

**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project**

| No.  | Source  | Section, Table, Figure (Page)               | <b>Comment Summary</b><br>(all original submissions can be found on the <a href="#">Canadian Environmental Assessment Registry, reference #80124</a> )  | <b>Response (to be completed by CNL)</b> |
|--|---|---|---|--|
| <i>Note: Please provide detailed responses to the following comments and questions. If any do not fall within the scope of the project, provide justification. Comments submitted of general support or opposition to the project have been noted but are not reflected below.</i> |   |   |   |  |
| <b>Executive Summary</b>   |   |   |   |  |
| 1.   | <a href="#">Local Government District (LGD) of Pinawa</a><br>(Dec 19, 2017) | Executive Summary (viii)                    | <p>The Executive Summary of the draft EIS states: “During decommissioning, consideration will be given to place some equipment from the heat transport system that is currently located on the ground-level reactor floor to a below-grade position for incorporation in the disposal system.”</p> <p>The commenter indicates that part of the argument for <i>in situ</i> decommissioning (ISD) of the Whiteshell Reactor #1 (WR-1) is to avoid having to handle the below-grade equipment and structure, which would possibly cause the premature release of some of the radioactive material, trapped in place and possibly cause a release to the environment and additional exposure to employees. However, considering the inclusion of some above-grade equipment in the ISD project is counter to that statement. The equipment will have to be handled to move it below grade. Since it has to be handled, it should be appropriately disposed of offsite. This will also reduce the source term for the remaining radioactive material contained in the reactor structure. The commenter requests that all above-grade materials be disposed of appropriately and not be incorporated into the ISD of the WR-1.</p> |  |
| <b>Introduction</b>  |   |   |   |  |
| 2.   | <a href="#">Michael Stephens</a><br>(Dec 15, 2017)                          | Section 1.0 (1-1)                           | <p>This section of the draft EIS states: “[ISD] is a proven nuclear decommissioning approach that increases worker safety, promotes protection of the environment and the public, reduces interim storage and multiple handling, enables permanent liability reduction, and utilizes less resources.”</p> <p>The commenter raises the concern that this text contains several misleading statements and argues the following:</p> <ul style="list-style-type: none"> <li>• ISD is an unproven and not internationally accepted approach to nuclear decommissioning for reactors reaching the end of their planned operating life;</li> <li>• ISD proposes a quick and relatively cheap short-term solution when CNL is in complete control of the site - by sacrificing achievable long-term protection of the public and the environment long after control of the site has been relinquished; and,</li> <li>• ISD further defers indefinitely the development of the disposal repositories that Canada needs to deal definitively with the country’s existing low-level and intermediate-level radioactive wastes, leaving a liability for future generations.</li> </ul>   |  |
| 3.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)                   | Section 1.0 (1-1)<br>Table 10.5.1-1 (10-11) | <p>The Introduction section of the draft EIS identifies the scope and overview of the project but the commenters indicate that it is remiss in defining and quantifying the hazard. The commenters note that this does not occur until the section on Glaciation within Chapter 10 of the draft EIS “where the current radiological inventory is obscurely provided in Columns 1 and 2 of Table 10.5.1-1.”</p>  |  |
| 4.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)                   | Section 1.1 (1-7)                           | <p>This section of the draft EIS states: “The most significant contributor to the remaining radioactive source term is the reactor core (calandria and fuel channels) which accounts for 99% of the source term.”</p> <p>The commenters pose the following questions with respect to this statement:</p> <ul style="list-style-type: none"> <li>• What is the source term?</li> </ul>   |  |

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|     |  |                               | <ul style="list-style-type: none"> <li>• What portion of the source term and which radionuclides are attributed to the reactor core, thermal shield, biological shield, primary heat transport system, moderator system and any other contaminated or activated system which may be left behind in the WR-1 ISD structure?</li> <li>• What is the process used to determine the source term including sampling methods/locations used? Please describe.</li> </ul>  |                                   |
| 5.  | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)  | Section 1.1 (1-7)             | The commenters indicate that the following statement made in this section of the draft EIS is inappropriate, given it is yet to be proven: <i>“The new proposed approach for WR-1 is ISD which allows CNL to decommission the facility in a safer, compliant manner that reduces interim storage and provides protection of the public and the environment.”</i>  |                                   |
| 6.  | <a href="#">Michael Stephens</a><br>(Dec 15, 2017)   | Section 1.1 (1-7)             | <p>This section of the draft EIS states: <i>“AECL’s mandate is to manage its radioactive waste and decommissioning liabilities in a safe and environmentally responsible manner. AECL has asked CNL to perform the work, and in keeping with international best practices (IAEA 2004, 2006), the decommissioning timeframe has been accelerated with the goal of completing the decommissioning of the WL site by 2024.”</i></p> <p>The commenter indicates that the <i>“safe, responsible management of radioactive waste and decommissioning liabilities on AECL’s sites is only part of its mandate. AECL is also responsible for managing the government’s interests in the application of nuclear science and technology to national purposes, and for maintaining Canada’s nuclear obligations to the international community. While it is international best practice to decommission facilities as soon as is reasonably feasible (so that the current generation minimizes the risk and cost to future generations) it is NOT best international practice to rush the task so much that it leaves a long-term risk and shadow on the future uses of the site that could be avoided.”</i></p>   |                                   |
| 7.  | <a href="#">William Turner</a><br>(Nov 25, 2017)<br><br><a href="#">William Turner</a><br>(Dec 18, 2017) | Section 1.1 (1-7)             | <p>The commenter notes that while this section of the draft EIS cites two (2) International Atomic Energy Agency (IAEA) documents, the following are not made reference to in the draft EIS:</p> <ul style="list-style-type: none"> <li>• IAEA, <i>Decommissioning Strategies For Facilities Using Radioactive Material</i>, Safety Report Series #50, IAEA, Vienna, 2007</li> <li>• IAEA, <i>Decommissioning of Facilities</i>, General Safety Requirements Part 6, IAEA, Vienna, 2014</li> </ul> <p>If Atomic Energy Canada Limited (AECL) has requested, as indicated on page 1-7, <i>“CNL to perform the work, and in keeping with international best practices”</i>, the commenter requests that CNL justify why their ISD proposal can proceed counter to the IAEA guidance for “entombment”.</p> <p>Further to this, the commenter raises concerns with the fact that although there are no “regulatory” requirements to follow IAEA guidelines, these documents are internationally recognized as setting a minimum for determining “best practice”, and that Canada is a member state of the IAEA. The commenter suggests that the EIS must provide justification as to why international best practices do not apply to this project.</p> <p>[Please refer to pages 8 and 9 of the commenter’s submission, where quotes from these two documents are provided (Section 2.4 and 3.2.3 from IAEA 2007; 1.9 and 1.10 of IAEA 2014)].</p> |                                   |
| 8.  | <a href="#">Northwatch</a><br>(Dec 20, 2017)   | Section 1.1 (1-7)             | This section of the draft EIS states: <i>“The facility structure would be decontaminated and then demolished to achieve unrestricted release criteria.”</i>   |                                   |

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|     |   |   | Other statements made throughout the draft EIS with respect to release criteria include: “ <i>final radiological surveys to verify that release criteria are met</i> ” (Section 2.5.2, page 2-13) and “ <i>following removal and decontamination, the facility would be subjected to a radiological survey to confirm that facility release criteria have been met</i> ” (Section 2.5.3, page 2-17).<br><br>Although “release criteria” is referenced at numerous points in the draft EIS, the commenter indicates that the criteria are not provided. The commenter requests that CNL provide a current copy of the site release criteria that will apply to this project.   |                                   |
| 9.  | <a href="#">Sagkeeng First Nation (SFN)</a><br>(Jan 15, 2018) | Section 1.1 (1-7)<br>Section 1.4 (1-12) | It is SFN’s understanding that: <ul style="list-style-type: none"> <li>• The Government of Canada has entered into a commercial partnership with Canadian National Energy Alliance (CNEA) to manage but not accept the environmental liabilities associated with the Whiteshell Laboratories (WL) site. CNEA is a partnership of multi-national, for-profit corporations.</li> <li>• The contractual relationship between Canada and CNEA is focused on the management of environmental liabilities for a defined period of time and does not extend to the long-term / perpetual care of the site.</li> <li>• CNL and CNEA are both acting as agents of Canada and, in this regard, the application for the proposed project has been submitted on behalf of the Government of Canada, with the Government’s full support.</li> <li>• Canada’s contractual relationship with CNEA in no way absolves the Crown of its responsibilities for the WL site and its fiduciary duties to SFN.</li> <li>• Canada is and will continue to be responsible in perpetuity for any environmental liabilities at the WL site, regardless of any contractual relationships it may have entered into with CNEA or other parties.</li> </ul> SFN recommends that CNL confirm/refute the accuracy of their understandings and describe the following in detail: <ul style="list-style-type: none"> <li>• The nature of the contractual relationship between Canada and CNEA;</li> <li>• The financial terms between Canada and CNEA, with emphasis on any incentives/penalties related to the schedule and budget of the proposed undertaking;</li> <li>• The respective responsibilities of Canada, CNL, CNEA and other parties for the environmental liabilities at the WL site, both now and in the future; and,</li> <li>• The respective responsibilities of Canada, CNL, CNEA and other parties to fulfill the fiduciary obligations of Canada to SFN as they pertain to the proposed undertaking.</li> </ul> |                                   |
| 10. | <a href="#">Michael Stephens</a><br>(Dec 15, 2017)            | Section 1.2 (1-10)                      | This section of the draft EIS states: “ <i>WR-1 is well suited for this [ISD] decommissioning approach because the small reactor core contains the vast majority of remaining activity and it can be isolated below-grade in a permanent safe way that provides protection of the environment and people. On the contrary, total dismantling of the below-grade reactor systems exposes workers to many radiological and standard industrial hazards that are avoided through the ISD approach.</i> ”<br><br>The commenter indicates the “ <i>fact that ‘the small reactor core contains the vast majority of remaining activity’ means that removing the core (including the calandria tubes and fuel channels) for eventual disposal in a repository designed for the purpose will greatly enhance the long-term safety of the WL site after human control is relinquished. Workers will not be exposed to unacceptable radiological and industrial hazards when removing the core and associated systems. Such work is standard practice in the nuclear industry and CNL has in place long-standing worker protection programs that are suitable for just</i>  |                                   |

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|     |  |                               | <p><i>this purpose. If the reactor remains in place and future remedial action or removal is required, then the contaminated structure filled with grout will be difficult and very expensive to deal with. Thus ISD will thus increase - not reduce - the associated liability because the avoidable risk of possible expensive future remediation will inevitably remain.</i></p>   |                                   |
| 11. | <a href="#">Northwatch</a><br>(Dec 20, 2017)   | Section 1.2 (1-10)            | <p>This section of the draft EIS states: “During decommissioning, consideration will be given to place some equipment from the heat transport system that is currently located on the ground-level reactor floor to a below-grade position for incorporation in the disposal system.”</p> <p>The commenter notes that placing additional radioactive materials in the sub-surface area of WR-1 would be a significant change to the project, and would require careful study and recalculations to understand the potential consequences.</p> <p>The commenter requests that CNL provide a detailed analysis of the contaminant release consequences of adding these materials to the waste inventory to be placed subsurface for each alternative.</p>   |                                   |
| 12. | <a href="#">William Turner</a><br>(Nov 25, 2017)<br><br><a href="#">William Turner</a><br>(Dec 18, 2017) | Section 1.2 (1-10)            | <p>This section of the draft EIS states: “CNL plans to start decommissioning activities related to the WR-1 Building in 2019. The Project site will be turned over to Institutional Control in 2024, which is assumed to last for 300 years, with active controls (e.g., ground water monitoring and site inspection) only required for the first 100 years. This timeframe is consistent with that required for other near surface disposal projects (ranging from 100 to 300 years), including similar projects under CNSC jurisdiction (e.g., Ontario Power Generation’s [sic] Deep Geological Repository project).”</p> <p>The commenter provides several quotes from a U.S. Department of Energy (U.S. DOE) [1] document to make the following comparisons:</p> <ul style="list-style-type: none"> <li>• CNL’s proposed 300-year institutional control period for the WR-1 ISD differs from the U.S. DOE’s approach for indefinite institutional control by the U.S. Government for ISD projects;</li> <li>• U.S. DOE recognizes that the decay of the radionuclides will never permit release of the facility from regulatory control. In Canada, at the end of the institutional control period, the site should be eligible for a licence to abandon, in other words, “unrestricted use”. Otherwise, the institutional controls must be maintained to ensure use of the site is restricted;</li> <li>• While the U.S. DOE has their Legacy Management Office to ensure institutional control in perpetuity, Canada has no such entity, thus cannot undertake this commitment.</li> </ul> <p>Given these comparisons, the commenter argues that CNL’s proposed 300-year institutional control period would not meet either U.S. practice or IAEA guidance. Further, given the half-life of radionuclides that will be entombed the level of radioactive decay will not meet both the Canadian and international (IAEA) unrestricted use criteria.</p> <p>The commenter indicates that when discussing their proposed institutional control timeframe in the draft EIS, CNL needs to be consistent and ensure that the readers understand that, with entombment, institutional control will be required in perpetuity. The commenter requests that CNL revise the draft EIS to remove the inconsistencies and explicitly state that institutional control period can never end.</p> <p>The commenter requests that CNL revise the institutional control period to be consistent</p> |                                   |

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|     |   |                               | <p>with the restricted use of the WR-1 location. The commenter notes that essentially, this period must address the time required for the level of radioactivity to decay to the CNSC clearance criteria.</p> <p>The commenter also notes that any restrictions to land use will require some level of institutional control. The commenter indicates that the draft EIS confuses “land use restrictions” and “institutional control”. In some instances, CNL states that the IC will last 300 years, but then land use restrictions will last indefinitely.</p> <p>In addition, the commenter indicates that the statements made in the quote above are inconsistent with several other of CNL’s assertions in the document, such as the following quote, in which CNL states that the WR-1 site will never be released without land use restrictions: “... <i>the presence of the WR-1 ISD structure will result in restricted land use of the WR-1 portion of the WL site. This area will require ongoing controls including Institutional Control, access restrictions, and performance monitoring; however, the amount of land associated with this area is very small relative to the size of the WL site that will have unrestricted land use</i>” (from Section 2.5.4.2 of the draft EIS).</p> <p>Lastly, the commenter highlights that the draft EIS’s Technical Supporting Document (TSD), entitled “<i>In Situ Decommissioning Of Whiteshell Reactor 1 Project – Decommissioning Safety Assessment Report</i>” does not address the U.S. DOE document.</p> <p>[Please refer to pages 10-11 of the commenter’s submission for more information].</p> <p><b>References:</b><br/>                     [1] U.S. Department of Energy. 2013. <i>DOE EM Project Experience &amp; Lessons Learned for In Situ Decommissioning</i>. Prepared By U.S. Department of Energy, Office of Environmental Management, Office of D&amp;D and FE, EM-13. Washington DC: Office of Environmental Management).</p> |                                   |
| 13. | <a href="#">William Turner</a><br>(Dec 18, 2017)<br><br><a href="#">Canadian Environmental Law Association (CELA)</a><br>(Dec 19, 2017) | Section 1.2 (1-11)            | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>The commenters quote from CNSC P-290, CNSC G-320 and Section 26 of the <i>Nuclear Safety and Control Act</i> (NSCA) to illustrate that at the time of granting any licence for the decommissioning or abandonment of a nuclear facility, “<i>the CNSC must consider whether the predicted (future) residual radioactivity in the grouted reactor site would meet the CNSC’s current Unconditional Clearance Criteria for radionuclides, as set out in the CNSC’s “Radionuclide Information Booklet.”</i>”</p> <p>However, the commenters note that CNL’s proposed active institutional control will end in 100 years’ time, i.e., in 2124.</p> <p>Mr. Turner notes that the permissible impact at the time of regulatory decision (i.e., within the next year or so) will be the same as that for all nuclear facilities currently licensed. Mr. Turner explains this is currently accomplished through the implementation of institutional controls (such as barriers, shielding, procedures, processes, security, etc.)</p> <p>Mr. Turner argues that CNL needs to demonstrate that the residual activity on the site of the WR-1 will continue to meet clearance criteria at the end of the institutional control period. If the institutional control period is indeed 100 years, CELA expresses the position that the predicted nuclide concentrations in 100 years’ time (i.e., as reduced via decay) should have been calculated by CNL, but as far as can be ascertained, has not</p>   |                                   |

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|     |   |                               | occurred. CELA indicates they have carried out the calculations and provides them in Table 2 of their submission.<br><br>[Please refer to Mr. Turner’s submissions for more context and the quote referenced from CNSC P-290].<br><br>[Please refer to CELA’s submission for the quotes referenced from CNSC G-320 and the NSCA as well as Table 2, where the predicted nuclide concentrations have been calculated on page 48].  |                                   |
| 14. | <a href="#">Canadian Coalition for Nuclear Responsibility (CCNR)</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018)  | Section 1.4 (All)             | The commenter expresses the position that the ISD of the WR-1 should be designated as an AECL proposal and not a CNL proposal, even if CNL carries out the work under the direction of AECL. The commenter provides the rationale that <i>“when billions of dollars of public money are being spent on projects of vital importance to the health and safety of Canadian citizens and the environment for millennia, it is important that a crown agency that is wholly owned by and accountable to the Canadian government be in the driver’s seat.”</i><br><br>[Please refer to pages 7-8 of the commenter’s submission for more information].  |                                   |
| 15. | <a href="#">Dave Taylor</a><br>(Nov 30, 2017)<br><br><a href="#">Lynn Jones</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018) | Section 1.4 (1-12 to 1-15)    | <i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i><br><br>Several commenters express their concern with a private consortium of multinational corporations - of which some have faced substantial legal challenges including corruption, bribery, fraud and violation of nuclear safety requirements - being responsible for the management of radioactive waste at AECL owned sites. CCNR provides examples that highlight <i>“the dangers of outsourcing such decommissioning projects to private profit motivated corporations”</i><br><br>[Please refer to pages 13-14 of CCNR’s Dec 19 submission for these examples].<br><br>Ms. Jones’ argues that the privatization of the management of Canada’s federally-owned nuclear facilities and radioactive wastes, with an emphasis on speed, low cost and disposal of all wastes, has led <i>“quickly to the WR-1 ISD proposal and two other cheap and dirty proposals for permanent disposal of radioactive wastes using inappropriate methods that do not comply with international guidance.”</i><br><br>Mr. Taylor argues that this is the reason for why other retrievable alternatives to ISD <i>“have been rejected in favour of the quick plan of abandonment.”</i><br><br>CCNR indicates that it should not be left to the private consortium of multinational corporations that own and operate CNL to decide on the basis of what is most convenient and profitable for them. |                                   |
| 16. | <a href="#">Northwatch</a><br>(Dec 20, 2017)  | Section 1.4 (1-12)            | This section of the draft EIS states: <i>“AECL, a federal Crown corporation, is responsible for its radioactive waste liabilities, including the WL site. AECL has contracted CNL to manage and operate its sites on its behalf, including completing the decommissioning of the WL site. As such, CNL is CNL for the Project.”</i><br><br>The commenter expresses the concern that the respective roles and the decision-making functions of AECL and CNL remain ambiguous, particularly given CNL’s short term contract and AECL’s long term responsibilities. The commenter requests that CNL  |                                   |

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|     |   |                               | provide a full and detailed description of how CNL's decision-making process for this project has involved AECL and how it will do so in the future phases.  |                                   |
| 17. | <a href="#">Northwatch</a><br>(Dec 20, 2017)  | Section 1.4.1 (1-12)          | This section of the draft EIS states: <i>"AECL and the GoCo process bring in world class nuclear decommissioning expertise."</i><br><br>The commenter expresses the concern that this is one of several statements in the draft EIS that are devoid of actual information. The commenter requests that CNL provide a factual description of how the government-owned, contractor-operated (GoCo) process has brought expertise to decommissioning projects.  |                                   |
| 18. | <a href="#">William Turner</a><br>(Dec 18, 2017)  | Section 1.4.1 (1-13)          | This section of the draft EIS states: <i>"CNL works to deliver safety execution and innovation in all work activities, and provide the highest performance in meeting the commitments expected of them by their regulators, customers, stakeholders, First Nation and Métis peoples, and the public."</i><br><br>The commenter inquires what evidence exists to support this statement. The commenter provides the following example:<br>In Table 6.9.10-1 "Summary of Predicted Residual Adverse Effects for Socioeconomic Valued Components" of the draft EIS, CNL concludes that the concerns of the local residents are "not significant". All the mitigation measures identified in this table are short-term and do not address the legacy left at the site by a near surface radioactive waste disposal site. By concluding that the residual adverse effects for the socio-economic components are "not significant", the commenter argues that CNL has not provided <i>"... the highest performance in meeting the commitments expected of them by ... First Nation and Metis peoples and the public."</i><br><br>The commenter requests that this sentence either be deleted or revised. |                                   |
| 19. | <a href="#">William Turner</a><br>(Dec 18, 2017)  | Section 1.4.2 (1-13)          | This section of the draft EIS states: <i>"CNL is led by an Executive Team and a Board of Directors. The President and Chief Executive Officer, along with seven Vice Presidents are responsible for different aspects of the business."</i><br><br>The commenter notes that when the consortium set up the executive structure for CNL in September 2015, there were seven Vice-Presidents (VPs). In January 2016, there were 9 VPs. As of October 2017, there are 10 VPs.<br><br>With this example, the commenter raises CNL's performance and competence as a concern given these types of errors contained in the EIS documentation.  |                                   |
| 20. | <a href="#">Dave Taylor</a><br>(Nov 30, 2017)<br><br><a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)<br><br><a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017)<br><br><a href="#">Anne Lindsey</a><br>(Dec 19, 2017) | Section 1.6.1 (1-17)          | <i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i><br><br>This section of the draft EIS states: <i>"The Project is located on Federal lands and is regulated by the CNSC, therefore, it is anticipated that provincial permits, licences or other authorizations are not required."</i><br><br>The commenters argue that the proposed project contravenes Manitoba's <i>High-Level Radioactive Waste Act</i> , which states no person shall: <i>"(d) provide storage for high-level radioactive waste or spent nuclear fuel underground or in an above-surface environment that is not subject to continuous monitoring, as agreed between the government and the research facility, and that does not provide reasonable human access to the containers in which the waste or nuclear fuel is contained"</i> .  |                                   |

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|     |  |                               | <p>"High-level radioactive waste" in this Act is defined as:<br/>                     (a) spent nuclear reactor fuel, not intended for reprocessing or research, or<br/>                     (b) the highly radioactive liquid, whose radioactivity consists mainly of fission products, with some actinides also present, that are generated during chemical reprocessing of irradiated nuclear fuel (aqueous waste from the first solvent extraction cycle and those waste streams combined with it), or<br/>                     (c) any other waste with a radioactivity level comparable to clause (a) or (b)."</p> <p>Lisa Aitken et al. argue that radionuclides with significant levels of radioactivity within the irradiated core of WR-1 are "high-level radioactive waste" as per the definition in this Act. The commenters also argue that the ISD of the WR-1 would be deemed a waste disposal site as the IAEA defines "the end state of an entombed site equivalent to a waste disposal site" (Safety Report Series #50, 3.3.3.), and as such, would violate the provincial legislation.</p> <p>Ms. Lindsey indicates that in the currently licensed decommissioning plan, Manitobans were led to believe that the nuclear facilities at the WL site, including contaminated reactor elements would be entirely removed from the site and that the site would be returned to natural conditions. The commenter notes that this is consistent with the intent and purpose of Manitoba's <i>High-Level Radioactive Waste Act</i>. Some of the commenters argue that while the constitutional realities of this provincial law, as it was written, can be debated, there is no doubt that the intent of the law (which is the result of the advocacy and demand of Manitobans to have their voices heard) was to protect the environment and public health from the dangers of radioactive waste disposal, in accordance with public opinion at that time. Some of the commenters express the concern that the current proposal violates the intent and spirit of the provincial law, which continues to represent the voice of Manitobans.</p> <p>Peter Baumgartner et al. inquire whether CNL has had discussions with the Province of Manitoba regarding the <i>High-Level Radioactive Waste Act</i> and request that CNL describe how this Act does not apply to the proposed ISD of WR-1 and any assurances or authorizations received from the Province.</p> |                                   |
| 21. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 1.6.1 (1-17)          | <p>This section of the draft EIS states: "Waste generator registration will be maintained through the Manitoba Conservation and Water Stewardship and in compliance with the Dangerous Goods Handling and Transportation Act...The Project is located on Federal lands and is regulated by the CNSC, therefore, it is anticipated that provincial permits, licences or other authorizations are not required."</p> <p>The commenter notes the inconsistency between the title of this section, "Federal Review Process" and the content of this section which includes provincial requirements such as a waste generator registration.</p> <p>The commenter also argues that whether or not the "project is located on federal lands and is regulated by the CNSC" does not mean that "provincial permits, licences or other authorizations are not required" nor does it exclude other federal regulators from having jurisdiction.</p> <p>The commenter requests that CNL revise this section to ensure all applicable legislation is identified appropriately and not just focus on the CNSC as the only regulator having jurisdiction.</p>   |                                   |



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| 22.                           | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 1.6.2 (1-17)                               | <p>The commenter expresses the position that this list is incomplete since it contains no reference to international guidelines or standards. In particular, the commenter notes that the list does not include the U.S. DOE document [1] on lessons learned from the various ISD projects undertaken on behalf of the U.S. DOE.</p> <p>The commenter requests that CNL revise this section to include all “<i>relevant standards, codes and guidelines</i>”, in particular the international guidance documents, since these are the only ones that address “entombment” or ISD.</p> <p><b>References:</b><br/>                     [1] U.S. Department of Energy. 2013. <i>DOE EM Project Experience &amp; Lessons Learned for In Situ Decommissioning</i>. Prepared By U.S. Department of Energy, Office of Environmental Management, Office of D&amp;D and FE, EM-13. Washington DC: Office of Environmental Management).</p>   |                                   |
| 23.                           | <a href="#">SFN</a><br>(Jan 15, 2018)            | Section 1.6.2 (1-17)<br>Section 1.7 (1-19 to 1-22) | <p>SFN indicates that the list of relevant codes, standards and guidelines provided in Section 1.6.2 of the draft EIS has omitted reference to the Draft Technical Guidance produced by the Canadian Environmental Assessment Agency (CEAA) for assessing “Current Use of Lands and Resources for Traditional Purposes” (CULRTP). SFN also identifies the gap that the draft EIS does not include the assessment of CULRTP as a stand-alone valued component (VC).</p> <p>SFN also notes that virtually all Indigenous groups in Canada have rejected the language in the <i>Canadian Environmental Assessment Act, 2012</i> (CEAA 2012), that the focus of assessment of effects under Section 5(1)(c) should be limited to “current use” of lands and resources for traditional purposes. Aboriginal and treaty rights and the resources and activities they are tied to, are not limited by current use, but should be assessed with reference to past, present and desired future use. Tying the assessment to merely current use is not in the interests of reconciliation, especially given that alienation effects (cutting Indigenous peoples off from current access to lands and resources) have been enforced by prior Crown decisions.</p> <p>SFN recommends that CNL provide an explanation for the omission of this technical guidance and a supplementary submission providing an assessment of CULRTP for SFN, including provision of information on desired future use of lands and resources by Sagkeeng.</p> |                                   |
| <b>Purpose of the Project</b> |  |  |   |                                   |
| 24.                           | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 2.2 (2-1)                                  | <p>This section of the draft EIS states: “<i>The proposed WR-1 Project ensures CNL focuses their environmental efforts on limiting nuclear legacy obligations for future generations.</i>”</p> <p>The commenter argues that this statement is false given that CNL states several times in the draft EIS that the site of the WR-1 can never be freely released. In addition, the ISD approach and the 300-year institutional control period is an obligation and responsibility that will be transferred to several future generations.</p> <p>The commenter requests that CNL remove this statement or acknowledge that the “... <i>nuclear legacy obligations for future generations</i> ...” may change, but can never be limited.</p>  |                                   |
| 25.                           | <a href="#">Northwatch</a>                       | Section 2.3 (2-1)                                  | The commenter indicates that the draft EIS provides no clear and detailed statement of the  |                                   |

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|     | (Dec 20, 2017)                                   |                               | project's purpose nor does it provide a clear statement on the basis for bringing forward an alternative approach at this time, mid-point in the implementation of the currently approved decommissioning plan.  |                                   |
| 26. | <a href="#">Northwatch</a><br>(Dec 20, 2017)     | Section 2.3 (2-1 to 2-2)      | This section of the draft EIS states: <i>"The implementation of the GoCo model provides an opportunity for AECL to leverage the experience and expertise of the private sector to optimize work and increase efficiencies and effectiveness, including taking action to address risks sooner and advancing the commissioning of waste disposal facilities."</i><br><br>The commenter indicates that there is a lack of information in the draft EIS to support this statement. The commenter requests that CNL provide a comparative analysis of how the expertise of the consulting firms utilized by CNL for this project (e.g., Golder) has been enhanced or "leveraged" through the GoCo model.  |                                   |
| 27. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 2.3 (2-2)             | This section of the draft EIS states: <i>"c) Demonstrating the long-term safety of the Project through a consideration of the site characteristics and engineered design features, including implementation of a long-term monitoring and surveillance program for the site."</i><br><br>The commenter indicates that this sentence contradicts the following statement in Section 1.2 of the draft EIS (page 1-11): <i>"The Project site will be turned over to Institutional Control in 2024, which is assumed to last for 300 years, with active controls (e.g., ground water monitoring and site inspection) only required for the first 100 years."</i><br><br>The commenter requests that CNL explain why "long-term monitoring" is only required for 100 years.   |                                   |
| 28. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 2.3 (2-2)             | This section of the draft EIS states: <i>"3) Significantly reduce risk to workers during the decommissioning phase by avoiding and minimizing industrial hazards."</i><br><br>The commenter indicates that there is a lack of evidence and information in the draft EIS to support this statement. For example, the commenter notes that there is no information in the draft EIS with respect to the risk to workers from the entombment process itself.<br><br>The commenter refers to the U.S. DOE document (referenced in comments above) which includes extensive discussions on the risk to workers from the entombment process. As discussed in the U.S. DOE document, the activities associated with the entombment process must include processes to ensure the required characterization of the physical, chemical, structural, and radiological contamination in all areas filled by the grout.<br><br>The commenter requests that CNL provide a quantitative assessment of the various risks to workers from all activities (including characterization) for all four of the alternatives discussed. The commenter also notes that if the decommissioning of the reactor is deferred, then the activity in the facility will have decayed such that the risk to the workers conducting the characterization will be reduced. |                                   |
| 29. | <a href="#">SFN</a><br>(Jan 15, 2018)            | Section 2.3 (2-1)             | SFN expresses the position that there is insufficient justification for adopting a revised approach in the draft EIS and provides the following comments: <ul style="list-style-type: none"> <li>• The original decommissioning proposal for WR-1, as described in the 2001 Comprehensive Study Report (CSR), was based on the disposal of virtually all radioactive wastes at off-site radioactive waste facilities.</li> <li>• Despite this important commitment, AECL subsequently instructed CNL to accelerate the project timeframe such that the site is decommissioned by 2024 (as</li> </ul>   |                                   |

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|     |  |                               | <p>indicated in Section 1.1, pages 1-7 to 1-9 of the draft EIS). This arbitrary timeline effectively precludes the use of off-site disposal facilities due to the fact that they won't become operational for multiple decades. As a consequence, on-site disposal options such as ISD became the pre-determined decommissioning solution. Significantly, the revised approach is anticipated to cost a fraction of the plan that Canada originally committed to implement.</p> <ul style="list-style-type: none"> <li>• In Section 2.3 of the draft EIS, CNL states that a fundamental objective of the revised proposal is to ensure that it does not nullify obligations previously committed to in the CSR. However, it is the view of SFN that switching from off-site to on-site disposal constitutes a significant and fundamental difference between the original and revised proposals. Based on those differences, SFN asserts that the revised proposal is inconsistent with and nullifies AECL's prior CSR commitments.</li> <li>• The original (i.e., CSR) and revised alternative selection processes resulted in completely different outcomes: an original proposal with off-site disposal and a revised proposal disposing on-site, <i>in situ</i>. CNL's draft EIS for the revised proposal does not present an adequate rationale for this fundamental change. However, based on the criteria that were used for the alternatives assessment, it appears that cost and expediency were given increased emphasis by the latter evaluation. There has been no consultation process to confirm that these values, chosen by the Canadian Government and its agents in AECL and CNL, have been confirmed in a socialization process with affected First Nations and other Manitobans.</li> <li>• Importantly, Canada's original proposal indicated that low-level waste (LLW) present in trenches and radiologically contaminated sediment in the Winnipeg River would be actively monitored for an extended period prior to determining the acceptability of those materials for <i>in situ</i> disposal. In contrast, the revised proposal involves disposing of relatively large quantities of hazardous radioactive waste from WR-1 <i>in situ</i>, without an extended period of monitoring to confirm its acceptability first.</li> <li>• In summary, failure to justify the diametrically opposed conclusions of the CSR and draft EIS undermines the credibility of the selection process. The flip-flop also undermines public and SFN confidence.</li> </ul> <p>SFN recommends that CNL present a detailed description justifying all differences between the original (i.e., CSR) and the revised proposal. The description should clearly demonstrate how the revised proposal does not nullify any of AECL's obligations from the original proposal.</p> |                                   |
| 30. | <a href="#">SFN</a><br>(Jan 15, 2018)            | Section 2.3 (2-1)             | <p>SFN explains that the WR-1 was designed as a nuclear research reactor, not an <i>in situ</i> radioactive waste disposal facility. SNF indicates that retrofitting it to dispose of radioactive wastes in place more than 50 years after it was constructed without any planning for that potential end state is inappropriate. Fundamentally, such a "retrofit" approach will inevitably be less effective in containing the waste than a purpose-built repository.</p> <p>SFN recommends that CNL present a detailed analysis and comparison of potential radiation exposure pathways from: a) the retrofit ISD concept; and b) a purpose-built, off-site disposal facility, as envisaged in the original CSR proposal.</p>  |                                   |
| 31. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 2.4.1 (2-3)           | <p>This section of the draft EIS states: "<i>Of these seven principles, the most effective is to eliminate the hazard, and wherever possible this will be the preferred method of hazard control for the Project. When a hazard cannot be eliminated, then the remaining principles are implemented to varying degrees to provide an acceptable level of defence-in-depth.</i>"</p>  |                                   |

