SHALLOW DEPTHS:
REPRODUCTIONS OF NUCLEAR LANDSCAPES
AND ANOMALIES OF CONSENT AT CHALK RIVER

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Abstract:

Scholars and Indigenous communities increasingly urge courts and regulators to uphold the principle of "free, prior, and informed consent" (FPIC) as articulated in the United Nations Declaration on the Rights of Indigenous Peoples. In Canada, the Nuclear Waste Management Organization (NWMO) has ostensibly embraced FPIC through its "willing host model," designed to identify potential sites for a deep geological repository (DGR) to house radioactive waste. In this doctoral research, I examined the siting process for a Near Surface Disposal Facility (NSDF) in Chalk River, Ontario. I attended public hearings and community meetings as part of close empirical work documenting opposition to the proposed NSDF. In this dissertation, I demonstrate how opposition, and Indigenous refusal in particular, is generative in terms of political and regulatory shifts toward asserting and advancing Indigenous rights.

The research raises the question of why the willing host model is appropriate for the DGR, but not the NSDF. I argue that consent, in this framework, is used a tool to manage and generate legitimacy in order to secure a bare minimum social license to operate. In practice, the willing host model exhibits the hallmarks of a "divide and conquer" strategy, with people in neighbouring communities being pitted against each other as they weigh the very uncertain costs and benefits of nuclear waste storage proposals.

My research demonstrates that a major barrier to workable consent processes is the significant time and resources required to implement them. Effective frameworks must account for the complex and differentiated geographies of risk and impact, the intergenerational effects, and the cumulative social and financial costs, including the exacerbation of intra- and inter-community divisions. This dissertation disentangles tensions of the NWMO's willing host model, with the ultimate vision of 'scaling up' consent-processes to broader extractive contexts.

This research advances critical human geography and environmental justice literatures by teasing out how spatial and local political-economic-social contexts shape both decision-making and its outcomes—specifically, how these contexts influence the operationalization of consent-based policies, the mechanisms through which consent is negotiated, and the extent to which the nuclear waste siting process is deliberative, fair, and just.

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Acronym	**Long-form**	**Brief Description**
AECL	Atomic Energy Canada Limited	Federal Crown Corporation; promotes nuclear energy; "owner" of Chalk River site and other nuclear project sites in Canada.
CNL	Canadian Nuclear Laboratories	Responsibility for the management and operation of AECL-owned sites.
CNSC	Canadian Nuclear Safety Commission	Nuclear regulator in Canada.
CRL	Chalk River Laboratories	Nuclear research site located near Deep River, ON about 200km from Ottawa. The first nuclear laboratory in Canada, established in 1944.
DGR	Deep Geological Repository	Engineered containment solution for used nuclear fuel waste; DGR proposed to be located in Revell Lake, ON, about 280km NW of Thunder Bay.
EA	Environmental Assessment	A process to determine the impacts of a proposed project subject to federal assessment under the *Canadian Environmental Assessment Act* (CEAA), 2012.
FPIC	Free, Prior, and Informed Consent	A principle that articulates the right of Indigenous peoples to voluntary, knowledgeable consent in advance of other forms of decision-making regarding activities on or impacting their land.
IA	Impact Assessment	A process to determine the impacts of a proposed project subject to federal assessment under the *Impact Assessment Act, 2019.*
KFN	Kebaowek First Nation	Algonquin First Nation; central in Chalk River case study.
KZA	Kitigan Zibi Anishinaabeg	Algonquin First Nation; central in Chalk River case study.
NSDF	Near-surface Disposal Facility	Engineered "mound" proposed as a solution for "low-level" radioactive waste at Chalk River.
NWMO	Nuclear Waste Management Organization	An organization created in 2002 tasked with finding a solution for used nuclear fuel waste.
UNDRIP	United Nations Declarations on the Rights of Indigenous Peoples	International human rights instrument/framework developed by the United Nations and adopted under the *United Nations Declaration on the Rights of Indigenous Peoples Act, 2021* in Canada.
WHM	Willing Host Model	Process that seeks a 'willing host' for used nuclear fuel in Canada.

Chapter One

Introduction: Motivations and Methods

When I began my doctoral studies, I was agnostic about nuclear. I was not acutely aware of the material afterlives of military-industrial landscapes and their embedded toxic legacies. My initial research interests were shaped by the dispossession and contamination resulting from military infrastructure discards, but my understanding of environmental injustice deepened through relational engagements. Before commencing my studies, an Inuk friend from Iqaluktuuttiaq, Nunavut, recounted how Inuit women experience PCB contamination in profoundly uneven ways. I went on to learn that Inuit women bear up to five times higher concentrations of PCBs in their breast milk than white women in the south—exposures not of their choosing nor the consequence of individual behaviors (Dewailly et al., 1989). PCB contamination disrupts endocrine function in women and impairs motor skills in children (Adamou et al., 2020). These patterns of environmental harm are neither incidental nor arbitrary but rather structured through racial capitalism and settler colonialism. As environmental justice literatures have demonstrated, the siting of toxic, radioactive, and highly contaminating infrastructures overwhelmingly targets racialized, economically precarious, and politically marginalized communities (see, for example, Liboiron, 2021; Agyeman et al. 2010; Bullard, 1990). That I arrived at a critical stance on nuclear through an interrogation of its waste is therefore unsurprising—it is in its waste infrastructure siting processes where nuclear colonialism is perhaps most visible and enacted with slow violence.

This became personal when I received a phone call from my father informing me that their neighbour had received mail about the proposed Near Surface Disposal Facility (NSDF). The planned site is upstream on the river that supplies my parents' well water, deepening their long-standing anxieties around contamination from the nearby Chalk River Laboratories.[1] My family's history in the Pontiac region, on unceded, unsurrendered Algonquin territory, stretches back to the 1800s. My grandfather, a log roller, laboured in forestry, one of the many extractive industries that have reshaped this land. Hydroelectric projects like the Bryson and Chenaux Dams have transformed portage routes, erasing historic landscapes in service of settler infrastructures. As I considered a case study for this dissertation, the ongoing contestation over Chalk River emerged as an especially salient site for interrogating militarism, extractivism, and (nuclear) colonialism.

My first comprehensive exam traced the co-constitution of militarization and infrastructural violence, a relationship starkly visible in Chalk River's history. My second comprehensive exam examined critical approaches to waste and environmental justice, opening space to theorize "wastelands" as a settler-colonial spatial imaginary that justifies Indigenous dispossession and exclusion from land-use decision-making. These conceptual frameworks, grounded in critical geography, have informed my dissertation's central inquiry: what level of participation in nuclear decision-making do affected

[1] "Chalk River Laboratories" is the full name of the Canadian Nuclear Laboratories site in question, adjacent to Deep River, Ontario. "Chalk River" and "Chalk River Laboratories" will be used interchangeably throughout the dissertation, as it is colloquially in the region, to refer to the Chalk River Laboratories site.

publics—and particularly Indigenous nations—have, and how does settler governance structure their inclusion or exclusion? What political and economic dynamics drive nuclear expansion, and what social forces enable it? How do contestations over nuclear waste unfold, and under what conditions does refusal gain traction?

These questions map onto site-specific struggles (e.g., the successful opposition to a Deep Geological Repository [DGR] on Saugeen Ojibway Nation territory), structural shifts (e.g., Germany's nuclear decommissioning and transition to renewables), and procedural reforms (e.g., the Nuclear Waste Management Organization's [NWMO] adoption of a "willing host" model following the Seaborn Panel's 1998 recommendation that high-level radioactive waste siting must have social approval). Examining how the "willing host" model is operationalized reveals the contradictions within nuclear governance and raises the question of why certain nuclear waste infrastructures are required to demonstrate local consent while others, including similarly permanent nuclear waste sites imposed on Indigenous lands, are not? These disparities underscore the racialized geographies of nuclear colonialism, where settler-state regulatory frameworks unevenly distribute risks and decision-making power.

In considering Chalk River as a case study, I attended the Canadian Nuclear Safety Commission (CNSC) public licensing hearings on the NSDF siting in May-June 2022, and again in August 2023. The following year, in July 2024, I observed Kebaowek First Nation's judicial review in Federal Court, which contested the absence of meaningful free, prior, and informed consent (FPIC), as relevant to be interpreted in the

United Nations Declaration on the Rights of Indigenous Peoples Act, 2021, throughout the siting process.

Overall, the public hearings surfaced a spectrum of concerns articulated by settlers, Indigenous nations, and environmental organizations, centering on the risks of permanently storing nuclear waste roughly a kilometer away from the Ottawa River. These deliberations confirmed that Chalk River is an especially rich site for examining power, normativity, and the socio-political conditions that render certain landscapes vulnerable to nuclearization. Norms around risk, assumptions about public acceptability, and the entanglements of nuclear power with militarism, waste, and extractivism are all at play here. This case also raises critical questions about why some waste sites trigger "willing host" considerations while others do not, and how justificatory frameworks are mobilized to perpetuate nuclear expansion on unceded Indigenous lands in the midst of the climate crisis.

The research for this dissertation was informed by literature reviews engaging with critical geography and environmental justice literatures, participant observation, and six semi-structured interviews. Interview participants were selected using the snowball sampling method (Orcher, 2016). Interviews were transcribed and analysed to inform Chapters three and four. My notes from the CNSC's licensing hearings I attended in 2022, 2023, and 2024 were confirmed by re-watching or re-reading court records as available; some, but not all, of the hearings were transcribed, though when transcriptions were not available, the recording was provided on request. Written interventions are also referred to in Chapter Three, and are cited by intervenors name, date, and document number as appropriate.[2] All interview participants were granted anonymity and will be described in the dissertation through their role (e.g., “community member in the DGR context”; “proponent”; “council member of host community,” etc.). A content analysis and sentiment analysis were conducted using R to assess public perceptions of the proposed project. To guide this analysis, a set of key terms including *risk, trust, legitimacy, transparency, accountability, consent*, and *acceptability* were identified based on both prior literature on extractivism and nuclear infrastructures and themes that emerged during preliminary reading and observations of the data. These terms were used as codes to examine how participants framed their positions as either "for" or "against" the project. Coding was conducted iteratively, and categories were refined through cross-checking and review of transcripts and field notes to ensure reliability and consistency in interpretation. The sentiment analysis was applied to characterize intervenors’ overall tone toward the proposal. This was done using a hybrid approach: qualitative judgments of sentiment (positive, negative, neutral) were made alongside keyword frequency and contextual usage. Quotes from hearing transcripts were used to illustrate particularly representative or divergent perspectives.

In examining the willing host model, the focus was on how the notion of consent was referenced and contested in both formal submissions and oral testimony from 2005-2024, referencing resident and First Nation working group reports and observations in community working groups and NWMO sponsored “dialogue” sessions. Analysis was

[2] The term “intervenors” is used to describe those who provided written submissions or oral presentations during the CNSC’s public licensing hearings.

guided by definitions from critical geography literatures and Indigenous jurisdiction literatures identifying explicit mentions of consent, as well as implicit indicators such as expressions of procedural dissatisfaction, acknowledgment of sovereignty, or critiques of regulatory legitimacy. The analysis in Chapter Five follows the recommendations of an environmental assessment panel (known as the 'Seaborn Panel') published in 1998 to assess the "acceptability" of the Deep Geological Repository concept. These recommendations are frequently referenced in field observations and interviews as the foundation for how the willing host model has been developed and implemented. Together, these methods allowed for a layered interpretation of the willing host model process, highlighting not only participant and industry positions but also the deeper normative values shaping those positions.

Given the history of colonial and extractive research by non-Indigenous scholars (McGregor et al. 2018) and the limited resources of many First Nations communities, my research approach focused on amplifying Indigenous perspectives that have already been shared publicly, or that were shared with me in informal gatherings, events, or phone calls, while establishing clear expectations and accountability to align the research with articulated community goals. For this reason, I do not report on any formal interviews with First Nations community members, because so much was generously shared with me in community contexts (workshops, gatherings) that has been foundational to my understanding of the complex relationship between contested jurisdiction on Algonquin territory and settler-state authority over decision-making on those lands.

When I first attended the Canadian Nuclear Safety Commission (CNSC)'s public hearings in the summer of 2022, I introduced myself to as many people as possible, positioning myself as a researcher with roots in the community and a particular interest in how consent (or the absence of it) is operationalized in the context of the NSDF. At the time, I viewed the Nuclear Waste Management Organization's (NWMO) 'willing host model' as the gold standard for consent-based approaches used in siting energy infrastructures. I use "energy infrastructures," as defined by Reddy and Nathan (2010), to encompass the full supply chain—from extraction, to processing and refining, to transportation and waste management.

For example, I accepted that implementing a consent mechanism such as the willing host model (WHM) as a standard for social license could help reconcile the demands of large-scale decarbonization with the development of supply-chain infrastructures necessary for the green energy transition. While the WHM is a core feature of siting processes for high-level radioactive waste, consent mechanisms remain significantly underdeveloped in other sectors—such as critical minerals mining—where Indigenous communities are often forced to accept incursions on their land, rights, livelihoods, culture, and safety to support state-driven decarbonization efforts (Scott, 2023). In fact, in the context of green energy development, governments increasingly lean toward fast-tracking regulatory approvals in the name of climate emergency, rather than implementing more robust and participatory processes (Scott and Smith, 2017). Why shouldn't we all be "willing hosts" for energy infrastructures? This question drives the focus of my research forward. However, before considering whether consent mechanisms might mitigate broader conflict over energy infrastructure projects, I aim to understand their nature and practice more deeply.

