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Supplementary Information

Presentation from Sandy Greer

In the Matter of the

Canadian Nuclear Laboratories, Douglas Point Waste Facility

Application to amend the waste facility decommissioning licence for the Douglas Point Waste Facility

Commission Public Hearing

November 25-26, 2020

Renseignements supplémentaires

Présentation de Sandy Greer

À l'égard de

Les Laboratoires Nucléaires Canadiens, installation de gestion des déchets de Douglas Point

Demande de modification du permis de déclassement de l'installation de gestion des déchets de Douglas Point

Audience publique de la Commission

25 et 26 novembre 2020

Canada

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Why Due Diligence Needed as per Potential Adverse Environmental Effects in Phase 3 of Douglas Point Waste Facility Decommissioning

submitted by Dr. Sandy Greer, PhD © November 2020

Recognition by International Joint Commission (IJC) on Potential Threats to the Great Lakes Basin from the Release of Radionuclides as a Result of Decommissioning

Thirty nuclear reactors at 12 generating stations are still operating in the basin and will eventually be decommissioned, according to an Oct. 2019 IJC newsletter .

A forthcoming final report from the IJC will include recommendations to governments to reduce or eliminate threats from potential release of radioactive contaminants as a result of decommissioning.

The Need to Challenge the CNL Assumption that High Level Nuclear Waste (HLW) will have Its Final Home in the Proposed NWMO DGR

The Canadian Nuclear Laboratories' (CNL) licence submission **CMD 2-H4.1** states in its **Table 14-1 – DPWF Baseline Waste Strategy per Waste Classification** (on PDF page 67):

> *"HLW will eventually be emplaced in the Nuclear Waste Management Organization's HLW disposal facility." …*

This statement is an inappropriate assumption at a time when both of the final communities still engaging in the NWMO's process have concerned citizens increasingly speaking against becoming the final "willing host" destination for the high level DGR.

In the same Table , I see ambiguity, in reference to Intermediate Level Waste (ILW), in regard to its ultimate destination (on PDF page 68):

> *"Consolidate packages at CRL in engineered storage* ***until a geological disposal facility becomes available.****"*

A "geological disposal facility" usually means `deep geological repository. 'My understanding, however, of NWMO original mandate was for it to figure out how to deal with *only* spent fuel bundles. Both CNL, and NWMO, need to communicate with more clarity where each level of radioactive waste ultimately will end up, and figure out options if and when the proposed NWMO DGR is stopped. NWMO's mandate in recent weeks appears to be shifting.

Making a Determination about Significant Adverse Environmental Effects is an Illusion vis à vis the Current Policy

In the CNSC submission, Overall Conclusions and Recommendations, on PDF page 40:

> *"… CNSC staff recommend that the Commission:*
> *1. make a determination that carrying out the proposed decommissioning activities at the Douglas Point Waste Facility is not likely to cause significant environmental effects in accordance with section 67 of the* **Canadian Environmental Assessment Act, 2012**."

I suggest that such a determination is not possible, first of all, because that 2012 Act never clearly defined "significant adverse environmental effects."

Secondly, such a determination always has been rendered meaningless, because of the policy that `significant adverse environmental effects' cannot even be identified until after mitigation measures have been implemented when something goes wrong.

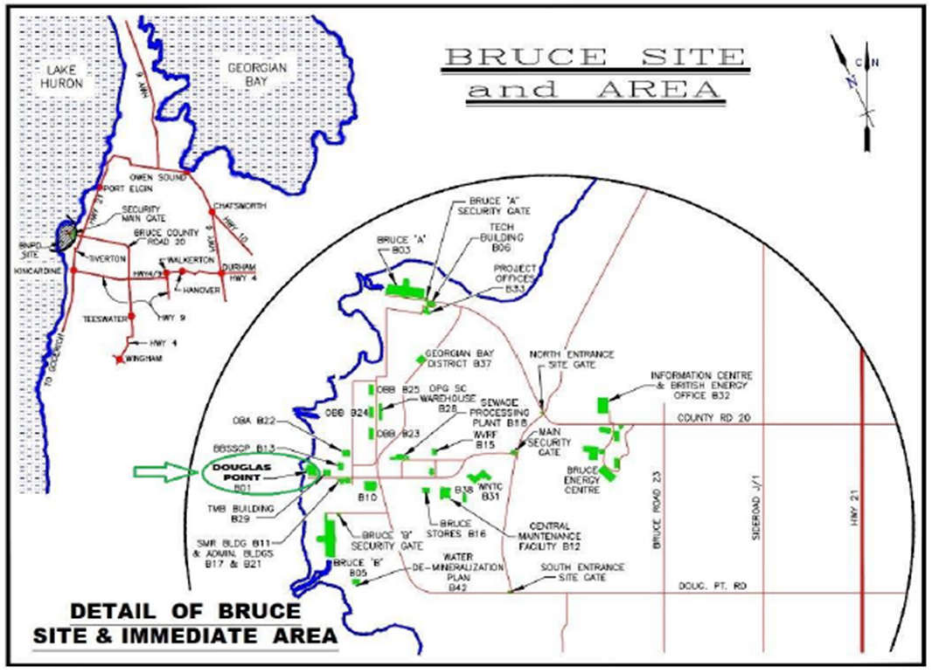
Third, the project already is licenced to go forward. Worse, mitigation is too little too late once radionuclides have been released., and where is the scientific evidence that mitigation can be effective in these circumstances?

