

**Comments (& Observations) on the Revision to the
“Project Description - Near Surface Disposal Facility at Chalk River Laboratories”
(Registry Number 80122)**

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By W. Turner (Concerned Deep River Resident)

Executive Summary

The following remarks are not restricted to the revised project description as currently written. They also include the results of my discussions with various CNL personnel at several Public Information Sessions that occurred in June and October 2016. In addition, I have included my observations on the posters presented at those sessions, and on the CNL website⁽¹⁾ and the presentation to the Commission on September 21st, entitled “*Canadian Nuclear Laboratories’ Integrated Strategy for Decommissioning and Waste Management*”⁽²⁾ including the transcript of that presentation ⁽³⁾.

I recognize that the extent of my comments and observations discussed below may be outside the scope of an Environmental Assessment. They do provide evidence that CNL’s approach to the radioactive waste issues at its sites is haphazard. Apparently, CNL is sacrificing serious consideration of these issues to meet an artificial deadline defined by a short-term contract.

My remarks are divided as follows:

- **Observations on Public Engagement and Facility Elaboration** - This grouping includes analyses of my conversations with CNL staff at the Public Information Sessions I attended, the posters presented at those sessions ⁽⁴⁾, the CNL presentation to the CNSC September 21st, updates to the CNL website and the updated project description.
- **Specific Comments on the revised Project Description** - This grouping includes an assessment of the revised project description, CNL communication practices related to that revision, the expansion of the scope, and the inadequacies of that expansion.
- **Updates to Previously Submitted Comments on the Original Project Description** – Since I have yet to receive dispositions to my previously submitted comments, this grouping includes an updated version of those comments. My updates address the revisions to the CNL website, and the revised project description.

I would appreciate any feedback, and I expect to see the Proponent’s responses to these Observations and Comments.

⁽¹⁾ The CNL website for the project includes the statement “*To download our information session posters, click below.*” At the time of the October 18th Public Information Session, I downloaded the posters then available. Nevertheless, those posters were from for the previous June Public Information Sessions and did not match those that were updated for October Public Information Session. Yet even though updated, they did not address any comments received.

In the previous project description, the Proponent described several studies as being planned for 2016. Neither the revised Project Description nor these updated posters provided any results from these studies. (See also Comment 2.3, “The results of the studies conducted during the Spring and Summer of 2016 do not inform CNL’s site selection”).

When asked why the posters on the website did not match those at the Public Information Session, the CNL staff suggested they had not had the time to update the website, since they had only received the new posters a few days before. It is not clear to me why one would schedule public communication activities when there are significant discrepancies between what is available on a website and that presented at a public session.

⁽²⁾ “*Canadian Nuclear Laboratories’ Integrated Strategy for Decommissioning and Waste Management*”, a presentation by CNL to the CNSC, E-DOCS-#5076879-v1-CMD 16-M52, September 21st 2016

⁽³⁾ CNSC, “*Transcript of Commission Meeting of September 21, 2016*”, available from the CNSC website at <http://www.nuclearsafety.gc.ca/eng/the-commission/pdf/2016-09-21%20-%20Meeting%20Corrected%20-%20ENG.pdf>

⁽⁴⁾ The updated posters were made available on the CNL website, Tuesday November 1st, several days after the last Public Information Session, held in Petawawa, Thursday October 27th. However, the posters from the website were not the same as those at the Public Information Sessions. I find this discrepancy most disturbing and deliberately deceptive.

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My overall conclusions are:

- CNL’s public engagement is inadequate;
- CNL’s communication materials are inconsistent and contradictory;
- CNL’s priority is to meet short-term contractual obligations thus sacrificing all other considerations;
- CNL limits its responses to stakeholder concerns to regulator requests;
- CNL lacks a plan to deal with all wastes from decommissioning and removal of over 120 buildings on the CRL by 2026, leading one to conclude that all these wastes will end up in the NSDF;
- CNL’s aggressive schedule does not allow for appropriate understanding and evaluation of the issues;
- CNL’s has yet to identify and consider “alternative means” (all material presented only addresses the NSDF);
- As waste issues arise, the project scope appears to change;
- CNL has provided no evidence that it can design, build, and operate a facility similar to the NSDF;
- None of the examples cited by CNL are designed to manage ILW;
- CNL’s waste emplacement procedure implies that the NSDF is an enhanced municipal waste dump;
- With respect to the disposal of ILW, CNL appears to ignore both Canadian and international best practice;
- CNL does not address facilities for waste conditioning, volume reduction, waste segregation or waste characterization as part of the project scope;
- To meet its aggressive schedule, CNL is out of compliance with the Environmental Assessment Act; and
- This poorly conceived initiative could become the precedent for managing the radioactive wastes from other nuclear sites in Canada.

To summarize my concerns, CNL has yet to define the problem it wishes to solve by implementing the NSDF project. By its own description of the waste emplacement procedure, I can only conclude the NSDF is an enhanced municipal waste dump.

By adhering to its aggressive schedule, CNL cannot adequately address the issues listed above. CNL has set the target date for the operation of the NSDF as 2020, less than four years from now. Since the Proponent is currently undertaking physical activities (that is, removing buildings from the CRL site) that are integral to the NSDF project as a whole, CNL risks being out of compliance with the CEA Act.

These observations and comments provide considerable additional evidence to confirm the conclusion to my previous comments; CNL must withdraw this proposal, as it is completely inadequate. (See also Comment 3.1.2 below)

NOTE: Since CNL is continually revising its documentation, these comments and observations are current as of November 16th, 2016.

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1 Observations on Public Engagement and Facility Elaboration

In this section, I address my conversations with CNL staff at several Public Information Sessions that I attended, the posters presented at those sessions and available from the CNL website, the CNL presentation to the CNSC September 21st and its implications to the NSDF, updates to the CNL website, and the revised project description.

1.1 CNL Public Engagement is Low Priority

To meet the deadline for submission of comments on the previous Project Description of June 24th, I submitted my comments (below) on June 14th. I subsequently attended a Public Information Session held in Deep River on June 21st. The June 2016 issue of the CNL publication, *Contact*, provided a schedule for these sessions that included dates after the June 24th deadline for submissions. I was somewhat concerned that these information sessions were being held just before and after the June 24th submission deadline. I took this as evidence that CNL really did not want to engage the public, but went along anyway.

As further evidence that public engagement was not a high priority, CNL made several changes to their website between the period that the Project Description was published (May 24th) and these Public Information Sessions (some of these changes are noted in Section 3 below). I was somewhat concerned over these inconsistencies, and pointed out the discrepancies to CNL staff at several information sessions.

Although one could excuse these early irregularities, as “teething pains”, there is no excuse for continuing this practice. As discussed below, much more evidence has accumulated that the CNL communication strategy for this project (and the two others currently proposed) is confused and inconsistent.

If truth were told, the Contractor can walk away from the site within the 6 to 10 years of the contract. In other words, there is little incentive for CNL to plan for the long-term (see also Observation 1.2 below). Their Project Description, their communication strategy, and their lack of seriously engaging the public provides considerable evidence that their only concern is to “take the money and run”.

I can no longer condone this haphazard approach to public engagement. As stated above, I have raised this issue with both CNL and AECL staff at several Public Information Sessions that I have attended. Since public communication is a critical aspect of the environmental assessment process, CNL cannot continue with its current approach.

NOTE: At the October 26th Public Information Session, CNL Communication Staff responded positively to several suggestions regarding improving their communication activities. I am looking forward to any enhancements. That said, I am very disappointed that several posters, available from the CNL website (November 1st, several days after the last Public Information Session), were not exactly the same as those displayed at those October sessions.

1.2 Penalties and Incentives confirm CNL’s interests are short-term.

During the September 21st meeting of the CNSC, CNL presented its “*Canadian Nuclear Laboratories’ Integrated Strategy for Decommissioning and Waste Management*” (2). In response to the following question by a Commission Member:

“On Slide 11, “Strategy to Safely Achieve Vision 2026,” you are saying in the first column in the fourth bullet, “Contractual incentives and penalties.” What does that mean?” (3)

Mr. Kehler responded:

“We have three different contract types, so the target costs are different than what I will call the site operating contract, but **all the contracts have penalties for health and safety incidents, environmental incidents of different scales** and different loss of fee to the companies involved up to 100 percent loss of any potential fee for the companies ... “ [emphasis added] (3)

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To be fair, Mr. Kehler also discussed the incentive side of the contractual agreement.

I take this to mean there will be no penalties beyond the end of the contract (in 6 to 10 years) for any “... *health and safety incidents, environmental incidents* ...” that could possibly occur. Similarly, all incentives are limited to within that contract timeframe.

Assuming they have the NSDF operational by 2020 (the target date given in the Project Description), CNL will have only operated the facility for 5 years (contract end is 2025). Yet the facility is supposed to operate until 2070. Thus for the majority of its operational life, CNL has no responsibility for any “... *health and safety incidents, environmental incidents* ...”

Although CNL has cited several examples to demonstrate their chosen technology is proven, upon examination, none of those examples are appropriate for the local environment, or the types of wastes (including ILW) identified by CNL for waste emplacement. In other words, the NSDF is a first of its kind. As such, there are too many uncertainties to assert anything about the long-term integrity of the NSDF. (See also Comment 2.2 – ‘Expansion of the project scope to include “*some intermediate level wastes*” and from my previous Comments (updated) 3.1.1.1 - “***It’s proven technology***”, 3.1.1.2 - “***It’s environmentally sound***” and 3.1.1.3 - “***It’s safe***” below)

For a long-term radioactive waste disposal project, this short-term vision is **NOT** acceptable. Recall, disposal is forever.

1.3 Where do the wastes from the removal of reactors go?

Slide nine from CNL’s presentation to the CNSC that outlined “*Canadian Nuclear Laboratories’ Integrated Strategy for Decommissioning and Waste Management*” ⁽²⁾, shows a map of the built-up area of the site in the year 2026 (less than 10 years from now). At the September 21st meeting at, with respect to this slide, Mr. Kurt Kehler stated:

“By 2026, ***the orange buildings from the previous slide*** [slide 8] ***will be gone***, with one exception. The one exception is the NRU reactor, which will remain in storage with surveillance until a later date for decommissioning.” ⁽³⁾ [emphasis added]

Parsing Mr. Kehler’s assertion identifies three significant omissions in the CNL’s “*Integrated Strategy*” (as I outline below). As CNL’s *Vice-President for Decommissioning and Waste Management*, he should have known about these gaps and made sure they were part of his presentation on CNL’s *Integrated Strategy*.

First, the wastes generated by removal of these buildings include typical construction materials, (such as, lumber, concrete, bricks, piping, roofing, metal beams and all the equipment within those buildings). With proper segregation to remove hazardous substances (including any items contaminated with radioactively that do not meet clearance levels), a typical municipal landfill is a suitable repository for these wastes. Except in answer to a question from a Commission Member, Mr. Kehler makes no mention of this alternative for these wastes. Thus, my only conclusion is that the NSDF is the destination for all these non-hazardous wastes.

Second, because of the extra costs for ensuring the health, safety, security and environmental protections for a near surface radioactive waste disposal site, international experience requires waste volume reduction preprocessing (such as, metal melt, incineration, and super-compaction). Yet, Mr. Kehler makes no mention of these technologies that would result in significant cost savings over the life cycle of the NSDF.

Third, these buildings include reactors (the NRX and the two Maple reactors), several “Hot Cell” facilities, and several other associated buildings that are known to be contaminated with alpha from the plutonium production conducted in the early days of the Chalk River site. The wastes from these buildings will include intermediate level wastes. Yet, Mr. Kehler states the NSDF will accept “*a small amount of short-lived intermediate-level wastes*” (see

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quote below). However, he makes no mention of the destination for the long-lived ILW. Thus, my only conclusion is that the NSDF is the destination for these wastes too.

Mr. Kehler also asserted:

“The second key element of the [integrated] strategy is our technical approach. ... This will start with the new Near Surface Disposal Facility as a permanent solution for low-level and a small amount of short-lived intermediate-level waste, which meets the safety basis.”⁽³⁾

So, is CNL’s “*Integrated Strategy for Decommissioning and Waste Management*” realistic? From the evidence presented by CNL at the CNSC meeting (², ³) summarized above, my observations, and my comments given below, the answer is clearly **“NO”**.