This research assesses the variation in procedural justice models employed across two nuclear waste siting processes: one that includes a consent mechanism—the NWMO's proposal to construct a Deep Geological Repository (DGR) for used nuclear fuel bundles, categorized as "high-level radioactive waste"—and one that does not, instead relying on the consultation standards outlined in Environmental/Impact Assessment regulations—the Canadian Nuclear Laboratories' proposed NSDF for contaminated materials (such as items used in cleanup efforts and other less clearly categorized items, characterized by the proponent as "low-level radioactive waste"). Early in the CNSC's public licensing hearings for the proposed NSDF in summer 2022, I met two articling students working for the Canadian Environmental Law Association (CELA), where I would begin employment exactly one year later. CELA had intervened in the hearings, raising distinct concerns about the project's implications for environmental and intergenerational justice. The organization has long been an active voice calling for law reform toward responsible and transparent radioactive waste policy in Canada. During a scheduled break in the hearings on June 1st, 2022, while reviewing my notes, an intervenor approached me and quietly said, "Meet me in the hotel across the street, room 217." Intrigued and excited, I replied, "Can my friends come?"—gesturing to the two articling students beside me, who were also busy working on their notes and reflections. Though the invitation felt unusual, the three of us decided to go together. When we arrived, several intervenors were seated around a small table, chairs pulled in close, debriefing about the responses from CNL and AECL to the concerns raised thus far. By the end of the hour-long break, I felt I was in good company—welcomed into what felt like an 'inner circle' of people I soon recognized as experts in their own domains: individuals with PhDs, law degrees, a physician, a community activist, and a retired nuclear industry worker. Over time, this “inner circle” grew into a broader web of affected publics, including members and leadership of Algonquin communities and other academics.

The final day of the CNSC’s public hearings for the NSDF, June 2, 2022, was reserved for First Nation interventions. By this time, the classic dynamics I had been cautioned about in the nuclear context had become apparent: those who critique, question, or oppose nuclear infrastructures are routinely dismissed by the industry as inherently biased, uninformed, or referred to pejoratively as NIMBYs, (which stands for ‘Not In My Backyard’). In contrast, information provided by industry and their experts is framed as neutral, evidence-based, and in the interest of all Canadians (see Bell, 2022). My father—who, to my knowledge, had never taken a sick day unless he was seriously ill—took one that day to attend and show his support for the First Nations intervening.

This may have further entrenched the industry's perception of me as a NIMBY, especially considering CNL later made an unprovoked comment at a 2024 Environmental Stewardship Council meeting about my parents' riding being included in their public outreach. I have also been contacted by the NWMO on three occasions: the first was simply a message to my e-mail inbox with several NWMO staff CC’d, but no text in the message. The second was following Environment North’s announcement that York EUC

Faculty member Dr. Mark Winfield and I had accepted invitations to present our research to the public in Thunder Bay, wherein the NWMO wanted to make sure we were informed by their perspective. And later, in 2025, the NWMO invited me to speak on a notably unbalanced panel at the University of Toronto's Munk School of Global Affairs and Public Policy event on March 19, 2025, titled 'NIMBYism: Site Selection for Canada's Used Nuclear Fuel,' which I declined.

By the time the CNSC's final hearing in August 2023 took place—following a procedural direction granting First Nations more time to participate due to the initial lack of consultation—I was involved in organizing the in-person event. This included drafting and sending letters on behalf of Kebaowek First Nation to Members of Parliament, the Prime Minister, the Minister of Environment and Climate Change, and other public interest organizations, encouraging them to support and participate in the hearings alongside Kebaowek, Kitigan Zibi, and Mitchikanibikok Inik. Despite these First Nations' repeated requests for an in-person format, the CNSC opted to proceed virtually.

The final hearing was scheduled for August 10, 2023—coincidentally, my birthday. That morning, my father and I left his house at dawn to travel to 50 Sussex Drive in Ottawa, where we helped sign in guests and observed the press conference held by Kebaowek First Nation and Kitigan Zibi Anishinaabeg, followed by the final hearing. Kebaowek had generously provided a feast following the hearing, where despite the overall sentiment of being dismissed by the CNSC, members of the gathering were in high spirits under the notion that we are "stronger together" and prepared to continue strategizing structural opposition--which would later be two successful judicial reviews, described in detail in Chapter Four.

On June 27, 2024, I attended Canadian Nuclear Laboratories' Environmental Stewardship Council (ESC) as a proxy for a member who was unable to attend. Generously, this person, aware of my research project, suggested that I take their place. The ESC is a community-based advisory group that reviews and provides feedback on CNL's environmental programs and performance. That morning, I carpooled with three colleagues whom I had first met at the CNSC's licensing hearings for the NSDF in May 2022. They picked me up outside a dépanneur in Portage, QC, not far from my parents' house, on a crisp early morning. As we made our way to the Chalk River site, I was reminded of the summers in my childhood, when I would drive this same route from the lower Ottawa Valley. Along the way, we passed Garrison Petawawa, Canada's largest army base, its presence unmistakable due to the many fences and warning signs: *Caution: Active Artillery Area* and *Danger: Unexploded Ordnance—Do Not Leave the Road*. I had always felt a certain unease passing by the base, and this time was no different. It also marked a familiar milestone—only about 15 minutes to Chalk River. Upon arriving, we parked in the visitor's lot outside the *Minwamon* building, whose name means "clear path" in the Algonquin language, Anishinabemowin. The name was given in a ceremony by the Algonquins of Greater Golden Lake, one of nine non-status First Nations among the ten that make up the Algonquins of Ontario.[3] The *Minwamon* building is the site entrance of CRL and inside are shiny signs that detail brief milestones of AECL beginning in 1944, a cabinet area with emergency respirators, and an overall beautiful modern design as part of the CRL revitalization project. I noticed other guests were picking up lanyards with radon detectors and was curious as to why my group did not receive them, until I was reassured that the colour spectrum outlining our guest passes would change colour if elevated radon levels were detected.

The *Minwamon* building was about 5 km from the main campus, so the ESC boarded a bus that would take us to all of the sites we would be visiting: a central building where we heard a presentation from CNL to providing information about the effluents being released from the Sewage Treatment Plant, the Effluent Toxicity Test and the reporting process related to effluent monitoring; and tours of Waste Management Areas (WMAs) D/G/H, the future location for Global First Power (a proposed 'micro-modular reactor'), Advanced Nuclear Materials Research Centre (ANMRC) Site, Science Collaborations Centre (SCC)/ Harriet Brooks Building Tour (equipped with a state-of-the-art cinema) and finally, a site tour of the NSDF.

Most pertinent to my interests were site tours of Waste Management Areas D/G/H and the NSDF. I recalled that during the summer 2022 hearings, AECL and CNL addressed concerns about the NSDF, particularly regarding weather-related incidents like

[3] In the CNSC's public licensing hearing for the NSDF on June 2, 2022, Councillor Justin Roy (Kebaowek First Nation) stated, "we reject the AOO having their naming ceremony for the entrance to Chalk River nuclear site, calling it *Minwamon*, meaning, or supposed to mean, clear path."

tornadoes. They argued that the waste would be safer in the NSDF than in its current storage. Seeing the waste at WMAs D, G, and H made visible the need for remediation of legacy waste—rows upon rows of shipping containers filled with radioactive waste, sitting in an open grassy lot. Importantly, of the 165 interventions I heard, read, and analyzed, not one intervenor felt that the site did not need to be cleaned up; concerns related to the NSDF were all primarily related to the process, the irretrievability of the waste (the lack of a "rolling stewardship" model), the proximity to the Ottawa River, environmental concerns about the anticipated degradation of the mound, disregard for Algonquin First Nation consent, and transportation of wastes from outside sources to the site to Chalk River.

The tour stop at the site for Global First Power's proposed micro-modular reactor was in an existing parking lot. As a group, we stood in a circle and had our questions answered about the proposal. One member of the ESC suggested that if CNL was so concerned about emissions, instead of constructing a new parking lot, employees at the site could carpool in; at this point, the contracted photographer for CNL sarcastically said to me and one other [paraphrased] 'Yeah, great idea. The smartest people in the country work here and they're going to save the world. Let's make it more inconvenient for them and make them carpool in.' This stood out to me as an example of the exceptionalism that many on-site employees experience, as projected onto them by 'outsiders' in the community.

The NSDF site tour was exactly as I had imagined—a grassy field sloping upward, with the Kichi Sibi (Ottawa River) visible in the background. Monarch butterflies rested on clovers at the edge of the cleared grass. On our drive back to the *Minwamon* building, we followed the perimeter of the NSDF site, where four-by-fours had been erected into what looked like a makeshift fence. Approximately every 500 meters, at the center of each roughly eight-foot section of fencing, was a piece of plywood arranged in a ramp-like shape. Curious about its purpose, I asked, and we stopped the bus to discuss it. KFN and KZA's assessment had revealed that the NSDF site was a denning area for *Makwa*, the black bear. In response, CNL's world-class engineers had designed these plywood ramps to allow wildlife—particularly the culturally significant *Makwa*—to exit the proposed NSDF site while preventing their return.

Between the initial CNSC hearings I attended in 2022 to now, several informal research groups emerged that I participated in: one focused on the NWMO's proposal for a Deep Geological Repository, and one that is centered around the history of nuclear colonialism on Algonquin Territory. These groups are comprised of academics, community members, and members of ENGOs. On February 21, 2024, my supervisor, Dr. Dayna Scott, and I hosted a virtual launch of the report *Operationalizing Indigenous-led Impact Assessment*, which was a collaborative project involving several researchers involved in conducting or researching Indigenous-led Impact Assessment. Chief Lance Haymond (Kebaowek First Nation) and Rosanne Van Schie (ecologist and researcher with Kebaowek First Nation) presented Kebaowek and Kitigan Zibi's Indigenous-led Assessment of the proposed NSDF at the launch event. This event provided a platform and opportunity to hear more about the Kebaowek and Kitigan Zibi's drive to conduct the assessment, along with their experience undertaking the assessment on the CRL site in relation to the outcomes but also the interactions with the proponent and regulator and their processes.

To reiterate my central research questions: what level of participation in nuclear decision-making do affected publics—and particularly Indigenous nations—have, and how do settler governance models enable their inclusion or exclusion? What political and economic dynamics drive nuclear expansion, and what social forces enable it? How do contestations over nuclear waste unfold, and under what conditions do opposition movements gain traction? This dissertation also engages with the questions: what does it mean (in social, political, and economic contexts) to be a "willing host"? What characteristics qualify the process and outcome of the process as legitimate? These connect to broader questions about the fair distribution of costs and benefits in extraction contexts, environmental governance, and settler colonialism—questions that I will continue to pursue beyond the dissertation.

This dissertation emerges from both scholarly inquiry and subjective experience, grounded in the relationships, responsibilities, and realities of researching nuclear colonialism on unceded Algonquin territory. What began as a study of infrastructural violence evolved into a deeper engagement with the geographies that shape consent, participation, and resistance in energy infrastructure siting processes. Through critical geography and environmental justice frameworks, I interrogate how legitimacy is constructed, how consent is procedurally sought, and how affected publics—especially Indigenous nations—navigate the asymmetries of settler-state governance. While this work is rooted in the specifics of the proposed NSDF, its implications extend far beyond, challenging us to reconsider what meaningful consent entails and who is granted the authority to decide the futures of land, water, and livelihood. Ultimately, this research seeks not only to analyze, but to support movements for justice, Indigenous jurisdiction, and more equitable energy futures.

In the remainder of this chapter, I will build background context that grounds the dissertation study within critical geography and environmental justice literatures, and introduce the central case study in this dissertation, Chalk River Nuclear Laboratories. Next, I will introduce the avenues of inquiry (what are the opportunities for Indigenous and public influence of nuclear waste siting? What past and present opposition is there to nuclear infrastructures, and what drives the opposition?) that aim to address my central research question (can we seek consent for nuclear waste infrastructures?). I will then bring into conversation the question of the nuclear solution to climate change and challenge the rhetoric of "green energy," as it pertains solely to emissions, and briefly raise the question of economic feasibility of such a proposed solution. Finally, I provide an overview of the remainder of the dissertation.

Context for the Study: Canada's Final Bid to Solve the Radioactive Waste Dilemma

The year 2024 has been pivotal for the nuclear industry and governance in Canada, marked by both contention and celebration. On July 10, 2024, the Nuclear Waste Management Organization (NWMO), a not-for profit organization established by Canada's nuclear electricity and waste producers, formally announced to its national audience and international counterparts that it had secured an informed and willing host community in Northwestern Ontario for the long-term containment of used nuclear fuel. This milestone signaled next steps: the environmental assessment process, and then the construction of a Deep Geological Repository (DGR). While this announcement marked the passing of a significant hurdle toward resolving Canada's nuclear waste dilemma, it did not occur in isolation. The governance of nuclear waste remains deeply contested, as evidenced by parallel nuclear waste siting of a proposed Near-Surface Disposal Facility (NSDF) for low-level radioactive waste regulated by the Canadian Nuclear Safety Commission (CNSC), which has faced accusations of regulatory capture. The controversy surrounding the siting of a proposed NSDF at Chalk River, Ontario, would be the first of its kind in Canada, and reflects ongoing tensions between regulatory authorities, Algonquin communities and the nuclear industry.