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|     |   |   | <p>If CNL truly applies these seven principles, the commenter notes that their preferred alternative of ISD is the only alternative option that does not remove the hazard.</p> <p>For the remaining principles, the commenter indicates that CNL should apply them to the long-term situation, rather than focus on “worker safety” which is a short-term issue.</p> <p>The commenter requests that CNL address all seven principles in the long-term when assessing the four decommissioning alternatives. Specifically, the commenter requests that CNL justify why the “most effective” principle was not chosen as the governing criterion when the evaluating the alternatives.</p>   |                                   |
| 32. | <a href="#">Lawrence H. Johnson</a><br>(Dec 18, 2017) | Section 2.4.1 (2-3)   | <p>The commenter indicates that accepted practice, which is also discussed in regulatory documents of various nations and the IAEA, is that a disposal site should be selected based on its potential to isolate the waste (e.g., CNSC G-320 “Isolation is achieved through proper site selection”). The commenter expresses the position that the disposal site has not been selected for its isolation properties, as the disposal site is in near-surface sediments which have relatively high hydraulic conductivity. The commenter indicates that a direct statement should at least be made that these safety principles have not been applied to this project.</p>   |                                   |
| 33. | <a href="#">SFN</a><br>(Jan 15, 2018)                 | Section 2.4.1 (2-3)<br>Section 2.5.4.2 (2-21)<br>Section 3.4.2 (3-22) | <p>SFN expresses the following concerns with the proposed project relative to the “As Low as Reasonably Achievable” (ALARA) principle:</p> <ul style="list-style-type: none"> <li>• The ALARA principle is an internationally accepted requirement for the management of potential risks from ionizing radiation. CNL indicates it is committed to ALARA as it pertains to both people and the environment. Specifically, the principle is identified as a “strategic requirement” of the project (Section 3.4.2 of the draft EIS). In this regard, CNL asserts that conformance with the ALARA principle was a fundamental requirement of the alternatives assessment. The evidence presented in the draft EIS suggests otherwise.</li> <li>• The original proposal which involved off-site disposal of radioactive wastes is clearly consistent with ALARA; by removing the wastes from the site and depositing them in a robust, purpose-built radioactive waste disposal facility, the residual risks at the WL the site would be reduced to the greatest degree possible, without incurring undue risks at another location. The original proposal and associated commitment to dispose of wastes off-site were made taking into consideration all relevant risks, including occupational exposures and the potential for transportation accidents.</li> <li>• In contrast, the revised proposal involves leaving the waste on-site. Under this approach, some effort would be taken to isolate the wastes <i>in situ</i>, but the residual risks would still be greater than those associated with the original proposal. To illustrate, the proposed ISD groundwater will not meet drinking water standards / guidelines during the period of institutional control and for thousands of years into the future. Specifically, Section 2.5.4.2 of the draft EIS concludes the ISD alternative “represents the highest risk to the environment at the WL site during the post closure phase because the majority of radioactive materials will be present on site, unlike the other alternatives where the radioactive materials are either completely or partially removed.”</li> <li>• Based on its inferior residual risk profile relative to the original proposal, the revised proposal cannot be classified as ALARA; the original proposal keeps risks lower and, based on its prior acceptance, is also “reasonably achievable”.</li> </ul> <p>SFN expresses the position that the decommissioning of the WR-1 must comply with the ALARA principle and, as a result, the revised proposal is not acceptable. Notably, the</p> |                                   |

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|     |  |                               | revised proposal also fails to meet CNL’s own criterion that the ALARA principle will be a “strategic requirement” of the project.<br><br>SFN recommends that prior to selecting a preferred alternative, CNL should conduct a detailed quantitative assessment demonstrating the performance of each alternative relative to the ALARA principle.   |                                   |
| 34. | <a href="#">Northwatch</a><br>(Dec 20, 2017) | Section 2.4.1 (2-4)           | This section of the draft EIS states: <i>“Protective measures against the hazards of ionizing radiation will be considered to be optimized when further reductions in radiation doses are outweighed by the additional efforts and costs required for their implementation. This principle applies to all phases throughout the life cycle of the Project, from decommissioning and closure to post-closure, and is a particularly important consideration when developing the decommissioning procedures.”</i><br><br>The commenter expresses the view that this statement appears to be inconsistent with the ALARA principle. The commenter requests that CNL provide tangible examples of when further reductions in radiation doses would be outweighed by the additional efforts and costs required for their implementation.  |                                   |
| 35. | <a href="#">SFN</a><br>(Jan 15, 2018)        | Section 2.4.2 (2-5 to 2-7)    | SNF expresses the concern that the proposed ISD approach lacks alignment with international practices and provides the following comments: <ul style="list-style-type: none"> <li>• CNL asserts that the ISD approach has been implemented successfully or is planned to be used at a variety of sites in the U.S. (e.g., Savannah River Site). These projects are very recent and there is insufficient monitoring data to validate their long-term performance. Further, it is critical to note that the vast majority of sites where radioactive wastes have been decommissioned have used conventional off-site disposal approaches.</li> <li>• In the vast majority of circumstances, ISD (also referred to as entombment) has not been the preferred method and regulatory / advisory agencies have indicated that it is generally not considered to be an appropriate approach for the management of radioactive wastes.</li> <li>• Section 2.4.2 of the draft EIS states that CNL has relied heavily on guidance of international radioactivity authorities, including the IAEA. However, based on the following guidance from the IAEA [1], SFN questions the extent to which CNL has followed international best practices: <i>“Entombment, in which all or part of the facility is encased in a structurally long-lived material is not considered a decommissioning strategy, and is not an option in the case of planned permanent shutdown. It may be considered a solution only under exceptional circumstances (e.g., following an accident)”</i>.</li> <li>• Further, the U.S. Nuclear Regulatory Commission (NRC) [2] states: <i>“The NRC staff position is that entombment should be used as a last resort for the decommissioning of power reactor facilities, with the expectation that this method would be selected only under unique decommissioning circumstances”</i>, and that <i>“Entombment should be used only if this option provides more benefit than harm to public health and safety and the environment and does not create a legacy situation to be managed by future generations.”</i></li> </ul> SFN expresses the position that the remedial strategy for WR-1 should be based only on techniques that are consistent with internationally recognized best practices for the management of radioactive wastes. SFN notes that such techniques must have a proven track record of effectively containing radioactive wastes for extended timeframes. ISD currently fails to meet this requirement and it therefore cannot be supported. |                                   |

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|   |  |                               | <b>References:</b><br>[1] IAEA. 2014. <i>Decommissioning of Facilities: General Safety Requirements. IAEA Safety Standards, General Safety Requirements Part 6, No. GSR Part 6</i><br>[2] US Nuclear Regulatory Commission, <i>Regulatory Improvements for Power Reactors Transitioning to Decommissioning, Regulatory Basis Document</i> , NRC-2015-0070, 3150-AJ59, 2017 November.   |                                   |
| 36.   | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 2.4.2 (2-7)           | This section of the draft EIS states: “ <i>The existence of this discussion paper demonstrates that the regulatory process for radioactive waste management and disposal is evolving. It is likely that the regulations for radioactive waste disposal will change, or at least become more formalized, in the near future. CNL will continue to meet and adapt to any new regulations as they develop.</i> ”<br><br>With respect to these statements, the commenter poses the following question: if the current status of WR-1 is essentially safe and “... <i>the regulations for radioactive waste disposal will change ... in the near future</i> ”, why not wait until those regulations are in place? What is the rush?<br><br>The commenter requests that CNL justify why the short-term objective of “reducing liabilities” is a higher priority than postponing the process until the CNSC regulations are in place “... <i>in the near future.</i> ” Given the project has a timeline of at least 300 years, the commenter indicates that waiting five years (i.e., 2% of this timeframe) has no long-term impact to the project. The commenter requests that CNL justify why they cannot encompass a short delay of 5 to 10 years in their project plan. |                                   |
| <b>Alternative Means of Carrying out the Project</b>            |  |                               |  |                                   |
| <b>Alternatives Means of Carrying out the Project - General</b> |  |                               |  |                                   |
| 37.   | <a href="#">Northwatch</a><br>(Dec 20, 2017)     | General                       | The commenter notes that the draft EIS claims the ISD of the WR-1 will meet the project criterion of isolating and containing contamination and ensuring that the potential effects on humans and the environment both during and after decommissioning are within acceptable limits, however the document provides information – albeit limited - that contradicts this claim.  |                                   |
| 38.   | <a href="#">CELA</a><br>(Dec 19, 2017)           | General                       | Through their own calculations, the commenter demonstrates that approximately 800 GBq of tritium will be released to air as a result of the proposed ISD. The commenter explains that this means that radiation exposures to workers and farmers living nearby will be increased during entombment activities, with approximately 10 years’ worth of normal tritium emissions would be emitted in an 18-month period. In light of this, the commenter recommends that the tritium emissions from the alternative scenarios should have been estimated and compared.<br><br>[Please refer to pages 49-52 of the commenter’s submission for more information].   |                                   |
| 39.   | <a href="#">CELA</a><br>(Dec 19, 2017)           | General                       | The commenter indicates that other approaches for the isolation of radioactive wastes are available, for instance Flexible Concrete Membranes, ICOS congruent secant pile walls, etc. (Reeves et al, 2006). The commenter notes that none of these options are discussed by CNL (Klukas-CNL, 2016).<br><br>[Please refer to the commenter’s submission for the references quoted above].   |                                   |

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| 40. | <a href="#">SFN</a><br>(Jan 15, 2018)                     | General                       | <p>SFN explains that despite being referred to as “<i>in situ</i> decommissioning” the proposed undertaking involves constructing a permanent hazardous waste disposal facility for radioactive waste. Based on modern best practices, the decision to construct such a facility at a given location would be preceded by a rigorous, transparent and highly consultative siting process. The overall goal of such a process would be to select a preferred site which: a) has superior physical / technical attributes; and b) has a “willing host” for the facility.</p> <p>SFN indicates that the extensive efforts of Canada’s Nuclear Waste Management Office (NWMO) to find a willing host for nuclear fuel wastes is a recent example of this practice. Ontario Power Generation (OPG) has also implemented a rigorous siting/design process over more than a decade for a radioactive waste deep geologic repository (DGR) that is both technically effective and publicly acceptable. Even non-hazardous waste disposal facilities are subjected to robust siting exercises.</p> <p>SFN notes that with regard to the proposed ISD project, a siting study has not been performed to confirm that the WL site is technically superior and publicly acceptable. As a result, SFN indicates that virtually no evidence has been presented to support the conclusion that the site is the most appropriate location for such a facility. Instead, the site was selected primarily because that’s where the wastes are currently located. SFN argues that such an approach is inconsistent with best practices and is not defensible.</p> <p>SFN states that they did not consent to have the WR-1 radioactive research laboratory constructed on its traditional lands in the first place nor does it agree to have the radioactive wastes from that laboratory permanently disposed of and leaking contaminants onto its lands when other viable alternatives exist. On this basis, SFN is not a willing host for the proposed ISD project.</p> |                                   |
| 41. | <a href="#">Peter Baumgartner</a><br>(Dec 11, 2017)       | General                       | <p>Given CNL’s announcement in October 2017 that it would remove intermediate-level waste (ILW) from the inventory of the proposed near surface disposal facility (NSDF), the commenters pose the following questions:</p> <ul style="list-style-type: none"> <li>• Where will the ILW be disposed since the communities around Kincardine rejected the inclusion of AECL’s LLW and ILW in OPG’s DGR during their 2005 survey (Strategic Council 2005)?</li> <li>• If CNL adheres to the IAEA’s, U.S. NRC’s and U.S. DOE’s suggestions for geological disposal of ILW and its immense siting, environmental and social impact assessments and infrastructure costs, then would it not be cost-effective to roll all of these proposals into one non-OPG facility including that for decommissioning and disposal of NRX, NRU, Gentilly 1 &amp; 2 and Point Lepreau? Or will the issues and work be repeated time after time for a separate disposal facility with each reactor core?</li> <li>• The National Legacy Liabilities Program (NLLP) was completely devoid of any future disposal plan as is CNL’s Integrated Waste Strategy (Anonymous 2017). By failing to actively plan for disposal, are we not planning to fail or at very least, drive up the cost for indefinite storage and maintenance?”</li> </ul>   |                                   |
| 42. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | General                       | <p>The commenters state: “<i>It has been recognized for many years now that the information pertaining to any human activity that has an environmental or radiation hazard associated with it be maintained. Simple decay calculations show that, although the current radionuclide inventory will decrease from the current ~1015 Bq (27,000 Ci) by two orders of magnitude over the first 3000 years, there will still be nearly 350 Ci left. Leaching of the two most soluble radioisotopes, Cl-36 and I-129, will have no</i></p>  |                                   |

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|     |   |                               | <p><i>appreciable impact on the radionuclide inventory as these two radioisotopes represent less than 1% of the isotopes present and both have long half-lives. The legacy of a proposed in-situ disposal of a fairly large contaminated structure (the WR-1 reactor system) will be much longer than recorded history and history has shown that no reliable records exist that are older than a few millennia. A considerable amount of research has been done to develop markers that will only last millennia but that will contain information that can be deciphered over that space of time (e.g., OECD-NEA 2014). Investigations have shown that warning signs, for example, at the Project Gnome test site in New Mexico, have been used for target practice and that warning signs at other sites have been deliberately defaced (Klein et al. 2016). If a robust system of retaining knowledge cannot be demonstrated, relying on temporary markers to identify a high radiation source at a shallow depth is simply not acceptable. Instead, the WR-1 reactor system needs to be kept in a safe state and under surveillance until such time that it can be removed and disposed of in a properly designed and constructed central repository at considerable depth in a geologically stable formation.”</i></p> <p>[Please refer to the commenter’s submission for the references quoted above].</p>  |                                   |
| 43. | <a href="#">SFN</a><br>(Jan 15, 2018)                             | General                       | <p>SFN indicates that CNL fails to meet the requirements of CNSC’s <i>Generic EIS Guidelines</i> (Section 4.2) with regards to providing an assessment of all potential environmental effects of the proposed ISD approach and of each alternative mean of carrying out the project. SFN explains that the four different alternatives should all have been subject to an environmental effects assessment; however, they were not. Instead, SFN indicates that the draft EIS provides only a subjective, qualitative evaluation of each of the proposed alternatives. For example, no dose estimates to workers, public, or non-human biota are provided for each of the alternatives. As a result, SFN indicates that it is impossible to determine the relative environmental impacts and benefits of each alternative. This undermines the credibility of the assessment process and selected alternative (i.e., ISD).</p> <p>SFN recommends that CNL conduct a revised alternatives assessment that quantitatively evaluates the relative impacts of all alternatives.</p>  |                                   |
| 44. | <a href="#">Manitoba Métis Federation (MMF)</a><br>(Dec 19, 2017) | General                       | <p>MMF expresses the concern that the draft EIS has not presented evidence of the dose rates to workers currently in the building when performing maintenance or monitoring, or what the doses to workers were when removing the fuel from the WR-1 or transporting the fuel to its current location, and what the doses will be when transporting the fuel off-site (or where the fuel will be moved to). MMF explains that this information is required to make informed decisions about the preferred options for the WR-1. If this information is available in supporting documents, MMF indicates it should be summarized here.</p> <p>MMF proposes that other alternatives, such as leaving the reactor in place until a permanent national depository is available, should be re-considered, and effects of these options on worker safety should be identified and considered. The MMF has expressed an interest in having Manitoba Métis Community (MMC) citizens build capacity and knowledge in the decommissioning activities, over the lifecycle of the project. As such, it is noted that the potential effects of various options for decommissioning on the workers is of interest and concern to the MMF.</p> <p>Additionally, the draft EIS (page 2-15) states: “While the complete removal of the facility will result in positive effects to the environment, the environmental liabilities associated with the removed wastes will be transferred to another offsite facility that has not been constructed yet. It is not yet known if this future facility will be within an industrial setting</p> |                                   |



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|     |  |                               | <p><i>or a green-field site which could result in additional adverse environmental effects (e.g., vegetation clearing required at a green-field site)."</i> Given that any potential off-site facility is unknown, and removal has not been sufficiently detailed or considered as an option for decommissioning throughout the draft EIS, MMF indicates it isn't clear whether removal of the WR-1 would result in adverse environmental effects that would be more significant than the current ISD plan. MMF notes that a future facility would presumably consist of more than removing vegetation from the site, however with such a location underdetermined, any potential effects are speculative and uncertain.</p> <p>MMF recommends that CNL consider and provide information about the effects on workers of alternative decommissioning options that do not involve ISD.</p> <p>[Please refer to page 33 of MMF's submission for more information].</p>  |                                   |
| 45. | <a href="#">MMF</a><br>(Dec 19, 2017)        | General                       | <p>MMF expresses the view that it appears the accelerated timeframe to decommission the WL site by 2024 is the key component for the plan to decommission the WR-1. MMF expresses the concern that this timeframe may not allow for consideration of other alternative decommissioning or disposal options that have less potential for contamination effects on the local environment, and correspondingly less potential impacts to the MMC and other members of the public. MMF notes that the ISD option is the only alternative identified by CNL which will allow the decommissioning of the site by 2024.</p> <p>MMF recommend that all parties involved - CNSC, AECL and CNL - should consider extending the timeframe for site decommissioning if it provides the best solution to WR-1 decommissioning.</p> <p>[Please refer to pages 32-33 of MMF's submission for more information].</p>  |                                   |
| 46. | <a href="#">CELA</a><br>(Dec 19, 2017)       | Section 2.5 (2-7 to 2-31)     | <p>The commenter requests that CNL:</p> <ul style="list-style-type: none"> <li>• Provide a description of the sustainability-based criteria that were used to evaluate and compare the alternative means as well as the preferred option.</li> <li>• Describe how the four evaluation criteria (safety, technical feasibility, economic feasibility, and environmental effects), CNL design principles, principles from external sources, and CNSC licensing requirements constitute relevant sustainability considerations.</li> <li>• Provide a comparative evaluation of the alternative means in terms of their relative contributions to sustainability.</li> <li>• Provide a description of the process by which consideration for sustainability was incorporated throughout the assessment and design of the preferred option.</li> <li>• Describe and demonstrate how trade-offs were considered in the comparative evaluation of alternative means.</li> <li>• Explain how short-term versus long-term impacts were weighted in the comparative evaluation of alternative means.</li> <li>• Describe how reversibility, retrievability, diversity, and redundancy were incorporated in a) the comparative evaluation of alternative means and b) the design and assessment of the preferred ISD option.</li> </ul> <p>[Please refer to pages 35-41 of the commenter's submission for more information].</p> |                                   |
| 47. | <a href="#">Northwatch</a><br>(Dec 20, 2017) | Section 2.5 (2-7 to 2-31)     | <p>The commenter argues that the alternatives assessment is incomplete given it does not include a "null/do nothing" alternative nor does it consider what the commenter characterizes as "Alternative # 5", which would be based on deferred decommissioning and on-site storage. The commenter explains that with no assurance that off-site storage</p>  |                                   |

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|     |  |                               | will become available at a future date – certainly not within the 30 year estimate referenced – Alternative #5 may prove to be the most realistic and the most protective.  |                                   |
| 48. | <a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017)                                  | Section 2.5 (2-7 to 2-31)     | <p>The commenters argue that, by dismantling and removing WR-1, another alternative option is that the materials can be stored and monitored until new technologies have evolved that will present a more permanent solution to dispose of radioactive material. The commenters indicate that the ISD approach forever negates the application of future decommissioning technologies.</p> <p>In addition, the commenters note that the WR-1 was originally intended to be a scientific test facility looking at, among other things, the viability of storing radioactive material underground in the Canadian Shield at the Underground Research Laboratory. It was determined that the rock of the Canadian Shield was unsuitable for the long term storage of radioactive material. The commenters pose the following question: why is CNL proposing a solution that seals the reactor in a man-made substance that they admit only has a 300 year life span?</p>   |                                   |
| 49. | <a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018) | Section 2.5 (2-7 to 2-31)     | <p>The commenter expresses the view that, CNL argues the only two options for decommissioning the WR-1 are total removal of all radioactive materials from the site and emplacement of those materials in an approved repository for LLW and ILW, or ISD. And that, as there is no such approved repository at the present time, ISD is the only alternative. However, the commenter argues that this ignores the fact that ISD requires making the reactor site itself into an approved repository for LLW and ILW.</p> <p>The commenter requests that CNL consider another alternative in the draft EIS, that is, the dismantling and careful packaging of all the radioactive waste from the WR-1, ensuring that each package is robust, transportable, and accompanied with a detailed inventory of the radioactive contents of each individual package.</p>  |                                   |
| 50. | <a href="#">SFN</a><br>(Jan 15, 2018)  | Section 2.5 (2-7 to 2-31)     | <p>SFN expresses the concern that the alternatives assessment places excessive emphasis on occupational risks and requests that CNL address the following issues in a multi-party reconsideration of alternatives:</p> <ul style="list-style-type: none"> <li>• The assessment methodology places excessive emphasis on the potential need for mitigation of occupational risks, even though precedent indicates all alternatives can be implemented safely.</li> <li>• To illustrate, the majority of “C” circuit was safely removed and placed in on-site interim storage during the first phase of WR-1 decommissioning. The successful decommissioning of “C” circuit serves as evidence that the remaining WR-1 systems can be safely dismantled and removed for disposal elsewhere. Further, hundreds of other sites with radiological and conventional hazards comparable to the WR-1 facility have been decommissioned safely.</li> <li>• The conclusion that the occupational risks of decommissioning can be effectively mitigated is supported by multiple statements in the draft EIS (e.g., Section 12.9, page 12-14).</li> <li>• CNL’s prior decision to implement off-site disposal indicates that the occupational risks associated with that approach were deemed manageable and acceptable. Nonetheless, CNL repeatedly asserts that the partial reduction of those risks was a critically important factor in the selection of ISD as the preferred alternative. These assertions are not accompanied by an analysis that quantifies the residual occupational risks (i.e., after mitigation) associated with each alternative. Without such analysis, there is insufficient evidence to support CNL’s conclusion that the residual occupational risks of ISD are materially lower than other alternatives.</li> <li>• SFN notes that long-lived radioactivity represents a permanent hazard to the</li> </ul> |                                   |

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|     |                                       |                               | environment, as compared to the finite duration of occupational exposures. Within this context, CNL's unilateral decision to place a heavy emphasis on minimizing occupational risks resulted in less emphasis being placed on other critically important topics such as the long-term protection of the environment and public well-being. SFN questions the appropriateness of giving priority to the elimination of temporary, manageable and fully regulated/controlled risks to informed workers at the expense of long-term, uncontrolled exposures to the environment and public.   |  |
| 51. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 2.5 (2-7 to 2-31)     | SFN expresses the concern that the alternatives assessment places excessive emphasis on transportation risks and requests that CNL address the following issues in a multi-party reconsideration of alternatives: <ul style="list-style-type: none"> <li>• The draft EIS concluded that that the radiological risks associated with off-site transportation of WR-1 wastes would not be significant. Specifically, Section 2.5.1 states: "...the risk of public exposure during transport is extremely low."</li> <li>• Nonetheless, the draft EIS also states: "...the transportation of waste may result in increased degradation of the existing transportation infrastructure." CNL deemed the degradation of roads to be sufficiently important that the alternatives assessment included a criterion preferring approaches that would involve less transportation.</li> <li>• CNL has not provided any evidence to support the specious argument that the relatively small quantities of waste generated during the decommissioning of WR-1 would have a material adverse impact on the regional road network.</li> <li>• In the absence of radiological risks and evidence that waste transportation would cause material impacts to the existing transportation infrastructure, it is inappropriate that the alternatives assessment penalized alternatives that involve off-site disposal. Doing so skewed the selection process towards the ISD alternative.</li> </ul>  |  |
| 52. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 2.5 (2-7 to 2-31)     | SFN expresses the concern that the alternatives assessment places excessive emphasis on potential mitigation requirements and requests that CNL address the following issues in a multi-party reconsideration of alternatives: <ul style="list-style-type: none"> <li>• The potential need for mitigation was used as a criterion in the alternatives assessment. Specifically, the draft EIS states that the alternatives assessment was based on the following: "Alternatives that minimize the need for mitigation the most were considered most favourable, while alternatives that minimize the need for mitigation the least were considered least favourable" (Section 2.5.1, page 2-10).</li> <li>• Using the potential need for mitigation as an assessment criterion provided limited useful information. It also skewed the assessment towards approaches such as ISD that are fundamentally minimalist (i.e., alternatives that involve the least effort/intervention and cost). This was done at the expense of alternatives that are otherwise superior.</li> <li>• To illustrate, the draft EIS concluded that occupational exposures and transportation risks associated with all of the alternatives can be effectively controlled and mitigated to acceptable levels. Nonetheless, any alternatives requiring such mitigation were classified as "least favourable".</li> <li>• Basing the assessment on the potential need for mitigation is inappropriate; penalizing an otherwise superior alternative simply because it requires mitigation to reduce potential impacts to acceptable levels is inconsistent with standard environmental impact assessment practice. Instead, the assessment should be based on the nature of any residual risks after any mitigation has been implemented.</li> </ul> |  |
| 53. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 2.5 (2-7 to 2-31)     | SFN expresses the concern that the alternatives assessment places inappropriate emphasis on impact duration and requests that CNL address the following issues in a multi-party reconsideration of alternatives:   |  |

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|   |                                       |                               | <ul style="list-style-type: none"> <li>Impact duration is typically used as a key determinant when evaluating impact significance. All other factors being equal, an impact that lasts longer is typically classified as being more significant.</li> <li>Potential impacts from the proposed undertaking range from short duration impacts during the active remediation phase to long-lived impacts that will persist for thousands of years after the project has been implemented. The alternatives assessment presented in the draft EIS did not consider the duration of potential impacts. As a result, the assessment failed to acknowledge impacts that are of lower magnitude but longer durations. Again, this approach skewed the assessment towards alternatives such as ISD.</li> </ul>  |                                   |
| <b>Alternatives Means of Carrying out the Project - Evaluation Approach</b> |                                       |                               |  |                                   |
| 54.   | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 2.5.1 (2-7 to 2-12)   | SFN indicates that they were not consulted on the design of the alternatives assessment methodology (e.g., criteria, weighting, etc.), nor were they allowed to participate in the assessment itself. As a result, SFN expresses the position that the draft EIS is premature and provides the following comments: <ul style="list-style-type: none"> <li>A variety of techniques are available to ensure that a diverse range of criteria and values are effectively integrated into complex decision-making processes. For example, Multiple Accounts Analysis (MAA) techniques are used extensively within the private sector to inform defensible mine closure decisions. The technique has also been used by Indigenous and Northern Affairs Canada and other federal departments operating under the Federal Contaminated Sites Action Plan.</li> <li>When implemented through a collaborative process with interested parties, MAA can serve as an effective tool to gain consensus on the preferred approach. Unfortunately, the process used to select the ISD alternative falls far short of the expectations of MAA or similar approaches.</li> <li>Within the draft EIS, CNL presented a high-level, conceptual assessment of alternatives to the project. The qualitative assessment was used to select the preferred ISD approach but insufficient information was presented to justify the selection. While each of the assessed alternatives were noted to have qualitative advantages relative to the other alternatives, it is impossible to discern the rationale for the final decision to select ISD as the preferred alternative. In the absence of a systematic, traceable and more rigorous assessment of alternatives, the decision to proceed with the ISD alternative cannot be justified.</li> </ul> |                                   |
| 55.   | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 2.5.1 (2-7 to 2-12)   | SFN indicates that Sagkeeng were not involved in the identification of the criteria that were used to conduct the assessment and CNL's failure to incorporate the value systems of the First Nation into the criteria that were used to select the preferred alternative constitutes a fatal flaw of the process. SFN indicates that an additional fatal flaw of the alternatives assessment is the use of criteria that are equally weighted, without giving recognition to their relative importance. SFN explains this is a gross over-simplification that skewed the selection process towards alternatives that perform well in areas that are arguably less important. <p>SFN illustrates these points with the following example: the ISD approach performed poorly relative to all other alternatives on the "protection of human and ecological health" which is clearly the primary driver for implementing the proposed project. Despite this, ISD was selected as the preferred alternative, reportedly because the approach has advantages in other areas (e.g., lower occupational risks and costs).</p> <p>Without being given appropriate opportunities to contribute to key aspects of the alternatives assessment (e.g., selection of criteria and weighting), SFN express the</p>   |                                   |

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|     |  |                               | position that they cannot provide Free, Prior and Informed Consent (as required under the United Nations Declaration of the Rights of Indigenous Peoples) to the conclusions reached by that assessment, including the selection of ISD as the preferred alternative.<br><br>SFN recommends that CNL's alternatives assessment be revised to incorporate criteria and weightings that are selected in collaboration with SFN and other interested/affected/priority rights holding parties.  |                                   |
| 56. | <a href="#">J. R. Walker</a><br>(Dec 8, 2017)<br><br><a href="#">Lawrence H. Johnson</a><br>(Dec 18, 2017) | Section 2.5.1 (2-7 to 2-12)   | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>The commenters express the position that the draft EIS lacks a robust alternatives assessment that demonstrates why the ISD approach is preferred in comparison to the other alternatives. The commenters indicate that the subjective, qualitative evaluation approach is unsatisfactory as a quantitative occupational safety and risk assessment (including radiological aspects) has not been performed.</p> <p>For example, no dose estimates to workers, public, or non-human biota are provided for each of the alternative means. Similarly, no quantitative evaluation is provided on the non-radiological impact to humans or non-human biota for each of the alternative means. As such, Mr. Walker argues that CNL has failed to adequately address the requirements with respect to CEAA 2012.</p> <p>The draft EIS states that the risk would be lower for the ISD approach because the risks to workers (and the public) of full decommissioning, packaging and shipment of the wastes would be higher than for the proposed approach. Mr. Johnson notes that this may or may not be true, as no quantitative risk analysis is presented. Given that a number of reactors have been successfully and safely decommissioned in other countries and the wastes packaged for disposal and that shipment of radioactive wastes has an impressive safety record, the commenter indicates it is also possible that the argument for ISD based on relative risk is unsound.</p> <p>The commenters argue that to provide credibility to their choice of preferred means (entombment), CNL should provide a quantitative assessment of the impact of each alternative means on VCs, including human health. The commenters indicate that without a quantitative analysis of risks it is not possible to establish the preferred approach.</p> |                                   |
| 57. | <a href="#">Anne Lindsey</a><br>(Dec 19, 2017)   | Section 2.5.1 (2-7 to 2-12)   | <p>The commenter indicates that the methodology for determining the “preferred option” utilizes circular logic in that some of the evaluation criteria pre-determine the conclusion of “best” alternative. For example: “does the alternative minimize the transport of hazardous waste”? and “does the alternative require offsite disposal of wastes”?</p> <p>The draft EIS document states that the currently licensed decommissioning option of “complete removal of the facility is considered to be the safest long-term option with respect to the public near the WL site, compared to an ISD alternative”(Section 2.5.3.1, page 2-14). In addition, “compared to an ISD alternative, complete removal also eliminates the potential risk associated with groundwater leaching through the WR-1 ISD structure that could migrate to surface water and then adversely affect human health and the ecological health of terrestrial and aquatic ecosystems” (Section 2.5.3.2, page 2-14).</p> <p>Taking these statements into consideration, the commenter argues that since groundwater contamination is the major potential source of various risk pathways, eliminating risk to groundwater contamination is the strongest possible option for safety. The commenter</p>  |                                   |

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|     |  |                               | notes that although risk to workers is an important consideration, reactor dismantling is common practice around the world with well-established protocols to protect worker health and safety.  |                                   |
| 58. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 2.5.1 (2-7 to 2-12)   | This section of the draft EIS states: <i>“The purpose of this section is to present the alternative means of decommissioning the WR-1 Building. The consideration of alternatives is presented for each category in three steps:</i> <ul style="list-style-type: none"> <li>• <i>identification of technical and economically feasible alternative means;</i></li> <li>• <i>identification of effects on valued components (VCs); and</i></li> <li>• <i>application of the defined criteria and the completion of a comparative evaluation to identify the preferred or most favourable option.”</i></li> </ul> The commenter poses the following question: how does one identify the “... effects on valued components” when those components that are identified in this section do not match those in Section 6.0 of the draft EIS?<br><br>The commenter notes that the VCs listed in Table 2.5.1-2 do not match those identified in Section 6.1 of the draft EIS. The commenter expresses the view that CNL cannot change VCs chosen to evaluate the alternatives, from those chosen to assess their preferred option.<br><br>The commenter requests that CNL ensure the evaluation criteria for the alternatives assessment are consistently applied. |                                   |
| 59. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Table 2.5.1-2 (2-9)           | The commenter notes that “technical feasibility” and “economic feasibility”, are part of the definition of “alternative means”. The commenter provides the definition of “alternative means” from the CEAA document, <i>Operational Policy Statement: Addressing the “Purpose of” and “Alternative Means” under the Canadian Environmental Assessment Act, 2012</i> , as follows:<br><br><i>“Alternative means” are the various technical and economically feasible ways under consideration by CNL that would allow a designated project to be carried out”.</i><br><br>The commenter indicates that including these as evaluation criteria is inappropriate given they are part of the definition of “alternative means” and that any alternative means that are not technically or economically feasible would be eliminated from consideration. The commenter further notes that these two criteria are not environmental factors.<br><br>The commenter requests that CNL revise their evaluation methodology and remove these two criteria.   |                                   |
| 60. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 2.5.1 (2-9)           | The commenter expresses the view that the “reason narrative approach” used by CNL in the alternatives assessment is not an acceptable evaluation approach if one can actually derive quantitative (or semi-quantitative) values, which the commenter argues is possible in this case.<br><br>The commenter notes that although any derived value will be subject to errors, as long as the assumptions used to calculate that value are provided, and the calculations are similar, the resulting estimates can be directly compared. The commenter argues the narrative approach is not appropriate given it is entirely subjective and subject to bias.<br><br>The commenter also expresses the position that even if CNL does not wish to provide an estimated risk value, it is critical that all stakeholders are involved in determining the   |                                   |