Their strategy has identified only one disposal option, the Near Surface Disposal Facility (and, from a review of their project description, even that is questionable). We already know (from international and Canadian experience) that a near surface facility is not adequate to address all the wastes (both non-radioactive and radioactive) that have been or will be generated within the 10-year timeframe of CNL’s “*Integrated Strategy*”. How does CNL propose to address these other wastes? Since CNL has not identified any other “disposal” option, the only conclusion is that CNL plans these to manage all wastes generated from their decommissioning, site remediation, and ongoing operational activities in the NSDF.

As discussed above, CNL intends to remove over 120 buildings from the CRL site by 2026 and to dispose of the wastes created in the NSDF. However, these “surplus” structures include hot-cells and other facilities for radiochemical analyses. Without these facilities, CNL has significantly impeded its ability to accomplish the radiological waste characterization required before they are emplaced in the NSDF (or any other disposal facility deemed appropriate).

CNL’s only priority is to meet its short-term goal of removing over 120 buildings. Thus in this strategy, all other immediate constraints (such as using existing facilities to characterize the wastes) cannot be considered and nothing beyond 2026 can be addressed. Thus, CNL is ignoring several short-term issues and all long-term issues.

CNL must revise its “*Integrated Strategy*” to include addressing **all the wastes** generated from decommissioning and site remediation activities, and ongoing operations. At present, their strategy only addresses their short-term goals (apparently defined by their 6 to 10-year contract.).

1.4 What are the contingencies to the CNL “*Integrated Strategy*”?

I quote the following caveat that Mr. Kehler made at the CNSC meeting:

*“However, we understand that none of what we are describing today [the “*Integrated Strategy*”] is predetermined. We understand the engagement and the approval is required. We understand and respect both the environment assessment and the licensing process. We aim to be transparent.”⁽³⁾*

Parsing this statement, leads me to believe the two contingencies to CNL’s strategy are engagement and approval.

First: with respect to engagement, from the current evidence, CNL’s engagement has been limited to essentially making announcements. Changing its current communication strategy from a focus on announcing, to actually engaging all its stakeholders (not just the CNSC) will require a significant investment in time and resources. I hope CNL is prepared to make that happen. In an informal meeting with CNL’s communication staff after the October 26th Public Information session in Chalk River, the staff gave signs that they were listening and that some changes may be in the offing. However, they admitted that with the “aggressive schedule”, it might be difficult to accomplish.

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Second: with respect to approval, without regulatory authorisation for the NSDF, their strategy cannot proceed. No further comment is required.

Several items not addressed by Mr. Kehler’s caveat are those identified above, such as, the design, construction, and operation of facilities to characterize, segregate and/or to pre-treat the wastes. Recall that several of the buildings to be removed include facilities that could be used to characterize the wastes, thus will not be available when required. Since these facilities are critical to the operation of the NSDF, they must be included within the scope of project and thus the Environmental Assessment.

1.5 Has CNL actually finalized the scope of the NSDF Project?

Mr. Kehler’s statement quoted above states: “... new Near Surface Disposal Facility as a permanent solution for low-level and a **small amount of short-lived intermediate-level waste** ...” [emphasis added]. However, the revised project description uses the term, “... a small amount of intermediate-level waste ...”. Since the term in project description is more generic and includes more than to the short-lived ILW, CNL has left “the window open” to dispose of the long-lived ILW in the NSDF.

Since their “Integrated Strategy” identifies only one option, the NSDF, I suggest the scope of this disposal initiative will be expanded again to address much more of the IL wastes from the reactors, alpha contaminated structures and “Hot-Cells” than that identified by Mr. Kehler (above). In other words, the “some intermediate-level wastes” identified in the CNSC letter ⁽⁵⁾ likely includes these other IL wastes.

As to whether CNL is forthright about a possible expansion, somehow I doubt it. As pointed out above and in my comments below, openness in their communications is not one of CNL’s strengths (e.g. the posters presented at the information sessions are not the same as those available from their website).

These omissions provide more evidence that the biggest issue with this whole undertaking is a lack of a clear problem definition. Since I identified this deficiency in my comments on the previous project description, I would have expected that CNL would have at least attempted to develop a better problem definition. However, in their rush to complete the removal of the 122 buildings by 2026, adequately defining the problem or identifying alternatives is not a priority.

Therefore, my answer to this question is; CNL has yet to finalize the scope of the NSDF project.

1.6 CNL only responds to Regulator Requests

I note that this revision was done at the request of the CNSC ⁽⁵⁾. Recall, this is a proposal to build and operate a **near surface radioactive waste disposal site**. As a local resident of Deep River, I found the original description of the NSDF was troubling. With the changes as outlined in this revision (specifically the inclusion of “*some intermediate level wastes*”), I am even more alarmed. I cannot help but wonder whether I can believe CNL is completely honest with the public about this particular issue or any other of its intentions.

With respect to the openness issue, how can CNL decide to include “*some intermediate level wastes*” **after** they have put considerable effort into the initial technology selection, the preliminary design, the publishing their project description and the holding several public information and open house sessions, none of which included ILW? As several reviewers have noted, the Project Description is vague on the waste types to be emplaced in the NSDF.

⁽⁵⁾ H. Tadros (CNSC), letter to W. Pilkington (CNL), “CNSC Notification of Requirement for CNL to Decide on the Scope for the Near Surface Disposal Facility”, File No.: 2.14, 2016 Sep 15. (Available from the Canadian Environmental Assessment Registry website).

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Maybe their intension was to include ILW all along, but not tell anyone. I hope that is not the case, since it would be deliberately deceptive.

Only after the CNSC made the request ⁽⁵⁾, did CNL actually change the scope of the Project Description. However, the changes made were limited to addressing the modification to the project scope identified by the CNSC. None of the comments received (and posted on the Agency Registry website) were addressed (see Comment 2.1 - This revision does not address the comments on the previous version below).

CNL does not appear to be open about its intensions. Although their NSDF webpage has been revised, that site has yet to include a statement to the effect that project scope has been changed. Their fact sheet includes the following statement: “Near Surface Disposal Facility (NSDF) to be located at the Chalk River site and used for the management of CNL’s low-level radioactive waste and other suitable waste streams.” ⁽⁶⁾ This statement is somewhat misleading since it does not refer to Intermediate level wastes.

Much to my regret, I must rely on the CNSC to compel CNL to be more upfront (honest) about its intensions. It appears that the CNSC has to ensure the public is seriously engaged in its planning for the Chalk River site and any other AECL site within its mandate. My faith in CNL has been severely challenged. Much more oversight and diligence is essential.

1.7 What is CNL’s highest priority?

At the September 21st meeting, one Commission member asked the following about the aggressive schedule:

“And I hear you on how critical this facility is for you to deliver on all the other initiatives. It’s an extremely aggressive timeline of 2020 to have it in service and just seeing the experience we have had with some of our other projects. How confident are you in that date?” ⁽³⁾

Mr. Kehler responded:

*“It is recognizably an aggressive schedule, we realize that, and in dealing with staff we realize that as well. **It allows no hiccups in the process to get there whatsoever and there is no contingency built into that date at this point in time, but we are targeting it as strong as we can as a top priority of really the entire organization** because it is so critical to coming up with a final disposal path to support the schedule.” ⁽³⁾*
[emphasis added] ⁽³⁾

In response to the following question by another Commission Member:

“You know, considering that you have a very aggressive timeframe or schedule, as you were saying, I think it will be quite a management challenge to avoid shortcuts, no bashing, high-quality execution, ... if there are consequences, they are coming a few years or years after and then the costs are quite higher to correct them.” ⁽³⁾

To which Mr. Kehler responded:

“... So every site that we have worked that we strive to improve the safety performance and improve the compliance performance, which is all along with the conduct of operations, which is doing strict adherence to procedures and work planning and hazard controls, proves in the long run that we actually accelerate the work and do it at lower cost by focusing on the basics of safety and compliance.” ⁽³⁾

Conclusion, safety is a priority because of its cost and compliance implications.

What is missing from this response is that considering the longer-term implications could be a priority. For example, effects to the environment are more likely to occur “a few years or years after”. Since this undertaking is

⁽⁶⁾ Downloadable from the CNL website – Link http://www.cnl.ca/site/media/Parent/NSDF_Eng.pdf

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for a disposal site, the short-term industrial safety and compliance considerations cannot be the highest priority. Disposal is “forever”. Environmental issues must be given appropriate priority (at least as high as if not higher than safety and compliance). Adverse environmental consequences occurring at some later date will be much more costly to correct.

1.8 Has CNL any experience in the design, construction, operation, maintenance and closure of a radioactive waste disposal site?

Since CNL has provided no such evidence, I am uncomfortable about whether they can actually complete the design and construction of this facility in a safe and environmentally sustainable manner. This is especially true given their aggressive schedule. Sure, you can subcontract this work, but unless you are an “intelligent customer”, you are at a significant disadvantage.

In their presentation to the CNSC (2, 3), CNL personnel continually refer to their experience in accelerating the decommissioning of nuclear sites around the world. However, in all the cases which they cite as demonstrating that their chosen technology is proven (see Comment 3.1.1.1 - “It’s proven technology” below), none were designed, constructed, operated, maintained or closed by CNL.

This is somewhat worrying given that their proposed disposal facility is to last forever. Certainly, the information provided in their project description seems to confirm this lack of this experience.

It is fine to cite examples, especially if they are relevant to the proposed undertaking, but actual experience is much more credible. If they do not have the experience and they provide questionable examples to support their claims, then the whole concept for the NSDF is doubtful.

1.9 Does international best practice inform CNL?

In his presentation to the CNSC, Mr. Kehler stated:

“Finally, everything we do is informed by international best practices.”⁽³⁾

I regret that the evidence provided here contradicts this assertion. How can CNL claim that international best practice informs their decisions when:

- the definition of ILW (by both the IAEA and the CSA) precludes its emplacement in a near surface disposal facility?
- the international examples cited as “proven technology” are not appropriate to the proposed facility?

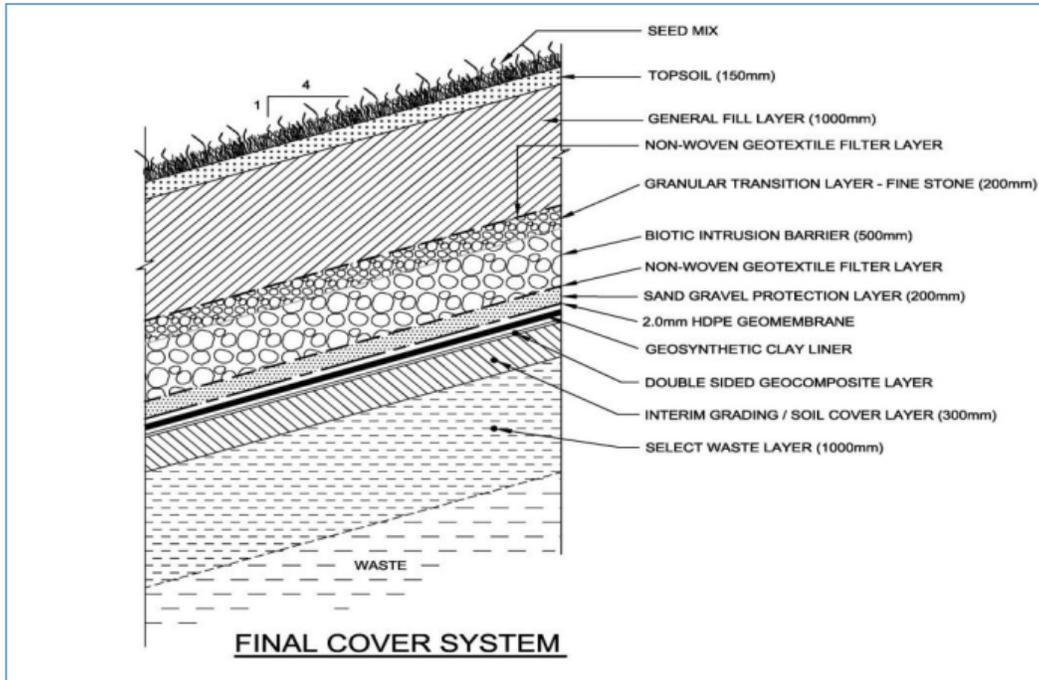
Therefore, my answer to this question is a categorical **NO**. There is no evidence that international best practice informs CNL.

