and include standards for PM2.5, NO2, SO2 and ozone that must be achieved by 2020, as well as more stringent standards for NO2, SO2 and ozone that must be achieved by 2025. In 2015 the standard was phased in, with the final standard phase in date in 2025 (Government of Canada 2013). Similar to the NAAQOs, the CAAQSs are not regulatory limits, but rather, are used as national targets for PM2.5, NO2, SO2 and ozone, excluding Quebec (CCME 2014).' Section 6.2.1.7.2 Subheading Predicted Modelling Concentrations has been updated as follows: 'All indicator compounds were below the applicable criteria at the CNL property boundary, except for SPM and PM10 on the 24-hour averaging period. The SPM result was above the MAAQC Maximum Acceptable Level Concentration but remains below the MAAQC Maximum Tolerable Level Concentration while the PM10 result was above the MAAQC Maximum Acceptable Level Concentration. However, for both SPM and PM10, all receptor locations above their respective criteria were located in close proximity to the CNL property boundary along Ara Mooradian Way, north of Hwy 211 and on property controlled by CNL. All sensitive receptors (residences) had POI concentrations below their respective guideline.' Table 6.2.1-6 Summary of the Applicable Manitoba and Federal Objectives and Criteria has been updated to include 2025 CAAQS. Table 6.2.1-14 Concentrations at the Local Study Area Boundary for the Minimum Base Case and the Application Case has been updated to include 2025 CAAQS. Table 6.2.1-15 Concentrations at the Local Study Area Boundary for the Maximum Case and the Application Case has been updated to include 2025 CAAQS.	

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			underestimating the actual impacts due to the Project. The uncertainties associated with the use of overestimated baseline data can be addressed through follow-up monitoring by considering the CAAQS management levels for PM2.5 and NO_2 and the CAAQS Air Zone Management Framework1 as general guidance to determine if modified or additional mitigation measures are required based on the results of monitoring.		Appendix 6.2-1, Appendix 6.2-2 and Appendix 6.2-3 have been updated to reflect the revisions described above. **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL. 2020. Whiteshell Laboratories Open-Air Demolition Technical Basis Document. WLDP-508740-TD-001. Revision 0. July 2020. CNL. 2022. Management and Monitoring of Effluents and Emissions. 900-509200-STD-009. Revision 1. December 2022. CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Manitoba Conservation. 2005. Manitoba Ambient Air Quality Criteria. July 2005. Government of Canada. 2013. Canadian Ambient Air Quality Standards. Canada Gazette Part 1, Vol 147, 21. CCME. 2014. Canada-Wide Standards for Particulate Matter and Ozone, 2012 Final Report. Winnipeg MB: Canadian Council of Ministers of the Environment. ISBN: 978-1-77202-009-0. Manitoba Conservation. 2006. Draft Guidelines for Air Dispersion Modelling in Manitoba, November 2006.	
223_R3	HC	EIS - Table 6.2.1-14, pdf pg.381 Appendix 6.2- 1, Table 13, pdf pg.1285 Section 6.2.1.5, pdf pg.362 Table 6.2.1-9, pdf pg.368	**Context:** Following CNL's response to HC's IRs, HC met with CNL and CNSC on June 5th and June 23rd, 2025, to discuss the following points related to IR-223_R2: 1. Presence of human receptors at or near the property boundaries, including current and future land use. - CNL described the nearby human receptors and confirmed that the nearest receptor is located outside of the WR-1 property boundary.	CNL is requested to provide additional detail (e.g., maps) to confirm the predicted concentration of PM2.5 and NO2 at and within the property boundary to confirm no predicted effects to human receptors who might access the site along the access roads. HC encourages the use of all available mitigation measures that are technically and economically feasible (e.g., use of Tier 4 engines) to ensure that air pollutants (i.e. PM2.5 and NO2) and		

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			- CNL additionally confirmed that the WR-1 property located east of the Winnipeg River is secure - CNL described the possible access points and monitoring efforts for public access. 2. Model validation of predicted maximum concentrations of PM2.5 and NO2 at the property boundary through cost-effective monitoring. - CNL confirmed exploring passive NO2 and cost-effective PM2.5 monitoring during the decommissioning period to confirm modeling predictions were reasonable. **Rationale:** For both NO2 and PM2.5, the maximum potential point of impingement concentrations from the applicable case resulted in concentrations below their respective 2025 Canadian Ambient Air Quality Standards	their possible adverse effects are minimized. Implement cost-effective monitoring of continuous PM2.5 and passive NO2 to validate property boundary model predictions during the 3-year period of active decommissioning in order to address perceived concerns regarding project-related emissions.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			(CAAQS) inside the Local Study Area (LSA) which extends outside CNL's property boundary. Since the closure phase is expected to produce fewer emissions than the application case, monitoring is recommended to validate modelling predictions only during the three years of active construction to validate modelled predictions. Additionally, CAAQS exceedances or a significant project contribution to PM2.5 and NO2 concentrations at the location of potential receptors would signal a need for follow-up monitoring, especially since these two contaminants do not have clear thresholds for health effects. Therefore, in the event that human receptors were to be exposed within the LSA, these two contaminants should, as a precautionary measure, be included in a follow-up monitoring program with the main purpose of validating modelling results and to make sure the mitigation measures are effective in keeping levels as low as possible.			
224_R2	HC	EIS - Section 6.7.1, pdf pg.641, ERA Sections 5.0, pdf pg.129 Appendix	**Context:** Health risks associated with lead exposures [see HC-06 in the Comment Table] are predicted to	CNL is expected to develop a plan for removal of potential sources of lead, including those identified	**Resolved As:** The Hazard Quotient (HQ) results for lead are reported in the Environmental Risk Assessment (ERA; Ecometrix 2024) and Environmental Impact Statement (EIS; WSP 2024) as the cumulative impact from both the existing environmental	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
		D, pdf pg.638 and Lead Inventory Estimate Section 4.0, pdf pg.3	exceed a target Hazard Qu2tient (HQ) of 0.2 by between 22 and 2,605 times (Section 6.7.1; ERA Section 5.0 and Appendix D) in all exposure scenarios evaluated during the post-closure phase (i.e., Normal Evolution and three Disruptive Events - Human Intrusion, Well in Plume, and WRDF Barrier Failure. Sources and pathways of lead exposures are identified as either in situ lead-containing paints and radiation shields via exposures to soil/groundwater (i.e., Human Intrusion **and** Well in Plume scenarios) or elevated baseline levels of lead in the Winnipeg River water via drinking water use (i.e., Natural Evolution **and** WRDF Barrier Failure scenarios). **Rationale:** Given the hlead exposures described in two Disruptive Events scenarios, as well as for potential project-related exacerbation of the existing lead contamination problem in the Winnipeg River. For example, the 514 kg of lead that is waiting for a "decision yet to be made" on its removal (Lead Inventory Estimate, Section 4.0) can be considered for removal.	in the Lead Inventory Estimate, as much as technologically and economically feasible from the project sit during the closure phase.	concentrations, and the Project's contribution to those existing environmental concentrations (ex. Table 6.7.1-16 of the Environmental Impact Statement (EIS)). The reported results show the Project's contribution to overall lead concentrations are many orders of magnitude below the target HQ for the Normal Evolution Scenario and the Barrier Failure Bounding Scenario. Even without the Project contributions, the HQ is already exceeded by the natural lead concentrations in the local environment. For the Human Intrusion and Well-in-Plume Scenarios, the assessment demonstrates that human intrusion into the Whiteshell Reactor Disposal Facility (WRDF), could result in exposures to human receptors to lead in groundwater or waste material brought to the surface at levels where risk cannot be ruled out. As such, while these are very unlikely worst-case scenarios, reasonable effort is warranted to reduce the probability of these unplanned events from occurring. During the post-institutional control period, passive controls will still be in place including the limited footprint, the WRDF composition being relatively impervious and made of material of no economic value, and the land use restriction acting to reduce the likelihood of a human intrusion event. Additionally, the EIS states in Section 3.4.6.1.5 Targeted Remediation, that CNL will make reasonable efforts to reduce the amount of lead and other hazardous materials in the facility prior to performing in situ disposal. For lead, this will target easily removable items (such as bricks, or small lead sheets), that are not embedded within systems or structures. This targeted remediation effort will reduce the lead source within the WRDF, thus further improving the conservatism of the Environmental Risk Assessment (ERA) and EIS predictions. The work to perform this hazardous material reduction, is captured in Canadian Nuclear Laboratories' (CNL's) Preliminary Decommissioning Work Plan (CNL 2021), which has been accepted by the Canadian Nuclear Safety Commission (CNSC). This Work Plan covers work that is not directly related to In Sit Disposal (ISD), but covers general work to prepare the facility for decommissioning, and is outside the scope of the EIS. **Change to EIS**: No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024. CNL. 2021. Building 100 Preliminary Decommissioning. WLDP-26400-WP-002. Revision 1. September 2021.	
225_R2	Heath Canada	EIS - Section 6.7.1, pdf pg.641	**Context:** Similar to the lead exposure	CNL is expected to develop and implement further	**Resolved As**:	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
		Section 6.7.1.9, pdf pg.700 ERA - Appendix D, pdf pg.638 Appendix D, Table D-15, pdf pg.668	scenarios [see New IR#4 (R2) below], health risks from exposures to radiological arameters and other non-radiological parameters (i.e., cadmium and HB-40) are predicted to exceed the public dose limit (i.e., 1 mSv annually) and target risk level (i.e., HQ of 0.2) in the Disruptive Events scenarios (Section 6.7.1; ERA, Appendix D). Although the Disruptive Events may be less likely to occur, the predicted risk levels are significant. For example, the predicted health risk from a toddler's exposure to cadmium is 710 times greater than the target HQ in Well in Plume scenario (ERA, Appendix D, Table D-15). **Rationale:** The EIS states that "(…) controls can be put in place to reduce the probability of the Disruptive Events (e.g., land use restrictions during post-institutional control period to reduce the likelihood of a human intrusion event)" (Section 6.7.1.9). To reduce the likelihood of Disruptive Events, especially as they will occur beyond the post-institutional control phase, additional measures, such as land use restrictions, should be considered.	controls (e.g., land use restrictions) after the post-institutional control phase to reduce the risk from contaminant exposure in the Disruptive Events scenarios.	Canadian Nuclear Laboratories (CNL) has indicated in Section 1.2 Project Overview of the Environmental Impact Statement (EIS; WSP 2025), that land use restrictions will form a part of the institutional controls overall. CNL has stated that institutional controls will be in place for at least 100 years. This is not a limit. CNL has indicated that institutional controls will continue until such time that it can be justified to reduce or remove any monitoring requirements. This monitoring program will be in place for the entirety of the institutional control phase. The post-institutional control phase is an assumed eventuality, though the exact time is uncertain. CNL has used 100 years as an assumption for assessment purposes but in reality it may not occur for many hundreds or thousands of years. It represents a hypothetical future time after which control and knowledge of the site is lost. Institutional controls such as deed and land use restrictions are assumed to fail if the facility enters into a post-institutional control period. However, their prior existence lends an opportunity for such records to survive further into the future even after institutional controls have failed overall. CNL has corrected the text to indicate that controls are in place for the institutional control period, and that the assessments are conservatively assessing the impacts in the unlikely event of a loss of institutional control as the facility enters a post institutional control phase. **Change to EIS:** The following text has been corrected as follows in Sections 6.7.1.10, 6.7.1.11, 9.2.6.1 and 12.13.1: 'Further, controls can be put in place to reduce the probability of the Disruptive Events (e.g., land use restrictions during the institutional control period to reduce the likelihood of a human intrusion event).' **References**: WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
226_R2	Heath Canada	EIS - Section 6.7.1.7, pdf pg.663 and 669	**Context:** All non-radiological contaminants that may be deposited onto soil and vegetation during the closure phase were removed from further consideration in the human health risk assessment as "all predicted air concentrations for non-radiological COPCs were below their relevant ambient air quality criteria (…) therefore, no non-radiological COPCs were identified for the closure phase and no health effects are anticipated (…)" (Section 6.7.1.7). **Rationale:** It is inappropriate to screen out contaminants for potential exposure pathways (i.e., consumption of country foods and incidental ingestion of soil) based on non-exceedance of air quality. Air quality criteria/guidelines are developed for a specific pathway of exposure (i.e., inhalation of airborne contaminants) and not necessarily considered appropriate criteria/guidelines for consumption of country foods or incidental ingestion of soil. Screening against health based soil quality criteria is recommended to evaluate the potential health effects via	CNL is expected to develop a monitoring program for air deposited contaminants (e.g., metals) in soil during the closure phase, and consider monitoring of vegetation if the contaminant levels in soil exceed health-based soil quality criteria.	**Resolved As:** As identified in Section 6.7.1.10 of the Environmental Impact Statement (EIS), it is anticipated that for closure, the monitoring at the Whiteshell Laboratories (WL) site and surrounding area will continue in accordance with Canadian Nuclear Laboratories (CNL's) existing Environmental Monitoring Program, which includes soil sampling. Additionally, soil around the WR-1 building will be remediated if concentrations exceed soil clean-up criteria established for the site end-state and land use (CNL 2019). As indicated in Section 6.3.1.6.2 Results [geology assessment], soil surrounding the foundation is not expected to exceed clean-up criteria; however, if soil contamination is encountered, it would be removed and segregated using standard excavation equipment and practices. With respect to the ERA, the Ontario Ambient Air Quality Criteria (AAQC) that were used in most cases for screening of predicted contaminant concentrations in air were developed in consideration of deposition and toxicity via foraging (MECP 2020). They are considered to be concentrations that are protective against adverse effects on health and/or the environment (MECP 2020), and additional screening of other pathways such as soil or vegetation would not be warranted. **Change to EIS:** No changes to the EIS are required to address this IR. **References:** Canadian Nuclear Laboratories (CNL). 2019. Whiteshell Laboratories Screening Soil Cleanup Criteria, WL-509420-REPT-001. Revision 0. January 2019. Ministry of Environment, Conservation and Parks (MECP). 2020. Ambient Air Quality Criteria. Queens Printer for Ontario.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			incidental ingestion of air deposited contaminants (e.g., metals) in soil. Additionally, potential contamination of country foods (i.e., vegetation) from air deposition should be verified in the follow-up monitoring program for the closure phase. **Reference:** Canadian Council of Ministers of the Environment (CCME). Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Available at: https://ccme.ca/en/resources/soil			
227_R2	Heath Canada	ERA Table 4-2, pg.67 Table 5-3, pg.138 Appendix D, Section 3.3, pg.665	**Context:** The ERA assumes that Farm A residents will drink well water in the closure phase (Table 4-2) and surface water (i.e., from the Winnipeg River) in the post-closure phase (Table 5-3). It is unknown why the Farm A residents would switch over to an alternative drinking water source in the post-closure phase. **Rationale:** The ERA concludes that no unacceptable levels of radiological doses or health risks (for non-radiological contaminants) are anticipated for the Farm A residents in the post-	CNL is to provide detailed rationale for the assumption that the Farm A residents would change their drinking water source in the post-closure phase. Alternatively, develop a groundwater quality monitoring program at the WL property boundary near the Farm A during the closure and post-closure phases.	**Resolved As:** Farm A residents are assumed to drink well water in the closure phase since the main source of releases to the environment during closure are through atmospheric releases. Atmospheric releases can end up in groundwater via infiltration through the soil following atmospheric deposition. During the closure phase the impact on the Winipeg River is considered negligible as there are no liquid releases. Farm A residents are not expected to change their drinking water source between the closure phase and the post-closure phase. The intent is to prepare a conservative assessment of risk and account for the primary pathways where exposure is likely to occur. As such, during closure Farm A residents were assumed to drink well water since the primary exposure pathway is through the atmospheric environment, and during post-closure Farm residents were assumed to drink river water since the primary exposure pathway is from the aquatic environment. There are no atmospheric releases during post-closure; therefore, the assumption that the Farm A resident drinks well water would underestimate the dose and risk to that receptor. As indicated in Section 6.7.1.10 Monitoring and Follow-Up in the Environmental Impact Statement (EIS), groundwater and surface water quality monitoring would be ongoing during closure and post-closure. The need for and duration of monitoring will be assessed based on an annual review of monitoring data. Additionally, groundwater monitoring would be integrated into Whiteshell Laboratories' (WL's) existing Groundwater Monitoring Program that is compliant with Canadian Standards Association (CSA) N288.7-15 (CSA 2015).	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			closure phase. However, the use of inconsistent exposure scenarios related to drinking water sources might have affected the estimated health risk values or dose levels for the receptors. Uncertainties remain concerning potential cumulative effects of the Whiteshell Laboratories (WL)-related emission sources [e.g., Whiteshell Reactor Disposal Facility (WRDF) and Waste Management Area (WMA)] on the Farm A groundwater quality in the post-closure phase.		**Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **Change to ERA:** No changes to the ERA are required to address this IR. **References**: Canadian Standards Association (CSA). 2015. Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills, National Standard of Canada, CAN/CSA-N288.7-15.	
228_R2	Health Cananda	Section 3.4.9.1.5, pg.182	**Context:** As part of the proposed disposal processes, "(b)uried or embedded services outside of the WRDF that may provide a preferential hydraulic pathway will be removed or sealed**."** (Section 3.4.9.1.5). **Rationale:** If the subsurface conduits will be sealed and left on-site, they may serve as preferential pathways for groundwater flow and accelerate contaminant transport to the Winnipeg River, depending on degradation rates of the sealing material.2	CNL is to clarify whether the subsurface conduits outside the WRDF will be removed or left on-site. Should the sealed conduits be left on-site, provide detail about where they are and why they are not likely to serve as preferential pathways for groundwater. Alternatively, remove all decommissioned subsurface conduits outside the WRDF.	**Resolved As:** CNL has identified subsurface conduits and excavations could present a pathway of increased hydraulic conductivity at the site. Generally speaking, subsurface infrastructure at the WL site is contained to the main campus and is present at depths above the general groundwater flow levels where contaminant migration would be expected to occur. Canadian Nuclear Laboratories (CNL) continues to work to identify these buried services and has identified the need to assess their impact on WR-1 as part of decision making on their remediation plans as they are developed. CNL has already identified key infrastructure that could impact WR-1; process water and process outfall systems that travel from the river to the main campus, and to WR-1 specifically. CNL has identified these service lines as likely requiring removal, or at least excavation and installation of hydraulic plugs/breaks, to ensure the pathway does not connect to the river directly. The plugs/hydraulic breaks would be likely composed of clay soil compatible with the natural conditions, and compacted to meet existing hydraulic conductivity expectations for overburden layers at the site, consistent with the assumptions and measured values used in the Post-Closure Safety Assessment (Golder 2021) supporting the Environmental Impact Statement (EIS; WSP 2025). Such barriers would not be subject to degradation, consistent with existing soils. The details of exactly which mechanical services will be removed, and which will be left in place, will be determined based on the proposed end-state for the overall Whiteshell site decommissioning. The unpublished draft Whiteshell Laboratories (WL) Remediation Plan (formerly Land-Use & End-State Plan) indicate that all buried conduit and mechanical services will be removed unless a safety case can be made to leave them in place.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					CNL commits to include explicit reference to the WR-1 Decommissioning Safety Assessment in the WL Remediation Plan, as part of the criteria that will be used in assessing any buried mechanical services for in-situ abandonment, and in development of detailed approaches to remediation and removal, or in situ abandonment of these buried services. **Change to EIS:** The following text has been appended to the end of Section 3.4.9.1.5: 'The requirement to align the decommissioning strategy for buried mechanical services on the WL site will be included in the overall end-state plan for the WL site, outside the scope of this EIS.' **References**: WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025. Golder. 2021. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021.	
229_R2	Health Canada	EA Follow-up Program Table 1, Pg 25 to 23	**Context:** The EA follow-up program outlines the proposed environmental monitoring plans, including information on the environmental media to be monitored, sampling locations, radiological/chemical parameters to be analyzed, and sampling frequency (Table 1). **Rationale:** Insufficient information is provided on how the environmental monitoring plans were developed. Individual monitoring activities listed in Table 1 could be provided with the literature/information sources that the activities are based on, specific ERA sections that stipulate reasons for excluding potential monitoring	CNL is to provide detail on how the environmental monitoring plans were developed, including rationale for the inclusion, or exclusion, of individual monitoring activities and for deviations from the CSA Standards.	**Resolved As:** The Environmental Assessment Follow-up Monitoring Program (EAFMP) for Whiteshell Laboratories (CNL 2018), is the overall program for the entirety of the Whiteshell Laboratories (WL) site. It contains monitoring activities that make up our current environmental monitoring program, which encompasses all activities at the WL site approved through the Comprehensive Study Report (AECL 2001), and the Decommissioning Licence (NRTEDL-W5-8.00/2024). The WR-1 In Situ Decommissioning Project, will also require an environmental assessment follow-up monitoring program, and Canadian Nuclear Laboratories (CNL) intends to amend the existing programs to incorporate any additional monitoring or surveillance not already in place. CNL has done so in the draft EAFMP revision and included Work Package #10, which outlines the WR-1 specific elements of the EAFMP. All other elements of this program, including the existing monitoring program for the WL site, are out of scope of this assessment. CNL has identified the key monitoring and surveillance activities for the WR-1 In Situ Decommissioning Project in Section 11 of the Environmental Impact Statement (EIS), specifically in Table 11.1-1. These items, combined with the proposed revisions to the WL EAFMP, provide the clear framework and key features of the WR-1 In Situ Decommissioning Follow up Program, and meet the requirements of REGDOC 2.9.1 Appendix A.3.10 (CNSC 2020), and paragraph 19(1)(e) of Canadian Environmental Assessment Act (CEAA) 2012 (CEAA 2012) which states that "the EIS shall include a framework or preliminary program upon which EA [Environmental Assessment] follow up actions will be managed throughout the life of the project." **Change to EIS:** No changes to the EIS are required in response to this IR. **References**:	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			activities, and/or detailed rationale for any deviations from the Canadian Standard Association (CSA)'s Standards. For instance, it remains unknown why strontium (Sr)-90 will be conditionally monitored in surface water of the Waste Management Area ditches, while the parameter will not be monitored in groundwater of the same location. **References:** CSA. 2019. N288.4:19, Environmental monitoring programs at nuclear facilities and uranium mines and mills CSA. 2011. N288.5:11 (R2021), Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills CSA. 2015. N288.7:15 (R2020), Groundwater protection programs at Class I nuclear facilities and uranium mines and mills		CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. AECL. 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNSC. 2020. Environmental Protection – Environmental Principles, Assessments and Protection Measures. REGDOC-2.9.1, version 1.2. September 2020. CEAA. 2012. Canadian Environmental Assessment Act, 2012.	
230_R2	Health Canada	Section 6.2, pdf pg.349 Section 6.8, pdf pg.789, 792, 819 Public Information Program (PIP):	**Context:** A quantitative noise assessment was not conducted because there are no sensitive receptors identified in the vicinity of the project (Section 6.2). Project-related noise emissions are considered a	CNL is to Include a 24- to 48-hour response initiation in the PIP to ensure that noise complaints are addressed in a timely manner and that the complaint response and overall	**Resolved As:** The Whiteshell Laboratories (WL) site is well secluded from nearby residents, and neighboring properties, which is why Canadian Nuclear Laboratories (CNL) does not expect any impacts on humans as a result of nuisance noise. CNL has been decommissioning Whiteshell Laboratories (WL) since 2002 and has been doing so under the Public Information Program (PIP) as referenced in the Environmental Impact Statement (EIS) as part of its decommissioning licence. The Canadian Nuclear Safety Commission (CNSC) has accepted these programs as adequate for the overall decommissioning of the WL site. The WR-1 In Situ Decommissioning Project is a part of the overall WL Site Decommissioning, and is comparable in	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
		Referred in various EIS Sections	nuisance that may be experienced during traditional land and resource use activities (Section 6.8). Health Canada anticipates that public complaints related to project impacts on noise levels will be addressed by the PIP that is mentioned in various places within the EIS and has been the mechanism to address noise complaints on other similar projects (i.e., Near Surface Disposal Facility). The PIP was updated in 2021 and reflects a 30-working day response time to address questions and issues. **Rationale:** A 30-day response time for addressing short-term or longer-term noise concerns is not sufficient to ensure that complaints are addressed in a timely manner. A more adequate timeline would be to respond as soon as possible, ideally within 24 to 48 hours of the complaint (which has been proposed in other federal impact assessment projects in the past). The information tracked as part of the noise complaint resolution process should include the date and time of the complaint, the approximate location of the complainant (if possible), any specific noise(s) that may have	outcome be recorded and available upon request by an interested party.	noise levels, as it utilizes similar equipment and techniques that have been in use at WL for more than 20 years. This demonstrates the effectiveness of CNL to adequately manage the decommissioning work with the programs currently in place. Given the secluded location of the site, and the 23 year track record decommissioning, CNL disagrees that the PIP needs to be revised, and proposes that the existing plan is adequate with respect to nuisance noise. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: N/A	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			resulted in the complaint, climatic information at the time of the complaint (wind speed, wind direction, humidity, etc.), the date of the response, and the overall outcome/resolution.			
231_R2	MMF	EIS Sections 2.5.2.3 and 2.5.2.4	**Context:** In Section 2.5.2.3 considering influence of public safety in a post-closure post-Institutional Control phase of the project on the alternatives assessment "it was assumed that that there would be no workers present. All people would be considered the public. The primary risk to the public would be from emissions of radiological and non-radiological contaminants over time". However, in Section 2.5.2.4 considering the influence of socio-economic environment "Socio-economic effects were not evaluated for the post-Institutional Control period. This phase assumes that all knowledge and control of the site has been lost, so the site could not influence the actual or perceived socio-economic benefits or drawbacks". The MMF is greatly concerned that CNL suggest in a post-closure post-Institutional Control phase of the project, CNL appears to suggest that WR-1	The MMF seeks clarity from CNL (and AECL) on how they envision public awareness of the WL site during the post-Institutional Control of the site. Additionally, in describing this phase, the MMF seeks to understand how CNL or other applicable organizations with oversight responsibilities have considered the potential risks to human and environmental health during this period, and how it has been considered within the scope of the EIS.	**Resolved As:** Post-Institutional control is by definition, a period where Canadian Nuclear Laboratories (CNL) or Atomic Energy of Canada Limited (AECL) no longer have control of the site. The assumptions made regarding institutional control, loss of knowledge, and the risks during that post-institutional control period, are made for the purpose of discussing the various options comparatively. The assessment looks at the alternatives in all phases or potential phases of the project. It is unreasonable for CNL to assume it will have control and knowledge for thousands of years. The Project does not allow for uncontrolled release of contaminants at a far future date. The assessment attempts to describe a future scenario where institutional controls have failed, and knowledge of the facility is lost. In this situation, any person or community would have no knowledge of a waste facility, and thus the only impact they can have socioeconomically, is by the environmental impacts they may or may not have. It is not implying that any of the alternatives will have an environmental impact. It is indicating that there could not be a socioeconomic effect without there first being an environmental effect. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** N/A	**Follow-up IR 231 R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			may produce biophysical risks as a result of from emissions of radiological and non- radiological contaminants over time, however, during this phase all knowledge and control of the site has been lost, so the site could not influence the actual or perceived socio- economic benefits or drawbacks. As a result it appears that CNL suggest that they are will to allow for preventable risks to impact public safety, however, the public will be unaware.			
231_R3	MMF	EIS Sections 2.5.2.3 and 2.5.2.4	**Context:** CNL have updated this section to speak to the use of public safety in the post-closure phase (post institutional control) as a method of determining more and less preferred alternatives. However, the MMF is concerned that CNL appear to be framing alternatives from the perspective of containing radiological and non-radiological materials, implying a presumption that containment is preferrable to removal or elimination. The MMF recognizes that all alternatives being contemplated, waste products will be contained, however, it is expected that for alternatives involving removal of waste and off-site disposal, disposal sites will be contemplated outside of	The MMF seeks further understanding of how CNL (or its successors) would achieve the ALARA standard for future humans who have no knowledge of the potential hazards which exist at the WR-1 location. In considering potential risks posed to workers during decommissioning and future risks to an unwitting public, how has CNL considered this trade off within the scoring of the Alternatives Assessment.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			the scope of this Environmental Assessment - as a result, the best alternative is one in which radioactive and non-radioactive materials are eliminated from the WL environment. As this relates to the initial issue being raised by the MMF, the MMF sees all alternatives in which radioactive materials being stored at WL being a potential source of emissions of radiological contaminants overtime, which may result in biophysical impacts or if known psychological impacts, which are directly linked as potential impacts on Red River Metis Citizens. In conducting their Alternatives Assessment, CNL have assigned equal weighting to Worker Safety as it does Public Safety, which includes, for the purposes of this analysis, Red River Métis Citizens. The MMF recognizes that the safety standard for radiation exposure, which has been established in Canada and outlined in the Radiation Protection Regulations, as well as RegDocs 1.6.2, 2.7.1, and 2.1.2 and others, is As Low as Reasonably Achievable (ALARA). In short, this standard is intended to not simply set a guideline for what constitutes acceptable			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			exposure for workers and the general public but establishes a principle in which all radiation safety control efforts should be oriented to achieve exposure levels which are a low as reasonably achievable. The MMF believe that in establishing radiation safety, as well as predictions for potential exposure as part of decommissioning efforts of WR-1, ALARA is to be considered at any point where a decision is contemplated in which radiation exposure may occur. The MMF feel that in considering the use of ISD relative to other alternatives, CNL must contemplate a trade-off between achieving ALARA for workers or for the public. CNL argue that ISD will have a lower risk of exposure for workers and therefore is in alignment with ALARA, a feature which significantly impacts CNL's Alternative Means Assessment (see EIS Table 2.7-2). However, in leaving radioactive waste material on site, CNL appear to fail to consider the relative increase in risk associated with public exposure during institutional and post-institutional control, which is assumed to present the same level of risk for all alternatives.			