The actual need to declare this determination appears not to be environmental well-being, but instead based on an inadequate federal policy (for which a review has been recently launched). See, same page, in the CNSC submission:

> *"This determination is required before the Commission can exercise its power* ***under the NSCA*** [Nuclear Safety and Control Act] *to authorize a project located on federal lands."* [my bold]

Framing DPWF Within the Lake Fringe Watershed Provides More Accurate Environmental Insights – Part I

The CNL submission declares “no *threatened* wildlife species (including Barn Swallows) have been discovered on the DPWF site,” on PDF p. 17, but the CNSC EPR lists these birds as the only `Species at risk,’ PDF p. 122.



The Lake Fringe Watershed Report illustrates how the CNSC Environmental Protection Report (based on the CNL submission) grossly limits wildlife which could be threatened. The watershed report identifies a much longer list of “Rare Species.” For survival, wildlife travel throughout an ecosystem in interactions with other species, which goes beyond the limits of an industrial site. This basic fact is why current limits of a `Site Study’ is inadequate for realistic environmental protection.

Framing DPWF Within the Lake Fringe Watershed Provides More Accurate Environmental Insights – Part II

Again, the language of CNL illustrates a lack of understanding in regard to how the natural environment functions, for example, on PDF pages 16 and 17:

> *"The immediate land surrounding the Bruce site also includes former gravel pits, fragmented woodlands, streams, and wetlands."*

The above passage reads more like a rationalization that the natural world already has been altered, and shows no recognition that, even though an ecosystem might have been undermined, the environment still is alive and functions through interrelationships.

As co-authors of ***The Systems View of Life – A Unifying Vision*** tell us:

> *"Since ecosystems interlink the living with the nonliving world, ecology must be grounded in not only biology, but also in geology, atmospheric chemistry, thermodynamics, and other branches of* [Capra and Luisi, 2014, p. 342]."

The ***Impact Assessment and Project Appraisal*** wrote about this topic, such as:

> *"In Canada, there is now a collective understanding that EA must go beyond the evaluation of site-specific, direct and indirect project impacts to include issues of broader regional, cumulative and higher-tiered policy, plan, and program (PPP) development significance."* [Dec. 2009, pgs. 258-270].

But this collective understanding is not yet evident in Canada's nuclear sector, despite the ***International Commission on Radiological Protection*** advocating it many years ago.

Comparing Watershed Interconnectivity with Historic Drainage Map for Site Study for OPG DGR

The interconnections of water pathways above show they go beyond political boundaries, to indicate we, in fact, live in bioregions not limited by municipalities.