1.10 Inconsistencies between the Project Description and the NSDF Posters

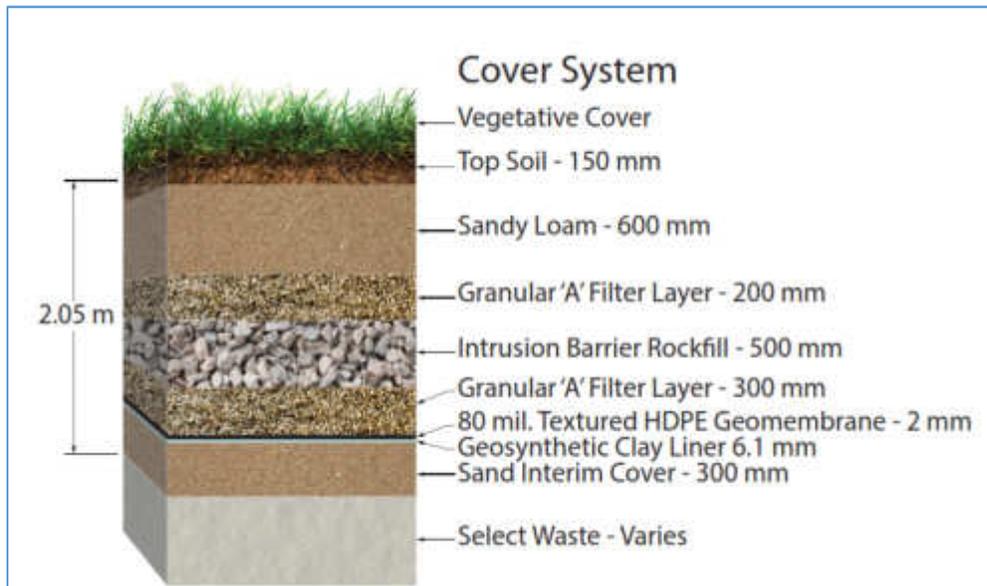
Although there may be other inconsistencies between the Project Description and Poster 5 displayed at the Public Information Sessions⁽⁷⁾, I shall only note two obvious ones since they are figures and easy to compare. These figures depict the proposed cover and liner for the facility.

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From the Project Description the following is the figure depicting the cover.

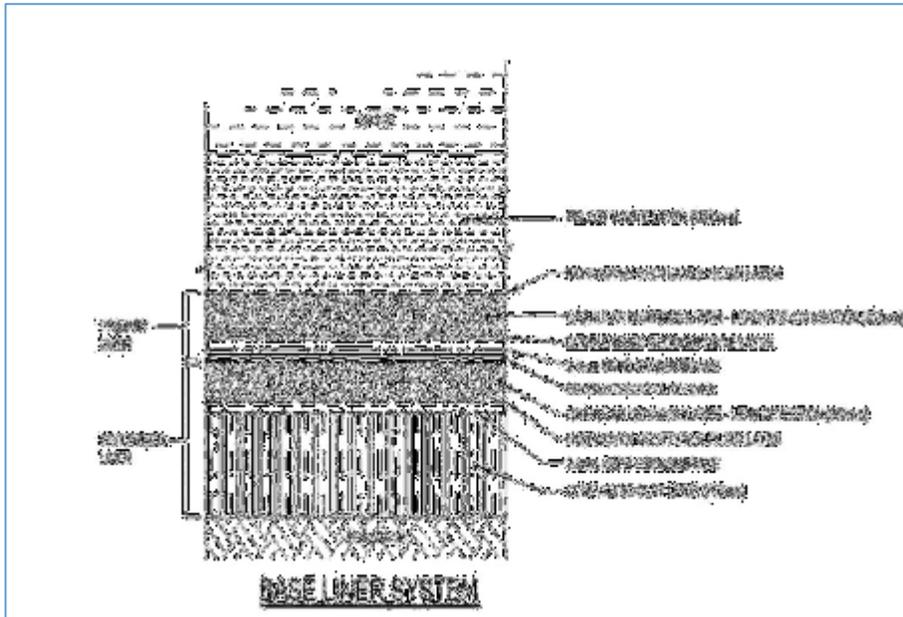


From Poster 5, the following figure depicts the cover:



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Then there are figures that depict the wastes and liner. First from the Project description:



Then the figure from Poster 5:



Although they may not be large, the discrepancies between the figures in the Project Description and those from Poster 5 are easy to find. It makes one wonder why the changes to the posters were not included in the revised Project Description. That said, easy to find inconsistencies such as these raises the question, “What other irregularities are there?” This leads to my next concern.

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1.11 Has CNL providing sufficient time for the community or the regulator to adequately absorb and evaluate the proposal?

In his September 21st presentation to the CNSC, Mr. Kehler stated:

“We also recognize that we are asking the community and the regulator to absorb and evaluate a lot of information over a relatively short period of time. We are taking great efforts to make information available and answer any and all questions.”⁽³⁾

This assertion is very disturbing.

First, there is sheer amount of information that the community is required to understand and assess. Very few individuals in the community have the knowledge to understand or time to spend on reviewing and evaluating the complexities of the decommissioning, dismantling of the 120 buildings in the built-up area, especially since these facilities include reactors, hot-cells, and contaminated buildings. From CNL’s *Integrated Strategy* presentation, it is not even clear that the Proponent actually understands these issues.

Second, the information provided, so far, is incomplete. To quote from Poster 6 on the NSDF, CNL intends to include the following:

“NSDF will accept wastes that have or will arise from:

- *Building decommissioning and demolition – this will be the largest source of waste*
- *Remediation of impacted soils and related structures*
- *Operational waste and legacy waste currently in interim storage*
- *Commercial sourced inventories, such as the healthcare field and universities*
- *Waste from the enduring laboratory operations and clean up missions”*⁽⁷⁾

As to the characteristics of these wastes, CNL provides no details. Without adequate information, neither the community nor the regulator can evaluate this proposal.

Third, to date, the information provided is inconsistent and contradictory. Originally, the wastes destined for the NSDF was limited to low-level radioactive wastes. Subsequently, CNL identified “some intermediate level wastes” as being suitable for emplacement. When the extent of the wastes to be generated in the next 10 years finally dawns on CNL, I wonder whether the project scope will be modified again to address those wastes (see also Observation 1.5 - Has CNL actually finalized the scope of the NSDF Project?, above).

(For two simple but obvious examples of inconsistencies, see Observation 1.10 - Inconsistencies between the Project Description and the NSDF Poster, above).

Conclusion: in order to meet its aggressive schedule, CNL has made it virtually impossible for “...*the community and the regulator to [adequately] absorb and evaluate a lot of information ...*” This is especially true since CNL is proceeding with simultaneous licencing initiatives.

To quote Mr. Kehler:

“... we are coordinating the Near Surface Disposal Facility environmental assessment and the site relicensing together.”⁽³⁾

⁽⁷⁾ NSDF Poster downloaded from the CNL website November 1st (Link - <http://www.cnl.ca/site/media/Parent/PSA-NSDF-Eng.pdf>)

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The community and the regulator now have to “...*absorb and evaluate* ...” the information for two licencing initiatives at the CRL site, those activities associated with the NPD Closure, and those associated with Whiteshell site relicensing and the entombment of WR-1.

1.12 Problems with the Site Selection Criteria

Although the Project Description provides very little detail as the criteria for site selection, Poster 6 on the NSDF project does depict a scoring regime. ⁽⁷⁾

With respect to that scoring, the size of a circle shown on the poster represents the results from the comparison between the two locations. However, there is no information to judge the criteria against each other. It is not appropriate to compare only locations, and not the criteria themselves. Therefore, in evaluating the EMR site, the criterion, “*Proximity to roads and services required to operate the NSDF*” has a larger circle than “*Archeological significance and presence of artifacts of cultural value*”. So which is more important in selecting a site, “*Proximity to roads*” or “*Archeological significance*”? From the summary given, it is “*Proximity to roads*”.

Then there is the difficulty in the actual criteria used for site selection. Three are related to the costs (primarily short-term), thus are double counting. Since this is a disposal facility, the short-term costs are irrelevant. In selecting a disposal site, it is the long-term impacts that are critical.

1.13 The proposed NSDF is essentially a municipal waste dump

The description of the “*Routine waste treatment steps*” given on Poster 2 from most recent set of NSDF posters ⁽⁷⁾ suggests the facility is a municipal waste dump with a liner and some radiological safety measures added. (Note: ECM = Engineered Containment Mound.) To quote that section:

- 1. A scheduled waste transport vehicle arrives at the facility entrance with a pre-approved waste package (e.g. bulk soil or drummed container).*
- 2. The driver of the waste transport vehicle approaches the “inbound” weigh scale where the load is measured and the waste is visually inspected by a Waste Technician to confirm match with shipping documentation.*
- 3. The vehicle proceeds to one of the ECM ramps for offloading (for example, soil and bulk debris to tipping station or drum containers to an unloading platform). Prior to offloading, final inspection of shipment is performed to confirm waste acceptance criteria are met.*
- 4. The waste is unloaded:*
 - A. The bulk waste is emptied from the vehicle (e.g. dump truck) into the working cell and dedicated heavy equipment within the ECM will reposition the waste to the “working face” of the mound. There it is compacted and recorded.*
 - B. The containerized waste is off-loaded from the shipping vehicle, inspected and checked for dose rate to match waste transfer document, then moved to the designated placement location within the working cell using the ECM dedicated all-terrain forklift, and recorded.*
- 5. The emptied vehicle is inspected and surveyed within the ECM. In the unlikely event that contamination is measured, the vehicle is directed to the NSDF vehicle decontamination facility.*
- 6. The emptied (and decontaminated) vehicle proceeds to the facility exit where the outbound weight is measured. The waste placement location is also recorded in the waste tracking software and final checks are completed.*
- 7. The waste transport vehicle and driver are released from site. Roadways in and out of the NSDF and within the site are routinely monitored to ensure they are free from contamination.”⁽⁷⁾*

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I do not know where to start assessing this procedure.

First, my reaction to this description was “You’ve got to be kidding”. There is no way that the NSDF can be seen as appropriate for disposing of ILW let alone LLW. Thus, most of the wastes from the removal of the buildings cannot be emplaced in the NSDF.

Second, this procedure relies entirely on the waste generator to characterize the wastes and ensure they are packaged in the appropriate container, drum or whatever. This is somewhat problematic since the CNL plans to remove that capability.

Third, as current practice at the CRL site has shown (for example, the Waste Analysis Facility located by the outer gate), relying on the generator to characterize and appropriately package its wastes is a poor guarantee that this will actually happen. What is especially concerning is CNL wishes to increase the health, safety and environmental (HSE) risks by emplacing ILW in the facility. Given the HSE risks involved, the reliance on the generator would not meet basic QA and/or HSE guidelines and standards.

Fourth, the first check (Step 2) on the wastes received is a “visual inspection” to confirm the shipping documentation. The final check (Step 3) is an “... *inspection ... to confirm waste acceptance criteria are met.*” I cannot see how an inspection can confirm the radiological and/or non-radiological contents of the wastes. The implication is that CNL’s WAC only address the waste form, bulk quantity and/or packaging.

Fifth, the record keeping is minimal and appears only to address the weight of the wastes (measure the weight of the truck before emptying and then subtract the weight after). This is a radioactive waste disposal facility, and yet there is no requirement to document the radionuclide content in the wastes emplaced. Where is the requirement to document the hazardous substance content?

Sixth, without an adequate inventory of the components in the wastes (both radioactive and non-radioactive) it is impossible to develop a monitoring program. You have no idea what potential contaminants would be in the leachate, the surface discharge or the airborne off gas releases.

Seventh, all the inspections, and records identified in this process are the minimum required for a municipal waste dump. However, they are completely unacceptable for a radioactive waste disposal facility. As a minimum, information about the radionuclide inventory is required to ensure confirmation with the safety case for the facility. To obtain that evidence, building and operating a Waste Characterization Facility is integral to the NSDF.

Eighth, we now have clear evidence that CNL’s decommissioning strategy for the removal of the over 120 buildings on the CRL site is to bulldoze them, drop the debris in transport trucks, drive the trucks to the NSDF, and dump their contents into some type of cell. Then return the trucks to do it all again.

My conclusion is that CNL has yet to devote the level of analysis required for a radioactive waste disposal facility. An enhanced municipal waste dump, while simple, is **completely inadequate**.

1.14 To meet its aggressive schedule, CNL is not compliant with the Canadian Environmental Assessment Act

The Canadian Environmental Assessment Act defines a project as:

“designated project means one or more physical activities that

(a) are carried out in Canada or on federal lands;

(b) are designated by regulations made under paragraph 84 (a) or designated in an order made by the Minister under subsection 14 (2); and

(c) are linked to the same federal authority as specified in those regulations or that order.