The siting process for the NSDF has been fraught with contestation, with significant legal and procedural challenges filed and ongoing. Kebaowek First Nation successfully argued in two separate instances—before the CNSC in 2023 and in federal court in 2024—that they had not been adequately consulted in the decision-making process and that they had not given their Free, Prior and Informed Consent (FPIC). These rulings led to delays in the proponent's schedule, underscoring both the importance of meaningful consultation with Indigenous communities and, more critically, the inconsistent or inadequate application of consent mechanisms within nuclear waste governance frameworks. While public discourse in 2024 has made the friction between the nuclear industry, Indigenous nations, and broader civil society more visible, these tensions are neither new nor ephemeral. They reflect deeper, historically rooted conflicts over land, environmental stewardship, and the legitimacy of decision-making processes in nuclear infrastructure development. During the Canadian Nuclear Safety Commission's hearing in June 2022 on the siting and construction of a NSDF at Chalk River Laboratories, Councillor Norman Matchewan of Mitchikanibikok Inik articulated the persisting tensions rooted in historical settler colonialism, perpetuated by contemporary settler-state desires:

> Earlier there was a question asked if there would be an agreement or a compromise. If there was such an agreement that says no, would that be respected? I don't think so because profits get in the way. Money and profits do come to an end—we don't carry that to our grave. But our grandchildren… will always have water, and this is why it's so important for us to be here…to stand with the people that oppose this project. I see and I've met so many people here that have been fighting for the past 30, 40 years…They've put their life in this opposition [of Chalk River nuclear activities] ...You know, we've always managed to move away from our territories to accommodate settlers. We were kicked off our land in so many places. We were pushed more in the bush to be more nomadic…we made that accommodation for your families, your ancestors, and we have given and given and given from time and time again our natural resources that have built this country. But what we have gotten in return is a failure in consultation and accommodation. (CNSC, 2022, p.205).

Canada has been contending with the socio-political complexities of radioactive waste management since the mid-twentieth century. The issue initially emerged from the accumulation of radioactive tailings generated by uranium mining and processing. However, the problem was fundamentally reconfigured with the introduction of nuclear reactors that produced long(er) lasting, high-level radioactive waste, beginning with the Zero Energy Experimental Pile (ZEEP) at Chalk River in 1945. ZEEP, Canada's first operational reactor, was developed to support the Manhattan Project—a classified military collaboration among Canada, the United States, and the United Kingdom aimed at the production of the first atomic bombs (CNSC, 2021). The entanglement of Canadian nuclear infrastructure with military imperatives at this early stage underscores the geopolitical dimensions of nuclear development, as well as the enduring legacies of waste accumulation that persist into the present and into unimaginable futures.

The legacy of nuclear development in Canada, initially driven by military imperatives, left behind a growing and largely unmanaged stockpile of radioactive waste. As civilian nuclear power expanded, so too did concerns over the long-term risks of accumulating high-level waste. By the late 20th century, the issue had become impossible to ignore. In 1988, in response to mounting public concern, Atomic Energy of Canada Limited (AECL) and Ontario Hydro proposed a DGR as a mechanism for containing spent nuclear fuel, marking a shift toward a more formalized waste management strategy. The proposal unfolded against the backdrop of intensifying debates over environmental risk, public accountability, and the role of expert knowledge in determining acceptable futures. In 1989, the federal government established an environmental assessment panel known as the Seaborn Panel to facilitate an independent and transparent review of the government's waste management framework. Between 1989 and 1998, the DGR concept was subjected to extensive scrutiny, culminating in the 1998 Report of the Nuclear Fuel Waste Management and Disposal Concept Environmental Assessment Panel. The panel ultimately concluded that, while the DGR was technically and conceptually viable, it was not socially accepted. This marked the first qualifier in the nuclear industry for securing social license—that the solution for nuclear waste is not only a technical and geological challenge but also a deeply political process—one that necessitates sustained negotiation over public conceptions of risk, consent, and inter/intragenerational responsibility.

This study provides a historical overview of the origins of nuclear colonialism alongside a critical constructivist lens to analyze the contemporary entanglements between the nuclear industry and the broader political interests driving nuclear expansionism. Further, it examines the evolving efforts to secure social license for nuclear waste disposal—from the 1988 proposals for a Deep Geological Repository (DGR) to the 2024 designation of an "informed and willing host community"—and critically questions the absence of formal consent mechanisms in other nuclear waste infrastructures, such as the Chalk River NSDF. By tracing these developments, this study seeks to critically interrogate how consent is constructed, legitimized, and contested in nuclear governance.

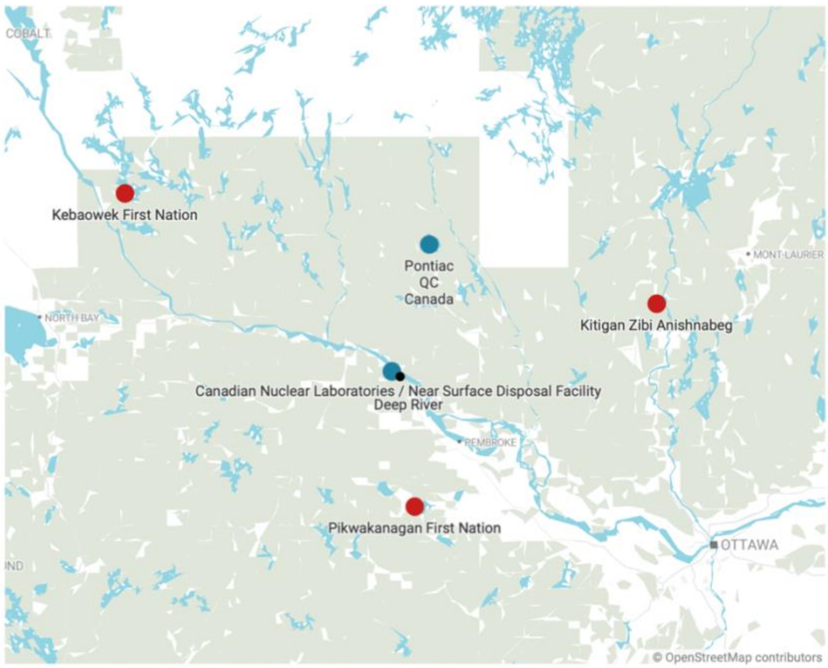
While obtaining social license is often framed as a straight-forward procedural step in infrastructure siting, past and present debates reveal it to be a deeply political and contested process, shaped by power relations, institutional narratives, and competing claims to authority. Two key insights emerge from these efforts: First, consent is not merely about legal or administrative approval; it is embedded in broader struggles over governance, legitimacy, and public trust. Second, the designation of a host community is not a fixed achievement but a fluid and negotiated outcome, continuously shaped by shifting political, social, economic, and historical contexts. At the core of this research is a fundamental question: Can "genuine consent" be constructed within nuclear waste governance, and what power dynamics shape its meaning, legitimacy, and practice?[4] Rather than approaching consent as an objective threshold to be met,

[4] The concept of genuine consent will be explored in chapter three and chapter four of the dissertation but is fundamentally contrasted with coerced consent.

this study examines how it is socially and politically produced—contingent on institutional frameworks, historical precedents, and the discursive strategies of state and industry actors. This approach foregrounds the ways in which nuclear governance operates as a site of struggle, where competing understandings of risk, environmental justice, and intergenerational responsibility come into conflict. This study challenges dominant narratives that portray nuclear waste siting as a rational, technocratic process and instead situates it within the broader contestations over power, knowledge production, and political legitimacy.

Chalk River and the Legacy of Atomic Energy: A Brief Introduction to Case-Study Selection

Chalk River Laboratories sits at the confluence of past and present, a site where the weight of militarism, scientific ambition, and nuclear governance settles into the landscape. Built on unceded Algonquin Territory in 1944 as a Defense Industries Limited site called "Petawawa Works," it is a place that has been both at the center of the nuclear arms race and the periphery of decision-making power, where the forest and river bend around reactors and waste sites, and where legacies of secrecy persist (CNL, 2022). Prisoners of War (POW) were held at "Camp 33" in Petawawa, and some were employed in the construction of Chalk River Laboratories (CRL) (O'Hagan, 2024). It was here, at CRL, that weapons-grade plutonium was first produced for the United States, material that found its way into atomic bombs that devastated Hiroshima and Nagasaki, displacing civilian populations, and creating lifetimes of environmental harm and intergenerational health impacts (Ham, 2011). And it is here, still, that nuclear waste accumulates, deep time folding into everyday life, where disposal plans move forward, shaped by contested legitimacy, and the invisible weight of radiation. This study turns to Chalk River as a case for understanding how consent is made, withheld, and imposed in nuclear governance—where social license is sought in some cases and quietly discarded in others.



First Nations are in red, municipalities in blue and the proposed near surface disposal facility in black.
Map: Matteo Cimellaro • Created with Datawrapper

Figure 1 Map of the Case Study Site, the NSDF at Chalk River Laboratories.

The NSDF proposed at Chalk River Laboratories is situated on contested land and is designed as an above-ground mound spanning ten soccer fields only 1.2 kilometers from the Kichi Sibi, otherwise known as the Ottawa River. The town of Chalk River is in the municipality of Laurentian Hills, which has a population of approximately 1000 people, but the Chalk River site is closely associated with Deep River, a community of approximately 4000 people just upstream where the majority of Chalk River employees are known to work (Statistics Canada, 2016; Statistics Canada, 2021a). The site will effectively extinguish the Algonquin Nation's right to access the 37 hectares of land it will be situated on. The Algonquin Nations shown in Figure 1 (Kebaowek First Nation, Kitigan Zibi Anishinabeg, and Pikwakanagan First Nation) will be discussed throughout the dissertation in terms of their participation in the siting process of the NSDF. The Pontiac, also shown in Figure 1, is a municipality in Quebec with approximately 6000 people and is where my parents live (Statistics Canada, 2021b).

Unlike the process for siting the Deep Geological Repository (DGR), siting the NSDF does not rest on the designation of a "willing host." No plebiscites, no community votes, no formal negotiations—just the momentum of a project moving forward. Decisions about waste governance are layered into the landscape, mapped through buried isotopes, dispossessed Indigenous lands that surround the site, deference to scientific expertise, and the absence of a structured consent process. In studying Chalk River Laboratories, this dissertation contends with the entangled histories of nuclearity, extractivism, and environmental injustice—how certain places become repositories for waste, how consent is shaped not by free agreement but by historical precedents, institutional narratives, and the long shadow of state power (see Stanley, 2005; Stanley, 2008). The forest here is thick, but the demarcations of nuclear infrastructure cut through it, imposing the logic of containment onto a world where contamination is never fully curbed.

At stake in this inquiry is not just the question of who consents, but how consent itself is produced, leveraged, and made to fit within evolving governance regimes. At CRL, where military imperatives, energy ambitions, and waste legacies collide, the struggle over legitimacy unfolds—through policy documents, environmental assessments, and the slow accumulation of waste that will outlast the institutions that place it there. This dissertation asks: How is "genuine consent" constructed in nuclear waste governance, and why is it required in some places but presumed unnecessary in others? What power relations determine the boundaries of consent, shaping whose voices matter and whose concerns remain in the margins? Rather than treating consent as a procedural step, this study interrogates its political life—how it is wielded, dangled as an option but not a veto, how it is contested and how it becomes part of the machinery of nuclear governance. At CRL, waste does not simply accumulate; it carries histories of exclusion and risks calculated by the state.

Regulatory Frameworks and Resistance as Avenues of Influence

A foundational inquiry to this dissertation is how opportunities for public participation and consent mechanisms vary across nuclear waste siting contexts in Canada. The central case study in this research examines avenues for public and Indigenous participation in the NSDF proposal at Chalk River Laboratories. Impact assessment under Canada's Impact Assessment Act (IAA) offers opportunities for public participation as a forward-looking planning tool that evaluates the environmental, social, health, and economic effects of proposed projects. It aims to inform government decision-making by identifying whether adverse effects are significant and whether they are justified in the public interest. The scope of assessment is broad, encompassing not only biophysical impacts but also considerations of sustainability, climate obligations, Indigenous rights, and community well-being (Northrup et al., 2025). Nuclear projects, such as nuclear power plants and waste disposal facilities, are among those developments explicitly subject to federal impact assessments due to their significant potential impacts and federal jurisdiction (Northrup et al., 2025, p. 8).

For nuclear projects, which are regulated by the Canadian Nuclear Safety Commission (CNSC), the impact assessment process includes mandatory referral to a review panel. The Minister must appoint at least one panel member from the CNSC's commissioners, although these members should not constitute a majority (Northrup et al., 2025, p. 33). Review panels must hold at least one public hearing, which gives the public a formal opportunity to present concerns—an opportunity not guaranteed in Agency-led assessments, but these panels are not required to publish draft reports for public comment, making early public engagement (via written submissions or participation in hearings, for example) especially important (Northrup et al., 2025). The analysis of the central case study in this study, the NSDF at Chalk River Laboratories, is largely situated within the context of public hearings.

Yet, public participation in federal environmental assessments for nuclear-related projects can vary significantly. For example, during the NSDF proposal process, Canadian Nuclear Laboratories (CNL) sought approval from Atomic Energy of Canada Limited (AECL) to store low-level radioactive waste at their site in Chalk River, and no public notice or supporting documents were posted to the public registry. The decision made by CNL on behalf of AECL was limited to a single paragraph and offered no detailed reasons or information about mitigation measures for environmental effects (Northrup, 2025, p.130). This lack of transparency stands in contrast to the principles of meaningful public participation outlined in the IAA and underscores the need for stronger oversight in such assessments (Northrup 2025, p. 130).

In contrast, Indigenous participation is rooted in unique legal and jurisdictional foundations. Indigenous peoples in Canada have inherent laws and jurisdiction over their territories, in addition to constitutionally recognized rights and title (Northrup et al., 2025). Increasingly, Indigenous nations are asserting their authority by conducting Indigenous-led environmental impact assessments of projects proposed in their territories (Scott et al., 2023). The IAA supports this through provisions that allow the Minister to recognize Indigenous nations as jurisdictions for the purposes of impact assessment. This recognition enables the substitution of Indigenous-led assessments for federal ones, and the Minister may also delegate portions of assessments to Indigenous governments (Northrup et al., 2025, 35). These processes go beyond public participation—they can reflect the exercise of Indigenous sovereignty and governance, ensuring that Indigenous knowledge, priorities, and decision-making systems guide project evaluation in their territories.