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|  |  |  | <p>criteria against which to evaluate the alternatives. The commenter argues this is important because the long-term future of Indigenous groups, local and regional communities is the major concern. The commenter notes the evaluation cannot be controlled by CNL's short-term considerations.</p> <p>The commenter requests that CNL provide information as to who was involved in this evaluation approach, and ensure all stakeholders are included in determining the evaluation criteria and their comparative weightings, and conducting the evaluation of alternatives.</p>   |                                   |
| 61.  | <a href="#">William Turner</a><br>(Dec 18, 2017)   | Section 2.5.1 (2-9 to 2-11)                              | <p>The commenter notes that the evaluation criteria for “worker safety” (e.g., radiological hazards during decommissioning, non-radiological hazards during decommissioning, general worker safety during decommissioning, and waste handling) are short-term and can be addressed through existing corporate procedures and processes.</p> <p>The commenter notes that only one of the evaluation criteria for “public safety”, that is, “risk to public at WL site during post-closure” addresses the long-term safety of the public. This criterion will require the project to address the uniqueness of the proposed undertaking and its timeframe which exceeds 300 years.</p> <p>The commenter requests that CNL evaluate their proposed undertaking and ensure that the long-term safety is given much higher priority or weighting than any short-term issues.</p>  |                                   |
| 62.  | <a href="#">MMF</a><br>(Dec 19, 2017)  | Section 2.5.1 (2-11)                                     | <p>This section of the draft EIS indicates that “traditional, cultural and heritage importance to Aboriginal peoples” was considered in the selection of VCs, yet no traditional knowledge (TK) or land use by the MMC has been included in the draft EIS. MMF notes that the MMC has longstanding use of the lands and waters in the vicinity of the project that continue to be of ongoing importance to the MMC in exercising their constitutionally protected harvesting and other rights. These rights have the potential to be impacted by the decommissioning activities and yet have not been considered by CNL, nor have accommodation or mitigation measures been discussed with MMF.</p> <p>It is recommended that a Traditional Knowledge and Land Use Study (TKLUS) with the MMF be undertaken to determine and understand Métis-specific land use and interests in the project study area. MMF also indicates that further discussions of accommodation and / or mitigation measures may be needed.</p> <p>[Please refer to page 25 of MMF's submission for more information].</p> |                                   |
| <b>Alternatives Means of Carrying out the Project - Alternative #1</b> |  |  |  |                                   |
| 63.  | <a href="#">Michael Stephens</a><br>(Dec 15, 2017)<br><br><a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018) | Section 2.5.2.1 (2-14)<br>Section 2.5.2.2 (2-14 to 2-15) | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>Mr. Stephens indicates that the nominal purpose of the project is to decommission the WR-1 building and argues that ISD does not achieve this goal. Rather, the commenter notes that ISD converts a structure that is currently maintained in a safe, sustainable storage state into a near-surface waste repository of ILW in a structure that was not designed for the purpose, and in a location that was not chosen for its suitability for disposal.</p> <p>CCNR indicates that the proposed ISD of the WR-1 is different from the previously approved plans to remove all radioactive materials from the site and return the site to</p>  |                                   |

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|-----|--|-------------------------------|--|-----------------------------------|
|     |  |                               | <p>“green field” status. CCNR argues that the proposal is now in effect a proposal to create a permanent repository for radioactive materials created during the fission process, including fission products (such as Sr-90, I-129 and Cs-137), transuranic actinides (such as neptunium, plutonium and americium), and activation products (like Co-60, Fe-59 and Ni-63).</p> <p>Mr. Stephens argues that the three long-term outcomes as described in Sections 2.5.2.1 and 2.5.2.2 of the draft EIS (i.e., public safety, environmental and social) which favour complete removal of the facility (Alternative #1) should be heavily weighted in deciding the choice of preferred alternative.</p> <p>[Please refer to pages 2-3 of Mr. Stephen’s submission for more information].</p>  |                                   |
| 64. | <a href="#">Northwatch</a><br>(Dec 20, 2017) | Section 2.5.2.2 (2-14)        | <p>This section of the draft EIS states: <i>“After decommissioning is complete, residual radiation may still be present, but it is expected to be of very low levels (below the clearance and release levels and the soil cleanup criteria) that will not pose a risk to the natural environment at the WL site in the post-closure phase (i.e., all radioactive and contaminated materials have been removed and disposed of off-site).”</i></p> <p>The commenter notes that this statement suggests that CNL has knowledge of clearance and release levels and the soil cleanup criteria as they will apply to this project. The commenter requests that CNL provide a statement of release levels and the soil cleanup criteria as they will apply to this project.</p>   |                                   |
| 65. | <a href="#">Northwatch</a><br>(Dec 20, 2017) | Section 2.5.2.3 (2-15)        | <p>This section of the draft EIS states: <i>“There are numerous examples of complete decommissioning projects of nuclear reactors in the U.S., United Kingdom, Japan, France, and Germany. Canada has not performed a reactor dismantling project yet, other than simple SLOWPOKE reactors. Lessons learned from previous decommissioning work would be used in preparing and executing this decommissioning plan, including the World Association of Nuclear Operators, Institute of Nuclear Power Operations, and CNL.”</i></p> <p>The commenter notes that this statement suggests that international experience will be applied in preparing and executing a decommissioning plan for the WR-1. The commenter requests that CNL provide a clear and detailed explanation as to how decommissioning experience in each of the listed countries has been – and will be – applied to preparing and executing a decommissioning plan for the WR-1.</p> |                                   |
| 66. | <a href="#">Northwatch</a><br>(Dec 20, 2017) | Section 2.5.2.3 (2-15)        | <p>This section of the draft EIS (page 2-15) states: <i>“However, it is assumed that an approved waste management facility will exist at the time of decommissioning (i.e., in 30 years), and that it will have the capacity to accept the wastes to be generated by the Project.”</i></p> <p>The commenter notes that the draft EIS makes numerous statements expressing an expectation that an approved waste management facility will be in place in approximately 30 years. The commenter requests that CNL provide additional details on the type of waste management facility that is referred to (e.g., waste type, storage or disposal, private or public ownership).</p>  |                                   |



| Alternatives Means of Carrying out the Project - Alternative #2                |   |                        |   |  |
|--|---|------------------------|---|--|
| 67.  | <a href="#">MMF</a><br>(Dec 19, 2017)   | Section 2.5.3.2 (2-18) | <p>MMF expresses the position that the complete removal of the facility (Alternative #2) would improve the perceived suitability of the site for future socio-economic MMC interests because long-lived radioactive material will no longer be present within the former WR-1 building footprint. In addition, the complete removal may allow this portion of the site to be released for unrestricted use which would allow safe use of the land for traditional land use activities and interests by the MMC such as hunting, berry picking, and medicinal plant gathering.</p> <p>MMF expresses the concerns that CNL is choosing the ISD alternative (Alternative #3) due to estimated project cost differences (in excess of \$100 M difference) rather than selecting a decommissioning alternative that is ecologically preferred or least impactful on the rights of Indigenous communities or best aligned with the long-term use and sustainability of the area for the MMC.</p> <p>MMF recommends that further meaningful consultation and engagement with the MMC must occur, to identify their interest and preference in the complete removal of the facility, as outlined in the CSR and as identified in Alternative #2. This consultation and engagement should occur through the MMF and in accordance with MMF Resolution No. 8.</p> <p>[Please refer to page 26 of MMF's submission for more information].</p>  |  |
| Alternatives Means of Carrying out the Project - Alternative #3 (ISD Approach) |   |                        |   |  |
| 68.  | <a href="#">Eva Pip</a><br>(Nov 22, 2017)<br><br><a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)<br><br><a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017)<br><br><a href="#">William Turner</a><br>(Dec 18, 2017)<br><br><a href="#">Anne Lindsey</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018) | General                | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>The commenters express the position that the proposed WR-1 ISD structure is not the most suitable option to contain the waste and prevent environmental effects including impacts to water quality and subsequent harm to the public.</p> <p>The following points are the reasons provided by the commenters to support this position:</p> <ul style="list-style-type: none"> <li>• ISD places the burden of the problem on future generations and residents of the area, while continuing to present potential risks for its projected infinite lifetime;</li> <li>• The initial promise to residents, for the complete dismantlement and removal, is not being kept;</li> <li>• ISD may be the cheaper and quicker solution, but it is not the safest solution nor is it in line with accepted practice worldwide;</li> <li>• Use of a grout that is just being developed which has never been tested and will not outlast the radioactivity it is to contain;</li> <li>• ISD requires too many assumptions, resulting in too many inconsistencies and several outright contradictions;</li> <li>• To abandon these wastes beside major bodies of water is not a responsible approach to radioactive waste management;</li> <li>• There is no guarantee (in fact the guarantee is the opposite) that there will be no leakage or capsule and grout failure for thousands of years, which are the half-lifetimes of some of the isotopes in question;</li> <li>• The statement that ISD is a proven technology remains an unsubstantiated claim – the fact that it has been utilized in 3 instances in the U.S., does not make this a proven technology given the enormously long time periods of potential radioactive contamination; and,</li> <li>• “Entombment” is not recognized by the IAEA as best practice when dealing with long-lived radionuclides.</li> </ul> |  |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project

|     |   |                              |  |  |
|-----|---|------------------------------|--|--|
| 69. | <a href="#">SFN</a><br>(Jan 15, 2018)   | General                      | <p>SFN expresses their concerns with respect to the manner and rationale by which CNL chose the ISD approach. SFN notes that there are numerous flaws with the approach used to select the preferred ISD alternative. Among the most significant gaps:</p> <ul style="list-style-type: none"> <li>• Sagkeeng was not given an opportunity to participate in the process;</li> <li>• The assessment methodology was skewed towards the selection of the ISD alternative. For example, excessive emphasis was placed on the avoidance of occupational and transportation risks that can be effectively mitigated, while at the same time giving insufficient attention to long-term impacts to people and the environment; and,</li> <li>• CNL did not adhere to Section 4.2 of CNSC's <i>Generic EIS Guidelines</i>, which requires a full and proper assessment of effects of all alternative means to undertake the project. Only an inadequate, primarily qualitative, assessment was undertaken of the other three alternatives considered.</li> </ul>  |  |
| 70. | <a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017)<br><br><a href="#">Anne Lindsey</a><br>(Dec 19, 2017) | Section 2.5.4 (2-20 to 2-23) | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>The commenters indicate that the ISD of reactors in North America is the least used method. The commenters explain that the CNL website lists 3 sites in the U.S. that have been <i>in situ</i> decommissioned. The commenters express the position that CNL has failed to share with the public that another 16 nuclear reactor sites in the U.S. have been dismantled.</p> <p>The commenters refer to the World Nuclear Association (WNA)'s report on September 8, 2017 that 17 power reactors have been fully dismantled worldwide, over 50 are currently being dismantled, over 50 are in "Safstor" (a deferred dismantling plan), and only 3 have been entombed (in 2 of those instances, the major sources of contamination were actually removed prior to grouting and entombment). In addition, the WNA states that "<i>proven techniques and equipment are available to dismantle nuclear facilities safely and these have now been well demonstrated in several parts of the world</i>" (Decommissioning Nuclear Facilities, Sept. 8, 2017, <a href="http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-wastes/decommissioning-nuclear-facilities.aspx">http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-wastes/decommissioning-nuclear-facilities.aspx</a>).</p> <p>The commenters pose the following question: if ISD is not the preferred reactor decommissioning option in the U.S. or in the rest of the world, why is it to be the preferred option for Manitoba?</p> |  |
| 71. | <a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018)                      | Section 2.5.4 (2-20 to 2-23) | <p>The commenter expresses the observation that "<i>CNL is inclined to misrepresent the acceptability of the waste management approaches that it is advocating here in Canada, as these approaches are not at all the "best practice" models that are claimed by CNL.</i>"</p> <p>The commenter indicates that it is not appropriate to compare the ISD WR-1 approach with the U.S. waste management approaches of military sites. The only instances of ISD of small nuclear reactors that the commenter is aware of are located on military sites such as the Hanford Reservation in Washington DC, the Savannah River Site in South Carolina, and the Idaho National Laboratory, all of them highly secure sites that are not freely accessible to the general public, all maintained and policed under the jurisdiction of the U.S. DOE.</p> <p>The commenter requests that CNL provide a detailed description of all non-military examples of ISD of nuclear reactors. In addition, the commenter requests that CNL provide background on all nuclear decommissioning and radioactive waste management projects undertaken alone or in partnership with others over the last fifteen years.</p>   |  |
| 72. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)   | Section 2.5.4 (2-20 to 2-23) | The commenters note that the draft EIS documents in Tables 6.4.2-8 and 6.4.2-13 that the preferred ISD alternative will impact the groundwater surrounding the WR-1 site.  |  |

|     |                                       |                              |  |  |
|-----|---------------------------------------|------------------------------|--|--|
|     |                                       |                              | <p>Although the draft EIS makes repeated statements (e.g., Section 3.4.2) that radioactive contamination will be contained such that risk to the public and environment is kept ALARA, the commenters express the position that the ISD groundwater will not meet drinking water standards / guidelines during the period of institutional control and for thousands of years into the future.</p> <p>The commenters indicate that the contaminants of concern are Cadmium, HB-40 (the WR-1 organic terphenyl reactor coolant), Lead, Xylene, Carbon-14 and Tritium. The commenters also state that Polonium-210, a particularly lethal radionuclide when ingested, does not exceed but approaches approximately 50% of the drinking water guideline. The commenters express the concern that this is disconcerting given the uncertainty associated with the accuracy and representativeness of the groundwater loadings.</p> <p>The commenters argue that the approach used by the proposed ISD is contrary to ALARA for the WR-1 environment and nearby public.</p>   |  |
| 73. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 2.5.4 (2-20 to 2-23) | <p>SFN indicates that there is a lack of alignment with the hazard duration and the design life of the proposed ISD and provides the following comments:</p> <ul style="list-style-type: none"> <li>• The 300-year design life of the proposed ISD approach is not aligned with the duration of the hazard, which exceeds many thousands of years. CNL acknowledges that, over the long-term, grouting with cementitious materials will be relatively ineffective in preventing groundwater flow through the WR-1 structure (Section.6.3.2 of the draft EIS).</li> <li>• Specifically, the draft EIS suggests that, with time, virtually all of the radionuclides from the WR-1 structure will be dispersed in the receiving environment. This “<i>solution to pollution by dilution</i>” approach is reported to reduce potential risks to acceptable levels. SFN cannot accept an approach that involves hazardous materials being dispersed on its lands, regardless of when it happens.</li> <li>• The proposed ISD approach could not withstand the impacts of glaciation; under such a circumstance it is likely that the entire inventory of radioactivity would be widely dispersed. CNL’s position that this would result in radiological doses below risk thresholds is credible but may not prove accurate. The timeline for such an event is many thousand years in the future. The grout will have fully failed prior to this point and prolonged release of residual radioactivity will have already started.</li> </ul> <p>The current proposal will ultimately result in the dispersal of radioactivity on SFN’s traditional lands. SFN expresses the position that this is fundamentally unacceptable, as Sagkeeng has identified in the past and in the minimal amount of consultation record for this proposed project. SFN recommends that CNL reconsider viable alternatives to address this issue.</p> |  |
| 74. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 2.5.4 (2-20 to 2-23) | <p>Fundamental amongst Sagkeeng’s concerns with CNL’s ISD proposal is that the plan doesn’t solve the problem of radioactivity but rather passes the burden to future generations. SFN provides the following comments:</p> <ul style="list-style-type: none"> <li>• In an attempt to address current liabilities in an expeditious and inexpensive way, CNL plans to pass the burden of the radioactive wastes to future generations of the SFN and the broader public.</li> <li>• SFN cultural laws and norms and stewardship values on the landscape are in vehement opposition to the “future loading” of impacts onto the generations to follow. SFN has survived in this landscape by taking a precautionary, forward looking approach to managing change; the CNL proposal is contrary to SFN values.</li> <li>• Based on the availability of other more permanent and effective approaches (including the previously approved proposal), the SFN cannot accept the ISD concept.</li> </ul>   |  |

|     |   |                              |   |  |
|-----|---|------------------------------|---|--|
|     |   |                              | <p>SFN states: “<i>The fact that the duration of the risk far outlasts the planned design life of ISD is absolutely unacceptable. It is anathema to Sagkeeng that the risk and impact of these decisions will be forced onto future generations. Sagkeeng lived and exercised its traditional practices in the area around the Whiteshell Lab long before the lab was there, and will continue to do so long after CNL is gone. It is Sagkeeng that bears the risk. Moreover, unlike other nuclear waste disposal solutions in Canada, no rigorous siting exercise was conducted to determine the best, and least impacting, site for the facility. The Whiteshell Lab was never built for long-term storage of nuclear waste, and rights-holders including Sagkeeng were never consulted about the possibility of long-term storage of radioactive materials.</i>”</p> <p>SFN expresses the position that this is fundamentally unacceptable because it violates cultural laws and norms. SFN recommends that CNL reconsider viable alternatives to address this issue.</p>  |  |
| 75. | <p><a href="#">SFN</a><br/>(Jan 15, 2018)</p> | Section 2.5.4 (2-20 to 2-23) | <p>SFN expresses the view that the ISD proposal’s requirements for perpetual institutional control are unacceptable and provides the following comments:</p> <ul style="list-style-type: none"> <li>• The proposed license amendment for shallow <i>in situ</i> disposal of WR-1 is likely to require an indefinite period of institutional care to monitor and maintain the infrastructure necessary to prevent potential impacts. Active institutional controls will continue after the stated 300-year institutional control period and will be maintained in perpetuity. These perpetual institutional controls would include, in general, physical barriers/fencing, signage, and other actions to prevent potential exposures to hazards.</li> <li>• Relying on perpetual active institutional controls is inconsistent with Canadian and international guidance. For instance, the CNSC has stated “<i>Long term management options should not rely on long term institutional controls as a safety feature unless they are absolutely necessary</i>” (CNSC 2006). In the current situation, institutional controls will be required indefinitely after closure solely because CNL is proposing to leave hazardous materials <i>in situ</i>.</li> <li>• SFN draws attention to the fact that active institutional controls cannot realistically be expected to remain in place in perpetuity. In this regard, SFN asserts that the decommissioned site must be sufficiently protective of people and the environment, even without long-term institutional control. As a project that involves the disposal of long-lived radioactive wastes, the ISD alternative cannot possibly meet this expectation.</li> </ul> <p>SFN indicates that perpetual institutional controls will ultimately fail, thereby resulting in environmental impacts that are fundamentally unacceptable to Sagkeeng. SFN recommends that CNL reconsider viable alternatives to address this issue.</p> <p>[Please refer to SFN’s submission for the reference quoted above].</p> |  |
| 76. | <p><a href="#">SFN</a><br/>(Jan 15, 2018)</p> | Section 2.5.4 (2-20 to 2-23) | <p>SFN expresses the concern that the ISD approach is not amenable to “reversibility” if in the future there is a desire/need to implement a different remedial approach at the site. SFN notes that this could be triggered by an unplanned release (e.g., leakage from the reactor core) and/or a change in public policy / regulation. Removing the radioactive waste from the grouted monolith would become a significant challenge.</p> <p>SFN recommends that CNL provide a detailed description of the approaches that would need to be taken to mitigate any ISD failures that might occur in the future and/or implement any alternate remedial approaches after WR-1 has been grouted.</p>  |  |

| Alternatives Means of Carrying out the Project - Alternative #4         |   |  |   |
|---|---|--|---|
| 77.   | <a href="#">Lawrence H. Johnson</a><br>(Dec 18, 2017)     | Section 2.5.5 (2-24 to 2-27)                   | <p>It is the commenter's understanding that the wastes with the nuclides and inventories in question would qualify as ILW which would normally require deep geological disposal. The commenter notes that the ILW category seems to apply to most of the highly neutron-activated core material and that it is likely that with the removal of such material, the remaining structure could qualify as a LLW site.</p> <p>As a result, the commenter argues that some version of Alternative #4 does not seem unreasonable as it would likely be compatible with national and international standards. Nonetheless, the commenter notes that this alternative is not put forward as the preferred approach, and indicates that it is not clear if it would be fully acceptable without a revised EIS based on this approach.</p>  |
| Alternatives Means of Carrying out the Project - Summary and Conclusion |   |  |   |
| 78.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Table 2.6.3-1 (2-31)<br>Section 3.5.4.2 (3-38) | <p>With respect to Table 2.6.3-1, a summary of estimated project costs, the commenters express the view that the estimated cost (\$7M) for the 100-year monitoring program proposed for the WR-1 ISD is quite low and likely insufficient for a very confident or robust monitoring, reporting and review program. The commenter notes that escalation should also be considered over the timeframes involved.</p> <p>The commenters also note that the proposed 100-year monitoring program is different from the 200-year institutional control period in the 2001 CSR for the complete dismantlement of the WR-1.</p> <p>In addition, the commenters indicate that for the ISD scenarios as opposed to the "complete removal" scenarios, CNL's grant in lieu (GIL) of taxes to the LGD of Pinawa are likely to be higher for longer times because fewer lands would meet release criteria over the period of institutional control (estimated at 300 years).</p> <p>The commenters argue that if monitoring costs and GIL of taxes were more accurately presented for the proposed ISD of WR-1, the apparent cost advantage of the ISD would be substantially reduced or eliminated.</p>   |
| 79.   | <a href="#">MMF</a><br>(Dec 19, 2017)                     | Table 2.6.3-1 (2-31)                           | <p>With respect to Table 2.6.3-1, a summary of estimated project costs, the preferred option of ISD has been identified by CNL as the cheapest and quickest method to decommission the WR-1, but MMF notes there is no explanation of individual costs. For example, monitoring of Alternative #1 is stated to be \$1M, but \$7M for Alternative #3; however it is unclear what the units are. MMF indicates that Alternative #3 has no surveillance after 2024 and no further details are provided. Presumably monitoring will continue on the site after 2024 as part of the site license and because of the legacy contamination in the lagoon, LLW Waste Management Area (WMA), cesium ditch, etc., however, MMF explains it is not clear whether the cost estimates include this ongoing monitoring.</p> <p>MMF recommends that more complete costing details to be provided, including identifying individual costs and whether ongoing monitoring has been included. In addition, there needs to be greater transparency about allocated costs. Also, estimates of how costs are allocated 100 to 300 years in the future should be described, along with an explanation of how future costs are being estimated for the next 100 years <b>[Recommendation 4.3.8a]</b>.</p> <p>MMF recommends that the cost estimates be audited and validated by an independent source <b>[Recommendation 4.3.8b]</b>.</p> <p>[Please refer to pages 33-34 of MMF's submission for more information].</p> |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 In Situ Decommissioning Project

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| 80.   | <a href="#">Michael Stephens</a><br>(Dec 15, 2017)        | Table 2.7-1 (2-32 to 2-36) | <p>The commenter explains that the rankings listed in Table 2.7-1 were carried out by considering whether each alternative had a high, moderate, or low likelihood of success. The commenter expresses the position that the “narrative approach” used was unquantified, highly subjective, and clearly biased towards ISD and provides the following arguments:</p> <ul style="list-style-type: none"> <li>• The evaluation criteria were unjustifiably given equal weighting: Worker safety can be controlled for all the alternative mean options, but the residual level of risk to the public left by the different alternatives should be given greater weight in the ranking because the situation is then no longer under the control of CNL.</li> <li>• Under “Social” criteria, no mention is made of the greater number of short-term local jobs that will be created by complete decommissioning rather than ISD. This would be of benefit to the local population and would give a greater favorable ranking to the complete decommissioning options. Why are short-term jobs not mentioned?</li> <li>• Under the “Social” criteria, Alternative #3, the ISD option, is credited with the presence of a WL Community Regeneration Partnership to support future economic and community development. Details are provided in Section 5.2.1.3. Why is this initiative not mentioned and credited for Alternatives #1 and #2 as well? It would be just as important to and welcomed by the local population.</li> <li>• Under the “Technical Feasibility” criteria, the statement that technologies are proven and have been successfully deployed at other sites for all alternatives is not true for the ISD approach. It may have been deployed at several U.S. sites, but it cannot be said to be proven as yet.</li> </ul> |  |
| <b>Project Description</b>                                |   |                            |   |  |
| <b>Project Description – General and Project Overview</b> |   |                            |   |  |
| 81.   | <a href="#">Northwatch</a><br>(Dec 20, 2017)              | General                    | The commenter expresses the concern that the draft EIS provides no clear delineation between which activities under the already approved plan are to be retained and which are to be replaced with the ISD approach.  |  |
| 82.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | General                    | <p>The commenters request that CNL:</p> <ul style="list-style-type: none"> <li>• Provide the underlying rationale and scientific basis for the design life of the engineered structures and the timeframes of the post-closure control periods.</li> <li>• Identify the enduring institutions(s) that will be responsible and accountable for protecting human health and the environment during the institutional control periods, and that will undertake remedial measures if they are needed.</li> <li>• Verify and validate the data, source terms and computer models which predict that the proposed engineered system will be passively safe during the hazardous lifetime of the wastes beyond 300 years.</li> </ul>   |  |
| 83.   | <a href="#">MMF</a><br>(Dec 19, 2017)                     | Table 3.1-1 (3-2)          | <p>MMF indicates that it is not clear what the project schedule is for construction / decommissioning activity. Loud decommissioning activity (i.e., jack hammering to remove deeply imbedded contaminants in concrete as indicated in Table 6.6.5-1 on page 6-264 of the draft EIS) is expected. Consequently, MMF expresses their considerable concerns over the potential disturbance and displacement of sensitive species at risk (SAR) and to wildlife of traditional interest and importance to the MMC.</p> <p>MMF recommends that CNL identify what consideration, if any, will be given to limit construction activity during sensitive timing periods for SAR, migratory birds and wildlife species of traditional importance to the MMC, such as during ungulate calving periods. It is recommended that a plan be developed to limit construction activity during sensitive timing periods as to minimize the potential for disturbance and displacement of species and wildlife in the project area [<b>Recommendation 3.2.9a</b>].</p>   |  |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project

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|   |  |  | MMF recommends that CNL provide clear communication and notification (minimum of 21 days) of the finalized construction scheduling to MMF for distribution to their membership, with follow-up communication on a weekly basis for any scheduling changes. There is concern that Manitoba Métis harvesters may have their harvesting rights and activities impacted when they travel to the Project area to hunt, and then find that the area they are travelling to is subject to construction activity which has disturbed or displaced the wildlife they are planning to hunt or harvest [ <b>Recommendation 3.2.9b</b> ].<br><br>[Please refer to page 27 of MMF's submission for more information].   |  |
| 84.   | <a href="#">J. R. Walker</a><br>(Dec 8, 2017)    | Section 3.1.2 (3-2 to 3-3)<br>Section 6.6.5.2.2 (6-273)<br>Section 6.9.6.1.2 (6-441)<br>Section 9.2.8 (9-15) | In Section 3.1.2 of the draft EIS, it is stated that active institutional controls will continue after the 300-year institutional control period and will be maintained in perpetuity. These perpetual institutional controls would include, in general, physical barriers/fencing, signage, and land title instruments/deed restrictions and are further described in Sections 6.6.5.2.2, 6.9.6.1.2 and 9.2.8 of the draft EIS. The commenter notes that these perpetual active institutional controls are credited in the assessment to deter both humans and non-human biota from accessing the WR-1 site.<br><br>The commenter raises the concern that this concept of perpetual active institutional controls to ensure safety is contrary to both Canadian and international guidance [please refer to commenter's submission for the list of referenced documentation] which notes that active institutional controls can be relied upon for only a limited period of time (up to a few hundred years). The commenter expresses the position that the use of institutional controls for an indefinite period would impose an excessive burden on future generations and does not provide confidence that safety can be assured over the time period that is compatible with the assurance of institutional and financial stability.<br><br>The commenter provides the following examples that are in keeping with Canadian and international guidance:<br><ul style="list-style-type: none"> <li>• Ontario Power Generation (OPG) is currently seeking to dispose of LLW and intermediate level wastes (ILW) in a deep geologic repository; and,</li> <li>• CNL announced in October 2017 that it would follow IAEA guidance and would no longer attempt to dispose of ILW in a proposed near surface disposal facility at Chalk River Laboratories in Ontario and would, instead, manage ILW in interim storage until a long-term disposal solution for this category of radioactive waste has been developed and approved.</li> </ul> |  |
| 85.   | <a href="#">MMF</a><br>(Dec 19, 2017)            | 3.1.2 (3-2 to 3-3)   | As indicated in Section 3.1.2 of the draft EIS, the rationale for ISD relies on maintenance and monitoring of the installation for 300 years and states that "control" will last "indefinitely". MMF indicates that it is not clear how CNL is prepared to make this commitment for the post-closure phase after 2124 or, in particular, after 2324. MMF notes that environmental regulations change with each government, and it is possible that future governments may choose not to allocate funding to maintaining and monitoring the WL site. MMF argues that there is no way to guarantee future commitment of resources.<br><br>[Please refer to page 34 of MMF's submission for more information].  |  |
| <b>Project Description – Project Requirements</b> |  |  |  |  |
| 86.   | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 3.4.3 (3-23)   | This section of the draft EIS states: " <i>The Project shall comply, as necessary, with federal and provincial regulations, guidelines, acts, standards, and codes (see Section 1.6.1 Relevant Standards, Codes and Guidelines and CNL's Program Requirements Document [CNL 2017a]);</i> "<br><br>The commenter notes an error in the reference provided in this statement. Section 1.6.1 is entitled "Federal Review Process", not "Relevant Standards". The latter title is numbered   |  |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project

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|   |   |                          | Section 1.6.2.   |  |
| 87.   | <a href="#">William Turner</a><br>(Dec 18, 2017)          | Section 3.4.4 (3-23)     | <p>This section of the draft EIS states: “<i>In addition to considering Canadian and international safety guidance (e.g., CNSC G- 320, IAEA SSR-5, IAEA SSG-23), in developing the Project, CNL considered three international standards that outline the three main stages for the decommissioning process.</i></p> <ul style="list-style-type: none"> <li>• <i>International Atomic Energy Agency, Decommissioning Nuclear Facilities: Decontamination, Disassembly and Waste Management, Technical Report No. 230, 1982.</i></li> <li>• <i>International Atomic Energy Agency, Factors Relevant to the Decommissioning of Land-Based Nuclear Reactor Plants, Safety Series No. 52, 1980.</i></li> <li>• <i>International Atomic Energy Agency, 1986 Safety in Decommissioning Research Reactors, Safety Series No. 74, STI/PUB/713.</i>”</li> </ul> <p>The commenter raises the following observations with respect to this paragraph:</p> <ul style="list-style-type: none"> <li>• None of the Canadian (G-320, SSR-5 or SSG-23) and latter three IAEA references are cited in Section 13 of the draft EIS; and,</li> <li>• All three IAEA references in the bulleted list are outdated and not current.</li> </ul> <p>The commenter indicates there is a lack of clarity as to which “international” standards were used as guidance and requests that CNL revise this list to include the actual standards used.</p> |  |
| <b>Project Description – Project Components</b> |   |                          |  |  |
| 88.   | <a href="#">Dave Taylor</a><br>(Nov 30, 2017)             | Table 3.5-1 (3-25)       | <p>The commenter expresses the view that the concept of ISD of the WR-1 should ultimately be based upon an understanding of what is to be sealed by grout. Based on the draft EIS documentation, the commenter raises the concern that CNL has either relied on outdated modelling, non-existent data or are not prepared to consider the potential of long-lived radionuclides, and as such, there is an inaccurate understanding of the materials that are proposed to be encapsulated.</p> <p>In particular, the commenter indicates that Table 3.5-1 makes over-generalizations referring to fission products as if they are all the same. The commenter notes that the WR-1 experienced a number of very severe accidents including the breaking of fuel elements in the reactor in November 1978. The commenter expresses the view that the modelling techniques from 1992 in the reactor core are inadequate. The commenter also notes there is inadequate information about the contamination of the biological shield, heavy water and helium system and the primary heat transport system and experimental loops.</p>  |  |
| 89.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 3.5.1.1.2 (3.31) | <p>This section of the draft EIS states: “<i>While the exterior walls of the below grade portion of the WR-1 facility are intact, there are several locations where penetrations exist to allow mechanical and electrical services to enter the building. As part of closure activities, any perforation in the foundation will be filled and sealed, and any system components (e.g., piping or conduits) that exist within 1 m of the foundation wall and floor, or equivalent barrier, will be removed to ensure no voids are present adjacent to the foundation. The penetrations will be sealed with an engineered plug to ensure the outer wall of the below grade portion of WR-1 is a continuous and uninterrupted barrier to mitigate releases to the environment.</i>”</p> <p>The commenters indicate that after exiting the WR-1 ISD structure, any potentially contaminated groundwater is free to enter a nearby buried service connector, such as the 24-inch diameter process water line which provides a direct 500-m path to the pump house located next to the Winnipeg River. The commenters express the concern that such direct pathways circumvent CNL’s calculated mean advective groundwater travel times to</p>   |  |



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|     |  |                                | the Winnipeg River, which were estimated to be on the order of 100 years (as per Section 6.3.2.6.2 of the draft EIS).  |  |
| 90. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)  | Section 3.5.1.1.5 (3.32)       | <p>This section of the draft EIS states: “<i>Some hazardous materials (such as PCB containing light ballasts or removable lead shielding) may be remediated, to reduce the levels of contaminated materials within the building prior to ISD. This effort will be limited to materials that are easily accessed, and present a relatively low hazard to workers to remove. This will help to further reduce the levels of hazardous materials left within the structure for encapsulation during ISD, and keep exposures to workers, the public and the environment ALARA.</i>”</p> <p>The commenters indicate that the draft EIS does not identify any dedicated commitment to remove hazardous materials such as asbestos, Polychlorinated Biphenyl Compounds (PCBs), etc. The commenters express the view that CNL appears to advocate encapsulation of radiological and non-radiological hazardous materials within the proposed ISD structure to the maximum extent possible in this section and other sections of the draft EIS.</p>   |  |
| 91. | <a href="#">Eva Pip</a><br>(Nov 22, 2017)<br><br><a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)<br><br><a href="#">Michael Stephens</a><br>(Dec 15, 2017)<br><br><a href="#">Anne Lindsey</a><br>(Dec 19, 2017) | Section 3.5.1.2 (3-32 to 3-33) | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>This section of the draft EIS states: “<i>Multiple grout formulations may be necessary to achieve complete filling of the below grade structure, but all formulations will adhere to the same minimum requirements to ensure the final end state performs as expected.</i>”</p> <p>The commenters raise the concern that there is inadequate information (with no references) to provide evidence that grouting will be complete, not expand and crack the structure or shrink and leave gaps, or crack after curing. Some commenters express the position that there is no guarantee that the concrete and grout materials will not crack or be porous. The commenters indicate that additional evidence is required to gain confidence in the proposed grout designs and formulations.</p> <p>In addition, some commenters pose the following questions:</p> <ul style="list-style-type: none"> <li>• What is the “final end state expectation”?; and,</li> <li>• If the “final end state” is thousands of years into the future, what are the “minimum requirements” that it should adhere to?</li> </ul>  |  |
| 92. | <a href="#">Anne Lindsey</a><br>(Dec 19, 2017)   | Section 3.5.1.2 (3-32 to 3-33) | <p>The commenter expresses the concern that the draft EIS provides no clear information on the properties of the proposed grouting material. The commenter notes that the limited information does not allow for an analysis of whether the grout, which has yet to be designed, will be adequate.</p> <p>Also, the commenter draws on the Savannah River reactor decommissioning example for comparison. The commenter notes that in-depth documentation of the grout materials used in the Savannah River case, including discussion of the specific reactivity between grouts and the particular components of those reactors was carried out. The commenter expresses the view that such an analysis would be appropriate for the WR-1 EIS particularly given that climate, geological settings, groundwater characteristics and the characteristics of the reactor are all unique in each circumstance and this technology has not been used, let alone proven, in the case of WR-1.</p> <p>Lastly, the commenter notes that one of the objectives in the Savannah River case was to “<i>prevent to the extent practicable the migration of radioactive or hazardous contaminants from the closed facility to the groundwater so that concentrations in the ground water do not exceed regulatory standards</i>”. The commenter expresses the view that such an objective would be appropriate in the WR-1 case, as many of the</p> |  |