It includes any physical activity that is incidental to those physical activities” [emphasis added]

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In his presentation to the CNSC, Mr. Kehler stated:

Our decommissioning work at CRL has already commenced. I am pleased to report that since we arrived a year ago we have safely decommissioned and removed 19 buildings with no lost time accidents.⁽³⁾

Questions:

- Since the NSDF has yet to be approved, where are these wastes being held until the NSDF becomes available? I suspect CNL is using some sort of temporary storage for the time between now (2016) and target date of 2020 (four years from now) when the NSDF becomes operational.
- What is the nature of this temporary storage?
- Are these wastes being prepared for their eventual emplacement into NSDF? If so, what are those preparative criteria? Since CNL has yet to define its WAC, I suspect there are none.
- What is the contingency for these wastes if they do not meet the yet to be defined WAC? Will they remain in temporary storage?

I suggest that all these are physical activities that are “*incidental*” to the project. As such, by CEAA definition, they are within the scope of the NSDF project. Therefore, until the EA is complete and the proposed undertaking is approved, CNL must cease decommissioning buildings and emplacing the resulting wastes in temporary storage

In summary, to meet its tight deadline to remove the 122 buildings on the CRL site by 2025, CNL’s current decommissioning activities are in contravention of the CEAA.

1.15 Will this set the precedent for the disposal of Canada’s radioactive wastes?

Although CNL does not explicitly state that there are currently no facilities in Canada to dispose of radioactive wastes, this fact forms the basis for the design, construction and operation of the NSDF. Otherwise, why would CNL devote this amount of effort to make this a reality?

The downside of not having appropriate facilities in Canada is that the first one to be operational becomes the precedent for any subsequent radioactive waste disposal initiative. All the evidence presented here, support the conclusion that the NSDF is **not appropriate**.

Thus approving this initiative as currently envisioned is a very scary thought.

2 Specific Comments on the revised Project Description

In this section, I include an assessment of the revised project description, the expansion of the project’s scope to include ILW, and the inadequacies of that development. I also assess CNL communication practices related to the revised scope.

2.1 This revision does not address the comments on the previous version

In accordance with good quality assurance (QA) practice, the revised project description document posted on the Agency Registry contains a table outlining the changes to the text. Also included is a “Revision History” sheet that identifies the author, the internal reviewers and the approver. (All of these appear to be CNL staff.) Since the Agency Registry also contains several comments on the previous version by external reviewers, good QA practice would suggest to me that, as a minimum, these CNL reviewers would the author to address these external reviewers’ comments.

Clearly, that did not happen. CNL’s only concern in this revision is to address issues raised by the CNSC in their September 15th letter to CNL ⁽⁵⁾. That letter raised the significant concern that in its preliminary submissions to the Regulator did not match the scope in original project. In response, CNL changed the scope of the Project to

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include “...*some intermediate level waste*...” The obvious question is, “Where were the internal reviewers for the first version of the text?”

Since CNL had to revise the document anyway, I can see no reason why the new revision could not address the comments they had already received. (Where is document QA?) Those comments have been available on the Agency Registry since June. Further CNL had collected comments at the various June/July Public Information Sessions. I am very disappointed that CNL chose not to address any of them in this revision ⁽⁸⁾.

Apparently, the Proponent only responds to the Regulator (see Observation 1.6 above). In other words, if the CNSC does not make a specific request, CNL believes it has no obligation to respond to any other interested party. This leads me to wonder whether Proponent is serious about consulting the public. They certainly are not proactive, open or transparent.

2.2 Expansion of the project scope to include “some intermediate level wastes”

2.2.1 What is meant by “a very small amount”?

In response to the CNSC's Sep 15th letter to CNL ⁽⁵⁾, the scope of the project has expanded the class of wastes designated for the NSDF to include “*some intermediate level wastes*” (ILW). The Proponent asserts that this represents “*a very small amount*”, approximately 1% of total (see the first paragraph in Section 1 of the Project Description). However, 1% of 1,000,000 m³ is 10,000 m³.

Given that the volume ILW is 10,000 m³, the Proponent must clarify what they mean by the term “a very small amount”.

2.2.2 International and Canadian Guidance precludes emplacement of ILW in a Near Surface Facility

I note that in the revised version, the Proponent has provided two references with respect to definitions of LLW and ILW. These are:

[1] International Atomic Energy Agency (IAEA). 2009. GSG-1, “Classification of Radioactive Waste”, International Atomic Energy Agency, Vienna. General Safety Guide No. GSG-1

[2] CSA N292.0-14, General Principles for the Management of Radioactive Waste and Irradiated Fuel”

The first reference, the IAEA GSG-1 document, defines ILW as:

*“Intermediate level waste (ILW): Waste that, because of its content, particularly of long lived radionuclides, **requires a greater degree of containment and isolation than that provided by near surface disposal.**”*
[emphasis added]

In the second reference, the CSA document, defines ILW as:

“A.6 Intermediate-level radioactive waste

A.6.1 General

Intermediate-level radioactive waste (ILW) typically exhibits levels of penetrating radiation sufficient to require shielding during handling and interim storage. A precise boundary between LLW and intermediate level

⁽⁸⁾ At the October 18th Public Information Session, I asked the representatives of the Proponent why this revision did not address comments received. Their response was that “it was up to the CNSC to provide the dispositions”.

While under the EA process that is technically true, this is a poor excuse. If the Proponent truly wanted to engage the public, it would be much more proactive in addressing any or all comments received. Waiting for direction from a Regulator confirms my initial suspicion that communication strategy that CNL has adopted is “Decide **Announce** Defend”. Consultation is NOT part of their strategy.

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waste (ILW) cannot be provided, as limits on the acceptable level of activity concentration will differ between individual radionuclides or groups of radionuclides. For orientation purposes only, a contact dose rate of 2 mSv/h and thermal power below 2 kW/m³ can be used in some cases to distinguish between low- and intermediate-level radioactive waste class. However, detailed classification should be distinguished using the characteristics specified in Clause B.3. ILW generally requires little or no heat dissipation during its handling, transportation, and long-term management.

However, because of its total radioactivity level, ILW might require consideration of the implications of short-term heat generation.

*Because of its long-lived radionuclides, **ILW generally requires a higher level of containment and isolation than can be provided in near-surface repositories.**” [emphasis added].*

The Proponent needs to provide proof upfront that their proposed near surface disposal facility will provide the containment and isolation required to address the risks of ILW as stated in both these definitions.

In other words, the Proponent must revise the Project Description to describe how it will address the “*higher level of containment and isolation*” required for ILW.

If, in order to meet the requirement for a “*higher level of containment and isolation*”, waste conditioning is required, then the scope of this proposal must be expanded to include the building, operations and maintenance of such a facility.

2.2.3 Proponent needs to provide examples of Near Surface Facilities that are appropriate for the disposal of ILW

Let us consider the examples cited by the Proponent as evidence that the design of the proposed facility is based on existing technology. To quote Section 3.3 (which is unchanged from the original version of the Project Description):

“The design of the NSDF is currently under development. It will be designed as an engineered mound, built at near-surface level on the CRL property, and resembling the plan for the Port Granby Project and licensed waste landfills established on many US Department of Energy sites; e.g. Idaho CERCLA Disposal Facility, Fernald On Site Disposal Facility and the Oak Ridge Environmental Management Waste Management Facility.”

However, none of these facilities are designed to “dispose” of ILW. Either the Proponent is being deliberately misleading, or forgot to update the examples to include those designed to manage ILW.

I challenge the Proponent to provide examples of where ILW is disposed of in a near surface disposal facility similar to that being proposed. (See also Comment 3.1.1.1 below “**It’s proven technology**”)

2.2.4 Proponent needs to provide criteria to clarify what is meant by “some intermediate level wastes”

The two definitions of ILW given above state that this class of radioactive waste in is not acceptable for disposal in a near surface facility. However, these definitions are very generic. Further, CNSC’s September 15th letter suggests that CNL will emplace only “*some intermediate level wastes*” in the NSDF ⁽⁵⁾. This suggests that not all the ILW is destined for the NSDF. Apparently, the Proponent is intending to subdivide the ILW category into those wastes that are acceptable (meet the WAC) and those that are not.

If the Proponent is considering a subdivision, then a summary of their proposed criteria for this “reclassification” must be provided in the Project Description.

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2.2.5 If “some” ILW is to be emplaced in the NSDF then the Proponent needs to expand the project scope to include a Waste Characterization Facility

Whether or not the Proponent develops a new subcategorization of ILW, the Proponent will have to implement a waste characterization processes specific to NSDF. This is especially true since CNL plans to remove its current capability. The Proponent cannot rely on the waste generator to comply with the WAC. The Proponent has to take the responsibility to ensure all wastes to be emplaced within the NSDF will meet the WAC. Further, within an acceptable uncertainty defined upfront, they will have to maintain an inventory of the total nuclides emplaced in the repository. Therefore, the scope of the proposed undertaking must be expanded to include the need to build, operate, and maintain a Waste Characterization Facility.

Please revise the scope of the project to include the construction, operation and maintenance of a Waste Characterization Facility (or a Waste Characterization and Conditioning Facility).

2.3 *The results of the studies conducted during the Spring and Summer of 2016 do not inform CNL’s site selection*

The previous version of the Project Description including statements to the effect that several studies would be made during the spring and summer of 2016. None of these statements has been modified in this revision (which is somewhat surprising given they were required as part of the final site selection process).

To quote from Section 4.1

“The final site selection decision will be made following the completion of biodiversity and archaeological studies scheduled for the spring and summer of 2016, and ongoing public consultation activities.”

In Section 6.3, it is stated:

“Biodiversity studies will take place in the spring and summer of 2016.”

To quote Section 6.4:

“Additional biodiversity studies are scheduled to take place in the spring and summer 2016. Specific species to be surveyed at this location include:

- *Amphibians*
- *Bats*
- *Fish species in Toussaint Lake.”*

Then there is Section 6.5.4. Two quotes from this section are:

“The EMR Site has high archaeological potential. Two relic shorelines cross this site, which could yield aboriginal pre-contact material. A Stage 2 archaeological assessment will be completed in the spring and summer of 2016 to determine the extent of the deposits and decide if further assessment is necessary to determine heritage significance.” And

“The remainder of this site [the Alternative Site] warrants further study to determine heritage significance and will also be assessed during the spring and summer of 2016.”

Let us not forget Section 7 in which it is stated:

“The final site selection decision will be made following the completion of biodiversity and archaeological studies scheduled for the spring and summer of 2016 as well as public consultation activities.”

CNL has had three opportunities to provide a summary of the results of these studies: revise the project description document to include summaries, modify the website to include result summaries, or modify the Public

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Information Session posters. So far, the only vehicle CNL has chosen is to revise its single poster (Poster 7) for the recent October Public Information sessions ⁽⁷⁾. However, this poster only addresses the “2016 Archeological Assessment” and contains significant caveat in that more studies are required.

However, Poster 3, the one that summarizes the site selection results, concludes that the EMR site is the preferred location, even though the results of the 2016 studies never given (see also Observation 1.12 - Problems with the Site Selection Criteria, above

My only conclusion is that CNL has selected the site without any regard for the results of these studies, the long-term impacts and/or any serious public consultation ⁽⁹⁾.

2.4 What is meant by “Consultation”

A search on the web revealed several definitions for “consultation”, most of which describe the interactions between lawyers and doctors. However, one definition that is more generic and thus relevant to this review is the following:

“Consultation (noun) - An exchange of views in an attempt to reach a decision” ⁽¹⁰⁾

Clearly, CNL understands this definition. To quote its website:

*“CNL is committed to developing and maintaining solid, long-term relationships with all of our stakeholders. These include the local communities where we work, the companies we do business with, as well as the public at large. **We are committed to communicating in a timely manner and exchanging information and we recognize the importance of listening to our stakeholders and working with them to resolve their concerns.** Only through the strong support of our communities will we be able to supply our customers with the nuclear science and technology services they need, while contributing to a strong economy, a clean environment and a healthy society.” [emphasis added]*

How well has CNL fulfilled this commitment? To date, there is little evidence that CNL has met its own promise.

Are their communications “timely”? CNL revised the Project Description to include changes to the scope of the project only after directed to do so by the CNSC. This does not appear to be “timely”. Further, I can find no evidence that, without the CNSC’s intervention, CNL would have informed its other stakeholders of this change. In fact, CNL has not yet updated its website to refer to this change in project scope.