In 2021, Kebaowek First Nation (KFN), an Algonquin First Nation whose efforts are documented throughout this dissertation, requested to have their jurisdiction recognized under the Act and called upon the Federal Cabinet to immediately pass a key regulation that would formalize this recognition when information-gathering and decision-making occur under the IAA in relation to environmentally significant projects (CELA, 2021). KFN requested a pause on all ongoing federal assessments of projects proposed in their unceded and traditional Algonquin territory until this overdue regulation is enacted. As Kebaowek Chief Lance Haymond stated, “So long as Canada holds all the power and defines how and when First Nations can participate in assessments of projects that directly affect our lands and territory, they are not meeting their moral, legal and constitutional obligations to protect Indigenous rights and interests” (CELA, 2021). In solidarity with broader Indigenous movements, Kebaowek First Nation called on First Nations across Turtle Island to join their effort to decolonize Canada’s impact assessment process and hold the federal government accountable to the principles of United Nations Declaration on the Rights of Indigenous Peoples (CELA, 2021). The case study examined in this research analyzes how KFN’s Indigenous-led Impact Assessment of the proposed NSDF affected decision-making of the project.

Generally, project proponents seek social license for projects going through an impact assessment process. Social license refers to the informal, non-legally binding acceptance of industrial projects—especially extractive and waste siting projects—by local communities, stakeholders, and rights holders. A concept originally developed in the forestry sector, social license is now a key consideration in industries such as mining, energy infrastructure, aquaculture, and renewable energy (Edwards et al., 2016; Mather and Fanning, 2019; O'Brien and Hipel, 2016). Companies pursue social license to mitigate delays, protests, and reputational damage, all of which can derail operations despite compliance with legal requirements (Joyce and Thomson, 2000; Thomson and Boutilier, 2011). However, social license is inherently subjective, impossible to measure, and frequently criticized as a corporate tool that can obscure real community concerns (Hitch et al., 2020; Owen and Kemp, 2013). Especially in Canada, where Indigenous communities continue to grapple with the legacies of colonialism, the pursuit of social license must go beyond performative actions and engage with local histories and realities, power dynamics, and justice (The Truth and Reconciliation Commission of Canada, 2015).

Recent research analyzing several Canadian mine sites highlights how social license is context-specific and deeply interwoven with Indigenous rights and social justice (Collins and Kumral, 2021). Each community affected by mining projects has its own cultural and historical background, and many use the same territories for subsistence, cultural, and spiritual purposes (Royal Canadian Geographical Society, 2018). The NSDF proposal, as will be detailed in Chapter Three, illustrates some of the consequences of proceeding without full community approval, which can range from complete project rejection to significant delays. Mechanisms like Impact and Benefit Agreements (IBAs), which are contracts between project proponents and affected First Nations, are often used as a tool to signify alignment of development benefits with community needs, offering economic opportunities and some degree of self-determination (Caine and Krogman, 2010; Bradshaw and McElroy, 2014). However, these agreements are confidential and do not guarantee equitable outcomes, making it difficult for communities to learn from each other or ensure broad-based benefit distribution (Szablowski, 2019; Fidler and Hitch, 2007). In addition, IBAs are often used to signal the consent of potentially impacted communities (Scott, 2020), and in chapters three and four of this dissertation, I will show that there are fundamental discrepancies between what can be considered social license and consent (regardless of whether a contract was signed). Despite their limitations, IBAs represent one potential pathway toward reconciling development with Indigenous self-determination and can potentially contribute incrementally to the long-term goals of social and Indigenous justice.

Regulatory processes rarely s social license explicitly, and although permitting includes consultation, final decisions ultimately rest on legal and technical criteria. Moreover, Environmental Impact Assessment (EIA) reports often omit clear indicators of community satisfaction or dissent. For example, in the case of the Meadowbank mine in Nunavut, communities accepted IBAs and secured economic benefits while still experiencing high levels of social distress (Bernauer, 2012). Furthermore, parallels in extractive contexts that can be applied in nuclear waste siting contexts, like issues related to poor mine closure planning, have led to serious environmental and health impacts in the past and underscore the need for long-term alignment between project outcomes and community expectations (Keeling and Sandlos, 2016). Questions related to how avenues for public participation may influence consent and social license in impact assessment and regulatory processes are central to this dissertation and will be examined in chapters three and four.

Tracing Opposition in the Nuclear Fuel Chain

The analysis in this section considers wastes from a Discard Studies perspective and will highlight selected examples of opposition of the most contentious aspects of the nuclear fuel chain. The "nuclear fuel chain" is intentional terminology used in favour of what is commonly referred to as the "nuclear fuel cycle" to highlight that there is an *end* of the chain (i.e., radioactive waste that needs to be managed) rather than a "cycle", which infers a circular model inclusive of recycling that relinquishes the issue of waste (Stanley, 2008). Discard Studies is an emerging field that examines constructions of what we consider as waste. In their namesake book, *Discard Studies* (2022), Max Liboiron and Josh Lepawsky make the argument that social, political, and economic systems maintain power by discarding certain people, places, and things. Though the vignettes below are limited to one example of how discards are situated within each level of the nuclear fuel chain, there are many more examples of opposing the impacts of nuclear in Canada, particularly in terms of uranium mining (see for example Anna Stanley's doctoral dissertation [2006], and foundational works [2005] and [2008] on the topic) and waste siting. These examples below intend to contextualize the broader relationship between communities impacted by nuclear infrastructures throughout time to inform the analysis of opposition and consent in later chapters of the dissertation.

Uranium Mining: Baker Lake (Nunavut)

Since the late 1960s, exploration for uranium mining near Baker Lake, Nunavut, has exemplified the extractive pressures imposed on Inuit lands by state and corporate interests, reinforcing colonial structures of resource governance. The struggle against uranium mining in the region has been ongoing for decades, shaped by both legal contestation and grassroots resistance. A pivotal moment in this struggle was *Hamlet of Baker Lake v. Canada* (1979), where Inuit—represented by the Hamlet of Baker Lake, the local Hunters and Trappers Organization, and Inuit Tapirisat of Canada—challenged the Canadian government's authority to grant mining permits on their traditional lands, arguing that exploration disrupted caribou herds and violated their inherent hunting rights (Bernauer, 2010, p.12; Tartak et al., 2019). Although the Federal Court acknowledged the existence of Aboriginal title in the region for the first time, it ultimately upheld state control over resource development, permitting exploration to proceed after a temporary injunction (Bernauer, 2010, p.12; Tartak et al., 2019). This ruling reinforced the limitations of legal recognition within settler-colonial frameworks, where Indigenous land claims are acknowledged, but remain subordinated to extractive imperatives.

Resistance to uranium extraction persists in Baker Lake, driven by concerns over environmental degradation, threats to caribou habitat, and the broader implications of resource extraction on Inuit self-determination (Scottie et al., 2022). Moreover, opposition to uranium mining—much like resistance to radioactive waste siting—stems from concerns that such projects “open the door” to expanded nuclear development. Highlighting this logic, Inuk Joan Scottie is quoted stating, “AREVA has made it clear that their intent is to open the region, and the territory, to as much uranium mining as possible. If we open this door we can never close it again” (quoted in Bernauer, 2010, p.5). In the late 1980s, a German-led proposal to mine the Kiggavik deposit was defeated by a coalition of Inuit organizations and community activists, demonstrating the capacity of local resistance to challenge transnational capital. In 1990, Baker Lake residents overwhelmingly rejected the Kiggavik project in a municipal plebiscite, with 90.2% of voters opposing the mine (Bernauer, 2012). Despite this longstanding opposition, and despite an Inuit-led uranium mining moratorium following the Nunavut Land Claims Agreement signed in 1993, uranium extraction remains a site of struggle, as evidenced by the renewed efforts of AREVA, a French state-owned multinational, to develop the Kiggavik mine (Scottie et al., 2022, p.125). The proposed site—located 80 kilometers west of Baker Lake, upstream from the community’s water supply, and within critical caribou habitat—illustrates the enduring tensions between Inuit land-based livelihoods and the logics of capitalist extraction. If it had been approved, Kiggavik would have been Nunavut’s first uranium mine and the first globally to operate in continuous permafrost, a fact that underscores the intensification of resource frontiers in the Arctic (Bernauer, 2012). As a result of persistent Inuit opposition, however, AREVA’s proposal was rejected. Like previous attempts at uranium extraction, the persistent reach for resources on Indigenous land reflects the entanglement of state, corporate, and settler-colonial interests in governing resources. Ongoing Inuit resistance to uranium mining exemplifies the range of factors that must be considered when analyzing opposition to nuclear energy.

Processing Uranium: Serpent River First Nation (Ontario)

Leanne Leddy is an Anishinaabe Kwe and author of *Serpent River Resurgence: Confronting Uranium Mining at Elliot Lake* (2022). Leddy tells the story of resistance to uranium mining, and the harms to land, homes, bodies, and community from the perspective of both a community member and a historian. The community still faces the lingering effects of a sulphuric acid plant that was built in the middle of the reserve in 1957 to process uranium from the mines. The plant shut down in 1963, but the first attempt to clean up the site wasn't until the summer of 1969, when the Royal Canadian Engineers performed "Exercise Powder Serpent," where a squadron of 110 people blew up the buildings and left the refuse and toxic waste to sit there for another two decades. Because of strong, determined community initiatives in bureaucratic channels and direct action, the waste resulting from "Exercise Powder Serpent" sat on the side of the Trans-Canada Highway for more than a year until just before Canada Day long weekend in 1988 the community set fire to the toxic waste. The rotten egg smell, irritation to noses and throats of settlers and tourists was enough to catch the attention of governments (Leddy, 2022, p.194-197). Before the waste was deliberately set fire, on hot days it would spontaneously combust, and community members endured these same hazards. That summer, the federal government provided $5.8 million in funding to remove the debris—a direct response to the community's relentless activism (Leddy, 2023). Though the last mines closed in the 1990s, the "tailings management areas" and watershed in SRFN require perpetual monitoring. While uranium mining is often considered in partnership with waste siting and nuclear militarism as the three central aspects of the nuclear fuel chain that face resistance, Leddy illustrates how not only the mining, but processing of uranium causes disproportionate harm to communities and enacts elements of slow violence.

Disposal: Kebaowek First Nation (Québec)

In January 2024, the CNSC approved the development of a NSDF adjacent to the Kichi Sibi pursuant to the *Canadian Environmental Assessment Act*[5] and the *Nuclear Safety and Control Act*[6] (CNSC, 2024). This decision disregards the explicit opposition of 10 out of 11 Algonquin communities whose unceded territories encompass the site (Tanguay, 2024). The continued imposition of hazardous infrastructure on Indigenous lands is symptomatic of a broader pattern of settler-colonial environmental governance (Whyte, 2018). The NSDF is designed to accommodate the legacy of radioactive waste that has been categorized by Canadian Nuclear Laboratories (CNL) as "low-level," though this has been disputed (Tanguay, 2023).

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[5] Canadian Environmental Assessment Act, SC 2012, c 19, s 52.
[6] Nuclear Safety and Control Act, SC 1997 c 9.

Although Canada ratified the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and passed the UNDRIP Act in 2021, the CNSC continues to operate in defiance of Article 29.2, which mandates that "no storage or disposal of hazardous materials shall take place in the lands or territories of Indigenous peoples without their free, prior and informed consent"[7] (United Nations, 2007). Kebaowek First Nation (KFN) and Kitigan Zibi Anishinabeg (KZA) conducted an Indigenous-led impact assessment, which document the socio-ecological consequences of the project (Kebaowek First Nation, 2023). The findings of the assessment point to irreversible harm, including dispossessing communities from access to sacred sites Oiseau Rock and Pointe au Baptême, radionuclide contamination of walleye and sturgeon populations, and the endangerment of moose and bear habitats near Perch Creek. The relational ontologies that can be embedded in Indigenous-led assessments stand in stark contrast to the reductive, technocratic frameworks employed by the CNSC. Despite the substantive evidence presented by KFN and KZA, the CNSC failed to meaningfully engage with their concerns. During the CNSC's regulatory hearings for the NSDF licensing in 2022 and 2023, CNSC representatives neither interrogated KFN and KZA's findings from their Indigenous-led assessment, nor acknowledged the gaps in the state's environmental assessment process. As KFN's legal representative Renée Pelletier observed, "the information CNSC staff received from the First Nations wasn't going to

[7] *United Nations Declaration on the Rights of Indigenous Peoples,* GA Res. 61/295, U.N. Doc. A/61/295 (2007) art 29(2).

change anything, and this is reflected in the fact that staff did not seem concerned at all about any of the gaps that Kebaowek and Kitigan Zibi raised" (Pelletier, 2024).

KFN's opposition did not end there; in July, 2024, KFN hosted a rally on Parliament Hill in Ottawa to coincide with their appeal to the Federal Court of Canada[8], arguing that Free, Prior, and Informed Consent must be part of the regulatory process, and that the CNSC should have modified the consultation standard per the repeated requests from KFN (Bui, 2024; *Kebaowek First Nation v. Canadian Nuclear Laboratories*, 2025). While this opposition is ongoing, it is illustrative of both a response to the exclusion of Indigenous epistemologies from decision-making processes, demonstrating the ongoing colonial nature of regulatory institutions in Canada, and of the power of collective resistance. The NSDF is the central case study in this dissertation, so the evolution of resistance and procedural justice will be traced in more detail later in this chapter and throughout the dissertation. The selected examples of resistance throughout the nuclear fuel chain aim to situate the opposition of the NSDF case study within the broader context of harms that nuclear energy produces.

The following section questions the claims of nuclear energy being "green," despite the creation of radioactive wastes that will need to be guarded from the environment for a (likely) ungovernable temporal range. Next, the economic feasibility of nuclear as a climate change solution will be considered. The dissertation does not engage

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[8] Kebaowek First Nation v Canadian Nuclear Laboratories, 2025 FC 319

deeply with these questions after chapter one, but the background and context are important to support the analysis deliberated in chapters three and four.