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|     |  |   | radionuclides which are thought to exist in the reactor components to be encapsulated have very long half-lives, far exceeding the institutional control period, and the draft EIS contemplates groundwater infiltration during the institutional control period.  |  |
| 93. | <a href="#">William Turner</a><br>(Nov 25, 2017)<br><br><a href="#">William Turner</a><br>(Dec 18, 2017) | Section 3.5.1.2 (3-32 to 3-33)<br><br>Section 2.4 (2-2)   | <p>The commenter expresses the concern that the draft EIS lacks any description, specification and/or performance requirements for the grout.</p> <p>The commenter identifies that the descriptions of the activities associated with the following are missing:</p> <ul style="list-style-type: none"> <li>• Construction and operation of the grouting facility;</li> <li>• Preparation of the grout itself (i.e., offsite, on-site, transport, secondary wastes from preparation, etc.);</li> <li>• Performance requirements for the grout; and,</li> <li>• Quality checks for the grout.</li> </ul> <p>Since there are no descriptions, the commenter argues that the assessments of the potential environmental impacts of these activities are not possible.</p> <p>In the draft EIS, CNL suggests that the potential long-term environmental, and health and safety of the entombed facility is based on the performance, thus, the integrity of the grout. The commenter poses the following question: how does one assess the long-term safety if the information about a critical aspect of that safety (i.e., the grout) is missing?</p> <p>The commenter requests that CNL discuss the performance requirements of the grout in the draft EIS.</p>   |  |
| 94. | <a href="#">Northwatch</a><br>(Dec 20, 2017)   | Section 3.5.1.2 (3-32 to 3-33)<br><br>[as well as Sections 2.5.4 (2-20), 2.5.4.2 (2-21) and 2.5.4.3 (2-22)] | <p>The commenter expresses the concern that the draft EIS lacks adequate descriptions of the grouting, the grouting material or the grouting methods. In particular, the commenter notes that while the terms “grout” and/or “grouting” appear hundreds of times in the draft EIS document, only a single page is fully assigned to a description of the grout and grouting for the proposed ISD approach.</p> <p>In addition, the commenter indicates that the document acknowledges the grout will degrade with time and will fail as a barrier between the radiological contamination entombed subsurface and the surrounding groundwater and biosphere but avoids providing clear estimates of time or consequence related to this failed barrier.</p> <p>The commenter also points out inconsistencies throughout the document, with several statements claiming that the <i>in situ</i> approach will “isolate” the radioactive hazards and other statements later acknowledging that the barriers (i.e., the grout) will fail and radionuclides will “leak” to groundwater.</p> <p>In the final EIS, the commenter requests that CNL provide clear descriptions of the grout(s), and their formulation, characteristics and required performance, including but not limited to the following:</p> <ul style="list-style-type: none"> <li>• Required physical properties of the grout(s);</li> <li>• Degree of isolation required to be considered acceptable;</li> <li>• “<i>Final end state</i>” performance expectations, stated in measurable terms over various time frames; and,</li> <li>• Quality control measures that will be in place.</li> </ul> <p>The commenter emphasizes that the descriptions must be supported by technical papers that demonstrate the basis for CNL’s statements and the means by which they have been demonstrated (e.g., laboratory tests, field observations, or other means).</p> <p>The commenter also requests that CNL clarify whether the “<i>external portions of the</i></p> |  |

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|     |   |  | <p><i>facility are of robust construction with reinforced concrete” (Section 2.5.4, page 2-20) are as-built or to be modified for ISD.</i></p> <p>[Please refer to pages 7-11 of the commenter’s submission for more information].</p>  |  |
| 95. | <a href="#">William Turner</a><br>(Dec 18, 2017)          | Section 3.5.1.2 (3-32 to 3-33)<br>Figure 1.1-2 (1-9) | <p>The commenter notes that the draft EIS does not include a figure similar to the Poster 4 provided on CNL’s website (<a href="http://www.cnl.ca/site/media/Parent/WR-1_posters_July.pdf">http://www.cnl.ca/site/media/Parent/WR-1_posters_July.pdf</a>).</p> <p>In comparing Poster 4 with Figure 1.1-2 in the draft EIS, the commenter notes that this suggests the grout will not completely fill the structure. The commenter requests that CNL provide details as to the grouting process, including any rearrangement, removal or size reduction of the components such that the structure can and will be completely filled with no void spaces.</p>  |  |
| 96. | <a href="#">CELA</a><br>(Dec 19, 2017)                    | Section 3.5.1.2 (3-32 to 3-33)                       | <p>The commenter indicates that the precise physical and chemical properties of the proposed grout are not discussed (Klukas-CNL, 2016). The commenters note that simple internal gravity placement of grout will not penetrate all void spaces in the below-ground structures forming the remaining component parts of WR-1, nor would it guarantee long-term stabilization and isolation of radionuclides within the required timescales of thousands of years.</p> <p>[Please refer to the commenter’s submission for the reference cited above].</p>  |  |
| 97. | <a href="#">MMF</a><br>(Dec 19, 2017)                     | Section 3.5.1.5 (3-33 to 3-34)                       | <p>During reclamation, CNL has stated that the project site and final vegetation cover will be graded to promote drainage from the site to the Winnipeg River and an engineered cover will be installed over the former footprint of the WR-1 Building to minimize water infiltration and migration of contaminants to underlying aquifers.</p> <p>The engineered cover will not provide a barrier for release of contamination explicitly, but rather will be installed to limit additional water infiltration into the system and protect the barriers that are in place by resisting intrusion into the sub-surface structure. Therefore, MMF recommends that for the same reason, this impermeable barrier should be installed around the entire grouted below-grade facility.</p> <p>[Please refer to page 26 of MMF’s submission for more information].</p> |  |
| 98. | <a href="#">MMF</a><br>(Dec 19, 2017)                     | Section 3.5.1.5 (3-34)                               | <p>The draft EIS (pages 3-34 and 6-266) indicates the following statement on several occasions: <i>“The surrounding grounds that were disturbed during demolition and decommissioning activities will be graded and restored with a grass seed mixture, but information on the approach and/or seed mix has not been provided.”</i></p> <p>MMF recommends that native seed mixes be used for reclamation in the project area. MMF indicates that the incorporation of native floral and grass seed mixes in re-vegetation efforts would further enhance habitat/forage for wildlife, particularly for pollinators.</p> <p>[Please refer to page 26 of MMF’s submission for more information].</p>   |  |
| 99. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 3.5.3.2 (3-35)                               | <p>This section of the draft EIS states: <i>“Targeted removal of hazardous substances remaining within the WR-1 Building will generate small quantities of non-radiological hazardous wastes. Hazardous wastes will be managed in accordance with CNL’s waste management practices (CNL 2017b, c) and Environmental Protection Program (CNL 2017d), and will meet all Federal, Provincial and Municipal requirements. The wastes will be shipped off-site to an appropriate hazardous waste facility, or encapsulated in the same manner as radiological wastes where it is demonstrated safe to do so.”</i></p>  |  |

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|      |   |                                  | With respect to these statements, the commenters request that CNL clarify what will and will not be encapsulated in the WR-1 ISD structure.  |  |
| 100. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)   | Section 3.5.4 (3-36)             | <p>This section of the draft EIS states: “<i>The final end-state for WR-1 will be a multilayered ISD structure that applies a Defense-in-Depth strategy through the use of numerous barriers (Figure 3.5.4-1). The primary pathway for release of contamination from the system 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 groundwater. Each layer of the WR-1 ISD structure provides an additional measure to prevent and mitigate the release of contaminants to protect the Public and the Environment. The layers of defence against contaminant release include reactor system components, grout, internal walls, outer foundation walls, the local geosphere, an engineered cover, and active environmental monitoring. Combined, they form a rigorous system of barriers to provide long term safety to the Public and the Environment.</i>”</p> <p>The commenters express the position that considering the WL site groundwater will not meet drinking water standards / guidelines during the period of institutional control and for thousands of years into the future; the purported Defense-in-Depth strategy lacks any significant merit.</p>   |  |
| 101. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)<br><br><a href="#">William Turner</a><br>(Dec 18, 2017) | Section 3.5.4.1.1 (3-36)         | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>This section of the draft EIS states: “<i>The overwhelming majority (~97%) of the remaining contamination in WR-1 is located within the piping and tanks that make up the reactor systems (primarily in the calandria and fuel channels). The contamination is both on the internal surfaces (surficial contamination) as well as embedded in the material itself (activated components)...These system components are the initial barrier, and must first breakdown through corrosion and dissolution in order for contamination to be released to any groundwater. Prior to their corrosion and dissolution, no contamination within them will be released. Breakdown of the reactor system components is expected to occur gradually over thousands of years.</i>”</p> <p>Peter Baumgartner et al. pose the following question: “<i>is it 97% or 99% as indicated in Sections 1.1, 10.5 and 10.5.1 of the draft EIS? 2% more ILW can make a difference.</i>”</p> <p>Peter Baumgartner et al. also request that CNL provide supporting evidence to substantiate the anticipated corrosion rates.</p> <p>Mr. Turner expresses the concern that that no information is provided as to the implications of the releases of the radionuclides or hazardous substances that will result from the breakdown of the reactor system components. The commenter expresses the view that, as such, there is no evidence that the proposed entombment will not present a significant adverse risk to humans in the future.</p> <p>Mr. Turner requests that CNL ensure the draft EIS includes an assessment of the breakdown of these components. The commenter notes that if the institutional controls were maintained in perpetuity, then one would expect that required physical processes and corrective action activities would be in place to address this breakdown throughout the complete institutional control period. In which case, the commenter indicates the draft EIS should identify those processes and activities that will be maintained in perpetuity.</p> |  |
| 102. | <a href="#">Dave Taylor</a><br>(Nov 30, 2017)   | Section 3.5.4.1.2 (3-36 to 3-37) | <i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i>   |  |

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|      | <p><a href="#">Peter Baumgartner et al.</a><br/>(Dec 2, 2017)</p> <p><a href="#">Lisa Aitken et al.</a><br/>(Dec 8, 2017)</p> <p><a href="#">Northwatch</a><br/>(Dec 20, 2017)</p> |                          | <p>This section of the draft EIS states: <i>“The grout will slowly degrade over time, allowing water movement to increase as it degrades, though this is expected to occur over thousands of years, and not at all once.”</i></p> <p>Section 6.4.2.7 “Prediction Confidence and Uncertainty” of the draft EIS discusses how the cover, grout, and foundation were assumed to degrade at rates comparable to other projects (i.e., Savannah River), which increased groundwater flow through time, resulting in total failure (degradation) of grout by year 10,000.</p> <p>The commenters request that CNL provide evidence supporting the long-life expectations of the numerous grout formulations to be used, given the following considerations:</p> <ul style="list-style-type: none"> <li>• The degradation of the grout beginning in about 300 years is an estimate and potentially could start earlier;</li> <li>• It is unknown how the grout will withstand the Manitoba climate, the underground environment and the exposure to radionuclides, including the radioactive materials of the WR-1;</li> <li>• Radioactive nickel-59 which is expected to be found in the inventory of reactor radionuclides has a half-life of 76,000 years and most concrete or grout at best will last a few hundred years however this may even be compromised by the extreme temperatures in Manitoba; and,</li> <li>• For this information to be meaningful, it must include evidence-based estimates of how the rate of releases would increase over time, which should be placed in the context of potential consequence to human health and the environment.</li> </ul> <p>In addition, the commenters pose the following questions:</p> <ul style="list-style-type: none"> <li>• Considering that no credit is given for the grout to retain the radionuclides, what is the rationale to use grout instead of unconsolidated material such as sand that could be removed if situations change?; and,</li> <li>• Where is the scientific data that proves groundwater will be safely contained for thousands of years?</li> </ul> |  |
| 103. | <p><a href="#">Peter Baumgartner et al.</a><br/>(Dec 2, 2017)</p>  | Section 3.5.4.1.3 (3-37) | <p>This section of the draft EIS states: <i>“Internal building walls and floors provide an additional barrier between sections of grout. While penetrations exist in these interior walls (to allow services to pass between rooms), they are mostly sealed for operational purposes such as fire-stopping.”</i></p> <p>The commenters pose the following question: what types of fire stopping materials are used within WR-1 and how appropriate/compatible are they as a sealing material in the future flooded environment?</p>  |  |
| 104. | <p><a href="#">Peter Baumgartner et al.</a><br/>(Dec 2, 2017)</p>  | Section 3.5.4.1.5 (3-37) | <p>This section of the draft EIS states: <i>“The soil conditions at WR-1 provide an additional barrier to release of contamination into the environment. The local soils are primarily clay based, and provide a natural barrier to groundwater movement. The soils provide a final barrier to groundwater movement, reducing the groundwater speed to ~5m per year, and also chemically sorb contaminants to further reduce their concentrations in any surface water emissions.”</i></p> <p>The commenters note that the WR-1 site is located about 500 m from the Winnipeg River, so mean advective groundwater travel times are on the order of only 100 years (as per Section 6.3.2.6.2 of the draft EIS). As such, the commenters express the position that the soil conditions are a limited barrier to the leaching of long-lived groundwater.</p>   |  |
| 105. | <p><a href="#">Peter Baumgartner et al.</a><br/>(Dec 2, 2017)</p>  | Section 3.5.4.1.6 (3-37) | <p>This section of the draft EIS states: <i>“The cover will degrade with time, much like the rest of the sub-surface structure.”</i></p> <p>The commenters note that the engineered cover has a design life of 300 years. The</p>  |  |

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|      |   |                          | commenters pose the following question: is the sub-surface structure (i.e., the final engineered barrier or concrete surround) expected to have a similar 300 year life expectancy or is it 10,000 years based upon discussions in Section 6.4.2.7 “Prediction Confidence and Uncertainty”?   |  |
| 106. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 3.5.4.1.7 (3-37) | <p>This section of the draft EIS states: “<i>The final barrier is post-closure environmental monitoring of the groundwater surrounding WR-1. Groundwater monitoring provides verification that the decommissioned WR-1, and the barriers to release, are performing their function as expected. Monitoring also provides an early warning system in the event that something unexpected has occurred, and provides the data necessary to make decisions about mitigating actions required, if at all.</i>”</p> <p>The commenters express the position that a limited monitoring program is not a “barrier” considering that the WR-1 ISD groundwater will not meet drinking water standards / guidelines during the period of institutional control and for thousands of years into the future.</p>   |  |
| 107. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 3.5.4.2 (3-38)   | <p>This section of the draft EIS states: “<i>Future use of the WL site will depend on the ability of AECL to release parts of the site for unrestricted use upon completion of the Project</i>” and “<i>In general, affected areas will be remediated to meet the WL preliminary soil cleanup and the non-radiological and radiological clearance and release criteria in accordance with the target end state of the associated land-use category.</i>”</p> <p>The commenters note that unrestricted use of all of the WL site lands was the original commitment in the 2001 CSR, other than for the LLW trenches in the WMA and the on-site landfill locations. The commenters request that CNL provide clarification of impacted lands in an open and transparent manner.</p>  |  |
| 108. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 3.5.4.2 (3-38)   | <p>This section of the draft EIS states: “<i>CNL is developing the WL Closure Land-use and End-state Plan, along with appropriate criteria for site remediation and clean-up activities. The Plan defines the post-closure end-states, the post-closure land-use classifications and allocation, and the physical release criteria that must be met at the site closure. These end-state definitions, land-use classification and allocation, and physical release criteria are applicable to all project decommissioning activities being carried out under the WL Closure Project. Following completion of the work, the lands, including any remaining infrastructure, will enter long-term care and maintenance in accordance with the Institutional Control requirements.</i>”</p> <p>Based on these statements, the commenters note that one can assume that more lands may be contaminated for longer periods of time. If so, the commenters indicate that details of impacted lands should be provided.</p> |  |
| 109. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 3.5.4.2 (3-38)   | <p>This section of the draft EIS states: “<i>As CNL of the project, CNL will be responsible for implementing and managing the proposed follow-up monitoring program.</i>”</p> <p>The commenters pose the following question: “<i>is it appropriate for CNL to provide monitoring data to the regulator or is this a blurring of responsibilities?</i>”</p>  |  |
| 110. | <a href="#">Northwatch</a><br>(Dec 20, 2017)              | Section 3.5.4.2 (3-38)   | <p>This section of the draft EIS states: “<i>Future use of the WL site will depend on the ability of AECL to release parts of the site for unrestricted use upon completion of the Project. CNL is developing the WL Closure Land-use and End state Plan, along with appropriate criteria for site remediation and clean-up activities. The Plan defines the post-closure end-states, the post-closure land-use classifications and allocation, and the physical release criteria that must be met at the site closure. These end-state definitions, land-use classification and allocation, and physical release criteria are applicable to all project decommissioning activities being carried out under the WL Closure Project.</i>”</p>  |  |

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|   |  |  | The commenter requests that CNL provide a copy of the most recent version of the <i>WL Closure Land-use and End state Plan</i> and a timeline for the completion of the Plan. The commenter also requests that CNL provide a copy of the public engagement program that supports the development of the Plan, and a record of how the public and Indigenous peoples have been engaged to date in the Plan's development.  |  |
| 111.  | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017)<br><br><a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017)<br><br><a href="#">Anne Lindsey</a><br>(Dec 19, 2017) | Section 3.5.5 (3-38)                       | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>This section of the draft EIS states: “<i>The size of the workforce after 2021 is anticipated to decrease to zero by 2024. A large workforce is not required during Institutional Control.</i>”</p> <p>The commenters pose the following question: “<i>with a workforce of zero, who conducts and maintains the integrity of a reliable and robust monitoring program and associated reporting etc.?</i>”</p>  |  |
| <b>Aboriginal and Public Engagement</b>           |  |  |   |  |
| <b>Aboriginal and Public Engagement - General</b> |  |  |   |  |
| 112.  | <a href="#">Michael Stephens</a><br>(Dec 15, 2017)   | Section 4.1.1 (4-2)<br>Section 5.1.1 (5-2) | The commenter expresses the position that the description of the ongoing Public Information Program demonstrates that CNL persists in one-way communication towards the public and that to date, there is no evidence that the public's views have been incorporated in anything that CNL does.   |  |
| <b>Aboriginal Engagement</b>                      |  |  |   |  |
| 113.  | <a href="#">Black River First Nation, Brokenhead Ojibway Nation, and Hollow Water First Nation</a><br>(January 22, 2018)   | General                                    | <p>Black River First Nation, Brokenhead Ojibway Nation and Hollow Water First Nation shared a list of the comments heard during a two-day community gathering meeting with CNL in February 2017. Questions and concerns raised were with respect to the following topics:</p> <ul style="list-style-type: none"> <li>• ISD design, methodology and integrity of grout encapsulation;</li> <li>• Accidents and malfunctions (including previous spills and accidents);</li> <li>• Future land use and tenure;</li> <li>• Waste management and transportation of waste;</li> <li>• Current and long-term monitoring activities;</li> <li>• Duty to consult and accommodate (including past decisions relative to the WL site);</li> <li>• TK and impacts to traditional hunting, fishing and trapping in the area;</li> <li>• Capacity funding;</li> <li>• Economic opportunities; and,</li> <li>• Future engagement opportunities and involvement in the process.</li> </ul> |  |
| 114.  | <a href="#">MMF</a><br>(Dec 19, 2017)  | General                                    | <p>Drawing on land use and occupancy data held by the MMF, and based on the MMC's constitutionally protected rights and the requirements of CEAA 2012, the following potential issues and concerns were raised, in relation to the rights and interests of MMC, from MMF's review of the draft EIS:</p> <ul style="list-style-type: none"> <li>• Potential negative impacts to the current use of lands and resources for traditional purposes, including impacts to the exercise of Métis rights by MMC citizens, must be avoided, mitigated, or accommodated.</li> <li>• Potential negative impacts to the health of MMC citizens—including, but not limited to those conditions reliant on the current use of lands and resources for traditional purposes—must be avoided, mitigated, or accommodated.</li> <li>• Potential negative impacts to collective MMC informal, and formal, socio-cultural</li> </ul>  |  |

**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project**

|      |                                       |         |   |  |
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|      |                                       |         | <p>and economic systems associated with the trade and sharing of resources or products from traditional land-use must be avoided, mitigated, or accommodated.</p> <ul style="list-style-type: none"> <li>• Potential negative impacts to MMC individuals commercial and subsistence harvesting rights and activities associated with traditional land-use must be avoided, mitigated, accommodated or compensated.</li> <li>• MMC citizens must be able to equitably participate in the economic benefits and opportunities associated with the construction, operations, and maintenance of the Project.</li> <li>• Through ongoing consultation and specific roles and/or employment, the MMF must be able to participate in the environmental monitoring and management of the Project in all stages.</li> </ul>               |  |
| 115. | <a href="#">MMF</a><br>(Dec 19, 2017) | General | <p>MMF recommends that CNL provide opportunities to the MMC to build capacity and knowledge in decommissioning activities and reclamation of project components. Opportunities to build MMC capacity and knowledge in efforts that are of importance to the Manitoba Métis, such as participation in seeding, planting and monitoring in follow-up programs should be explored with the MMF.</p> <p>[Please refer to page 28 of MMF's submission for more information].</p>   |  |
| 116. | <a href="#">SFN</a><br>(Jan 15, 2018) | General | <p>SFN expresses deep concern with respect to the absence of Indigenous Traditional Knowledge and traditional use information in the draft EIS and the lack of meaningful engagement with Sagkeeng in establishing a baseline or conducting an effects assessment (or even considering Sagkeeng VCs). SFN notes that the manner in which this EIS was completed is not in keeping with the expectations for acceptable practice established by the Crown in its 'Interim Principles' document issued in January 2016, or in its commitments to better incorporate Indigenous interests into the Environmental Assessment (EA) process in the 2016-2017 EA process review.</p>   |  |
| 117. | <a href="#">SFN</a><br>(Jan 15, 2018) | General | <p>SFN explains that Sagkeeng did not consent to the construction of a nuclear research facility on its traditional lands, nor does it consent to the disposal of radioactive wastes from that facility on its lands. SFN indicates that while CNL's Aboriginal Engagement Report identifies that their members and leadership have expressed alarm at the new idea of keeping the radioactive wastes onsite, CNL has nonetheless and without a compelling argument, ignored these concerns and plan to carry out the project as planned.</p>   |  |
| 118. | <a href="#">SFN</a><br>(Jan 15, 2018) | General | <p>SFN explains that Sagkeeng has and will continue to work on the basis that the Government of Canada is responsible for cleaning up the hazardous wastes at the WL site, regardless of any contractual relationships it may have entered into with CNEA or other parties. In this regard, SFN indicates that Canada cannot waive its fiduciary duties to: a) honour its prior commitment to remove the radioactive wastes from Sagkeeng lands; and b) ensure Indigenous interests and Aboriginal and Treaty rights are fully considered and protected. SFN express the position that the current application fails to meet both of these requirements. SFN also notes that this is inconsistent with the federal government's repeated overtures that it is committed to meaningful reconciliation with Indigenous peoples.</p> |  |
| 119. | <a href="#">SFN</a><br>(Jan 15, 2018) | General | <p>SFN expresses the concern that there has been a lack of engagement and participation of Sagkeeng and provides the following comments:</p> <ul style="list-style-type: none"> <li>• The proposed disposal site is within the traditional territory of SFN. The land and waterways surrounding the site have historically been an important part of the economic well-being and transportation system for SFN. <i>"A strongly held conviction among members is that the lands and waterways are the sustaining factors for all life. To members, the land and waters are indivisible and anything that is done to either will have far reaching effects for all life"</i> (SFN 2015). The project's location in very close proximity to the Winnipeg River, which drains north to Lake Winnipeg</li> </ul>                       |  |



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|      |                                       |         | <p>and the SFN reserve lands in between, creates a very high level of concern about cumulative effects over the long term on water quality along the lifeblood of SFN.</p> <ul style="list-style-type: none"> <li>• SFN has been in this area and will remain in this area, feeling any adverse effect from the WL site, long after CNL has planned to actively manage risks at the site. The draft EIS states that the area was used beginning in the Paleo Indian Period (ca. 11,000 – 7,000 years ago), following the retreat of the last ice age. In contrast, the proposed hazardous waste management facility has a design life of only 300 years.</li> <li>• There are several examples of remediation projects led by government agencies where meaningful efforts were taken to ensure interested parties, particularly Indigenous residents, were engaged and consulted throughout the decision-making / assessment processes. The Canada Deline Uranium Table (CDUT) to address contamination (including radioactivity) at the historic Port Radium Uranium Mine in the Northwest Territories is an example of a progressive and collaborative approach between Canada and the locally affected Indigenous population. The process involved numerous workshops, extensive community consultation, community liaison positions; a demonstrated willingness to adjust project plans....and was not rushed to meet a government timeline.</li> <li>• Unfortunately, in the case of the current proposal, CNL has given insufficient attention to engaging and consulting with SFN. While CNL has made some effort to communicate its plans to SFN leadership and membership, very little attention has been given to the following critically important aspects of engagement and consultation:             <ul style="list-style-type: none"> <li>a) Selection of closure objectives/priorities;</li> <li>b) Identification and assessment of alternatives, including identification of and Weighting of criteria;</li> <li>c) Assessment of impacts, including on traditional use and Aboriginal/treaty rights; and,</li> <li>d) Collection/use of TK (e.g., land use practices, dietary surveys, selection of VCs).</li> </ul> </li> <li>• Consultation summary materials provided by CNL to Sagkeeng and to the CNSC reflect a weak level of engagement. For example, many of the issues raised by SFN Chief and Council and members at large are identified in the consultation record, but have merited no response from CNL. In particular, “crux” matters such as SFN’s continued and fundamental opposition to ISD, clearly stated in meetings with CNL, AECL and CNSC, are ignored in CNL’s response materials, while matters of less importance, but for which CNL has an easily palatable response, such as socio-economic engagement, are responded to. The "Consultation Report" itself includes only one meeting directly addressing the EA. All the rest are into meetings and “show and tell” (site visit) and an employment fair.</li> <li>• In summary, SFN has been given insufficient opportunity to contribute to this extremely important decision.</li> </ul> <p>SFN explains that they were not invited to be a participant in the development of the draft EIS, nor the design of the methodology and indicates that this is completely inappropriate given the impact the decision will have on the First Nation.</p> |  |
| 120. | <a href="#">SFN</a><br>(Jan 15, 2018) | General | <p>SFN expresses the concern that there is a lack of assessment of psycho-social impacts in the draft EIS and provides the following comments:</p> <ul style="list-style-type: none"> <li>• There are multiple examples in Canada where the mere presence of hazardous waste has exerted an adverse psychological impact on Indigenous peoples (e.g., the abandoned Port Radium and Giant Mines). This includes affecting traditional practices, collection of traditional foods, general land use, etc. Depending on the approach to waste management that is taken, such impacts can persist even after remediation. The risk of long to permanent term psycho-social adverse effects and territorial alienation are highest in instances where hazardous materials are maintained <i>in situ</i>, rather than moved to a purpose built facility, because the radiation</li> </ul>   |  |

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|      |                                       |                           | <p>will stay in place (despite prior promises) and be released for literally thousands of years.</p> <ul style="list-style-type: none"> <li>• The current EIS has placed virtually no emphasis on this aspect that is critically important to SFN. For example, no consideration is given to the psycho-social impacts and chronic stress that the continued presence of hazardous materials will have on SFN members.</li> <li>• The construction of a radioactive waste disposal facility requiring perpetual care within SFN traditional territories will be a major source of long-term anxiety for SFN members. No efforts have been made by CNL to identify, evaluate and mitigate these impacts.</li> </ul> <p>SFN recommends that CNL include psycho-social impacts of nuclear waste disposal (never originally envisioned for this site) in a reassessment of effects on SFN and other receptors in relation to human health and well-being VCs, including reference to the plethora of existing literature on this subject. See Appendix 2 of SFN's submission, which identifies key factors and issues to consider, and identifies some critical actions that may be required for a proper assessment of effects, and for management of psycho-social effects during decommissioning and long-term institutional control.</p>   |  |
| 121. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 4.0 (4-1 to 4-15) | <p>SFN expresses the concern that there has been a lack of assessment of potential impacts on Aboriginal and treaty rights and provides the following comments:</p> <ul style="list-style-type: none"> <li>• Subsection 2.4 and Section 7 of CNSC's <i>Generic EIS Guidelines</i> outlines the information requirements related to gathering, understanding and assessing potential adverse impacts of the project on potential or established Aboriginal or treaty rights.</li> <li>• Further, Section 3.2, paragraph 14 of the CNSC's <i>Record of Decision for Canadian Nuclear Laboratories (CNL) on the Scope of Environmental Assessments for Three Proposed Projects at Existing Canadian Nuclear Laboratories</i> (March 8, 2017) states, "...CNL has committed to notifying CNSC staff of any concerns raised by Indigenous groups with respect to any impact on potential or established Aboriginal and/or treaty rights, as well as any proposed measures to address concerns raised." (page 3)</li> </ul> <p>However, SFN notes that the draft EIS lacks any information that characterizes and assesses potential project effects on SFN's Aboriginal and treaty rights. At minimum, SFN explains that the draft EIS must include an assessment of potential impacts to SFN Aboriginal and treaty rights, including but not limited to the following:</p> <ol style="list-style-type: none"> <li>1. Description of SFN rights-based activities and interests in proximity to the project;</li> <li>2. Potential project impacts on SFN rights-based based activities and interests;</li> <li>3. Identification of potential mitigation measures; and,</li> <li>4. Assessment of severity of potential impacts on SFN Aboriginal rights and treaty rights.</li> </ol> <p>SFN recommends that CNL provide a supplementary submission providing an assessment of potential project impacts on the Aboriginal and treaty rights of the SFN. For SFN's overview of essential steps of a treaty/Aboriginal rights-impact assessment, please see the Appendix A in their submission.</p> |  |
| 122. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 4.0 (4-1 to 4-15) | <p>Section 7.0 of CNSC's <i>Generic EIS Guidelines</i> states: "<i>The draft EIS will include VCs suggested by Aboriginal groups for inclusion in the draft EIS, whether they were included, and the rationale for any exclusions</i>".</p> <p>SFN notes that the draft EIS does not contain information relevant to this requirement.</p> <p>SFN recommends that CNL provide a supplementary submission outlining the process conducted by CNL for consulting with SFN to identify VCs for inclusion in the draft EIS,</p>  |  |

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|      |                                       |                           | a summary of that consultation process including SFN's final list of candidate VCs, and CNL's rationale for the exclusion of any of the VCs.   |
| 123. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 4.0 (4-1 to 4-15) | <p>SFN indicates that deep consultation with Sagkeeng is required given the context of proposed, permanent impacts to SFN's established treaty rights. SFN explains that the Crown's duty is further deepened by the ongoing Treaty Land Entitlement negotiation process that involves the resolution of outstanding treaty land commitments, a factor that could potentially be negatively impacted by the Project.</p> <p>In spite of this context, SFN indicates that it appears that only one meeting has been held with Sagkeeng specifically related to impacts to SFN's opportunity to exercise their aboriginal and treaty rights within the vicinity of the project area. It would appear, from this section that CNL and the Crown have not undertaken sufficient substantial discussion of potential interactions between the project and SFN rights, severity of potential impacts, or mitigation and avoidance measures to address these potential impacts.</p> <p>SFN recommends that CNL provide a supplementary submission that provides detailed characterization of the past, current and future rights-based practices of the SFN within the vicinity of the project, providing a project-rights interaction matrix. Potential project impacts include, but are not limited to the following:</p> <ul style="list-style-type: none"> <li>• Improper use of non-native re-seeding stock during reclamation;</li> <li>• Noise, air emissions during decommissioning/reclamation activities;</li> <li>• Additional traffic along project access road with potential wildlife collisions, hunting pressures;</li> <li>• Influx of workers, increased hunting, fishing competition;</li> <li>• Perception of risk - to water, wildlife (perceived linkage to cancer rates in community); and,</li> <li>• Permanent loss of use and access to treaty use lands.</li> </ul>                  |
| 124. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 4.0 (4-1 to 4-15) | <p>SFN references a conference paper [1], co-written by Robert A. Helbrecht (a former Director of Decommissioning at AECL WL site) and Daniel J.M. Grondin in 2002, that records Sagkeeng's significant interest and involvement in the 2001-2002 federal CSR process, and a range of recommendations and agreements that resulted from the process between SFN and AECL at the time.</p> <p>A key public concern at the time the CSR was conducted is noted in this paper as, "removal of waste from the site and the need for disposal facilities", and described as follows: <i>"This issue relates to the local community reluctance to have waste remain at the site in the absence of on-going research activity with related community benefits"</i> (page 15).</p> <p>One of the key commitments to Sagkeeng made by AECL in 2002 and recorded in this paper includes AECL's agreement to: <i>"involve the Sagkeeng in the monitoring program to acquire samples and to be trained in analysis. The timing proposed was to initiate involvement shortly after project implementation"</i> (page 17).</p> <p>However, SFN indicates that this section of the draft EIS does not refer to any of the consultation processes undertaken with SFN and other local communities at this time, key concerns that were raised, or to the conclusions or recommendations stemming directly from those consultations or to any resulting agreements between SFN and AECL in regards to mitigation/restoration measures and monitoring activities. SFN explains that this omission is a serious deficiency in the consultation record.</p> <p>SFN recommends that CNL provide a supplementary submission that describes the consultation process that took place in 2001/2002, including description of all key issues and concerns raised by local communities, including SFN, as well as commitments,</p> |