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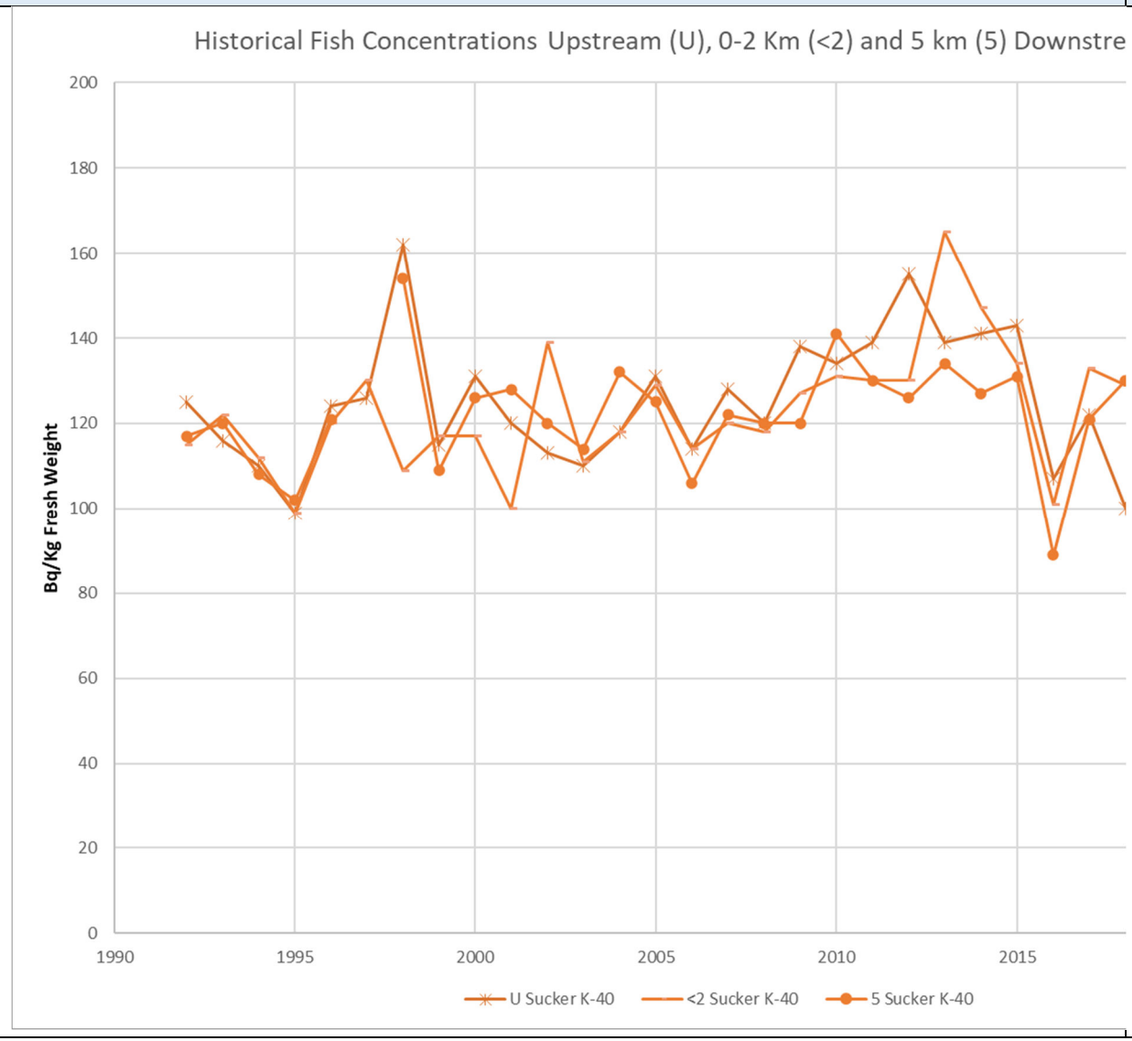
			The MMF fundamentally disagrees as the radioactive waste, though designed to be permanently contained, will continue to have an influence on the environment (and those who use it), as well as maintain a permanent risk for future exposure due to unforeseen release of contaminated material. Since the duration in which memory of the hazards that exist at WR-1 will be assumed to be lost in the future (~300 years), future humans will not be able to take measures to minimize exposure. As memory of the hazards will be lost, mitigations or other measures to protect future generations are not possible. As a result, the MMF do not believe that through the use of ISD, CNL are able to attain the standard of ALARA for the general public. Under a dismantling and removal alternative, CNL would be in a position to implement mitigation measures or other active programming to minimize exposure risks to workers, with long-term exposure risks to future generations being negligible. Therefore, we argue that in establishing a preference for ISD			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			over dismantling and removal of WR-1, CNL apply ALARA to workers, without the ability to achieve ALARA for the general public, especially in the future when memory of the hazards is lost. We therefore see that to achieve ALARA for the general public, a dismantling and removal alternative is the only available option, maintaining an active ability to adopt measures to achieve or nearly achieve ALARA for workers. For CNL to create an optimal and "most safe" environment during the post-institutional control phase, a hierarchy must exist in which alternatives resulting in the complete removal or elimination of radioactive and nonradioactive contaminant, be employed in support of selecting the preferred alternative.			
232_R2	MMF	EIS Section 6.5.5.2.1	**Context:** CNL described the sediment contamination at the outfall site and immediately downstream as “highly localized and spotty” and that sediment sample collection was difficult due to the inconsistent river bottom at the sites. Part of the challenge with sediment analysis in riverine systems is that flowing or dynamic movement of currents result in highly localized	The MMF request that the methods used for sediment sampling for radionuclide assessment as disclosed to reference whether best practices for sediment collection were used to accurately characterize each of the sediment sites at the outfall and downstream of WL. If sampling was conducted to the standards in an	**Resolved As:** The description of the environment provided in Section 6.5.5.2.1 is accurate. CNL completed work to characterize the river sediment contamination as part of the Comprehensive Study Report (Appendix B; AECL 2001). CNL’s sampling records support the conclusion that contamination in sediments are indeed localized and spotty, rather than uniform or contiguous. At CNL, all environmental sampling is done according to an established procedure, and is carried out by qualified environmental technicians. These procedures are the approved methods CNL follows to meet the requirements of its environmental protection program, which are compliant with the relevant Canadian Standards Association (CSA) N288 series standards on environmental protection and monitoring. In the particular case of sediment sampling, the sampling procedure calls for the technician to collect a sample at several locations in the river. At each location, the sampling tool is used to collect samples from the river bed (CNL 2020). In some instances, the tool is unable to obtain any sediment or only a small and insufficient amount. In such cases, sampling in the	**Partially accepted. Follow-up IR 232_R3**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			depositional and erosional zones that may change based on factors such as a flow velocity. The MMF are concerned that the proponent used language that minimizes potential effects to biota from these contaminated sediments as benthic organisms tend to also have a highly localized environment an interactions with contaminated sediments pose a risk to this important food source for fish. Additionally, we are concerned that a lack of observed areas of high contaminants is being confused with a lack of discharge to the environment, with the potential for contaminants being deposited further down stream than included in this assessment.	Environmental Effects Monitoring assessment then many sediment subsamples should make up a single sample and therefore "patchy and localized" would not be sufficient descriptors.	vicinity of the specified location continues until enough sediment can be collected to form a sample. This composite sample is representative of the sediments at the general sample location. Annually, CNL samples sediments from the Winnipeg River at 12 locations both up and down stream of the outfall. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL. 2020. Winnipeg River Sediment Sampling and Sample Preparation. WL-509251-PRO-012. Revision 0. February 2020.	
232_R3	MMF	EIS Section 6.5.5.2.1	The 2023 IR 232_R2 made by the MMF pertaining to "Description of the Environment – Section 6.5.5.2.1 General Overview" requested that language used by CNL stating that sediment contamination at the outfall site and immediately downstream is “highly localized and spotty” be modified because it minimizes potential effects to biota from these contaminated sediments as benthic organisms tend to also have a highly localized environment and interactions	The MMF requests quantitative or semi-quantitative understanding of the terms localized and spotty, as used in the context of the EIS as a function of volume or surface area		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			with contaminated sediments pose a risk to this important food source for fish. Revision 5.0 of the EIS still uses the same language, stating that "variation of activity is not unexpected for all samples due to the highly localized and spotty nature of the contamination in the river sediments at the outfall". The qualitative nature of the terms “localized and spotty” fails to provide confidence to the MMF that CNL have a firm understanding of the volume and magnitude of contamination, or have delineated contaminants to appropriately inform management decisions.			
233_R2	MMF	EIS Table 6.5.5-1	**Context:** CNL reports concentrations of radionuclides in fish tissue for harvested species by the Red River Métis including walleye, northern pike, lake whitefish, white sucker, and a redhorse species, however the summary statistics for average concentrations do not provide any sort of clarity on changes to these concentrations as they relate to the project.	The MMF request that CNL provide the timeline of formative advancements at WL including project construction, laboratory operations, when operations ceased, and when closure activities first began. This information should also be provided graphically with the above key points labeled for a more fulsome review of the risk of impacts to the aquatic ecosystem, fish, and Red River Métis harvesters.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has summarized the requested timeline information as follows: • Whiteshell Laboratories (WL) was established in 1963. • Whiteshell Reactor #1 (WR-1) came online in 1965. • WR-1 ceased operations in 1985. • Research & Development Activities at WL were largely suspended between 1996 and 1998. • WL received their first decommissioning licence in 2002. • WL has been in decommissioning from 2002 to present. The fish concentration data in Section 6.5 was not initially presented visually because the data does not show any trends, other than the values are low, consistent within their expected natural ranges and not significantly different upstream vs downstream of the WL site. The data supports the statement that the WL site has not impacted fish as a result of historical operations, and establishes that these levels are the appropriate existing background concentrations against which the project impacts will be assessed. The assessment of impacts to fish and the aquatic environment overall are discussed in Section 6.5.6, as well as in Section 6.7.2. CNL has provided an example of a visualization of the data below to reinforce this, but has not revised the Environmental Impact Statement (EIS) at this time.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
						

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					Change to EIS: No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** N/A	
234_R2	MMF	EIS Table 6.5.6-1	**Context:** CNL has identified solute transport and/or the release of chemical and radiological contaminants in the long-term as a primary pathway in one section (hydrology) and as a secondary pathway in another (aquatic environment). CNL has not considered the uptake of radionuclides by aquatic biota as a concern in their assessment. The MMF are aware that radionuclides can be up taken and bioaccumulated in some species of fish, and that bioaccumulation of said contaminants tends to occur more frequently in larger bodied, piscivorous species which poses a risk to fish health and well-being. Contamination of fish harvested by Red River Métis such as walleye and northern pike are of great concern to the MMF and Red River Métis citizens.	The MMF disagree with the Secondary Pathway designation and request that CNL provide evidence to substantiate the different analysis and valuation of radioactive chemical release into the valued components of water and the aquatic environment.	**Resolved As:** Numerous assessments are used to support the assessment of effects on the Aquatic Environment. For example, air quality (Section 6.2.1 Air Quality), hydrology (Section 6.4.1 Hydrology), surface water quality and sediment quality (Section 6.4.2 Surface Water Quality) and ecological health (Section 6.7.2 Ecological Health). The intent of Section 6.5 Aquatic Environment is to summarize the results of the other relevant discipline assessments and to evaluate whether or not changes to those environmental components will have a residual adverse effect on fish and fish habitat (the Valued Component for the Aquatic Environment). The reviewer is correct that Canadian Nuclear Laboratories (CNL) has identified solute transport and/or the release of chemical and radiological contaminants in the long-term as **a primary pathway for surface water quality and as a secondary pathway for fish and fish habitat**. This is because the potential groundwater seep is predicted to have a negligible residual effect on the Winnipeg River surface water quality, and therefore, is considered as a secondary pathway for fish and fish habitat; the only effect to fish habitat would be from changes to surface water quality. However, the assessment does not ignore the effects of solute transport and/or the release of chemical and radiological contaminants on the aquatic environment and fishing the long-term in Section 6.7 Human and Ecological Health of the Draft Environmental Impact Statement (EIS; WSP 2025). The Section 6.7.2 Ecological Health of the Draft EIS quantitatively assess the impacts of releases of chemical and radiological contaminants over the long-term and provide estimates of dose and risk to fish (carmine shiner, walleye, lake sturgeon), which accounts for the uptake of contaminants by aquatic biota. As stated in Section 6.7.2.9 Residual Effects and Determination of Significance of the Draft EIS, during post-closure, the incremental change in radionuclide levels in the Winnipeg River resulting from the transport of radionuclides from the Whiteshell Reactor Disposal Facility (WRDF) to the Winnipeg River via groundwater is predicted to be not practically distinguishable from background levels (see Section 6.4.2.7.2 Application Case Results). There are no exceedances of the 9.6 mGy/day radiation benchmark for the aquatic biota in the Winnipeg River during the post-closure phase. Similarly, there are no exceedances of the 2.4 mGy/day radiation benchmark for terrestrial and riparian biota on or near the Whiteshell Laboratories (WL) site. All predicted doses are well below these levels for the post-closure phase. Therefore, it is unlikely that there would be significant adverse effects on aquatic populations or communities as a result of radionuclide releases during the post-closure phase. There are no exceedances of the Hazard Quotients (HQs) identified for exposure of the ecological receptors to cadmium, lead, HB 40 (with the exception of benthic invertebrates in	**Partially accepted. Follow-up IR 234_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					groundwater) and xylene. Therefore, no significant adverse effects on aquatic populations or communities as a result of these chemical releases are predicted. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** WSP. 2025. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 5. January 2025.	
234_R3	MMF	EIS Table 6.5.6-1	**Context:** The MMF expressed concern about how CNL has identified solute transport and/or the release of chemical and radiological contaminants in the long-term as a primary pathway in one section (hydrology) and as a secondary pathway in another (aquatic environment). CNL has also not considered the uptake of radionuclides by aquatic biota as a concern in their assessment. In response to this, the MMF expressed that they disagree with the Secondary Pathway designation for aquatic environment, and recommend that CNL provide evidence to substantiate the different analysis and valuation of radioactive chemical release into the valued components of water and the aquatic environment. Revision 5 of the EIS appears to still identify the release of chemical and radiological	CNL is requested to provide evidence to substantiate the different analysis and valuation of radioactive chemical release into the VCs of water and the aquatic environment.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			contaminants in the long-term as a primary pathway for hydrology, and as a secondary pathway for the aquatic environment. The only reference that could be found in Revision 5 for acknowledgment of uptake in aquatic biota is in Table 6.7.2-9 Exposure Pathways for Selected Valued Components during the Post-Closure Phase. However, there does not appear to be "concern" expressed about this potential uptake.			
235_R2	MMF	EIS Section 6.5.6.2.1	**Context:** CNL states that "Follow-up monitoring during the post-closure phase will be completed to confirm radionuclide concentrations in both surface water quality and fish flesh will verify the anticipated low effects (or lack thereof) and provide information for use in adaptive management to address potential unforeseen effects." (p 6-267). Then later states that "Monitoring and follow-up programsfor the aquatic environment are not identified specific to the Project as there are no predicted residual effects to fish and fish habitat. However, CNL will implement an Environmental Assessment	These statements are contradictory and can be found on thesame page (6-267). The MMF requests that CNL acknowledge that radioactive contaminants will be released into the environment consistently for the foreseeable future. It is the MMF'sposition that CNL must sample fish and water in perpetuity to capture any effects to the aquatic environment from residual project effects and enact mitigations to protect the aquatic environment if/when effects or impairments are seen. The MMF request CNL submit a draft follow-up	**Resolved As:** Canadian Nuclear Laboratories (CNL) currently executes an environmental assessment follow-up monitoring program (EAFMP; CNL 2018) for the overall decommissioning of the Whiteshell Laboratories (WL) Site. This EAFMP is the basis for all of CNL's current environmental monitoring plans. As part of the Environmental Impact Statement (EIS) for the Project, CNL must identify monitoring and follow-up activities related to the scope of the WR-1 Project. That is, CNL must propose an EAFMP specific to the project being assessed. WR-1 is part of the overall decommissioning of Whiteshell Laboratories, and CNL intends to integrate the WL Site EAFMP, and the WR-1 EAFMP into a single program. CNL has proposed to do this by adding a WR-1 specific work package (Section 5.4 "Work Package #10 – Whiteshell Reactor Disposal Facility – Enhanced Monitoring") to the existing WL Site EAFMP. For each of the Monitoring and Follow-up sections in the Environmental Impact Statement (EIS), CNL identifies the proposed monitoring and follow-up specific to the scope and conclusions of the EIS. CNL reconciles the recommended monitoring of the Project, and the existing site EAFMP activities. Whiteshell specific monitoring is summarized in the EIS Section 11, Table 11.1-1 (Golder 2022). These form the basis of the monitoring and surveillance plan that CNL will submit as part of the application. For each of the Monitoring and Follow-up sections in the EIS (Golder 2022), CNL identifies the proposed monitoring and follow-up specific to the scope and conclusions of the EIS. CNL reconciles the recommended monitoring of the WR-1 EIS, and the existing site EAFMP activities. In this particular case, as an example, because the EIS does not indicate any impacts to fish, there is no proposed fish monitoring for the WR-1 EAFMP. However, fish monitoring is already part of the overall site EAFMP, and will continue to be in effect.	**Partially accepted. Follow-up IR 235_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Follow-up Program for the Project as identified for other environmental components (e.g., groundwater quality and surface water quality) to verify the accuracy of environmental effects and determine the effectiveness of mitigation that has or is to be implemented.	environmental monitoring program for review to ensure CNL will be able to provide adequate protection to the aquatic environment.	CNL has made additional commitments to augment the proposed monitoring to incorporate the requests of the Manitoba Métis Federation (MMF), including the installation of an additional groundwater sampling location. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
235_R2	MMF	EIS Section 6.5.6.2.1		See response to IR 125_R3		
236_R2	MMF	EIS Section 11.1.1	**Context:** CNL references the "Work Package #10 Whiteshell Reactor Disposal Facility (WRDF) Enhanced Monitoring" but does not provide said work package in the revised EIS or list this work package in the EIS references. The lack of follow-up program details in the EIS is very concerning to the MMF as our review cannot be considered complete without some idea of the programs, mitigations, and adaptive management plans CNL will take to protect the Winnipeg River and the environment at large.	The MMF request that CNL submit their draft follow-up environmental monitoring program for review through the Environmental Assessment proceedings to ensure CNL will be able to provide adequate protection to the aquatic environment.	**Resolved As:** Canadian Nuclear Laboratories (CNL) currently executes an environmental assessment follow-up monitoring program (EAFMP; CNL 2018) for the overall decommissioning of the Whiteshell Laboratories (WL) Site. This EAFMP is the basis for all of CNL's current environmental monitoring plans. As part of the Environmental Impact Statement (EIS) for the Project, CNL must identify monitoring and follow-up activities related to the scope of the WR-1 Project. That is, CNL must propose an EAFMP specific to the project being assessed. WR-1 is part of the overall decommissioning of Whiteshell Laboratories, and CNL intends to integrate the WL Site EAFMP, and the WR-1 EAFMP into a single program. CNL has proposed to do this by adding a WR-1 specific work package (Section 5.4 "Work Package #10 – Whiteshell Reactor Disposal Facility – Enhanced Monitoring") to the existing WL Site EAFMP. Whiteshell specific monitoring is summarized in the EIS Section 11, Table 11.1-1 (Golder 2022). These form the basis of the monitoring and surveillance plan that CNL will submit as part of the application. For each of the Monitoring and Follow-up sections in the EIS (Golder 2022), CNL identifies the proposed monitoring and follow-up specific to the scope and conclusions of the EIS. CNL reconciles the recommended monitoring of the WR-1 EIS, and the existing site EAFMP activities. In this particular case, as an example, because the WR-1 EIS does not indicate any impacts to fish, there is no proposed fish monitoring for the WR-1 EAFMP. However, fish monitoring is already part of the overall site EAFMP, and will continue to be in effect. In addition, CNL will be completing monitoring of the river water, to confirm there are no impacts to the water, and thus no impacts to the river habitat overall.	**Partially accepted. Follow-up IR 236_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					CNL has made additional commitments to augment the proposed monitoring to incorporate the requests of the Manitoba Métis Federation (MMF), including the installation of an additional groundwater sampling location. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the CNSC as part of the license application. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
236_R3	MMF	EIS Section 11.1.1	**Context:** IR 236_R2 raised by the MMF in 2023 was that CNL references "Work Package #10 Whiteshell Reactor Disposal Facility Enhanced Monitoring" in Section 11.1.1 (Page 11-2 in the Revision 5.0 of the EIS), but does not provide said work package, nor does it include a reference to it in the EIS References section. This request has not been addressed in the Revision 5.0. This lack of details is very concerning to the MMF, as the review cannot be considered complete without some idea of the programs, mitigations, and adaptive management plans that CNL will take to protect the Winnipeg River and the environment at large.	CNL is requested to share the Work Package #10 with the MMF, as well as the draft Environmental Assessment Follow-up Program, to ensure that CNL will be able to provide adequate protection to the aquatic environment		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
237_R2	MMF	EIS Section 6.4.1.5.2.2	**Context:** CNL note that the LSA is a very low-lying area with local elevations of only a few tens of centimetres; the elevation difference from the WL main campus to the top of the riverbank is approximately 0.5m. However, there is a 10 m difference between normal water elevations in the river and top of bank elevation. This assessment of relative water level elevation assumes that current flow management structures are in place. Additionally, generally greatest concern regarding flood impacts occur when water levels are their highest.	The MMF requests that CNL provide information on the relative elevation between: A. High water levels under current flow regimes (assuming the presence of existing dam structures) and the WLmain campus, and; B. High water levels under naturalize flow regimes (assuming the absence of existing dam structures) and the WL main campus.	**Resolved As:** The potential effect of flooding on the Project and more broadly, the Whiteshell Laboratories (WL) site is discussed in Section 10 Effects of the Environment on the Project. Specifically, potential impacts of flooding on the Project are discussed in Section 10.2.2 Extreme Rainfall Events, Snowmelts and Flooding. As stated in this section: "Flooding of the WL site due to a rise in the Winnipeg River is remote and has been previously evaluated in the Comprehensive Study Report for the WL Decommissioning Project (AECL 2001). A failure of the Seven Sisters Dam, which is upstream of the WL site, is considered a bounding scenario for a potential rise in river levels due to extreme rainfall events (1 in 100-year precipitation event). Flood levels of the Winnipeg River at the WL site following a failure of the Seven Sisters Dam were estimated to take 1.5 hours to reach a peak at 7 m above normal water levels (AECL 2001, Section 6.5). As such, a flooding incident of this magnitude would affect the shoreline of the Winnipeg River adjacent to the WL site, but it would not flood the WL site. During the Closure Phase, decommissioning activities are encompassed by the existing Emergency Preparedness and Response plan, and the site design event (e.g., water conveyance structures and collection sumps) is a 1 in 100-year 24-hour precipitation event. The detailed design of the concrete cap and engineered cover have been prepared using the site design event consistent with that of recent, similar projects and commensurate with the 100 year design lifespan of the concrete cap and engineered cover. A rise in river level in response to ice jams or extreme rainfall events is considered a possible – occasional event (1 in 100 years to 1 in 1,000 years) based on historical occurrence data. However, Manitoba Hydro has contingency plans for comprehensive notification, warning, and response systems in case an emergency condition is detected." Based on the above, the assessment of potential effects (due to changing elevations) has considered high flows with the dams in place, as well as high flows with failure of the dams. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001.	**Partially accepted. Follow-up IR 237_R3 below**
237_R3 MMF		EIS Section 6.4.1.5.2.2	**Context:** The comment raised by the MMF regarding the 2023 Information Request pertains to Section 6.4.1.5.2.2 Drainage Patterns, within the EIS. Within this section, CNL state that "The LSA is a very low-lying area with local	CNL is requested to provide analysis of the circumstances in which the Winnipeg River may pose a threat to the LSA due to flooding or erosion associated with elevated water levels or stream		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			elevations of only a few tens of centimetres to a few metres; the elevation difference from the WL main campus to top of the riverbank is approximately 0.5 m. However, there is a 10 m difference between the normal water elevations in the river and top of bank elevation." The MMF expressed concern that this section does not adequately address elevation as it relates to: a) High water levels under current flow regimes (assuming the presence of existing dam structures) and the WL main campus, and; b) High water levels under natural flow regimes (assuming the absence of existing dam structures) and the WL main campus. Revision 5.0 of the EIS still makes the same statement (as quoted above), and does not appear to include any new information regarding high water levels under current flow regimes or natural flow regimes. Thus, this issue has not been addressed. CNL present a series of potential scenarios in which interactions between the WRDF and the surrounding environment. This includes the following events: • Unsealed Borehole	meandering in a scenario in which the Seven Sisters Dam has been removed.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			• Well in Plume • Localized Failure of the WRDF • WRDF Barrier Failure • Human Intrusion • Glaciation • Seismicity • Liquefaction The scenarios are intended to imagine circumstances in which humans or the environment are able to interact with contaminated waste material as a result of natural events, structural or materials failure, or unintended human intrusion. These disturbance scenarios are presented in addition to the normal evolution scenario (a base case scenario), Defence-in-depth cases, and sensitivity analysis cases. The MMF appreciates that this information has been made available for review as it provides additional insight into how CNL have considered the potential for reasonable risks to adversely affect the containment of radioactive and non-radioactive materials. However, the MMF is concerned that in presenting these scenarios, CNL have not fully contemplated the potential for interaction of multiple scenarios to occur			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			simultaneously. While it is not expected that events such as glaciation and seismicity to occur in a single event, human intrusion, or the development of a well in the groundwater plume is entirely plausible during a time in which the WRDF Barrier has partially of completely failed, yet its failure has not yet been detected. The MMF is concerned that such a scenario has not be contemplated or assessed, with the potential impact being greater risks for exposure as a result of these concurrent scenarios. The MMF is also concerned by the absence of flooding or migration of the Winnipeg River as part of the plausible scenarios. Currently, the Seven Sisters Falls Dam plays a critical role in controlling the hydrology of the Winnipeg River. It, however, shouldn't be expected that this dam or another control structure will remain in place for the next 10,000 years. As a result, flooding or uncontrolled stream meandering in the future may allow for significant interaction between the river and the WRDF, potentially to the point of eroding backfill material which is to serve as a barrier for			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			radioactive contamination. Further to the previous point, if such an event were to occur concurrently with the compromise of one or more containment layers, the potential for the release of radioactive contaminants (or non-radioactive contaminants), may be substantial, yet to date unqualified.			
238_R2	MMF	EIS Section 6.4.2.5.2.3	**Context:** CNL provides quotes from Sagkeeng First Nation and Black River First Nation, Brokenhead Ojibway Nation and Hollow Water First Nation, however, provide minimal context on how this information was used or incorporated into the understanding of past, current, or future surface water quality.	The MMF request CNL provide explanation on how Traditional Knowledge was used in the assessment of project impacts on surface water quality.	**Incorporated**: Canadian Nuclear Laboratories (CNL) acknowledges that limited context was provided in Section 6.4.2.5.2.3 of the Environmental Impact Statement (EIS) on how Traditional Knowledge was used in the assessment of Project impacts on surface water quality. The Traditional Knowledge from the Manitoba Métis Federation (MMF); confirmed the importance of surface water quality; validating the selection of surface water quality as a Valued Component. Specific information and concerns raised during Indigenous Engagement are provided in Section 6.4.2.2 of the EIS. The quotations included in Section 6.4.2.5.2.3 of the Environmental Impact Statement (EIS) are to provide observations and concerns related to the existing environment of the Winnipeg River. **Change to EIS:** The following text was added to Section 6.4.2.5.2.3 of the EIS. 'From the MMF: One participant noted two drinking water sources from within the 25 km Study Area. GISID 5202-16 indicates a pump in the Lee River which is the drinking water source for the participant's household. The participant explained that they used to drink water straight from the Lee River, but since moving back to the area in 2003, they have had to install multiple filters and reverse osmosis on their water coming from the Lee River. These filters have to be changed roughly every week and a half. The participant noted the high cost of these filters as well as costs associated with ongoing water quality testing (Shared Value Solutions 2019).' **References**: SVS (Shared Value Solutions). 2019. Whiteshell Reactor #1 Decommissioning, Manitoba Métis Traditional Knowledge, Land Use and Occupancy Study. January 2019.	**Accepted**
239_R2	MMF	EIS Section 6.4.2.7.1.1	**Context:** HB-40 is identified as reaching a maximum groundwater	The MMF request that CNL identify a biologically relevant threshold or	**Resolved As:** Table 7-3 of the Environmental Risk Assessment (ERA) identifies a toxicity benchmark of 2 µg/L for HB-40 which is identified as an IC25 divided by 10. The IC25 was derived from aquatic toxicity testing on HB-40, performed by AquaTox	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			concentration of 584 µg/L, however, it is unclear what an appropriate biological threshold is for this substance.	guideline for HB-40, supported by literature.	Testing & Consulting Inc. (Ecometrix 2017). This value is considered biologically relevant and is identified in Table 6.4.2-6 of the Environmental Impact Statement (EIS). The acute test endpoints are reported as a Lethal Concentration 50% (LC50) which is the concentration of HB-40 estimated to produce 50% lethality in test organisms. The chronic test endpoints include both an LC50, and an Inhibition Concentration 25% (IC25) which is the concentration of HB-40 that is estimated to cause 25% inhibition of growth or reproduction. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** Ecometrix. 2017. Memo Re: Results of Aquatic Toxicity Testing on Non-irradiated HB-40.	
240_R2	MMF	EIS Section 6.4.2.7.2	**Context:** In presenting the Application Case results, CNL note that in many instances radionuclides have no water guidelines or background concentrations available for comparison purposes. Generally, where guidelines are absence or not relevantsuch as in the case of assessing and environment with background levels naturally above guidelines, comparisons can be made to a suitable reference condition.	The MMF request that CNL provide suitable reference background numbers for radionuclides where guidelines are absent. Further, we request that CNL provide analysis on whether predicted groundwater and surface water concentrations of radionuclides are to be significantly higher than reference condition.	**Incorporated:** Limited data are available for this full suite of radionuclides on background concentrations in the Winnipeg River. Canadian Nuclear Laboratories (CNL) has done a literature search and found some background concentrations for some radionuclides in the Winnipeg River, a report by Sheppard and Sanipelli (2011) “Environmental radioactivity in Canada-measurements”. Table 6.4.2-13 of the Environmental Impact Statement (EIS) in Section 6.4.2.7.2 will be updated to include a column with “Background Surface Water Concentrations” and data from the Sheppard and Sanipelli report will be added for iodine-129, lead-210, radiuim-226, thorium-232, tritium, uranium-235, and uranium-238. For radionuclides with available background concentrations, the predicted groundwater concentrations are generally lower than background with the exception of iodine-129, tritium, and uranium-234. The predicted surface water concentrations are well below the available background concentrations for all radionuclides. For groundwater, background concentrations for non-radionuclides are provided in Table 5-2 of the Environmental Risk Assessment (ERA; Ecometrix 2024). Contaminants that are above surface water criteria (note there are no Canadian Council of Ministers of the Environment (CCME) criteria for groundwater) are bolded in the table and include cadmium and lead. **Change to EIS:** Table 6.4.2-13 was updated as follows:	**Partially accepted. Follow-up IR**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information