A Nuclear Solution to Climate Change: Clean Energy or Contaminated Futures?

> Electricity is but the fleeting byproduct from atomic reactors. The actual product is forever deadly high-level radioactive waste (Kevin Kamp, 2010).

Nuclear power is frequently positioned as a key component of the green energy transition, largely on the basis that nuclear reactors (one aspect of the much broader nuclear fuel chain) produce energy with fewer greenhouse gas emissions. Yet, this framing remains deeply contested. This section engages with scholarship that promotes nuclear energy as a socialist solution to the climate crisis, and with scholarship that considers nuclear a technocratic project enabling low-carbon energy production while reproducing patterns of environmental injustice. Nuclear energy has only recently been recast as an environmentally-friendly technology—an idea that, just three decades ago, would have got you "laughed out of a room" (Ramana, 2024). This discursive shift underscores a key constructivist insight: the category of "green energy" is not fixed but socially produced, shaped by powerful political and industrial interests. While nuclear indeed produces energy with low-carbon emissions, it is not without risks; there is a tradeoff required to accept nuclear energy as the solution to climate change and climate justice. 'Carbon tunnel vision' is a useful concept that understands while decarbonization is crucial, it should not come at the expense of ignoring other sustainability goals (SEI, 2022; Deivanayagam, 2023). In a key consideration toward a 'just transition' should be to ensure that technological approaches toward decarbonization and tempering the climate crisis do not exacerbate environmental injustice as an externality.

Advocates for nuclear—including state actors and tech-billionaire investors—promote nuclear power as an essential green energy source, yet this framing selectively obscures the broader material realities of the nuclear fuel cycle, requiring the concept of nuclear waste to be divorced from the concept of nuclear energy (Ramana, 2024; Durant 2009; Durant and Stanley, 2009). Beyond the waste, contamination from uranium mining, reactor accidents, and nuclear proliferation risks remain central concerns, raising critical environmental justice questions about the long-term social and ecological costs of nuclear expansion. The “green” energy label masks the embedded inequalities and distributional conflicts that shape nuclear’s political economy.

Each stage of the nuclear fuel chain—from mining to waste storage—creates long-lasting environmental risks. Radioactive waste remains hazardous for hundreds of thousands of years, with no demonstrated safe long-term solution for its management (Ramana, 2024). The absence of direct CO_2 emissions during reactor operation does little to mitigate these structural risks, which accumulate as intergenerational burdens. Mark Winfield similarly argues that positioning nuclear as a solution to the climate crisis risks reproducing a familiar pattern: substituting one long-term crisis (climate change) with another (nuclear waste), rather than addressing the underlying logics of environmental harm (Chown Oved, 2023).

There are credible scholarly arguments that advance nuclear energy from socialist and climate justice perspectives. For example, Matthew Huber (2022) argues that despite valid concerns about nuclear with regards to cost and environmental safety, nuclear energy forms a basis of working-class power (p.251). In a 2023 article, Matt Huber and Fred Stafford argue for the inclusion of nuclear power within a socialist framework for electricity generation, emphasizing its reliability and capacity for large-scale, centralized energy production. They critique the environmental left's reliance on market-based renewables, which they see as contributing to deregulation and grid instability. Instead, they advocate for public ownership and democratic planning of the electricity sector, viewing energy as a public good that should be equitably provisioned. The authors also highlight the importance of a labor-centric approach, suggesting that public control of energy infrastructure can better align with workers' rights and job security. Critically, they position nuclear essential toward the transition to a just energy system, and as essential to creating a decarbonized and reliable overhaul of the electricity grid. Similarly, Leigh Phillips (2024) argues that nuclear energy is a crucial and efficient component of Canada's decarbonization strategy because of its minimal land-use footprint compared to renewable sources like wind and solar. Phillips asserts that, given the significant land and ecological impacts associated with large-scale renewable energy infrastructure, nuclear power offers a more sustainable and less disruptive path toward achieving net-zero emissions while preserving biodiversity (Phillips, 2024). However, a critique of Leigh Phillips is that his brand of 'productivist Marxism' fails to engage with how resource extraction in under-developed parts of the world is part and parcel with relations of uneven ecological exchange and imperialism.

Scholars have challenged Huber and Stafford's position, arguing that that nuclear power remains problematic due to its unresolved ties to militarism, waste issues, and its association with conservative, centralized visions of socialism, while also critiquing Huber and Stafford for overlooking the growing trend toward decentralized electricity systems. Instead of reviving pro-nuclear arguments, these scholars say that focus should be on how socialism can democratize control over emerging energy technologies like renewables, challenging capital, and correcting misrepresentations of energy history (Pirani, 2024). At its core, this debate raises fundamental ethical and political dilemmas. Can nuclear power be meaningfully categorized as 'environmentally friendly' if its waste legacies pose profound risks for future generations? And if nuclear expansion is pursued under the pretense of climate mitigation, what forms of environmental governance, social struggle, and policy intervention become necessary to address its material consequences?

Piling on the Problems: The Cost of "Green" Energy

Assessing the question of nuclear energy as a climate solution that justifies the intergenerational burden of its waste raises further questions regarding the economic feasibility of scaling up nuclear fleets, and the safety of relicensing what were supposed to be decommissioned reactors. The renewed commitment to nuclear power in Canada and Ontario reflects a broader geopolitical and infrastructural vision of energy sovereignty, and is bound by enduring economic, environmental, and temporal contradictions. Ontario's historical trajectory of nuclear development—punctuated by cost overruns and infrastructural debt—foregrounds the financial precarity of nuclear expansion. For example, the Darlington nuclear station was completed at approximately $14.4 billion, nearly three times its initial budget, a financial burden ultimately transferred onto ratepayers (Winfield, 2024). This section questions the feasibility of scaling up nuclear energy as the solution toward a just energy transition.

The pattern of going overbudget described above is neither uncommon nor strictly regional. Sovacool et al. (2014) document that nuclear projects globally exhibit average cost overruns of 117% and take on average 64% longer than expected, figures that contrast with the economic efficiency of renewable infrastructures such as wind and solar. The ontology of nuclear landscapes entangles energy policy with historical trajectories of state intervention, industry lobbying, and intergenerational debt (Ramana, 2023). That nuclear remains financially untenable in competitive energy markets underscores its reliance on state underwriting, an arrangement that extends beyond the political economy of energy and into the material, temporal, and affective landscapes of infrastructural governance.[9]

Beyond the immediate calculative logics of investment and return, nuclear energy's infrastructural reality implicates questions of territorial governance, waste futurity, and uneven geographies of risk. Winfield (2023) posits that nuclear power "fails every other test of sustainability," a critique that extends beyond cost to the long temporality of radioactive waste and the uneven geographies of sacrifice zones. While proponents frame nuclear as indispensable to a net-zero transition (see, for example, Huber, 2022; Phillips, 2024), such narratives ignore the political economy that defines nuclear landscapes, where the promise of technological progress confronts realities of debt, futurities of waste, and dispossession (Schneider & Froggatt, 2022). The financial burden of Ontario's nuclear expansion, projected to exceed $100 billion in refurbishment costs alone, reinforces a structural dependency on public funds, even as the declining costs of wind and solar render nuclear increasingly antiquated (Froese et al., 2020). Small Modular Reactors (SMRs), for example, have recently been suggested as a solution to energy insecurity in remote, off-grid geographies, including remote Indigenous-communities currently

[9] In this context, state underwriting refers to the financial and policy mechanisms through which the government assumes significant economic responsibility for the nuclear sector, and in turn promotes nuclear because it would not effectively compete with market-driven energy systems.

relying on diesel, and even to power remote mines and pipeline infrastructures (Farrar & Tucker, 2023; Thomson, 2021). The very logics of SMRs, touted as a corrective to large-scale nuclear's economic failures, unravel under scrutiny; their diminished scale undercuts the economies of production that defined nuclear's initial infrastructural promise, while their projected costs remain misaligned with renewable alternatives (Ramana & Blaise, 2024). Aside from the economic concerns about the feasibility of SMRs, there also remains the under-discussed question of waste. SMRs produce high levels of high-level radioactive waste (compared to conventional reactors) and add to the already contested questions of transporting, storing, and disposing of waste, particularly given the proposals to be situate SMRs in remote locations (Schwartz, 2022). The ongoing reinvestment in nuclear, situated within the broader material and financial frameworks of energy transition, requires a careful consideration of its intergenerational burdens, of economic feasibility, and the enduring associated risks.

Outline of the Dissertation

The **first chapter** of this dissertation provided a brief introduction to my motivations and methods, background context on resistance to aspects of the nuclear fuel chain because of contamination, or risks of contamination, and highlighted central debates that question whether nuclear is a viable energy solution to mitigate the climate crisis. In the remainder of the dissertation, I will build an argument that reaching consent is a necessary task in siting any radioactive waste. A "consent" process is not a series of procedural or administrative steps, but a sustainable determination that must consider the legitimacy of public participation processes. Ideally, the work done to disentangle the barriers and interest in consent for a DGR will offer a framework that can be applied to other waste sites, including the NSDF, and ultimately be scaled up to all aspects of the nuclear fuel chain, including uranium mining, radioactive waste transportation, and beyond to broader extractive infrastructures.

Chapter Two provides an overview of key concepts that inform the analysis of empirical data in the dissertation. The chapter outlines my theoretical framework and examine how literatures engaging with legitimacy, critical infrastructures and infrastructural violence, settler/nuclear colonialism, and environmental justice inform my analysis of nuclear development and constructions and applications of consent. I explore how legitimacy, both political and epistemic, has been constructed to justify nuclear expansion and its produced wastes, often reinforcing systemic inequalities. Militarism and Nuclearization are concepts used to explore how patterns of environmental injustice are spatially patterned through the idea of certain spaces as "wastelands," contributing to intra- and inter-generational exposures to slow violence. The question of becoming a 'nuclear community' helps to address the social and cultural dimensions that influence participation and decision-making relevant to proposed new nuclear infrastructures, from new nuclear technologies to radioactive waste sites. Social license is examined to determine if these consultation and environmental impact assessment processes drive public acceptance of a project, or function as a tool to suppress opposition. Finally, Indigenous-led Impact Assessments and legal pluralism are explored as opportunities to create more robust regulatory frameworks for siting nuclear waste infrastructures, and ideally, processes that can lead to 'genuine consent.'

Chapter Three situates Chalk River within a transnational analysis of nuclear dispossession and examines how the burdens of nuclear development are disproportionately borne by Indigenous and marginalized communities across the globe. The chapter traces parallels between Canada's nuclearization of Algonquin territory and nuclear injustices in the Marshall Islands, where U.S. nuclear weapons testing left a legacy of radiation exposure; Japan, where the Fukushima disaster continues to shape public debates on nuclear governance; Ukraine, where the remnants of Chernobyl highlight the long temporalities of nuclear contamination; and Serpent River First Nation, back in Canada, where uranium mining and processing has left lasting health and environmental consequences. By linking these geographies, this chapter highlights how nuclear governance is deeply embedded in colonial logics of resource extraction, militarism, environmental sacrifice, and dispossession. I then examine historical and contemporary nuclear praxis, showing how Cold War-era policies continue to shape power asymmetries and environmental injustice, and trace how narratives of security and progress beginning in the Cold War era have sustained practices of nuclear colonialism. This chapter shows how entangled histories of nuclear and settler colonialism shape the uneven distribution of harm in nuclear industries across generations.

Chapter Four examines how the NSDF, a proposed nuclear waste disposal site intended to house one million cubic meters of low-level radioactive waste, has been framed by proponents—including AECL and CNL—as a necessary step in Canada's nuclear legacy. Yet, for the Algonquin Anishinaabeg, the NSDF represents another iteration of settler colonial environmental violence: a project justified in the language of risk management but one that reifies Canada’s long-standing practice of siting hazardous infrastructures on Indigenous lands without meaningful consent.

This chapter demonstrates how characterizing nuclear risk is socially produced, with specific attention to the ways in which regulatory processes—such as those overseen by the CNSC—prioritize technocratic expertise over Indigenous knowledge and governance. This chapter also examines claims that the CNSC as a captured regulator, and the role of state trust in gaining social license in nuclear waste siting. The logic here follows Morales and Nicols (2018), who suggest that the state's limited willingness to legitimize true nation-to-nation relationships with Indigenous peoples is constrained by an assumption of Crown sovereignty, revealing the failure of reconciliation efforts to move beyond symbolic gestures. This tension is represented by the legal challenges of the NSDF which underscore the ways in which the project is emblematic of Canada’s broader refusal to recognize Indigenous jurisdiction over land and resources. Kebaowek First Nation, along with other Algonquin communities, challenged the project on multiple fronts, including through judicial review applications arguing that the CNSC failed to uphold its duty to consult under Section 35 of the Constitution Act, 1982.

Additionally, concerns regarding the NSDF’s proximity to the Ottawa River have been central to opposition efforts, with critics arguing that the CNSC’s approval process dismissed long-term ecological risks identified in Kebaowek First Nation and Kitigan Zibi Anishinabeg’s Indigenous-led Assessment in favor of CNL’s assessment. This chapter also incorporates analysis informed by key informant interviews and observations from community-led groups created to increase participation in the proposed siting. These perspectives provide critical insights into how affected communities understand and resist nuclear governance, offering a counterpoint to the dominant narratives of risk management and technological necessity. Through this engagement, the chapter foregrounds the lived experiences of those most directly impacted by nuclear dispossession and environmental harm, further illustrating the entanglements of nuclear policy, colonialism, and Indigenous resistance.

