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Written submission from the Sierra Club Canada Foundation

Exposé oral

Mémoire de la Fondation Sierra Club Canada

In the Matter of the

À l'égard des

Canadian Nuclear Laboratories (CNL)

Laboratoires Nucléaires Canadiens (LNC)

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

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

Commission Public Hearing
Part 2

Audience publique de la Commission
Partie 2

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FONDATION
SIERRA CLUB CANADA
FOUNDATION

Submission for the NSDF licensing hearing (Ref. 2022-H-07)
Sierra Club Canada Foundation
Written Submission in Advance of Public Hearing Scheduled for April 11, 20222

Choosing the right disposal option(s) for federal legacy nuclear waste
Commission Member Document CMD 22-H7, prepared by Canadian Nuclear Safety Commission (CNSC) staff for the licensing hearing for the Near Surface Disposal Facility (NSDF) project, says “Only low-level radioactive waste… would be emplaced in the ECM” and that “due to the nature and characteristics of the waste to be disposed in the ECM, near surface disposal is a suitable design.” [1] For this to be accepted as true, the NSDF proponent needs to be able to answer the following questions:

- Is there sufficient knowledge of waste characteristics to distinguish between low-level waste and intermediate-level waste at Chalk River, Whiteshell, and other federal nuclear sites?
- Is this knowledge adequate to choose the appropriate disposal option or options (above-ground, near surface, intermediate depth, deep disposal) for federal radioactive wastes?
- Can these wastes be tracked from point of origin to their final and correct disposition?
- Can it be demonstrated that the chosen disposal option(s) will result in acceptable risks to current and future generations?

Risks associated with the NSDF are unacceptable if Canadian Nuclear Laboratories (CNL), the NSDF proponent, cannot demonstrate an adequate understanding of the characteristics of the wastes that it needs to manage. At present, evidence is lacking that the disposal option chosen by CNL (an “engineered containment mound”, or “ECM”) is appropriate, or that CNL has adequately characterized and tracked the federal wastes that are currently in storage.

CMD 22-H7 contains little information about wastes that would go in the mound. Section 3(1)(j) of the *General Nuclear Safety and Control Regulations*[2] requires that a licence application include the “name, origin, quantity, form, and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed, processed, or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste.”

Section 3.3 of the *Safety Case*[3] has a "NSDF Reference Inventory and Licensed Inventory" (Table 3-22) with a list of radionuclides and a "maximum activity" for each. For hazardous wastes, Table 3-23 lists

[1] https://www.nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/CMD22/CMD22-H7.pdf, p. 52 of 590
[2] https://laws-lois.justice.gc.ca/eng/regulations/sor-2000-202/index.html
[3] https://www.cnl.ca/wp-content/uploads/2021/03/Near_Surface_Disposal_Facility_Safety_Case_Rev_2.pdf

"Key Non-Radiological Constituents of Potential Concern" and a "Maximum Estimated Leachable Quantity" for each. But "maximum activity" and "maximum estimated leachable quantity" are not what Section 3(1)(j) requires. "Maximum quantity" is covered by Section 3(1)(c) ("… maximum quantity and form of any nuclear substance…"). For Section 3(i)(j), actual information on name, quantity, form, origin and volume is required. This is not provided in the licence application.
The final NSDF *Environmental Impact Statement* says "Waste to be placed in the ECM will primarily originate from operations and environmental clean-up activities at the CRL site (including legacy radioactive wastes currently stored on the CRL site)."[4] Knowledge of the properties of stored wastes at the Chalk River Laboratories is a key determining factor of the acceptability of the NSDF project. The wastes currently in storage at Chalk River contain most of the radioactivity that Canadian Nuclear Laboratories (CNL) intends to put in the mound. CMD 22-H7 contains essentially no description of the origins of these waste, the current conditions in which they are stored, or, most importantly, their characteristics in terms of mass, volume, radioactivity, and specific radionuclides.