Predicted Radionuclide Concentrations in the Winnipeg River at the Nearfield and Farm A Intake

Radionuclide	Background Surface Water Concentration[(a)] (Bq/L)	Time of Maximum (yr)	Maximum Groundwater Concentration (Bq/L)	Surface Water Concentration Nearfield (Bq/L)	Surface Water Concentration Farm A Intake (Bq/L)
Actinium-225	NV	87,200	5.26×10^{-07}	4.08×10^{-13}	7.61×10^{-15}
Actinium-227	NV	157,200	5.44×10^{-07}	4.22×10^{-13}	7.94×10^{-15}
Bismuth-210	NV	204,000	1.52×10^{-03}	1.18×10^{-09}	2.17×10^{-11}
Calcium-41	NV	19,500	7.08×10^{-02}	5.49×10^{-08}	1.03×10^{-09}
Carbon-14	<2 [(c)]	1,006	$1.48 \times 10^{+03}$	1.02×10^{-03}	1.93×10^{-05}
Chloride-36	NV	162	2.27×10^{-04}	1.58×10^{-10}	2.97×10^{-12}
Gadolinium-152	NV	204	2.22×10^{-12}	1.54×10^{-18}	2.90×10^{-20}
Iodine-129	1.80×10^{-04} [(b)]	170	1.52×10^{-02}	1.05×10^{-08}	1.98×10^{-10}
Lead-210	<2.00×10^{-02} [(b)]	206,200	3.79×10^{-05}	2.94×10^{-11}	5.52×10^{-13}
Neptunium-237	NV	40,700	1.94×10^{-03}	1.50×10^{-09}	2.83×10^{-11}
Nickel-59	NV	486,000	$1.76 \times 10^{+00}$	1.36×10^{-06}	2.56×10^{-08}

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL						Accepted/ Request for follow-up information
					Niobium-94	NV	646,000	6.44×10^{-16}	4.99×10^{-22}	9.39×10^{-24}	
					Plutonium-239	NV	106,400	7.91×10^{-03}	6.14×10^{-09}	1.15×10^{-10}	
					Plutonium-240	NV	66,200	1.91×10^{-05}	1.49×10^{-11}	2.79×10^{-13}	
					Polonium-210	NV	199,800	3.95×10^{-01}	3.06×10^{-07}	5.75×10^{-09}	
					Protactinium-231	NV	159,200	5.45×10^{-07}	4.23×10^{-13}	7.95×10^{-15}	
					Protactinium-233	NV	40,400	2.58×10^{-06}	2.00×10^{-12}	3.75×10^{-14}	
					Radium-223	NV	157,700	9.18×10^{-06}	7.12×10^{-12}	1.33×10^{-13}	
					Radium-224	NV	1,903,000	5.71×10^{-11}	4.43×10^{-17}	8.13×10^{-19}	
					Radium-225	NV	87,300	4.51×10^{-06}	3.50×10^{-12}	6.54×10^{-14}	
					Radium-226	$<5.00 \times 10^{-03}$ (b)	203,700	8.70×10^{-06}	6.75×10^{-12}	1.27×10^{-13}	
					Radium-228	NV	936,000	5.73×10^{-11}	4.44×10^{-17}	8.35×10^{-19}	
					Silver-108m	NV	3,661	3.39×10^{-06}	2.49×10^{-12}	4.69×10^{-14}	
					Technetium-99	<0.2 (c)	10,600	1.46×10^{-01}	1.14×10^{-07}	2.13×10^{-09}	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL						Accepted/ Request for follow-up information
					Thorium-227	NV	160,000	1.01×10^{-06}	7.80×10^{-13}	1.46×10^{-14}	
					Thorium-228	NV	1,090,000	1.24×10^{-11}	9.64×10^{-18}	1.81×10^{-19}	
					Thorium-229	NV	89,300	9.91×10^{-07}	7.69×10^{-13}	1.45×10^{-14}	
					Thorium-230	NV	200,400	1.90×10^{-06}	1.48×10^{-12}	2.78×10^{-14}	
					Thorium-231	NV	117,000	1.31×10^{-06}	1.02×10^{-12}	1.76×10^{-14}	
					Thorium-232	5.70×10^{-04} (b)	632,000	1.24×10^{-11}	9.59×10^{-18}	1.80×10^{-19}	
					Thorium-234	NV	115,400	9.08×10^{-06}	7.04×10^{-12}	1.32×10^{-13}	
					Tritium	$1.60 \times 10^{+00}$ (b)	67	$3.66 \times 10^{+05}$	2.54×10^{-01}	4.77×10^{-3}	
					Uranium-233	NV	74,500	1.44×10^{-04}	1.11×10^{-10}	2.09×10^{-12}	
					Uranium-234	NV	126,500	4.52×10^{-04}	3.50×10^{-10}	6.59×10^{-12}	
					Uranium-235	5.90×10^{-05} (b)	118,000	1.84×10^{-04}	1.43×10^{-10}	2.69×10^{-12}	
					Uranium-236	NV	117,900	2.48×10^{-04}	1.93×10^{-10}	3.62×10^{-12}	
					Uranium-238	1.20×10^{-03} (b)	116,600	1.27×10^{-03}	9.88×10^{-10}	1.86×10^{-11}	
					Notes:						

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					a. Sample collected from Winnipeg River (Sylvia Lake) on May 6, 2007. Sylvia Lake is a forebay on the Winnipeg River approximately 19 km upstream of the WL site; sampled from boat ~50m off-shore of Carter Island. b. Sheppard, S. C., & Sanipelli, B. (2011). Environmental radioactivity in Canada–measurements. Report No. NWMO TR-2011-16, Nuclear Waste Management Organisation, Toronto, Ontario. May. c. CNL. 2023. Environmental Monitoring in 2022 at Whiteshell Laboratories. WL-509243-ACMR-2022. Revision 0. **References:** Sheppard, S. C., & Sanipelli, B. 2011. Environmental Radioactivity in Canada–Measurements. Report No. NWMO TR-2011-16, Nuclear Waste Management Organisation, Toronto, Ontario. May 2011. CNL. 2023. Environmental Monitoring in 2022 at Whiteshell Laboratories. WL-509243-ACMR-2022. Revision 0. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024.	
240_R3	MMF	EIS Section 6.4.2.7.2	**Context:** IR 240_R2 raised by the MMF in 2023 pertains to Section 6.4.2.7.2 Application Case Results, within the EIS. The MMF is concerned that where guidelines for certain parameters are absent or not relevant (such as in the instance where background levels are naturally above guidelines), comparisons have not been made to a suitable reference condition. The MMF requested that CNL provide suitable reference background numbers for radionuclides where guidelines are absent. The MMF also requested that CNL provide analysis on whether predicted groundwater and surface water concentrations of radionuclides are to be significantly higher than reference conditions. Revision 5.0 of the EIS contains tables within Section 6.4.2.7.2 which	Where background information is missing, the MMF want to see comparison to appropriate reference locations.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			show background concentrations where the data was available to them, but there are a considerable number that say "NV".			
241_R2	MMF	EIS Section 6.4.2.9	**Context:** In outlining their plans for follow-up CNL note that the development and implementation of an Environmental Assessment Follow-up Program will only occur after the conclusion of the assessment. Presently, few details are provided to demonstrate that this program will meaningfully monitor and assess potential sources of contaminants in surface water, and further, as of yet there are no firm timelines outlining the duration of the program. Finally, CNL fails to illustrate how they will integrate adaptive management into this monitoring plan in the event their predictions underestimate contaminants able to enter surface waters.	The MMF requests that CNL develop a draft Environmental Assessment Follow-up Program that outlines proposed sampling parameters, locations, frequency, and program duration for surface waters associated with WR-1. The MMF requests that CNL outline an adaptive management approach for collecting information, interpreting, triggering action, and implementing response in the event surface water contaminant predictions are inaccurate.	**Resolved As:** **A.** Canadian Nuclear Laboratories (CNL) currently executes an environmental assessment follow-up monitoring program (EAFMP) [CNL 2018] for the overall decommissioning of the Whiteshell Laboratories (WL) Site. This EAFMP is the basis for all of CNL's current environmental monitoring plans. As part of the Environmental Impact Statement (EIS) for the Project, CNL must identify monitoring and follow-up activities related to the scope of the WR-1 Project. That is, CNL must propose an Environmental Assessment Follow-Up Monitoring Program specific to the Project being assessed. WR-1 is part of the overall decommissioning of Whiteshell Laboratories, and CNL intends to integrate the Site EAFMP, and the WR-1 EAFMP into a single program. CNL has proposed to do this by adding a WR-1 specific work package (Section 5.4 "Work Package #10 – Whiteshell Reactor Disposal Facility – Enhanced Monitoring") to the existing Site EAFMP. For each of the Monitoring and Follow-up sections in the EIS, CNL identifies the proposed monitoring and follow-up specific to the scope and conclusions of the EIS. CNL reconciles the recommended monitoring of the WR-1 EIS, and the existing site EAFMP activities. Whiteshell specific monitoring is summarized in the EIS Section 11, Table 11.1-1. These form the basis of the monitoring and surveillance plan that CNL will submit as part of its application. The EIS is very clear that the program will monitor for at least 100 years. The monitoring will continue beyond the 100 year period until the Canadian Nuclear Safety Commission (CNSC) or other authority having jurisdiction deems it acceptable to reduce or stop monitoring. To do so, CNL would bear the burden of justifying any proposed changes to the monitoring. CNL has made additional commitments to augment the proposed monitoring to incorporate the requests of the Manitoba Métis Federation (MMF), including the installation of an additional groundwater sampling location. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the CNSC as part of the license application. **B.** CNL commits to the adaptive management approach outlined in Section 11.2 of the EIS (Golder 2022) that includes identifying unplanned conditions, assessing the magnitude and scope, and providing the underlying data for determining the appropriate mitigative actions. If the Environmental Assessment Follow-up Program for the Project identifies that adverse environmental effects are greater than predicted or results for any monitored contaminants of potential concern are above the established limits,	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					then CNL will investigate the results, which may include additional sampling and analysis to help determine/confirm the source and extent of the contamination. CNL would also evaluate whether they result in changes to the conclusions in this EIS. If changes are confirmed, then CNL will evaluate the need for revised mitigation actions and management practices to manage effects, and will engage MMF for openness and transparency. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
242_R2	MMF	EIS Section 1.3	**Context:** CNL identifies that plant harvesting takes place in summer months – this statement is vague as harvesting is based on the species and reasoning (i.e., subsistence, medicinal, etc.). Different species' harvestable characteristics (i.e., leaves, fruits, bark, sap, insect burls, roots, shoots, etc.) are available at certain times of year, or year-round. This statement does not accurately represent harvesting seasons for vegetation resources.	The MMF requests that CNL include potential harvesting for year- round resources within the assessment of predictions on Ecological and Human Health. Atmospheric inputs of dust and radioactive material as a result of decommissioning activities must be mitigated to the fullest extent possible on harvestable vegetation resources.	**Incorporated:** The intent of Section 1.3 Project Location was to provide a high level summary of traditional land use by Indigenous Nations in vicinity to the Whiteshell Laboratories (WL) site and the Manitoba Métis Federation (MMF), with additional detail provided in Section 6.8.1.5.2.2 Traditional Land Use by Indigenous Peoples. Section 6.7 Human and Ecological Health provides an assessment of chemical and radiological releases on both human and ecological receptors. For human health, harvesters were selected as a receptor to represent Indigenous or traditional users of the area who may be exposed through harvesting of country foods. Pathways relevant to exposure for a harvester also included airborne effluents during closure. Project components and/or activities with the potential to affect air quality are identified in Section 6.2.1.6 Project Interactions and Mitigation. Environmental design features and mitigation that have been or could be incorporated into the Project to eliminate and/or reduce adverse effects to air quality are also presented. Canadian Nuclear Laboratories' (CNL's) Management and Monitoring of Effluents and Emissions (CNL 2022) outlines the requirements for identification, control and treatment of emissions at CNL sites. **Change to EIS:** Section 1.3 Project Location was modified as follows: "These activities ~~were typically undertaken in the summer months and~~ are known to occur in areas southwest of the Project." **References:** CNL. 2022. Management and Monitoring of Effluents and Emissions. 900-509200-STD-009. Revision 1. December 2022.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
243_R2	MMF	EIS Section 3.4.6.5 and Table 6.6.5-1	**Context:** Upon completion of the final concrete cap and engineered cover, the surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a turf grass seed mixture compatible with the surrounding area, and include selective herbicide application to remove weeds (requirement of the maintenance of the concrete cap and engineered cover during Institutional Control period). The potential introduction and spread of noxious weeds during reclamation affecting community species composition was assessed as having no linkage pathways (no measurable changes and no linkage to residual effects for Terrestrial Environment Valued Components (VCs)).	The MMF requests CNL review alternative methods to planting prescriptions/chemical herbicide use for final site restoration/maintenance. Prevention and or mitigation options presented did not consider a treatment plan or methodology that replants traditionally or culturally important species, or using a variety of native species to combat the potential establishment of noxious weeds, with the added benefit of providing habitat for a variety of wildlife species (including selected terrestrial VCs, and establishing measurement indicators for Traditional Land and Resource Use VCs). These planting prescriptions have also been shown to outcompete certain aggressive weedy species and noxious weeds. By using a 'Turf grass establishment' method, including herbicide applications to manage noxious weeds until a monocrop of turf grass is established, it will increase the control period making the lands unavailable for	**Incorporated:** Canadian Nuclear Laboratories (CNL) previously revised Section 3.4.6.5 to reflect the use of native grass seed mixtures recommended for reclamation projects, to minimize the need for noxious weed control using these competitive natural grasses. As presented in Section 3.4.6.5 Final Site Restoration of the Environmental Impact Statement (EIS; Golder 2022), "Upon completion of the installation of the final concrete cap and engineered cover, a grass seed mixture native to the area will be used to establish vegetative cover. Maintenance of the concrete cap and engineered cover includes restricting weed growth and preventing surface erosion and abrasion. The surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a grass seed mixture compatible with the surrounding area." CNL will revise Table 6.6.6-1 Pathway Analysis for the Terrestrial Environment Valued Components (Golder 2022) to be consistent in its description of the post closure seeding of the project site (Section 3.4.6.5 of the EIS; Golder 2022). CNL has also engaged the Manitoba Métis Federation (MMF) as part of its overall end-state planning for the wider Whiteshell Laboratories (WL) Restoration Project. Any decision on seed mixes used for the site, would be decided as part of that process. CNL welcomes discussion and suggestions from the MMF and its citizens on preferred species to be utilized. CNL has not yet chosen a specific seed mix but will ensure, at minimum, that it complies with the recommendations of the province of Manitoba for reclamation purposes. It is important to note that as part of that discussion, there may be a decision to specifically avoid species that are harvested by Indigenous People, to not incentivize activity in certain areas. However, CNL is confident that a mutually agreeable decision can be made based on the relationship we currently have. **Change to EIS:** Table 6.6.6-1 Pathway Analysis for the Terrestrial Environment Valued Components (Golder 2022) for the No Linkage pathway regarding the spread of noxious weeds has been updated to: "Upon completion of the installation of the final concrete cap and engineered cover, a grass seed mixture native to the area will be used to establish vegetative cover. Maintenance of the concrete cap and engineered cover includes restricting weed growth and preventing surface erosion and abrasion. The surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a grass seed mixture compatible with the surrounding area." **Reference:** Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	**Partially accepted. Follow-up IR 243_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
				harvesting, potentially impact the future viability of the soil to grow harvestable species in the future, and add further contaminants that have a potential to runoff into other areas.		
243_R3	MMF	EIS Section 3.4.6.5 and Table 6.6.5-1	**Context:** Although the revised EIS does not include the use of chemical herbicide applications; road watering and chemical dust suppressant will be used when necessary. The MMF acknowledge CNL's ongoing commitment to work with MMF on developing restoration and maintenance vegetation prescriptions that incorporate traditional use and native plant species. The MMF, however is concerned that CNL continues to fail in ensuring that end-state objectives or planning is instrumental in driving prescriptions for vegetation, maintenance and uses.	CNL is to include reference to end state planning objectives as key driver in determining restoration and maintenance vegetation prescriptions.		
244_R2	MMF	EIS Section 6.1.3 and Section 6.6.3	**Context:** As per REGDOC-2.9.1, Environmental Principles, Assessments and Protection Measures, Section C.5 – The licensee should describe the effects of the facility or activity on terrestrial fauna and flora and include a full accounting of	Habitat availability, habitat distribution, survival and reproduction were selected as the measurement indicators for the terrestrial environment species VCs – these factors are limited and or unknown for select SAR chosen as VCs.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has followed the guidance in Section C.5 Terrestrial Environment for defining Valued Components (VCs). REGDOC 2.9.1 Environmental Principles, Assessments and Protection Measures (CNSC 2020) states that "The licensee should describe the effects of the facility or activity on terrestrial fauna and flora and include a full accounting of effects on species with elevated conservation status and their habitat." The bullet list following the first paragraph in Section C.5 (CNSC 2020), provides examples of "potential effects that should be considered", not alternatives to Species at Risk for evaluation.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			effects on species with elevated conservation status and their habitat. This evaluation should be based on results of field monitoring studies or predictions from an Ecological Risk Assessment. Consequently, understanding the potential effects of the Project on the selected VCs is supposed to provide inferences about effects on other wildlife species or guilds with similar life history traits and habitat requirements. No consideration is given to the practice of limiting construction activities that create sensory disturbance (i.e., noise/light) or other effects during sensitive timing periods for species that are not on Schedule 1 of SARA but are considered of traditional/cultural importance to the MMF (i.e., moose/deer calving).	Recognizing that CNL can select certain indicators to be representative of the impacts from Project activities on terrestrial VCs, REGDOC-2.9.1 lists alternatives to Species at Risk for possible evaluation. The MMF requests CNL provide additional rationale why this guidance was not used in the selection process for VCs.	With respect to the reviewer's comments about "Habitat availability, habitat distribution, survival and reproduction were selected as the measurement indicators for the terrestrial environment species VCs – these factors are limited and or unknown for select SAR [species at risk] chosen as VCs.", this is not entirely correct. In fact, there is much known about these species. For example, for a species to be listed under the Species at Risk Act, a status report is prepared by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). A status report is a comprehensive technical document that compiles and analyzes the best available information on a wildlife species' status in Canada. It contains information on the basic biology of a wildlife species, as well as information on a wildlife species' distribution in Canada, population sizes and trends, habitat availability and trends, and threats to the wildlife species (COSEWIC 2023). At current conditions, the Whiteshell Laboratories (WL) campus is a collection of buildings (in the process of being dismantled and decommissioned), paved and gravel roadways, and manicured turf grass with minimal tree and shrub coverage. The footprint of the WR-1 Building is approximately 0.07 ha and is in an area that has been previously disturbed, where wildlife habitat value is considered negligible to low. In addition, temporary supporting infrastructure will be located within the local study area (LSA) on previously disturbed and developed areas. In addition, the assumption is that the current perimeter fencing allows for negligible access to the WL campus by ungulates such as moose and deer. Therefore, the Project is not expected to result in an incremental loss of wildlife habitat for white-tailed deer and moose from current conditions at the WL site. As the reviewer notes, there could be a secondary pathway of effects of noise and light on traditionally important wildlife, such as moose and deer, outside of the LSA. However, indirect effects of the building demolition work (e.g., light, noise, equipment use) was deemed to be of low risk to wildlife in natural areas adjacent to the fenced campus, and they were unlikely to occur within the fenced campus. Although not explicitly stated in Section 6.6.3, there will be best management practices (BMPs) and industry standards for limiting noise implemented. As described in Section 6.8.1.6.2.1 No Linkage Pathway, decommissioning of the WR-1 Building will be completed in a controlled manner, and no blasting will be required. The loudest decommissioning activity will likely be noise from a percussion hammer on an excavator, which will be used to break up reinforced concrete walls and floors during demolition. This activity will be limited to the interior of the building envelope, which will serve to reduce the level of noise outside the building, and in the surrounding area. The WL site has also retained heavy tree coverage, which provides a natural noise barrier (AECL 2001). As such, due to the nature of the noise produced by Project activities (sporadic, short-term, no blasting), wildlife species such as deer and moose that live near the WL site are not expected to experience habitat displacement. It is worth noting that the potential sensory disturbance to traditional/ cultural species such as moose and deer from the Project, is already occurring with current demolition activities at the WL site. Decommissioning activities related to the Project are similar in nature to those already occurring at site, therefore, it is anticipated that moose, deer, and other wildlife species would respond to sensory disturbance from the Project in a similar manner. Overall, sensory disturbance is expected to have a negligible effect on traditional/ cultural species such as moose and deer. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:**	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNSC. 2020. Environmental Principles, Assessments and Protection Measures. REGDOC 2.9.1, Version 1.2. September 2020. COSEWIC. 2023. COSEWIC Status Reports. Cosewic / Cosepac - Status reports. Accessed 10 November 2023.	
245_R2	MMF	EIS Section 6.6.4.1 and Table 6.6.5-1	**Context:** LSA represented by ~29 ha fenced area, including the SSA. No description of the 'fence' provided (other than being a "six-foot high chain-link fence") and that it will serve to 'reduce access to ground-based wildlife species'. Similarly, a reptile fence has been proposed as a potential mitigation measureto protect turtles from roadway mortalities (no details provided).	The MMF requests that CNL provide information about the confidence associated with ground-based VCs "restricted access to, or from, the LSA" due to the presence of the fence, and what kind of monitoring or maintenance will be associated with maintaining the LSA boundary. Similarly, MMF requests that CNL provide information about the reptile fence installations and recommends a Qualified Environmental Professional with SAR experience is available for monitoring fence installation.	**Resolved As:** The Environmental Impact Statement (EIS) did not intend to imply that the site fence was impervious to terrestrial wildlife. The fence simply deters free movement, and more effectively for larger species such as deer, coyotes, wolves, or moose. Smaller burrowing species are certainly able to circumvent the fencing when it suits them. Canadian Nuclear Laboratories (CNL) has relatively high confidence in these assumptions based on: limited sightings of large animals within the fenced area, in contrast to regular sightings outside the fenced area (CNL 2023). Similarly, the reptile fencing proposed as a mitigation for snapping turtle mortalities on the roadway, is not fool proof. It is however a reasonable deterrent for turtles and makes the culverts a more attractive path. These two fencing installations will be maintained during the closure phase of the Project; the period during which terrestrial animals are most likely to encounter noise, light, or dust pollution, and road mortality risk. CNL has qualified environmental protection staff, both at Whiteshell, as well as Chalk River, to advise on design and installation, and oversee maintenance and monitoring. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** CNL. 2023. Whiteshell Wildlife sightings master list (2014-2023). WL-509240-041-000. December 2023.	**Follow-up IR 245_R3 below**
245_R3	MMF	EIS Section 6.6.4.1 and Table 6.6.5-1	**Context:** Effects of demolition works are deemed to be of 'low risk' to wildlife in natural areas adjacent to fenced areas, and considered 'unlikely' to occur within the fenced campus where direct effects would be possible. The WR-1 perimeter fence is	The MMF recommends updating the EIS to include animal exclusion fencing be installed to (at minimum) effectively deter burrowing by amphibians and reptiles underneath (e.g., buried approximately 10-15 cm), and/or climbing overtop		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			intended to reduce access to ground-based wildlife species. Maintenance requirements/inspection frequency is unclear; although the EIS states this will be installed/maintained for perpetuity. The MMF recommends CNL provide additional information regarding the perimeter fencing that clarifies installation, monitoring and maintenance requirements in perpetuity. Reptile and amphibian fencing is to be checked annually in early May to confirm fencing is still functional and effective for directing amphibians and reptiles through culverts. Maintenance or replacement should occur as required.	(e.g., tight and at least 30 cm above ground), following current guidance and the recommendations of a Qualified Environmental Professional with SAR experience.		
246_R2	MMF	EIS Section 6.6.4.2	**Context:** The Comprehensive Study Report (CSR) indicated that no effects were identified for terrestrial biota, as natural vegetation will re-establish following completion of decommissioning and reclamation activities. As the RFD case includes the activities already approved for preparation for ISD, but the CSR did not incorporate the updated decommissioning activities included for ISD, it is unreasonable to state that the RFD case will have 'no effects	The foundation of the CSR was the assumption that complete demolition and removal of WR-1 would be completed as per the current approvals. Final site reclamation descriptions throughout the EIS indicates the use of a manicured turf grass which may incorporate herbicides and management for noxious weeds. The MMF requests that CNL update the EIS to incorporate gaps presented for terrestrial	**Incorporated:** Canadian Nuclear Laboratories (CNL) has revised the Environmental Impact Statement (EIS) to correct the inconsistent description of the revegetation of the site, to clarify and support the statements that the Comprehensive Study Report (CSR) conclusions remain valid for the work being performed. As presented in Section 3.4.6.5 Final Site Restoration, "Upon completion of the installation of the final concrete cap and engineered cover, a grass seed mixture native to the area will be used to establish vegetative cover. Maintenance of the concrete cap and engineered cover includes restricting weed growth and preventing surface erosion and abrasion. The surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a grass seed mixture compatible with the surrounding area." (Golder 2022). CNL will revise Table 6.6.6-1 Pathway Analysis for the Terrestrial Environment Valued Components (Golder 2022) to be consistent in its description of the post closure seeding of the project site (Section 3.4.6.5 of the Environmental Impact Statement (EIS); Golder 2022). CNL has also engaged the Manitoba Métis Federation (MMF) as part of its overall end-state planning for the wider Whiteshell Laboratories (WL) Restoration Project. Any decision on seed mixes used for the site, would be decided as part of that process. CNL welcomes discussion and suggestions from the MMF and its citizens on preferred species to be	**Follow-up IR 246_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			[were] identified for terrestrial biota'.	biota.	utilized. CNL has not yet chosen a specific seed mix but will ensure, at minimum, that it complies with the recommendations of the province of Manitoba for reclamation purposes. It is important to note that as part of that discussion, there may be a decision to specifically avoid species that are harvested by Indigenous people, to not incentivize activity in certain areas. However, CNL is confident that a mutually agreeable decision can be made based on the relationship we currently have. **Change to EIS:** Table 6.6.5-1 Pathway Analysis for the Terrestrial Environment Valued Components (Golder 2022) for the No Linkage pathway regarding the spread of noxious weeds has been updated to: "Upon completion of the installation of the final concrete cap and engineered cover, a grass seed mixture native to the area will be used to establish vegetative cover. Maintenance of the concrete cap and engineered cover includes restricting weed growth and preventing surface erosion and abrasion. The surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a grass seed mixture compatible with the surrounding area." **References**: Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
246_R2	MMF	EIS Section 6.6.4.2	**Context:** CNL has incorporated other MMF recommendations that include native seed mixtures for establishing vegetative cover during final site restoration; however, as the CSR did not incorporate updated decommissioning activities required for ISD, the MMF requests that CNL update the EIS to incorporate gaps presented for terrestrial biota, and correct the assumption that the RFD case will have 'no effects [were] identified for terrestrial biota'	See IR 243_R3		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
247_R2	MMF	EIS Section 6.6.5.2	**Context:** Information sources have been assumed for SAR data compilation (CNL 2016). Incidental observations were conducted by WL staff, with no known training in wildlife identification.	The MMF requests that CNL verify the sources for SAR data compilation and provide confidence for incidental observations that informed VC selection.	**Resolved As:** Environmental Assessment practitioners use a variety of sources for background information when compiling the baseline information used in an Environmental Impact Statement (EIS). It is common to use "citizen science" and anecdotal information from laypeople, in the overall collection of baseline information considered. The nature and source of this information is made explicit and considered based on the type of data represented (i.e., non-wildlife specialist employees providing anecdotal information on wildlife observations). These data do not replace biological survey data collected by professionals and conducted during appropriate seasons, using repeatable, defensible methods. It is these professionally conducted surveys that can provide reliable information towards a determination of presence / non-detect status for individual wildlife species. It is the opinion of the professionals responsible for the preparation of this section, that verification of the wildlife species identification skills of Canadian Nuclear Laboratories (CNL) staff who recorded species observation records on or near the Whiteshell Laboratories (WL) Campus is unnecessary. Follow-up targeted biological surveys were conducted for the most relevant Valued Component (VC) guilds (birds and bats) and appropriately trained and educated biological practitioners were responsible for those reports. The results of the terrestrial environment assessment would not be changed by increased scrutiny and verification of the wildlife identification skills of CNL WL employees that provided anecdotal observations. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** N/A	**Accepted**
248_R2	MMF	EIS Section 6.6.5.5	**Context:** The presence of both SARA-listed species, little brown myotis and northern myotis, was confirmed within the LSA. The primary focus of the assessment was on potential maternity roost habitat, but no established/identified criteria yet developed to determine critical habitat requirements associated with maternity roosts for these selected terrestrial VCs.	The MMF requests that CNL select scientifically defensible and/or established criteria to evaluate effects on current terrestrial VCs to limit assumptions carried forward in the assessment for these species.	**Resolved As:** The comment relates to the federal government's process of formally describing the biophysical attributes required to provide maternity roost critical habitat for two Species at Risk Act (SARA)-listed / VC bat species. Per the Recovery Strategy (ECCC 2018): Maternity roosts are used for giving birth and rearing young, and clearly contribute to the survival and recovery of these three species of bats. However, the locations of the vast majority of maternity roosts are currently either unknown or undocumented, or the data are unavailable to Environment and Climate Change Canada. Given this, it is not possible to determine which maternity roosts are necessary for the survival or recovery of these species; therefore, maternity roosts are not identified as critical habitat in this recovery strategy. Although the potential for affecting anthropogenic bat roosting habitat was considered in this Environmental Impact Statement (EIS; Golder 2022) as a potential pathway of effects, the WR-1 Building itself has been subject to detailed searches for roosting bats within the building envelope. These surveys have resulted in no confirmed occurrences of bats within the WR-1 Building envelope. As a result, the physical removal of the building was considered to be a secondary pathway of effects on maternity roost habitat (i.e., negligible effects on habitat survival and reproduction or habitat	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					availability; Golder 2022). There are no assumptions being carried forward regarding maternity roost habitat biophysical attributes that has a material effect on the findings of the terrestrial environment assessment, especially since detailed surveys within the WR-1 Building have found no evidence that bats are roosting in the building. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: ECCC. 2018. Recovery Strategy for the Little Brown Myotis (Myotis lucifugus), the Northern Myotis (Myotis septentrionalis), and the Tri-colored Bat (Perimyotis subflavus) in Canada. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
249_R2	MMF	EIS Section 6.6.6.2.2	**Context:** The following are considered to potentially have measurable minor environmental changes but negligible residual effects on the Terrestrial Environment VCs relative to Base Case: Sensory disturbance from increased noise levels created by ISD of WR-1 and demolition of above- ground structures of the WR-1 Building; Potential mortality or injury to wildlife (particularly snapping turtle) from movement of decommissioning-related heavy equipment and other vehicles on roads; Non-radiological air emissions and dust emissions (including sulphur dioxide, nitrogen oxides [NOx/NO_2] and particulate matter) and subsequent deposition; and,	The MMF requests that CNL consider the following: As decommissioning activities have been ongoing but sporadic since initial preparation/deferment work, this does not represent the 'ongoing activity' scenario that can potentially habituate species to noise disturbance that will occur once decommissioning activities continue (i.e., batch plant required for ISD). This may have a disproportionate effect on various species selected as terrestrial VCs, and species that have traditional harvesting value.	**Incorporated:** As the reviewer notes, there could be a secondary pathway of effects of noise on traditionally important wildlife, such as moose and deer, outside of the local study area (LSA). However, indirect effects of the building demolition work (e.g., light, noise, equipment use) were deemed to be of low risk to wildlife in natural areas adjacent to the fenced campus, and they were unlikely to occur within the fenced campus. Although not explicitly stated in Section 6.6.3, there will be best management practices (BMPs) and industry standards for limiting noise implemented. As described in Section 6.8.1.6.2.1 No Linkage Pathway, decommissioning of the WR-1 Building will be completed in a controlled manner, and no blasting will be required. An adaptive management approach for potential wildlife-vehicle collisions is provided in Table 6.6.7-1 Monitoring and Follow-up Programs for the Terrestrial Environment for the Valued Component (VC) species Snapping Turtle. The following information is included under the heading: Trigger for Further Action. "If, after mitigation and operational measures are shown to be ineffective and any mortality or injury of snapping turtle occurs, further mitigation will be considered in an adaptive management framework. This mitigation may take the form of: surveys of high risk road crossing locations to determine if they are being used by turtles for crossing, potential upgrade of existing crossing culverts to enhance snapping turtle passage, consideration of the potential need to re-design or lengthen the existing amphibian and reptile fencing at the three most likely turtle crossings on Ara Mooradian Way, or consideration of the need to add fencing on any other roads where injuries or mortality of snapping turtle is recorded. Based on results of routine wildlife road surveys, evaluate implementation of traffic calming measures during the season when snapping turtles are expected to cross the road (i.e., terrestrial life history period from May 1 to September 30). These may include options such as further reduction of posted speed limit, installation of speed bumps, or other measures." The request is for all terrestrial VCs to have species-specific information available. Although the road mortality mitigation program is directed at snapping turtles, it will serve to benefit all wildlife species potentially affected by vehicle collisions.	**Partially accepted. Follow-up IR 249_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Release of chemical and radiological contaminants during the closure phase and in the long-term (during the post-closure phase).	Vehicle traffic mortality has been an ongoing concern for MMF – especially relating to metrics involved with estimating changes in Base Case, and thresholds for adaptive management triggers. Please provide details of the adaptive management which would be implemented in the event that the thresholds are reached/exceeded. All terrestrial VCs should have species-specific information available. MMF requests CNL to continue its ongoing engagement with the MMF. Mitigation includes the use of contamination immobilization agents, containment, ventilation, and High- efficiency Particulate Air (HEPA) filters to control generation of airborne emissions during decontamination or removal of contaminated systems or structures. In addition, use of dust suppression methods during building demolition or soil remediation activities will be implemented to control	The monitoring program will provide feedback for adaptive management (and the potential need for more signage, extension of existing fencing, or other fencing to restrict wildlife access to road surfaces. **A.** 'Dust suppressants' are used to reduce the amount of dust from becoming airborne (e.g., on roads to reduce dust created from vehicle traffic). Canadian Nuclear Laboratories (CNL) primarily uses water as a dust suppressant on site, or other commercially available dust suppressant compounds when water is inappropriate or unavailable. 'Contamination immobilization agents' are used to reduce contamination mobility and bioavailability for plants. Typically they are applied to a contaminated surface to 'stick' contamination to the object. CNL currently uses contamination immobilization agents such as Polymeric Barrier System (PBS) on site. (BHI Undated). **B.** CNL previously revised Section 3.4.6.5 to reflect the use of native grass seed mixtures recommended for reclamation projects, to minimize the need for noxious weed control using these competitive natural grasses. As presented in Section 3.4.6.5 Final Site Restoration of the Environmental Impact Statement (EIS; Golder 2022), "Upon completion of the installation of the final concrete cap and engineered cover, a grass seed mixture native to the area will be used to establish vegetative cover. Maintenance of the concrete cap and engineered cover includes restricting weed growth and preventing surface erosion and abrasion. The surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a grass seed mixture compatible with the surrounding area." CNL will revise Table 6.6.6-1 Pathway Analysis for the Terrestrial Environment Valued Components (Golder 2022) to be consistent in its description of the post closure seeding of the project site (Section 3.4.6.5 of the EIS; Golder 2022). CNL has also engaged the Manitoba Métis Federation (MMF) as part of its overall end-state planning for the wider Whiteshell Laboratories (WL) Restoration Project. Any decision on seed mixes used for the site would be decided as part of that process. CNL welcomes discussion and suggestions from the MMF and its citizens on preferred species to be utilized. CNL has not yet chosen a specific seed mix but will ensure, at minimum, that it complies with the recommendations of the province of Manitoba for reclamation purposes. It is important to note that as part of that discussion, there may be a decision to specifically avoid species that are harvested by Indigenous people, to not incentivize activity in certain areas. However, CNL is confident that a mutually agreeable decision can be made based on the relationship we currently have (Golder 2022). **C.** As described in Section 11.2 Adaptive Management of the Draft EIS (Golder 2022), if the Environmental Assessment Follow-up Program for the Project identifies that adverse environmental effects are greater than predicted or results for any monitored contaminants of potential concern are above the established limits, then CNL will investigate the results, which may include additional sampling and analysis to help determine/confirm the source and extent of the contamination. CNL would also evaluate whether they result in changes to the conclusions in this EIS. If changes are confirmed, then CNL will evaluate the need for revised mitigation actions and management practices to manage effects, with engagement with First Nations and the Manitoba Métis Federation for openness and transparency. Any proposals on modifications to the monitoring program will be communicated to the Canadian Nuclear Safety Commission (CNSC). **Change to EIS:**	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
				airborne emissions and nuisance dust during building demolition or soil remediation – confirm if the use of chemical dust suppressants is anticipated and clarify what is meant by 'contamination immobilization agents'. The MMF have ongoing concern with airborne contaminants that could deposit to soil, and water, where they could affect vegetation and wildlife/wildlife habitat of interest. A manicured turf grass seed mix should be reconsidered in reclamation design as per comments above. MMF requests to be offered opportunities to participate and provide materials for the reseeding initiative at the Project site.The Revegetation Plan should include the exact species of native plants, proportions used in the mixture, methodology of reseeding and should be mindful of the potential introduction of invasive species through the reseeding initiative. A robust reseeding plan is	In response to bullet D, Table 6.6.6-1 Pathway Analysis for the Terrestrial Environment Valued Components (Golder 2022) for the No Linkage pathway regarding the spread of noxious weeds has been updated to: "Upon completion of the installation of the final concrete cap and engineered cover, a grass seed mixture native to the area will be used to establish vegetative cover. Maintenance of the concrete cap and engineered cover includes restricting weed growth and preventing surface erosion and abrasion. The surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a grass seed mixture compatible with the surrounding area." **References:** Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. BHI Energy. Undated. Specialty Coatings Services. https://www.bhienergy.com/wp-content/uploads/Media-Brochures/BHI_SpecialtyCoatingsInspections_Brochure.pdf	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
				importantto support future MMF land use in the area. Please provide adaptive managementresponse protocols in place to notify the MMF in the event that monitoring values exceed radiation benchmark values and applicable environmental guidelines.		
249_R3	MMF	EIS Section 6.6.6.2.2	Context: 1. Sensory Disturbance from ISD and Demolition - The MMF raised concerns about how noise from the ISD and building demolition could disturb terrestrial species of interest, emphasizing that prior activity at the site does not qualify as sufficient habituation. The EIS acknowledges the risk of sensory disturbance and outlines seasonal surveys for nesting or roosting in the WR-1 building, followed by deterrent use if needed (Section 6.6). However, the EIS does not provide details on noise thresholds, long-term disturbance monitoring, or how species-specific responses will be tracked or mitigated. 2. Wildlife Mortality from Vehicle Traffic - The MMF expressed concern about mortality risk to wildlife, particularly snapping	The MMF reiterates the following requests: 1. Species-specific noise monitoring protocols that account for traditional harvesting species and VCs. These protocols should define temporal and spatial disturbance thresholds, mitigation triggers, and mechanisms for transparent reporting to the MMF. 2. Species-specific mortality thresholds and associated adaptive management actions. These should include concrete mitigation measures, response timelines, and direct data sharing protocols with the MMF to support oversight.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			turtles, from increased vehicle activity, and requested clearly defined thresholds and adaptive responses. While the EIS states that CNL will monitor and document turtle mortality and apply additional mitigation "as required" (Section 6.6), it does not provide specific mortality thresholds, measurable triggers, or timelines for implementing corrective measures. 3. Airborne Emissions and Dust Deposition - The MMF requested clarification on the composition and use of dust suppressants and contamination immobilization agents, as well as safeguards for vegetation and wildlife habitat from airborne contaminant deposition. The EIS outlines the use of HEPA filters, ventilation controls, and various dust suppression methods, including wetting and chemical applications (Section 6.2; Table 9.3-1). It also notes ongoing air quality monitoring. However, the EIS does not specify contaminant thresholds for deposition to soil or plants, nor does it commit to alerting the MMF when levels approach ecological relevance. 4. Revegetation Plan and Native Species Commitment - The MMF asked to be involved in the reseeding initiative to ensure the	3. Disclosure of the composition of chemical dust suppressants and clarification of what is meant by "contamination immobilization agents." The MMF also reiterates their request for adaptive management protocols and notification procedures if emissions exceed thresholds that may affect vegetation, wildlife, or habitat. 4. Decommissioning activities to be informed by end-state planning. See IR 243_R3		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			use of culturally significant native species, avoid invasive species, and support future harvesting. CNL has committed to using native seed mixes and has shared preliminary materials with the MMF (Section 3.4.6.5; Section 4.0). However, the final species list, reseeding methodology, and weed control measures have not yet been provided or finalized in consultation with the MMF			
250_R2	MMF	General	**Context:** The EIS predicts no 'residual' effects in wildlife or birds, giving the impression that CNL understands the full range of effects from the Project to consider them safe. Section 6.6.8 states that 'the assessment endpoint for the terrestrial environment is the maintenance of self-sustaining and ecologically effective populations'.	As all terrestrial VCs selected are SAR with limited or unknown measurement indicators chosen for the Project, there is no suitable way for CNL to be able to test whether any of these endpoints have been changed. The MMF requests that CNL propose additional testable endpoints to measure potential impacts to wildlife or birds, including relative health and population.	**Resolved As:** The terrestrial assessment endpoints (Section 6.6.3 Valued Components; Golder 2022) are the overall properties of the Valued Component (VC) that should be protected but are not in themselves what is used to measure an effect. The measurement indicators are the quantifiable units that were considered by the terrestrial assessment (i.e., habitat availability, habitat distribution, survival and reproduction of the species), to measure Project-induced mortality of individuals and sensory effects on individuals that would be at a level that could cause reproductive failure. Although there are limits on relative health and population-level information available for biological VCs, effects on VCs were predicted to have no residual effect relative to Base Case. The implementation of mitigation measures is expected to eliminate or reduce effects such that there is no linkage to VCs, or the effects are predicted to be negligible (i.e., secondary pathway) on habitat survival and reproduction or habitat availability (Golder 2022). Adding additional testable endpoints relating to population health would not change the conclusions of the assessment. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	**Accepted**
251_R2	MMF	General	**Context:** CNL has indicated that sampling and monitoring will include garden produce, game animals and fish. However, it is unclear if monitoring will be sufficient to	MMF requests that CNL clarify the Environmental Monitoring Plan objectives, and confidence rankings to detect changes over time.	**Resolved As:** Canadian Nuclear Laboratories (CNL) currently executes an Environmental Assessment Follow-up Monitoring Program (EAFMP; CNL 2018) for the overall decommissioning of the Whiteshell Laboratories (WL) Site. This EAFMP is the basis for all of CNL's current environmental monitoring plans.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			detect impacts from the Project by CNL.		As part of the Environmental Impact Statement (EIS) for the Project, CNL must identify monitoring and follow-up activities related to the scope of the WR-1 Project. That is, CNL must propose an EAFMP specific to the project being assessed. WR-1 is part of the overall decommissioning of Whiteshell Laboratories, and CNL intends to integrate the Site EAFMP, and the WR-1 EAFMP into a single program. CNL has proposed to do this by adding a WR-1 specific work package (Section 5.4 "Work Package #10 – Whiteshell Reactor Disposal Facility – Enhanced Monitoring") to the existing Site EAFMP. For each of the Monitoring and Follow-up sections in the Environmental Impact Statement (EIS), CNL identifies the proposed monitoring and follow-up specific to the scope and conclusions of the EIS. CNL reconciles the recommended monitoring of the WR-1 EIS, and the existing site EAFMP activities. Whiteshell specific monitoring is summarized in the EIS Section 11, Table 11.1-1. These form the basis of the monitoring and surveillance plan that CNL will submit as part of the application. In this particular example, CNL indicates that while no produce will be monitored as part of the WR-1 specific monitoring activities, monitoring of produce does occur as part of the overall monitoring program for the site. The goals for the EAFMP for WR-1 at the Whiteshell Laboratories Site (the Project) are to verify the accuracy of environmental effects predictions and determine the effectiveness of mitigation measures that have, or are to be, implemented. Wherever possible, existing programs will be adapted to meet the objectives of monitoring the predictions made by the environmental assessment for the Project. The primary goal of the WR-1 specific monitoring is to provide assurance that the conclusions of the EIS remain valid over the entire duration of the decommissioning project and during the Institutional Control period. The specific goals include: • Optimize the monitoring and surveillance program already in place at WL, • Demonstrate compliance with regulatory requirements and licence conditions, • Verify the disposal system is performing as expected as set out in the safety case, • Verify/Confirm that appropriate mitigation measures are implemented, • Verify effects predictions, • Identify effects of the Project that may not have been predicted, • Develop appropriate responses to unforeseen events, • Offset loss of potential nesting habitat and monitor use of compensatory habitat, • Monitor wildlife mortality (including birds, reptiles and mammals) and use information for adaptive management, and • Provide information for the public through existing communication activities within the site EAFMP.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					The confidence ranking for these activities to be sufficient to detect changes in the environment is high, because they are achieved through largely existing environmental monitoring activities. CNL maintains historical records of the results of these activities, and they can be tracked for trends and changes over decades. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018.	
252_R2	MMF	EIS Section 6.2	**Context:** CNL note that a quantitative noise assessment has not been completed for inclusion in the EIS as it is not anticipated that there are sensitive human receptors in the vicinity of the Project that would experience nuisance effects from the closure and post-closure phases of the Project. While a qualitative discussion of potential effects from noise on wildlife is provided, this fails to recognize potential impacts on land users near the WL site. Additionally, a qualitative assessment cannot appropriately be used to inform predictions of noise above baseline during decommissioning, as they impact wildlife.	The MMF requests that CNL provide a quantitative assessment and predictions of noise levels surrounding the WL facility, and throughout both the LSA and RSA, as they may impact wildlife and land use.	**Resolved As:** As the reviewer notes, there could be a secondary pathway of effects of noise on traditionally important wildlife, such as moose and deer, outside of the local study area (LSA). However, indirect effects of the building demolition work (e.g., light, noise, equipment use) was deemed to be of low risk to wildlife in natural areas adjacent to the fenced campus, and they were unlikely to occur within the fenced campus. Although not explicitly stated in Section 6.6.3, there will be Best Management Practices (BMPs) and industry standards for limiting noise. As described in Section 6.8.1.6.2.1 No Linkage Pathway, decommissioning of the WR-1 Building will be completed in a controlled manner, and no blasting will be required. The loudest decommissioning activity will likely be noise from a percussion hammer on an excavator, which will be used to break up reinforced concrete walls and floors during demolition. This activity will be limited to the interior of the building envelope, which will serve to reduce the level of noise outside the building, and in the surrounding area. The Whiteshell Laboratories (WL) site has also retained heavy tree coverage, which provides a natural noise barrier (AECL 2001). As such, due to the nature of the noise produced by Project activities (sporadic, short-term, no blasting), wildlife species such as deer and moose that live near the WL site are not expected to experience habitat displacement. It is worth noting that the potential sensory disturbance to traditional/ cultural species such as moose and deer from the Project, is already occurring with current demolition activities at the WL site. Decommissioning activities related to the Project are similar in nature to those already occurring at site, therefore, it is anticipated that moose, deer, and other wildlife species would respond to sensory disturbance from the Project in a similar manner. Overall, sensory disturbance is expected to have a negligible effect on traditional/ cultural species such as moose and deer. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:**	**Follow-up IR 252_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001.	
252_R3	MMF	EIS Section 6.2	**Context:** The MMF requested that CNL provide a quantitative assessment and predictions of noise levels surrounding the WL facility, extending throughout both the Local Study Area (LSA) and Regional Study Area (RSA), to evaluate impacts on wildlife and traditional land use. The EIS does not include a quantitative noise study or modelled projections of sound levels across the LSA or RSA. While Section 6.6 explains that such a study was not included due to the absence of nearby sensitive human receptors, this rationale appears to overlook land users who actively harvest near the WL site. As acknowledged in Section 4.2.4.2.2, MMF Citizens regularly exercise their harvesting rights in this area, and CNL has committed to providing them with 21-day advance notice of disruptive activities. This commitment affirms that such land users are important receptors in their own right. A quantitative noise assessment would therefore enhance transparency and support land-based decision-making for these users, while also complementing existing mitigation commitments.	The MMF reiterates our request for a quantitative noise assessment that includes modelled predictions of noise levels during each decommissioning phase. This assessment should provide expected decibel ranges and compare them to disturbance thresholds for both wildlife and human land users. The MMF also requests spatial representation of predicted noise levels in proximity to the WL site, including key areas used for harvesting within the LSA, to support informed land use and environmental monitoring decisions.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
253_R2	MMF	EIS Section 6.2.1.5.1	**Context:** CNL include data from both the 65 Ellen Street Station and Assiniboine Station in establishing baseline ambient air quality, however, do not describe how data from these two stations were combined.	The MMF requests that CNL provide additional information on how data from the 65 Ellen Street Station and Assiniboine Station were used to develop baseline air quality estimates.	**Incorporated:** Originally, Winnipeg was conservatively selected to represent the background air quality since no local monitoring was available and these measured values would not underestimate the local conditions. Three background air quality stations have been added to the assessment. These stations are more representative of the Project location in terms of population, urbanization, and land use. All three stations have background data for each indicator compound identified in the air quality assessment, except for CO_2 and Suspended Particulate Matter (SPM). The three stations, located in Flin Flon, Mb, Estevan, Sk, and Buffalo Narrows, Sk, are now assessed alongside the two currently assessed stations in Winnipeg, Mb and Assiniboine, Mb, to provide range of background concentrations for each indicator compound. Using the methodology of comparing to the minimum and maximum background concentration values from this dataset presents a range of Project impacts on the air quality in the region, as well as a range of maximum potential concentrations at a receptor from Project activities. **Change to EIS:** Section 3.2 of Appendix 6.2-1 has been updated with the following revisions: "The Flin Flon, Estevan and Buffalo Narrows air quality monitoring stations are located approximately 645 km, 512 km and 1,036 km away from the project, respectively. These stations are the three closest stations in proximity to the project location that are located in areas more characteristic of the Project location in terms of population, urbanization, and land use when compared to the 65 Ellen Street and Assiniboine stations and that include all indicator compounds, with the exception of CO and SPM." **References:** N/A	**Partially accepted. Follow-up IR 253_R3 below**
253_R3	MMF	EIS Section 6.2.1.5.1	**Context:** The MMF requested that CNL provide additional information on how data from the 65 Ellen Street Station and Assiniboine Station were used to develop baseline air quality estimates. The EIS presents background values from five regional air monitoring stations, including 65 Ellen Street and Assiniboine, with minimum and maximum Base Case values defined as the lowest and highest station averages	The MMF reiterates the importance of baseline air quality estimates that meaningfully reflect on-site and LSA conditions. Given CNL's stated intent to conduct on-site air quality monitoring, the MMF requests that CNL establish a monitoring station at or near the WL site. This station should be configured to measure the same indicators used in the		