Chapter Five interrogates the ideological and practical function of the "willing host" model, situating it within broader settler-colonial mechanisms of securing consent in extractive contexts. Industry and state actors present this model as a modern participatory framework that respects community decision-making, yet my analysis reveals how it operates primarily as a technique of governance that precludes meaningful Indigenous self-determination. The register in which the NWMO speaks of consent—positioning it as voluntary, democratic, and procedurally fair—masks an underlying asymmetry: the presumption that Canada has the ultimate authority over nuclear waste disposal. For example, in June 2024, CNL was telling members of the Environmental Stewardship Council that a "willing host" would be secured by the end of the year, before either of the two remaining municipalities considering their willingness had taken a vote. This chapter assesses whether the "willing host" model provides avenues to genuinely provide or withhold consent, or whether it merely manufactures legitimacy for a decision already made. In this chapter I also question, when it comes to assuming the characterization of the "host," how are proximate, equally burdened by risk communities in/excluded?

Overall, this chapter situates the “willing host” model within a genealogy of extractive industry tactics that manufacture agreement to sustain the legitimacy of projects with contested social, environmental, and rights-based implications. Consent, in this context, functions not as a simple expression of community will (but as a strategic intervention to guarantee access). The historical record of fossil fuel and mining projects in Canada—ranging from mutual benefit agreements (MBAs) in the Trans Mountain Expansion (TMX) to the co-optation of consultation processes in liquefied natural gas (LNG) projects—demonstrates how settler-state and corporate actors produce a veneer of consent, so-often through consultation, while precluding Indigenous veto power (Thornley, 2023). Similarly, the NWMO mobilizes discourses of partnership and benefit-sharing to obscure the underlying structure of settler sovereignty that makes such agreements necessary in the first place (NWMO, 2023). This chapter critically engages with legal documents, policy frameworks, media discourse, and observations from participation in community groups to analyze how consent is framed, operationalized, and contested in nuclear waste governance. Rather than resolving conflicts over land and jurisdiction, the “willing host” model ultimately reveals the contradictions of settler-colonial governance: the simultaneous need to secure legitimacy for energy infrastructure projects (including nuclear infrastructure, pipelines, and sites of extraction) and the persistent inability to fully contain resistance.

Chapter Six synthesizes the key research findings, demonstrating how nuclear governance frameworks actively shape, constrain, and operationalize consent in ways that reinforce existing power asymmetries. It highlights the study’s theoretical contributions to critical geography and environmental justice literatures, showing how consent is not merely a procedural step but a constructed and contested mechanism within nuclear regulatory frameworks. The chapter underscores the practical implications of these findings for policy and decision-making, particularly in relation to Indigenous consultation, regulatory accountability, and the broader legitimacy of nuclear waste siting processes. Finally, it outlines future directions for research, emphasizing the need to critically interrogate where and how consent models are employed, and how they are operationalized across nuclear governance structures, and how the option of refusal must be a characteristic and consideration that shapes decision-making. Finally, I explore alternative approaches that prioritize transparency, equity, and genuine community participation. Ultimately, this chapter reinforces the broader implications of the study, showing how nuclear governance does not simply engage with consent but actively produces and delimits its meaning and scope.

The overarching goal of this research is to examine the intersection of nuclear governance, settler colonialism, and environmental justice by investigating how nuclear waste infrastructure is sited, contested, and justified, particularly on Indigenous lands. Through the case study of Chalk River Laboratories (CRL) and broader struggles over nuclear waste disposal, the research interrogates the uneven distribution of environmental risks, the regulatory frameworks that structure inclusion and exclusion in decision-making, and the political-economic forces driving nuclear expansion. By critically analyzing how consent-seeking is operationalized through the "willing host" model, the study reveals how settler-state governance perpetuates nuclearization in ways that disproportionately impact Indigenous and marginalized communities, reinforcing patterns of dispossession and environmental harm.

Chapter Two:

Conceptual Mapping of Nuclear Colonialism

Nuclear colonialism refers to a system of power in which governments and corporations disproportionately impact Indigenous peoples and their territories in order to sustain the nuclear production cycle (Endres, 2009). Valerie Kuletz (1998) used the term nuclear colonialism to situate the emergent nuclear landscape in the American Southwest within the broader history of U.S. colonialism. Similarly, Chapter Three is largely framed around contextualizing nuclear colonialism in Chalk River within the broader histories of colonialism in Canada and Cold War colonialism. The remainder of this chapter will trace key concepts that help to describe the processes and logic for both the nuclear industry (whose interest is in continued production of nuclear energy and its wastes) and the groups opposing nuclear energy infrastructures. Leona Morgan (Diné/Navajo) described the wastes left over by the nuclear fuel chain as not only contemporary dispossession, but future theft: "Colonization isn't just the theft and assimilation of our lands and people, today we're fighting against nuclear colonialism which is the theft of our future" (quoted in Rudy, 2016). This, too, will be a pattern that is raised through the study's examination of temporal justice in the creation and siting of nuclear waste.

Nuclear Militarism

Nuclear militarism is used to describe nuclear activities related to aspects of war (nuclear bombs, nuclear tests, and even the creation of Chalk River Laboratories as a research site that contributed to the Manhattan Project to produce the world's first nuclear bombs). Nuclear militarism is expressed in the dissertation in selected vignettes that illustrate the devastating impacts of nuclear technology used in warfare. Vagts (1959) describes militarization as the spread of militarism, claiming that although the military is limited in scope, “militarism...involves an array of customs, actions, and thinking associated with war but that transcend true military purposes...” (Vagts, as cited in Fritz, 2010, p.13). Vagts warns that, “militarism’s influence is unlimited in scope. It may permeate all society and become dominant overall industry and arts display[ing] the qualities of cast and cult, authority, and belief (Vagts, as cited in Fritz, 2010, p.13).” In line with this definition, Farish (2010) details the pervasiveness of the subtle aspects of militarization in popular culture, including Disney’s *Tomorrowland* exhibit, and the film *Our Friend the Atom*, which sought to exemplify the optimism of nuclear science. Nuclear technologies enabled mass destruction, but the wartime technologies and systems of complex logistics were also creating jobs in all fields, promoting the viewpoint that America was close to “the ideal of prosperity for all in a classless society” (Farish, 2010, p.46). The militarization of U.S. and Canadian societies during the Cold War required the belief in capitalism as a system that would define not only aspects of the economy, but also individualistic freedoms and relations among the home, culture, and society. In this sense, the ubiquity and subtlety of military propaganda created the “cast and cult” dynamic, accustoming the availability of technologies derived as an externality of military research and industrialization. When militarism, like nuclear, is not associated with bloodshed or battle, but instead associated with freedoms, consumer goods, nationalistic pride, and jobs, it drives the tendency for many people, to be pro-military (or pro-nuclear) but anti-war (Fritz, 2010, p.309).

Wastelands

The perspective that posits marginalized lands as “frontiers” or “wastelands” will be utilized as a framework to understand why and how certain lands or places are designated by the state as open to extraction or defense development. Wastelanding discourse is followed by Valerie Kuletz’s work *The Tainted Desert* (1998) and Traci Brynne Voyles’ *Wastelanding* (2015). Voyles builds on Kuletz’s argument that “barren” land, unvalued as-is by Euro-American worldviews, leaves the land yearning for commodification by destructive industries, such as extractive infrastructures and military projects. The presumption of “barren” is associated with unsettled landscapes, a challenge that is met with modernity; energy infrastructures like dams avail water to otherwise deserted landscapes. Voyles (2015) explore how deserted landscapes that had been proclaimed “empty except for Indians” are utilized by settlers for nuclear activities; this feeds meaningfully into my analysis of the “predetermined” nuclear waste siting at Chalk River Laboratories, which is situated in a geography in vast contrast from desert, described as being “hacked out of the bush” (Krenz, 2004, p.22) The location was chosen because of its proximity to the cooling water source of the Ottawa River, and remoteness from centres of population—Indigenous communities, however, did live on and use the land that was expropriated by the Canadian government for the secretive Chalk River project, and were displaced from their cabins without consent to accommodate the gated, guarded infrastructures built for employee housing and nuclear projects (Krenz, 2004, pp. 14–19). Virginia Adams Hunt, one of the inhabitants of the cabins in “Indian Village” (as it was known pre-Chalk River Laboratories construction) disrupts the conception of Deep River being built on a frontier, writing in a North Renfrew Times reflective series titled, *River of Time,* “…Deep River was not born from a virgin forest. It was built from the ashes of homes and the heartbreak and tears of very dear people" (Adams Hunt, 2020).

Moreover, Voyles (2015) reflects on how the Federal government's plan to solve the "Navajo problem" was to commit a mass slaughter of Diné sheep, goats, cows, and horses to actively assimilate and settle Navajo land-use (p. 28). The Chalk River case study will build on the parallels between Kuletz and Voyles' conceptualizations of "wastelands," and will consider how the demographics and ecology in Chalk River influence settler perceptions of the region as a "wasteland," primed for the creation and storage of radioactive wastes.

Nuclearity and the Nuclear Community

Nuclearity is a term introduced by Gabrielle Hecht (2012) to "signal how places, objects, or hazards get designated as "nuclear" has often been contentious. Designating something as nuclear—whether in technoscientific, political, or medical terms—carries high stakes" (p.19). Pitkanen and Farish (2018) add that Hecht's concept of nuclearity establishes it as "profoundly spatial in its uneven distribution and consequences (p.862). Nuclear communities are described by Alexis-Martin and Davis (2017) through their initial emergence in the field of disaster risk reduction, particularly following the 1986 Chernobyl nuclear disaster (see also McKeown, 2003; Meyer, 1996; Petryna, 2013). The term nuclearity highlights the distinction between technical experts and the local population, with non-experts often perceived as passive recipients who needed to be informed of the "correct" facts about nuclear energy (Eden, 1998; Irwin, 2013).

Deep River, Ontario, where Chalk River Laboratories is situated, fits within the definition of a "nuclear community." The settlement of Deep River reflects the creation of an enclave within a frontier. Frontiers are imagined as spaces simultaneously "empty but full" --empty of established settlement and 'legitimate' governance, but full of valuable resources ripe for exploitation (Côte & Korf, 2016). In Deep River's case, however, the material resource sought was freshwater, but the real value was in obscurity itself: a secluded, private location with abundant freshwater to serve the needs of a (at the time largely secret) nuclear research facility. As with many extractive frontiers, the infrastructure that emerged around Deep River introduced conditions of infrastructural violence. Appel (2012) defines this form of violence through its patterns of exclusion and detachment, emphasizing that "violence is redoubled by the work of disentanglement, the work to abdicate responsibility for those forms of violence" (p. 442). Deep River's infrastructure was designed to support the research station and operated not just as a means of service provision, but also as a mechanism of isolation and social stratification.

Deep River's initial population was 4,300 and has remained relatively stable. The town was exclusively composed of imported employees from the Chalk River laboratories and a small, imported workforce to support them. As one observer described in 1958:

> "Tucked into a clearing on the shore of the Ottawa River in isolated lumbering country a hundred miles southeast of North Bay, the settlement looks like a metropolitan suburb. But it is a suburb without a city. Its sixteen miles of asphalt terminate abruptly at a barrier of virgin jack pine" (Newman, 1958).

This portrayal underscores the intentionality of the town's design—an enclave constructed to host a particular kind of settler-technocratic life. In their leisure time, the town's scientists created a rich internal culture, establishing "sixty-eight clubs and associations, whose members, among other things, blow glass, chant medieval madrigals, and measure the crawl velocity of snails.” (Newman, 1958). The town center was located in a clearing that displaced an Algonquin First Nations camp to contain shops, a thirty-two-bed hospital, four schools, and twenty recreational buildings. Urban design choices, such as keyhole-shaped streets meant to slow traffic, reinforced the sense of a controlled, self-sufficient community. Even the street names (for ex., Newton Crescent, Rutherford Avenue, and Faraday Street) reflected the residents' deep identification with science (Newman, 1958).

Like in most organized settler societies, social stratification was embedded within the community. As Newman (1958) noted, “...there’s a class element in every society and at Deep River it shows up during the morning coffee parties. The wives of the scientists rarely invite the wives of technicians.” This observation highlights the hierarchies that structured life in the enclave. Deep River’s physical and cultural infrastructure promoted a cohesive scientific identity, while also generating forms of exclusion, both in relation to the surrounding Indigenous territories and within the settler community itself. Like the population size, this too has remained fairly consistent.

Moreover, the small village continues to host a disproportionate amount of knowledge and expertise as compared to the surrounding areas of the Ottawa Valley. Like other communities in this context, a “deficit” model of public understanding prevailed—one that frequently overlooked or marginalized local knowledge and perspectives (Stanley, 2008; Eden, 1998; Irwin, 2013). The notion of expertise was particularly scrutinized by Wynne (1996), who examined the lay-expert divide in the context of nuclear contamination in rural areas. Wynne’s research revealed how scientists disregarded the insights of sheep farmers affected by radioactive fallout, even though these farmers had developed their own valuable, experience-based understanding of radiation (on local experiences with radiation see also Laura Pitkanen's [2017] work documenting the in-situ dispossession within Port Hope, ON, where both nuclear communities and nuclear homes are contended with). Marissa Bell conducted fieldwork in Bruce County, Ontario, and observed the self-qualification of "nuclear community" emerged frequently throughout her time in the region, describing connections related largely to social networks, economic stability, responsibility, and pride (Bell, 2024). I am interested in how the concept (or stigma) of becoming a "nuclear community" influences public responses to nuclear infrastructure proposals, and how public perception of nuclear (relating to safety, and benefit) evolves in existing "nuclear communities."

Environmental Justice

Grounded in an environmental justice framework, this research builds on a body of scholarship that documents the disproportionate siting of waste facilities and exposure to environmental toxins in marginalized communities, articulated in early iterations of environmental justice in Robert Bullard's foundational *Dumping in Dixie* (1990). The position that I take accepts as a starting point that economically, geographically, or racially marginalized communities often bear the burden and receive little benefit from military and extractive projects. These megaprojects are detrimental to human and environmental health and community well-being but are economically lucrative to specific industrial interests backed by the state, as described in the contemporary Canadian nuclear fuel chain context in Lianne Leddy's *Serpent River Resurgence* (2022).