The phrase "only low-level waste" is repeated several times in CMD 22-H7 (e.g., p. 195 of 590). This is the only description of the wastes destined for the NSDF that is found in the Environmental Assessment (EA) Report section of CMD 22-H7.

History of waste characterization at Chalk River Laboratories (CRL)
In the first several decades during which radioactive wastes were generated, collected and stored at Chalk River Laboratories (CRL), low-level wastes (LLW) and intermediate-level wastes (ILW) were not characterized, labeled, or tracked. Different waste forms and radionuclides were not managed separately. LLW and ILW were stored together in unmarked packages.

The amount of long-lived radionuclides that would cause LLW to become ILW is low. Mixing a small amount of ILW with LLW – in particular, "alpha emitting radionuclides that will not decay to a level of activity concentration acceptable for near surface disposal during the time for which institutional controls can be relied upon" -- should dictate that waste will be classified as ILW.[5]

It was only in the mid-1990s that CRL started to classify wastes according to where they would best be stored and possibly disposed of. This classification was based on estimated waste characteristics (not actual waste characteristics). Prior to the 1990s, wastes were placed into storage based on where they were generated, the radiation field they emanated, and the size, shape and weight of packages.

Wastes were NOT classified as LLW and ILW. Wastes that were contaminated with long-lived radionuclides and did not have measurable radiation fields were mixed with low radiation field LLW. The thinking was that low-radiation-field waste was equivalent to low-activity waste. But low- radiation-field waste can have levels of long-lived radionuclides that preclude their disposal in a facility like the NSDF.

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[4] https://www.cnl.ca/wp-content/uploads/2020/12/NSDF_EIS_Rev2_Volume2_EIS-Report.pdf (p. 185 of 1661)
[5] https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1419_web.pdf, p.6

CNL appears to have plans to put this waste into the NSDF without accurately measuring its content of long-lived radionuclides. CNL has not been forthcoming about the huge effort required to adequately characterize its stored waste, much of it an unsegregated, unmarked, uncharacterized, mixture of LLW and ILW. Adequate characterization is absolutely essential if CNL wishes to proceed with an above-ground, landfill-type disposal option.

Even CNL admits that there is some ILW on site that will require a non-surface disposal option. The CNSC should advise CNL and Atomic Energy of Canada Limited (AECL) to consider a non-surface alternative for the five decades worth of uncharacterized, mixed LLW and ILW found at CRL and other AECL properties.

Inadequate past practices make it extremely difficult for anyone to determine how much LLW and ILW has been stored on AECL properties. The volume estimates of federal ILW and federal LLW in Canada's *Seventh Canadian National Report for the Joint Convention* are suspect. Comparing the Seventh and Sixth Joint Convention reports, Canada now claims a 95% reduction in federal ILW volumes. A footnote to Table D.8, Inventory of L&ILW in storage in Canada as of December 31, 2019, explains:

> "Prior estimates were based on a conservative assumption that all waste stored within a structure that could contain ILW would be categorized as ILW until better characterization data became available. Between 2016 and 2019, retrieval and processing operations were conducted on selected legacy wastes in storage, and records were verified to extrapolate the current volumes."[6]

This new "extrapolation" of greatly reduced ILW volumes in the 2019 *Joint Convention* report relative to the 2016 *Joint Convention* report is suspect. Using these new estimates as a basis for estimating the NSDF inventory and suitability for putting wastes in the NSDF has dangerous implications for safety.

Retention of waste records for the NSDF Project

CMD 22-H7 (p. 34) says "For the proposed NSDF, the key requirements come directly from the *Class I Nuclear Facilities Regulations* and the *General Nuclear Safety and Control Regulations* (GNSCR) as well as other applicable requirements from the NSCA." Retention of waste records is a requirement of section 14(2) of the *Class I Nuclear Facilities Regulations*: (Records to Be Kept and Retained - 14 (2) Every licensee who operates a Class I nuclear facility shall keep a record of... (d) the nature and amount of radiation, nuclear substances and hazardous substances within the nuclear facility).