With respect to exchange of information, listening to stakeholders, and working with them to resolve concerns, the evidence points to only one stakeholder that receives this treatment, the CNSC. (See Observation 1.6 above).

Since this revision has ignored comments received, both on the previous version of the Project Description and at the Public Information Sessions (several of which I attended), CNL’s public communication appears to be limited to announcing and not exchanging information.

If CNL truly listened, then the revised project description would address comments received. If they worked with their stakeholders to resolve concerns, they would have actually met with those that raised issues at the previous round of reviews. All of this requires significant effort on the part of CNL. As far as I can discern, there has been no attempt to consult or engage with the public.

With respect to achieving some semblance of genuine public engagement, I expect that CNL would provide links to the Agency Registry on the webpages for their three “disposal” projects. The Registry is where all stakeholder comments received are posted, as required by the Canadian Environmental Assessment Act. Providing such

⁽⁹⁾ At the October 18th Public Information Session, I saw no attempt by CNL staff to consult the public on the selection of the location for the NSDF.

⁽¹⁰⁾ The American Heritage® Roget’s Thesaurus. Copyright © 2013, 2014 by Houghton Mifflin Harcourt Publishing Company.

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links is a simple and easy approach for CNL to demonstrate that it has some commitment to “... *communicating in a timely manner and exchanging information ...*” with its stakeholders. As of this writing, I regret that CNL has chosen not to provide those links.

I expect that this will change during the preparation of the *Environmental Impact Statement*, and CNL will make a genuine effort to engage all its stakeholders.

2.5 Public Consultations (Table 2-1)

CNL has summarized its *Public Stakeholder and Aboriginal Communication Activities* in Table 2-1. Those activities are described in the footnote to the table. To quote:

“ Presentation made to Stakeholder/Aboriginal Group focusing on NSDF Project. For activities not denoted by an asterisk, a brief overview of the NSDF was provided in the broader context of a vision for the company.”*

If this is all CNL has done to address its public communication obligations, then this is more evidence that CNL has yet to take these responsibilities seriously.

Public consultation is not just a matter of presenting a project overview with a question and answer session. Certainly, at the Public Information Sessions I have attended, the Proponent does gather feedback. However, I have yet to see any evidence that the feedback received has been addressed ⁽¹¹⁾.

CNL must ensure that Public Consultation activities are designed to guarantee that views are **exchanged with the goal of reaching a decision** (see definition above). “Define-Announce-Defend” is NOT an appropriate communication strategy for radioactive waste disposal projects.

2.6 What “alternative means” have been considered by CNL?

So far, all the evidence points to the obvious conclusion that CNL has only considered one “means” and that is the NSDF. Identifying and considering “alternative means” is not just a “good thing to do”. The Canadian Environmental Assessment Act (2012) mandates it. Under the Act, it is one of the environmental factors that must be assessed. To quote relevant section from the Act, “*Factors To Be Considered*”:

“Factors

*19 (1) The environmental assessment of a designated project **must take into account the following factors**: ...*

(g) alternative means of carrying out the designated project that are technically and economically feasible and the environmental effects of any such alternative means; ...” [emphasis added]

So, is CNL considering “alternative means”? The answer appears to be “**NO**”. A statement by Mr. Kohler at the September 21st meeting of the CNSC confirms that CNL is considering only one option. To quote from the transcript:

“At Chalk River, the previous plan indicated we’d have a waste disposal facility in place by 2034. Our current plan is to have a near surface disposal facility operational 14 years earlier, in 2020. This is a key enabling

⁽¹¹⁾ At the June 21st Public Information Session, I distributed copies of my comments on the two proposals, the NSDF and the NPD Closure project, to some of the CNL and AECL staff in attendance. Although the posters at the October Public Information Session had been revised, those revisions did not address any of the comments I give to the staff at those sessions. Although the staff in attendance acknowledged receipt of the comments, they did not seem prepared to address them,

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facility, essential to support our plan for decommissioning activities, which reduces the hazards and paves the way for site revitalization.”⁽³⁾

This quotation is somewhat telling. First, CNL has considered no other option but the NSDF. Second, the timeline has been significantly shortened. This suggests that all other factors (specifically the long-term implications of worker and public health and safety and environmental impacts) are being relegated to the “back seat” to meet the 10-year contract deadline.

I expect to see CNL identify at least one “alternative means” before proceeding with the EA process. Since CNL has characterised the current state as being unacceptable, “status quo” cannot be deemed an “alternative means”. This is especially true since CNL has expanded the project scope to include ILW, which by definition “requires a higher level of containment and isolation than can be provided in near-surface repositories”. Given this definition, what were the “alternative means” CNL considered for the IL waste class that led to their conclusion that the NSDF was the appropriate option?

Further, CNL must update its communication program to address “alternative means”. This would include updating the CNL website, all relevant documentation (including the Project Description) and all future public information sessions.

2.7 CNL must clarify the scope of the NSDF Project to address its “Integrated Strategy for Decommissioning and Waste Management”

As discussed (see Observation 1.3 above), CNL’s *Integrated Strategy for Decommissioning and Waste Management* does not address all the wastes that would be generated from the decommissioning and removal of over 120 buildings. That *Strategy* does not present or discuss any alternatives to the NSDF, leading to the conclusion that CNL plans to emplace all these wastes in the NSDF (a very disturbing prospect).

Unless CNL provides an “alternative means” to the NSDF, CNL must expand the project scope to include all wastes as identified in their *Integrated Strategy*.

2.8 CNL must include waste characterization facilities in the Scope of the NSDF Project

As with any waste disposal facility, the facility owner must maintain an inventory of the emplaced wastes. For a radioactive waste disposal facility (such as the NSDF), the inventory has to categorise and quantify the specific radionuclides, and hazardous substances. However, as noted above, CNL intends to remove the over 120 buildings by 2026 that include several hot-cell facilities and analytical capabilities that could be used to characterize the wastes that will be generated by such removal.

The removal of the capability to characterize the wastes severely hampers the operation of the NSDF. Therefore, the scope of the NSDF must be expanded to include the design, construction and operation of a waste characterization facility. (See also Comment 2.2.5 above)

2.9 CNL must include pre-treatment facilities in the Scope of the NSDF Project

One example cited by CNL (on their website, but not in their project description) as an example of “proven technology” is the *Low Level Waste Repository, in Cumbria, UK*. As described in my previous comments (see Comment 3.1.1.1 below), this repository requires that the wastes be pre-treated to reduce the total waste volume that will be emplaced. These include pre-treating the super-compactable, combustible, and metallic wastes.

At the September 21st presentation to the CNSC, Mr. Kehler responded to a Commission Member’s question with the following:

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*“So that was my discussion about soil remediation happening at the same time, because to **properly dispose and compact the debris coming from the buildings**, you actually need soil with that, usually around a 60:40 mixture, to make **the landfill so it won’t subside**.” [emphasis added] ⁽³⁾*

I find this response somewhat disturbing. Surely, the most appropriate technology to the compact building debris and to prevent landfill subsidence would be to pre-treat the wastes through a super-compacter and/or metal melt **before** their emplacement.

Further, my interpretation of the term “building debris” would include all building materials, wood, structural components, roofing, etc. Most of these are combustible. However, combustible materials in a landfill is a significant source of off-gasses, such as methane. Thus, landfills containing this waste type must be vented over the long-term. (Note that methane is a more significant greenhouse gas than carbon dioxide). I doubt whether venting of a radioactive waste repository over the long-term is acceptable. Thus to reduce the risk of combustibles being emplaced in NSDF, CNL must incinerate these wastes to remove this risk.

The building wastes will include metal components such as piping, and structural beams. Again, pre-treatment of these wastes will considerably reduce their volume and the risk of subsidence.

As the Proponent should know, several of the structures to be “removed” are constructed of concrete. Further, some of that concrete is contaminated with alpha. What will CNL do with the concrete?

As far as I am aware, none of the waste volume reducing technologies (the super-compacter, the incinerator or the metal melt facility) exists on the CRL site.

Since these facilities are integral to the operation of the NSDF, the scope of the project must be expanded to include these “infrastructure” components.

If CNL does not wish to build these pre-treatment facilities, then the scope of the NSDF must clearly identify these wastes as unacceptable for emplacement, even before developing their WAC.

2.10 CNL must clarify the timeline in the Project scope

I note that the timeline given in Section 3.4 of the Project Description is:

*“Project development: 2016 - 2020
Operations and future expansion: 2020 - 2070
Post-closure and monitoring: 2070 – 2400”*

Poster 5 of the Public Information Session posters for the NSDF project states:

“The design life of the NSDF is 550 years.” ⁽⁷⁾

So, which is it, the year 2400, or 2570? I take this to mean that the site will be abandoned at the end of its “design life” (either in the year 2400 or 2570). However, the half-life of most radionuclides in intermediate level wastes extends far beyond the year 2570. It is not clear to me that the levels of radioactivity will meet clearance levels at that time. Therefore, abandonment will not be an option.

CNL must ensure its communication activities are consistent and clarify its proposed timeline in the Project Description, including an estimate as to timeline for the abandonment of the site ⁽¹²⁾.

⁽¹²⁾ See Comment 3.2.3 - The NSC Act makes no provision for a disposal licence. Currently for a facility such as the NSDF, the only license available is a license to abandon.

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3 Updates to Previously Submitted Comments on the Original Project Description

I have updated some of my original comments to address the website changes and the September revisions to the Project Description. These updates are highlighted in yellow. I have also revised the heading numbering scheme in order to create a Table of Contents.

3.1 General Concerns

It appears that CNL is applying the “Decide-Announce-Defend” approach to public engagement. This is somewhat surprising since Canadian, US and international experience (of which CNL must be fully aware) suggests this approach will not bode well. I cite their Near Surface Disposal Facility (NSDF) web page (and other communication activities) as evidence of this communication strategy. Having decided on and announced the NSDF, CNL is now in the unenviable position of having to defend its choice.

3.1.1 Concerns with the NSDF Key Points as Provided by CNL (the Proponent)

CNL makes four key assertions about the NSDF project that are described on their Web Page (<http://www.cnl.ca/en/home/e-stewardship/nsdf/key-points.aspx>) (updated link - <http://www.cnl.ca/en/home/environmental-stewardship/nsdf/key-points.aspx>.) These assertions are: proven technology, environmentally sound, safe and a solution for CRL legacies. Each of these assertions is suspect, thus likely misleading.

Even though these 4 Key Points may not be specifically addressed in the project description document, they do reveal the framework in which CNL has defined both the problem and the proposed solution (i.e. the NSDF). Thus they are crucial to the understanding of the project description document.

Let us look at each of the Key Points in turn.

3.1.1.1 “It’s proven technology”

Although CNL provides several examples where the technology has been implemented, none of these can be cited as proof of the technology. As of today, those that are operational have only operated for a couple of decades or so. In other words, none of the facilities has been shown to last even 50 years, let alone the 300 years projected for the NSDF. Let us look at each of the examples cited by CNL.

(A) Fernald Preserve, Hamilton, Ohio, USA. It is my understanding that this facility is designed to manage wastes from “... former Feed Materials Production Center, a uranium processing facility that produced high-purity uranium metal products as the first step in America’s nuclear weapons production cycle”. It is not clear to me that these wastes are similar to the wastes being proposed for emplacement in the NSDF. Since uranium processing to produce high-purity uranium never occurred at the CRL site, any comparison between wastes that are now emplaced in the Fernald facility and those envisioned for the NSDF is not valid. Therefore, providing this as an example of what is being proposed is somewhat misleading.

(B) Integrated Disposal Facility, in Richland, Washington, USA. What are the characteristics of the area in which this facility is located? The photographs of this facility (available from <http://www.hanford.gov/page.cfm/IDF>) show that the predominant characteristic of the area in which this structure is located is essentially desert. If there is one overriding characteristic of the CRL site, it is not arid. Therefore, providing this as an example of what is being proposed is also misleading.

(C) Low Level Waste Repository, in Cumbria, UK. A cursory look at the overview of the WAC for this facility (available from <http://llwrsite.com/customer-portal/resource/waste-acceptance-criteria-overview-wsc-wac-ovr-version3-0-ap/>) suggests that several categories of wastes will require pre-treatment before being accepted. These include pre-treating super-compactable, combustible, and metallic wastes. Since CNL provides minimal information about the wastes to be managed in the NSDF, it is not clear whether pre-treatment facilities would be

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required. If **pre-treatment** is required, then the scope of NSDF is totally inadequate since it does not address these prerequisites. Therefore, providing this as an example of what is being proposed is also misleading

Note – Just before the June 21st Public Information Session, CNL removed the examples (D) and (E) from their website. I only noticed that these had been removed after I attended the Public Information Session. During my discussions with the CNL staff at that session, they admitted the two examples (D) and (E) were not appropriate. I then checked their website and confirmed they were removed. (For the record, I had submitted these comments to the CNSC, June 14th, before I became aware of these two deletions.)