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			(Section 6.2.1.5.2). This presents a reasonable approach for establishing a general baseline range for the WL site and LSA, given available regional data and the absence of historical on-site monitoring. However, with respect to future air quality monitoring intended to assess compliance with this baseline, the EIS relies heavily on references to CNL's Management and Monitoring of Emissions (2022), which is cited under varying titles, inconsistently referenced, and not made available for review. The EIS does not provide sufficient detail on how air quality monitoring will be conducted, nor does it explain how that monitoring will be calibrated to the defined Base Case values. Although CNL affirms that monitoring will take place, the lack of a transparent and detailed plan limits confidence that site-level measurements will support meaningful comparisons to the established regional baseline or effectively verify predicted air quality effects.	five-station Base Case, enabling direct comparison and validation of the regional baseline approach. The MMF also requests that CNL provide a clear, consolidated summary of their air quality monitoring plan in the EIS itself, including methods, timing, and locations.		
254_R2	MMF	Section 6.2.1.6.2	**Context:** A key concern regarding the impacts of decommissioning activities on land use in the area surrounding the WL site is the	The MMF requests: CNL provide modelled predictions on particulate matter deposition downwind of the WL site.	**Resolved As:** **A.** In the absence of a provincial standard/criteria for dustfall in Manitoba the assessment conservatively assumed in the modelling that all dust is emitted into the atmosphere and the plume is not depleted through deposition. As a result, the	**Follow-up IR 254_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			potential for the deposition of contaminants in the form of particulate matter. CNL fail to provide analysis on the deposition of dust and other particulate matter, as well as the chemical composition of this material. Dustfall can adversely impact the quality of berries and other plants harvested by the Red River Métis.	CNL provide chemical analysis of particulate matter to be produced by activities associated with the WR-1 decommissioning.	air quality assessment is considered to be conservative when assessing against the airborne standards for particulate matter. Predicted concentrations outside the Canadian Nuclear Laboratories (CNL) property boundary are still below the relevant Ambient Air Quality Criteria (AAQC), which are typically used as indicators of good or desirable air quality. Based on further analysis of the modelling results for suspended particulate matter (SPM), greater than 98% of the maximum SPM point of impingement (POI) concentration along the CNL boundary is attributable to re-entrainment of dust from vehicles travelling on paved roads, with less than 2% from the decommissioning activities around the Project site. As a result, dust generated from decommissioning activities around the Project site that is dispersed off-site is expected to be negligible. Dust from vehicle re-entrainment generally on paved roads is intermittent that does not produce visible emissions and is not considered a significant source of deposition. Further, the quantity of the dust from the paved roads at CNL is expected to be significantly less than the dust generated by existing roads in the study area. For example, Provincial Trunk Highway 11 (PTH 11) runs west of the site boundary and has recorded annual average daily traffic (AADT) of over 1400 vehicles in 2017. Comparatively, the site access road is expected to have a maximum of 97 vehicles per day during decommissioning, or approximately 7% of the vehicles that travel on PTH 11 daily. As a result, particulate matter deposition modelling is not required for this assessment as the project is not expected to contribute significantly to dustfall in the study area. **B.** Per A above, the main source of dust emissions from the Project site is re-entrainment from vehicles travelling on paved roads. The composition of the dust on the paved roads is not expected to be dissimilar to the dust generated by other paved roads in the area, which have a much higher flow of traffic. As a result, the analysis of chemical composition in the dust is not anticipated to be required. Dust emissions are monitored via air sampling stations during demolition work. The air monitors collect samples which are scanned for radiological contaminants, and to determine total suspended particulate mass. **Change to EIS:** Section 6.2.1.7.2 Application Case Results has been updated to include the following text: “All indicator compounds were below the applicable criteria at the CNL property boundary, except for SPM and PM10 on the 24-hour averaging period. The SPM result was above the MAAQC Maximum Acceptable Level Concentration but remains below the MAAQC Maximum Tolerable Level Concentration, while the PM10 result was above the MAAQC Maximum Acceptable Level Concentration. Modelling results for SPM greater than 98% of the maximum POI concentration along the CNL boundary is attributable to re-entrainment of dust from vehicles travelling on paved roads, with less than 2% from the decommissioning activities around the Project site. As a result, dust generated from decommissioning activities around the Project site that is dispersed off-site is expected to be negligible. Dust from vehicle re-entrainment generally on paved roads is intermittent that does not produce visible emissions and is not considered a significant source of deposition. For both SPM and PM10, all receptor locations above their respective criteria were located in close proximity to the CNL property boundary along Ara Mooradian Way, north of Hwy 211 and on property controlled by CNL. All sensitive receptors (residences) had POI concentrations below their respective guideline.	

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					Further, the quantity of the dust from the paved roads at CNL is expected to be considerably less than the dust generated by existing roads in the study area. For example, Provincial Trunk Highway 11 (PTH 11) runs west of the site boundary and has recorded annual average daily traffic (AADT) of over 1400 vehicles in 2017. Comparatively, the site access road is expected to have a maximum of 97 vehicles per day during decommissioning, or approximately 7% of the vehicles that travel on PTH 11 daily. As a result, particulate matter deposition modelling is not required for this assessment as the Project is not expected to contribute significantly to dustfall in the area." **References:** N/A	
254_R3	MMF	Section 6.2.1.6.2	**Context:** The MMF requested that CNL provide modelled predictions of particulate matter deposition downwind of the WL site, as well as a chemical analysis of the particulate matter expected to be produced by decommissioning activities. While the EIS includes modelled estimates of ground-level concentrations for various airborne contaminants (Section 6.2), it does not present predictions for the deposition of particulate matter onto soils or vegetation. Nor does it include an analysis of the expected chemical composition of fugitive dust resulting from demolition, grouting, or other site activities. Given that the EIS acknowledges localized increases in suspended particulate matter during the Application Case, including areas just outside the LSA (Table 6.2.1-19), the absence of deposition estimates or contaminant profiles limits the ability to assess impacts on traditional land use,	The MMF reiterates their request for modelled predictions of particulate matter deposition downwind of the WL site and an accompanying analysis of the expected chemical composition of this material. These predictions should account for both coarse and fine particulate matter fractions and identify likely contaminants of concern associated with demolition and material handling. The MMF also requests that CNL clarify how these data will be used to assess risks to plants harvested for consumption and cultural use, particularly those in areas of known land use.		