CNL suggests that this requirement does not apply to the NSDF project. Table B-1, C*oncordance Table for Class I Nuclear Facilities Regulations,* in the S*afety Case* says (page 569):

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https://nuclearsafety.gc.ca/eng/resources/publications/reports/jointconvention/seventh-report/seventh-report-joint-convention.cfm#:~:text=Canada's%20Seventh%20National%20Report%20demonstrates,%2C%20to%20March%2031%2C%202020.

Records to be kept and retained: Not applicable to the NSDF Project.[7]

Waste from research facilities

IAEA General Safety Guide GSG-1, *Classification of Radioactive Waste,* devotes special attention to waste from research reactors such as those at the Chalk River Laboratories (CRL). It says "The waste generated by research reactors and from some disused radioactive sources is particularly significant because, owing to its level of activity concentration and to the half-lives of the radionuclides, it does not meet the waste acceptance criteria of near surface disposal facilities." GSG-1 adds that

> "Research facilities (e.g. hot cell chains, glovebox chains) or pilot plants for checking fuel fabrication processes (particularly the fabrication of mixed uranium plutonium oxides, known as MOX), for fuel reprocessing (particularly advanced schemes), and for post-irradiation examinations, as well as their analytical laboratories, generate types of waste that, often, are different from the typical waste generated by industrial plants. Owing to the presence of non-negligible amounts of long lived alpha emitters, waste from research facilities generally belongs to the ILW class and even, in some circumstances, to the HLW class."[8]

This accurately describes the origins of the varied waste types at CRL. Such a description is lacking in CMD 22-H7 or in key documents produced by CNL such as the *Environmental Impact Statement* and *Safety Case*, despite the requirement in Section 3(1)(j) of the *General Nuclear Safety and Control Regulations* to provide information on the "origin" of nuclear substances in a licence application.

CNL's partial list of radionuclides destined for the mound indicates that 25 of the 31 radionuclides are long-lived, with half-lives ranging from 1,600 to 14 billion years. This list includes non-negligible amounts of long lived alpha emitters such as uranium-233 and plutonium-239, produced for the U.S. nuclear weapons program through reprocessing activities.

By comparing the unconditional clearance levels in Schedule 2 of the *Nuclear Substances and Radiation Devices Regulations*[9] to the Radionuclide Concentration Limits in Table 4 of the NSDF *Waste Acceptance Criteria*[10] (WAC), one can conclude that long-lived radionuclides proposed for disposal – if present in packaged wastes at maximum permitted limits – would not decay to clearance levels for thousands to millions of years. At 1,600 years post-closure, the entire contents of the mound would exceed unconditional clearance levels by more than five-fold, even if all radionuclides were evenly distributed throughout. Hence removal from regulatory control would not be possible for millennia.

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[7] https://www.cnl.ca/wp-content/uploads/2021/03/Near_Surface_Disposal_Facility_Safety_Case_Rev_2.pdf

[8] https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1419_web.pdf, p. 38

[9] https://laws-lois.justice.gc.ca/eng/regulations/sor-2000-207/index.html

[10] https://www.cnl.ca/wp-content/uploads/2021/03/Near-Surface-Disposal-Facility-Waste-Acceptance-Criteria-Rev-4_EN.pdf

IAEA safety standard SSR-5, *Disposal of Radioactive Waste* says the task of developing a safe disposal facility "has to be undertaken in consideration of… the characteristics and quantities of the radioactive waste to be disposed of."[11] SSR-5 requires "confirmation at a national level of the need for disposal facilities of different types; specification of the steps in development and licensing of facilities of different types… and provision of independent regulatory functions relating to a planned disposal facility." SSR-5 adds that "This requirement derives from a principle established in the Fundamental Safety Principles… It is also stipulated under the terms of the Joint Convention."[12]

Siting of a disposal facility for the federal government's radioactive waste

The "Site Section Evaluation" in CMD 22-H7 (Section 3.1, pages 36-37 of 590) gives inadequate consideration to deficiencies in the proponent's siting process. Serious problems with the chosen site should have disqualified it during the site characterization stage