To add to the confusion, in the June 2016 issue of the CNL publication, *Contact*,⁽¹³⁾ the list of examples of “proven technology” included the three above and the French facility (item (D) below). Now there were four examples. That said, the Public Information Sessions held in June and July listed the three above examples.

So, how many of these examples are included in the Project Description? The list in Section 3.3 of the Project Description (both the original and the revised one) contains three examples. In that list, there is only one (Fernald) that matches the website list. The Proponent has included another two on that list, *Idaho CERCLA Disposal Facility*, and *the Oak Ridge Environmental Management Waste Management Facility*.

I take these discrepancies as further evidence that the Proponent has decided that to meet its target to dismantle the CRL site by 2016 (see Observation 1.3 above), the NSDF is the only priority. Without the NSDF, CNL cannot meet that objective. Thus, little or no consideration is given to anything that potentially interferes with the 10-year timeframe. This is a short-term solution to a long-term problem. (See my previous Comment 3.1.2 ***In summary*** below)

If, with all their resources, CNL cannot get even these simple facts consistent, I wonder about their ability to implement even the proposed NSDF in a safe and environmentally sustainable way. With respect to the longer term, these inexcusable discrepancies suggest that CNL’s waste strategy lacks basic credibility required to ensure that the long-term protection will be in place (see also Observation 1.3 above).

To repeat, this is a disposal project. As such, it requires considerable effort to ensure that the health and safety of the workers and public, and the environment are protected over a very long-term. These inconsistencies are symptomatic of a rush job.

What CNL has omitted in these examples is a facility already operating on the CRL site that has most of the attributes of the NSDF. Although designed for very low-level wastes and considerably smaller than the proposed NSDF, the “*Bulk Materials Landfill*” has a liner, and leachate collection. Apparently, CNL is unaware of its own precedents. This leads me to believe CNL does not really know what it is doing.

(D) — Centre de L’Aube, France. Are the radioactive wastes that this facility is designed to similar to those for the NSDF? The description of the facility (downloadable from <https://www.andra.fr/download/andra-international-en/document/editions/379fva.pdf>) states explicitly that the facility “... is licensed for the disposal of 1 million cubic metre, s of low- and intermediate-level, short-lived waste packages.” Although the volume of the wastes for the French facility is the same as that for the NSDF, the characteristics of that waste do not appear comparable. CNL provides no commitment that their proposed wastes will be packaged or that the radiological nuclides will be short lived. Therefore, providing this as an example of what is being proposed is also misleading.

(E) — Rokkasho, Japan. A cursory look at the low-level waste disposal process given for the disposal site (available at http://www.infl.co.jp/en/about/publication/file/llw_disposal_center.pdf) shows that all the wastes are drummed. Again, CNL does not provide information about acceptable waste forms for the NSDF. Therefore, providing this as an example of what is being proposed is also misleading.

(13) Downloadable from http://www.cnl.ca/site/media/Parent/2016_CONTACT_DWM-Projects_CRL_FINAL_EN.pdf

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Although each of these facilities use (or propose to use) impermeable liners and covers, that appears to be the extent of similarity of these examples to the proposed NSDF. Thus one can safely say that the use of impermeable liners and covers have been implemented at several sites around the world. That said implementation is not proof. To assert the technology is proven is deliberately misleading (which, by the way, is not semantics).

NOTE: The three examples (A) through (C) referred to above are **NOT** designed to accept intermediate level waste. As such, citing these facilities as examples to support the assertion, that the technology selected by CNL is proven, is deliberately misleading.

That said, from the description in item (D) above, the French facility, explicitly includes IWL. However, its design is to emplace containers (drums) into several buildings all with roofs (nothing like the proposed NSDF). Further, this site includes a Waste Conditioning Facility.

3.1.1.2 “It’s environmentally sound”

Unless one predetermines the outcome of an environmental assessment (EA), CNL cannot assert that the proposed undertaking is “environmentally sound”. An assertion like this, before the EA is even started, presupposes the conclusion and suggests an unacceptable bias on the part of CNL. What will CNL do if the conclusion of the EA process determines the environmental impacts are unacceptable?

From a brief review of the project description, the project will be covering an area of about 30 ha with impermeable liners and covers. At first glance, this is a significant and adverse environmental impact. Until the EA is completed, I cannot say whether that impact would be acceptable, but somehow I doubt it.

3.1.1.3 “It’s safe”

While I agree that construction activities can be conducted to ensure little risk to the public or the environment, I see no evidence that this would apply to the operational activities or could be guaranteed after the facility is closed and put under institutional control for 300 years. There is no evidence that CNL has done an analysis in accordance with the CNSC Regulatory Guide, G-320, *Assessing the Long Term Safety of Radioactive Waste Management*. Thus an assertion like this, before the safety case is even started, presupposes the conclusion and suggests an unacceptable bias on the part of CNL. What will CNL do if the conclusion of the safety assessment determines the facility, over its 300-year plus lifetime, cannot be operated safely?

3.1.1.4 “A solution for CNL’s legacy obligations”

While I agree that the NSDF is a solution, I am not sure what the problem is for which this is the answer. CNL needs provide a clear definition of the problem that needs to be solved. Since the facility is supposedly being designed for a “variety of waste materials”, it will not be designed for all of “CNL’s legacy obligations”. Because no description of the “variety of waste materials” is postulated, it is not clear that what is being proposed is even the appropriate solution for this “variety of wastes”. Again, an assertion is given without any supporting evidence.

Since this Project Description was written, CNL has decided to provide more information as to what was meant by a “variety of waste materials”. These wastes now include “some intermediate level wastes”. This confirms my original comment that CNL has not yet provided an adequate problem definition (see Comments 3.1.2 - In summary and 3.2.4 - Advocating a short-term solution to a long-term problem below).

In addition, under this heading CNL also asserts that the NSDF will “...reduce the footprint of the built up area on the CRL site...” While it may be true that over 100 buildings will be removed, the actual footprint will not be reduced. This is especially true, since in the next clause CNL asserts the facility will “... create the appropriate conditions for a clean and revitalized science and technology campus.” I suggest that this campus will be situated

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on the current “... footprint of the built-up area...”⁽¹⁴⁾. If it isn’t, then the footprint will be expanded. Therefore, there will be no footprint reduction.

3.1.2 In summary

CNL appears to have decided on a technology without a thorough examination of the appropriateness of that technology. To compound the issue of choosing a correct solution, there is no clear problem definition. Without a proper definition, any proposed solution is OK. To paraphrase the Cheshire Cat in *Alice in Wonderland*, “*If you do not know where you are going, it does not matter what road you take*”. This is **not** an approach that I would expect of a technologically sophisticated company.

It appears that CNL’s primary concern is to have this facility up and operational by the year 2020 (four years from now). All other issues are seen as secondary, or tertiary, or even worse, as impediments. Thus they are not given proper consideration. Recall, the proposed undertaking is for a nuclear waste “disposal” site, something that is supposed to last forever. For an undertaking that is supposed to last forever, dismissing issues in the name of speed cannot be justified.

Since CNL has failed to clearly define the problem to be addressed by this undertaking and has not engaged the public in any serious way, I recommend that CNL withdraw this proposal.

I also recommend that before proceeding with the EA process, CNL must devote more resources to defining and documenting the problem (or problems), determining alternative means to address that problem and conducting an unbiased assessment of the alternative means to determine the best option or options. In all these steps, CNL must make a concerted effort to engage the local population and concerned citizens.

If CNL wishes to proceed with the project as described, then the following comments must be addressed.

3.2 General Comments

3.2.1 No reference to G-320

Note: disposal is forever. The proponent will need to demonstrate that the project meets the requirements of the CNSC Regulatory Guide, G-320, *Assessing the Long Term Safety of Radioactive Waste Management*. Since the description document makes no reference to this guideline, it is not clear whether the proponent understands the importance of this guidance.

3.2.2 Inadequate Public Engagement

Since disposal is forever, public engagement in the decision process is critical. From public engagement activities identified in their document (Sections 2.3 and 2.4), the proponent appears to have given little opportunity for the public to seriously participate in process. These sections appear to address only the activities associated with the announcement of the project. Given the nature of the stakeholder groups listed in Table 2-1, the proponent appears to have deliberately limited the opportunity for public feedback. I suggest that most of these groups have an economic interest in ensuring that CNL will succeed. Further, they are unlikely to have sufficient knowledge to raise issues on behalf of their members, and therefore, will defer to the expertise of the proponent. Therefore, they are unlikely to question any initiatives at the CRL site. Since querying by this audience is not expected, the proponent can safely limit the communication activities to announcements for these groups.

⁽¹⁴⁾ This assertion has been subsequently verified. If one limits the definition of “footprint” to the buildings, only then will there be a reduction. However, this is misleading. From the presentation by CNL to the CNSC (Footnote (2)), there does not appear to be any plans to reduce the area enclosed by the security fencing. Therefore, there will no reduction in the total footprint of the “built up” area. The building superstructures may be gone, but the total footprint remains.

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However, this communication strategy cannot be seen as acceptable when the object is to engage the general public. It appears that the proponent wants to preclude the general public from raising questions about a proposal that has irreversible implications to the CRL site, and the future of this community.

I suggest that the proponent is fully aware that this narrow focus is inconsistent with current Canadian practice for similar long-term waste management facilities. For example, in the developing the management strategy for the historic LLW in the Port Hope area (a project for which the proponent is now responsible), the general public was deliberately targeted for engagement. As the proponent should know, from the initial identification of the problem in the early 1970s to the formation of the Low-Level Radioactive Waste Management Office (1982) to the implementation of the Port Hope Area Initiative (2001), the general public has been and remains heavily engaged.

With respect to Canadian precedents, one must not forget that the LLRWMO developed several “alternative means” for managing Canada’s historic low-level wastes. One of these resulted in the *Siting Task Force on Low-Level Radioactive Waste Management (STF)*. The STF identified the CRL site as a potential location for the repository and the local community was heavily involved. As I recall, the STF had storefront offices located in downtown Deep River. As part of their mandate, the STF conducted several characterization studies of the CRL site, the results of which still form the basis for describing the environmental features of the property. As far as I can discern, this project has done very little to determine the suitability of either chosen site, or the CRL site as a whole.

In summary, the description of the public consultation initiatives given in Section 2.3 and 2.4 are totally inadequate since they appear to focus on an announcement strategy. It suggests that the proponent wishes to short cut the public engagement process even though the proponent is fully aware of Canadian precedents (e.g. one of the PHAI projects (Port Granby) is cited as a design example in Section 3.3). The proponent has provided no justification as to why the public consultation/engagement process should be truncated.

The proponent must revise its communication process to ensure the public is given a meaningful opportunity to participate in the planning process.

See my new Comments 2.4 - “What is meant by “Consultation”” and 2.5 - “Public Consultations (Table 2-1)” above. CNL has not revised its communication strategy.

3.2.3 The NSC Act makes no provision for a disposal licence

It is my understanding that the Nuclear Safety and Control Act makes no provision for a “disposal” licence. The word does not appear under *Prohibitions*, Section 26 of the Act which states:

“Subject to the regulations, no person shall, except in accordance with a licence,

(a) possess, transfer, import, export, use or abandon a nuclear substance, prescribed equipment or prescribed information; ...

(e) prepare a site for, construct, operate, modify, decommission or abandon a nuclear facility; ...”

Under current legislation, the only licence that would be available at the end of the institutional control period (which is not really addressed in this project description document) is a licence to abandon. To comply with the regulatory guide G-320, “*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*” (Section 7.4, Assessment Time Frames, CNSC Regulatory Guide, G-320, page 24). At the time of the application for a licence to abandon, the residual radioactivity at the disposal site will have to meet clearance criteria. Although this is a CNSC licence, the regulatory concern does not end with this licence. Since hazardous materials, or mixed waste are to be emplaced in this facility (see Section 7, third paragraph), the proponent will also need to demonstrate that after the licence to abandon is issued by the CNSC, the site will meet the requirements for the closure of a hazardous waste management facility under provincial regulations.

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Please provide an estimate of the timeline at which the radioactivity of the closed disposal site will meet the clearance levels required for abandonment. In this estimate, the proponent needs to address any timelines associated with any provincial closure regulations.

