



Supplementary Information

Presentation from the City of Ottawa

In the Matter of the

Canadian Nuclear Laboratories (CNL)

Application from the CNL to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility

Commission Public Hearing Part 2

May 30 to June 3, 2022

Renseignements supplémentaires

Présentation de la Ville d'Ottawa

À l'égard des

Laboratoires Nucléaires Canadiens (LNC)

Demande des LNC visant à modifier le permis du site des Laboratoires de Chalk River pour autoriser la construction d'une installation de gestion des déchets près de la surface

Audience publique de la Commission Partie 2

30 mai au 3 juin 2022

Comments on the proposed Near Surface Disposal Facility (NSDF)

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City of Ottawa position on NSDF

- In principle, we are supportive of the proposed NSDF as a means of providing improved environmental protection and engineered storage for low-level radioactive waste. We recognize that most (90%) of the waste already exists on the Chalk River Laboratories (CRL) site and is currently located in close proximity to the river.
- In our opinion, maintaining a viable and active site for scientific work at CRL, along with careful regulatory oversight and monitoring, is the best way to ensure environmental stewardship and protection for the long-term.

Weather shield system for NSDF

- It is important to minimize the amount of rainfall/snow that mixes with NSDF stored waste which must then be collected, treated, and discharged to the natural environment.
- The Final EIS Report (Section 3.4.1.9.1) describes a soil/tarp/fixative cover barrier that will be deployed daily to minimize seepage of rain/snow into the facility, which we feel provides only minimal environmental protection.
- **Recommendation:** that the weather-shield system be included as a requirement of the NSDF operating license to minimize the impact of rain/snow and subsequent collection, treatment, and discharge to the natural environment.

Safeguards to protect river during demolition and waste transfer activities

- Protection of the river during all activities related to site demolition and waste transfer.
- CNL should consider the use of temporary berms, tarps, sumps, etc. to specifically protect the river from any surface run-off from the demolition site until all waste is safely characterized, transferred, and stored.
- **Recommendation:** that the operating license for the NSDF include safeguards to protect the river from surface and subsurface run-off during all site demolition and waste transfer activities.

Criteria for water discharge from NSDF wastewater treatment plant

- The Final EIS Report Table 3.4.2-2 *Radionuclide Concentrations in Wastewater and Effluent Discharge Targets* specifies that the wastewater treatment effluent will meet Canadian Drinking Water Quality Guidelines (CDWQG) or CCME Aquatic Guidelines prior to discharge.
- The WWTP design appears to be robust and capable of removing almost all radionuclide substances. However, we would like to see the criteria specified in the operating license, including the sample location, test frequency, reporting requirements, and regulatory oversight for test results.

Criteria for water discharge from NSDF wastewater treatment plant

- **Recommendations:** that the operating licence for NSDF clearly state the criteria in Table 3.4.2-2 for discharge of treated wastewater including requirements for sampling, testing, reporting, and regulatory oversight. For tritium specifically, the discharge criteria should be modified to meet the Health Canada drinking water guideline of 7,000 Bq/L at all times in the NSDF wastewater effluent discharge. Lastly, chemical and radiological test results for the WWTP discharge should be included as part of CRL's routine environmental monitoring reports to demonstrate compliance with effluent discharge criteria.

Additional measures to minimize H3-Tritium and Cobalt-60 in NSDF wastewater

- The Final EIS Report Table 3.4.2-2 *Radionuclide Concentrations in Wastewater and Effluent Discharge Targets* shows predicted radionuclide maximum concentrations in the NSDF wastewater treatment influent, all of which are expected to meet drinking water standards except for three radionuclides that will require treatment:

Radionuclide	Maximum concentration in wastewater influent prior to treatment (Bq/L)	Effluent target concentration after treatment (Bq/L)	*Drinking Water Guideline Maximum Acceptable Concentration (Bq/L)
Cobalt-60	1,300	40	40
Strontium-90	9.6	5	5
Tritium- ³ H	140,000	360,000	7,000

Additional measures to minimize H3-Tritium and Cobalt-60 in NSDF wastewater

- Since the NSDF only accepts low-level solid waste, there should be design measures that can be taken to minimize water contact and leaching such that the tritium drinking water guideline of 7,000 Bq/L can be achieved at all times in the NSDF effluent discharge.
- **Recommendation:** that measures be taken to immobilize radionuclides and ensure “dry” storage conditions to minimize/eliminate leaching of radionuclides into the NSDF wastewater stream. As an example, this might require the use of secondary containment vessels and/or operation of the weather-shield system. Such requirements should be incorporated into the operating license for the NSDF.