**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project**

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|      |   |                           | <p>recommendations, or conclusions that resulted from this process.</p> <p><b>References:</b><br/>                 [1] Grondin, D.J.M. and R. A. Helbrecht, <i>Decommissioning of a Nuclear Research Facility in Canada: Application of the Federal EA Process</i>, WM'02 Conference, February 24-28, 2002, Tucson, Arizona.</p>  |  |
| 125. | <p><a href="#">SFN</a><br/>(Jan 15, 2018)</p> | Section 4.0 (4-1 to 4-15) | <p>The current proposal to significantly alter the decommissioning strategy as proposed by AECL in 2001, reviewed under a federal CSR and approved in the 2002 CNSC licensing decision, SFN explains constitutes a “strategic, higher level decision” that will have a serious impact on SFN's Aboriginal rights and treaty rights.</p> <p>SFN notes that the causal relationship between the current proposed project and SFN's rights is that, if approved, lands that under the 2002 decommissioning plan would be returned to use by SFN members for exercise of treaty rights within 60 years, would instead be placed off-limits and subject to ongoing restrictions and monitoring for a 300-year period, or essentially, permanently. SFN indicates that the assessment of the impact of this proposed change to the decommissioning strategy on SFN's Aboriginal and treaty rights has not been provided in this section.</p> <p>SFN recommends that CNL provide a supplementary assessment of the effects of the proposed revision to the decommissioning strategy on SFN's future opportunity to conduct rights-based activities within and adjacent to the project area. SFN proposes that CNL utilize a scenario analysis that compares potential opportunities for use of the area under the 2002 strategy and the newly proposed strategy.</p>   |  |
| 126. | <p><a href="#">SFN</a><br/>(Jan 15, 2018)</p> | Section 4.0 (4-1 to 4-15) | <p>CEAA 2012 CULRTP guidance (page 4) indicates that “current use” includes: “<i>uses by Aboriginal peoples that are actively being carried out at the time of the assessment and uses that are likely to occur in a reasonably foreseeable future provided that they have continuity with traditional practices, traditions or customs... [and] uses that may have ceased due to external factors should also be considered if they can reasonably be expected to resume once conditions change.</i>”</p> <p>SFN explains that the proposed project, if approved, would greatly diminish future opportunities for Sagkeeng to exercise Aboriginal and treaty rights (and CULRTP) within the vicinity of the project area.</p> <p>SFN indicates that the assessment of potential impacts of Crown conduct on the ability to exercise rights in the future is required both to meet the Crown's common-law duty to consult, as well as to meaningfully assess potential effects on CULRTP.</p> <p>SFN identifies CNL’s failure to adhere to both of these federal requirements, and best practice for assessment of impacts on traditional use of lands and resources by Indigenous peoples, including a lack of any data collection, meaningful consultation with Sagkeeng on the issue of their land uses, land of consideration of past and desired future uses, and overall inadequate consideration of this required assessment pursuant to CEAA 2012 section 5(1)(c).</p> <p>SFN recommends that CNL provide a supplementary assessment of the effects of the proposed project on future use by SFN for rights-based activities within and adjacent to the project area.</p> |  |
| 127. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Table 4.3.2-8 (4-15)      | <p>MMF indicates that the wildlife VCs selected in the draft EIS focus on SAR, as per regulatory requirements, with no inclusion of wildlife species and habitats of traditional and cultural importance to the MMC. MMF indicates they have expressed interest in Indigenous values and rights, as identified in the “Summary of Key Interests and</p>   |  |

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|                          |   |         | <p>Concerns for the Manitoba Métis Federation” (Table 4.3.2-8 of the draft EIS) with regards to VCs for the project.</p> <p>CNL has determined in Section 6.8.5.2.1 (page 6-381) of the draft EIS that the “<i>Project is not expected to have a substantial effect on an individual’s land and resource use experience or on harvested species with because of mitigation and management practices put in place for the Project</i>”, however without conducting a full effects assessment with applicable mitigation measures for traditionally valued species of the MMC specifically, MMF does not believe that CNL can make this determination with respect to effects on the MMC.</p> <p>MMF recommends that CNL complete a thorough effects assessment on species of traditional importance to the MMC identified in a project-specific Traditional Knowledge and Land Use and Occupancy Study (TKLUOS). MMF indicates that CNL should also include monitoring and follow-up programs for potential effects to culturally important terrestrial species, including objectives and any monitoring measures (i.e., thresholds) that will be implemented to verify the predictions of effects and evaluate the effectiveness of proposed mitigation measures.</p> <p>[Please refer to page 25 of MMF’s submission for more information].</p>   |  |
| <b>Public Engagement</b> |   |         |  |  |
| 128.                     | <a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017) | General | <p>The commenters indicate that although CNL has been repeatedly asked about potential hazards and exposure to the environment and the public, worst case scenarios, monitoring plans, emergency preparedness plans, and remediation plans, CNL has yet to provide this information. The commenters provide the following quotes from CNL’s responses:</p> <p><i>“The post closure monitoring program will effectively monitor the site conditions. If the concentration levels of any contaminants are above our conservative levels, action will be taken. Specific details on an action plan have not been developed. However, the first steps will be to confirm test results and increase the period of testing, and at more locations. There are many strategies available should any remediation be required (CNL Response to L. Aitken, Dec 1, 2016 Feedback Form)”.</i></p> <p><i>“Once the decommissioning project is complete, Atomic Energy of Canada Limited (AECL) will be responsible for the long-term care, maintenance activities and environmental monitoring to ensure that the decommissioning approach performs to expectations and corrective measures are taken if necessary (Letter to L. Aitken from M. Mackay CNL, November 2017)”.</i></p> <p><i>“To ensure ongoing safety, Post closure monitoring plans will be developed jointly between CNL and the Canadian Nuclear Safety Commission, following the Environmental Assessment, if the project is approved (Letter to L. Aitken from M. Mackay CNL, November 2017)”.</i></p> <p>The commenters request that CNL provide detailed information to the public and in the draft EIS with respect to all hazards and potential hazards during and post decommissioning, along with detailed monitoring, emergency preparedness and response plans at every stage of implementation.</p> |  |
| 129.                     | <a href="#">Greg Link</a><br>(Dec 19, 2017)         | General | <p>The commenter provides the following feedback on a webinar held by CNL in October of 2017:</p> <ul style="list-style-type: none"> <li>• The webinar was fast paced and only the audio worked for most of the event; and,</li> <li>• Although the content appeared to be valuable, the team was unable to capture the content for the public to view at a later time.</li> </ul>   |  |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project

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| 130. | <a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017) | Section 5.0 (5-1 to 5-16)  | <p>The commenters express the position that CNL has not properly engaged nor informed the citizens of Manitoba of their intentions for the proposed ISD of the WR-1.</p> <p>In particular, the commenters express the following concerns with respect to CNL’s public information sessions held in Lac du Bonnet on September 2, 2016, December 1, 2016 and July 15, 2017:</p> <ul style="list-style-type: none"> <li>• No CNL representative made a formal presentation of facts and available options for the proposed ISD of the WR-1 reactor; instead the public was invited to circulate between “posters” CNL had developed for the sessions.</li> <li>• Limited information was presented on the poster boards, all of which focused on the proposed ISD, providing participants no information on the available options for decommissioning, the inherent risks and the long term stability and monitoring of the project.</li> <li>• At no time did a CNL representative take notes of questions or concerns, nor was there any effort to summarize participant feedback.</li> </ul> <p>In addition, the commenters note that when asked in person or in writing little to no information was provided by CNL on the alternative options, rather the preferred option of ISD was promoted and answers were deferred by stating information would be available when the draft EIS was released to the public. The commenters express the view that “for the public to be adequately informed and provide feedback, all options should have had equal representation at the public poster sessions and questions answered.”</p> |  |
| 131. | <a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017) | Section 5.0 (5-1 to 5-16)  | <p>The commenters express the concern that CNL has limited their open house public engagement to the communities within a 50 km radius of the WR-1, specifically in the 5 towns of Beausejour, Whitemouth, Pinawa, Lac Du Bonnet, and Powerview. The commenters note that CNL has been asked to host public engagement sessions in Winnipeg in order to inform and receive feedback from the thousands of season residents in these community areas as well as Manitoba citizens. Although CNL has been requested to do so (during open house sessions, in email and in follow-up written feedback response forms), the commenters indicate that to date, CNL has not hosted an open public information session in Winnipeg or outside of these 5 communities.</p> <p>With respect to the open houses held in these 5 communities, the commenters express the view that advertisements for these sessions were limited, i.e., one ad in the local paper “The Clipper” and on two occasions an advertising leaflet was distributed in resident mailboxes. The commenters note that the advertising leaflets were not received by many residents or they arrived the day of the event (as there is no home delivery and resident mailboxes are located in the central post office in the town of Lac du Bonnet which residents don’t visit on a daily basis).</p>  |  |
| 132. | <a href="#">Dave Taylor</a><br>(Nov 30, 2017)       | Section 5.2.2.2 (5-7)  | <p>With respect to media coverage, the commenter expresses the view that CNL has gone to great lengths to marginalize the articles in opposition to the concept. With respect to Table 5.2.2-2, the commenter notes that only one OpEd article was mentioned and it was incorrectly referred to as a letter to the editor (June 11, 2016 Letter to Editor: Generations Saddled with Pinawa Nuclear Burial Winnipeg Free Press). The commenter indicates that many OpEd articles have appeared in the Winnipeg Free Press and provides a list.</p> <p>[Please refer to commenter’s submission for the list of referenced articles].</p>   |  |
| 133. | <a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017) | Table 5.2.2-5 (5-7)<br>Table 5.3.2-2 (5-9)<br>Table 5.3.3-2 (5-13) | <p>The commenters express the view that Tables 5.2.2-2, 5.3.2-2, and 5.3.3-2, which are summaries of the issues raised during open houses, do not accurately reflect or include the questions and concerns expressed by them.</p> <p>The commenters pose the following question: how can CNL report on “key interests and</p>  |  |

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|  |  |  | <p>concerns” of the public when they did not register any questions, concerns or comments made?</p> <p>The commenters indicate that these tables reflect CNL’s interpretation and do not include the questions asked or concerns raised by attendees. The commenters note that there were attendees who verbally provided CNL feedback at the open houses as an alternative to completing and sending “comment cards” and that their voices are not portrayed in the draft EIS.</p>  |  |
| 134.                                       | <a href="#">Michael Stephens</a><br>(Dec 15, 2017) | Section 5.3.2.1 (5-8)<br>Table 5.3.2.2 (5-9) | <p>Although Table 5.3.2.2 summarizes issues raised at CNL’s Round 1 Open Houses, the commenter indicates that the draft EIS does not provide information with respect to how CNL will address these “key interests and concerns”. The commenter notes this is another indication of CNL’s one-way communication with respect to this project.</p>  |  |
| 135.<br>NEW                                | <a href="#">Greg Link</a><br>(Dec 19, 2017)        | General                                      | <p>Over the duration of the project, through conversations and research, the commenter came across various documents, studies and other references to incidents at Pinawa (when operational) that were not made readily available to the public.</p> <p>The commenter questioned why this information wasn’t initially shared, given the relevance of these potentially influential documents.</p> <p>[Note: In their submission, the commenter notes that they later discovered that this information had been made available to the public via <i>Freedom of Information Act</i>].</p>   |  |
| <b>Environmental Effects</b>               |  |  |  |  |
| <b>Environmental Effects – EA Approach</b> |  |  |  |  |
| 136.                                       | <a href="#">Northwatch</a><br>(Dec 20, 2017)       | General                                      | <p>The following statement is made several times in Sections 6 through 8 of the draft EIS: “<i>The end-state plan for the WL site will be 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-states.</i>” Despite the quantity of these statements, the commenter indicates that the draft EIS lacks quality in the discussion of end-state objectives of the proposed ISD approach.</p> <p>To demonstrate this point, the commenter provides the following examples of additional statements in the draft EIS:</p> <ul style="list-style-type: none"> <li>• The draft EIS states “<i>the facility structure would be decontaminated and then demolished to achieve unrestricted release criteria</i>” (page 1-7) but does not indicate what the release criteria is or would be, or the basis for developing release criteria;</li> <li>• The draft EIS states “<i>final radiological surveys to verify that release criteria are met</i>” (page 2-13) will be undertaken, but does not describe any methodology for undertaking those radiological surveys or provide any description of what the release criteria is that the survey is verifying has been met; and,</li> <li>• The draft EIS states “<i>following removal and decontamination, the facility would be subjected to a radiological survey to confirm that facility release criteria have been met</i>” (page 2-14), but as indicated above no release criteria has been described.</li> </ul> <p>The commenter notes that in later sections of the draft EIS (page 3-38) the document indicates that CNL is in the process of developing a <i>Closure Land-Use and End-State Plan</i>, which will include criteria for site remediation and clean-up, definitions of post-closure end-states, and the release criteria.</p> <p>The commenter indicates that it is unclear is how CNL could have developed a decommissioning approach – which it repeatedly claims will achieve the required end-state – before post-closure end-states have been defined. The commenter expresses the</p> |  |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project

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|      |                                       |                      | concern that what CNL is attempting to engage in is a private process of standard-setting.  |  |
| 137. | <a href="#">MMF</a><br>(Dec 19, 2017) | Section 6.1.1 (6-2)  | <p>This section of the draft EIS states: <i>“Project-specific effects can be quantified (e.g., incremental changes to ground and surface water quality, air quality, and fish and wildlife habitat). Because the socio-economic status of different communities, subpopulations and individuals may vary, a socio-economic effect may have positive aspects and negative aspects. An effect on a biophysical discipline is typically constrained to being negative or positive.”</i></p> <p>MMF explains that this introductory text is meant to provide support to later conclusions in the draft EIS, but MMF indicates that this statement overstates the levels of confidence in the analysis. For example, project-specific effects to fish and wildlife habitat are identified; however, MMF notes that the subsequent analysis does not quantify effects to fish and wildlife habitat. In fact, MMF states there are no formal surveys of fish and wildlife habitat for the WL site described in the draft EIS, and no methods for estimating effects to habitat, either in 2024 or in the future. This presents problems for later conclusions in the draft EIS, such as, for example, related to the protection of fish and fish habitat (Table 6.1.2.1); while identified as an issue to be assessed and considered in the draft EIS, the subsequent analysis does not specifically address changes to fish habitat in the Winnipeg River. MMF notes that it estimates the radiation dose to fish in the river (and the concentration of non-radioactive chemicals) and concludes that doses will not cause effects in adult fish. Later in the draft EIS (page 6-215) it is stated that <i>“fish habitat is generally similar throughout the RSA [Regional Study Area]”</i> However, MMF indicates it provides no evidence for this conclusion. MMF notes a consideration of the evidence from the scouring (near the plant site) and depositional zones (further downstream) in several places in the river could be considered as it relates to supporting or refuting this conclusion.</p> <p>MMF recommends that the draft EIS be reviewed, particularly the text in the “Assessment” section (Section 6) for conclusions that overstate its accuracy or imply that the analysis will be rigorous and predict impacts with any accuracy or precision. For example, no surveys of fish or wildlife distribution have been conducted for the draft EIS so MMF argues the text should not imply or include conclusions based on surveys that have not been undertaken. MMF notes that logbooks by staff are not accurate indicators of wildlife presence, abundance, or distribution at the site; etc. [<b>Recommendation 4.3.10a</b>].</p> <p>MMF recommends, to the extent that the conclusions identified in Section 6 require surveys or assessment activities that have not been undertaken regarding the project site and/or effects, these formal surveys, assessments etc. should be undertaken by experienced personnel. MMF further recommends that risk assessment models for the WL site should use site-specific surveys of species distribution for both the aquatic and terrestrial environments to provide some conceptual support for the models. The Ecological Risk Assessment (EcoRA) uses data from other studies and anecdotal reports to estimate exposure and does to VCs. These surveys or assessment activities should, as much as possible, be at locations specific to the project site and not drawn from other locations that may or may not provide comparable data (for example, fish community data on page 6-216 is drawn from other locations in the Winnipeg River and it is unclear if the fish population at the project site are similar or comparable to the location of this data source) [<b>Recommendation 4.3.10b</b>].</p> |  |
| 138. | <a href="#">MMF</a><br>(Dec 19, 2017) | Section 6.1.5 (6-17) | <p>MMF indicates that Section 6 of the draft EIS is intended to leave the impression that the risk assessment methods used here are rigorous and that the conclusions on exposure and effects are fully justified. However, MMF expresses the concern that most of the text glosses over the fact that conclusions are made without justification, a rationale or supported by data specific to the WL site. For example, phrases in Section 6.1.5 such as</p>  |  |



**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project**

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|   |  |                              | <p><i>“either because there was no linkage initially or because environmental design features or mitigation will remove the pathway, are not advanced for further assessment” or “pathways determined to have no linkage to a VC or those that are considered secondary are not expected to result in environmentally significant effects on the assessment endpoint of VCs”</i> result in pathways being removed without sufficient justification. MMF expresses the position that statements and conclusions must be based on evidence if they are to be relied on to support conclusions that there will be no, or limited, impacts on factors of importance to the MMC, its rights, interests or health and well-being.</p> <p>MMF recommends that the draft EIS be reviewed and revised so that statements of professional judgement are based on and linked to evidence.</p> <p>[Please refer to page 35 of MMF’s submission for more information].</p>   |  |
| <b>Environmental Effects – Geological and Hydrogeological Environment</b> |  |                              |   |  |
| 139.  | <a href="#">CELA</a><br>(Dec 19, 2017)   | Section 6.3 (6-71 to 6-144)  | The commenter indicates that the foundations of the WR-1 unit extend below-grade into bedrock but the exact depth is not reported in the draft EIS. The commenter notes that many services, including pipes, cables and a discharge pipeline for cooling water enter below-ground sections of the WR-1 site. The commenter explains that these service pipes and cables extend to the Winnipeg River and provide additional pathways for nuclide travel.  |  |
| 140.  | <a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018) | Section 6.3 (6-71 to 6-144)  | <p>The commenter expresses the position that the draft EIS is inadequate in its attempt to address the long-term implications of abandoning long-lived radionuclides that will remain a potential hazard for long periods of time. The commenter notes that on page 6-310 (Section 6.7.1.6.2.2) of the draft EIS, future dose rates are predicted.</p> <p>The commenter poses the following question: where are the detailed hydrological and geological studies over periods of hundreds of thousands of years that would justify the bold assurances given by CNL regarding the fate of a multitude of buried radionuclides over such enormously long time periods? The commenter notes that detailed studies covering a period of at least 500,000 would normally be required to establish the security of a permanent radioactive waste repository (so close to a river), taking into account the effects of geological and hydrological changes, including the effects of climate change, and the geochemical evolution of subterranean wastes over that enormous time period.</p> |  |
| 141.  | <a href="#">Northwatch</a><br>(Dec 20, 2017)   | Section 6.3.2.6.2 (6-139)    | The commenter indicates that no references were provided for key assumptions, such as, post decommissioning groundwater elevation will recover to the top of (or above) the reactor Materials, and mean advective groundwater travel times to the Winnipeg River were estimated to be on the order 100 years. Additionally, the commenter notes it is not clear on what basis CNL is able to calculate such matters as additional time required for solute mass to migrate through the grout when the formulations for grout have not yet been devised.   |  |
| <b>Environmental Effects – Surface Water Environment</b>                  |  |                              |   |  |
| 142.  | <a href="#">Wabaseemoong Independent Nations (WIN)</a><br>(Jan 9, 2018)              | Section 6.4 (6-145 to 6-206) | <p>WIN expresses the concern that baseline surface water quality and quantity conditions for areas within WIN’s territory near the project have not been established and should be before any other actions take place.</p> <p>WIN indicates that there were no “Sites of Interest” (SOI) selected within the WIN Territory and that no information has been provided with respect to how the spill or nuclear waste assessments conducted at the site would be adequately extrapolated to apply to sites within WIN Territory. WIN notes that the assessments for the SOI were overly simplistic, relying on a mass balance-type approach and in the case of acute toxicity, inappropriately comparing acute thresholds to a mixed scenario.</p>   |  |

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|      |  |                             | <p>WIN also indicates that the locations of “Highly Sensitive Receptors” (HSRs) have not been made public, but the criteria with which these HSRs were selected followed a blanket approach, which did not take in to account the individual values of the historical transportation corridor. In the case of WIN, for example, this might include local drinking water intakes that are not of public record (i.e., Ministry of Environment and Climate Change water well records).</p> <p>The section through the WIN Territory is a notable issue with respect to spill detection and spill response of nuclear waste. The greater the length of time required to respond to and contain a spill, the greater the potential is for contaminating surface water or groundwater resources, regardless of the other factors acting on spill volume and migration.</p> <p>WIN explains that the effects and issues pertaining to surface and ground water described above have implications for numerous WIN rights and interests given that water is the foundation of life and community wellbeing. As such, risks to water resources trigger risks to numerous WIN rights and interests including:</p> <ul style="list-style-type: none"> <li>• Risks to water and watersheds;</li> <li>• Barriers to access to resources and livelihood;</li> <li>• Risks to economic opportunities;</li> <li>• Risks to clean water for cultural, ceremonial and spiritual purposes;</li> <li>• Risks to environmental integrity and compounding cumulative impacts;</li> <li>• Risks to health and community wellbeing; and,</li> <li>• Barriers to stewardship and planning for seven generations.</li> </ul> |  |
| 143. | <a href="#">MMF</a><br>(Dec 19, 2017)        | Section 6.4.1.5.2.2 (6-160) | <p>This section of the draft EIS states: “<i>Although the installation of the engineered cover at the WR-1 Building is expected to slightly alter the drainage rates and flow patterns and discharge volume to the Winnipeg River; the changes are expected to be within the natural range of variation</i>” MMF express the concern that the data used to justify this statement is limited to only a few years during which CNL has managed the site. MMF indicates that it is unclear whether these assumptions will withstand the passage of time, particularly over 300 years given climate change and possible land-use changes in the area. It is unlikely that the surrounding environment and the land use will remain the same. The flow of the Winnipeg River may change with drier or wetter climate, and changes in the dams on the river. MMF explains that this uncertainty will also affect the project description and other aspects of the project over time as they are described, assessed and form conclusions in the draft EIS.</p> <p>MMF recommends that the draft EIS be revised to explicitly include acknowledgement that the uncertainty of the estimates increases over time. It is not possible to make conclusions on environmental and climatic conditions 300 years in the future with any certainty and the draft EIS should identify this limitation [<b>Recommendation 4.3.4a</b>].</p> <p>[Please refer to page 32 of the MMF’s submission for more information].</p>  |  |
| 144. | <a href="#">Northwatch</a><br>(Dec 20, 2017) | Section 6.4.1.5.2.2 (6-161) | <p>This section of the draft EIS states: “<i>The end-state plan for the WL site will be 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-states.</i>”</p> <p>The commenter requests that CNL provide a definition of “end-states” and a discussion of how planned end-states are measured and in what instances they have been achieved in other decommissioning projects. The commenter also notes that this statement appears repeatedly throughout the draft EIS.</p>   |  |

**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project**

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| 145.   | <a href="#">Eva Pip</a><br>(Nov 22, 2017)                 | Section 6.4.2.4.2.2 (6-179 to 6-181, 6-203)           | The commenter notes that the “ <i>final repository for water flow in the area is and will be the Winnipeg River, whose sediments have been shown to contain uranium and thorium progeny.</i> ” The commenter expresses the position that sediment monitoring should extend a substantial distance downstream because contaminants may be transported large distances and do not distribute uniformly and predictably but may accumulate in pockets along the way.  |  |
| 146.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Table 6.4.2-8 (6-190)<br>Table 6.4.2-13 (6-198)       | The commenters express the position that rather than just stating the year in which maximum groundwater concentrations are achieved, information should be presented on the total duration in which a radionuclide or non-radionuclide exceeds a drinking water guideline / standard.  |  |
| 147.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Sections 6.4.2.7 (6-202 to 6-203) and 6.4.2.9 (6-205) | This section of the draft EIS states: “ <i>Assuming an area source, the estimated dilution could be in the order of 283,000:1 if the plume rises 1 cm from the bottom and 1,400,000:1 if the plume rises 5 cm from the bottom. In either case, the available dilution is sufficient to render the plume indistinguishable from ambient river water.</i> ”<br><br>Similar to Section 10.5.1 “Comparison with Unconditional Clearance Levels” of the draft EIS, where Table 10.5.1-1 presents the calculated radioactivity remaining after being subjected to groundwater leaching for 140,000 years, the commenters indicate that CNL’s proposed solution is pollution by dilution rather than containment (i.e., ALARA).   |  |
| 148.   | <a href="#">MMF</a><br>(Dec 19, 2017)                     | Section 6.4.2.9 (6-205)                               | This section of the draft EIS states: “ <i>CNL’s current environmental monitoring program includes collecting water samples at one location upstream and three locations at varying distances downstream of the WL site. Surficial sediment is also collected at two locations upstream, at the outfall, and nine locations downstream. 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 Lac du Bonnet.</i> ”<br><br>MMF indicates that it is unclear if the collection of samples as described is adequate to detect changes in water chemistry if the WR-1 releases radionuclide and non-rad components more quickly than predicted. MMF notes that past monitoring programs may be considered to justify or refute the conclusion that the collecting sampling plan and timelines are sufficient to guard against the risks involved. Collecting cores every 20 years is unlikely to detect changes in water chemistry or deposition of contaminants and won’t allow for quick adaptive actions to correct releases.<br><br>MMF recommends that CNL consider data from past monitoring programs to justify a sampling schedule that will allow detection of any releases. Where indicated by these past monitoring programs, a sampling plan collecting cores more frequently than every 20 years should be implemented.<br><br>[Please refer to page 36 of MMF’s submission for more information]. |  |
| <b>Environmental Effects - Aquatic Environment</b> |   |   |  |  |
| 149.   | <a href="#">MMF</a><br>(Dec 19, 2017)                     | Section 6.5.4.2.3 (6-219)<br>Table 6.5.4-1 (6-220)    | This section of the draft EIS states: “ <i>From 1976 to 1982, downstream fish flesh concentrations of Cs-137 were greater than upstream concentrations for all fish species. However, the estimated dose from fish consumption (&lt;0.005 mSv/a) remained far below (0.01%) the occupational dose limit, so the fish remained safe to eat (AECL 1983). Concentrations in water decreased subsequent to improvements to effluent treatment at the ALWTC in 1982, similar to levels observed between 1962 and 1972 (AECL 1983).</i> ”<br><br>MMF notes that this is a significant observation which connects releases of Cs-137 from the plant to fish consumed by fishers.  |  |

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|      |  |                           | <p>MMF indicates that the data presented in Table 6.5.4-1 was collected from 2010 to 2015 but does not include the data prior to 2010 even though AECL has been monitoring fish since 1976. MMF notes that presumably this data is available and would provide additional details regarding the concentrations of contaminants in fish over longer periods of time. MMF explains that such information would be relevant to the consideration of the long-term effects of contamination on fish populations, over the 300 years of the project decommissioning, and the potential adverse effects on members of the MMC who harvest and consume fish as part of a traditional diet.</p> <p>The total incremental dose due to fish ingestion was identified as <math>1.14 \times 10^{-4}</math> mSv/a for adults. MMF expresses the view that additional information for this assessment is required, including, sample sizes, species consumed, amount of fish consumed, and the other nuclides assessed. This information is vital for estimating exposure in MMC citizens, and others harvesting fish as radionuclides are released from WR-1.</p> <p>MMF recommends that CNL provide and include a summary of the details of the historic concentrations in fish and the amount of fish consumed in the risk assessment models in the draft EIS. Monitoring of fish species has been conducted since the early 1970s but only the later data have been used for the assessment. The exposure models should use site specific data on species caught and amounts consumed, not generic values from the Canadian Standards Association (CSA) standard.</p> <p>[Please refer to pages 35-36 of MMF's submission for more information].</p> |  |
| 150. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 6.5.4.2.4 (6-221) | <p>This section of the draft EIS states: "<i>Benthic invertebrate studies were undertaken on the Winnipeg River in the vicinity of the WL site by AECL (1973).</i>"</p> <p>The commenter expresses the view that the over 40-year old study and the three other studies cited are not an appropriate evaluation of benthic invertebrates near the WL site. The commenter argues that these studies do not describe the current benthic environment adjacent to the WL site. In particular, the commenter notes that the effects from any operations at the site since 1973 will confound the results of any assessment, which is especially true since the reactor operated from 1965 to 1985.</p> <p>The commenter requests that CNL provide the results of more recent studies conducted adjacent to the WL site. As a minimum, the commenter indicates the timeframe for these studies cannot be greater than four (4) years. If recent studies are not available, the commenter requests that CNL conduct the appropriate surveys before proceeding with this undertaking.</p>   |  |
| 151. | <a href="#">MMF</a><br>(Dec 19, 2017)            | Section 6.5.4.2.4 (6-221) | <p>This section of the draft EIS indicates that benchmark dose to non-human species from the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and CSA are used; however, MMF explains there have been more quantitative assessments completed.</p> <p>MMF states: "<i>Environment Canada and the AECB used more conservative benchmark values for the Priority Substances List assessment for the protection of the environment around nuclear facilities (EC 2001). Specifically, the Radiation Benchmarks used in Section 6.3.2 are very selective in the literature that it uses to rationalize the UNSCEAR 1996 values, which are seriously outdated. EcoMetrix 2017, in Table 7-2 - Assessment endpoints, measurement endpoints, etc. includes a line of evidence for the radiological dose of growth, survival and reproduction that is not supported by the UNSCEAR benchmark. More conservative benchmarks are more protective and are considerably more quantitative.</i></p> <p><i>A more quantitative approach by the European Community (cited by Ecometrix)</i></p>   |  |

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|      |   |                              | <p><i>combined a detailed literature review, species sensitivity analysis and an added safety factor of 5, consistent with the assessment of other contaminants, to provide a chronic incremental screening dose of 10 µGy/h for the protection of all ecosystems (protective of 95% of species) using the ERICA approach (Brown et al. 2008, Garnier-LaPlace and Gilbin 2006, Garnier-LaPlace et al. 2006). It was recognised that this dose rate could also allow some cytogenetic effects in sensitive vertebrate species (Sazykina 2005, Sazykina et al. 2009)."</i></p> <p>Given the uncertainties in predicting background and incremental doses in the future, MMF recommends that a more conservative benchmark be used.</p> <p>[Please refer to pages 36-37 of MMF's submission for more information].</p>  |  |
| 152. | <p><a href="#">WIN</a><br/>(Jan 9, 2018)</p>  | Section 6.5 (6-207 to 6-231) | <p>WIN members have rights and established interests in fish and fishing, access to fish, fishing resources and the quality/safety of the fish. As stewards of the land members of WIN have a responsibility to protect ecosystems and ensure ecosystem function including trophic impacts of contamination. WIN expresses the view that potential adverse impacts on fisheries from the project would negatively impact the ability of WIN members to collect these fisheries resources and damage their relationship with them. Moreover, changes to concentrations of contaminants (e.g. nuclear spills) in fish tissues could have negative consequences on human health.</p> <p>WIN indicates that the primary risks to fish and fish habitat from the project are related to impacts from:</p> <ul style="list-style-type: none"> <li>• The destruction or alteration of fish habitat from the decommissioning of the reactor;</li> <li>• Introduction of deleterious substances (e.g., spills, sediment), which can degrade water quality causing direct mortality and sub-lethal effects on fish; and,</li> <li>• Modified ecosystem function and cumulative impacts on fish and fish habitat.</li> </ul> <p>WIN explains that the issues pertaining to fish, fish habitat and aquatics described above have inter-related implications for numerous WIN rights and interests including:</p> <ul style="list-style-type: none"> <li>• Barriers to access to resources and livelihood;</li> <li>• Risks to economic opportunities;</li> <li>• Risks to environmental integrity and compounding cumulative impacts;</li> <li>• Risks to health and community wellbeing;</li> <li>• Barriers to stewardship and planning for seven generations; and,</li> <li>• Risks to water and watersheds.</li> </ul> |  |
| 153. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Section 6.5 (6-207 to 6-231) | <p>Of the four alternatives assessed, ISD represents the highest risk to local aquatic systems because contaminated materials will reside permanently within the local environment. MMF expresses the position that permanent storage of radioactive contaminated material must be monitored indefinitely. MMF explains that 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 &lt;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, with maximum groundwater concentrations (at point of discharge) of 147 Bq/L and 3,760 Bq/L respectively. The latter of which is expected to occur within 68 years during post-closure. Due to the risks associated with contaminated groundwater, MMF indicates that a robust monitoring program must be in place.</p> <p>MMF explains that CNL plan to conduct surface water monitoring and surficial sediment monitoring to test for contaminants during closure and post-closure. However, MMF notes that it is unclear at what intervals this monitoring will occur. Moreover, the locations for water quality monitoring follow-up program are not sufficient. The nearest</p>   |  |

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|      |                                       |                              | <p>downstream surface monitoring location to the groundwater seep is 2 km downstream from the site boundary (monitoring station DS, Figure 6.4.2-3). MMF indicates this is unlikely to detect any contamination except from extreme events, nor to show any gradient or distribution of contamination.</p> <p>MMF recommends that CNL clarify the location, frequency and timing at which surface water and sediment sampling will occur. MMF indicates this data must be presented in text and in the form of a map (similar to Figure 6.4.2-3) with locations of all proposed follow-up monitoring locations clearly marked. MMF also notes this must be accompanied by a description of the frequency of monitoring proposed for these stations [<b>Recommendation 4.1.1a</b>].</p> <p>MMF recommends that additional surface water monitoring stations be planned closer to the location of groundwater emissions, given that the nearest downstream surface water and sediment sampling station in the Winnipeg River is too far for monitoring contamination of groundwater seepage. At minimum, MMF suggests these occur at the effluent outflow, the groundwater seep, 25m, 100m and 500m downstream on the Winnipeg River [<b>Recommendation 4.1.1b</b>].</p> <p>MMF recommends that water quality in trenches/ditches from the WMA be monitored actively during closure and post-closure. In addition, MMF requests that CNL provide additional details on locations and frequency of monitoring associated with the WMA. MMF notes that there should be clear adaptive management and contingency plans for responding to degrading water quality in these features such as capture and additional treatment [<b>Recommendation 4.1.1c</b>].</p> <p>[Please refer to pages 19-20 of MMF's submission for more information].</p> |  |
| 154. | <a href="#">MMF</a><br>(Dec 19, 2017) | Section 6.5 (6-207 to 6-231) | <p>CNL has identified “No Linkage Pathway” to residual effects from runoff during closure (page 6-186). However, MMF indicates: “<i>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. CNL has assumed that this would not occur because best practices would be in place. This includes, water management, containment barriers, and water testing.</i>”</p> <p>MMF recommends that CNL prepare an Environmental Protection Plan (EPP) outlining in detail the mitigation strategies and actions that will be taken to prevent contaminated runoff from the site to receiving waters during closure. In addition, MMF indicates that the EPP be provided to them for an opportunity for review. Failing this, MMF explains it will be necessary to incorporate potential effects of increased contamination to the Winnipeg River because of runoff, into the EA process.</p> <p>[Please refer to page 20 of MMF's submission for more information].</p>  |  |
| 155. | <a href="#">MMF</a><br>(Dec 19, 2017) | Section 6.5 (6-207 to 6-231) | <p>Beginning during post-closure and continuing for up to 500,000 years, groundwater contaminated from contact with the below grade building materials and WR-1 will leach steadily into the Winnipeg River. Radionuclides released can result in harm to aquatic wildlife. In the Goldsim (version 11.1) mass balance and transport model for groundwater, MMF notes that only radionuclides with half-lives longer than 1 day were modelled. MMF explains that this excludes a large number of potentially damaging radionuclides which, if present in large quantities could contribute to radiological effects on aquatic wildlife in the Winnipeg River.</p> <p>Moreover, MMF indicates that certain radionuclides with short half-lives may decay into</p>   |  |