The central case study in this dissertation, the proposed NSDF at Chalk River Laboratories, will illustrate how the environmental history and toxic legacies in the area are a result of planning, and not coincidence, adding to documentation that characterizes patterns of environmental injustice in the Canadian context. Documenting the environmental impacts of waste from uranium mining, while recognizing who is most impacted by the tainted landscapes and analyzing the disparate impacts to white and marginalized (typically Indigenous) workers in uranium mining will provide a central foundation to the characteristics of environmental injustice of nuclear energy; there can be no nuclear energy without uranium mining, and uranium mining requires sacrificial bodies and lands (see Mellor, 2018; Malin, 2015; Harding, 2007). Environmental justice literatures, particularly those situated in analyzing the implications of legacy wastes and contamination in extractive contexts (see Keeling & Sandlos, 2009; Leddy, 2022; Colbourn & Andrews Sayle, 2020) inform the analysis of licensing and regulating the nuclear fuel chain, and the examination of the implications to human and environmental health as a consequence of nuclear activities. Central to this analysis is an examination of participation and consent processes to determine what principles lead to an amplification or disempowerment opposing voices.

The anticipated impacts of climate change (for example, resource scarcity, heightened intensity, and frequency of natural disasters) are expected to generate disproportionate conditions of injustice for future generations. Acting now to mitigate the acceleration of climate change via decarbonization has been a frequent agenda item on global political deliberations (e.g., the Conference of Parties [COP] under the United Nations Framework Convention on Climate Change) and on national policy agendas (e.g., the *Canadian Net-Zero Emissions Accountability Act, 2021*) aiming to achieve a sustainable planet for future generations. While some scholars cite nuclear key to achieving decarbonization to avoid climate catastrophe (e.g., Huber, 2022), others argue it is not economically or technically feasible (e.g., Ramana, 2024; Sovacool et al., 2020) to decarbonize on a scale swiftly or in scale capable of combatting climate change. Nevertheless, Canada and the nuclear industry within it justify increased state spending toward nuclear infrastructure as a tool toward reaching net-zero (CNA, 2025c; Natural Resources Canada, 2023).

The research questions explored in this dissertation are oriented toward *intra*-environmental justice (now and onwards) while seeking to improve conditions of intergenerational justice. Here, I aim to align with Scott and Malivel (2021) who argue for a relational conception of intergenerational environmental justice, informed by feminist, decolonial, and Indigenous legal traditions to better reflect the interconnected responsibilities across generations. This can be achieved through legislative, institutional, and deliberative reforms to embed long-term, intergenerational interests in environmental governance (Scott and Malivel, 2021). The authors work critiques conventional assertions toward seeking intergenerational equity that ignore *intra*generational disparities rooted in colonialism, class, and race (see Brown Weiss, 1989), much like the nuclear industry's rhetoric, which ignores claims of nuclear colonialism in the framing of nuclear as a solution to climate justice for future generations.

The language of risk in nuclear waste management lends from a socially constructed discourse that shapes how harm is understood, spatially organized, and deferred to technoscientific solutions managed by socio-political and economic principles. The temporal nature of nuclear waste further complicates considerations of environmental (in)justice. By focusing on mitigation and control, risk discourse displaces responsibility across generations, often justifying decisions that have irreversible, long-term consequences and rely on regulatory structures we do not know will exist (Stanley, 2021). This necessary abstraction of risk is deeply entangled with the political economy of nuclear waste, particularly under the GoCo model described in Chapter Four, where state-owned facilities are managed by private multinational contractors. In this arrangement, the profits of waste management are privatized while the long-term liabilities are socialized. With this relationship at play, framing nuclear waste as a "manageable risk" legitimizes continued investment and nuclear infrastructure expansion, while masking the already-felt harms and institutional failures surrounding waste governance. The GoCo model depends on risk discourse to secure public legitimacy, and sustain a lucrative, long-term market in environmental remediation.

Critical environmental justice scholarship urges a shift away from risk as a depoliticized technical term and toward concepts like harm, exposure, and injustice, which foreground structural violence and the unequal distribution of environmental burdens (see Pulido, 2018). This reframing makes visible the ways that settler colonialism, privatization, and regulatory capture work together to offload radioactive harm onto Indigenous and marginalized communities (Stanley, 2021). Recognizing risk as a political tool, not just a scientific measure, allows us to better understand how temporal and economic logics are mobilized to legitimize projects that would otherwise be indefensible. As Stanley (2021) argues, risk management is not merely a technical practice but a political one. It functions as a mode of settler governance and a way of organizing exposure and protection that often aligns with the interests of the state and industry while erasing Indigenous sovereignty and minimizing community experience. Framing radioactive waste as a "manageable risk" rather than a form of already-existing harm detaches present policies from past violence and externalizes consequences onto those with the least power to resist them. Risk discourse, in this light, becomes a vehicle for normalizing and perpetuating harm under the guise of planning.

Slow Violence

Slow violence, as conceptualized by Rob Nixon (2011), is an attempt to address the "attritional catastrophes that overspill clear boundaries in time and space [that] are marked by displacements—temporal, geographical, rhetorical, and technological displacements that simplify violence and underestimate, in advance and in retrospect, the human and environmental costs" (p.7). Nixon cites as an example Rachel Carson's *Silent Spring* (1962), which brought to the forefront of public awareness the indiscriminate casualties of dichloro-diphenyl-trichloroethane (DDT) and the violent human and environmental impacts of nuclear testing in the Marshall Islands. Nixon contrasts slow violence with Galtung's (1969) concept of structural violence to describe how social and political systems harm people by denying them basic needs. Slow violence specifically emphasizes the environmental dimensions of injustice, but is often rooted in structural inequalities, disproportionately affecting marginalized communities who live in degraded or polluted environments. Throughout this study, the concept of slow violence is understood as enabled by structural violence and is evoked in both perception of risk that drives resistance, and the histories of impacts of nuclear colonialism and harm experienced by communities that informs opposition to nuclear infrastructures.

Infrastructural Violence Throughout the Nuclear Fuel Chain

Infrastructure plays a central role in shaping socio-spatial relations, functioning not only as a means of social provisioning and fulfilling basic human needs but also as a mechanism for capital circulation, accumulation, and geographical expansion (LaDuke & Cowen, 2020). In Canada, nuclear infrastructures are considered a “critical infrastructure,” defined by the state as essential to the health, safety, security or economic well-being of Canadians and the effective functioning of government (CNA, 2025b; PSC, 2025). The dual function of infrastructure expressed by critical geographers reveals inherent tensions: it can either serve human well-being through safe drinking water and essential services or be oriented toward profit maximization and capital accumulation. As LaDuke and Cowen (2020) observe, infrastructure is not inherently colonial but holds the potential for both transformation and harm, capable of delivering both freshwater and toxic sludge. The historical and contemporary deployment of infrastructure extends beyond material concerns, intertwining with affective and ideological dimensions. The modern proliferation of energy infrastructures like fossil fuel pipelines and nuclear infrastructures both illustrate how physical infrastructures of energy circulation are entangled with affective infrastructures (LaDuke & Cowen, 2020, p.247).

The concept of “affective infrastructure” highlights the interplay between material well-being, subjective experience, and political engagement, shaping how communities experience and respond to infrastructural developments. Bosworth (2023) clarifies that this term encompasses both the emotions generated by infrastructure and the infrastructural conditioning of affect, forming a dynamic relationship that influences collective agency. In its affirmative aspect, affective infrastructure seeks to counteract economic, technical, and ideological alienation by fostering organizational forms that enhance collective capacity to analyze and transform social conditions (Bosworth, 2023, p.67). The deep-rooted history and memory of devastation along the nuclear fuel chain continues to evoke strong emotional and political responses from those who oppose nuclear development.

Rafi Arefin’s (2019) concept of “infrastructural discontent” explores how discontent surrounding infrastructure can also serve as catalysts for political resistance in Cairo’s sanitation system. Spatialized inequalities are present in waste management, where some communities experience chronic neglect while others receive state investment, contributing to environmental injustice and accumulating as long-term sources of social dissatisfaction. These grievances can be mobilized for both revolt and repression, with the state often securitizing infrastructural failures and framing sanitation crises as threats to national stability. While Arefin (2019) observes how the history of infrastructural discontent in Cairo demonstrates how material infrastructures embody colonial legacies, development paradigms and uneven urbanization shape both collective action and state responses. Energy infrastructures similarly reflect the enduring structures of settler-colonialism, particularly in the context of siting on Indigenous lands.

Andrew Curley's analysis of the Central Arizona Project (CAP), a 336-mile system that supplies Colorado River water to the most populated regions in Arizona, and its impact on Navajo resources builds on his broader critique of colonial infrastructures as mechanisms of material and political dispossession. Curley (2021) argues that national infrastructure projects, such as CAP, do more than provide essential services; they function as colonial tools that deepen Indigenous political and economic subjugation. He traces how Arizona's 'critical infrastructures,' comprising dams, power plants, and water networks, serve as what he refers to as a 'colonial beachhead' built at the expense of Navajo sovereignty, embedding a structure of extraction that continues to shape Indigenous livelihoods and governance (Curley, 2021, p.388). This analysis underscores the persistence of settler-colonial expansion through infrastructural development, where each phase of resource exploitation reconfigures Indigenous lands into sites of extraction for urban and economic growth. The Navajo Generating Station, for instance, was not merely an energy project but an infrastructural beachhead that extended Arizona's control over Navajo water rights while fueling urban expansion in Phoenix and Tucson (Curley, 2021, p.396). The infrastructural lifecycles Curley examines illustrate a pattern of political containment, where projects like CAP entrench colonial jurisdiction over Indigenous territories, blocking Indigenous-led governance and decision-making.

Critical geography perspectives illuminate the spatialized inequalities inherent in waste management, where state investment benefits some communities while others experience chronic neglect. Arefin (2019) highlights how infrastructural discontent in Cairo reveals colonial legacies, development paradigms, and uneven urbanization, shaping both collective action and state responses. Curley's (2021) analysis of the Navajo Generating Station (NGS) as an infrastructural beachhead resonates with the ongoing dispossession of Algonquin peoples from the Chalk River site, as will be detailed throughout the dissertation. The initial displacement of Algonquin communities in the 1940s has become the basis for continued exclusion, now manifesting in the proposed development of a permanent radioactive waste facility that will effectively dispossess Algonquin communities from exercising their rights on site for several generations. Just as Curley exposes the entrenchment of settler-colonial control through energy infrastructures, the NSDF represents a similar colonial strategy: transforming Indigenous lands into sites of state-sanctioned environmental sacrifice while consolidating non-Indigenous economic and political interests. Audra Simpson's concept of refusal is evident in Kebaowek First Nation's persistent legal challenges to the CNSC regulatory process, detailed in Chapter Four. It will later be illustrated that by contesting the legitimacy of consultation and advocating for the interpretation of Free, Prior, and Informed Consent in colonial law and regulatory regimes, First Nations can assert authority to influence decisions about projects on its traditional territory that may affect their rights, culture, laws, well-being, and way of life.

Refusal

Resistance to oppressive infrastructures can take the form of refusal, a critical framework that challenges the expectation that marginalized communities must consent to their dispossession. The literature on Indigenous refusal has grown in scope and significance in recent years. Glen Coulthard and Audra Simpson are often cited as foundational to this conversation. Coulthard's contributions are part of a broader resurgence literature that emphasizes the complex and often contradictory terrain Indigenous nations must navigate in engaging with the settler state. Coulthard (2014) interrogates whether decolonization requires a complete withdrawal from state engagement. Coulthard insists that while the asymmetrical power relations of settler colonialism demand a cautious and critical engagement with state structures, such engagement must be grounded in Indigenous lifeways and political traditions. Coulthard's theory of refusal is therefore not a simple rejection of the state, but a commitment to engaging the state on Indigenous terms.

Both Stark (2023) and Coulthard (2014) have called for grounded normativity, the ethical frameworks and lifeways rooted in Indigenous place-based knowledge, to guide all interactions with colonial institutions. However, historical examples, including the treaty-making processes of the nineteenth century and their contemporary repercussions, show that neither grounded engagement or strategic refusal has shielded Indigenous nations from colonial incursions (Stark, 2020, p. 18). Treaty nations continue to call on the Crown to honor agreements, while non-treaty nations challenge Canada's assertion of sovereignty over their lands. The latter dynamic is illustrated in Kebaowek First Nation's refusal and in the Statement of Asserted Rights and Title, both presented in Chapter Four.

Audra Simpson's concept of refusal offers a powerful way to rethink Indigenous political agency beyond the usual frameworks of state recognition and consent (Simpson, 2017). Instead of engaging with the settler state on its terms (for example, through voting, treaty-making, or legal recognition) refusal can assert Indigenous autonomy by turning away from those structures altogether. It's not just about resistance. It's about rejecting the idea that the state has the authority to define Indigenous political life in the first place. As Simpson puts it, "Rather than recognition and its ruse of consent, I have proposed elsewhere [see Simpson, 2014] a political alternative of refusal" (Simpson, 2017, p. 20). Simpson challenges the assumption that consent in colonial contexts is ever truly voluntary, pointing instead to how it's often shaped by violence, coercion, and the erasure of Indigenous governance systems (Simpson, 2017, p.22). In this way, refusal is not only a political stance—it's a refusal to be complicit in the settler state's narratives of legitimacy and justice. Simpson's ethnographic work with the Kahnawà:ke Mohawks shows how refusal plays out in practice. Whether it's rejecting Canadian citizenship, evicting non-Indigenous residents, refusing to vote or serve in the military, these actions reflect what she calls "a structure of refusal." These refusals aren't just isolated acts of protest, but part of a broader commitment to uphold Indigenous sovereignty on Indigenous terms, while also "push[ing] up against the desire of the liberal state to consider its governance just" (Simpson, 2017, p. 21). Ultimately, Simpson offers refusal as an alternative path—not one that seeks justice through the recognition of colonial powers, but one grounded in Indigenous law, memory, and futures. It's a way of insisting that Indigenous life doesn't need validation from the state to be legitimate, and that sovereignty can be lived, not just negotiated.