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			including the quality of culturally important plant species such as berries. This omission also reduces the transparency of the predicted effects on soil and plant receptors, despite Red River Métis Citizen concerns raised throughout the engagement process.			
255_R2	MMF	Section 6.8.1.2	**Context:** CNL outline at multiple instances within the EISthat they have commitments to work with Indigenous Nations in monitoring and to engaging with them over the long-term to address ongoing concerns. This is described in Section 6.8.1.7 Monitoring and Follow-up. While specific terms of agreements and commitments with the MMF were unavailable at the time of the CNL's release of the EIS – details are presented regarding commitments made to Sagkeeng First Nation, which focus on supporting the Nation during active phases of decommissioning, but fail to provide any meaningful commitments to either Sagkeeng First Nation or the MMF on support and involvement during post- decommissioning phases of Institutional Control (2027-2127) and post-Institutional Control (2127-12127). Concerns raised by the MMF and	The MMF requests that CNL demonstrate that it is willing to commit to supporting meaningful participation in the monitoring and oversight of the WL site through the entirety of the Institutional Control period expected to cover 2027-2127.	**Incorporated:** Canadian Nuclear Laboratories (CNL) has an overall monitoring program as outlined Section 11. 1 of the Environmental Impact Statement (EIS). The program is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the site and the outcomes of the initial Comprehensive Study Report (AECL 2001). CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the Whiteshell Laboratories (WL) site, which will be integrated into the existing EAFMP which will serve to provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the environmental assessment and confirm the effectiveness of mitigations. Section 11 of the EIS describes the specific items that need to be monitored to validate the assessment results. This monitoring program will be in place for the entirety of the institutional control phase. The post-institutional control phase is an assumed eventuality, though the exact time is uncertain. CNL has used 100 years as an assumption for assessment purposes but in reality it may not occur for many hundreds or thousands of years. It represents a hypothetical future time after which control and knowledge of the site is lost. At the time of this response, no specific agreement has been reached between CNL and the Manitoba Métis Federation (MMF) for longer term arrangements; however, CNL has committed to involve the MMF/Red River Métis in monitoring in a way that is most meaningful to them. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration and renewal periods. **Change to EIS:** Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring in the EIS (Golder 2022) was edited as follows to include the specific commitments on involvement and timeline. 'CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red	**Partially accepted. Follow-up IR 255_R3 below**

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			Red River Métis, specifically highlight the long-term impacts of ISD on traditional land use in and around the WL site. These concerns not only cover the period in which active decommissioning will occur, but through the entire period in which radioactive material may pose a risk to environmental or human health, which extends well into the future.		River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their	

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					consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.' Section 6.9.6.2.2 was revised to the following text: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.'~~CNL and the Manitoba Métis Federation have also been working together to develop the draft multi-year relationship agreement that will help to mitigate the Manitoba Métis Federation's concerns on the Project and ensure the Manitoba Métis Federation and its citizens are involved in environmental monitoring, communication initiatives, and other key initiatives.~~ The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
255_R2	MMF	Section 6.8.1.2		See IR 11_R3		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
256_R2	MMF	EIS Section 6.8.1.6.2	**Context:** CNL must consider the concerns raised by the MMF as distinct from those raised by First Nations. The relationship Métis citizens have with the WL site is unique from that of First Nations, as a result any approach which advances pan-Indigenous solutions is set up for failure.	The MMF request CNL present evidence on how it plans to identify, consider, and address the values, concerns, and interests of the Red River Métis directly in the development and implementation of Environmental monitoring and oversight activities.	**Incorporated**: Canadian Nuclear Laboratories (CNL) agrees that issues and concerns raised by the Manitoba Métis Federation (MMF) come from a unique Métis perspective and are different from those of First Nations. CNL has documented the specific Red River Métis interests and concerns, and specific actions CNL has taken to address those unique interests and concerns in Environmental Impact Statement (EIS) Appendix 4.0-1 Summary of Engagements and Summary of Issues and Concerns Tables. Further, the discussion of results specific to Section 6.8 of the EIS have identified the input of the MMF and its citizens in the current draft. CNL has an overall monitoring program as outlined Section 11. 1 of the EIS. The program is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the stie and the outcomes of the initial Comprehensive Study Report (AECL 2001). CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the Whiteshell Laboratories (WL) site, which will be integrated into the existing EAFMP which will serve to provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the environmental assessment and confirm the effectiveness of mitigations. Section 11 of the EIS describes the specific items that need to be monitored to validate the assessment results. In addition, CNL has committed to augment this overall monitoring program based on how the Red River Métis wish to be involved. The first is through a harvest sample collection plan to collect information wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. Further to this, the CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF Monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. At the time of this response, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF/Red River Métis in monitoring in a way that is most meaningful to them. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration and renewal periods." **Change to EIS:** Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring in the EIS (Golder 2022) was edited as follows to include the specific commitments on involvement and timeline. 'CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild foods, medicines, and wood	**Partially accepted. Follow-up IR 256_R3 below**

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					to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. The specific timelines and milestones for engagement will be determined cooperatively with the MMF and supported through the agreement in place. At present, CNL commits to holding and resourcing regular update meetings with representatives from MMF on the Project and restoration of the Whiteshell site. In addition, this will include at a minimum an annual meeting to activities and coordinate MMF's participation in monitoring activities for the upcoming year. This will include participation of representatives of the Red River Métis in monitoring activities (job shadowing). CNL will work with the Community Liaison and the MMF to share monitoring results/outcomes to the communities in ways that are appropriate for community distribution. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their	

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					consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.' Section 6.9.6.2.2 was revised to the following text: Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. ~~CNL and the Manitoba Métis Federation have also been working together to develop the draft multi-year relationship agreement that will help to mitigate the Manitoba Métis Federation's concerns on the Project and ensure the Manitoba Métis Federation and its citizens are involved in environmental monitoring, communication initiatives, and other key initiatives.~~ The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References**: AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
256_R3	MMF	EIS Section 6.8.1.6.2	**Context:** CNL have varied in their	See IR 11_R3 and IR 125_R3		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			execution of the development of distinctions-based assessment and programming. There are many examples where Red River Metis specific issues and concerns are considered and taken into account, including the development of a range of commitments that speak uniquely to the needs of the MMF. However, there are perhaps as many instances where pan-Indigenous issues and information is considered leading to pan-Indigenous mitigations and programming, that will likely not be successful**.**			
257_R2	MMF	EIS Section 6.8.1.6.2	**Context:** CNL must consider the concerns raised by the MMF as distinct from those raised by First Nations. The relationship Métis citizens have with the WL site is unique from that of First Nations, as a result any approach which advances pan-Indigenous solutions is set up for failure.	The MMF request CNL present evidence on how it plans to identify, consider, and address the values, concerns, and interests of the Red River Métis directly in the development and implementation of Environmental monitoring and oversight activities	**Incorporated**: Canadian Nuclear Laboratories (CNL) agrees that issues and concerns raised by the Manitoba Métis Federation (MMF) come from a unique Métis perspective and are different from those of First Nations. CNL has documented the specific Red River Métis interests and concerns, and specific actions CNL has taken to address those unique interests and concerns in Environmental Impact Statement (EIS) Appendix 4.0-1 Summary of Engagements and Summary of Issues and Concerns Tables. Further, the discussion of results specific to Section 6.8 of the EIS have identified the input of the MMF and its citizens in the current draft. CNL has an overall monitoring program as outlined Section 11. 1 of the EIS. The program is based on the Environmental Assessment Follow-up Monitoring Program (EAFMP) for decommissioning of the stie and the outcomes of the initial Comprehensive Study Report (AECL 2001). CNL will develop a Monitoring and Surveillance Plan for the In Situ Decommissioning of WR-1 at the Whiteshell Laboratories (WL) site, which will be integrated into the existing EAFMP which will serve to provide sufficient information on the type, quantity and quality of information required to reliably verify effects predicted by the environmental assessment and confirm the effectiveness of mitigations. Section 11 of the EIS describes the specific items that need to be monitored to validate the assessment results. In addition, CNL has committed to augment this overall monitoring program based on how the Red River Métis wish to be involved. The first is through a harvest sample collection plan to collect information wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. Further to this, the CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing.	**Note 257_R2 is a duplicate of 256_R2**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					CNL has documented this and all other commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the licence application. On December 6, 2023, MMF sent verification and agreement on their commitments sought from CNL, with the understanding that additional work is required on MMF priority commitments such as, communications protocol, sharing of MMF Monitoring data and MMF recruitment/procurement procedures to be developed in collaboration with CNL. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. At the time of this response, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF/ Red River Métis in monitoring in a way that is most meaningful to them. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration and renewal periods." **Change to EIS:** Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring in the EIS (Golder 2022) was edited as follows to include the specific commitments on involvement and timeline. 'CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.' Section 6.9.6.2.2 was revised to the following text: Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. ~~CNL and the Manitoba Métis Federation have also been working together to develop the draft multi-year relationship agreement that will help to mitigate the Manitoba Métis Federation's concerns on the Project and ensure the Manitoba~~	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					~~Métis Federation and its citizens are involved in environmental monitoring, communication initiatives, and other key initiatives.~~ The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References**: AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
258_R2	MMF	EIS Section 6.8.1.6.2.1	**Context:** CNL has failed to provide evidence of the amount of noise that will be produced during and after decommissioning activities. Similarly, no assessment of dust or particulate matter deposition is provided.	CNL is to consider a quantitative assessment of baseline noise as well as predictions of noise associated with activities within 10 km of the site. CNL is to consider a quantitative assessment of baseline dust/particulate matter deposition around the WL site, as well as modelled predictions of increased deposition and chemistry throughout the downwind area to be affected. CNL should then provide a plan to monitor the impacts on human health as a result of dustfall	**Resolved As:** **A.** As the reviewer notes, there could be a secondary pathway of effects of noise on traditionally important wildlife, such as moose and deer, outside of the local study area (LSA). However, indirect effects of the building demolition work (e.g., light, noise, equipment use) was deemed to be of low risk to wildlife in natural areas adjacent to the fenced campus, and they were unlikely to occur within the fenced campus. Although not explicitly stated in Section 6.6.3, there will be Best Management Practices (BMPs) and industry standards for limiting noise implemented. As described in Section 6.8.1.6.2.1 No Linkage Pathway, decommissioning of the WR-1 Building will be completed in a controlled manner, and no blasting will be required. The loudest decommissioning activity will likely be noise from a percussion hammer on an excavator, which will be used to break up reinforced concrete walls and floors during demolition. This activity will be limited to the interior of the building envelope, which will serve to reduce the level of noise outside the building, and in the surrounding area. The Whiteshell Laboratories (WL) site has also retained heavy tree coverage, which provides a natural noise barrier (AECL 2001). As such, due to the nature of the noise produced by Project activities (sporadic, short-term, no blasting), wildlife species such as deer and moose that live near the WL site are not expected to experience habitat displacement. It is worth noting that the potential sensory disturbance to traditional/ cultural species such as moose and deer from the Project, is already occurring with current demolition activities at the WL site. Decommissioning activities related to the Project are similar in nature to those already occurring at site, therefore, it is anticipated that moose, deer, and other wildlife species would respond to sensory disturbance from the Project in a	**Partially accepted. Follow-up IR 258_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
				on berries and plants of cultural significance to the Red River Métis, which may be consumed.	similar manner. Overall, sensory disturbance is expected to have a negligible effect on traditional/ cultural species such as moose and deer. **B.** In the absence of a provincial standard/criteria for dustfall in Manitoba, it was conservatively assumed in the modelling assessment that all dust is emitted into the atmosphere and the plume is not depleted through deposition. As a result, the air quality assessment is considered to be conservative when assessing against the airborne standards for particulate matter and predicted concentrations outside the Canadian Nuclear Laboratories (CNL) property boundary are still below the relevant Ambient Air Quality Criteria (AAQC), which are typically used as indicators of good or desirable air quality. Deposition was not included in the original assessment and has not been requested in the previous rounds of review. Based on further analysis of the modelling results for suspended particulate matter (SPM), greater than 98% of the maximum SPM point of impingement (POI) concentration along the CNL boundary is attributable to re-entrainment of dust from vehicles travelling on paved roads, with less than 2% from the decommissioning activities around the Project site. As a result, dust generated from decommissioning activities around the Project site that is dispersed off-site is expected to be negligible. Dust from vehicle re-entrainment generally on paved roads is intermittent that does not produce visible emissions and is not considered a significant source of deposition. Further, the quantity of the dust from the paved roads at CNL is expected to be significantly less than the dust generated by existing roads in the study area. For example, Provincial Trunk Highway 11 (PTH 11) runs west of the site boundary and has recorded annual average daily traffic (AADT) of over 1400 vehicles in 2017. Comparatively, the site access road is expected to have a maximum of 97 vehicles per day during decommissioning, or approximately 7% of the vehicles that travel on PTH 11 daily. As a result, particulate matter deposition modelling is not required for this assessment as the project is not expected to contribute significantly to dustfall in the study area. Per B above, the main source of dust emissions from the Project site is re-entrainment from vehicles travelling on paved roads. The composition of the dust on the paved roads is not expected to be dissimilar to the dust generated by other paved roads in the area, which have a much higher flow of traffic. As a result, the analysis of chemical composition in the dust is not anticipated to be required. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001.	
258_R3	MMF	EIS Section 6.8.1.6.2.1	**Context:** The MMF requested a quantitative assessment of	The MMF requests that CNL provide modelled estimates of particulate		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			baseline and future dust and particulate matter deposition around the WL site, including chemical composition and modelled downwind patterns, as well as a plan to monitor human health impacts from dustfall on culturally significant plants such as berries. The EIS does not include a quantitative assessment of particulate matter deposition at or around the WL site, nor does it provide modelled predictions of downwind deposition patterns or chemical composition. While it outlines mitigation measures such as dust suppression, HEPA filtration, and general monitoring during demolition, these measures are not linked to an analysis of where dust may settle or how it may interact with plants of cultural significance. The EIS does include a Human Health and Ecological Risk Assessment, but this assessment does not explicitly evaluate the exposure pathway posed by dustfall on harvested plants.	matter deposition and associated chemical profiles in areas downwind of the WL site, particularly in locations where plant harvesting may occur. The MMF also requests that CNL assess the risks associated with the consumption of culturally significant plants affected by dustfall. This assessment could be conducted as an addition to the existing Human Health and Ecological Risk Assessment or as a standalone analysis. These efforts would help clarify whether additional mitigation or monitoring is warranted during decommissioning activities.		
259_R2	MMF	EIS Section 6.9.2 and Table 6.9.2-1, p. 6-510	**Context:** Table 6.9.2-1 in Section 6.9.2 summarized issues raised during engagement related to the socio-economic environment and has combined all the Indigenous concerns together in one table without appropriate referencing.	The MMF requests CNL to distinguish between unique and distinct concerns of the MMF and First Nations and provide a separate table that clearly outlines the concerns and interests of each. By doing so, it will	**Resolved As:** Canadian Nuclear Laboratories (CNL) acknowledges and respects the concern of presenting a pan-Indigenous discussion and agrees with the Manitoba Métis Federation (MMF) to ensure, where possible, to present the interests and concerns of the MMF independently of others. The MMF and each First Nation have expressed their interests and concerns to CNL regarding the project. Each of those interests and concerns are documented in the Section 4.2.4.2 and Appendix 4.0-1 Section 1.3.4 of the Environmental Impact Statement (EIS). Each community is given their own distinct Table of Interests and Concerns, as well as their own	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			This blending of concerns and interests of the MMF and First Nations is unacceptable and demonstrates a lack of appropriate care and consideration for distinct and Nation-based assessment of interests and concerns. The MMF does not approve of pan-Indigenous solutions, and CNL as an operator of a facility owned and regulated by the Crown hold obligations to ensure the distinct interests and concerns of the Red River Métis are considered and addressed appropriately.	facilitate the follow-up and monitoring phase and enable both the Proponent and the MMF to assess whether the concerns have been addressed appropriately.	unique responses, actions and commitments to address them. This is where CNL has provided the detailed documentation of the views of each community. The table in Section 6.9 and similar tables throughout Section 6 of the EIS, are intended to serve only as a mapping tool for the reader. This table directs the reader to specific sections of the document where that topic is discussed. Within that section, where a topic (such as socioeconomics) has different or unique elements to discuss (such as differentiating between the views of Métis and First Nations), the distinct discussions are presented. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: N/A	
260_R2	MMF	EIS Section 6.9.5	**Context:** It has come to the attention of the MMF that project-specific Indigenous community-led studies have only been conducted for Sagkeeng First Nation. Unfortunately, this has resulted in a significant absence of Métis-specific data in the existing condition sections of the socio-economic chapter of the EIS. This lack of information is particularly evident with respect to employment and income, labour force characteristics, as well as housing and other infrastructure for Métis in LRS. As such, the MMF considers this omission of Métis-specific data to be unacceptable.	CNL must include Métis-specific data through the description of the environment, as well as project interactions, and follow-up and monitoring phases. It is essential that the socio-economic section of the EIS accurately reflects the potential impacts of the proposed project on Métis citizens.	**Incorporated:** In discussion with the Manitoba Métis Federation (MMF), it was determined that updating the Environmental Impact Statement (EIS) to reflect 2021 Census data with disaggregated data for Métis people residing within the local study area (LSA) and regional study area (RSA) (based on Statistics Canada definitions of Aboriginal, Métis and Inuit) would not be representative of the MMF's citizens. The MMF agreed to supply what information it had that could be publicly shared to support the characterization of Métis-specific information where applicable. Based on information supplied by the MMF, CNL has incorporated the MMF explicit description of their membership totals and locations. **Change to EIS:** Section 6.9.5.1.1.1 Limitations on Statistics Canada has been updated to state: 'As the national government of the Red River Métis, the Manitoba Métis Federation represents more than 125 000 citizens and harvesters within the provincial boundaries of Manitoba and thousands more across their National Homeland and around the world.' **References:** N/A	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
261_R2	MMF	EIS Section 6.9.5.1.1.1	**Context:** CNL indicated, "The characterization of the existing socio- economic environment relies on the 2016 and 2006 Census of Population data along with data from the 2011 National Household Survey (NHS)" (p. 6.521). All these data sources are over 10 years old, therefore it doesn't adequately characterize the socio-economic baseline conditions. To accurately assess the potential impacts of the proposed project on the socio-economic environment, CNL must incorporate the most recent census data, as well as a Métis-specific socio-economic study.	The MMF requests that CNL take action to ensure that the latest and most accurate data is utilized to inform their socio-economic impact assessment.	**Incorporated:** In discussion with the Manitoba Métis Federation (MMF), it was determined that updating the Environmental Impact Statement (EIS) to reflect 2021 Census data with disaggregated data for Métis people residing within the local study area (LSA) and regional study area (RSA) (based on Statistics Canada definitions of Aboriginal, Métis and Inuit) would not be representative of the MMF's citizens. The MMF agreed to supply what information it had that could be publicly shared to support the characterization of Métis-specific information where applicable. Based on information supplied by the MMF, CNL has incorporated the MMF explicit description of their membership totals and locations. **Change to EIS:** Section 6.9.5.1.1.1 Limitations on Statistics Canada has been updated to state: 'As the national government of the Red River Métis, the Manitoba Métis Federation represents more than 125 000 citizens and harvesters within the provincial boundaries of Manitoba and thousands more across their National Homeland and around the world.' **References:** N/A	**Accepted**
262_R2	MMF	EIS Section 6.3	**Context:** The WR-1 building, and the majority of the remainder of the WL campus is located within 500 m of the Winnipeg River. Presently, the Winnipeg River is controlled by several dam and impoundment structures, including directly upstream at the Seven Sisters Generating Station. The Seven Sisters Generating Station was constructed from 1929 to 1931, and as a result, the WL site has never been exposed to 'naturalized' flows of the Winnipeg River. That said, the	The MMF requests CNL to provide information on historic flood and meander potential of the Winnipeg River for the stretch between the Seven Sisters Generating Station and Lac du Bonnet, prior to the establishment of the Seven Sisters Generating Station and other impoundments on the Winnipeg River. Additionally, the MMF request CNL provide analysis of how the removal of the Seven Sisters Generating Station may	**Resolved As:** **A. Canadian Nuclear Laboratories (CNL) has provided a description of the stratigraphic soil layers present at the Whiteshell Site in the Geosynthesis (CNL 2022) and WR-1 Hydrogeologic Study Report (Dillon 2018). The vast majority of soils are glacio-fluvial and glacio-lacustrine materials, deposited** near the end of the ice age when glacial Lake Agassiz existed and drainage towards it could more easily reach a flood state. During the end of the last ice age, the land was adjusting to the eventual recession of the continental ice sheet, as the WL area changed from lake to an area drained by the river the potential for flooding was far more prevalent as large amounts of glacial melt water flowed into glacial Lake Agassiz**.** During that time period the rate of inflow and discharge would have a greater potential to over top the river banks. Since that time the Winnipeg River has eroded into its current channel and Lake Winnipeg is at a lower elevation that the former glacial Lake Agassiz. While heavy rain falls and snow melts can occur there has been no condition where the river banks were even close to being over topped. **B. The Winnipeg River system is well established, and not prone to flooding in the same way the Red River is.** The Winnipeg River prior to the existing dams was a faster flowing river (dams are at elevation changes and rapids) than the Red River with a low elevation change that meanders and is prone to flooding. In 2022, the Winnipeg River system saw record breaking high water levels, which impacted some shoreline properties. However the Whiteshell	**Follow-up IR 262_R3 below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Winnipeg River frequently floods even with the control structures in place, as was witnessed in 2022 after Lake of the Woods reached record levels. In order to protect an ISD WR-1, it is important to minimize disturbance of the soil around the reactor site. To consider the full extent of risks, CNL must consider possible risks of flooding from the Winnipeg River (and other sources) which may disturb the WR-1 reactor at all phases of the project until radioactive material left in place no longer pose any risk to human or environmental health. Given the long duration in which material poses a potential risk (e.g. 10,000 years), CNL cannot assume flow conditions of the Winnipeg River will remain consistent to what have been observed over the past 100 years, and further, CNL cannot be solely reliant on the existence of control structures to manage water in perpetuity.	impact ISD and the WL site during Institutional Control and post-Institutional Control phases of decommissioning. The MMF request that CNL provide an analysis and discussion on how CNL has considered the impacts and uncertainty of climate change on flood conditions ofthe Winnipeg River both with the presence of current water control structures and in their absence.	Laboratories (WL) site and WR-1 were still many meters away from any overland water impacts from that high level water event. **C.** The potential effect of flooding and climate change on the Project and more broadly, the WL site is discussed in Section 10 Effects of the Environment on the Project. Specifically, potential impacts of flooding on the Project are discussed in Section 10.2.2 Extreme Rainfall Events, Snowmelts and Flooding. As stated in this section: "Flooding of the WL site due to a rise in the Winnipeg River is remote and has been previously evaluated in the Comprehensive Study Report for the WL Decommissioning Project (AECL 2001). A failure of the Seven Sisters Dam, which is upstream of the WL site, is considered a bounding scenario for a potential rise in river levels due to extreme rainfall events (1 in 100-year precipitation event). Flood levels of the Winnipeg River at the WL site following a failure of the Seven Sisters Dam were estimated to take 1.5 hours to reach a peak at 7 m above normal water levels (AECL 2001, Section 6.5). As such, a flooding incident of this magnitude would affect the shoreline of the Winnipeg River adjacent to the WL site, but it would not flood the WL site. During the Closure Phase, decommissioning activities are encompassed by the existing Emergency Preparedness and Response plan, and the site design event (e.g., water conveyance structures and collection sumps) is a 1 in 100-year 24-hour precipitation event. The detailed design of the concrete cap and engineered cover have been prepared using the site design event consistent with that of recent, similar projects and commensurate with the 100 year design lifespan of the concrete cap and engineered cover. A rise in river level in response to ice jams or extreme rainfall events is considered a possible – occasional event (1 in 100 years to 1 in 1,000 years) based on historical occurrence data. However, Manitoba Hydro has contingency plans for comprehensive notification, warning, and response systems in case an emergency condition is detected." Based on the above, the assessment of potential effects (due to changing elevations) has considered high flows with the dams in place, as well as high flows with failure of the dams. **D.** CNL has acknowledged and considered the potential impacts of the long term uncertainty associated with the Winnipeg River due to climate change. As stated in Section 10.5.2 Climate Change Resilience Assessment, a climate change resilience assessment was conducted for the Project to meet the requirements of the Strategic Assessment of Climate Change, Revised October 2020 (Government of Canada 2020). The assessment follows the approach outlined in Infrastructure Canada's Climate Lens - General Guidance (Infrastructure Canada 2019). The assessment includes identifying climate-infrastructure interactions of the Project infrastructure with a range of climate variables for near term (2050s) and far term (2080s). All the climate risks associated with the Project have negligible to moderate risks under the future climate. Hence, based on the existing Project design and the monitoring and surveillance plans, the Project is resilient in the near term (2050s) and the far term (2080s) for a range of different climate variables. To ensure ongoing resiliency for the Project and reduce the climate impacts, ongoing monitoring will be implemented to monitor the performance of the infrastructure under the changing climate.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					Uncertainty in model inputs was addressed through sensitivity analyses. Model components evaluated through the sensitivity analysis included geological pathways, the WR-1 concrete cap and engineered cover, foundation and grout failure modes and timeframes associated with failure, adsorption-partition coefficients, source mass inventory, corrosion of the reactor components, hydraulic conductivity of the backfill and bedrock, stage of the Winnipeg River. Where uncertainty remained in the assessment modeling about the validity of long-range climate change forecasts, CNL used sensitivity analyses to test whether the WR-1 ISD would be sensitive to various environmental changes, such as extreme erosion, higher precipitation rates (higher groundwater infiltration) or shorter path to the Winnipeg River. The assessment confirmed that the safety of the environment and humans largely depends on the slow release of contaminants through corrosion of reactor metals and is not significantly affected by environmental conditions, including those resulting from climate change. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** AECL (Atomic Energy of Canada Limited). 2001. Whiteshell Laboratories Decommissioning Project, Comprehensive Study Report. WLDP-03702-041-000. Revision 2. March 2001. CNL. 2022. Geosynthesis for WR-1 Environmental Impact Statement. WLDP-26400-041-000. Revision 3. January 2022. Dillon Consulting Ltd. (Dillon). 2018. WR-1 Hydrogeological Study Report. WDLP-26000-REPT-004. Prepared for Canadian Nuclear Laboratories. November 2018. Infrastructure Canada. 2019. Climate Lens General Guidance. Last amended on October 31, 2019. Available at https://www.infrastructure.gc.ca/pub/other-autre/cl-occ-eng.html#1 Government of Canada. 2020. Strategic Assessment of Climate Change. Revised October 2020. Available at https://www.strategicassessmentclimatechange.ca/	
262_R2	MMF	EIS Section 6.3	Context: IR 262_R2 raised in 2023 pertains to Section 6.3 Geological and Hydrogeological Environment - General, of the EIS. The concern expressed by the MMF relates to the fact that presently, the Winnipeg River is controlled by several dam and impoundment structures, including directly upstream at the Seven Sisters Generating	Within Section 6.3 of Revision 5.0 of the EIS, it does not appear that any of Within Section 6.3 of Revision 5.0 of the EIS, it does not appear that any of A, B, or C have been addressed. The only mention of the Seven Sisters Generating Station within Section 6.3 is the statement that "The current river level (which is		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Station. The recommendation made by the MMF in 2023 was threefold: A) The MMF requests CNL to provide information on historic flood and meander potential of the Winnipeg River for the stretch between the Seven Sisters Generating Station and Lac du Bonnet, prior to the establishment of the Seven Sisters Generating Station and other impoundments on the Winnipeg River. B) Additionally, the MMF request CNL provide analysis of how the removal of the Seven Sisters Generating Station may impact ISD and the WL site during Institutional Control and post-Institutional Control phases of decommissioning. C) The MMF requests that CNL provide an analysis and discussion on how CNL has considered the impacts and uncertainty of climate change on flood conditions of the Winnipeg River both with the presence of current water control structures (e.g., the Seven	controlled upstream via the Seven Sisters Generating Station) is approximately 10 m below the top of the adjacent eastern riverbank near the WL site". There is no mention of climate change within Section 6.3.CNL is requested to address these requests.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Sisters Dam) and in their absence (e.g., following the removal of the Seven Sisters Dam).			
263_R2	MMF	EIS Section 6.3.1.5.2.2	**Context:** Figure 6.3.1-7 illustrates surficial sediments within the RSA, including those which cover the WL campus itself. Within this figure CNL illustrate that a large portion of the WL campus is covered by alluvial sediments which continue to the high-water mark of the Winnipeg River where the assessment stops. The WR-1 building is located immediately adjacent to alluvial sediments, on calcareous lacustrine clay. The MMF is concerned about the potential for surficial erosion as a result of flood conditions in the Winnipeg River. It is necessary to accurately understand where historic floodplain existed relative to the WR-1 site.	The MMF requests that additional detailed surficial soil mapping be conducted to delineate with confidence the historic high water flood plain is relative to the WR-1 building. Specifically, we seek to gain clarity on where the highwater mark of a 1 in 10,000-year flood event would occur, using both geologic indicators and/or appropriate flood modelling.	**Resolved As:** **Canadian Nuclear Laboratories (CNL) does not believe additional characterization is required at this time. CNL has provided a description of the stratigraphic soil layers present at the Whiteshell Site in the Geosynthesis (CNL 2022) and WR-1 Hydrogeologic Study Report (Dillon 2018). The vast majority of soils are glacio-fluvial and glacio-lacustrine materials, deposited** near the end of the ice age when glacial Lake Agassiz existed and drainage towards it could more easily reach a flood state. During the end of the last ice age, the land was adjusting to the eventual recession of the continental ice sheet, as the WL area changed from lake to an area drained by the river the potential for flooding was far more prevalent as large amounts of glacial melt water flowed into glacial Lake Agassiz**.** During that time period the rate of inflow and discharge would have a greater potential to over top the river banks. Since that time the Winnipeg River has eroded into its current channel and Lake Winnipeg is at a lower elevation that the former glacial Lake Agassiz. While heavy rain falls and snow melts can occur there has been no condition where the river banks were even close to being over topped. **The Winnipeg River system is well established, and not prone to flooding in the same way the Red River is.** The Winnipeg River prior to the existing dams was a faster flowing river (dams are at elevation changes and rapids) than the Red River with a low elevation change that meanders and is prone to flooding. In 2022, the Winnipeg River system saw record breaking high water levels, which impacted some shoreline properties. However the Whiteshell Laboratories (WL) site and WR-1 were still many meters away from any overland water impacts from that high level water event. To assess the impact of the uncertainty surrounding flooding, and erosion, CNL included assessments of scenarios where the river migrated closer to the Whiteshell Reactor Disposal Facility (WRDF) (erosion), and changes in cap and cover hydraulic conductivity conditions (flooding), and determined that the changes did not significantly impact the overall performance of the WRDF to isolate and contain the wastes. (Golder 2021). **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: CNL. 2022. Geosynthesis for WR-1 Environmental Impact Statement. WLDP-26400-041-000. Revision 3. January 2022. Dillon Consulting Ltd. (Dillon). 2018. WR-1 Hydrogeological Study Report. WDLP-26000-REPT-004. Prepared for Canadian Nuclear Laboratories. November 2018. Golder. 2021. Decommissioning Safety Assessment Report for the WR-1 In Situ Decommissioning of Whiteshell Reactor 1 Project. Canadian Nuclear Laboratories Document No. WLDP-26000-SAR-001. Revision 4. December 2021.	**Follow-up IR 263_R2 below**