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|      |   |                              | <p>daughter radionuclides with longer half-lives that continue to emit radiation. For example, I-135 with a half-life of 6.5 hours can decay through <math>\beta^-</math> decay into Xe-135 and Cs-135, the latter of which has a half-life of 2.3 million years. Thus, by excluding short-lived radionuclides from the modelling, CNL is potentially ignoring important sources of radioactive contamination and underestimating the potential risk to the aquatic environment.</p> <p>MMF recommends that the mass balance and transport model for groundwater include all radionuclides, including those with half-lives shorter than a day.</p> <p>[Please refer to page 20 of MMF's submission for more information].</p>  |  |
| 156. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Section 6.5 (6-207 to 6-231) | <p>In their evaluation of the potential effects of surface water contamination (dispersion modelling), MMF notes that CNL only evaluated concentrations of radionuclide and non-radionuclide contaminants at the Nearfield (50 m downstream) and Farm A (approximately 3,100 m downstream) locations. As a result, CNL were able to assume complete mixing of contaminants and utilize large dilution rates. For example, the dilution rate used for evaluation of contaminants for the nearfield site was 300,000:1. However, at the point where contaminated groundwater is being released into the Winnipeg River, MMF explains the dilution will be much less. MMF indicates that this will result in higher concentrations of contaminants in the water column (than shown in Tables 6.4.2-12 and 6.4.2-13 in the draft EIS) and in sediment (shown in Tables 6.4.2-14 and 6.4.2-15 in the draft EIS).</p> <p>MMF states: <i>“This is of concern for all contaminants, but particularly for highly toxic contaminants for which concentrations in groundwater are above applicable guidelines such as cadmium and lead. These contaminants released through the groundwater seep may have locally high concentrations that could bioaccumulate in fish and benthic invertebrates causing harmful effects. Moreover, the accumulation of these contaminants in fish tissues represents a potential pathway for human consumption, including affecting MMC citizens who rely on fishing and harvesting aquatic resources for subsistence and as part of a traditional diet and lifestyle.”</i></p> <p>By evaluating the concentrations of contaminants at the Nearfield location rather than in the immediate vicinity of the groundwater release, CNL is underestimating the potential effects of this project. To evaluate these effects, MMF requests that CNL produce a dispersion model to predict the concentrations of contaminants between the point of groundwater release into the Winnipeg River and the Nearfield location (between 0 and 50m). These higher concentrations should be used to calculate contaminant concentrations in sediment within the mixing zone for groundwater seepage. This updated and more localized information would enable CNL to evaluate the potential effects within the immediate area of effect near the seep and whether any contaminants are above regulatory guidelines for either surface water or sediment [<b>Recommendation 4.1.4a</b>].</p> <p>MMF requests that if concentrations of contaminants (radiological and non-radiological) are found to be higher than what has been predicted at the Nearfield and Farm A locations, CNL update the Human Health Risk Assessment (HHRA) and EcoRA to evaluate the potential impacts of these higher concentrations [<b>Recommendation 4.1.4b</b>].</p> <p>[Please refer to page 21 of MMF's submission for more information].</p> |  |
| 157. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Section 6.5 (6-207 to 6-231) | <p>As part of the existing licence for the WL site, CNL engages in monitoring of fish tissue at upstream and downstream locations from the project site. However, MMF notes that as indicated on page 6-231 of the draft EIS, CNL is not planning to monitor fish tissues for contaminants during the closure and post-closure phases. MMF explains that <i>“many individuals from the MMC fish regularly along the Winnipeg River for game species such</i></p>  |  |

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|  |   |                              | <p><i>as walleye, lake whitefish, smallmouth bass, and northern pike. The risk of health effects from consuming these contaminants is thus a serious concern for these fishermen and their families.” Due to the importance of fishing and fish consumption to the MMC, MMF explains it is critical that monitoring of fish tissue occur and be designed accordingly so that the predictions of low contamination can be verified.</i></p> <p>MMF requests that CNL engage in monitoring of fish tissues during the closure and post-closure (institutional control) phases and have adaptive management plans in place to address unanticipated levels of contaminants in edible portions of fish in exposure areas. MMF recommends that the sampling locations currently used for monitoring associated with the existing license be maintained. In addition, MMF suggests that monitoring should occur every year during closure and at least every 10 years during post-closure.</p> <p>[Please refer to pages 21-22 of MMF’s submission for more information].</p>   |  |
| 158.   | <a href="#">Eva Pip</a><br>(Nov 22, 2017) | Section 6.5.6 (6-231)        | <p>The commenter expresses the view that <i>“ongoing radioisotope monitoring is very important in fish, particularly since metallic elements may bioconcentrate to very high levels (thousands of times) compared to sediments, especially in top-level carnivores, which are the most at risk and also the most desirable species in sport fishery. It is a concern that many of the fish species are primarily resident year-round, which amplifies the opportunity for local contaminant uptake, and concomitant risks to public health. First Nations dietary habits must be particularly taken into account: for many First Nations persons, fish comprise the basis of traditional dietary protein intake. While contaminant monitoring in fish normally focuses on skeletal muscle tissue (the predominant tissue consumed), there is also traditional consumption of delicacies such as the livers of certain fish, which may contain many times the contaminant concentrations of skeletal muscle in the same fish. Thus analysis of skeletal muscle only may underestimate the intake and risk. Possibly the First Nations themselves would like to participate in the monitoring of their food by providing samples from their catch.”</i></p>   |  |
| 159.   | <a href="#">Eva Pip</a><br>(Nov 22, 2017) | Section 6.5.6 (6-231)        | <p>The commenter expresses the view that <i>“fish appear to be the only components of the aquatic biota that are included in the monitoring program, yet there are many other important components of the ecosystem that are excluded, for example there are species of rare snails, freshwater mussels (some of which may live for 100+ years and have a greatly extended window for uptake and cumulative body burden), and rare aquatic macrophytes in the area. Will changes to community composition be monitored? Will upstream and downstream communities be compared to better gauge such changes?”</i></p>   |  |
| <b>Environmental Effects – Terrestrial Environment</b> |   |                              |   |  |
| 160.   | <a href="#">WIN</a><br>(Jan 9, 2018)      | Section 6.6 (6-233 to 6-278) | <p>WIN expresses the concern that no specific surveys were conducted for mammals within the WIN territory, and only desk-based information was relied on. Further, wildlife habitat features targeted during baseline surveys excluded features needed to support wildlife of high value to WIN such as beaver lodges, dams, mineral licks, deer/moose winter habitats, muskrat dens, river otter burrows, bear and wolf dens, and many more.</p> <p>WIN indicates that no baseline data was collected on benthic invertebrates, even though they are one of the most vulnerable groups to long-term effects of oil spills, and are valued by WIN due to their recognized importance at the base of food chains. Benthic invertebrates supply food to numerous fish, amphibians, small mammals, and birds; these species subsequently act as food items for terrestrial species at higher trophic levels (bear, herons, mink, etc.). WIN notes that it is also important to collect baseline information on benthic invertebrates as a reference point for determining when an area has been fully remediated following a nuclear mishap. For these reasons, WIN states that the wildlife and wildlife habitat baseline data are not currently adequate for use in properly informing an EA or as a reference point for remediation after a nuclear disaster within the WIN</p> |  |



|      |                                       |                         |  |  |
|------|---------------------------------------|-------------------------|--|--|
|      |                                       |                         | <p>Territory.</p> <p>Also, WIN indicates it is clear that vegetation of traditional importance was not targeted during baseline surveys, assessed during the EA, or prioritized by mitigation methods. Further, there is a low level of information about the real-life success of various clean-up techniques within Manitoba and Ontario, particularly for nuclear waste. Depending on the severity of nuclear spill and age of the vegetation community lost, it may take many decades for the vegetation to be returned to similar conditions. Even if a nuclear spill occurs, however, remediating an area such that it can host vegetation used for traditional purposes (e.g., medicine, foods) is not currently a requirement for mitigation. Therefore, the current project – as proposed may pose a potential risk to WIN rights with regard to access to, use of, and management of traditional vegetation resources to maintain cultural practices, to sustain a livelihood and for economic well-being.</p> <p>WIN explains that the issues pertaining to wildlife and wildlife habitat described above have inter-related implications for numerous WIN rights and interests including:</p> <ul style="list-style-type: none"> <li>• Barriers to access to resources and livelihood;</li> <li>• Risks to economic opportunities;</li> <li>• Risks to environmental integrity and compounding cumulative impacts;</li> <li>• Risks to health and community wellbeing; and,</li> <li>• Barriers to stewardship and planning for seven generations.</li> </ul> <p>WIN expresses the view that their members have the right to access and harvest wildlife for spiritual, cultural, health, or economic purposes. They have the right to sustain a livelihood from the lands and resources, which includes hunting, trapping, fishing, tourism, and employment from resource development. They have a right to healthy, interconnected habitat that supports diverse and abundant species that are free of disease and migrate freely through their territory. Further, they have the right to manage the land and water according to their traditional teachings, which include a deep appreciation for ecosystem interactions and trophic relationships. WIN’s review of the EA resulted in a failure to conclude that the project will have merely negligible impacts on the rights of WIN from impacts on wildlife and wildlife habitat.</p> |  |
| 161. | <a href="#">MMF</a><br>(Dec 19, 2017) | Section 6.6.4.2 (6-245) | <p>This section of the draft EIS indicates that baseline terrestrial data for the WL property was gathered through incidental observations by staff and through targeted surveys for SAR in 2015. A desktop review was also completed to identify potential SAR within the RSA; however, MMF explains that Traditional Ecological Knowledge (TEK) or harvesting rights, practices and the needs of MMC land users were not considered.</p> <p>MMF recommends that CNL conduct multi-season (spring/summer/fall/winter) baseline terrestrial surveys to provide a less biased and more comprehensive measure of site characteristics and an accurate representation of the ecological components potentially affected by the project. MMF explains this would provide a more comprehensive assessment of potential impacts to native vegetative species and species of traditional importance to the MMC [<b>Recommendation 4.2.1a</b>].</p> <p>MMF recommends that CNL engage them to identify and consider the MMC’s extensive TEK, harvesting rights, current exercise of rights and ongoing needs and interests, during or in addition to the baseline surveys recommended above. MMF explains that there needs to be recognition of and accommodation measures provided for the Métis who live within the vicinity of and/or harvest within the project assessment areas as part of determining the significance of net effects as a result of the project [<b>Recommendation 4.2.1b</b>].</p> <p>[Please refer to pages 24-25 of MMF’s submission for more information].</p>  |  |

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| 162. | <a href="#">MMF</a><br>(Dec 19, 2017) | Table 6.6.5-1 (6-264)                                   | <p>CNL has identified that wildlife collisions with vehicles will be monitored, for which adaptive management measures will be considered, however MMF indicates that no thresholds have been provided.</p> <p>MMF recommends that CNL provide adaptive management thresholds at which additional wildlife collision mitigation measures will be applied.</p> <p>[Please refer to page 26 of MMF's submission for more information].</p>  |  |
| 163. | <a href="#">MMF</a><br>(Dec 19, 2017) | Table 6.6.5-1 (6-264 to 6-265)<br>Table 6.6.6-1 (6-276) | <p>CNL has identified that bat surveys will be conducted in the year prior to initiation of project decommissioning, during the 'appropriate season', and over multiple visits if necessary. MMF indicates that additional measures could be implemented to mitigate effects of disturbance and mortality to SAR bat species which are not considered in the draft EIS.</p> <p>MMF recommends that CNL identify the exact timeframe and frequency at which bat monitoring surveys will be completed. MMF notes that <i>"the seasonal and daily pattern of bat activity and the use of different types of roosts at different times of the year will impact the appropriateness of survey methodologies. The optimum time for dusk surveys at buildings, particularly during early summer is for two hours after the first bats emerge as this will cover the emergence period as well as the first return to the roost for some species. The time of first emergence varies between species, with noctules leaving around sunset and others leaving about 1 hour after sunset. Bats using underground structure at the site during the summer may not emerge until later, upwards of 4 hours after dark. Towards dawn, many bats swarm outside their roosts and surveys beginning about 90 minutes before sunrise and continuing until 15 minutes after sunrise ('sunrise surveys') is recommended (Mitchell-Jones, 2004)"</i> [<b>Recommendation 4.2.10a</b>].</p> <p>During this time, MMF recommends that continuous automated bio-acoustic detectors linked to data-loggers be used, so as to minimize missing the presence of SAR bats in the project area.</p> <p>MMF recommends that the location and installation of the replacement roosts (bat boxes) should be chosen to maximise the chances of the bats finding and adopting it. Care should be taken to install boxes close to existing flight lines and have an entrance close to appropriate / preferred habitat types. Many bat species prefer to fly in dark areas straight into vegetation, so external lighting on the site close to boxes should be avoided [<b>Recommendation 4.2.10b</b>].</p> <p>MMF recommends that if SAR bat species are identified during pre-decommissioning surveys, demolition of the facility should stop until individuals have left the area, roosts/nests are no longer active and/or adoption of habitat off-sets (bat boxes) have been confirmed [<b>Recommendation 4.2.10c</b>].</p> <p>[Please refer to pages 27-28 of MMF's submission for more information].</p> |  |
| 164. | <a href="#">MMF</a><br>(Dec 19, 2017) | Table 6.6.5-1 (6-265)                                   | <p>CNL indicates that chemical and radiological contaminant release will be monitored as part of follow-up monitoring during the closure phase to verify effects predictions and to provide information for use in adaptive management measures to address unforeseen effects. Adaptive management approaches have been proposed, yet MMF indicates that thresholds at which implementation of these approaches have not been provided in the draft EIS.</p> <p>MMF recommends that CNL provide adaptive management measures and thresholds being considered for follow-up monitoring.</p>  |  |

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|  |   |   | [Please refer to page 28 of MMF's submission for more information].  |  |
| 165.   | <a href="#">MMF</a><br>(Dec 19, 2017)   | Section 6.6.5.2.2 (6- 273)  | <p>MMF identifies that there are ongoing concerns with airborne contaminants that could deposit to soil, and water, where they could affect vegetation and wildlife/wildlife habitat of interest and importance to the MMC. MMF poses the following question: what emergency response protocols are in place to notify the MMC in the event that monitoring values exceed radiation benchmark values and applicable environmental guidelines?</p> <p>It is recommended that an Emergency Response Plan be developed by CNL in consultation with MMF, to notify its members in the event of radioactive leaks and airborne monitoring exceedances.</p> <p>[Please refer to page 28 of MMF's submission for more information].</p>   |  |
| 166.   | <a href="#">MMF</a><br>(Dec 19, 2017)   | Table 6.6.6-1 (6-275 to 6-277)  | <p><i>"Changes in radiation and radioactivity levels during post-closure phases were predicted for wildlife VCs living on or near the WL site. However, because species of traditional importance (i.e., commonly harvested by the MMC such as moose, deer, waterfowl, etc.) to the MMC were not specifically identified or considered as part of the post-closure plan, there are ongoing concerns regarding potential effects and exposure to animals in the long-term, and in particular that some specific species of importance to the MMC may not have been identified or considered."</i></p> <p>MMF recommends that CNL re-run the effects assessment of radioactive exposure to wildlife species of traditional importance to the MMC, as per the TKLUOS recommendation.</p> <p>[Please refer to page 27 of MMF's submission for more information].</p>   |  |
| <b>Environmental Effects - Human and Ecological Health</b> |   |   |  |  |
| 167.   | <a href="#">J. R. Walker</a><br>(Dec 8, 2017)<br><br><a href="#">William Turner</a><br>(Dec 18, 2017) | Section 6.7 (6-279)<br>Table 7.1.2-1 (7-4)<br>Table 7.1.3-1 (7-5)<br>Section 7.3.8.2.2 (7-23) | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>An Environmental Risk Assessment (ERA) is a planning and management tool that aims to identify, quantify, and characterize the risk posed by contaminants and physical stressors on human and non-human biota, including the magnitude and extent of potential effects associated with a facility. The commenters argue that an ERA's focus is on current operations, not issues that could result from future operations. The commenters indicate that an ERA is not designed to assess the performance of the components of the entombed system over the thousands of years that the structure's integrity must be maintained to ensure minimal risk.</p> <p>Both commenters argue that CNL's use of an ERA, for the purposes of the EA, is inappropriate. Particularly, Mr. Walker indicates the use of an ERA is inappropriate <i>"for the assessment of the decommissioning of nuclear facilities and the disposal of radioactive waste"</i>, and Mr. Turner <i>"for an evaluation of the risks from a future facility."</i></p> <p>Mr. Walker problematizes CNL's use of a risk matrix method to produce a qualitative measure of the risk posed by contaminants to humans and non-human biota by multiplying a subjective measure of the annual likelihood of an effect (rare, unlikely, possible, etc.) and suggests the IAEA's method is more appropriate for the appraisal of likelihood ("likely - frequent" and "very high", respectively, leading to "highest" risk).</p> <p>Mr. Walker recommends that CNL refrain from using a risk-based concept and instead follow appropriate Canadian and international guidance, while Mr. Turner suggests that</p> |  |

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|      |   |                       | <p>the authors eliminate all references to the results of an ERA, given that these results are inappropriate, and instead use a Performance Assessment (PA) approach which is more analogous to the EA process required under CEAA 2012.</p> <p>[Please refer to the respective commenter's submissions for more context, detailed references and examples: pages 5-6 of Mr. Walker's submission and pages 4-5 of Mr. Turner's submission].</p>  |  |
| 168. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Section 6.7 (6-279)   | <p>The draft EIS (page 6-297) acknowledges that: "<i>Harvesters represent traditional users of the area who may be exposed through harvesting of country foods.</i>" MMF indicates that the draft EIS and ERA TSD make a series of assumptions about land use location, duration, and frequency of harvesting activities. MMF expresses the view that the time spent by traditional harvesters at the WL site in the exposure model is very restrictive. The HHRA for the harvester assumes land use practices in 2324 to be similar to those in 2024 but MMF notes these may be completely different. MMF argues that it should be possible to conduct several land use practices using the transport models to determine if time of residency in the area and a more traditional diet will affect exposure.</p> <p>The draft EIS further states: "<i>Recreational users such as swimmers, anglers, and boaters that occasionally carry out recreational activities along the Winnipeg River at locations close to the WL site, as compared to the most critical group locations (Farm A and Farm F), are not directly considered for the assessment because these activities are not representative of population groups in the area.</i>" Given the potential for the change in land use over time, MMF argues these recreational activities should be considered as part of the assessment. As the project site and surrounding area become available for these uses, there is the potential for the recreational use of the area by the MMC to increase.</p> <p>MMF recommends that land use studies be conducted to determine if time of residency in the area and a more traditional diet will affect exposure [<b>Recommendation 4.3.18a</b>]. In addition, MMF recommends that recreational users and the potential increase in the recreational land use of the area should be considered in the land use studies undertaken [<b>Recommendation 4.3.18b</b>].</p> <p>[Please refer to page 38 of MMF's submission for more information].</p> |  |
| 169. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Table 6.7.1-1 (6-281) | <p>MMF indicates that the draft EIS identifies the harvesting practices of First Nations proximate to the project site, and the potential effects on the harvesting and other rights of First Nations. For example, Table 6.7.1-1 identifies how "<i>Sagkeeng FN harvest wild rice and medicinal plants in the area.</i>" As is identified throughout their review, the MMC has constitutionally protected rights and interests, and exercise those rights and interests in the vicinity of the project area. Much like First Nations, MMF explains that these rights and interests and the health and wellbeing of the MMC stand to be impacted by the project activities and resulting accumulation of contaminants in the environment and resources relied on by the MMC. Métis may have similar concerns and wish to harvest wild rice from depositional areas of the Winnipeg River downstream of WL site, which needs to be taken into account by CNL and included in the draft EIS.</p> <p>MMF recommends that CNL work with them to identify and consider the rights, interests and activities of the MMC that may be impacted by the project. MMF explains that these need to be included in the draft EIS, along with a consideration of how these harvesting activities and practices may be impacted by the presence of contaminants and consequently affect the health and well-being of the MMC. In addition, MMF notes that accommodation and mitigation options may be required.</p> <p>[Please refer to page 37 of MMF's submission for more information].</p>  |  |

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| 170. | <a href="#">J. R. Walker</a><br>(Dec 8, 2017) | Sections 6.7.1.6.1 and 6.7.1.6.2 (6-295 to 6-312)<br><br>Table 7.3.8-1 (7-26) | <p>The results provided in Sections 6.7.1.6.1.2 and 6.7.1.6.2.2 of the draft EIS show that doses to each of these critical groups would be below the dose constraint of 0.3 mSv/year, for closure and post-closure phases, respectively. The commenter raises the concern that this analysis is not conservative.</p> <p>The commenter references the WL Derived Release Limits (DRL) document which indicates that a wide range of types and scales of farming exist on both sides of Winnipeg River from Seven Sisters Falls to Lac du Bonnet; some inhabitants of the banks of the Winnipeg River in the vicinity of WL use well water and some use river water. The commenter notes that the WL DRL document uses conservative assumptions in modelling exposures (Section 5.4 of the WL DRL document):</p> <ul style="list-style-type: none"> <li>• For liquid effluent modelling, the critical group was conservatively assumed to draw all their water from the Winnipeg River. Thus, 100% of the drinking water was assumed to be contaminated.</li> <li>• For modelling airborne effluents, the critical groups were assumed to obtain their drinking water from wells, which were assumed to be contaminated.</li> </ul> <p>The commenter indicates that these conservative assumptions were not used in the draft EIS:</p> <ul style="list-style-type: none"> <li>• For the closure phase, residents of Farm F were modelled as ingesting well water (Table 6.7.1-7), rather than river water, which is a non-conservative assumption.</li> <li>• For the post-closure phase, residents of Farm A and the on-site farm were modelled as ingesting river water (Table 6.7.1-10). This may be a conservative assumption for Farm A, but it is a non-conservative assumption for the on-site farm.</li> </ul> <p>The commenter expresses the view that conservative modelling should be used in the assessment of hazards to critical groups. WR-1 is not immediately adjacent to the Winnipeg River, so, over the long time period that the proposed facility represents a hazard (thousands of years), an on-site farm using a well that intersects the plume from WR-1 may be quite likely. Hence, an on-site farm consuming well water should be considered as a critical group. Table 7.3.8-1 of the draft EIS gives the assessed doses to the adult, child, and infant residents of an on-site farm who use well water for drinking. These doses all exceed the dose constraint of 0.3 mSv/year, with the exception of an infant consuming cow's milk (rather than nursing or consuming formula).</p> <p>[Please refer to pages 4-5 of the commenter's submission for more information].</p> |  |
| 171. | <a href="#">Eva Pip</a><br>(Nov 22, 2017)     | Section 6.7 (6-279 to 6-315)  | <p>The commenter raises the concern with respect to the scenario of a possible failure of the ISD structure, without immediate detection, and how this would impact the residents in the area.</p> <p>The commenter poses the following questions:</p> <ul style="list-style-type: none"> <li>• Will this engender background chronic stress?; and,</li> <li>• Will epidemiological records be gathered well into the future to monitor health of surrounding permanent and seasonal residents?</li> </ul>   |  |
| 172. | <a href="#">Eva Pip</a><br>(Nov 22, 2017)     | Section 6.7.1.9 (6-315)<br>Section 6.7.2.9 (6-343 to 6-344)                   | <p>The commenter indicates that monitoring with respect to human and ecological health should also include plants (herbs, roots and bark) used for medicine, many of which are ingested, and edible fungi. The commenter explains that mushroom foraging in the region is a popular activity for both local residents and visitors, and some of these mushrooms are sold to restaurants. The commenter notes that fungi are known to be notorious bioconcentrators of many chemical elements, particularly rare earths and metals.</p> <p>The commenter also indicates that it would be desirable to monitor contaminants in horsetails (<i>Equisetum</i>) as they are exceptional bio-indicators of pollution due to their propensity for accumulating many rare elements, to the extent that they are used in</p>  |  |

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|      |   |   | <p>prospecting for rare metals that would be undetectable in soil samples due to their low environmental concentrations. The commenter explains that horsetails are also particularly useful since both terrestrial and aquatic species occur at the site, thus providing a convenient window on the health of both kinds of ecosystems.</p>   |  |
| 173. | <p><a href="#">Peter Baumgartner et al.</a><br/>(Dec 2, 2017)</p> | <p>Section 6.7.1.6.2.1 (p.6-305)<br/>Section 6.7.1.10 (p.6-344)</p> | <p>This section of the draft EIS states: “<i>An On-site Farm was not considered reasonable for the normal evolution scenario [NES] during the Institutional Control period. The WL site will be under institutional control for the first 300 years of post-closure, which will physically restrict residential use of the WL site, including any farming activities. However, the establishment of a farm (On-site Farm) was considered following post-Institutional Control once the site is no longer being actively managed. The assumption is made that at some time in the distant future, government failure leads to government controls (e.g., zoning designations, land use restrictions, or orders) becoming ineffective and people will be present on-site and make some use of local resource. The On-site Farm has the same characteristics as Farm A; however, residents obtain water from drinking, irrigation, and bathing from the Winnipeg River directly downstream of the WR-1 groundwater seep into the River.</i>”</p> <p>The commenters pose the following question: how do you prevent future residents of the on-site farm from using a well within the contaminated groundwater plume as a water source for daily living requirements?</p> <p>Conservatively, and to eliminate some uncertainty, the commenters propose that an on-site farm using a well within the contaminated groundwater plume exclusively, as the sole water source, be considered in the modelling.</p>  |  |
| 174. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p>                     | <p>Section 6.7.1.8 (6-314)</p>                                      | <p>Table 5-20 of the ERA TSD identifies that the dominant contributor to the total dose is C-14 through the ingestion of terrestrial plants and animals, and fish, except for the 3-month-old drinking formula, which has tritium as the dominant contributor to dose. MMF poses the following question: why is the dose not calculated for the nursing infant of the harvester?</p> <p>MMF indicates that the hazard quotients (HQs) derived for constituents of potential concern were below the protective benchmark for all receptors, with the exception of a toddler harvester during post-closure, which slightly exceeded the benchmark. For the toddler harvester, the total ingestion HQ slightly exceeded 0.2 for lead (HQ = 0.24) (page 6-314 of the draft EIS). The draft EIS further identified that “<i>with the exception of a toddler harvester during post-closure, which slightly exceeded the benchmark. If only the Project contribution is considered, the HQs are reduced even further and hazard quotients are well below for all receptors (the Project contribution to the total is 0.0021% for cadmium and 0.00002% for lead).</i>”</p> <p>MMF explains that this gap in the modelling scenario is significant as there does not appear to be a pathway for the nursing infant for the harvester scenario. MMF notes that a rationale for this was not located, nor was a description of the infant diet for the harvester. MMF assumes that the “harvester” is represented by a family with adults, a toddler and a breastfeeding infant, however this assumption needs to be confirmed and clearly identified in the draft EIS. Given the reliance of the MMC on harvesting activities, and the importance of protecting and preserving the harvesting rights and activities of the MMC for future generations of Métis harvesters, the data related to pathways for contaminants between adults and nursing infants is significant in terms of potential long-term health effects on members of the MMC.</p> <p>MMF indicates that further information is needed, including the diet for the infant harvester, and the identification of the family grouping considered, the pathway for the nursing harvester, etc.</p> |  |

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|      |  |                              | [Please refer to pages 38-39 of MMF's submission for more information].   |  |
| 175. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Table 6.7.2-2 (6-319)        | <p>Table 6.7.2-2 in the draft EIS identifies the VCs that would be impacted by the current activities associated the proposed entombment.</p> <p>The commenter argues that there can be no information about the species on the site at the end of the institutional control period, and that any assessment of species currently residing near the WL site that suggests they will still reside in the area more than about 50 years from now is “pure speculation”.</p> <p>The commenter further argues that as long as the institutional controls are maintained, all species present will be protected. However, without institutional controls, then the species present could be at risk. Thus, to ensure they are protected at the end of the IC period, the commenter indicates that the residual activity and hazardous substances must meet clearance levels.</p>   |  |
| 176. | <a href="#">William Turner</a><br>(Dec 18, 2017) | Table 6.7.2-3 (6-322)        | <p>Table 6.7.2-3 states that the “assessment endpoint” for nine (9) categories of VCs is “protection of ecological health”, however, the commenter notes that no definition of this term is provided in the draft EIS. The commenter notes that without a definition of “protection of ecological health”, one cannot determine whether the “endpoint” has been achieved. The commenter requests that either CNL define this term or remove this information from the assessment.</p> <p>Similarly, the items listed in the column “measurement indicator” all begin with “changes to ... quality”. The commenter indicates that this list lacks clarity in terms of what changes are to be measured. For example, any releases of gases from combustion, of particulates from cutting, grout preparation, transport, etc. will change the air quality. The commenter requests that either CNL include further details as to what is to be measured or remove this information from the assessment.</p>   |  |
| 177. | <a href="#">MMF</a><br>(Dec 19, 2017)            | Section 6.7 (6-279 to 6-344) | <p>MMF explains that the safety case for the WR-1 decommissioning relies to a large extent on the conclusions of the 2001 CSR for the WL site. Two areas with elevated radioactivity were expected to remain on the WL site: the contaminated Winnipeg River sediments and the LLW WMA. The conclusions from that study were based on the assumption that all High Level Waste (HLW) would be removed from the site and sent to a national disposal site within a number of years. As no facility has been selected or developed, leaving the HLW would change the conditions of the CSR for the WL site, and as such MMF indicates it should be re-examined as it forms the basis of the long-term plan for the site.</p> <p>Although the WR-1 decommissioning is a separate component of the CSR, MMF argues that the exposure models should be assessed in terms of the other sources of radioactivity on the site (LLW WMA, Winnipeg sediment, sewage lagoon and other sources of radioactive and non-radioactive contaminants).</p> <p>[Please refer to page 30 of MMF's submission for more information].</p> |  |
| 178. | <a href="#">MMF</a><br>(Dec 19, 2017)            | Section 6.7 (6-279 to 6-344) | <p>MMF explains that the draft EIS does not discuss the other sources of radioactivity currently stored on the site. The CSR indicates that, after decommissioning, there will be two sources of radioactivity that remain on the site: the contaminated Winnipeg River sediments and the LLW WMA. MMF indicates that there is no mention of these radiation sources or their influence on the risks from the WR-1 decommissioning in the draft EIS. MMF argues that these existing sources of radioactivity present the potential for additional radioactive material and effects that requires consideration as it may result in additional cumulative effects on the environment and specifically the MMC members that</p>   |  |

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|      |   |                              | <p>rely on the natural environment for the exercise of their rights and subsistence.</p> <p>The draft EIS (page 2-2) further identifies that the “<i>decommissioning approach for the WL site as described in the Comprehensive Study Report (CSR) was to remove all facilities entirely from the WL site with the exception of LLW trenches in the Waste Management Area, which may be managed through on-site in situ disposal (AECL 2001). Over a 10-year period, multiple buildings and facilities at the WL site have been decommissioned and the occupied space has been remediated, in an effort to meet this objective</i>”. MMF indicates that the Winnipeg River sediment is not mentioned here although it was identified in the CSR as remaining after site closure. MMF notes it is also not clear what the long-term plans are for the irradiated fuel remaining on-site.</p> <p>Although the draft EIS is written specifically for the WR-1 ISD, MMF recommends that it be reviewed in the context of the larger site and other sources of contamination. At the very least, MMF recommends that the description of the site and exposure models should include all sources of contamination and their management plans including identifying the long-term plans for the irradiated fuel currently on-site and the Winnipeg River sediment.</p> <p>[Please refer to page 32 of MMF’s submission for more information].</p>   |  |
| 179. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Section 6.7 (6-279 to 6-344) | <p>The draft EIS and associated documentation indicate that land use plans and institutional control are clearly defined and will continue during post-institutional period (300+ years) and will be designated for other uses after 300 years. The draft EIS also acknowledges that the government might not maintain control over the site in which case monitoring programs might not continue and that people may “be present on-site and make some use of local resource”. Given this uncertainty, MMF notes that predicting social, political and environment conditions 300 years into the future is very problematic. In terms of exposure modelling and access to the site, MMF indicates that it would be more conservative to adopt a model that allows for no controls and unrestricted access to the site. The long-term plan or “end use” for the WL site is also unclear, and where possible MMF explains this should be clearly identified in the draft EIS as this “end use” state will be of importance to the MMF and ultimately affect what traditional uses and activities can be carried out there by MMC citizens.</p> <p>MMF recommends that the draft EIS be revised to include, as a possibility, an institutional control model with no controls and unrestricted access to the site, to take into account the uncertainty of the end state of the WL site [<b>Recommendation 4.3.15a</b>].</p> <p>MMF recommends that, if possible, the long-term plan or “end use” of the WL site should be clearly identified, including a timeline leading up to this end use state. Limitations on the MMC use of the lands and resources resulting from this anticipated “end use” state should be clearly identified [<b>Recommendation 4.3.15b</b>].</p> <p>[Please refer to page 37 of MMF’s submission for more information].</p> |  |
| 180. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p> | Section 6.7 (6-279 to 6-344) | <p>The draft EIS (page 6-288) states: “<i>Results of the Comprehensive Study Report (AECL 2001) indicated that no public health threats were predicted from the decommissioning and reclamation activities for the WL site. Releases are well within regulatory limits for the protection of human health and regular monitoring provides that any aberrations are detected immediately (AECL 2001).</i>” The draft EIS (page 6-294) further identifies that the “<i>Results of the Comprehensive Study Report [“CSR”] indicated no residual effects on public health are expected as a result of the closure of the WL site.</i>”</p> <p>MMF argues that this is a misrepresentation of the results of the CSR: The CSR determined that there would only be the LLW WMA and the Winnipeg River sediment as</p>  |  |