IAEA Specific Safety Guide SSG-29, *Near Surface Disposal Facilities for Radioactive Waste*, says that siting is a "fundamentally important activity in the disposal of radioactive waste." SSG-29 recognizes four stages in the siting process: (1) A conceptual and planning stage; (2) An area survey stage, leading to the selection of one or more sites for more detailed consideration; (3) A site investigation stage of detailed site specific studies and site characterization; (4) A site confirmation stage.[13]

The NSDF siting process made the critical error of skipping the first two stages.

The *NSDF Site Selection Report* says "The alternatives considered feasible for locating the NSDF were On-site, at CRL, or Off-site at WL or the NPD reactor site." It adds that "close proximity of the CRL site to the legacy and future decommissioning waste" and "cost of transporting waste from CRL to an Off-site location (economic feasibility)" were "key differentiating factors" in the site selection process.[14]

The NSDF siting process did not include consideration of any locations other than Atomic Energy of Canada (AECL) properties at Chalk River and Rolphton (which are immediately adjacent to the Ottawa River, a drinking source for millions of Canadians), and AECL's Whiteshell Laboratories on the Winnipeg River. Proximity to contaminated structures awaiting demolition at AECL's Chalk River Laboratories—not environmental protection—was the priority in the siting of the NSDF.

The NSDF proponent did not consider sites on the adjacent Garrison Petawawa property owned by the Department of National Defence (DND). This large (9080-hectare) federal property includes Petawawa deltaic sands characterized by "lithological homogeneity both over large areas and through great thicknesses."[15]

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[11] https://www.iaea.org/publications/8420/disposal-of-radioactive-waste, p. 19

[12] Ibid, p. 17

[13] https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1637_web.pdf, p.83

[14] *NSDF Site Selection Report* 232-10300-TN-001 Revision 2 (p. 12 of 44)

[15] Peter T. Hanley, *The Surficial Geology and River Terraces of Allumette Island and Adjacent Parts of Ontario And Quebec*, file:///C:/Users/User/Downloads/EC55808.PDF.

The Petawawa deltaic sands on this federal property provide potential locations for an in-ground near surface disposal facility – a concrete vault. Such a facility could be properly sized to address a larger proportion of the federal nuclear legacy waste than the proposed NSDF. A concrete vault located further from the Ottawa River would reduce risks of leakage and surface water contamination, eliminate costs associated with waste sorting and segregation, and not entail a significant increase in transportation costs.

The 3700-hectare CRL site is characterized by a high water table and is therefore unsuitable for in-ground facilities (CMD 22-H7, p. 37 of 590). The proponent should be required to consider alternative sites that would avoid groundwater contamination and discharge of radioactive and hazardous substances close to a major water body used by millions of downstream residents.

Despite the high water table at the proposed site for the NSDF, a portion of this facility would in fact be in-ground and would require rock blasting during construction. CMD 22-H7 (p. 18 of 590) says "Slope depressurization accompanied by rock blasting (depth ranges from 1 to 8 m) will be needed to drain groundwater within the rock mass and lower groundwater elevations beneath the ECM footprint."

Environmental impacts (e.g., fracturing of the underlying bedrock) of slope depressurization and rock blasting activities have not been assessed. The possibility that "horizontal drains … drilled in the rock mass to lower the water table" could in future become conduits for rapid transport of contaminated leachate to downslope water bodies has not been considered. No references or evidence are provided to verify that slope depressurization would be effective in lowering the water table. The high water table should have eliminated the proposed site from further consideration during the site characterization stage.

Section 5.3.1.4.2.1 (Regional Geological Conditions – Bedrock) of the NSDF *Environmental Impact Statement* says that the southern portion of the chosen site for the mound is underlain by a feature categorized in 1994 as a "high-probability" fracture zone," ten meters wide and over a kilometer long – a potential groundwater flow pathway with "permeability values several orders of magnitude greater than bulk rock mass."[16]

CMD 22-H7 (p. 124 of 590) says "CNSC staff review of the NSDF safety case identified that uncertainties on fracture zones in the bedrock at the NSDF site remain," adding that "further geological verification will be undertaken during the construction phase."