3.2.4 Advocating a short-term solution to a long-term problem

The proponent appears to advocate implementation of a short-term solution to a longer-term problem. However, I cannot see that the proposed solution is justified since there is no clear definition of the problem. In Section 3.1.1, the proponent asserts that there is an “*immediate requirement for a new facility ... for the disposal of large quantities of LLW ...*” but provides no justification for this assertion. Why is the need “immediate”?

The proponent then asserts “*The urgency for the NSDF is rooted in the requirements established by AECL, on behalf of the Government of Canada, to substantially reduce the risks associated with the CNL legacy wastes, liabilities and the cost of laboratory operations to taxpayers in the 10-year period 2016-2025 and to create the conditions for the revitalization of the CRL site.*” Again no justification is provided.

Let us look at each of the requirements in the quote above. First, “*...to substantially reduce the risks ...*” What is the nature of those risks? Given the various reports on the environmental performance and worker safety at the CRL site (reports submitted annually to the CNSC as part of the CRL licence), those risks do not seem to be unacceptable. If there are risks that could be considered unacceptable, they are usually highly localized and short term, and can be dealt with as a small-scale problem. Since the risk is already low, it will be very difficult and expensive “*... to substantially reduce the risk*”. As to whether this facility can address the “*urgent need to reduce risk*”, it will fail. The period for commencing operations is four years from now. That is only to start operations. It will likely take several years before it can make any impact on risk reduction. Therefore, if the need is urgent, what alternative means has the proponent considered? Since no evidence is provided that any alternative to address this imperative has been identified, this suggests that even the proponent does not consider reducing risk as being crucial. I suggest that the risk is sufficiently low such that risk reduction cannot be used as a justification for the project.

Second: “*... to substantially reduce the ... cost of laboratory operations ... in the 10 year period ...*”. What is the current cost of laboratory operations? Why is the period of 10 years chosen? For a proper assessment of the costs, the costs of the laboratory operations must be extended beyond the 10 years to at least the project time line given in section 3.4, which is to the year 2400. What is the cost of this project over the complete life-cycle (including the costs for design, building, operations and closure and the cost of maintaining any institutional controls, maintenance and monitoring activities post closure up to at least the year 2400)? Without this information, this requirement remains an assertion and cannot be used to justify the project.

Third: “*...to create the conditions for the revitalization of the CRL site.*” What are these conditions? Again, the required information is lacking and this remains as an assertion, not a justification.

From the above, I am at a complete loss as to the justification and rationale provided by the proponent for this undertaking. Further, I cannot evaluate the proposed undertaking since I am not clear as to the problem the proponent wants to address.

In order to properly evaluate the proposed undertaking, the proponent must provide a clear definition of the problem. This definition must be provide the evidence that there is actually a problem and not just make assertions. Assertions are not evidence. Without the appropriate information, the proposed solution cannot be evaluated as to its suitability.

In summary, to quote H.L. Mencken – “*For every problem there is a solution which is simple, clean and wrong.*”

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3.2.5 Project Description does not address “alternative means”

This project description does not identify or consider “*alternative means of carrying out the project*”. As such, I cannot determine whether or not this proposed undertaking is the optimum solution. I note that each of the two other project descriptions recently submitted by the proponent (*the NPD Closure Project*, CEA Registry Number 80121, and *In situ decommissioning of the Whiteshell Reactor # 1*, CEAA Registry Number 80124) contain discussions of alternative means. Thus, the fact that this document does not identify or consider “alternative means” is somewhat disappointing.

The lack of a discussion of “*alternative means of carrying out the project*” suggests that the proponent has predetermined the solution, thus risks being out of compliance with clause 19(1) (g) of the CEAA (2012).

Please include a description of the alternative means, along with criteria used to select the NSDF as the best option.

3.2.6 Identification of “cumulative effects” missing

I note that this project only addresses the LLW from CRL (with some provision to handle the wastes from the NPD and Whiteshell sites). However, all CNL sites contain wastes other than LLW. How is this project integrated into the overall strategy to manage all wastes at CNL sites? What are the other CNL waste projects either underway or planned?

Recall that under Section 19 (1) (a) “Factors to be considered in an EA” states:

*“the environmental effects of the designated project, including the environmental effects of ... **any cumulative environmental effects** that are likely to result from the designated project in **combination with other physical activities that have been or will be carried out.**” [emphasis added]*

Without knowing the nature of these current and future projects, it is not clear that the proponent has adequately addressed the evaluation of cumulative effects. Further, I suggest that the proponent has not provided an adequate description of the context of the project.

3.2.7 Inadequate assessment of the potential impact to the environment from the sites selected

What is the potential impact to the environment from either of the sites selected? The proponent states that the area of each of the two potential sites is about 30 ha. To put this into perspective, it is my understanding that the built-up area occupies about 70 ha. Essentially an expanse equivalent to 43% of the built-up zone will be directly impacted by the installation of the impermeable liners and covers.

What is the result of the installation of these engineered barriers? Clearly, the whole local groundwater and surface water discharge regimes will change. As a result, the hydrology under the facility and, by extension, the surrounds will be altered. These transformations will impact the local ecosystem resulting in adverse effects to the existing flora and fauna both inside and outside the actual facility footprint.

Just from the size of the facility alone (approximately 30 ha) that is to be covered by impermeable liners and covers, one can predict that these effects will be significant and adverse. I am disappointed that the proponent has not identified these obvious impacts.

I suggest that the proponent’s assertion that the proposed undertaking is “... environmentally sound ...” is unjustified (see also Concerns with the NSDF Key Points as Provided by CNL (the Proponent) above).

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3.3 Specific Comments

3.3.1 Section 1.1 – Project Proponent (First paragraph)

“[AECL] ...fulfils this mandate through a long-term contractual arrangement with Canadian Nuclear Laboratories (CNL) ...”

It is my understanding that the contract with CNL is for 6 years with the option to renew for a further 4 years. This timeframe does not meet what I would consider “long-term”.

Please revise, a 10-year contract is not long-term.

I am concerned that at the end of this contract, the government will be left with a problem for which the contractor cannot be held responsible. As such, I suggest that for a project whose lifetime extends beyond the current contract, the proponent cannot be CNL. With a project lifetime up to the year 2400 (see Section 3.4), either the government itself (i.e. through NRCan) or AECL must be the proponent.

3.3.2 Section 1.1 – Project Proponent (Second paragraph)

“Canadian Nuclear Laboratories is a private-sector company ...”

From the CNL website, it is stated: “CNL is Canada's premier nuclear science and technology laboratory managed by Canadian National Energy Alliance”. Apparently, CNL is not actually a company but a “Laboratory”. Management of this entity is by a consortium of several private companies entitled, *Canadian National Energy Alliance (CNEA)*. Please confirm. If it is not a single company please revise this statement and identify which of the companies within the CNEA is responsible for this proposal.

It is my understanding that CNL is an incorporated entity that is a wholly owned subsidiary of AECL (a crown corporation). To add to the confusion, in their presentation to the CNSC (2), Mr. Kehler stated: “CNL's shareholder is Canadian National Energy Alliance, who holds the contract with AECL.” It is not clear to me how a contractor can own CNL (i.e. the sole shareholder), the subsidiary of AECL. This leads to the question, “When the contract is over in 6 to 10 years, does the ownership revert to AECL or does it remain with CNEA?”

Therefore, it is not clear that CNL is actually a “private-sector company”. Given these convoluted relationships, AECL must take complete responsibility for this proposal.

Please clarify which entity is responsible for what.

3.3.3 Section 2.1 - Project's Name, Nature and Proposed Location (Last paragraph on Page 2-2)

“A site selection process has identified two candidate sites to locate the NSDF, called the East Mattawa Road (EMR) Site, and the Alternate Site ...”

Please provide a summary of the criteria used for the site selection process. Please include a summary of the results of the evaluation.

Was the potential impact from the installation of impermeable liners and covers over the very large area (30 ha) considered in the selection process? (See also Comment 3.3.22 below). If not, please provide a justification.

3.3.4 Section 2.3 – Description of Consultation Activities

Please provide a copy of the “...a brief overview of the proposed NSDF within the context of a larger vision of the company.” Without the information it is not clear that the “overview” included a description of “...the risks to public health, safety and security, and the environment posed by the facility or activity ...” as required by the CNSC document, RD/GD-99.3, Public Information and Disclosure, March 2012, page 3.

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3.3.5 Section 2.3.1 – Future Engagement Activities

This section does not meet the requirements of Section 2.2.2 *Target audience(s)* of the CNSC document, RD/GD-99.3, *Public Information and Disclosure*, March 2012. To quote the first sentence in that section, “*The public information program shall define the target audiences, and the rationale utilized for inclusion.*”

Although a target audience is identified for these future engagement activities, please summarize the rationale used to determine their inclusion.

3.3.6 Section 2.3.1 – Future Engagement Activities (Top of page 2-6)

The list of activities provided in this section are all related to announcing the project. There does not appear to be any effort to engage the population of the local communities in any of the decisions related to this project. As stated above, disposal is forever. Thus limiting the communication efforts to announcements to elected officials and special interest groups cannot be considered sufficient. This land belongs to all Canadians. With this ownership responsibility comes the obligation to engage Canadians in any decisions with respect to long-term uses, specifically nuclear waste disposal.

I note that the two Canadian long-term waste management sites in the Port Hope area were designed specifically for the historic radiological wastes being emplaced therein. In other words, a problem was identified, alternative solutions were evaluated, and the final design was proposed, all with significant public engagement.

Please ensure the public is engaged in any decisions related to this project. Two Canadian examples come to mind, both of which are located in the Port Hope area of Ontario. One of these, Port Granby, is cited as a design example in Section 3.3.

The proponent should follow the precedent set by AECL in the implantation of the Port Hope Area Initiative. From the initial identification of the problem early 1970s to the formation of the Low-Level Radioactive Waste Management Office (1982) to the implementation of the Port Hope Area Initiative (2001) the public have been engaged. Since AECL has the appropriate experience in public engagement, the proponent can neither claim ignorance nor an inability to implement the process.

3.3.7 Section 3.1.1 - Project Context (First Paragraph)

“Canadian Nuclear Laboratories has an immediate requirement for a new facility at its CRL property for the disposal of large quantities of LLW generated from past, present and future activities ...”

Please provide the evidence to support the assertion that this need is immediate. See *General Comments* above.

What were the alternative means that were considered that would address this immediate need?

3.3.8 Section 3.1.1 - Project Context (2nd Paragraph)

“The urgency for the NSDF is rooted in the requirements established by AECL, on behalf of the Government of Canada, to substantially reduce the risks associated with the CNL legacy wastes, liabilities and the cost of laboratory operations ...”

Please summarize the risks that require substantial reduction. As far as I am aware, there are no substantial risks associated with CRL waste management operations as identified by the regulator, (CNSC, *CNSC Staff Report on the Performance of CNL’s Nuclear Sites and Projects: 2013*, March 2015, Ottawa.)

With respect to the liabilities and operational costs, please provide the cost estimates such that the current costs can be compared to the costs of this project (over its complete life cycle, including post closure). See *General Comments* above.

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Please provide the evidence to support the risk reduction assertion. Again, what are the alternative means that can address these substantial risks?

3.3.9 Section 3.1.1 - Project Context (2nd Paragraph)

“Canadian Nuclear Laboratories will also close the Whiteshell Laboratories and Nuclear Power Demonstration (NPD) prototype reactor sites ... The NSDF project will provide the asset [sic] to dispose of the LLW resulting from the aforementioned actions ...”

The statement that the NSDF will dispose of LLW from the closure of the WL and NPD reactors appears to be inconsistent with the EA Project Descriptions for those projects. Neither of those closure projects identify the NSDF as a potential waste disposal site. This is somewhat surprising since CNL is the proponent for all three projects, this one, and the closure of the two reactors. Further, all three projects are being brought forward at the same time.

Please confirm that the scope of the wastes to be emplaced in the NSDF includes wastes from the closure of the two reactor sites.

I note this section has been revised. The revision now includes the following:

*“The NSDF project will provide the asset to dispose of the **radioactive waste** resulting from the aforementioned actions...” [emphasis added]*

I note that the new posters for the information sessions on the NPD have explicitly identified “Reactor systems and components” (See NPD Poster 3). This terminology is a change from the same poster as presented at the October Public Information Sessions, where it was identified as “intermediate level wastes”. Apparently, CNL no longer limits the class of wastes from Whiteshell and the NPD projects emplaced in the NSDF to LLW. This suggests that ILW from these two projects will also be emplaced in the NSDF.