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|      |   |   | <p>the two remaining sources of radioactivity on the site. All HLW was to be removed to a national disposal site that would isolate the waste from the biosphere. Because of those assumptions, there would be no long-term impact on public health at WL site. Those assumptions have now been changed with the long-term ISD storage of WR-1.</p> <p>MMF recommends that the ISD of the WR-1 should be analyzed in terms of the sources of radiation on the site (LLW WMA, the Winnipeg River sediment, lagoon, etc.). Also, the CSR should be re-visited with updated data.</p> <p>[Please refer to pages 37-38 of MMF's submission for more information].</p>  |  |
| 181. | <p><a href="#">MMF</a><br/>(Dec 19, 2017)</p>         | <p>Section 6.7 (6-279 to 6-344)</p>                             | <p>MMF indicates that the draft EIS and the ERA TSD both often use the term "conservative" when describing uncertainty without explanation or evidence. For example, page 7.1.6 of the ERA TSD states: "<i>The EcoRA problem formulation is conservative in its assumptions to accommodate uncertainties and meet the objective of protecting ecological health during the post-closure period</i>" and "<i>There is uncertainty in the radiological and non-radiological release rates to the surface water environment; however, the estimates are expected to be conservative.</i>" Also, in a previous section of the ERA TSD, entitled "Uncertainty in Exposure Assessment", MMF notes that sentences such as "this is considered appropriate" and "dose coefficients were obtained from reputable sources" are not convincing and cannot be reviewed. Page 6-344 of the draft EIS states: "<i>Although uncertainties in the assessment exist, conservatism has been included in the modelling so that residual effects are not greater than predicted... Overall, residual effects are considered to be not significant for all ecological health VCs during the closure and post-closure phases. Monitoring and follow-up programs include implementation of CNL's existing Environmental Monitoring Program. These activities will verify effects predictions for ecological health.</i>"</p> <p>MMF argues that there needs to be some support for these types of statements. MMF indicates that evaluating conservatism needs to be expressed relative to another set of conditions. Here it is stated, without support. For the statement on page 6-344, MMF explains there is no support for the observation of "residual effects are not greater than predicted" without some reference.</p> <p>MMF recommends that the draft EIS be reviewed for consistency in the use of the term "conservative" when describing uncertainty of various aspects of the project. In addition, evaluating conservatism needs to be expressed relative to another set of conditions.</p> <p>[Please refer to page 39 of MMF's submission for more information].</p> |  |
| 182. | <p><a href="#">J. R. Walker</a><br/>(Dec 8, 2017)</p> | <p>Section 6.7 (6-279 to 344)<br/>Section 7.0 (7-1 to 7-29)</p> | <p>The commenter expresses the position that the draft EIS lacks an adequate assessment of the NES. Based on the Canadian and international guidance referenced in the submission, the commenter notes that the NES should be based on reasonable extrapolation of present day site features and receptor lifestyles. The commenter also notes that it should include expected evolution of the site and degradation of the waste disposal system (gradual or total loss of barrier function) as it ages.</p> <p>The commenter indicates that the draft EIS's consideration of future on-site human habitation and facility degradation under Section 7.0 "Accidents and Malfunctions" is inappropriate, since they should be considered as part of the NES.</p> <p>The commenter explains that the material contained in the proposed facility will remain hazardous for thousands of years, which is far longer than the expected life of the proposed facility, its cover, and the grout. As such, the commenter indicates that the NES should include the effects of the degradation of the proposed facility, including the direct transfer of the hazardous material to the accessible biosphere. Similarly, the commenter</p>   |  |

**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project**

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|  |  |                              | <p>states that the NES should include a critical group of on-site residents consuming well-water as this is a reasonable extrapolation of the present.</p> <p>Lastly, the commenter indicates that the hazards associated with the NES should be assessed against extant Canadian criteria.</p> <p>[Please refer to pages 7-8 of the commenter's submission, for details on the documentation cited].</p>  |  |
| <b>Environmental Effects - Land and Resource Use</b> |  |                              |  |  |
| 183.   | <a href="#">William Turner</a><br>(Dec 18, 2017) | General                      | <p>The commenter expresses the concern that there is a lack of clarity in the draft EIS with respect to the long-term implications with the future land use of the “entombed” WR-1 site. As such, the commenter asserts that CNL’s assessment of the long-term adverse environmental impact of the proposed undertaking remains unproven.</p> <p>In order for one to conduct an evaluation of the environmental effects, the commenter indicates that one needs a clearly defined end-state. The commenter argues that there is the lack of a clearly defined end-state, and provides a list of examples on page 3 of their submission to support this argument.</p> <p>The commenter also poses the following questions:</p> <ul style="list-style-type: none"> <li>• What is the eventual end-state for the WL site as a whole? From the draft EIS, it appears to be “unrestricted land use”.</li> <li>• What is the eventual end-state for WR-1 itself?</li> <li>• Will the location of the WR-1 building ever be released for unrestricted land use? If so, when? (There appears to be at least two answers to this question, one is “never” and the other is post-institutional control. However, an explicit answer is not provided in the draft EIS.)</li> <li>• When will the need for “institutional control” end?</li> <li>• When will the need for monitoring end?</li> <li>• At the WR-1 end-state, what is the total residual radioactivity?</li> <li>• At the WR-1 end-state, what is the residual radioactivity for each of the long-lived individual radionuclides?</li> </ul> |  |
| 184.   | <a href="#">CELA</a><br>(Dec 19, 2017)           | General                      | <p>CELA notes that the original 1960s and 1970s agreements between AECL and the Manitoba Government stipulated that both locations would be returned to “green-field conditions” on their abandonment by AECL. CNL argues that it is questionable whether CNL’s proposal will be considered as “green-field conditions” by the Manitoba Provincial Government.</p> <p>[Please refer to pages 56-57 of the commenter’s submission for more information and references].</p>   |  |
| 185.   | <a href="#">SFN</a><br>(Jan 15, 2018)            | General                      | <p>SFN explains that key elements of the proposed facility have a design life of only 300 years. In contrast, SFN notes that Sagkeeng and other Indigenous peoples have used the lands surrounding the WL site for thousands of years. SFN indicates that <i>“this land use continues today and will extend far into the future, long after the proposed radioactive waste containment will have failed. When this occurs, hazardous radioactive wastes will be dispersed in the environment, causing impacts to land, water, traditional foods and people. These impacts will last for thousands of years. These are the fundamental truths of this plan, which represents a backslide from the previously approved plan to remove these dangers from our territory, a plan which has been changed without meaningful Crown consultation, and was hatched by a Proponent whose motives are unclear to us.”</i></p>  |  |
| 186.   | <a href="#">SFN</a>                              | Section 6.8 (6-345 to 6-386) | SFN expresses the position that the spatial boundaries of the assessment are inappropriate   |  |

**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project**

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|      | (Jan 15, 2018)                        | Section 6.8.3.3 (6-353)                               | <p>for assessing potential impacts to CULRTP. SFN indicates that the Local Study Area (LSA) must include the access road, due to potential increased traffic during decommissioning activities. In addition, the RSA must be expanded to include the full scope of SFN's traditional territory (including provincial parks, ecological reserves, wildlife management areas, and regional municipalities, all of which place restrictions on the exercise of SFN's harvesting rights and CULRTP).</p> <p>SFN recommends that CNL revise the RSA and LSA for the CULRTP accordingly and re-submit the assessment of potential effects based on these revisions.</p>   |  |
| 187. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 6.8 (6-345 to 6-386)<br>Section 6.8.4 (6-354) | <p>SFN notes that a projects inclusion list has not been provided for assessing cumulative effects on CULRTP. However, SFN indicates it is clear that there are numerous past and present projects/activities (e.g., paper mill at Pinefalls-Powerview, hydro-electric dams on the Winnipeg River, provincial parks, etc.) that continue to present adverse effects on CULRTP within SFN's traditional territory.</p> <p>SFN recommends that CNL provide a supplementary submission that provides a listing of all past and present projects and activities that pose legacy and current cumulative effects with SFN territory (including but not limited to the Winnipeg River).</p>   |  |
| 188. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 6.8 (6-345 to 6-386)<br>Section 6.8.4 (6-354) | <p>This section of the draft EIS indicates that the assessment CULRTP was entirely conducted through desktop research and non-research "engagement processes" with Aboriginal groups. SFN expresses the position that this approach is highly deficient and does not meet the current standard of assessment of potential project effects on CULRTP (and rights-based practices) within Canada.</p> <p>In addition, SFN expresses the view that the results of the analysis for interactions between the project and CULRTP VCs are invalid for the following reasons:</p> <ul style="list-style-type: none"> <li>• Lack of baseline information for SFN CULRTP;</li> <li>• Lack of consideration of SFN future CULRTP within proximity of research;</li> <li>• Inappropriate exclusion of wide range of project effects with potential to interact with SFN CULRTP, including exclusion of "restricted access" from consideration as a residual effect; and,</li> <li>• Lack of community consultations/research to validate assumptions of interactions and potential success of mitigation measures in addressing potential impacts on CULRTP.</li> </ul> <p>SFN recommends that CNL provide a supplementary assessment of the effects of proposed project on SFN CULRTP within and adjacent to the project area, including documentation of pre-industrial baseline, "current conditions baseline" that includes past and current projects/activities within the region that continue to affect CULRTP, project-activities interaction matrix, and use of current best practices relating to community-led TKLUS.</p> |  |
| 189. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 6.8 (6-345 to 6-386)<br>Section 6.8.4 (6-354) | <p>SFN notes that Section 1.6.2 of the draft EIS asserts to adhere to CEAA's <i>Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site or Thing that is of Historical, Archeological, Paleontological or Architectural Significance under the Canadian Environmental Assessment Act, 2012</i>. This guidance states that changes to cultural landscapes and geographic locations that are linked to Indigenous spiritual and cultural practices must be assessed.</p> <p>However, SNF indicates that this section and the draft EIS as a whole entirely omits any consideration or assessment of project effects on SFN intangible cultural heritage.</p> <p>SFN recommends that CNL provide a supplementary assessment of the effects of proposed project on SFN's intangible cultural heritage, including effects on SFN cultural</p>   |  |

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|      |                                       |  | landscapes or locations linked to community legacy, spiritual and cultural practices.  |  |
| 190. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 6.8 (6-345 to 6-386)<br>Section 6.8.5 (6-376 to 6-386) | <p>This section of the draft EIS concluded that there is no "linkage pathway" between the project and cultural heritage; and between dust and noise effects and CULRTP.</p> <p>As noted in previous SFN comments, due to deficiencies in the characterization of CULRTP and flaws in the identification of impact pathways and omissions of potential effects, SFN argues that this conclusion is not supportable and should be revisited. The discussion, on page 6-381 of the draft EIS, excerpted below is provided by SFN as an example of the flawed conclusions in this section: <i>"Land and resources use are restricted on site, although continue to persist in locations adjacent to the WL site...Project activities, including site preparation, WR-1 Building demolition and operation of the batch mixing plant, are expected to increase the level of nuisance factors (dust and noise) in the LSA; however they are not expected to have a substantial effect on an individual's land and resource use experience or on harvested species because of mitigation and management practices put in place for the Project."</i></p> <p>SFN expresses the concern that this conclusion is not based on any baseline of current conditions of use, or on any input from SFN in regards to intangible cultural heritage and/or effects of project noise/dust on preferred use of the vicinity of the project for harvesting.</p> <p>Based on a supplementary community-based study of project-CULRTP interactions and mitigations, SFN recommend that CNL provide a revised assessment of potential project impacts on CULRTP, taking into consideration cumulative effects.</p> |  |
| 191. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 6.8 (6-345 to 6-386)<br>Section 6.8.5 (6-376 to 6-386) | <p>SFN indicates that the assessment in this section of the draft EIS has minimized the impact of the project in its effect of reducing the overall percentage of the WL footprint that would be returned to potential use by SFN for CULRTP and other activities. Page 6-384 of the draft EIS states: <i>"Under the original decommissioning plan, a smaller percentage of the site (the waste management area) would have had restricted access than with the Project; however, the area with anticipated restricted access under the Project is still small when compared with the remainder of the WL site....Although a smaller proportion of the WL site will be available for unrestricted use as was previously anticipated because of the Project, it is still anticipated that the majority of the site would be safe and appropriate for other use. Overall, this will result in an increase in the amount available for future use in the LSA. As such, these pathways are categorized as secondary."</i></p> <p>SFN argues that this characterization is incorrect and should be revised to reflect the concerns of SFN and other regional communities to have all waste removed from the site, and how this project has the potential to adversely impact future use of the area - in perpetuity - as well as heighten community perception of risk related to use and harvesting of country foods from the Winnipeg River and adjacent area.</p> <p>SFN recommends that the conclusions of this section of the draft EIS should be revisited in light of a supplementary community-based study of project-CULRTP interactions and mitigations.</p>                          |  |
| 192. | <a href="#">SFN</a><br>(Jan 15, 2018) | Section 6.8 (6-345 to 6-386)<br>Section 6.8.5 (6-376 to 6-386) | <p>SFN argues that although the assessment in this section of the draft EIS has acknowledged that the project may have the effect of heightening a perception of risk regarding use of the project footprint and adjacent area and downstream portions of the Winnipeg River, overall the assessment has dismissed community concerns as being attributable to <i>"a small number of users"</i> (page 6-385) that can be mitigated through <i>"robust communication of environmental monitoring results to confirm the safety of the WL site and help address concerns about future uses"</i> (page 6-386). Further, although</p>  |  |

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|   |  |                              | <p>CNL notes that currently no communication model exists for the project to disseminate information to Indigenous communities, it concludes that with "mitigation in place (i.e., communication measures to mitigate perceptions), Project effects on land and resource use are expected to be negligible."</p> <p>SFN expresses the position that the draft EIS's outright dismissal of community concerns and as illegitimate perceptions that simply require "correction" through the communication of monitoring results, serves to underline the failure of CNL, through its very limited consultation efforts with SFN and other Indigenous communities, to apprehend and appreciate community concerns related to the project, and in particular why communities in the region want the waste to be completely removed from the facility.</p>  |  |
| <b>Environmental Effects – Socio-Economic Environment</b> |  |                              |  |  |
| 193.  | <a href="#">Eva Pip</a><br>(Nov 22, 2017)          | Section 6.9 (6-389 to 6-446) | <p>The commenter poses the following questions with respect to the proposed ISD's impact on the socio-economic environment:</p> <ul style="list-style-type: none"> <li>• Will property values suffer because people will not want to move to or live in the region?</li> <li>• Will tourism be adversely affected by negative perceptions?</li> </ul>  |  |
| 194.  | <a href="#">Michael Stephens</a><br>(Dec 15, 2017) | Section 6.9.4.2.6.1 (6-426)  | <p>This section of the draft EIS states: "There is still uncertainty regarding the future uses of the WL site once CNL transfers control to AECL for Institutional Control."</p> <p>The commenter notes that this is the first mention in the draft EIS that CNL will turn over the WL site to AECL for institutional control during the post-closure phase of the project (institutional control is part of the project, as per page 3-3). The commenter raises the concern that there is no mention of how AECL plans to implement institutional control.</p> <p>In addition, the commenter poses the following question: why, then, is AECL not a co-proponent of the project, and why is there no detailed description of what institutional control will consist of and how it will be financed?</p>  |  |
| 195.  | <a href="#">LGD of Pinawa</a><br>(Dec 19, 2017)    | Section 6.9 (6-389 to 6-446) | <p>The commenter expresses the position that this section's conclusion - that the impacts of the project on the socio-economic environment are "not significant" - is inappropriate.</p> <p>The commenter raises the following concerns with respect to this section's proposed mitigation: "The first item concerns the activities of Whiteshell Laboratories Community Regeneration Partnership. We acknowledge that CNL and AECL are both actively participating in the partnership. However, participation in the partnership does not guarantee a significant positive outcome for the future economy for the region. Furthermore, there is no long term commitment to continue to assist with economic development activities for the region after the project is complete. It follows that if there is no significant progress made in economic development for the region by the end of the project, the region will be left with legacy nuclear disposal at the Whiteshell Laboratories site and that will certainly eliminate some economic opportunities for the region as outlined in our letter of July 4, 2016. The other 3 items listed as proposed mitigation are important to communicate the level of hazard and to minimize the level of hazard. However, this will not change the fact that the region will be left with legacy nuclear disposal and this will eliminate some economic opportunities for the region. It is not possible to simply conclude that this possible outcome is not significant. This can be rectified by a more detailed commitment for both participation in and funding of Whiteshell Laboratories Community Regeneration Partnership activities to facilitate future economic development of the region."</p> |  |

| Accidents and Malfunctions |  |                       |   |  |
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| 196.                       | <a href="#">Dave Taylor</a><br>(Nov 30, 2017)<br><br><a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017)                                     | General               | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>The commenters note that CNL has stated, from their conservative modelling, the best case scenario is no more exposure to the general public than a dental X-ray. However, the commenters indicate that CNL has failed to predict and articulate the implications of the worst case scenario. The commenters also note CNL has failed to provide information regarding their monitoring procedures.</p>  |  |
| 197.                       | <a href="#">William Turner</a><br>(Nov 25, 2017)<br><br><a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018) | Table 7.2.1-1 (p.7-5) | <p>The CCNR highlights that “<i>some of the radioactive materials in the WR-1 core and radioactive structural materials are very long-lived. Nickel-59 has a half-life of 76,000 years. Plutonium-239 has a half-life of 24,000 years, but it will take almost a quarter of a million years for 99.9% of the Pu-239 atoms to disintegrate. And when those plutonium atoms do disintegrate, they do not disappear, but are transmuted into new radioactive atoms having a half-life of 700 million years. This fact is nowhere indicated in the draft EIS.</i>”</p> <p>The CCNR expresses the position that the draft EIS provides no information of the actual inventory of radionuclides that are to be entombed nor information about the half-life, total activity in Bq, mode of decay, radioactive progeny, or any other pertinent data.</p> <p>In addition, the CCNR notes that there is an error in Table 7.2.1-1 of the draft EIS, as Radon-226 does not exist. The commenter presumes the radionuclide intended is Radium-226, which has a half-life of 1600 years.</p> <p>The CCNR also presumes that the term “Isotopic Plutonium” indicates a mixture of Plutonium-239, Plutonium-240, and Plutonium-241, with half-lives of 24,100 years, 6,560 years, and 18.1 years.</p> <p>[Please refer to the table of half-lives on page 10 of the commenter’s submission for more information].</p> <p>The CCNR explains that of the 22 radionuclides indicated in Table 7.2.1-1, 11 of them have half-lives of over 100 years, 9 of them have half-lives over 1,500 years, 7 of them half half-lives over 15,000 years, 4 of them half half-lives over 100,000 years, and 1 of them has a half-life over 15 million years.</p> <p>[Please refer to page 11 of the commenter’s submission for their breakdown of calculations and table of multiplied half-lives].</p> <p>The CCNR indicates that the longevity of these radioactive materials is measured not just in hundreds of thousands of years, but in millions of years. The commenter expresses the concern that the WR-1 structure was never designed for the purpose of entombing such radionuclides over such a long period of time.</p> <p>The CCNR requests that CNL provide a detailed and realistic description of the expected breakdown of the WR-1 subterranean structures over the centuries and millennia to come. Moreover, the commenter indicates that a complete and detailed inventory of all radionuclides should be included, with half-lives, total activity (in Bq), mode of decay (alpha, beta, gamma), and radioactive progeny.</p> <p>Mr. Turner notes that no comprehensive list of radionuclides is included in the draft EIS. Without a description of the “source terms”, Mr. Turner argues that it is impossible to evaluate any potential impacts to the environment, health and safety of persons, both</p> |  |

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|   |  |  | short-term and long-term.   |  |
| 198.  | <a href="#">J. R. Walker</a><br>(Dec 8, 2017)    | Section 7.3.7 (7-18)<br>Section 7.3.8.2.2 (7-24)<br>Table 10.5.1-1 (10-11) | <p>The commenter raises the concern that there is a lack of an adequate assessment of the barrier failure. The commenter indicates that no analysis is provided on the impact of the direct transfer of radionuclides out of the proposed facility to the accessible biosphere by natural weathering or by normal human activities such as road or building construction, farming, etc. The commenter argues that this pathway should be assessed and presented, since the radiological and non-radiological hazards represented by the proposed facility will exist long after the proposed facility, its cover, and its grout, have all degraded.</p> <p>As indicated in Section 7.3.8.2.2 of the draft EIS, the transfer of material from a single exploration borehole to the accessible biosphere results in radiation doses in excess of both the dose constraint (0.3 mSv/year) and the public dose limit (1 mSv/year). The commenter argues that the direct transfer of radionuclides out of the proposed facility to the accessible biosphere by natural weathering or by normal human activities such as road or building construction, farming, etc. should be modelled and the resultant doses assessed against the dose constraint of 0.3 mSv/year.</p> <p>The <i>Decommissioning Safety Assessment Report</i> TSD discusses potential doses to the public following a postulated glacial cycle and provides a comparison with CNSC's unconditional clearance levels. The results appear in Table 10.5.1-1 of the draft EIS.</p> <p>Similarly, the commenter argues that the comparison with unconditional clearance levels should be expanded to include all pathways where humans could be exposed, for example, through natural weathering or normal human activities such as road or building construction, farming, etc.</p> <p>[Please refer to pages 6-7 of the commenter's submission for more information].</p> |  |
| <b>Cumulative Effects and Past Accidents/Events</b> |  |  |   |  |
| 199.  | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 8.0 (8-1 to 8-18)  | The commenter notes that if CNL designed the facility such that at the end of the institutional control period the residual activity met clearance levels, then, except for short-term activities, this section is not required. The commenter requests that CNL address the end-state requirement to meet clearance levels, and remove all irrelevant information from the draft EIS.  |  |
| 200.  | <a href="#">Eva Pip</a><br>(Nov 22, 2017)        | Section 8.0 (8-1 to 8-12)  | <p>The commenter explains that barrels of various LLW and toxic waste materials were historically buried in the surrounding landscape, and that adequate records and data were not kept with respect to the contents and locations of these barrels. Given this, the commenter raises concern with the statements made in the draft EIS which conclude that the likelihood of contaminant transport is very low and that no effects on groundwater are anticipated.</p> <p>The commenter poses the following questions:</p> <ul style="list-style-type: none"> <li>• How can CNL make these statements if not all contaminant sources are known?</li> <li>• Will "site restoration" fully address these kinds of diffuse contaminant sources?</li> <li>• Will all compromised soil be removed?</li> <li>• Where will these materials be transported and disposed of?</li> <li>• Since the substrates are largely clay, sand and gravel, how far and where has leachate already travelled?</li> <li>• Are there subterranean plumes that need to be investigated?</li> <li>• Will hydrological dynamics be more completely mapped and will water wells at potential risk in the future be monitored for radioactivity?</li> <li>• Will there be areas where water wells will not be allowed?</li> </ul>  |  |

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|  |   |   | <p>The commenter also notes that due to high levels of natural radioactivity in the bedrock, numerous wells in the Lac du Bonnet area have been closed and that not much additional radiation would be required to push other wells over the “safe” threshold. The commenter raises the concern that the substantial downward direction of groundwater flow may present a risk at unexpected, more distant locations where it may eventually emerge, as the orientation and extent of cracks in the bedrock are not fully documented.</p>  |  |
| 201.   | <a href="#">Eva Pip</a><br>(Nov 22, 2017)                 | Section 8.0 (8-1 to 8-18)                                   | <p>The commenter raises concern with respect to the circular fenced area known as the Field Irradiator Gamma (FIG) area, where for many years sustained irradiation was carried out from a cesium-137 source at its center for the purpose of investigating the effects of long-term gamma radiation on a forest ecosystem. The commenter notes that this experimental area was set up with no biosecurity provisions or barriers, other than an enclosing chain link fence to keep out trespassing intruders.</p> <p>The commenter indicates that this project resulted in significant developmental and morphological aberrations in the plant life, as well as in organisms such as snails in the ponds (Pip, 1977), which were already documented by 1970.</p> <p>The commenter expresses their concern with regard to potential harmful mutations in the biota that might affect biological characteristics such as invasiveness, or virulence of plant and animal disease organisms, or conversely impaired ability to withstand disease and competition, or increased/decreased reproductive capacity. The commenter notes that there are no barriers to prevent altered plant, fungal and other genetic material to escape to the surrounding communities.</p> <p>According to the draft EIS, the WL site will be available for unrestricted activities such as berry picking, medicinal plant gathering and other harvesting or recreational pursuits. The commenter expresses the position that at the very least, the FIG area and ideally a surrounding buffer zone, should be permanently contained and be off-limits to the public. Furthermore, the commenter argues that long-term monitoring of the natural communities within and around the site should be mandatory to ensure that potentially harmful organisms do not spread.</p> <p>[Please refer to pages 6-7 of the commenter’s submission for more information].</p> |  |
| <b>Assessment of Effects of the Environment on the Project</b> |   |   |  |  |
| 202.   | <a href="#">Eva Pip</a><br>(Nov 22, 2017)                 | Section 10.3<br>Section 10.4 (10-4)                         | <p>The commenter poses the following questions with respect to seismic events and climate change:</p> <ul style="list-style-type: none"> <li>• How will the reactor capsule stand up to potential seismic processes or erosion or flooding over thousands of years?</li> <li>• How will climate change affect the integrity of the mitigation measures?</li> </ul> <p>The commenter notes that increased rainfall, storms, changes in snowfall amounts and patterns will affect groundwater flow rates, volumes, and seasonal hydrodynamic patterns.</p>   |  |
| 203.   | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 10.4 (10-4 to 10-7)<br>Section 10.5 (10-8 to 10-12) | <p>The commenters propose the following conservative approach in assessing the long-term safety of the ISD, given the complexity and unknowns of continental glaciation and climate change: <i>“Perhaps a bounding approach can be used where the problem is broken down into two distinct phases and corresponding bounds that are not necessarily sequentially relatable.</i></p> <p><i>For example, the current radionuclide leaching model used in the draft EIS (Bishop 2017), including the rapid, unhindered corrosion of activated stainless steel, is possibly</i></p>  |  |



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|      |   |                               | <p><i>an unrealistically high impact result during the pre-glaciation phase. Due to the high uncertainty of the corrosion rates and congruent release of radionuclides from the shells of activated reactor components, no attempt should be made to release the WR-1 site from CNSC control by using such highly suspect unconditional clearance calculations.</i></p> <p><i>Instead, the post-glaciation exhumation model should be based on a highly restricted leaching model based on nested shells of reactor components, high-pH chemistry, microbial activity, glacial permafrost, hindered groundwater supply rate, hindered reactant supply and competition (“getters”) by non-activated metals for reactants. Post-glaciation human doses should then be based on contact with these less corroded, partly intact radioactive metals. Alternately, the calculations could ignore any Ni-59 leaching and depend on decay alone. Both approaches would need proper explanation for the public to show that they are bounding extremes and do not necessarily represent an expected reality.”</i></p>   |  |
| 204. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 10.5 (10-10 to 10-12) | <p>The commenters note that while the draft EIS recognizes that the excised or exhumed WR-1 will not be structurally intact, the less corroded, abraded and fractured metals nevertheless will tend to be tougher and more malleable than the brittle grouts, concretes and any entrained rock. The commenters express the concern that these metals may result in a much coarser size fraction (e.g., fist-sized or larger) than the cementitious or rock material and will be quite distinguishable by future generations. Once discovered as an unusual curiosity, non-geological material and possibly useful, it is plausible that metal fragments will be actively gathered.</p> <p>The commenters pose the following question: what radiation doses from the long-lived radionuclides (e.g., Ni-59) could post-glacial peoples expect if they resettled near the glacially crushed, displaced and exposed remains of WR-1? The commenters indicate that the expectation would be that these remains would largely consist of the more malleable stainless steel and other metals of the reactor vessel and its components separated from the brittle grout and concrete shielding (Baumgartner et al. 2016 Oct 28). The commenters express the view that the inability of the scientific and engineering community to predict the details of the glacial transport mechanism, path and/or re-emergence of WR-1 to the surface obliges the necessity to prevent this transport from occurring in the first place.</p> <p>[Please refer to the commenters’ submission for the references cited].</p> |  |
| 205. | <a href="#">William Turner</a><br>(Dec 18, 2017)          | Section 10.5.1 (10-10)        | <p>This section of the draft EIS states: <i>“It is anticipated that the WR-1 ISD structure will eventually deteriorate over time allowing the release of the solutes contained in the biological shield, PHT, and reactor components to the interior of the grouted structure, and eventually to the geological pathway.”</i></p> <p>Section 4.3.3 (page 125) of the <i>Decommissioning Safety Assessment Report TSD</i> explicitly states: <i>“As the safety assessment provides a safety envelope for the Project, an appropriate degree of conservatism was integrated into the solute transport modelling, including:</i></p> <ul style="list-style-type: none"> <li><i>Conservatively the assumption was made that no credit should be taken for encapsulation of waste in the grout.”</i></li> </ul> <p>Taking this into consideration, the commenter indicates that the relevance of an assessment that incorporates any deterioration of the ISD structure over time is not clear. If no credit can be made for encapsulation, then the commenter argues that the radioactive content at the time of entombment must be such that at the end of the institutional control period, clearance levels must be in accordance with CNSC P-290.</p> <p>The commenter requests that CNL ensure all assumptions are consistently applied, such</p>  |  |

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|   |   |                                 | that one can demonstrate that clearance levels will be met at the end of the institutional control period.  |  |
| 206.  | <a href="#">Michael Stephens</a><br>(Dec 15, 2017)  | Section 10.5.1 (10-10 to 10-11) | The commenter explains that this section of the draft EIS reports on an assessment of the release of contaminants from the grouted WR-1 structure over the long-term and compares the residual radioactivity to unconditional clearance levels. A key assumption is made that the remaining radioactivity is evenly mixed throughout the entire 880 Mg of non-radioactive corroded WR-1 components. The commenter argues that this is an unwarranted assumption, and the consequent assumed extreme dilution of the radioactivity over such a large mass of material leads to only a low fraction of the unconditional release levels for the various nuclides. The commenter notes, however, that if one alternatively assumes that the reactor core materials do not degrade to that degree and dilute the contamination in the mass evenly to that degree, the remaining level of radioactivity could be harmful to a human who comes upon a remaining mass of uncorroded contaminated metal from the reactor core.  |  |
| 207.  | <a href="#">William Turner</a><br>(Dec 18, 2017)  | Section 10.5.2 (10-11)          | <p>This section of the draft EIS states: “<i>Many naturally occurring ore bodies contain elevated concentrations of radionuclides. These existing ore bodies provide a point of comparison for evaluating the potential health risks to human and non-human biota of ISD material becoming dispersed within the surface environment.</i>”</p> <p>While natural analogues appear to be an appropriate comparison for the purposes of a long-term evaluation, the commenter indicates that the particular nuclides included in the “near-surface deposits” are not equivalent to any anthropogenic nuclides. The commenter notes this is especially true since the natural deposits are typically dispersed, whereas the anthropogenic ones are considerably more concentrated. Essentially the natural deposits do not require protection (i.e., no institutional controls), whereas the anthropogenic ones do.</p> <p>The commenter indicates that the content in this section is misleading and requests that CNL remove this information.</p>   |  |
| 208.  | <a href="#">William Turner</a><br>(Dec 18, 2017)  | Section 10.5.2 (10-12)          | The commenter notes that the document referenced (CCME 2007) in the following statement could not be found in the draft EIS documentation: “ <i>Experience has shown that a sound knowledge of the potential radiological impacts associated with the presence of these natural deposits has generally resulted in no measurable impact on human health (CCME 2007).</i> ”  |  |
| <b>Summary of Monitoring and Follow-Up Programs</b> |   |                                 |   |  |
| 209.  | <a href="#">Lisa Aitken et al.</a><br>(Dec 8, 2017)<br><br><a href="#">CELA</a><br>(Dec 19, 2017) | Section 11.0 (11-1 to 11-3)     | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>Lisa Aitken et al. argue that this section of the draft EIS fails to meet the Section 10 “Mitigation Measure” requirements of CNSC’s <i>Generic EIS Guidelines</i>. The rationale provided by the commenters is that CNL does not provide a plan of action for long-term monitoring including notification and emergency response measures to “Farm A, Farm B, and Harvesters”, local residents and the general public in the event of an accident, leak, unusual occurrence or hazardous event that has the potential to impact people and/or the environment, including the Winnipeg River, regardless of the intensity.</p> <p>The commenters also note that CNL does not provide a detailed monitoring plan, and the information on monitoring and follow-up program provided in the draft EIS is both ambiguous and limited to “<i>sampling and analysis of ambient air, surface water and ground water, including the Winnipeg River, sediment, vegetation, garden produce, game animals, and fish</i>” (Section 6.7.2.9, page 6-343).</p> |  |

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|                               |  |                             | <p>In addition, CELA requests that CNL:</p> <ul style="list-style-type: none"> <li>• Provide in-depth plans for the long-term monitoring of the ISD project during the post-institutional control phase.</li> <li>• Provide a rationale for discontinuing active controls for groundwater and surface water quality monitoring during the post-institutional control stage of post-closure</li> <li>• Describe how the concept of rolling stewardship will be applied in all phases of monitoring for the project.</li> </ul> <p>[Please refer to pages 39-41 of CELA's submission for more information].</p>  |  |
| 210.                          | <a href="#">William Turner</a><br>(Dec 18, 2017) | Section 11.0 (11-2)         | <p>This section of the draft EIS states: <i>“The post-closure phase has two discrete periods: Institutional Control and Post-institutional Control. The Institutional Control period Includes implementation of both active and passive control throughout 2024 to 2324 (i.e., 300 years). During active Institutional Control, long-term performance monitoring and maintenance activities will continue through to 2124 to demonstrate compliance with the safety case assumptions. The passive Institutional Control period includes passive controls such as access restrictions (e.g., physical barriers/fencing, signage, and land title instruments/deed restrictions) and will continue through 2024 to 2324. Post-institutional Control occurs after year 2324 and continues indefinitely.”</i></p> <p>The commenter indicates that these statements are misleading and requests that CNL remove them. The commenter explains that any restriction on the use of the land in perpetuity (as stated elsewhere in the document), means permanent institutional control is required, thus there cannot be a post-institutional control period.</p> |  |
| 211.                          | <a href="#">Anne Lindsey</a><br>(Dec 19, 2017)   | Section 11.0 (11-2)         | <p>The commenter expresses concern with the proposed 100-year institutional control period, given the load of radioactive materials and their rate of decay. The commenter argues that active groundwater monitoring and site inspection needs to continue for a much longer period, and indicates, perhaps indefinitely.</p> <p>In addition, the commenter expresses their concern with the following statement made in Section 2.5.4.3 (page 2-23) of the draft EIS: <i>“Monitoring will be completed in the post-closure period to demonstrate long-term safety of the public and the environment”</i>. The commenter indicates that this is a misleading statement in its use of the term “long-term safety” as there is no way to demonstrate this if monitoring does not continue into the long-term.</p>  |  |
| 212.                          | <a href="#">Anne Lindsey</a><br>(Dec 19, 2017)   | Section 11.1 (11-2 to 11-3) | <p>The commenter indicates that, although CNL makes a commitment to adaptive management, <i>“revised mitigation measures”</i> in the event that <i>“adverse environmental effects are greater than predicted”</i> may not be possible owing to the grout penetration of the site.</p>  |  |
| <b>Radionuclide Inventory</b> |  |                             |  |  |
| 213.                          | <a href="#">CELA</a><br>(Dec 19, 2017)           | General                     | <p>The commenter makes reference to a diagram of long-lived radionuclides and the time scale of radioactivity, and states: <i>“The very long-lived nature of these radionuclides necessitates that considerable attention be devoted to the form, and nature of their disposal. Unfortunately, the draft EIS and its supporting documents attribute little safety significance to the long-lived nature of these radionuclides. In addition, it omits serious discussion of the radionuclide, tritium (3H), with the highest concentration (5.54E+17 Bq). Although tritium has a relatively short half-life of 12.3 years, because of its large inventory at the site, significant amounts would remain after 100 or even 300 years.”</i></p> <p>[Please refer to pages 42-43 of the commenter's submission for more information].</p>   |  |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project