Awarding a construction licence for a permanent radioactive waste disposal facility at a site with a significant probability of having unsuitable geological characteristics could waste large sums of public money and create unacceptable safety risks. Poor quality bedrock should have eliminated the proposed site from further consideration during the site characterization stage.

[16] https://www.cnl.ca/wp-content/uploads/2020/12/NSDF_EIS_Rev2_Volume2_EIS-Report.pdf, p. 404 of 1661

The original site selection criteria announced by the proponent would have excluded any site with more than a 10% slope. According to the *NSDF Site Selection Report*), the slope criterion was changed to 25% to allow construction of the proposed NSDF facility on the side of a hill.[17] The excessive slope should have eliminated the proposed site from further consideration early in the siting process.

The chosen site is on a hillside, in an area with a high water table, on fractured bedrock, adjacent to wetlands that drain into Perch Creek 50 metres from the base of the hill (Perch Creek drains into the Ottawa River one kilometre away). This would not appear to be an acceptable site for a radioactive waste disposal facility.

Elected government officials should decide if reduced costs of a radioactive waste disposal facility can justify increased risks to people and the environment.

The decision on benefits and risks associated with the NSDF Project - Canada's first proposed permanent disposal facility for man-made radionuclides produced by nuclear reactors – should be taken at the highest levels of government, not by the regulatory body.

Principle 4 of the IAEA *Fundamental Safety Principles* should be applied to the NSDF proposal: "For facilities and activities to be considered justified, the benefits that they yield must outweigh the radiation risks to which they give rise."[18]

The IAEA says decision makers must "make informed judgements and must determine how best to balance the benefits of an action or an activity against the associated radiation risks and any other detrimental impacts to which it gives rise."[19] It says "In many cases, decisions relating to benefit and risk are taken at the highest levels of government" but "In other cases, the regulatory body may determine whether proposed facilities and activities are justified."[20]

Language used in CMD 22-H7 such as "dose optimization" (p. 55 of 590), "dose acceptance criterion" (p. 57 of 590), "bounding doses" (p. 275 of 590), and "trigger values for radiation doses in receiving environments" (p. 296 of 590) suggests "optimizing" radiation exposures from the NSDF. This implies a trade-off of cost savings versus health risks. The CNSC here assumes that public radiation exposures from a disposal facility can be "acceptable".

This raises ethical issues. Unlike electricity generated by a nuclear power plant, or medical knowledge generated by an x-ray, exposure to radiation from a waste disposal facility yields no compensating benefit.

IAEA Specific Safety Requirements SSR-5, *Disposal of Radioactive Waste*, says: "No releases of radionuclides, or only very minor releases (such as small amounts of gaseous radionuclides), may be

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[17] *NSDF Site Selection Report* 232-10300-TN-001 Revision 2 (p. 16 of 44)
[18] https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1273_web.pdf, p.10
[19] Ibid, p.2
[20] Ibid, p. 10

expected during the normal operation of a radioactive waste disposal facility and hence there will not be any significant doses to members of the public."[21]

The 2017 *NSDF Environmental Impact Statement* examined the trade-off between the speed and cost of constructing a disposal facility, versus its ability to contain wastes. It admitted that, compared to a landfill, a geological facility "would provide increased barriers for potential releases to the environment in the long-term."[22] But it argued that constructing a geological facility would be an order of magnitude more expensive and "would delay the start of operations beyond 2020."[23] It concluded that "reduced cost is more preferable as it further contributes to the reduction of the cost of laboratory operations."[24]

It appears that cost savings are the motivation for recommending a design and location for a disposal facility for the federal government's radioactive wastes that would result in long-term exposures to members of the public to a wide variety of radioactive and hazardous substances. CMD 22-H7 states (on p. 38 of 590) that "facility lifecycle costs [are] not factored into CNSC staff's review."