Trace organic substances in NSDF wastewater

- The Final EIS Report *Table 3.4.2-3* notes several organic substances that would exceed drinking water or aquatic discharge guidelines in the WWTP influent: *anthracene, chloroform, chrysene, ethylene dibromide, and fluoranthene*.
- **Recommendation:** that low-level waste materials containing these chemical substances be modified to minimize or eliminate leaching into the WWTP influent. As an example, this might require the use of secondary containment vessels and/or operation of the weather-shield system.

WWTP discharge to Perch Lake vs. subsurface

- The EIS Report notes two options for discharge of treated wastewater effluent:
 - (i) injection into subsurface groundwater through an exfiltration gallery, or
 - (ii) direct discharge to Perch Lake, which in turn discharges to the Ottawa River via Perch Creek.
- Discharging the effluent into the subsurface aquifer will only add to the burden of radionuclides (eg. tritium) already present in the groundwater. Further, a subsurface discharge represents a less controlled release that is more difficult to monitor, and its environmental effect deferred into future decades.

WWTP discharge to Perch Lake vs. subsurface

- **Recommendation:** design and operate the NSDF to minimize leaching of radionuclides such that the final WWTP effluent concentrations meet Health Canada guidelines for drinking water at the point of discharge into Perch Lake rather than discharge into the subsurface aquifer.

Import of radioactive waste from external AECL sites

- The EIS report states that 5% of material to be stored in the NSDF is expected to originate from other AECL sites outside of the watershed.
- The City of Ottawa does not support the import of radioactive waste from external sites (eg. Manitoba, Quebec) since it increases risk to the Ottawa River ecosystem
- **Recommendation:** that the stored waste directed to the NSDF be limited only to on-site legacy waste (90%) and expected contract waste (5%) from the Ottawa area (hospitals, research, etc.).

Prompt notification of spill or release to river for NSDF

- Since the City of Ottawa and many other communities rely on the Ottawa River as their primary source of drinking water, it is imperative that municipalities be promptly notified of any spill or unexpected release that might affect river water quality. We presume that notification procedures are already in place for CNL through environmental regulations and oversight by the CNSC.
- **Recommendation:** that spill notification protocols be confirmed with downstream municipalities using the Ottawa River as a source of drinking water. The notification protocol and contact list should be tested annually. This recommendation applies to the NSDF and all related demolition/transfer activities as well as the CRL site in general.

Timely access to water quality data for Ottawa River

- For over 30 years, the City of Ottawa has conducted routine monitoring of radioactivity at both water treatment plants, based on daily samples. The results for the last 15 years have shown consistently low or background levels for alpha, beta, and tritium radioactivity.
- **Recommendation:** that radiological test results for the Ottawa River upstream and downstream of the Chalk River site be published or shared in a timely manner (eg. quarterly) with downstream municipalities, for the purposes of data comparison and environmental trending.

Environmental risk comparison for design alternatives

- During our review of the NSDF documents, we did not find satisfactory explanation to demonstrate the relative risk comparison for various waste management options. The *Final EIS Report (Section 2.5)* describes several options that were evaluated during the early phase of the project, prior to selecting the NSDF design.
- **Recommendation:** that all future environmental projects include a transparent risk ranking of alternatives with a public commenting period prior to selecting the preferred design option. It is possible that the revised Impact Assessment Act (IAA, 2019) already incorporates this step in the consultation and approval process.

Review of the City of Ottawa position on NSDF

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- In our opinion, maintaining a viable and active site for scientific work at Chalk River, along with careful regulatory oversight and monitoring, is the best way to ensure environmental stewardship and protection for the long-term.