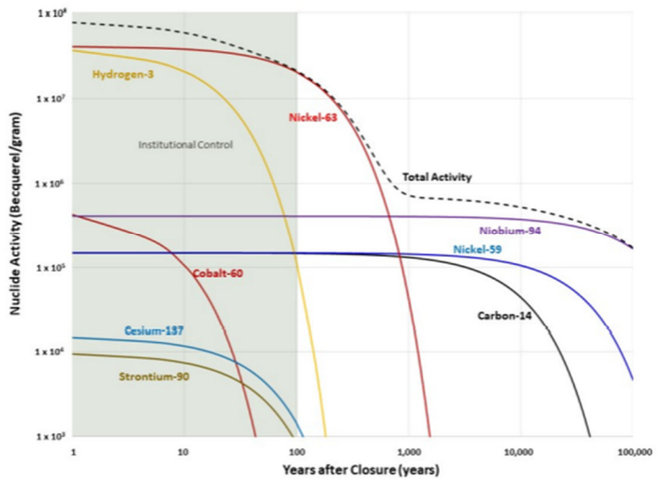
IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
263_R3	MMF	EIS Section 6.3.1.5.2.2	IR 263_R2 pertains to Section 6.3.1.5.2.2 Local Geological Conditions, within the EIS. In particular, the MMF were concerned about Figure 6.3.1-7, which illustrates surficial sediments within the RSA. The figure shows that a large portion of the WL campus is covered by alluvial sediments which extend to the high-water mark of the Winnipeg River. The MMF requested that additional detailed surficial soil mapping be conducted to delineate, with confidence, the historic high-water flood plain, relative to the WR-1 building. The MMF specifically wanted to see where the high-water mark of a 1 in 10,000 year flood event would occur, using geologic indicators and/or appropriate flood modelling. This request is especially warranted given the impacts of climate change, and the fact that water levels in the Winnipeg River depend in part on the operation of upstream dams. This extra data seems like something that would be attainable, and is very critical given the risks involved with potential flooding and the potential for contaminants entering the Winnipeg River as a result. It does not appear that	CNL is requested CNL to provide analysis of the circumstances in which the Winnipeg River may pose a threat to the LSA due to flooding or erosion associated with elevated water levels or stream meandering in a scenario in which the Seven Sisters Dam has been removed.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Figure 6.3.1-7 has been adjusted in any way to illustrate the high-water mark of a flood scenario, or historic high-water data. Therefore, the recommendations from 2023 remain in place, and the issue has not been addressed.			
264_R2	MMF	EIS Section 6.3.2.6.2	**Context:** CNL identify the release of solutes into the groundwater as the grout and reactor components gradually deteriorate as a primary pathway. This pathway is already demonstrated as the grouting associated with existing buildings and structures. As a mitigation CNL include the installation of a concrete cap and engineered cover system to mitigation moisture infiltration into the WRDF and hence limit release of solutes into the groundwater.	The MMF requests information on the expected lifespan of materials used in the cap and cover, as well as grout and reactor components. Additionally, the MMF requests information on prospective approaches to maintenance and/or replacement of cap and cover/grouting materials to ensure cover and grout function as intended for the entirety of time in which radioactive materials pose a risk to human and environmental health.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has indicated in the Environmental Impact Statement (EIS) that the Cap and Cover system have a minimum lifespan of 100 years. This 100 year requirement is based on the understanding that those contaminants most prone to quick release by groundwater have shorter half lives, and are not constrained within the metal matrix of the reactor components. This initial mitigation is intended to further mitigate the already low expected potential releases from the facility during the first 100 years when they would be available for release. After 100 years, they will have significantly decayed to the point they are no longer of concern. Beyond 100 years, CNL has assumed that the cap and cover will degrade back to more natural soil conditions, and based the assessment of long term safety on that degraded condition. CNL acknowledges the limited confidence in long term performance predications for man made structures, and so has assumed that the barriers will fail over time, and demonstrated that the facilities' performance, with that degradation, is acceptable. This shifts the uncertainty from "what if it breaks down?" to "what if it lasts longer than we assumed?". CNL has prepared a preliminary design for a cap and cover system (AECOM 2020a), including a preliminary monitoring and maintenance plan for the first 100 years (AECOM 2020b). This plan could potentially be extended beyond 100 years, if it is deemed appropriate to do so and the systems and oversight remain in place to enact it. **Changes to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** AECOM. 2020a. Design of the Concrete Cap and Engineered Cover of the Whiteshell Reactor 1 (WR-1) Disposal Facility. AECOM. WLDP-26000-235-000. Revision 0. March 2020. AECOM 2020b. Design of the Concrete Cap and Engineered Cover for the Whiteshell Reactor (WR-1) Disposal Facility – Work Instructions. AECOM. WLDP-26000-DWI-52586051 Revision 0. November 2020.	**Partially accepted. Follow-up IR 264_R2 below**
264_R3	MMF	EIS Section 6.3.2.6.2	MMF IR 264_R2 requested information on the expected lifespan of materials used in the	The MMF recommends that information be added regarding contingency		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			cap and cover, as well as grout and reactor components. Additionally, the MMF requested information on prospective approaches to maintenance and/or replacement of cap and cover/grouting materials to ensure cover and grout function as intended for the entirety of time in which radioactive materials pose a risk to human and environmental health. Within Revision 5.0 of the EIS, Page 3-34 (Section 3.4.6.4) states that the concrete cap will have a design life of 100 years, aligning with the recommended institutional control period, and require no maintenance. Moreover, it also states that the engineered cover will also have a design life of 100 years. Page 3-40 (Section 3.4.9.1.2) states that "the grout will slowly degrade over time, allowing water movement to increase as it degrades, though this is expected to occur gradually over thousands of years". Page 3-43 (Section 3.4.9.1.6) provides information on the concrete cap and cover but does not speak to a suspected lifespan of the materials. Section 6.3.2.6.2 Results, refers to effects pathways regarding the release of solutes into groundwater as the grout and reactor	planning for addressing the expected lifespans of materials (ex. cap, cover, and grout), and what methods have been considered if these materials do not last as expected and require replacement. This critical information will help ensure that the MMF has a full picture and understanding of proposed approaches and a reliable alternative/backup plan.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			components gradually deteriorate over time. However, there is no mention within Table 6.3.2- 9 of anticipated lifespans of materials, or prospective approaches to maintenance and/or replacement of cap and cover/grouting materials.			
265_R2	MMF	EIS Section 6.3.2.6.2.1	**Context:** CNL has identified "No Linkage Pathway" to residual effects from runoff during and following closure. However, there is an issue with this evaluation because there could be large loads of contaminated material and dust during active closure. These could be from building demolition, excess piping or other contaminated materials. If there is a significant precipitation or snowmelt while this material is present, it could result in a slug of contaminated runoff to the Winnipeg River. The Proponent has assumed that this would not occur because best practices would be in place. This includes, water management, containment barriers, and water testing.	As part of the EA follow-up program CNL outline in detail the mitigation strategies and actions that will be taken to prevent contaminated runoff from the site to receiving waters during closure. The EA follow-up program must be provided to the MMF so that there is an opportunity for review. Failing this, it will be necessary to incorporate potential effects of increased contamination to the Winnipeg River because of runoff, into the Environmental Assessment process.	**Incorporated:** Stormwater runoff from the WR-1 study area will be collected and directed to the Process Outfall. The discharge from the Process Outfall is composed of stormwater runoff from paved roadways or around buildings, cooling water used in process and experimental facilities, and holding tank discharges including those from the new active liquid waste treatment system tanks based in Building 100 and Building 300. Effluent from the Process Outfall is subject to monitoring prior to release under Canadian Nuclear Laboratories (CNL's) Whiteshell Laboratories (WL) Radioactive and Non-Radioactive Effluent Verification Monitoring Program (EVMP). All results for radionuclides must be below the Derived Release Limits (DRLs; WL-509211-RRD-001 [CNL 2021a]). All results for non-radionuclides are compared against WL's Administrative and Action Levels for WL Non-Radiological Effluent (WL-509200-PRO-002 [CNL 2021b]). Currently, wastewater from decommissioning activities is collected and tested and based on the results, is directed either to an onsite waste treatment systems, domestic drain, processed drain or ditch systems, or is sent for storage, evaporation and/or solidification and disposal. This process follows the requirements in CNL's Management and Monitoring of Effluents and Emissions (CNL 2022). Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants. (CNL 2021c). **Change to EIS:** As per IR 106_R2, CNL has changed the No Linkage Pathway (Section 6.4.2.6.2.1 in the EIS; Golder 2022) "During closure activities, there is the potential for the transport of site runoff to the Winnipeg River" to Secondary Pathway (Section 6.4.2.2.2 of the EIS). A reference to the DRL document and WL's Administrative and Action Levels for WL Non-Radiological Effluent (WL-509200-PRO-002; CNL 2021b) was added to the above-mentioned pathway in Section 6.4.2.6.2.2 Secondary Pathway of the EIS (Golder 2022). "Wastewater directed to the ground or ditch system only occurs when the wastewater is below levels of concern for all contaminants, as specified in CNL's Derived Release Limits for AECL's Whiteshell Laboratories (WL-509211-RRD-001; CNL 2021a)." **References:** CNL. 2021a. Derived Release Limits for AECL's Whiteshell Laboratories. WL-509211-RRD-001. Revision 6. January 2021.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					CNL. 2021b. Administrative and Action Levels for WL Non-Radiological Effluent. WL-509200-PRO-002. Revision 0. June 2021. CNL. 2021c. Acceptability Criteria for Routine and Non-Routine Discharge of Liquids at Canadian Nuclear Laboratories Sites. 900-509200-MCP-005. Revision 1. February 2021. CNL. 2022. Management and Monitoring of Effluents and Emissions. 900-509200-STD-009. Revision 1. December 2022. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022	
266_R2	MMF	EIS Section 6.3.2.7.2 Application Case	**Context:** ISD represents the highest risk to local aquatic systems because contaminated materials will reside permanently within the local environment. Permanent storage of radioactive contaminated material must be monitored indefinitely. Once the containment system fails, decaying radioactive material will have a direct pathway for contamination of groundwater. Over time, this contamination will likely migrate to surface water (e.g., through seepage to the Winnipeg River <500m), posing risks to aquatic wildlife and humans who consume these organisms. For example, based on predictions of mass loadings to the Winnipeg River, it is expected that Carbon-14 and Tritium are expected to be particularly high. The latter of which is expected to occur within 68 years during post-closure. Due to the risks associated with contaminated groundwater, a	The MMF request CNL present a plan for long-term surface and ground water monitoring associated with the WR-1 reactor, covering the entirety of time in which radioactive materials present a plausible risk to human and environmental health.	**Resolved As:** As detailed in the Environmental Impact Statement (EIS), the post closure program for the Project is currently proposed to operate for 100 years as part of the Institutional Controls; however, it will continue until the Canadian Nuclear Safety Commission agrees that monitoring is no longer needed. The main potential release mechanism during post-closure is via leakage through the Whiteshell Reactor Disposal Facility (WRDF) to groundwater and subsequent migration of groundwater to surface water at the Winnipeg River. For assessment purposes, a period of 100 years (from 2027 to 2127) of institutional control was selected. This timeframe is based on the results of the groundwater flow and solute transport model, and the expected quantities of contaminants within the WRDF over time. For prominent contaminants of concern, such as tritium (hydrogen 3) and cobalt-60, the total activity of these nuclides remaining in the WRDF after 100 years quickly decreases to zero (Figure 3.4.9-4; see figure below). During the 100-year period, the peak release rate and dose rate from those contaminants are also expected to have occurred. Sampling during institutional control will verify these short-term results or signal the need for intervention. It is also reasonable to assume that current institutional systems will remain in place until then.	**Partially accepted. Follow-up IR**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			robust monitoring program must be in place. We note that in Section 6.3.2.9, CNL commits to the development and implementation of a groundwater monitoring program during the Institutional Control period, however, specific durations are not described. Additionally, we note that in the supplementary material WR-1 Groundwater Flow and Solute Transport Modelling Revision 4, Golder suggests that mass loading rates for other parameters such as lead, barium, chromium, copper, mercury, niobium- 94m nickel, radium-224, radium-228, samarium, samarium- 148, thorium-228, thorium-232, and zirconium, do not reach their peak discharge until after the completion of the proposed Institutional Control period. It is therefore unclear whether or not CNL or other parties to be responsible for monitoring these parameters in groundwater or surface water beyond the temporal scope of CNL's committed monitoring program.		 It is recognized that institutional control could extend for hundreds of years beyond 2127; however, to assess the effects of an institutional control failure, a duration had to be selected. The 100-year period is a reasonable duration for the failure assessment given the results of the groundwater flow and solute transport model. Monitoring activities will be adaptive in nature, increasing or decreasing in scope and frequency depending on the results. Monitoring activities for the Project will be coordinated with and integrated into the existing Environmental Assessment Follow-up Monitoring Program (EAFMP), over and above the current monitoring activities, and will be carried out through the existing Environmental Monitoring Program. At this time, no specific agreement has been reached between Canadian Nuclear Laboratories (CNL) and the Manitoba Métis Federation (MMF) for longer term monitoring co-operation; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will be over the length of the monitoring period, with the caveat that both parties could agree to reduce or stop monitoring at some future date if it is reasonable, and acceptable by the regulator, to do so. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					References: N/A	
266_R2	MMF	EIS Section 6.3.2.7.2 Application Case	The MMF requested in IR 266_R2 in 2023, that CNL present a plan for long-term surface and groundwater monitoring associated with the WR-1 reactor, covering the entirety of time in which radioactive materials present a plausible risk to human and environmental health. The comment specifically pertained to Section 6.3.2.7.2 Application Case, and Section 6.3.2.9 Monitoring and Follow-Up. In the most recent version of the EIS, Table 6.3.2-10 states that initial sampling frequency will likely be twice per year (spring and fall). Additionally, it states that "the frequency of recurrence of water sampling will be reviewed based on performance data. The number and location of wells and parameters measured, may change based on an annual review of the data". Overall, the wording does not sound like a concrete sampling schedule has been established, and the MMF still want to see a robust sampling schedule including frequency and duration for the	While it is positive that CNL has stated that they will commit to adding additional ground monitoring wells and that the program will include the requested details, this monitoring program has not yet been shared with the MMF, which prevents this issue from reaching a status of "Addressed". MMF requests that this post-closure monitoring program be developed and shared with the MMF with enough time to allow for meaningful review and comments.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			entirety of time in which radioactive materials present a plausible risk to human and environmental health. Wording within Section 6.3.2.9 (inaccurately shown as section 6.3.2.1 in the Revision 5.0) states that a "post-closure monitoring program will also be developed that will provide the sampling and analysis objectives and procedures for sampling and testing the groundwater quality in the vicinity of the WR1 Building during the institutional control period", and that the monitoring program "will include details concerning sampling locations and sampling frequencies, analysis, quality assurance/quality control requirements, and will be compliant with CSA N288.7-23: Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills (CSA Group 2023). As a result of engagement on the Project's follow-up monitoring program thus far, CNL has committed to adding additional ground monitoring well(s) between the WR-1 reactor and the Winnipeg River as requested by the Red River Métis".			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
267_R2	MMF	Section 4.2.4.2	**Context:** CNL states that at the October 26, 2020, teleconference with the MMF "CNL also discussed CNL's proposed communication protocol and the Manitoba Métis Federation's Resolution #8" there is however, no update surrounding the development or implementation of the communication protocol. The MMF's re-review of the EIS in December 2021 indicated that at this time the development of a communication protocol in alignment with Resolution 8 remained an outstanding issue.	The MMF request that CNL provide further information surrounding the progress made on developing and implementing a communication protocol drafted in alignment with MMF Resolution 8 as discussed in 2020 and 2021 as well as a timeline for implementation.	**Resolved As:** To address the interests and concerns of Manitoba Métis Federation (MMF), Canadian Nuclear Laboratories (CNL) and the MMF signed a five-year memorandum of understanding that established a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the Whiteshell Laboratories (WL) site on the Red River Métis, including the Project. A draft workplan articulating the MMF priorities, action plans and timelines on how these commitments will be achieved was provided to the MMF in January 2024. A communication protocol is one of the items within this work plan for CNL and MMF to agree on timelines and deliverables to achieve. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. CNL has documented all of the commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the license application. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** N/A	**Partially accepted. Follow-up IR 267_R3 below**
267_R7	MMF	Section 4.2.4.2	**Context:** The MMF notes that CNL have recorded the MMF's interest in establishing a communications protocol anchored around MMF Resolution 8, and states that CNL will continue to follow proper protocol and inform the MMF if an event should occur as per the framework outlined in Resolution 8 (Appendix 4.0-1; Table 1.3.4). The MMF appreciates this being recorded as a key interest and concern; however, the EIS itself fails to provide direction on how this will be implemented in practice to ensure that the project follows appropriate	The MMF seeks not only a commitment from CNL that Resolution 8 and any future successors be used as the foundation of CNL-MMF communication, but also provides clear demonstration of how it will be reflected in programming and plans.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			communication channels throughout the life of the project.			
268_R2	MMF	EIS Section 4.2.4.2.1	**Context:** CNL states that in responding to the MMF's comments on the EIS in December of 2020, they "clearly identified any comment or concern that was out of scope of the EIS and proposed clear next steps to help address the Manitoba Métis Federation's concerns". There is no further detail provided	The MMF request that CNL include further detail surrounding which of the MMF's comments and issues raised in their review of the EIS CNL determined to be out of scope of the EIS, and what next steps were proposed to address these issues instead.	**Resolved As:** The response in question was provided to the Manitoba Métis Federation (MMF) on December 17, 2020. This email response was documented in the table of Section 1.3.3 of Appendix 4.0-1 Summary of Engagements and Summary of Interests and Concerns Tables of the Environmental Impact Statement (EIS; Golder 2022). The email contained responses to MMF comments on the 2017 Draft of the EIS. As these comments are a separate document to the EIS, they are not included in the EIS. They will be provided with the Final EIS following the technical review stage. The EIS instead does contain the summary of the Interests and Concerns of the MMF. The comments that were deemed 'out of scope' were related to: • Spent Fuel Transportation • Site cleanup criteria for the wider Whiteshell Laboratories Restoration Project • Cost related to the wider Whiteshell Laboratories Restoration Project • Water quality results from monitoring of Waste Management Area ditches • Whiteshell Laboratories Land use and End State planning • Overview Detailed Decommissioning Plan for the wider Whiteshell Laboratories Restoration Project While out of scope of the WR-1 Environmental Impact Statement, Canadian Nuclear Laboratories (CNL) has acknowledged these interests and concerns, and continues to engage with the MMF and work on resolving them. CNL and the MMF signed a five-year memorandum of understanding that established a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the Whiteshell Laboratories (WL) site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. For those concerns that require longer term actions CNL has made specific binding commitments to the MMF. CNL has documented all of the commitments it has made to the MMF in a consolidated Commitments List, to be submitted to the Canadian Nuclear Safety Commission (CNSC) as part of the license application. CNL has further co-developed a work plan with the MMF to document those commitments which are of highest priority, the budgets allocated to the specific actions to be taken by each party, and the timelines agreed for the actions to be completed. **Change to EIS:**	**Accepted**

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[3]</th><th>Context and Rationale</th><th>Information Requirement (IR)[4]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them.
References:
Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.</td><td></td></tr>
<tr><td>269_R2</td><td>MMF</td><td>EIS Section 4.2.4.2.2</td><td>Context:
In discussing Red River Métis citizen land use near the WL site, and the MMF’s completion of a traditional food consumption study, CNL states that “CNL has used the data to confirm that the Harvester model is a conservative model for modern day Indigenous people that rely on harvesting for some of their food. The results confirmed that the intake rates assumed in the Harvester model in the EIS are conservative compared to the Manitoba Métis Federation survey and the post-closure safety assessment is also conservative.”

CNL does not provide data from either the MMFconsumption study or the Harvester model to support this statement. Further, it is not clear how CNL has considered thelimitations posed by the small sample size of 21 Red River Métis citizens in making this claim, or why the MMF’s study has been used to draw an assumption about the</td><td>The MMF request that CNL provide additional detail surrounding the Harvester model in the EIS, including the parameters and data used, and how this is connected to addressing Red River Métis interests and concerns related to the consumption of traditional foods, if at all. Further, the MMF request additional information from CNL surrounding how the Harvester model used to draw conclusions about the post-closure safety assessment as stated takes a distinctions-based approach to Red River Métis interests and concerns.</td><td>Resolved As:
Canadian Nuclear Laboratories (CNL) has been clear that the Harvester model is sufficiently conservative for a First Nation and a Métis Harvester, based on the information provided by the Manitoba Métis Federation (MMF) in its Traditional Knowledge Study (SVS 2019).
The Harvester diet in the Environmental Risk Assessment (ERA) is based on the Sagkeeng First Nation Indigenous Food Intake Survey. The MMF survey was received later on and then compared against the diet that was used in the ERA. The conclusions showed that the ingestion rates for the MMF were lower than the Sagkeeng First Nation, so the existing diet for the harvester used in the ERA was considered conservative and bounding.
Ecometrix processed the data from the MMF survey and used the following assumptions:
• A serving size was 75 g for birds, mammals, fish. A serving size was 90 g for berries and 56 g for medicinal plants – these are the same assumption that were used for the Sagkeeng First Nation data.
• The number of servings for each food item were obtained from Table 1 and Table 2 of Shared Value Solutions report “Whiteshell Reactor Decommissioning Community Feedback Report”. These tables are the food frequency tables and were used to determine the average number of servings per week per food item (see table below).
• The average number of servings per week by food item was then converted into an ingestion rate of g/day using the serving size identified in bullet #1 above.
• The food items were grouped together into fish, deer, ducks/geese, fruits and berries, weekay, cedar.
The results in this table are from the MMF survey. The data from the MMF survey were used to determine the average servings per week.
<table>
<tr><th>MMF – Food Items</th><th>Serving Size (g)</th><th>avg servings/wk</th><th>Ingestion Rate g per wk</th><th>Ingestion Rate g per day</th></tr>
<tr><td>Deer</td><td>75</td><td>0.750843</td><td>56.31322</td><td>8.044746</td></tr>
<tr><td>Moose</td><td>75</td><td>0.484429</td><td>36.33219</td><td>5.190313</td></tr>
<tr><td>Geese</td><td>75</td><td>0.0467</td><td>3.502491</td><td>0.500356</td></tr>
</table></td><td>Accepted</td></tr>
</table>

<table>
<tr><th>IR</th><th>Reviewer</th><th>Reference to EIS, or supporting document[3]</th><th>Context and Rationale</th><th>Information Requirement (IR)[4]</th><th>Response from CNL</th><th>Accepted/ Request for follow-up information</th></tr>
<tr><td></td><td></td><td></td><td>Harvester model as it applies to “modern day Indigenous people that rely on harvesting for some of their food” given that CNL has committed to a distinctions-based approach to engagement with Indigenous Nations, and that many Red River Métis harvesters harvest as a means of subsistence.</td><td></td><td>
<table>
<tr><td>Ducks</td><td>75</td><td>0.114882</td><td>8.616127</td><td>1.230875</td></tr>
<tr><td>Grouse</td><td>75</td><td>0.191821</td><td>14.38658</td><td>2.055226</td></tr>
<tr><td>Other Birds</td><td>75</td><td>0.00274</td><td>0.205479</td><td>0.029354</td></tr>
<tr><td>Fish</td><td>75</td><td>0.11006</td><td>8.254495</td><td>1.179214</td></tr>
<tr><td>Pike</td><td>75</td><td>0.250747</td><td>18.80604</td><td>2.686577</td></tr>
<tr><td>Pickerel</td><td>75</td><td>1.341656</td><td>100.6242</td><td>14.37489</td></tr>
<tr><td>Berries</td><td>90</td><td>0.350685</td><td>31.56164</td><td>4.508806</td></tr>
<tr><td>Medicinal</td><td>56</td><td>0.750761</td><td>42.04262</td><td>6.006088</td></tr>
</table>
Section 6.7.1.6.1 “Methods” for the Human Health Assessment in the EIS states: “The intake rates from the Manitoba Métis Federation survey were lower than the intake rates identified by the Sagkeeng First Nation. Therefore, the Harvester receptor in the model uses the intake rates from the Sagkeeng First Nation Indigenous food intake survey, and is considered to be a conservative reflection of potential health effects to a Harvester.”
Change to EIS:
No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them.
Change to ERA:
The ERA (Ecometrix 2024) was revised to include Appendix E Comparison of Traditional Food Diets, directly comparing the intake rates of the MMF and SFN survey results.
References:
SVS (Shared Value Solutions). 2019. Whiteshell Reactor #1 Decommissioning, Manitoba Métis Traditional Knowledge, Land Use and Occupancy Study. January 2019.
Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024.</td><td></td></tr>
<tr><td>270_R2</td><td>MMF</td><td>EIS Section 4.3, pg 4- 91</td><td>Context:
CNL generally discusses the influence of Traditional Knowledge on the Environmental Assessment through a pan-Indigenous lens that in several</td><td>To more effectively understand how Red River Métis knowledge influenced CNL’s assessment, the MMF request that CNL provide</td><td>Incorporated:
Canadian Nuclear Laboratories (CNL) has made updates to the Environmental Impact Statement (EIS; Golder 2022) based on feedback from Round 1 Information Requests (IRs), including providing additional details on the Red River Métis as a distinct Indigenous group governed by the Manitoba Métis Federation (MMF) (see and R1 IR_02 and Section 6.8.1.5.2.2.1 of the EIS).</td><td>Accepted</td></tr>
</table>

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			places amalgamates the results of the Traditional Knowledge studies undertaken and not only renders it difficult to discern exactly how Red River Métis Knowledge was used by CNL to influence the Environmental Assessment but lacks a distinctions-based approach to including Traditional Knowledge in the assessment process.	additional information surrounding the integration of the MMF's land use and occupancy study using a distinctions-based approach, which requires disaggregating the results of this study from the others completed.	Section 4.3 describes the overall approach to how CNL would incorporate Traditional Knowledge (TK) and capture it. It describes the aspects of the assessments where it would be applied, such as in Valued Component (VC) selection, and in describing the environmental conditions. CNL has provided this as an overall discussion of the approach. The use of each TK study however is captured distinctively for each community and cited as such throughout the EIS. Further each community's specific interests and concerns summarized in Section 4.2.4 of the EIS and in Appendix 4.0. The information and knowledge provided by the MMF is captured there, and additionally in specific targeted sections of the EIS where it is directly relevant, such as in Section 6.8.1.5.2.2.1 on Traditional Land and Resource Use. While the existing environment Section of the EIS (Section 6.8.1.5.2.2.1) distinguishes uses among different Indigenous groups, the effects assessment considers the VC Traditional Land and Resource Use by Indigenous Communities broadly, in part because the measurement indicators for the VC relate to the availability of plants, fish, wildlife (i.e., the supporting resources which as distinct from who may use them), in addition to the traditional uses themselves. Similarly, the pathways analysis for the VC (Table 6.8.1.6-1) is focused on the drivers of potential change or effects pathways, and not on the potential changes to each individual resource user or Indigenous group. From CNL's analysis, the Project is expected to have a negligible effect to traditional land and resource use from a western scientific lens. Section 6.8.1.6.2 noted there are not anticipated to be any threshold exceedances in harvested receptors through atmospheric releases and waterborne dispersion of contaminants. In addition, the mitigation proposed to minimize Project effects on surface water quality, the aquatic environment, and the terrestrial environment, are anticipated to eliminate or mitigate any potential adverse effects to the resources on which traditional land and resource use are dependent. Section 6.8.1.6.2 similarly acknowledges a difference in conclusions of the EIS, with the MMF expressing concern that the Project will affect the health of fish, birds and deer over time. To address the divergence in conclusions of the EIS to those of the MMF, CNL has committed to augment this overall monitoring program based on how the MMF wish to be involved. The first is through a harvest sample collection plan to collect information wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. In addition to this program, CNL and the MMF have agreed to meet at least annually to review closure phase monitoring activities and coordinate MMF's participation in monitoring activities for the following season. This will include participation of representatives of the Red River Métis in monitoring activities (job shadowing). CNL and the MMF signed a five-year memorandum of understanding that established a cooperative relationship between the Red River Métis and CNL. The agreement was the culmination of two years of discussions between the parties regarding the effects of decommissioning activities at the WL site on the Red River Métis, including the Project. In mid-February 2024, the MMF notified CNL of the MMF's decision to end the 2023 agreement. Canadian Nuclear Laboratories respects the MMF's decision while continuing to share information. Canadian Nuclear Laboratories remains open and interested in discussion with the MMF. At the time of this response, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF/Red River Métis in monitoring in a way that is most meaningful to them. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods."	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					Change to EIS: Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring in the EIS (Golder 2022) was edited as follows to include the specific commitments on involvement and timeline. CNL has committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. The first is through a harvest sample collection plan to collect information on wild foods, medicines, and wood to be led by the MMF and implemented collaboratively between the MMF and CNL staff. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing. CNL has also agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF. Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement establishes a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. The specific timelines and milestones for engagement will be determined cooperatively with the MMF and supported through the agreement in place. At present, CNL commits to holding and resourcing regular update meetings with representatives from MMF on the Project and restoration of the Whiteshell site. In addition, this will include at a minimum an annual meeting to activities and coordinate MMF's participation in monitoring activities for the upcoming year. This will include participation of representatives of the Red River Métis in monitoring activities (job shadowing). CNL will work with the Community Liaison and the MMF to share monitoring results/outcomes to the communities in ways that are appropriate for community distribution. At this time, no specific agreement has been reached between CNL and the MMF for longer term arrangements; however, CNL has committed to involve the MMF in monitoring in a way that is most meaningful to them, such as offering opportunities to provide input to the site water management plan, including a ground water monitoring station closer to the reactor, and providing capacity to involve the MMF in review of the WL Remediation Plan (formerly Land Use and End State Plan), which is currently under development. CNL and the MMF will continue to discuss how best to ensure MMF involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the MMF, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'CNL is committed to working with the Manitoba Métis Federation on their long-term interests such as environmental monitoring by sharing monitoring results, seeking input on our current environmental protection program, implementing	