Given that the proposed facility would be funded by the Government of Canada, and would mostly contain federal radioactive wastes, a careful examination of the costs and alternative means of long-term management of the federal radioactive waste liability is warranted.

Costs and environmental effects associated with alternative waste disposal technologies
Section 19(1)(g) of CEAA 2012 states that "The environmental assessment of a designated project must take into account… alternative means of carrying out the designated project that are technically and economically feasible and the environmental effects of any such alternative means."

Figure ES-1 in *Nuclear Waste Management Organization - Integrated Strategy for Radioactive Waste Cost Estimate* indicates that the cost of radioactive waste disposal in an engineered containment mound is around $2500 per cubic meter of waste. The cost for disposal in a concrete vault or a shallow rock cavern would be twice as high, at around $5000/m^3.[25]

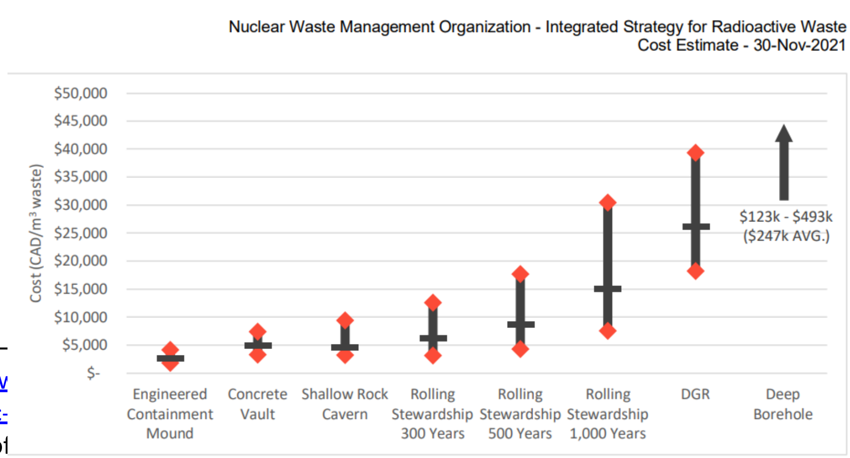

Figure ES-1: Cost Summary Graph of Each Long-Term Management Option, Including Accuracy Range

[21] https://www
[22] https://iaac-
[23] Ibid, p. 74 of
[24] Ibid, p. 68 of
[25] radwastepla

According to Figure 4-5 in *Nuclear Waste Management Organization - Integrated Strategy for Radioactive Waste Project Report*, much of the current radioactive waste inventory may be unsuitable for disposal in an engineered containment mound.[26] Table 4-1 in this report indicates that the need for accurate waste characterization related to a specific safety case creates this uncertainty about the total waste volume suitable for disposal in an engineered containment mound.[27]

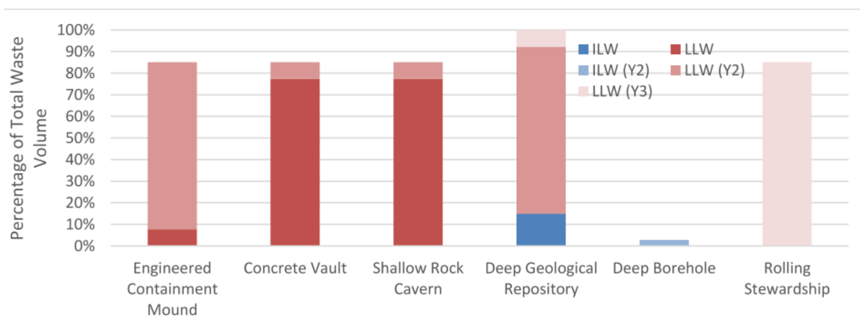

Figure 4-5: Waste Inventory Volumes Suitable for Each Long-Term Management Option.