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| 214. | <a href="#">CELA</a><br>(Dec 19, 2017)                    | General | <p>The commenter notes that ILW is defined by the CNSC as waste “<i>that contains long-lived radionuclides in concentrations that require isolation and containment for periods beyond several hundred years.</i>”</p> <p>The commenter explains that the CSA standard N292.0-14 contains an approximate boundary for radioactivity concentrations in ILW and LLW. Annex 5 of the CSA standard recommends limiting the amount of long-lived beta and/or gamma-emitting radionuclides (specifically including C-14, Cl-36, Ni-63, Zr-93, and Nb-94) in LLW to “an average of up to tens of kBq/g”. The commenter notes, in other words, concentrations above this level (~E+04 Bq/g) constitute ILW.</p> <p>Annex 5 of the CSA standard also provides that the numerical limits for LLW and ILW are for orientation purposes and not rigid limits, as acceptable concentrations will differ between individual radionuclides or groups of radionuclides. However, as Table 2 [of the commenter’s submission] indicates, individual concentrations of radionuclides (i.e., not an average in a mixture) in nearly every case (except one, Cl-36) exceed this CSA standard and constitute ILW. As such, the commenters argue that these radionuclides require a more rigorous containment and isolation than provided in near-surface facilities, such as that proposed for the ISD at WR-1.</p> <p>[Please refer to pages 48-49 of the commenter’s submission for Table 2].</p>   |  |
| 215. | <a href="#">Anne Lindsey</a><br>(Dec 19, 2017)            | General | <p>The commenter indicates that the <i>WR-1 Reactor Radiological Characterization Summary</i> TSD suggests that the actual radiological content of the materials to be entombed is not well understood.</p> <p>The commenter concludes that since the radioactive inventory referenced in the draft EIS is based on incomplete information, “<i>it is challenging to understand why, in 2017, Canadians should be comfortable with burying – close to the surface, and immediately adjacent to a river – materials whose characteristics we don’t really understand.</i>”</p>   |  |
| 216. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | General | <p>The commenters argue that CNL’s proposed ISD of WR-1 does not meet its strategic requirement to “<i>contain radioactive contamination such that risk to the public and environment is kept ALARA</i>”. The commenters state: “<i>This is an unwitting attempt to trade off the controlled radiological exposure to knowledgeable and accepting decommissioning workers to the unaware and vulnerable future inhabitants, all in the guise of cost savings. “Unwitting” because CNL’s staff and contractors have not considered nor illustrated all the relevant factors that affect the rates of radionuclide release over the geological time frame, including the role of cementitious sealing materials, supply of groundwater reactants and the physical interference of continental glaciation. CNL’s assumption of unexpectedly rapid corrosion and release of the radiological materials leaves us with the impression that “dilution is the solution to pollution” even if it is an unrealistic bounding calculation that is not clearly stated.</i>”</p> <p>The commenters also note that the draft EIS does not provide an explanation to the inexperienced reader (i.e., non-technocrat) on how the radionuclides, both the “surficial” and “congruent-release” varieties, are released and transported through all of the downstream pathways. The commenters indicate that the reader also needs to know how the upstream groundwater supply and contained corrosion reactants play a role in the radionuclide release process. The commenters argue this must first be provided to show how simplifying assumptions used in the analyses are truly conservative. The commenters indicate these points would also have been beneficial to the analysts because the long-term post-glacial redistribution of the neutron-activated reactor vessel and its internal components within the environment of returning inhabitants is under-estimated.</p> <p>In addition, the commenters raise the following points:</p> |  |

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|      |  |         | <p><i>“Before discussing these misrepresentations of the pre- and post-glaciation status, we need to define two terms for the mechanism of the release of the radionuclides that are subsequently transported: the “surficial” radionuclides and the “congruent-release” radionuclides. The surficial radionuclides are those that are deposited on the surface of an object (e.g., contaminants such as particles associated with fuel failures entrained within the coolant system) and are readily accessible to the groundwater for transport. The congruent-release radionuclides are those that are an integral part of an object matrix (e.g., neutron activation products such as Ni-59 created within the alloyed stainless steel reactor vessel) and, unless released preferentially, require dissolution or corrosion of the host matrix to enable their release for subsequent transport. In Table 1, the congruent-release radionuclides are essentially limited to Nb-94, Ni-59 and Ni-63 found in the alloyed fuel-channel and stainless-steel materials and only can be released by corrosion. The bulk of the remaining radionuclides in Table 1 are found in the surface deposits of the reactor vessel, internal components and piping and are essentially “instantaneously” available for release.</i></p> <p><i>As can be seen in Figure 1 and Table 1, the radionuclide inventory is dominated by the two nickel congruent-release radionuclides, Ni-59 and Ni-63, in the stainless-steel alloys of the reactor vessel and components. Stainless steel was chosen for the reactor components due to its high corrosion resistance in water, particularly in chloride-free environments. The virtual total dissolution of the congruent-release radionuclides are estimated in Table 2 (derived from Table 4-3 in Bishop 2017). The solute transport model used the Full Corrosion (2-way) values which is based on the simultaneous attack on both sides (inside and outside surfaces) of the reactor components (e.g., Calandria Vessel - 63,500 years and stainless-steel Fuel Channel - 17,800 years) (Bishop 2017). This simultaneous attack on both sides of all of the components seems to be highly conservative and unrealistic because it results in the maximum possible rate of radionuclide release into the geosphere without any consideration of glaciation effects...”</i></p> <p><i>“...The draft EIS needs to illustrate the likely corrosion processes and rates for congruent and surficial radionuclide release taking into account the contacting ground water-flow rates, high-pH chemistry, microbial activity under both oxic and anoxic conditions, glacial permafrost and hindered groundwater replenishment conditions. Note that the draft EIS acknowledges that glaciation will hinder groundwater flow, not only limiting migration of contaminants from the reactor into the geosphere but concomitantly limiting the supply of corrosive reactants, such as oxygen. For example, the annual flow rate through the backfilled WR-1 structure of 0.167 to 0.193 m<sup>3</sup>/day (Bishop 2017) will approach zero during the permafrost and glacial cover periods, possibly leaving diffusion as the primary transport mechanism for reactant and product transport. Only after rupture and exhumation of the WR-1 structure by the glacier can a complete two-way corrosive attack occur on the remaining structures.</i></p> <p><i>The stated release of the nearly total nickel radionuclide inventory within 140,000 years is highly suspect and needs a more valid supporting argument. Most of the Ni-59, as shown in Figure 1, should be available for glacial exhumation of WR-1. Even if the total nickel inventory is released as described in the draft EIS, CNLs will have to show that the solubilized nickel is not reconcentrated downstream of the WR-1 site through sorption and/or bioaccumulation.”</i></p> <p><i>[Please refer to pages 3-6 of the commenters’ submission for the entirety of text related to this comment, as well as Figures 1-3 and Tables 1 and 2].</i></p> |  |
| 217. | <a href="#">William Turner</a><br>(Nov 25, 2017) | General | <p>The commenter indicates that the one activity critical to the ISD option is the characterization of the radiological and non-radiological hazards that will be left in place (or entombed). As discussed in the U.S. DOE guidance document [1], the commenter notes this activity is essential since this information forms the basis for any long-term</p>  |  |

CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement – WR-1 *In Situ* Decommissioning Project

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|      | <a href="#">William Turner</a><br>(Dec 18, 2017)          |   | <p>safety or PA.</p> <p>The commenter requests that CNL identify and address all the crucial activities associated with the characterization of the radiological and non-radiological hazards that will be left in place, as recommended in the U.S. DOE guidance document.</p> <p>Further to this, the commenter notes that the term “residual coolant” occurs once. Page 3-17 of the draft EIS states: “<i>Other hazards include asbestos insulating materials, residual organic coolant in piping and tanks, and building structures and service systems. Administrative controls are in place to restrict access to these areas.</i>” The commenter notes that the draft EIS does not address these concerns.</p> <p><b>References:</b><br/>[1] U.S. Department of Energy. 2013. <i>DOE EM Project Experience &amp; Lessons Learned for In Situ Decommissioning</i>. Prepared By U.S. Department of Energy, Office of Environmental Management, Office of D&amp;D and FE, EM-13. Washington DC: Office of Environmental Management</p>  |  |
| 218. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 10.5 (10-8 to 10-14)<br>Table 10.5.1-1 (10-10 to 10-11) | <p>The commenters indicate that within the EIS documentation there is no figure or table which documents the decay of the identified key long-lived ILW radionuclides over time (i.e., the rate at which the hazard naturally diminishes). Figure 1 of the commenters’ submission provides such an illustration showing the relationships over time before any consideration of loss of radionuclides by groundwater leaching. The figure also highlights the radionuclide inventory at the estimated cessation of the next glaciation, 140,000 years from now, regardless of where the radionuclides may have been redistributed or dispersed. The commenters explain this creates a strong visual image for the reader and provides a comparative reference timeline in discussing further arguments, such as the relative insignificance of ±50,000 years to the 140,000 year intraglacial estimate.</p> <p>[Please refer to Figure 1 on page 2 of the commenter’s submission].</p>  |  |
| 219. | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | Section 10.5 (10-8 to 10-14)<br>Table 10.5.1-1 (10-10 to 10-11) | <p>Table 1 of the commenters’ submission is adapted from Table 10.5.1-1 in the draft EIS. The commenters indicate Table 1 provides the current (column 3) and future radionuclide inventories following 140,000-years of decay (column 4) as well as the remaining radionuclides following groundwater leaching (column 5).</p> <p>The commenters explain that CNL acknowledges grouting with cementitious materials will be relatively ineffective in preventing groundwater flow through the WR-1 structure. The commenters indicate that the comparison of decay vs. leaching in the draft EIS suggests that it is desirable to wash out virtually all (i.e., &gt;99.99%) of the remaining radionuclides from the WR-1 structure and to disperse the radionuclides within the environment before they are excised or exhumed in mass by glaciation. The commenters note that clearly, this loss of containment is akin to the internationally banned practice of ocean dumping of radioactive waste (i.e., “the solution to pollution is dilution”).</p> <p>The commenters explain that CNL assumes the remaining radionuclides would be either widely distributed or sorbed on downstream geological materials prior to return of the intraglacial period. The commenters indicate that then little or no radionuclides would remain at the exhumed WR-1 site for future human contact as in the comparison to the fraction of the CNSC “Unconditional Clearance Level” in Table 10.5.1-1. The commenters express the position that this argument cannot be substantiated and must be rejected.</p> <p>[Please refer to Table 1 on page 3 of the commenters’ submission].</p> |  |
| 220. | <a href="#">Peter Baumgartner et al.</a>                  | Table 10.5.1-1 (10-11)  | The commenters indicate that the column title “Specific Radioactivity” in Table 10.5.1-1  |  |

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|                                    | (Dec 2, 2017)  |                                | of the draft EIS should be renamed to “Activity Concentration” and not be confused by the property of “Specific Activity”, which is defined as the activity per quantity of atoms of a particular radionuclide.   |  |
| <b>Long-Term Safety Assessment</b> |  |                                |   |  |
| 221.                               | <a href="#">William Turner</a><br>(Dec 18, 2017)                                     | General<br>Figure 1.7-1 (1-21) | <p>The commenter quotes from Section 7.4 of CNSC Guidance Document G-320, <i>Assessing the Long-term Stability of Radioactive Waste Management</i>, which states: “There is no time limit associated with the statutory objective to “prevent unreasonable risk, to the environment and to the health and safety of persons.” (NSCA, 9(a)(i)), or with the principle that the predicted impact on the health and safety of persons and the environment from the management of radioactive waste are no greater than the impacts that are permissible in Canada at the time of the regulatory decision (as discussed in CNSC regulatory policy P-290, <i>Managing Radioactive Waste</i>)...Assessments of the future impact that may arise from the radioactive waste are expected to include the period of time during which the maximum impact is predicted to occur. In some cases, only the magnitude of the maximum impact, independent of time, may be sufficient for the assessment (e.g., in bounding assessments using calculations based on solubility constraints).”</p> <p>The commenter could not find any discussion of the potential impacts “... to the environment and to the health and safety of persons ...” either during or after the institutional control period (the commenter indicates there is no long-term PA in Figure 1.7-1).</p> <p>The commenter requests that CNL include the appropriate assessment of risk beyond the 100-year monitoring and the 300-year institutional control periods, as well as a discussion of the models used to predict these risks.</p> <p>[Related to these models, please refer to Section 7.3.1 of CNSC G-320 which is quoted on page 14 of the commenter’s submission].</p> |  |
| 222.                               | <a href="#">CCNR</a><br>(Dec 19, 2017)<br><br><a href="#">CCNR</a><br>(Jan 15, 2018) | General                        | <p>The commenter states: “The radionuclides of concern are currently lodged in the WR-1 reactor vessel (calandria, fuel channels, thermal shield, biological shield), primary heat transport system (feeder pipes, pumps, heat exchangers) and other contaminated systems (heavy water and helium systems, fuel transfer flask, etc.) but these material structures will be pulverized by the ravages of time leaving those radionuclides free to recombine and migrate in hundreds of unforeseen ways.”</p> <p>The commenter indicates that every underground repository for radioactive wastes that has so far been tried for more than a decade has suffered major setbacks within a few decades of coming into service.</p> <p>[Please refer to the commenter’s submission, where several examples are cited – two in Germany and another in Carlsbad New Mexico. Please refer to pages 2-3 of the commenter’s submission for more information].</p> <p>The commenter requests that CNL include in the draft EIS an exhaustive study of possible chemical reactions that could lead to the production of explosive and/or non-condensable gases that might seriously compromise the safety and security of the buried entrails of the WR-1 over a period of many centuries and millennia.</p>   |  |
| 223.                               | <a href="#">CELA</a><br>(Dec 19, 2017)   | General                        | <p>The commenter points out that the draft EIS refers to Health Canada’s “safety” limit for tritium in drinking water of 7,000 Bq/L at various points. The commenter indicates that this limit, which was set in 1994, is outdated compared with the safer limits now used by other agencies.</p>   |  |

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|      |   |         | <p>The commenter raises that many scientists have expressed concern about tritium's low dose factors and its radiotoxicity. The commenter indicates that official dose models for tritium are deficient, for the following reasons:</p> <ol style="list-style-type: none"> <li>1. Tritium's unusual properties of extreme mobility, exchangeability, and binding with organic matter are not recognised.</li> <li>2. Because of the short range of tritium's beta particle, tritium's damage depends on its location in the body. At present, it is not possible to model where tritium goes in the body with accuracy. Official models assume that tritium (HTO) is equally distributed throughout the whole body, thus lowering its concentration and dangers, but this is a profoundly non-conservative assumption.</li> <li>3. Tritium is often described as a "weak" beta-emitter, but in radiation biology, so-called "weak" beta particles are more effective (i.e. dangerous) than energetic ones. This is especially the case with tritium, but this is not acknowledged in setting its dose factor. In fact, much evidence indicates that tritium's relative biological effectiveness (RBE) (in radiation biology experiments comparing tritium with gamma rays) is two or three times that recognised by the International Commission on Radiological Protection (ICRP) (Fairlie, 2007).</li> <li>4. Little official recognition is given to tritium's ability to incorporate in organic molecules to high levels as a result of chronic environmental exposures. Official dose models for organically bound tritium (OBT) therefore significantly underestimate its doses.</li> </ol> <p>The commenter indicates that the above concerns are not acknowledged in CNL's draft EIS. Instead, the commenter indicates that Section 5.3.1.1.3 (page 158) of the <i>Decommissioning Safety Assessment Report TSD</i> incorrectly states: "Tritium ...delivers a whole body dose because it will get distributed throughout the whole body". The commenter explains a significant fraction of tritium intake in fact is metabolized to OBT and thus is heterogeneously distributed. Tritium ingested as OBT is not homogeneously distributed throughout the entire body.</p> <p>[Please refer to Table 6 and additional detail on page 52 of the commenter's submission].</p> |  |
| 224. | <a href="#">Lawrence H. Johnson</a><br>(Dec 18, 2017) | General | <p>The commenter notes that there are many uncertainties in a long-term radiological risk assessment. The commenter acknowledges that the draft EIS has attempted to deal with these, but notes they were unable to determine if they were adequately covered in the risk analysis.</p> <p>The commenter notes: "<i>The main process of contaminant release is corrosion of metals that would release neutron activation products embedded in the metals. These corrosion processes are extremely slow for steels and Zircaloy (in the range of 10 nm/a corrosion rate) in high pH grout. However, once the portlandite (Ca(OH)<sub>2</sub>) is leached out and the pH drops, corrosion rates of steels can increase significantly</i>" and further that "<i>the timing of this pH drop is related to the flow through the grout. If significant flow can occur through the grout, which may be possible if there are (eventual) cracks in the building concrete structure, the favourable high pH conditions may not last. Note that in a proper deep disposal site selected for its good hydraulic isolation, this pH drop would not be expected to occur.</i>"</p> <p>The commenter indicates that while it is possible that post-glacial scouring and broad dispersion of residual activity associated with the facility would not lead to significant consequences given that this would occur after many tens of thousands of years, the entire uncertainty with the analysis presented could be avoided if the site was decommissioned with the removal of at least the most highly neutron-activated materials and the shipment of wastes to a future deep repository site.</p>   |  |



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|   |  |         | [Please refer to page 3 of the commenter's submission for more information].   |  |
| <b>International Standards and Guidance</b> |  |         |  |  |
| 225.  | <a href="#">J. R. Walker</a><br>(Dec 8, 2017)    | General | <p>CNSC's Policy P-290 states that it is policy of the CNSC to consult and cooperate with provincial, national and international agencies to:</p> <ul style="list-style-type: none"> <li>Promote harmonized regulation and consistent national and international standards for the management of radioactive waste; and,</li> <li>Achieve conformity with the measures of control and international obligations to which Canada has agreed concerning radioactive waste.</li> </ul> <p>The commenter argues that the proposed facility is in noncompliance with international requirements and guidance, for example:</p> <ul style="list-style-type: none"> <li>Entombment is not acceptable as a decommissioning strategy;</li> <li>Near surface disposal is not acceptable for ILW; and,</li> <li>Perpetual institutional control is not acceptable.</li> </ul> <p>With respect to the safety of radioactive waste management, the <i>Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management</i> has general safety requirements and requirements for siting, design and construction, assessment, operation, and institutional measures after closure in articles 11, 13, 14, 15, 16, and 17, respectively. The commenter argues that the ISD proposal in the draft EIS is incompatible with Canada meeting these obligations.</p> <p>[Please refer to page 9 of the commenter's submission for more information].</p>  |  |
| 226.<br>NEW                                 | <a href="#">William Turner</a><br>(Nov 25, 2017) |         | <p>The commenter expresses concerns that the draft EIS fails to address the policy provisions of P-290, specifically with regards to the following from Section 5.0 "Policy Statement":</p> <p><i>"b) The management of radioactive waste is commensurate with its radiological, chemical and biological hazard to the health and safety of persons and the environment and to national security;"</i></p> <ul style="list-style-type: none"> <li>The commenter states that since there is little information in the draft EIS about the "... radiological, chemical and biological hazard[s] ..." in the wastes and structures to be entombed, it is impossible to determine whether the proposed undertaking will be "commensurate" with its hazards, and even without this information, IAEA guidance documents recommend that the entombment option is not "commensurate" with these hazards [1][2].</li> </ul> <p><i>"c) The assessment of future impacts of radioactive waste on the health and safety of persons and the environment encompasses the period of time when the maximum impact is predicted to occur;"</i></p> <ul style="list-style-type: none"> <li>The commenter raises the fact that there is little information about the "... radiological, chemical and biological hazard[s] ..." and finds that it makes it difficult to assess future impacts and that without this information, "... the period of time when the maximum impact is predicted to occur ..." cannot be determined.</li> </ul> <p><i>"d) The predicted impacts on the health and safety of persons and the environment from the management of radioactive waste are no greater than the impacts that are permissible in Canada at the time of the regulatory decision;"</i></p> <ul style="list-style-type: none"> <li>The commenter is of the opinion that the lack of information about the "... radiological, chemical and biological hazard[s] ..." makes it impossible to ensure that "The predicted impacts on the health and safety of persons and the environment from the management of radioactive waste are no greater than the</li> </ul> |  |

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|      |   |         | <p><i>impacts that are permissible in Canada at the time of the regulatory decision”.</i></p> <p>“g) Promote harmonized regulation and consistent national and international standards for the management of radioactive waste;”</p> <ul style="list-style-type: none"> <li>The commenter finds that is not clear to which of the “... international standards for the management of radioactive wastes” this policy principle refers. However, since Canada is a member state of the IAEA, one can only conclude the IAEA guidance documents are included. As has been pointed out by several reviewers who provided submissions on the project description, CNL has failed to address several of these IAEA standards [see below references].</li> </ul> <p>The commenter is of the opinion that the draft EIS provides no evidence that “CNL considered these CNSC’s guidance documents [i.e. P-290] in the design and safety case development of the Project”.</p> <p>[Please see the commenter’s submission for more information on these comments].</p> <p><b>References:</b><br/>                 [1] IAEA, Decommissioning Strategies For Facilities Using Radioactive Material, Safety Report Series #50, IAEA, Vienna, 2007<br/>                 [2] IAEA, Decommissioning of Facilities, General Safety Requirements Part 6, IAEA, Vienna, 2014</p>   |  |
| 227. | <p><a href="#">J. R. Walker</a><br/>(Dec 8, 2017)</p> <p><a href="#">Lisa Aitken et al.</a><br/>(Dec 8, 2017)</p> <p><a href="#">Peter Baumgartner</a><br/>(Dec 11, 2017)</p> <p><a href="#">Lawrence H. Johnson</a><br/>(Dec 18, 2017)</p> | General | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>The commenters express the position that the safety assessment presented in the draft EIS and associated documents is inadequate since it employs an incorrect methodology and provides an incomplete assessment.</p> <p>The IAEA defines the safety requirements for the decommissioning of facilities in <i>General Safety Requirements Part 6: Decommissioning of Facilities</i> (2014), which states: “Entombment, in which all or part of the facility is encased in a structurally long-lived material, is not considered a decommissioning strategy and is not an option in the case of planned permanent shutdown. It may be considered a solution only under exceptional circumstances (e.g. following a severe accident).”</p> <p>This safety standard describes two possible decommissioning strategies, namely immediate dismantling and deferred dismantling. Mr. Walker indicates that the IAEA notes the inappropriateness of entombment, as follows: “1.10. A combination of these two strategies may be considered practicable on the basis of safety requirements or environmental requirements, technical considerations and local conditions, such as the intended future use of the site, or financial considerations. Entombment, in which all or part of the facility is encased in a structurally long lived material, is not considered a decommissioning strategy and is not an option in the case of planned permanent shutdown. It may be considered a solution only under exceptional circumstances (e.g., following a severe accident).”</p> <p>Mr. Walker highlights how different classes of radioactive waste require different disposal concepts, depending upon the length of time that the waste remains a hazard. This is discussed at length in both Canadian and international guidance, and is relevant when considering disposal of IWL versus LLW. The commenter argues that entombment is an inappropriate technology for the decommissioning of WR-1, since it would place ILW in a near surface repository, contrary to Canadian and international guidance, and that institutional control would be required for an indefinite period of time.</p> <p>Mr. Baumgartner echoes these concerns, highlighting the guidelines and practices of the</p> |  |

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|  |   |         | <p>U.S. NRC.</p> <p>Mr. Johnson concludes that the draft EIS must explain fully why the approach is being proposed given the statements in the safety standard.</p> <p>[Mr. Walker elaborates on the unsuitability of entombment for the WR-1 and IAEA guidelines in detail, and includes examples of how this safety requirement has been incorporated into the policies of the U.S. NRC. Please refer to the commenters' submissions for more information and details to support their arguments: pages 1-4 and 9 of Mr. Walker's submission, pages 1-2 of Mr. Baumgartner's submission and page 1 of Mr. Johnson's submission].</p>  |  |
| <b>EIS Terminologies and Definitions</b> |   |         |   |  |
| 228.                                     | <a href="#">Peter Baumgartner et al.</a><br>(Dec 2, 2017) | General | <p>The commenters express concern with CNL's use of the term "remote" throughout the draft EIS and provide the following comments:</p> <ul style="list-style-type: none"> <li>• The term "remote" is relative. The WR-1 site is as remote from southern Ontario as Southern Ontario is from Ottawa. The implication of the use of the term "remote" is that this site will remain "remote" in terms of "sparsely populated" in contrast to that in southern Ontario for the time period during which the radioactive material poses a hazard to the general public. Contrast this with the effort spent in time and money (C\$1.28 billion) to characterize the historic NORM (naturally occurring radioactive materials) located in Port Hope, southern Ontario, to remediate the town and to dispose of the waste material (Hebert and Case 2016).</li> <li>• There is no assurance that the WL site will remain as remote as it now. With the increase in population of Winnipeg and demands for recreational areas in its close proximity, it can be anticipated that Winnipeg residents will want to build cottages and summer homes in the Pinawa area and that there will be an increase in human activity. Thus, "remote" may no longer be a proper term to describe the Pinawa, Whiteshell, Lac du Bonnet area.</li> <li>• Note also that the WL site is only ~100 km from the edge of Winnipeg (population ~700,000). During the operation of the WR-1 and its former more distant Underground Research Laboratory, about 5% of the labour force commuted daily from Winnipeg, little different from commuting practices in major population centres. This is hardly remote.</li> <li>• The entire Winnipeg River system beginning at and including Lake of the Woods on the Ontario/U.S. border is an important recreational area. Nominally, the local region's population grows by a factor of three during the summer months. The area downstream of the WL site has a population density no less than that of the rural farming districts in the U.S., which is not referred to as "remote". The term "remote" implies very distant, difficult to access and of little importance. This is hardly how the local populace including the Indigenous people see themselves or appreciate being treated in such an insulting manner.</li> </ul> <p>[Please refer to the commenters' submission for the examples used to illustrate their points and the referenced documentation above].</p> |  |
| 229.                                     | <a href="#">William Turner</a><br>(Dec 18, 2017)          | General | <p>The commenter highlights that the term "discipline" appears 82 times in the draft EIS and that all of these instances are associated with environmental components terminology. The commenter makes reference to the definition of the term "discipline" from an online dictionary (<a href="http://www.dictionary.com/browse/discipline">http://www.dictionary.com/browse/discipline</a>). None of the definitions from the online dictionary apply to the descriptions and evaluations of the environmental components as provided in the draft EIS.</p> <p>The commenter requests that CNL ensure the terminology used to describe environmental components in the draft EIS is correct and if not, to revise accordingly.</p>  |  |

| EIS Deficiencies |  |   |   |  |
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| 230.             | <a href="#">William Turner</a><br>(Dec 18, 2017)<br><br><a href="#">Northwatch</a><br>(Dec 20, 2017) | General   | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>Northwatch expresses the view that there is inadequate information about the site, site conditions, past land uses, and related residual hazards is provided in the draft EIS. For example, Northwatch highlights that inadequate information is provided about how the ISD of the WR-1 will interact with other decommissioning activities at the WL site and argues that a cumulative effects assessment is required.</p> <p>Mr. Turner indicates that the draft EIS is lacking sufficient information, in terms of details, summary, methodology and criteria used to demonstrate the long-term safety to the environment and to the public. The commenter illustrates this point through several examples in the draft EIS:</p> <ul style="list-style-type: none"> <li>• Wildlife species chosen as VCs are those that are present near the WL site currently. Since one cannot predict the species that will be present at the end of the institutional control period, there are no relevant end-point species for which a risk assessment can be conducted (Figures 6.7.2-1 and 6.7.2-3); and,</li> <li>• There can be no pathway with respect to land and resource use, since this use is a direct interaction. Either one uses the land and the resources directly, or one does not (Section 6.8.5).</li> </ul>   |  |
| 231.             | <a href="#">Northwatch</a><br>(Dec 20, 2017)   | General<br>Section 2.4.1 (2-4)<br>Section 3.5.5 (3-38)<br>Section 6.9.5.2 (6-435) | <p>The commenter notes that the draft EIS repeatedly uses subjective terms which are unclear in their meaning, and generally lacks clarity.</p> <p>For example, Section 2.4.1 (page 2-14) of the draft EIS states: <i>“Protective measures against the hazards of ionizing radiation will be considered to be optimized when further reductions in radiation doses are outweighed by the additional efforts and costs required for their implementation. This principle applies to all phases throughout the life cycle of the Project, from decommissioning and closure to post-closure, and is a particularly important consideration when developing the decommissioning procedures.”</i> However, the commenter indicates that this provides the reader with no understanding of how CNL would quantify and make a determination that <i>“further reductions in radiation doses are outweighed by the additional efforts and costs required.”</i> The commenter argues that this statement is wholly undefined and subject to completely subjective interpretation.</p> <p>In terms of clarity, Section 3.5.5 (page 3-38) of the draft EIS states: <i>“Canadian Nuclear Laboratories anticipates employment to peak at 400 employees in 2021, when grouting of below grade systems and structures is anticipated to occur.”</i> However, Section 6.9.5.2 (page 6-435) of the draft EIS indicates: <i>“CNL may contract with a Manitoba-based contractor for the grouting work provided one with the necessary qualifications is available”.</i> The commenter argues that this introduces confusion over the employment numbers CNL has provided and poses the following question: are the estimates of CNL employees or of all potential employment, in various capacities, that might be associated with the project?</p> |  |
| 232.             | <a href="#">Northwatch</a><br>(Dec 20, 2017)   | General   | <p>The commenter asserts that numerous statements misrepresent the level of information that CNL has available and that their conclusions are not based on evidence.</p> <p>The commenter illustrates this point with the following example: In the discussion of Alternative #3, the draft EIS concedes that risks associated with this alternative will be highest in the post-closure period (i.e., higher than the other alternatives) but goes on to purport that <i>“however, the in situ structure will safely isolate the radioactive material that remains in the WR-1 Building, and allow the material to continue to decay naturally”</i> (page 2-21).</p>   |  |

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|      |   |   | <p>The commenter argues that CNL has not presented evidence to support such a statement. In addition, the commenter indicates that missing information includes estimates of decay periods for the subject radionuclides and a description of the loss of containment over time. At minimum, the commenter explains the draft EIS requires references or links to later sections in the documentation that provide related information.</p>  |  |
| 233. | <p><a href="#">CELA</a><br/>(Dec 19, 2017)</p> <p><a href="#">Northwatch</a><br/>(Dec 20, 2017)</p> | <p>Section 3.5.5 (3-38)<br/>Section 6.9.5.2 (6-435)</p> | <p><i>Concerns on this topic were expressed by more than one commenter, and comments have either been summarized, or included as excerpts from commenter submissions.</i></p> <p>Northwatch argues that the draft EIS over-generalizes and fails to provide basic information in a straightforward fashion. The commenter explains that the draft EIS descriptions lack specificity and technical basis to be useful in understanding or evaluating the project design and implementation.</p> <p>Related, the lack of TSDs as companions to the draft EIS, is pointed out by the commenter as another failing of the draft EIS. The commenter explains that numerous technical documents listed in the references were not provided and are not publicly available, but by reference are reasonably expected to provide relevant technical information in support of the draft EIS. The commenter argues that these documents will be necessary to many public intervenors and technical experts who are assisting them, and should be made available to the public.</p> <p>[Please refer to pages 13-15 of Northwatch's submission for the full list of documents referenced].</p> <p>Similarly, CELA highlights other CNL documents that are not yet available for public examination, including:</p> <ul style="list-style-type: none"> <li>• A health and safety plan which will identify workplace hazards associated with the closure period activities, specifically addressing all non-radiological COPCs; and,</li> <li>• A detailed safety analysis for the ISD of the WMA trenches.</li> </ul> <p>The commenter argues that the absence of these documents impairs public review and is a deficiency of the data provided by CNL in the draft EIS.</p> |  |
| 234. | <p><a href="#">CELA</a><br/>(Dec 19, 2017)</p>  | <p>General</p>  | <p>The commenter raises the following omissions/errors in the draft EIS:</p> <ul style="list-style-type: none"> <li>• Ag-108m and Sn-121m are absent from the nuclide inventory;</li> <li>• No definition of couponing activities;</li> <li>• No technical description of the engineered cover system;</li> <li>• No technical description of the proposed grout and its properties;</li> <li>• No discussion of hydrogen releases from grout-aluminum reactions;</li> <li>• No discussion of collective doses;</li> <li>• No discussion of OBT;</li> <li>• Table 2.6.3-1 of the draft EIS omits "\$ millions" in the legend;</li> <li>• Paragraph 6.3.1 of the <i>WR-1 Reactor Radiological Characterization Summary</i> TSD, states "Heavy Water and Tritium Inventory" but contains no Bq inventory for tritium; and,</li> <li>• Table 3-6: "Estimated Radionuclide Inventory in Primary Heat Transport System Following Shutdown (Bq)" of the ERA TSD contains incorrect half-lives.</li> </ul>  |  |
| 235. | <p><a href="#">Northwatch</a><br/>(Dec 20, 2017)</p>  | <p>General</p>  | <p>The commenter raises the following concerns with the draft EIS. The document:</p> <ul style="list-style-type: none"> <li>• Consists of numerous internal inconsistencies. For example, the draft EIS refers to final disposal as having an unspecific future date in some sections, while other sections refer to 30 years;</li> </ul>  |  |

**CNL Disposition Table of Public and Indigenous Groups' Comments on the Draft Environmental Impact Statement - WR-1 *In Situ* Decommissioning Project**

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|  |  |  | <ul style="list-style-type: none"><li>• Utilizes non-sequiturs and attempts to assign relationships to unrelated statements (in some of the most fundamental aspects of the decommissioning project);</li><li>• Is not identified as the “draft” EIS; the Administrative Protocol, the public Registry and other sources accurately identify it as a “draft” document, but the document itself does not; and,</li><li>• Does not identify its authors or provide their credentials or areas of expertise (other than the application of the logos of three consulting firms to the cover page).</li></ul> |  |
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