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					improvement based on feedback received from Manitoba Métis Federation, and discussing potential remediation as necessary. **CNL has also committed to augment the overall EAFMP (CNL 2018) based on how the First Nations and the MMF wish to be involved. One of the anticipated benefits of the program is to provide near-term confidence in the harvested goods for the Red River Métis citizens through reporting. Further to this, CNL commits to continue its testing of wildlife in the vicinity of the WL site and has invited Red River Métis harvesters to participate in the donation of locally harvested meat for testing**. CNL hosted a technical workshop with Manitoba Métis Federation and their consultants, Shared Value Solutions Ltd, to further explore and address the issue of ground water monitoring. **As a result of these discussions, CNL has agreed to the MMF request to have an additional groundwater monitoring well installed at a location closer to the WRDF.** CNL will provide a plain language summary report to support CNL's annual environmental monitoring reports. CNL has also committed to engage with Manitoba Métis Federation to discuss future land use for the WL site.' Section 6.9.6.2.2 was revised to the following text: Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. This agreement established a series of ongoing engagement activities to improve communications between the parties, including an annual leadership meeting, the creation of an MMF liaison position, and invitation for Red River Métis participation in an Indigenous Advisory Committee. Other initiatives include the development of a communications protocol for reportable events, the development of plain language materials on CNL activities, and support to enable MMF participation in environmental monitoring and economic activities at the Whiteshell site. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project. ~~CNL and the Manitoba Métis Federation have also been working together to develop the draft multi-year relationship agreement that will help to mitigate the Manitoba Métis Federation's concerns on the Project and ensure the Manitoba Métis Federation and its citizens are involved in environmental monitoring, communication initiatives, and other key initiatives.~~ The following text was added to Section 6.9.8: 'Through ongoing discussions CNL and the Manitoba Métis Federation identified initiatives that would help address the Manitoba Métis Federation's concerns of the Project. As a culmination of these discussions, in August 2023, the Manitoba Métis Federation and CNL signed a multi-year contribution agreement. While this agreement is no longer active, CNL has an open offer of capacity funding for different areas of MMF interest related to participation on the environmental assessment for the Project.' **References:** CNL. 2018. Environmental Assessment Follow-Up Program for Whiteshell Laboratories. WL-509246-STD-001. Revision 0. December 2018. Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	

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271_R2	CNSC	EIS Section 3.1.2, Table 3.1.2-1	**Context:** The proposed overall project schedule is not reflective of the current status of the project and EA process.	CNL is to revise this table with updated estimations for project milestone dates.	**Incorporated:** The proposed overall Project schedule in the Environmental Impact Statement (EIS; Golder 2022) has now been revised with milestones relative to the approval date to account for the Environmental Assessment (EA) process. **Change to EIS:** The EIS (Golder 2022) has been updated to provide the Project schedule milestones relative to the regulatory approval date. **References:** Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	**Accepted**
272_R2	Sagkeeng First Nation	EIS Section 2.8.3.7, pg. 2-72	**Context:** CNL's interpretation of the Sagkeeng First Nation Alternative Means Assessment states here that "The study claims" that results of Sagkeeng First Nation's Test #7 are consistent with Sagkeeng First Nation's Traditional Knowledge Land Use and Occupancy Study (Olson et al 2019), re: reduced confidence under ISD in the quality of water, wildlife and other resources relied upon by Sagkeeng First Nation for rights practices.	CNL is requested to revise this statement to reflect that indeed there is consistency between the findings of the Sagkeeng First Nation Alternative Means Assessment and the TKLUOS. The use of the term "claims" suggests a value judgment which is not appropriate in this circumstance.	**Incorporated**: Canadian Nuclear Laboratories (CNL) has adjusted the wording used to describe the findings of the Sagkeeng First Nation Alternative Means Assessment (Sagkeeng Anicinabe 2020). The wording within Sagkeeng First Nation's Alternative Means Assessment; Section 2.8 Sagkeeng Test #7: Sagkeeng Treaty Rights and Canadian Environmental Assessment Act (CEAA) 2012 Section 5(1)(c) Factors (Sagkeeng 2020) is: 'These results are consistent with recent studies related to the proposed WR-1 decommissioning, in which Sagkeeng First Nation members noted that ISD [in situ disposal] would result in reduced confidence in water quality in the Winnipeg River, which is inextricably linked to the future practice of Treaty rights such as fishing, harvesting wild rice, hunting, and collecting drinking water (e.g., Olson et al. 2019a).' **Change to EIS:** The wording in Section 2.8.3.7 Description of Sagkeeng First Nation's Alternative Means Assessment Report Results of the Environmental Impact Statement (EIS; Golder 2022), was revised to: 'The study **states** that results are consistent with recent studies related to the proposed WR-1 decommissioning, in which Sagkeeng First Nation members noted that ISD would result in reduced confidence in water quality in the Winnipeg River, which is inextricably linked to the future practice of Treaty rights such as fishing, harvesting wild rice, hunting, and collecting drinking water (e.g., Olson et al. 2019a).' **References**: Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. Olson, R. and Firelight Research Inc., with the Sagkeeng Anicinabe. 2019a. Sagkeeng Anicinabe Land Use and Occupancy Study Specific to Canadian Nuclear Laboratories' Proposed In Situ Decommissioning of the WR-1 Reactor at Whiteshell Laboratories. Vancouver, Firelight Research Inc.	**Accepted**

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					Sagkeeng Anicinabe. 2020. Alternative Means Assessment for the Environmental Assessment of Canadian Nuclear Laboratories' Proposed WR-1 Reactor Decommissioning Project. October2020.	
273_R2	Sagkeeng First Nation	EIS Section 2.8.5.3, pg. 2-76 and 2-77; also Section 2.8.5.2	**Context:** CNL states that "The Sagkeeng First Nation assessment implies that risks disappear or are reduced if removed from the Whiteshell Laboratories site." This is not accurate. What the Sagkeeng First Nation assessment focuses in on is the need for ISD to be proven by the proponent to be demonstrably better than the already permitted plan for full removal established in 2002: "Unless and until the ISD alternative (CNL Alternative 3) can be demonstrated to be preferable (including to the Proponent, to impacted Indigenous groups and to Canada) relative to the already committed and permitted full removal options (CNL's Alternatives 1 & 2) CNSC should reject the proposal to change the decommissioning plan to ISD" (Sagkeeng Alternative Means Assessment 2020; pg. 9) CNL goes on to use reference to the Linear Non-Threshold (LNT) model to suggest that Sagkeeng First Nation is making unrealistic	CNL is requested to remove the assertion about what the Sagkeeng First Nation assessment implies re: risks to other communities from the EIS. CNL is requested to identify why it has: Assumed that a purpose built deep geological repository would likely have the same risk profile as retrofitting the WR-1 facility into a near surface permanent waste disposal facility; and Assumed that just because both types of facilities (DGR vs. ISD) would be regulated by the CNSC, that they would have the same level of environmental risk/" environmental protection over the long term".	**Resolved As:** To clarify, Canadian Nuclear Laboratories (CNL) has adjusted the text of the Environmental Impact Statement (EIS; Golder 2022) to better reflect the specific information being discussed, and not generalize the implication to the entire report. CNL provided an explanation of the assumptions and decisions around whether a future facility would be a significantly better alternative, in Section 2.8.5.2 2 Considerations for an Off-site Disposal in a Purpose-built Facility of the EIS (Golder 2022). 'CNL has considered the results of Sagkeeng First Nation's assessment and disagrees with its confidence in the benefits of an off-site disposal in a purpose-built facility. This is primarily because a 'purpose-built' facility currently does not exist, nor is proposed to exist for at least two decades, and as such, a direct comparison is challenging and exacerbated by the uncertainty of the timing of such a facility to exist. As it can be assumed such a facility will be required to meet at least the same standards for the protection of workers, the public and the environment as the WR-1 Disposal Facility, CNL believes that the appropriate assumption is that an off-site facility would meet the same regulatory requirements that in situ disposal is required to meet, and thus all options should be given equal credit for the level of protection they provide over the long term. Changes in policy that currently enable waste transportation could also impact the ability to perform the work. Uncertainty in the future was a key part of the determination of how the different alternatives were scored.' The assessment was not strictly based on whether a facility would be purpose built or not, but also included discussion of uncertainty in the location, quality, capacity, and timing of such a facility. CNL reflected on its assumptions and assessment after reviewing the Sagkeeng First Nation Alternative Means Assessment (Sagkeeng Anicinabe 2020). While CNL acknowledges the perspectives presented, and presented those perspectives in the EIS, CNL ultimately decided its own criteria and scoring for the assessment were appropriate and did not adjust the conclusions of its alternative means assessment. **Change to EIS:** Section 2.8.5.3 was revised as follows: CNL found several tests of Sagkeeng First Nation's Alternative Means Assessment (Sagkeeng Anicinabe 2020) focused on the impacts and benefits of each alternative on Sagkeeng First Nation's community and does not appear to consider the potential impacts on the host community for any offsite storage or disposal of WR-1 waste. **'Test #1 of the Sagkeeng First Nation assessment (and any subsequent tests that utilize the proposed scoring of Test #1) state that risks disappear or are reduced if removed from the Whiteshell Laboratories site.'** **References**: Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	**Follow-up IR 273_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			assertions about risks being lower to communities where the waste would ultimately be housed versus the risks to Sagkeeng First Nation . The LNT argument is not relevant. Sagkeeng First Nation has never asserted that there would be no radiological risks associated with full removal. Neither did the CNSC and AECL when coming to their determination in 2002 that full removal is preferred. What Sagkeeng First Nation has noted is that a purpose-built DGR-type facility would likely and by design be superior to a shallow retrofitted facility beside the Winnipeg River and that this should be clearly reflected in the scoring. In the preceding section (2.8.5.2), CNL argues that a comparison to an off-site facility is inappropriate because, one doesn't yet exist. The idea that CNL cannot assess and compare against scenarios if they do not yet exist is unreasonable. This amounts to an unsupported argument that if you already have a sub-standard alternative it will always out-perform a new but (as of yet) unbuilt state of the art facility. Also in Section 2.8.5.2, CNL states the following: "CNL believes that a more appropriate assumption		Sagkeeng Anicinabe. 2020. Alternative Means Assessment for the Environmental Assessment of Canadian Nuclear Laboratories' Proposed WR-1 Reactor Decommissioning Project. October2020.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			is that an off-site facility would meet the same regulatory requirements that in situ disposal is required to meet, and thus all options should be given equal credit for the level of protection they provide over the long term." Again, this is not a reasonable assumption. CNL is assuming that an off-site purpose-built facility would be subjected to the same regulatory requirements as in situ disposal, and that the two alternatives should therefore be given equal credit for the level of protection they provide. Basically, CNL is saying they think CNSC would provide regulatory approval to either facility and, as a consequence, their potential environmental impacts should be rated the same. The fact that the regulatory requirements would be the same doesn't mean that the environmental performance of the two alternatives would also be the same. Ultimately, the argument that there would be some level of impacts to other communities at the location of a DGR cannot be used as a "trump card" to force Sagkeeng First Nation to house an unplanned permanent			

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			radioactive waste disposal facility in its territory. Any DGR facility would require a willing host that accepts any such impacts. Forcing a project on a non-willing host in Sagkeeng First Nation in this case constitutes a significant impact on Sagkeeng First Nation in and of itself.			
273_R3	Sagkeeng First Nation	EIS Section 2.8.5.3, pg. 2-76 and 2- 77; also Section 2.8.5.2	**Context:** CNL has not meaningful revised its material on this topic and still has not provided a defensible argument for why ISD is likely to be equivalent to DGR as a radioactive waste disposal approach. CNL has provided a self-serving continuation of its argument that – despite all evidence to the contrary – near-surface ISD near a major water body in a nonpurpose built facility that is not located in consolidated bedrock and which will eventually degrade and release radiological materials into a shallow groundwater system and eventually to the Winnipeg River, is somehow likely to be equivalent in environmental performance to a purpose-built deep geological repository, designed so that radiological materials will never resurface through groundwater migration.			

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			This despite the obvious differences in likely outcomes as evident from the description above and: • The fact that nuclear science has recognized for years that deep geological repositories are the most appropriate means for disposal of ILW and HLW; • The IAEA's guidance that ISD should be avoided except in emergency situations (which WR-1 is not); and • Canada's Integrated Strategy for Radioactive Waste (ISRW), which actively calls for the development of DGRs for the disposal of ILW. For the record, Sagkeeng rejects the ISRW's 'carve out' for WR-1 to be exempt from the requirement of all other ILW to be housed in deep geological repositories in the future. Sagkeeng was not consulted on this 'carve out' and would have rejected it as prejudicial to Sagkeeng's rights and interests if consulted on it. A purpose-built DGR would likely and by design be superior to a shallow retrofitted facility beside the Winnipeg River. By design, a DGR would avoid the risk level inherent in an ISD scenario - i.e. proximity to the river, depth of containment. Suggesting that the two very different approaches –			

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			ISD based on speed and cost savings, and DGR based on the highest possible degree of precaution explicitly to protect the environment and future generations – is an inherently unreasonable assumption. CNL's characterization of Sagkeeng transferring risks to a DGR host community has also not been removed, and represents "victim blaming" of the first order. Sagkeeng has never asserted that there would be no radiological risks associated with full removal. Neither did the CNSC and AECL when coming to their determination in 2002 that full removal is preferred. Also any proposed location for permanent disposal should go through a "willing host" process for the host community – any potential Indigenous host community would have the same right as Sagkeeng (which CNL and AECL appear to seek to ignore but is a right nonetheless) to reject being a host for such a facility, even if there are no differential impacts across disposal locations, which there indeed are in this instance. CNL is seeking to suggest that because the waste is already in Sagkeeng territory, the "Willing Host" and FPIC requirements of turning that waste from its current storage and surveillance			

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			mode to a permanent disposal facility are somehow negated. Nothing could be further from the truth. Sagkeeng was not consulted when the facility was built and would not have agreed to the facility being placed in Sagkeeng territory if ISD was the ultimate plan. Canada cannot foist its waste problem on to the shoulders of Sagkeeng just because “it is already there”. Sagkeeng has the same Willing Host and FPIC rights as any Indigenous group facing the creation of a proposed permanent hazardous waste disposal facility. To suggest anything else is extremely far below the Honour of the Crown. It is tantamount to stating “We have given you 60 plus years of impacts to your rights without permission or accommodation, and on that basis we have the right to continue impacting your rights in perpetuity”. CNL in its response states that because a ‘purpose-built’ facility currently does not exist, nor is proposed to exist for at least two decades, the comparison of benefits between ISD and full removal is challenging and exacerbated by the uncertainty of the timing of such a facility to exist. CNL states that uncertainty in the future was a key part of the			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			determination of how the different alternatives were scored. Sagkeeng notes that Canada now has a roadmap that aligns with the previously approved decommissioning method, reducing CNL's "uncertainty". **Sagkeeng will continue to point out these fatal flaws in CNL's approach and stand on the evidence and argument that Sagkeeng has provided.**			
274_R2	Sagkeeng First Nation	EIS Section 4.2, pg. 4-4 and Section 4.2.3, pg. 4-19	**Context:** CNL suggests that a "Relationship Agreement or similar agreement" has been "drafted" between Sagkeeng First Nation and CNL. Sagkeeng First Nation has received funding from CNL and AECL for a Guardian Program, a Community Working Group, a Technical Working Group, and a promise for funds related to Healing and Resilience Initiatives. Sagkeeng First Nation is appreciative of this funding and the improvements made by CNL and AECL to the relationship since 2021. That said, there is no "drafted" relationship agreement or similar agreement between the parties at this time. In addition, at pg. 4-19, CNL suggests that Sagkeeng First Nation and CNL will discuss and develop a long-term relationship	CNL is requested to revise its characterization to reflect the current absence of negotiations toward a relationship agreement with Sagkeeng First Nation . 	**Incorporated:** Section 4.2 is intended to highlight the progress Canadian Nuclear Laboratories (CNL) is working towards with each community and any agreements they have reached. The indication for Sagkeeng First Nation is not that a relationship agreement has been drafted. A footnote exists specifically to identify that a long-term relationship agreement is something CNL looks to the future for, and that only a contribution agreement has been reached to address issues and concerns related to the Project. The section acknowledged that CNL and Atomic Energy of Canada Limited (AECL) have entered into a contribution agreement and subsequent amendments to that agreement with Sagkeeng First Nation. Additionally, CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the Environmental Impact Statement (EIS) submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:** Section 11.4 Indigenous Engagement and Participation in Environmental Monitoring of the EIS (Golder 2022) was revised as follows to include the specific commitments on involvement and timeline: 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP.	**Partially accepted. Follow-up IR 274_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			agreement. Sagkeeng First Nation has indicated to CNL previously that this statement is not reasonable in the EIS and should be replaced with "Once the monitoring program is implemented, Sagkeeng First Nation and CNL will continue addressing priority areas of concern for Sagkeeng First Nation which may in the future include a long-term relationship agreement."		CNL is committed to continuing to engage with Sagkeeng First Nation in the manner they so choose. An additional amended contribution agreement was also entered into by CNL, AECL and Sagkeeng First Nation to support Sagkeeng First Nation's participation in the Project, and to provide incremental benefit to the WL Site. CNL believes that the CEMP and communication of results of that monitoring in the community is intended in part to support the Sagkeeng First Nation Healing and Resiliency Action Plan scope of work which was a recommendation of the psycho-social impact assessment. CNL has agreed to implement this Healing and Resiliency Action Plan in part to acknowledge the difference in the conclusions of the EIS held by Sagkeeng First Nation, and to support learning and reconciliation. CNL staff have also participated in trauma-informed engagement training provided by Sagkeeng First Nation and will continue to be involved in and learn from processes Sagkeeng First Nation may want to implement into the future. At this time, no specific agreement has been reached between CNL and the Sagkeeng First Nation for longer term arrangements; however, CNL has committed to involve the Sagkeeng First Nation in monitoring in a way that is most meaningful to them. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods.' Section 6.8.1.7 was revised to include the following text: 'The Sagkeeng First Nation is located downstream from the WL site and therefore has a different relationship to the Project, which is reflected in CNL's commitments. **CNL has committed to augment the overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and AECL have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP**.' Section 6.9.6.2.2 was revised to include the following text: 'CNL and AECL have also entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP.' Section 6.9.7 has been updated to include: 'Specifically for Sagkeeng First Nation, CNL/AECL and the Sagkeeng First Nation signed a contribution agreement for the Community Environmental Monitoring Program to fulfill the scope of a Sagkeeng First Nation Indigenous monitoring and guardian program called the Niigan Aki Program. The Sagkeeng First Nation CEMP can be used to better understand changes to traditional uses and cultural practices should Sagkeeng First Nation so choose to do work in that regard.' **References:**	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022.	
274_R2	Sagkeeng First Nation	EIS Section 4.2, pg. 4-4 and Section 4.2.3, pg. 4- 19	**Context:** While the response is adequate, Sagkeeng is seeking greater clarity.	Sagkeeng provides the following Follow-Up Information Requirements for CNL: Is CNL committed to providing a joint update on the status of engagement with Sagkeeng to the CNSC not less than one month prior to any EA hearing? See also IR 11_R3, IR 56_R3 and IR56_R3.		
275_R2	Sagkeeng First Nation	EIS Section 4.2.4.1.2, pg. 4-40; Section 4.2.4.1.1, pg. 4-29; and Section 4.2.4.1.4.3; pg. 4-46	**Context:** CNL states that "CNL has agreed to work with Sagkeeng First Nation through a Technical Working Group to establish this CEMP [Community Environmental Monitoring Program] that will include Indigenous led risk communication and country foods monitoring with Sagkeeng First Nation members." Sagkeeng First Nation has noted in previous correspondence to CNL in October 2022 that support for Indigenous-led risk communication is a consideration that has not yet been fully dealt with by the	CNL is requested to engage with Sagkeeng First Nation re: risk communication requirements in relation to the WR-1 Project and provide feedback to CNSC on any commitments that arise from these discussions. CNL should work with Sagkeeng First Nation to develop and implement a community-led risk communication program.	**Incorporated:** Canadian Nuclear Laboratories (CNL) and Sagkeeng First Nation have outstanding points of discussion and will continue to work with Sagkeeng First Nation in a way that is most meaningful to them, including consideration of a Risk Communication Plan, and Community Environmental Monitoring Program (CEMP). CNL, Atomic Energy of Canada Limited (AECL) and Sagkeeng First Nation have entered discussions around the implementation of an Indigenous-led risk communications program designed to improve Indigenous understanding of the site and vicinity risk to the health and edibility of country food and water sources (including radiation, impact pathway identification, monitoring results, and plain language reporting about the safety of country food and water sources), as well as sharing CNL's annual reports with the community. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the Environmental Impact Statement (EIS) submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:**	**Partially accepted. Follow-up IR 275_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			parties. The Community Environmental Monitoring Program will contribute information that is relevant to strong, focused and understandable risk communication but the parties have yet to establish a process or resources required to accomplish meaningful risk communication in relation to WR-1. The fact that the CEMP and risk communication are tied together but are not one and the same thing is recognized by CNL at pg. 4-29, where it notes actions by the parties to develop "a CEMP that includes country foods monitoring and is closely tied to a community-driven risk communications program". It is further recognized at pg. 4-46, where CNL refers to a future "community-led risk communication program that is co-developed by Sagkeeng First Nation, CNL and AECL".		N/A	
275_R3	Sagkeeng First Nation	EIS Section 4.2.4.1.2, pg. 4-40; Section 4.2.4.1.1, pg. 4-29; and Section 4.2.4.1.4.3; pg. 4-46	Partially adequate response. **Context:** Notwithstanding Sagkeeng's continued opposition to the ISD proposal, discussions about necessary mitigation, monitoring	See follow-up IR 11_R3, IR 56_R3, and IR 56_R3		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			and accommodation measures continue between the parties.			
276_R2	Sagkeeng First Nation	Section 4.2.4.1.6, pg. 4-48	**Context:** CNL refers to a list of commitments to be developed for the WR-1 Decommissioning proposal. Sagkeeng First Nation did not see a list of existing commitments in the draft EIS. Sagkeeng First Nation considers this to be an important part of the EIS; to understand what the Proponent is currently committed to.	CNL is requested to identify when this list of commitments will be filed and how Sagkeeng First Nation will be engaged by CNL in the development and review of it by CNL. The technical review period should not proceed without this information.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the Environmental Impact Statement (EIS) submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** N/A	**Partially accepted. Follow-up IR 276_R3 Below**
276_R3	Sagkeeng First Nation	Section 4.2.4.1.6, pg. 4-48	Partially adequate response. **Context:** Sagkeeng continues to hold that the environmental assessment cannot be completed without a full list of commitments provided for CNSC for its regulatory decision and Sagkeeng for its required consent decision. A consolidated commitments list, vetted and verified by Sagkeeng for any commitments designed to deal with Sagkeeng issues/concerns, should be provided well in advance of any CNSC hearing on this file.	See follow-up IRs: IR 11_R3, IR 56_R3, and IR 56_R3		
277_R2	Sagkeeng First Nation	Section 6.7.2	**Context:** In addition to radiological and non-radiological contaminant accumulations, the ability of the	CNL is requested to: Add the ability of the environment to transform back to a natural condition	**Resolved As:** **A.** The base case environmental conditions presented in the Environmental Impact Statement (EIS; Golder 2022) are meant to represent a characterization of current (baseline) conditions of the site as described in Appendix B of REGDOC 2.9.1	**Follow-up IR 277_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			environment to transform back to a natural condition set over time is an indicator of ecological health important to Sagkeeng First Nation. This should be considered in this section as well. Overall, it is not clear what the definition of ecological health is that is being used by CNL, nor is it clear whether this definition aligns with Indigenous Knowledge of the factors relevant to ecological health. Greater clarity and further discussion required. Sagkeeng First Nation is concerned with the use of a damaged baseline and the lack of any reference to the proper base case to compare the Project against, which is the commitment made by Canada to remove all the radioactive components from WR-1, as per the 2002 CSR.	set over time as an indicator of ecological health. Provide CNL's definition of ecological health and indicate whether and how this was informed by Indigenous Knowledge and how it aligns with Indigenous perspectives on what constitutes ecological health.	(CNSC 2020). This includes cumulative effects of previous and current operational and decommissioning activities. The area of the WR-1 Building will be remediated as part of the closure phase (i.e., Application Case); thus, comparison to a remediated landscape is appropriate. However, determination of the impact of the final end state will include a comparison to background conditions, determined through the Whiteshell Laboratories (WL) Integrated Environmental Monitoring Program (CNL 2020), by collecting samples from locations that are unaffected by past operations, as well as to other reference values. The site will not be able to fully transform back to a natural condition. Consistent with Section 6.8.2.6.2.2., future use of the WL site will depend on the ability to release parts of the site with no restriction on use upon completion of the Project. The intent is to return lands disturbed by site activities to a condition that is physically stable, safe and in keeping with the post-closure land use classification and release criteria to achieve the planned end-state. The criteria developed will prioritize the environment and safety. Some lands will have restrictions on the future use so that there are no adverse effects to people and the environment; however, most of the site will have no land use restrictions. Canadian Nuclear Laboratories (CNL) will be engaging the public, Indigenous Nations, and other key stakeholders in a discussion on future uses for the WL site. **B.** Ecological health in Section 6.7.2 refers to the viability of ecological Valued Components (VCs) at the population and community level, or at the individual level for species at risk. Viability is considered in terms of growth, survival and reproduction. Indigenous Knowledge helped identify specific ecological VCs assessed and identified concerns related to the health of the environment and current and future environmental monitoring. The site will not be able to fully transform back to a natural condition; however, CNL will implement a follow up monitoring program to ensure protection of existing ecological health. CNL has, and will continue to, engage Sagkeeng First Nation and all engaged Indigenous Nations, to develop and finalize the follow up monitoring plan. **Changes to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** Golder. 2022. Environmental Impact Statement In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site. WLDP-26000-ENA-001. Revision 4. December 2022. CNSC. 2020. Environmental Principles, Assessments and Protection Measures. REGDOC 2.9.1, Version 1.2. September 2020. CNL. 2020. Whiteshell Laboratories Integrated Monitoring Program Framework. WL-509200-OV-001. Revision 1. December 2020.	