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A February 2020 *Waste Characterization* document prepared by AECOM for CNL says that "Most of the waste to be disposed of in the NSDF has not yet been characterized or generated. The properties of future waste streams are currently based on projections using known existing waste streams that have been characterized to some extent. This necessarily introduces uncertainties into the waste characterization."[28]

An engineered containment mound may be the cheapest option for radioactive waste disposal. But because most of the waste to be disposed of in the NSDF is not characterized or generated, costs would be higher owing to the need for extensive waste segregation, sorting and characterization. This need would create operational delays and increased worker radiation exposures as well as increased costs.

[26] radwasteplanning.ca/sites/default/files/project_report.pdf, p. 23
[27] Ibid, p. 22
[28] AECOM, *Canadian Nuclear Laboratories Near Surface Disposal Facility Design and Consulting Services Waste Characterization* 232-508600-REPT-002 Deliverable 1.1, Revision 4, February 2020

Use of other options such as such as a concrete vault or shallow rock cavern would still require accurate waste characterization, but would not require the degree of waste segregation and sorting activities associated with a mound.

As noted above, the average cost for waste disposal in an engineered containment mound is $2500 per cubic meter ($m^3$) of waste. This suggests that the $750 million estimate (p. 280 of the *Safety Case*[29]) for disposal of a million cubic meters of waste in the NSDF, which translates to $750 per m^3, may be a 5-fold underestimate, even without taking into account the added costs of segregation and sorting.

High uncertainty about total costs and how much of the federal legacy nuclear waste could go in an engineered containment mound is a major disadvantage of the NSDF project. This adds to other disadvantages such as the greater likelihood of waste releases from a mound.

The "Alternative Means" section of the *Environmental Assessment Report* in CMD 22-H7 (pages 225-230 of 590) does not address these matters. They are central to understanding the environmental effects of the different waste disposal options in the above-cited reports.

These reports were contracted for by the Nuclear Waste Management Organization (NWMO) pursuant to a request by the Minister of Natural Resources Canada to lead the development of an integrated, long-term strategy for low- and intermediate-level radioactive waste in Canada. Note that the NWMO reports assume that federal low-level waste will go in the NSDF and that intermediate-level waste will be "entombed" in shut-down federal reactors at Rolphton, ON and Pinawa, MB.[30]

Sierra Club Canada Foundation does not endorse the NWMO-led effort to develop an integrated waste strategy. We believe that the Government of Canada itself should be leading this effort, and not the NWMO, a nuclear industry organization. However, we note that the NWMO reports cited in this submission were prepared by independent consultants.

Final remarks

Four current initiatives are relevant to the long-term management of radioactive wastes generated by the 75 years of federal nuclear research and development. These are:

- Development of an integrated radioactive waste strategy for Canada;[31]
- The modernization of Canada's policy on radioactive waste;[32]

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[29] https://www.cnl.ca/wp-content/uploads/2021/03/Near_Surface_Disposal_Facility_Safety_Case_Rev_2.pdf

[30] radwasteplanning.ca/sites/default/files/project_report.pdf, p. 3

[31] wmo.ca/en/More-information/News-and-Activities/2020/11/12/16/33/NWMO-asked-to-lead-development-of-an-integrated-radioactive-waste-management-strategy-for-Canada

[32] https://www.rncanengagenrcan.ca/en/collections/modernizing-canadas-radioactive-waste-policy

- The study of Nuclear Waste Governance in Canada being conducted by the House of Commons Standing Committee on Environment and Sustainable Development;[33] and
- The Nuclear Waste Management Environmental and Sustainable Development Audit being conducted by the Auditor General of Canada.[34]

These initiatives should help in determining ways to manage federal radioactive waste that are safe, cost-effective, and publicly-acceptable.   They should be allowed to conclude before any final decision is made on approval of the NSDF project.

[33] https://www.ourcommons.ca/Committees/en/ENVI/StudyActivity?studyActivityId=11488326
[34] https://www.oag-bvg.gc.ca/internet/English/parl_fs_e_43659.html