Please provide the rationale for the change from “... dispose of the LLW ...” to the more generic “... dispose of the radioactive waste ...”

3.3.10 Section 3.1.2 – Project Objectives (First Paragraph)

The objective for the project is stated as: “...to design, licence, construct and commission the NSDF for operation.” This is a list of project outcomes, and cannot be considered project objectives. This statement implies that once the NSDF is commissioned there is no longer a need for the project. I doubt that this is what the proponent intends.

Please revise the list to address the actual objectives of the project. In other words, please answer the question, what is the problem this project will be designed to solve? From a clear problem definition, the proponent can then develop appropriate project objectives.

Note: This problem definition needs to identify the type of wastes to be emplaced in the facility, including radiological content, non-radiological content (including organic content), inventories, packaging, and other such waste characteristics. It is not sufficient to use the generic term of LLW to describe these wastes and leave it to the future to determine the waste acceptance criteria. The design of the containment system is critically dependent on the characteristics of the wastes (i.e. waste acceptance criteria).

The wastes to be emplaced have been expanded to include “some intermediate level wastes”. However, from the definitions above, these wastes require “... a higher level of containment and isolation than can be provided in near-surface repositories ...”

Please revise to ensure the project objectives address the “higher level of containment and isolation” required for this waste class.

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3.3.11 Section 3.1.2 – Project Objectives (Second Paragraph)

I note that the last sentence in bullet c) states that the future wastes will include “...*the remediation of soils from the **final closure of the CRL site*** [emphasis added]” and the first sentence of this paragraph states “*The facility is expected to be operational for approximately 50 years.*” This implies that the CRL site will be closed within 50 years.

Please confirm that the CRL site will be closed within 50 years.

3.3.12 Section 3.1.2 – Project Objectives (Second Paragraph)

“The NSDF will be sized to hold 1 000 000 m³ of LLW”

Please provide a summary of the calculations (estimates) used to determine the proposed capacity. Without appropriate evidence, this volume assertion is meaningless.

The doubts about the capacity estimate extend to the assertion that 50% of the wastes will be expected from current activities and 50% from future activities.

Please provide the basis for these estimates.

Please revise to include the basis for the estimated volume of ILW (i.e. the 10,000 m³).

3.3.13 Section 3.1.2 – Project Objectives (Second Paragraph)

I note that the type of wastes to be emplaced in these facilities includes decommissioning wastes, contaminated lands and soils.

Please provide a summary of the characteristics of these wastes including waste forms.

Please include the characteristics of the ILW.

What is the proposed waste form for the contaminated soils? Will it be in containers? Please provide a description of these containers. For example, some contaminated soil and decommissioning wastes are currently managed in containers in the SMAGs facilities on the CRL site. As I understand the situation, these containers are slowly corroding. Will these rusty containers be acceptable for direct transfer to this facility, or will the wastes contained therein have to be repackaged?

I note that the figures depicting the conceptual design of the facility that include a cross-section of the wastes (Figures 3-1 and 3-2) do not show the use of waste packages. I take this to mean that the acceptable waste forms will not include any packaging. Please confirm. If packaging is acceptable, what is the nature of that package?

Please provide a summary of the activities associated with the waste emplacement process. Will the emplaced wastes be compacted? If the intent is to compact, then packaging cannot be acceptable waste form.

If the liner is breached during emplacement activities, what are proposed mitigation measures?

I note that the wastes emplaced in Centre d'Aube facility in France (example (D) above) include ILW. However, these wastes are drummed before being emplaced. The Proponent needs to provide a description of the acceptable waste form that will be used to emplace the ILW.

3.3.14 Section 3.1.2 – Project Objectives (top of page 3-2)

“All waste to be disposed in the NSDF will be required to meet the Waste Acceptance Criteria (WAC) that will form part of CNL’s licence application. Though future waste (i.e. waste not yet generated) cannot be defined at the project outset, waste destined for disposal in the NSDF will be required to meet the WAC.”

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The NSDF will accept radiologically contaminated hazardous wastes (mixed waste). If required, mixed waste will be treated to comply with the WAC prior to its transfer to the NSDF.”

I suggest that the proponent must have some idea as to the wastes that are to be emplaced since they are listed in the second paragraph of this section (although no details are provided). Therefore, the proponent must have WAC in mind (whether or not it is documented) in order to determine the design of the facility. Please provide the WAC used to design this facility.

A clear problem definition that includes a description of the wastes to be emplaced will help to identify the appropriate solution. That description must include a summary of the types (including ILW), acceptable characteristics (including radiological, non-radiological hazards content), size and packaging for the wastes. In other words, the problem statement must include the WAC.

The clear problem definition will allow for the identification of alternative means as required in CEEA (2012).

3.3.15 Section 3.3 - Physical Works Related to the Project (First paragraph)

This paragraph describes the designing of the facility. It should be noted that design is not a physical work.

Please revise.

3.3.16 Section 3.3 - Physical Works Related to the Project (first paragraph)

The sites listed as examples, “Idaho CERCLA Disposal Facility, Fernald On Site Disposal Facility and the Oak Ridge Environmental Management Waste Management Facility” are all licenced under US regulations. To demonstrate that these are appropriate examples to use for the design of NSDF, the proponent needs to provide suitable evidence that the US regulatory regime will meet Canadian legislation requirements. In this case, the minimum would be the CNSC Regulatory Guide, G-320 along with other applicable CNSC REGDOCs and guidelines.

In addition, a summary of the WACs for each of these facilities (including the Port Hope area sites) would help to establish whether these examples are appropriate when considering the NSDF design.

I note that the wastes emplaced in the Fernald site are from the “... former Feed Materials Production Center, a uranium processing facility that produced high-purity uranium metal products...”. Since no uranium processing occurred at the CRL site, this is not an appropriate example to use here. (See Concerns with the NSDF Key Points as Provided by CNL above.) Please remove this site as an example.

Please ensure consistency in the examples used on the website, the posters, the presentations, and the project description.

Please use examples where ILW is emplaced in facilities with a design similar to that proposed for the NSDF.

3.3.17 Section 3.3.3 - Supporting infrastructure

This section has not been revised. Even though I did not provide comments in my previous submission, with the changes to the project’s scope, this section is no longer adequate.

Included in this section is a list of the infrastructure components required for the project to proceed. I note the list does not include a Waste Characterization and/or a Waste Conditioning facility. Given the change in scope to include ILW, and the elimination of CNL’s current characterization capabilities, these facilities must be included.

Please revise the project scope to include these two facilities or some combination thereof.

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3.3.18 Section 3.5 - Project Activities (Post-closure and monitoring activities)

The proponent does not provide any information with respect to “The assumed performance time frames of engineered barriers and the evolution of their safety function with time ...” (CNSC G-320, Section 7.4 Assessment Time Frames). Therefore, it is not possible to evaluate whether the engineered barriers are adequate to meet the requirements of G-320.

The third bullet states, “Monitoring and maintaining leachate collection and removal systems, leak detection systems, and gas collection systems to protect the surrounding environment and population from releases.” Again, no time frame is provided.

The proponent needs to acknowledge these issues in order to ensure that the design of the facility (and its infrastructure) will incorporate the appropriate features that address these concerns.

3.3.19 Section 4.1 - Project Location

As stated above (see Comment 3.3.3 Section 2.1 - Project’s Name, Nature and Proposed Location (Last paragraph on Page 2-2)), there is no information as to the site selection criteria, therefore the proponent has provided no basis on which to decide whether or not either site on the CRL property is appropriate for this undertaking.

For example, are the geology, hydrology, soil, bedrock, groundwater, and biota characteristics of the CRL site suitable for this type of facility? How do these CRL site characteristics compare with those for the sites cited as examples? Are the total foot print areas of the example sites similar to those for the CRL facility (estimated to be 30 ha)?

Apparently, there are archeological issues associated with at least one of the sites. How were these archeological issues weighed against the other site selection criteria?

Since this area is subject to periodic earthquakes, what are the seismic issues associated with this proposed facility?

Since the impacts from the size of the facility alone (approximately 30 ha) will likely affect the whole local ecosystem, were ecosystem effects incorporated into the site selection criteria? (see also Comment 3.3.22 below)

3.3.20 Section 4.2 - Project Proximity to Residences

This section describes the current residences in the area. However, this proposed undertaking is a disposal facility which implies that the effects of the project will extend far into the future (possibly forever). As such, the proponent should provide a reasoned discussion of the implications to future residents in the area.

3.3.21 Section 4.3 - Project Proximity to Reserves, Traditional Territories and Land/Resources by Aboriginal Peoples (Third paragraph) and Section 6.5.4 - Effects on Aboriginal People

“Canadian Nuclear Laboratories is currently reviewing the Aboriginal groups to be engaged in dialogue about the NSDF project. This includes an assessment of the significance of potential adverse impacts and consideration such as asserted rights, historical or traditional practices and land claims.”

Engagement with aboriginal groups is a critical part of the requirements of the CEAA and is identified in Clause 5 (1) (c), of the Act (quoted below).

“... with respect to aboriginal peoples, an effect occurring in Canada of any change that may be caused to the environment on

(i) health and socio-economic conditions,

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- (ii) *physical and cultural heritage,*
- (iii) *the current use of lands and resources for traditional purposes, or*
- (iv) *any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.”*

There appears to be a discrepancy between what the Proponent intends to do with respect to aboriginal groups and what is in the Act. This is especially true since one of the selected sites, “*The EMR Site has high archaeological potential*” and the other “... warrants further study ...” (see Page 6-8).

Please revise to ensure that the aboriginal groups are truly engaged in the project decisions and not just informed (see Table 2-1)

See my new Comment 2.5 - Public Consultations (Table 2-1) above. So far, there is no evidence that CNL has seriously engaged aboriginal groups (or any other interested group). Announcements on webpages, newspapers, and mailings are not engagement. Nor are presentations or Public Information Sessions. Engagement requires effort. Apparently, CNL does not wish to make that effort. Therefore, discharging this responsibility cannot a high priority for CNL. (See also Observation 1.1 above).

3.3.22 Figure 6-2 Physical and Natural Features of the Two Candidate Sites for the NSDF

As stated in Section 4.1, the approximate areas for these sites is about 30 ha. This compares to the approximately 70 ha occupied by the built-up area (currently the campus). In and of itself, this area comparison should give the proponent pause to consider the potential impacts of this facility. They are unlikely to be minor.

Let us assume that only 90% of the 30 ha will covered by impermeable engineered barriers. Thus the total area to be covered will be 27 ha. By any standards, this is a very large cover. And yet the proponent does not identify, as an environmental effect, the impact to the groundwater flows under these locations or to the run-off to areas outside these locations.

From the map given in Figure 6-2, both these sites appear to be in recharge areas for groundwater, and to be sources of run-off to the local wetlands, lakes and streams. The installation of impermeable liners and covers over these areas will prevent recharge of the groundwater. The water that would normally move through the subsurface will be diverted to surface run-off. As a result, the changes to the hydrology of these areas will be significant. The integrity of the neighbouring wetlands and streams, and by extension, any downstream fish and fish habitat will be severely impacted. Further the wildlife (turtles, amphibians, birds, etc.) currently residing in the wetlands and streams will also be impacted since the whole of local ecosystem will be adversely altered.

From this short evaluation, I suggest that the potential adverse impact to the environment would preclude the selection of either site. In fact, if one was to apply this simple analysis to the rest of the CRL site, the whole site would likely be disqualified as a potential location for the disposal facility. The site is too wet.

3.3.23 Section 6.5.1 - Fish, Fish Habitat and Aquatic Species (Last paragraph)

“Impact to fish or fish habitat ... and on aquatic species ... will be evaluated as the design of the facility proceeds.”

From the short evaluation given in the previous comment, the proponent should recognize that the anticipated impacts to fish and fish habitat maybe unacceptable. That said, any potential adverse impacts on the ecosystem must be included in the criteria for the site selection and cannot be left to the design phase.

Please revise to address Comment 3.3.22 above.

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3.3.24 Section - 6.5.2 Migratory Birds

This paragraph is totally inadequate as it assumes the effects will only occur during the site preparation phase. Given the size of the proposed facility and its potential impact on groundwater and surface water flows, wetlands, lakes and streams (see Comment 3.3.22 above), any impact to migratory species will not be limited to their breeding season. The facility is likely to impact their complete life cycle.

Please revise and ensure a realistic evaluation of the potential impacts is provided.