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
277_R3	Sagkeeng First Nation	Section 6.7.2	**Not Accepted** **Context:** CNL has refused to adopt the ability of the environment to transform back to a natural condition set over time as an indicator of ecological health, apparently in large part because CNL recognizes that under ISD, the WR-1 site cannot return to natural conditions. Instead, CNL suggests it will set a bar of "protection of existing ecological health" at the site. Sagkeeng notes that protection of existing ecological health is an extremely low bar for a site that has been fundamentally altered by industrial activity and radiological waste storage over the past 60 years. Sagkeeng does not consider CNL's threshold of the protection of existing ecological health as adequate. What is required is recovery of as near a natural condition as possible, and "as possible" does not mean "as possible under ISD" but rather "as possible using available technically and economically feasible alternative means of decommissioning the WR-1 site". Sagkeeng does not accept that fiscal prudence or quicker implementation, which appear to be the main drivers for ISD, trump the goal of getting to as	Sagkeeng provides the following Follow-Up Information Requirements for CNL: A: CNL states that "the site will not be able to fully transform back to a natural condition". CNL is requested to clarify whether the WR-1 site can be transformed back to a natural condition under any of the technically and economically feasible alternative means. B: CNL is requested to identify whether, how and on what timeline it has entered into a collaborative end state planning process relevant to WR-1? C: Was the "intent" as described at left developed before or after completion of any collaborative end state planning with Indigenous peoples? If so, how was such an intent for WR-1developed without Indigenous inputs? D: Is CNL committed to revisiting its WR-1 end state intent upon completion of work by Sagkeeng on site visioning,		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			near natural - pre-industrial - conditions at the site. CNL has not – as requested - indicated whether and how its definition of ecological health was informed by Indigenous Knowledge or how it aligns with Indigenous perspectives on what constitutes ecological health. For the record, CNL's terminology of "viability of ecological VCs at the population and community level" does not match Indigenous understandings of ecological health. Nor has CNL engaged Sagkeeng in any discussions about what ecological health means for Sagkeeng. CNL's response language suggest that end state planning decisions having been made for the site already (e.g., "some lands will have restrictions"; "the intent is"). Sagkeeng was not engaged in any prior end state or site restoration planning that has led to CNL making such determinations. CNL appears willing now to engage Sagkeeng in some aspects of end land use planning, but by choosing ISD as its preferred option before conducting collaborative end state planning, CNL has "put the cart before the horse" and substantially limited end state/site restoration planning	and filing additional material on this topic with the CNSC at least 3 months prior to any hearing on the WR-1 proposal? E: Is CNL committed to engage Sagkeeng on what constitutes ecological health from an Indigenous perspective and to integrate that into is Project and end state planning? If so, is CNL committed to doing this well in advance of the hearings phase of this environmental assessment.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			options. Sagkeeng's position was and remains that this is a backward approach to determine future uses AFTER committing to decommissioning plans that constrain those future uses, especially where different economically and technically feasible alternative means have highly varied implications for the potential future use of the WR-1 site. Best practice for the development of consensus-based land-use visions should be based on extensive engagement and collaboration with the affected parties. For example, in the case of the Giant Mine Remediation Project, a rigorous communitybased "Surface Design Engagement Process" was led by affected parties. The purpose of this process was to ensure that the end land use for the site was consistent with Indigenous preferences, prior to adopting the decommissioning strategy. WR-1 requires a comparable process to ensure that the remediation project has the requisite social licence. This is particularly important given CNL's stated preference to dispose radioactive wastes in situ			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			on Sagkeeng territory. For clarity, this should not be a "parallel process" that solely represents the preferences of affected parties and can be ignored; instead, it should be a consensus-based process that is reached through good faith dialogue.			
278_R2	Sagkeeng First Nation	Section 6.8.1.3	**Context:** The draft EIS does not fully consider all of Sagkeeng First Nation's VCs identified within the TKLUOS in its assessment of CULRTP - water; medicine, berries and other food plants; hunting and trapping; and Anicinabe Pimatiziwin. The VCs that are included do not fully capture the Sagkeeng perspective. For example, "Cultural and Archaeological Sites" does not come close to covering Anicinabe Pimatiziwin.	CNL is expected to revise the selection of VCs to incorporate all of Sagkeeng First Nation's VCs included in the TKLUOS or provide rationale for not including them in the assessment, in a manner similar to table 6.6.3-2, which includes rationale for why specific Indigenous "Valued Components" were not assessed.	**Resolved As:** Sagkeeng First Nation included four valued components (VCs) in its Traditional Land Use and Occupancy Study (TLUOS) for the Project: water resources; medicines, berries, and other food plants; hunting and trapping; and Anicinabe Pimatiziwin. The VCs were chosen "to represent the critical elements that must be present for the continued practice of Sagkeeng First Nation culture and livelihoods." While the VCs used in the effects assessment do not exactly align with Sagkeeng First Nation's VCs, many components of Sagkeeng First Nation VCs are included throughout the effects assessment across multiple VCs. It is common practice in effects assessment to consider whether changes to a VC can be measured and/or monitored or would be better ascertained through the analysis of a proxy VC. In the assessment Canadian Nuclear Laboratories (CNL) has also tried to balance the perspectives of other parties, including other publics who live in the local and regional study areas, along with other Indigenous communities. As such, Sagkeeng First Nation VCs were not universally adopted. Water resources in the TLUOS includes catch sites for different species (e.g., sturgeon, suckers, catfish), important habitat (e.g., sturgeon spawning areas), wild rice harvesting areas, and water collection/drinking sites). Based on the list of data collected, components of water resources are assessed across multiple VCs. Those VCs include surface water quality (Section 6.4.2), fish and fish habitat (Section 6.5), and traditional land and resource use by Indigenous peoples (Section 6.8). Wild rice is not included in the effects assessment as it does not grow close to WR-1 (Section 6.7) and presence in the relevant studies areas is a commonly used criteria for VC selection. Medicines, berries, and other food plants in the TLUOS includes areas where community members harvest blueberries, plums, raspberries, strawberries, pin cherries, saskatoon berries, low-bush cranberries, gooseberries, chokecherries, and medicinal plants. The act of gathering medicines, berries, and other food plants is described in traditional land and resource use by Indigenous peoples (Section 6.8). The effects of the Project on medicines, food plants, and berries is assessed in the human health and ecological risk assessment (HHERA), which supports the human and ecological health VC assessed in Section 6.7. Table 6.7.1-9 presents the plant species ingested by the harvester receptor in the HHERA. Hunting and trapping in the TLUOS includes trapping areas for multiple species, including for beaver, muskrat, otter, rabbit, squirrel, and weasel; multiple kill sites for moose and white-tailed deer, and one fox kill-site; a mineral lick; and game processing sites. Table 6.6.3-2 provides the rationale for species not being assessed as part of the terrestrial environment. The effects of the Project on some terrestrial species, including hare and deer, are considered as part of the human health and ecological risk assessment that supports the human and ecological risk VC (Section 6.7). Table 6.7.1-9	**Follow-up IR 278_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					presents the animal species ingested by the harvester receptor in the HHERA. The activity of hunting and trapping is assessed in traditional land and resource use by Indigenous Peoples (Section 6.8). Anicinabe Pimatiziwin in the TLUOS includes sacred places and gathering sites used by Sagkeeng First Nation members and their ancestors for ceremonial purposes and the transmission of traditional knowledge; camping sites, including those used as a base for fishing and hunting activities; trails and water routes; and findings of archaeological materials. Activities supporting traditional land use are described and assessed in traditional land and resource use by Indigenous Peoples (Section 6.8). Sagkeeng First Nation notes that the cultural and archeological sites VC does not match the Anicinabe Pimatiziwin VC, which is correct. The cultural and archeological sites VC focuses on known sites that have been registered with the provincial government. Knowledge transmission is not considered as part of the traditional land and resource use VC because pathways to traditional land and resource use by Indigenous Peoples were determined to have either no linkage or be a secondary pathway, which means any residual effect would be negligible. CNL acknowledges that this perspective differs from that of Sagkeeng First Nation. CNL acknowledges that some aspects of land and resource use valued by Sagkeeng First Nation may not be included in the effects assessment because it was determined that there were no pathway of effect or negligible effects. CNL acknowledges that this perspective differs from that of Sagkeeng First Nation. To address the discrepancy, CNL supports community environmental monitoring, which will enable Sagkeeng First Nation to undertake monitoring on topics it considers relevant, and that might be beyond the scope of the Environmental Impact Statement (EIS) and Follow-Up Monitoring Program. CNL has entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring. A scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon and includes detailed work planning for the first three years of activities, and commitment to detailed work planning on an annual basis. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References:** N/A	
278_R3	Sagkeeng First Nation		Not Accepted. **Context:**	**No follow-up IR but context is submitted for CNL's information and action.**		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			CNL has chosen to use proxy VCs against the requests of Sagkeeng, and also to not defer to the findings of effects on traditional land and resource use by Sagkeeng, despite Sagkeeng being the experts on its own members' traditional land and resource use. The lack of deference to Indigenous inputs and assessments is jarring and heavily flawed. Sagkeeng rejects the argument that CNL – a party without Indigenous Knowledge or first hand knowledge of what contributes to and detracts from the ability and willingness of Indigenous people to conduct traditional activities– can deem itself more qualified than Sagkeeng – a party with both those attributes. CNL attempts to justify this by suggesting that Sagkeeng is just 'one party of many', rather than the primary Constitutionally-protected rights holding First Nation whose consent for the Project is mandatory. Of course, Sagkeeng disagrees with this approach. When an unqualified assessor "disagrees" with a qualified assessor, the findings of the qualified assessor must be held in higher regard. Sagkeeng will continue to raise these issues through the remainder of the environmental assessment			

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			process, and they are relevant to Sagkeeng's forthcoming consent decision, but given CNL's lack of willingness to reconsider effects based on inputs from Sagkeeng, we see little value in posing follow-up information requests that will just be subject to the same responses by CNL.			
279_R2	Sagkeeng First Nation	Table 6.8.1.3-2, pg. 6-433	**Context:** Stewardship and governance are not discussed anywhere in the values, endpoints or indicators.	CNL should revise the table to include discussion on Sagkeeng First Nation stewardship and governance.	**Resolved As:** Section 5 (1) (c) of the Canadian Environmental Assessment Act states that environmental effects of a project include, 'with respect to aboriginal peoples, an effect occurring in Canada of any change that may be caused to the environment on (i) health and socio-economic conditions, (ii) physical and cultural heritage, (iii) the current use of lands and resources for traditional purposes, or (iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance' Section 6.8.1 of the EIS deals specifically traditional land and resource use (including hunting, trapping, fishing, and gathering by Indigenous peoples), archaeological and cultural sites, and the overall importance of the Winnipeg River system. Although governance and stewardship are deeply connected to stewardship and governance, these topics we considered and addressed as part of the assessment of community well-being. More specifically, the pathways analysis for community well-being included consideration of the presence of long-lived radioactively material having the potential to affect community well-being through the changes of the suitability of the site for future uses, the continued inability to exercise stewardship and governances over land and resource use management decisions (Section 6.9.6.2.2). Canadian Nuclear Laboratories (CNL) acknowledges the importance of stewardship and governance values for Sagkeeng First Nation, and are committed to continued engagement and dialogue with the community through a signed and amended contribution agreement. This includes commitments towards a Sagkeeng First Nation-led Community Environmental Monitoring Program (CEMP), which will be undertaken by Niigan Aki. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the Environmental Impact Statement (EIS) submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:**	**Partially accepted. Follow-up IR 279_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					Section 6.9 Community Well-being included consideration of the presence of long-lived radioactively material having the potential to affect community well-being through the changes of the suitability of the site for future uses, the continued inability to exercise stewardship and governances over land and resource use management decisions (Section 6.9.6.2.2). **References:** N/A	
279_R3	Sagkeeng First Nation	Table 6.8.1.3-2, pg. 6-433	**Partially adequate response.** **Context:** CNL states that "Although governance and stewardship are deeply connected to stewardship and governance". Sagkeeng does not know what CNL means by this statement. Sagkeeng requests that CNL clarify this statement. Sagkeeng will consider impacts on Sagkeeng governance and stewardship rights in its rights impact assessment for this EA and for Sagkeeng's required consent decision.	CNL is to clarify the statement, "Although governance and stewardship are deeply connected to stewardship and governance"		
280_R2	Sagkeeng First Nation	Table 6.9.2-1, pg. 6-511	**Context:** CNL states "CNL is working closely with AECL to discuss historical grievances with each Nation." Sagkeeng First Nation is not aware of any such efforts.	CNL is requested to clarify or remove this statement.	**Incorporated**: The Environmental Impact Statement (EIS) has been updated to revise the statement which now clarifies that Canadian Nuclear Laboratories (CNL) is working with Atomic Energy of Canada Limited (AECL) to address the interest and concerns of each Nation related to the Project and the Whiteshell Laboratories (WL) Site overall. **Change to EIS**: Section 6.9, Table 6.9.2-1 in the EIS has been updated with the sentence now stating the following: 'CNL is working with AECL to address the interests and concerns of each Nation related to the Project and the overall WL site.' **References**: N/A	**Accepted.** Context provide by SFN: Sagkeeng notes that CNL has suggested that it has confirmed that historical grievances are outside the scope of this Project. For the record, Sagkeeng disagrees. The scope of assessment for the WR-1 Project environmental assessment and Sagkeeng's parallel consent decision have to

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
						include the ability of the decommissioning plan to promote recovery from historical changes caused by the development of the WR-1 reactor in Sagkeeng's territory. Sagkeeng has been clear that one of Sagkeeng's priorities is to re-establish cultural, TLRU, and other rights practice to pre-WL site conditions, and that is a critical paramerer for this assessment. Sagkeeng will consider impacts of the proposed decommissioning strategy – ISD – on the ability for the site to return to natural conditions, as against the currently Canada-accepted full removal option, as part of Sagkeeng's rights impact assessment and required consent decision. We have encouraged the CNSC to do the same if it wants to conduct a defensible rights impact assessment.

281_R2	Sagkeeng First Nation	Section 6.9; Table 6.9.6-1: Pathways Analysis for Socio-economic Valued Components; and 6.9.7 Monitoring and Follow-up	**Context:** Sagkeeng First Nation notes and appreciates that CNL has demonstrated a willingness to co-develop and implement mitigation and follow up programs. Sagkeeng First Nation looks forward to moving forward with this work. Some further clarity and commitments are required to ensure impacts to Sagkeeng First Nation's socio-economic and well-being values are mitigated. This should include the development and implementation of: A Sagkeeng First Nation -specific Community Communication Plan to be funded and carried out for the duration of the Project. This should include community defined annuals plans that will help manage concerns and risk perceptions within the community to offset fears and support use of, and connection to land. A Sagkeeng First Nation -specific Rehabilitation Plan to be funded by CNL and carried out collaboratively with Sagkeeng First Nation and CNL. This plan would bring together knowledge holders, elders, and youth, to help plan for how the land should be rehabilitated back to natural state and in a manner that will reconnect members to the area and support the practice of rights. This will also include	CNL is requested to identify all commitments it makes to the communication, mitigation and monitoring measures identified at left.	**Resolved As:** Canadian Nuclear Laboratories (CNL) recognizes the difference of perspective on the potential for socioeconomic impacts in the context of the Environmental Impact Statement (EIS) framework of the environmental assessment. CNL has accepted the findings and recommendations of the Psychosocial Impact Assessment Report and is working with Sagkeeng First Nation to address the Calls to Action through technical working group meetings. Through the working groups, CNL and Sagkeeng First Nation will prioritize actions, and agree on commitments CNL will make to take further action in the future. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: N/A	**Partially accepted. Follow-up IR 281_R3 below**

			hiring Sagkeeng First Nation members and inviting Sagkeeng First Nation students to be involved in the rehabilitation efforts. A Sagkeeng First Nation -specific Employment and Procurement plan. This plan would clarify how Indigenous communities are given priority for certain roles (including rehabilitation), retention plan to ensure Indigenous employees stay on, success of program evaluation, and more. lan to evaluate the success of these plans (and other mitigations) collaboratively with Sagkeeng First Nation.			

IR 281_R3	Sagkeeng First Nation	Section 6.9; Table 6.9.6- 1: Pathways Analysis for Socioeconomic Valued Components ; and 6.9.7 Monitoring and Follow-up	Partially adequate response. **Context:** Sagkeeng notes that the parties have yet to identify commitments related to socio-economic impacts or other commitments.	See follow-up IRs: IR 11_R3 and IR 56_R3		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
282_R2	Sagkeeng First Nation	Section 10.2.2, pg. 10-3	The EIS section on Effects of the Environment on the Project does not discuss a scenario where a changing of the course of the Winnipeg River such that it intrudes upon the WR-1 monolith occurs. If the likelihood of this occurring is vanishingly small, it will not be of concern. If it is a possibility, the fact that there will be long-lasting ILW sources potentially at risk of exposure by the power of the Winnipeg River may be a cause for concern.	CNL is requested to: Provide evidence re: the likelihood of the Winnipeg River changing course within the time frame used to assess long-term impacts from the radioactivity sources that would be bound up in the WR-1 monolith in the Project Case. Iif this is a realistic scenario within this time frame, identify if the course of the Winnipeg River changed to directly impact on the WR-1 monolith and the clays holding contaminated materials, what risk there may be to shoreline (riparian) and aquatic environments and vegetation and wildlife within those environments. Identify any proposed adaptive management or mitigation measures that would be applied to deal with this scenario and what level of confidence we can have that they will be applied if this failure mode occurred in the long-distant future.	**Resolved As:** The scenario regarding the changing of the course of Winnipeg River such that it intrudes upon the WR-1 monolith is mentioned in the Environmental Impact Statement's (EIS') technical supporting documents, the Geosynthesis Report (CNL 2022) and the Groundwater Flow and Solute Transport Modelling Report (GWFSTMR; Golder 2021). The effect of variation in transport distance and time from WR-1 to the discharge at the Winnipeg River on the assessment results was analyzed through a sensitivity study in the GWFSTMR (Golder 2021). Sensitivity study #1 'Preferential Pathway' examined the effects of an undiscovered pathway between WR-1 and the discharge with enhanced hydraulic connection. This scenario effectively reduced the travel time between the WR-1 and the Winnipeg River by 10 times, which can simulate the erosion of 90% of the current riverbank soil towards WRDF. Scenario #13 evaluated the effects of a "low river stage", which can simulate erosion on the west bank of the river, effectively moving the river away from Whiteshell Reactor Dispoal Facility (WRDF). The results for Sensitivity analysis – Scenario 1, showed that the preferential pathway scenario generally resulted in earlier peak arrival, and higher peak mass loading rates for those parameters released instantly (i.e., all solutes not released through reactor core corrosion). The earlier arrival of peak mass loadings is attributed to a reduction in travel time due to the increased flow rate through the pathway. The higher peak values are attributed to an increase in the concentration gradient between the grout and the backfill as the higher flow rate "flushes" the backfill with clean water. For parameters with relatively short half-lives (e.g., tritium), the reduction in travel time resulted in significant increases in peak mass loadings. Radionuclides such as C 14 were less sensitive to the change in travel times because of their longer half-lives. In addition, the majority of the inventory for C 14 is contained in the reactor components which limits release (through corrosion), hence limiting the effect of the preferential pathway. For solutes such as Cl 36 (contained in the biological shield) or I 129 (contained in the reactor systems) the time of peak mass loadings are more affected by the preferential pathway since these solutes are immediately available for release at the time of saturation. However, due to their low relative abundance, the changes in release rates are not of concern. For those solutes which are primarily ingrown from parent radionuclides (such as Rn 222), there is a reduction in peak mass loading, as the flushing action from increased flow and increased release of parent isotopes leads to less inventory available and less time to allow for ingrowth of these progeny solutes. For all solutes released instantly, the increase in mass loading was proportional with the increase in hydraulic conductivity of the pathway, excluding contributions from decay or ingrowth. For those solutes which are released through corrosion (i.e., in the reactor core components) there was negligible impact on the peak mass loading or time of peak. The Geosynthesis Report (CNL 2022) discusses the potential for migration of the Winnipeg River, and the features that suggest it may be geologically controlled, and less subject to migration in overburden. However, there is also some evidence of shore erosion. In either case, significant migration would not be expected in the near term, based on the evidence of geologic control features, and the absence of significant river migration at the WL site over its <60-year operating history. Because of this, there is not expected to be any potential for significant impacts on the release of short-lived contaminants such as Tritium.	**Accepted**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					In all cases, the changes in potential peak release rates, were not significant enough to indicate release rates would result in an exceedance of any regulatory dose limits. The increase in mass loading is directly proportional to the dose rate estimate. The increase in mass loading for each contaminant, when compared to the dose rate estimate in the Environmental Risk Assessment (ERA; Ecometrix 2024), was not large enough to increase the dose rate to exceed the regulatory limit. Since the result of such a scenario is not a concern, no mitigation would be expected to be necessary. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: CNL 2022. Geosynthesis for WR-1 Environmental Impact Statement. WLDP-26400-041-000. Revision 3. January 2022. Golder 2022. In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site – WR-1 Groundwater Flow and Solute Transport Modelling. WLDP-26000-REPT-005. Revision 4. December 2021. Ecometrix. 2024. WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment. WLDP-26000-REPT-006. Revision 6. November 2024.	
283_R2	Sagkeeng First Nation	Section 11	Sagkeeng First Nation have noted effects on body condition of fish, as well as spawning habitat impacts. CNL note river sediment contamination in Section 6.7. There are no predicted residual effects, but CNL identifies a follow-up program intended to validate its predictions.	CNL is requested to identify how it plans to collaborate with Sagkeeng First Nation in designing a joint traditional knowledge/scientific fish sampling program as part of an overall aquatic effects and fish and fish habitat monitoring program, including joint field work, interpreting results, and determining action triggers and responses re: fish and fish habitat.	**Resolved As:** Canadian Nuclear Laboratories (CNL) has incorporated the information that it received from Sagkeeng First Nation in the form of the written studies, and oral feedback, both from Elders and Community members, and consultants and representatives of Sagkeeng First Nation. The measure of inclusion is not whether or not the project changed, but whether the information was adequately reviewed, and assessed against the project. CNL has included all the information it has obtained and has discussed how that information informed the project. While the information did not result in changes to the assessment outcomes, it did result in changes in how CNL and Sagkeeng First Nation will cooperate on the future monitoring of the project. CNL has committed to augment this overall monitoring based on the interests and feedback received from Sagkeeng First Nation. CNL and Atomic Energy of Canada Limited (AECL) have entered into a contribution agreement with Sagkeeng First Nation that outlines commitments to Indigenous independent monitoring, and a scope of work for a Community Environmental Monitoring Program (CEMP) led by Sagkeeng First Nation has been agreed upon. This work will be undertaken by Niigan Aki, a program established by Sagkeeng First Nation through the contribution agreement to undertake the CEMP. CNL is open to collaborating on joint efforts. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. CNL and Sagkeeng First Nation will continue to discuss how to best ensure Sagkeeng First Nation's involvement in monitoring, and commit that whatever agreement is reached, will identify the respective roles and responsibilities of CNL	**Partially accepted. Follow-up IR 283_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
					and the Sagkeeng First Nation, as well as the intended duration of the agreement and renewal periods. CNL and Sagkeeng First Nation established a dispute resolution mechanism that was rooted in the Anishinaabe teachings on finding resolutions and forms part of the contribution agreement. **Change to EIS:** No specific changes to the EIS due to this IR; however, related IRs noted in the request may have changes associated with them. **References**: N/A	
283_R3	Sagkeeng First Nation	Section 11	Partially accepted response **Context:** Sagkeeng notes that the EAFMP has not been updated nor have any specific commitments been made to date by CNL about how Sagkeeng First Nation will be involved in future monitoring, including but not limited to fish and fish habitat monitoring.	See IR 11_R3		
284_R2	Sagkeeng First Nation	Appendix 4.0 – 1, PDF pg. 1192/1428; also PDF pg. 1197/1428; also Section 4.2.4.1.2, pg. 4-36; also Section 4.2.4.1.6, pg. 4-48	In the Appendix 4.0-1 table, there are a couple of references to Sagkeeng First Nation's requested supports from CNL and AECL for a Healing and Resiliency Action Plan, including the following at PDF pg. 1197 of 1428: "Sagkeeng First Nation's notes that CNL has made a nominal commitment to support a Sagkeeng First Nation Healing and Resiliency Action Plan. However, the scope and duration of that plan that CNL and AECL are willing to support has yet to be defined. This information is material to the likelihood of success of any such initiative."	CNL is requested to provide: An updated, clear commitment to supporting Sagkeeng First Nation's Healing and Resiliency Action Plan, that can be considered as one of the mitigation/accommodation commitments in the CNSC's deliberations. Identification of what impacts CNL's support for the Sagkeeng First Nation Healing and Resiliency Action Plan are designed to mitigate and/or	**Resolved As:** Canadian Nuclear Laboratories (CNL) believes that the Community Environmental Monitoring Program (CEMP) and communication of results of that monitoring in the community is intended in part to support the Sagkeeng First Nation Healing and Resiliency Action Plan scope of work which was a recommendation of the psycho-social impact assessment. CNL has agreed to implement this Healing and Resiliency Action Plan in part to acknowledge the difference in the conclusions of the Environmental Impact Statement (EIS) held by Sagkeeng First Nation, and to support learning and reconciliation. CNL has been working diligently to develop a draft list of commitments from the Project to Sagkeeng First Nation regarding WR-1. Sagkeeng First Nation and CNL have not arrived at a set list of sufficiently detailed commitments at this time, but do expect that to change over the coming months, as CNL and Sagkeeng First Nation continue to engage and discuss. Sagkeeng First Nation has also expressed a desire to see the EIS submission go forward at this time, without their commitments in the draft commitment list. **Change to EIS:** Section 4 and Appendix 4.0-1 was updated to include engagement and discussions with Sagkeeng First Nation up to and including July 31, 2024. **References:** N/A	**Partially accepted. Follow-up IR 284_R3 Below**

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			We note as well that in Section 4 (pg. 4-36) of the EIS, CNL indicates that for the Healing and Resiliency Action Plan, "The next step is to engage with Sagkeeng First Nation through the Technical Working Group to discuss the Healing and Resiliency Action Plan and what is within scope to resolve outstanding concerns and work collaboratively on areas of interest." References in Section 4.2.4.1.6 to "forthcoming" meetings in October 2022 suggest that this section was not updated prior to the re-issuance of the EIS; Sagkeeng First Nation's understanding is that CNL's commitment to the HRAP has been updated in the interim. Sagkeeng First Nation is appreciative of CNL's more recent efforts to engage meaningfully with Sagkeeng First Nation in relation to initiatives like the Healing and Resiliency Action Plan and suggests that CNL should clarify its commitment to this initiative and also clarify for the CNSC and other parties what impacts the Healing and Resiliency Action	accommodate for, and how.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Plan will contribute to the mitigation or accommodation of.			
284_R3	SFN	Appendix 4.0 – 1, PDF pg. 1192/1428; also PDF pg. 1197/1428; also Section 4.2.4.1.2, pg. 4-36; also Section 4.2.4.1.6, pg. 4-48	Partially adequate response. **Context:** Sagkeeng notes that the requested updated commitments have not been made by CNL to date.	See IR 11_R3		
New IRs generated from Round 3 review on new or revised material						
285_R3	CNSC	EIS Section 6.7	**Context:** CNL states in their WR-1 EIS Package that the revised EIS "Included assessment of uranium as a chemical element". The uranium element, however, is missing from the report, such as in Table 6.4.2-14 "Predicted non-radionuclide concentrations in the Winnipeg River….?". No rationale for this exclusion has been provided and CNSC staff could not identify the area where uranium as a chemical element was included in the assessment. In comparison, CNSC staff noted that the revised ERA includes an assessment of uranium as a chemical element.	CNL is expected to either provide rationale for exclusion of the assessment of uranium as a chemical element in EIS, or indicate where in the EIS report this assessment has been included. Otherwise, CNL is expected to update the EIS to include the assessment of uranium as a chemical element.		
286_R3	CNSC	EIS Section 6.7	**Context:** CNL states in their WR-1 EIS Package the following change in their revised EIS: "Updated water screening to use latest 2024	CNL is expected to confirm that the updated 2024 Health Canada drinking water quality guidelines are		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Health Canada (HC) drinking water (DW) quality guidelines". However, it seems that this update was not completed. In comparison, CNSC staff noted that the revised ERA includes the updated 2024 Health Canada guidelines. For example, on page 6-251 para 2: HC 2014 DW guideline is referenced and on page 13-31: HC 2014 DW guideline Summary Table is listed in the references.	referenced and used in the revised EIS report.		
287_R3	CNSC	EIS Section 6.7, Page 6-362 para 2	**Context:** A HC 2010 DW guideline is mentioned, but there is a 2009 HC reference listed (i.e., Page 13-28: HC 2009 DW guideline TecDoc Rad Parameters)	CNL is expected to confirm and update the text in this section with the correct year for Health Canada's drinking water guideline reference.		
288_R3	CNSC	EIS Section 12.18	**Context:** CNL has deleted the following sentences from the previous revision of the EIS: *"The primary pathway for release of contamination from the Whiteshell Reactor Disposal Facility is by groundwater that has infiltrated into the sub-surface structure, picked up contamination and then carried it out of the sub-surface structure to the surrounding environment. As such groundwater monitoring during the post-closure phase is the main component of the Environmental Assessment Follow-up Program for the*	CNL is requested to explain why these sentences have been removed from the EIS.		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
			Project and adaptive management."			
289_R3	CNSC	Section 4.0 – Table 4.2.2-1	**Context:** Table 4.2.2-1 identifies First Nations, the Red River Métis and/or Representative Organizations and the Identification Rationale and Proximity to the WL site. Consistent information related to proximate distance and traditional territory and Treaty rights information (established and asserted) for each Nation helps reviewers better understand and evaluate Identification Rationale.	CNL is requested to update Table 4.2.2-1 to include proximate distances to the nearest reservations/communities and provide Indigenous Nation territory/treaty information related to established and asserted Rights applicable to each Nation where this information is not provided.		
290_R3	CNSC	Section 6.8 – Table 6.8.1.6-1	**Context:** Table 6.8.1.6-1 identifies Project Activity, Effects Pathway and Management Practices and Mitigation Actions related to the Pathways Analysis for Traditional Land and Resource Use Valued Components. Given the importance of heritage resources and archaeological sites, no specific information is provided on the protection and preservation of cultural and archaeological sites.	CNL is requested to update Table 6.8.1.6-1 for the "Project activities could affect unidentified or unknown heritage resources" Effects Pathway under the Management Practices and Mitigation Actions to explain/detail the commitment(s) to protect and preserve cultural and archaeological sites (i.e., onsite archaeological monitoring during ground disturbance, stop work and call in archaeologist when cultural artefacts are suspected,		

IR	Reviewer	Reference to EIS, or supporting document[3]	Context and Rationale	Information Requirement (IR)[4]	Response from CNL	Accepted/ Request for follow-up information
				etc.) or at very least please reference the specific section of the Implementation of the Environmental Assessment Follow-up and Monitoring Program which details the specific actions.		
291_R3	CNSC	Appendix 4.0 – Section 1.3.5 BRFR, HWFN and BON Engagement Summary of Engagements and Summary of Interests and Concerns Tables and Indigenous Engagement Report	**Context:** It is identified in Section 4.2 and Appendix 4.0 that Black River First Nation, Hollow Water First Nation, and Brokenhead Ojibway Nation conducted consultation activities together from 2016 to Autumn 2020 at which time Brokenhead Ojibway Nation decided to conduct bilateral consultations with CNL. Within Section 1.3.5 where the three Nations are represented together, there are a number of entries within this table that only include Black River and Hollow Water First Nations. It is not evident that BON has delegated authority to BRFN/HWFN to consult, engage and represent their positions hence it being problematic when text and consultation logs represent all three Nations but only 2 of the Nations are listed in attendance.	CNL is requested to revise sections 1.3.5 to only include those meetings and entries related where all three Nations participated and where only Black River and Hollow Water First Nations were a part of discussions, these should be included in Section 1.3.5.2 and the time frame adjusted to accurately reflect what Nations took part in what discussion and provide clarity for when entries involved all three Nations.		