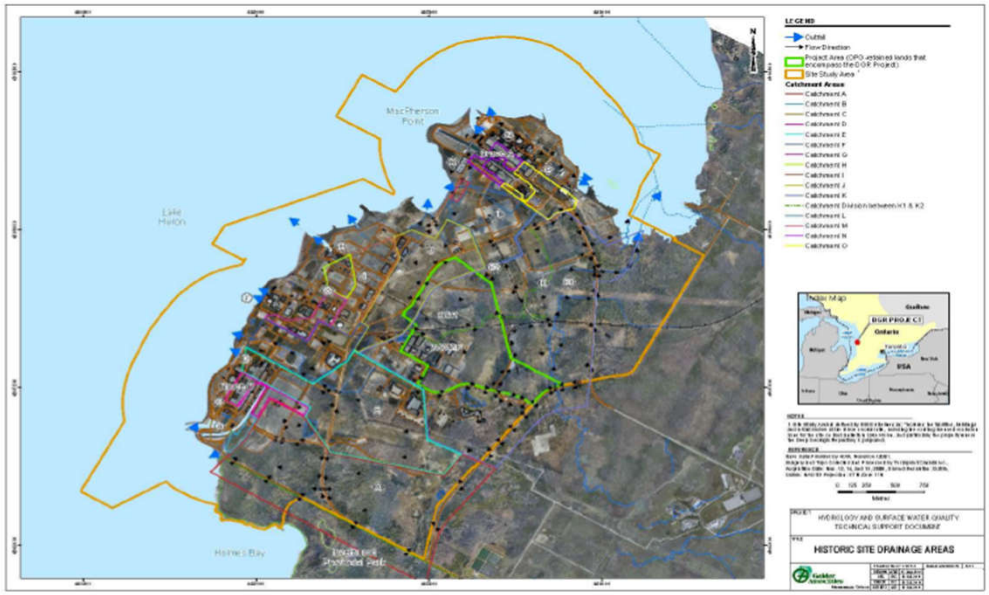


Figure 3: Historic Site Drainage Areas (GOLDER 2011d, Figure 5.4.3-2)

The above image is from the "Hydrology and Surface Water Quality Tech. Support Document prepared by Golder 2011 to show "Historic Site Drainage Areas" for the OPG DGR.

It provides a clearer understanding of drainage than line drawings and flow diagrams in the CNSC EPR re. the DPWF Inactive Drainage System . Groundwater and storm runoff discharge into Lake Huron at six discharge points.

Drainage Issues illustrate Effectiveness of Mitigation Measures cannot be Fully Known for Decommissioning Phase 3

The **CNSC EPR**, under Section **3.2.3 Hydrological Environment**, reads: "The proposed decommissioning activities at the DPWF have the potential to interact with groundwater. ...

"[specifying] ***excavation activities during the removal of those underground structures will likely impact groundwater*** [PDF, page 89]"

Also, given the anomaly of the existing `Inactive Drainage System,' **CNL offers to "conduct further assessments to better understand the current groundwater table conditions and re-evaluate whether there is a need to implement additional measures to better manage this potential seepage** [PDF, page 90]." In the same sub-section, **3.2.3.2 Mitigation Measures**, it reads:

"If mitigation measures cannot eliminate the potential for groundwater seepage, CNL will develop a contingency plan... ."

The **CNSC EPR**, Section **3.2.4 Aquatic Environment** reads: "During decommissioning activities at the DPWF, there could be potential effects to surface water quality and sediment quality of Lake Huron from liquid wastes or storm water runoff." In **Mitigation Measures**:

"Additional barriers, such as berms, dikes and silt fences, will be considered in accordance with CNL's procedure for the management of surface water releases to Lake Huron."

Why are `additional barriers' not mandatory, prior to Phase 3? The phenomenon of increasing severe weather events is not properly addressed in the CNSC EPR.

The Challenges to do Full DPWF Environmental Monitoring and why CNL Vigilance is Needed

Currently, CNL is required by CSNC to conduct only "effluent monitoring (EVMP)," relying on other data from the Bruce Power full site Environmental Monitoring Program (EMP). CSNC also carries out its own Bruce site IEMP, i.e. independent, and writes in its **EPR**, Section 2.3.3.:

"Given that the potential risk from airborne and waterborne releases is expected to remain low to negligible during the proposed decommissioning activities..., CNSC staff would not require a site-specific EMP over the proposed licence period... ." [beyond effluent monitoring]

But, reading Bruce Power's ***2018 Environmental Protection Report*** reveals circumstances - regardless of compliance - why contaminant releases cannot always be verified definitively. Please note these examples, in regard to the long-term Phase 3 of decommissioning of DPWF:

1) "In 2018, the Meteorological Tower data collection process has faced multi-faceted recurring issues... dialing into the tower modems to collect data appears to be failing on a regular basis."

2) "In some cases, the availability of reliable data in 2018 was such that concentrations of a specific radionuclide could not be defined for any media along a specified exposure pathway."

3) "Despite the incorporation of best practices, not all radionuclides can be reliably monitored in all media."

Key lessons in the above honest disclosure point to the reality that, from equipment breakdown to technological limitations and radionuclide phenomena, human tools of measurement are fraught with imperfection. The quest to ensure environmental and human safety must be a continuous work-in-progress across the nuclear sector.

Lest we forget