Dian Million (2023) adds an affective dimension to refusal, framing it as both a spiritual and political act. Million emphasizes that refusal is not mere negation, but a manifestation of Indigenous presence— "our bodies as spirit, affective will"—in direct contrast to the capitalist logic of enclosure and extraction (Million, 2023, p. 51). For Million, Indigenous epistemologies are grounded in place, relationality, and responsibility, and they provide the protocol for ethical living in a world marked by ecocide and violence. Refusal is thus not an empty resistance but a "bubbling pot," full of generative power (Million, 2023, p.52). It honors relational obligations and the sustenance of life, even when resources appear low. In this framing, refusal becomes a lived ethic of care, sovereignty, and collective persistence. Gina Starblanket (2023) similarly underscores the vitality of refusal in the context of treaty politics. She argues that treaties are often misrepresented by the Canadian state as mere legal instruments or cultural acknowledgements, but from an Indigenous perspective, they are expressions of continuity and survival (Starblanket, 2023, p.87). Far from relics of the past, treaties represent a refusal to die—politically, socially, and culturally (Starblanket, 2023, p.87). Starblanket challenges the binary between pragmatic engagement and visionary politics, highlighting that Indigenous leaders have always navigated a complex political landscape shaped by both immediate material needs and long-term aspirations. The decision to uphold or contest treaty relationships must be understood as part of this enduring tension, not as a simplistic either/or.

Building on these foundations, Leanne Simpson articulates refusal as a process of generative disruption. In conversation with Sarah Hunt/Tłaliłila'ogwa, Simpson (2023) characterizes resurgent struggle as "world-building… in the present," a mode of refusal that disrupts systems of violence while simultaneously creating new forms of life (p. 141). This refusal is unapologetic and rooted in opposition to "state and intimate violence, capitalism, ecocide, white supremacy, and heteropatriarchy" (Simpson, 2023, pp. 134–135). It draws from the richness of Indigenous and Black thought and insists on the necessity of building life-affirming alternatives. For Simpson (2023), blockades and other sites of resistance are not simply political interventions but expressions of Indigenous joy, solidarity, and relational ethics (p. 134). These are spaces of theoretical production, where community, care, and freedom are actively imagined and enacted.

Refusal, then, is more than a withdraw of consent, it is a proposition. It is a refusal to participate in colonial logics of recognition and assimilation, and a commitment to embodying other ways of being. Whether expressed through grounded engagements with the state (Simpson, 2014; Coulthard, 2014), the refusal of capitalist enclosure (Million, 2023), the honoring of treaty relationships (Starblanket, 2023), or the creation of joyful, insurgent spaces (Simpson, 2023; Simpson, 2017), refusal is revealed to be an active, generative, and necessary element of Indigenous resurgence. Together, these scholars share an understanding of refusal that is not simply a *no* to colonial violence(s); it is a *yes* to Indigenous futurity.

Unravelling Social Dynamics of Nuclear Hegemony

(Nuclear) hegemony is actively produced and maintained through state power, elite discourse, and the suppression of alternative viewpoints (see Gramsci, 1999, p.316-319). Despite the potential of catastrophic consequences resulting from nuclear, the industry, entwined with the state, have been relatively effective at legitimizing nuclear power as an essential tool to combat climate change while simultaneously neutralizing public fears about its risks by positioning nuclear knowledge as the domain of elite scientists and technocrats. Gaslighting is a tool commonly used in the nuclear industry to dismiss perspectives from "outsiders" to the industry (ICAN, 2022). In terms of impacts to human health from radiation exposure, experts commonly cite that increased cancer in radiated regions are equally likely to have been caused by lifestyle choices. The World Health Organization stated that, "the substantial number of cases [of thyroid cancer] that have already been observed in the Fukushima Health Management Survey have been considered likely due to the sensitivity of the screening rather than to radiation exposure" (WHO, 2016). The Canadian Nuclear Safety Commission has also noted that the higher-than-average cancer rates in proximity to Chalk River Laboratories (CRL) are more likely, "...due to lifestyle, behaviour, and other factors, rather than the very low environmental radiation exposures from CRL" (Canadian Nuclear Safety Commission, 2024). These are selected examples which also raise interesting questions about how harm is defined, and by who (see Murphy, 2017; Vogel, 2012). The nuclear industry's entanglements with military structures further reinforce this opacity, as concerns about environmental justice and public accountability are subordinated to national security imperatives (Sovacool, 2011, p.4).

Disparate burden and benefit schemes operate within Canada's nuclear landscapes and are particularly salient in the siting of nuclear waste and the management of radioactive contamination. Drawing on the concept of sacrifice zones, described by Pitkanen and Farish (2018) as, "...spaces of intentional destruction and dispossession, and the implications for local communities ultimately seem to be calculated as externalities," (p.870) it becomes clear that certain geographies—particularly Indigenous lands—are disproportionately burdened with the consequences of nuclear expansion, reflecting broader structures of colonialism and economic extraction (see also Stanley, 2008).[10] So, while nuclear power has been effectively framed as a necessary solution to climate change, a strategy that reinforces its legitimacy while marginalizing alternative energy perspectives, this reflects the role of cultural hegemony, where dominant groups manufacture consent by controlling discourse and framing (nuclear) technology as indispensable (see Chomsky & Herman, 1988; Gramsci, 1999, p.501-502). Nuclear landscapes are not just physical sites, but ideological constructs shaped by representation,

[10] Kuletz (2016) suggests the term "deterritoriality" to explain the construction of national and international sacrifice zones. Kuletz documents deterritoriality as phenomenon that is becoming an increasingly common feature in industrialized societies, where extensive zones of sacrifice are allowed to emerge as the price for, and inevitable result of, a particular set of power requirements (p.5).

expertise, and governance structures. This expertise is concentrated within scientific and governmental institutions, positioning nuclear knowledge as something that can only be understood by the ‘superiorly trained’ and not the public (Juraku and Sugawara, 2021). This follows Anna Stanley’s (2005) analysis that “the discourse [of modern risk] represents the knowledge of the nuclear industry as “universal” and also concrete, and the knowledge of Aboriginal peoples as “particular”; as simultaneously “local” and peripheral” (p.206). This knowledge hierarchy limits public engagement and constrains democratic decision-making, ensuring that nuclear policies remain largely unchallenged.

At the same time, the nuclear industry’s historical ties to military structures exacerbate issues of transparency and democratic accountability. The nature of nuclear technology, where civilian and military applications are deeply intertwined, means that decisions regarding nuclear development, waste disposal, and risk assessments are often made under the guise of ‘national security.’ As Pitkanen and Farish highlight, the United States’ nuclear testing programs relied on a combination of spectacle and secrecy, with highly publicized weapons tests masking the deeper, long-term contamination of surrounding landscapes and communities (2018, p.866). This logic spills into Canada, where nuclear projects are often secretive and justified as being in the national interest, even when they disproportionately harm specific populations.

Legitimacy and Social License

As described in Chapter One, social license is sometimes used rhetorically in place of the term ‘consent.’ Throughout this dissertation, I aim to tease out distinctions between how consent and social license are sought, produced, and withheld. Boutilier and Thomson (2011; see also Boutilier, 2017) define social license as comprising four elements: economic and socio-political legitimacy, and interactional and institutionalized trust. Trust, as defined by Stuart et al., (2023) is "a willingness and intention to accept vulnerability to risk or loss through the actions of another, based on positive expectations of their intentions and behaviour." In written interventions opposing the NSDF, trust—whether in the proponent or the regulator—was a recurring theme, with only one 21% failing to mention it.[11]

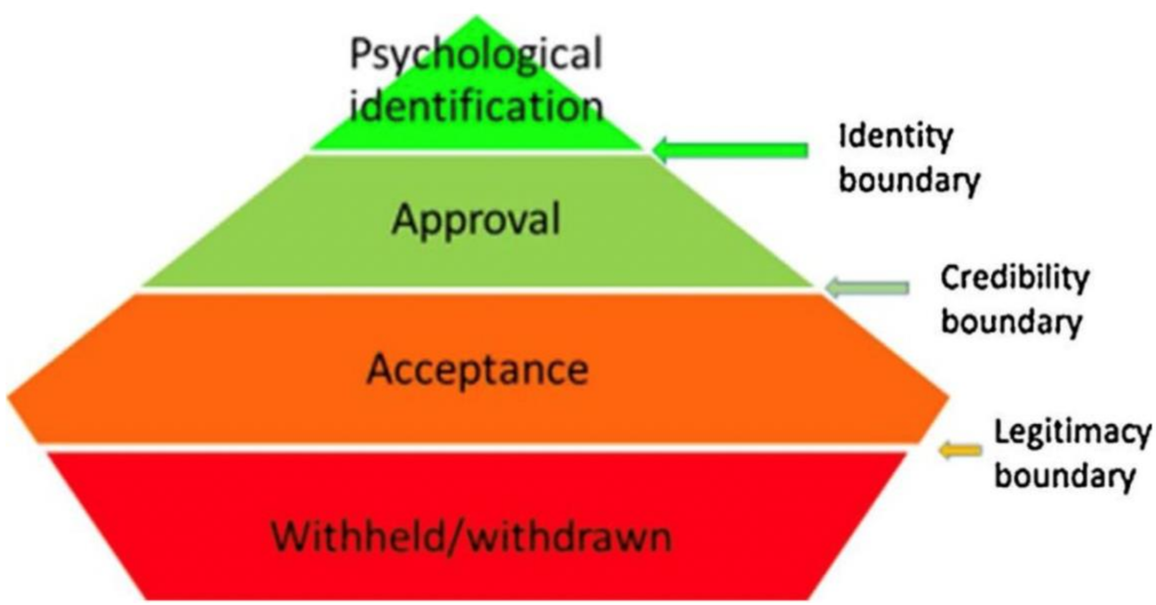

Figure 2 The "arrowhead model" of social license to operate (Boutilier and Thomson, 2011)

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[11] I categorized all of the submitted interventions regarding the proposed NSDF that were filed in the CNSC's hearing catalogue for May 30, 2022-June 2, 2022 into "in support" or "opposed." I shared these findings with Kebaowek First Nation. I also parsed out key concerns, and this is where (lack of) "trust" was found in 79% of interventions opposing the NSDF.

The “arrowhead model” developed by Boutilier and Thomson (see Figure 3.) builds on the conceptual foundations laid by Thomson (2000), and Joyce (2008), who observe that community approvals can be achieved in a form of cumulative hierarchy. The model illustrates that economic legitimacy is the foundational baseline requirement for social license to operate and community approval of a project. For the highest level of social license, all four criteria must be met, culminating in institutionalized trust. Trust-building relies on open dialogue and cooperation between the community and the company, forming the foundation for institutional trust. Psychological identification with the project represents the highest level of social license.

Meinhard Doelle and Adebayo Majekolagbe (2022) examine the role of meaningful public participation in integrating climate change policy into impact assessment. While their focus is on climate change policy, key lessons from their work can be applied more broadly. They argue that project-level impact assessments are the most effective sites for achieving meaningful participation—defined by the respect and recognition of rights and interests, transformative learning for all stakeholders, collective and cooperative action, legitimacy of interventions, and adaptive management. They also highlight that public participation adds an additional layer of complexity to climate change-related impact assessments. Traditional questions—such as who participates, when participation should occur, and how the public should be engaged—become more difficult to answer in this context, particularly because overarching climate objectives are often predetermined (p.4). Similarly, in the nuclear waste context, while the role of public participation is necessary to achieve social license or consent, the objective of waste siting is pre-determined by the stockpiles of nuclear waste that already exist, and do not have safe, acceptable, long-term storage (or disposal plans).

The perception of the CNSC as a 'captured regulator' (i.e.., serving the industry it is intended to regulate instead of serving the public) further fragments this legitimacy, and will be explored further in the "regulatory capture" section in Chapter Four. Ideally, successful interactions between the proponent, the public, and Indigenous communities would lead to institutionalized trust, wherein company-community relationships are characterized by mutual respect, equal partnership, and a sense of shared identity with the project (Lehtonen et al., 2022). Chapter Four documents how public engagement rang hollow for concerned groups in the NSDF process and intends to show that processes to secure 'acceptance' as a form of social license often fails to produce legitimacy in decision making, resulting social refusal through legal means or otherwise.

Institutionalized trust, as described by Boutilier and Thomson, exists within broader historical, cultural, and political contexts, influenced by power relations, identities, and grievances. Psychological identification is an indicator of institutionalization (Boutilier and Thomson, 2011) and can extend beyond a company to include broader entities such as the state, the private sector, nuclear power as an energy source, or even movements opposing a project (Luke, 2017). In this context, it aligns with the identity and pride of self-identified “nuclear communities” like Deep River, ON where Chalk River Laboratories is located.

According to Boutilier and Thomson (2011), distrust, defined as an inherent suspicion toward the “other,” can undermine democratic processes. However, distrust can also be constructive, prompting citizen action when faith in state institutions erodes (e.g., Lehtonen et al., 2020). Regardless of one's stance on a project, opposition can contribute to democratic revitalization in regions facing demographic and economic challenges. Since distrust often has ideological underpinnings—such as debates over nuclear energy’s role in addressing climate change or its compatibility with democracy—it can introduce fundamental issues to the discussion, enhancing the project’s democratic legitimacy and preventing a strictly technical framing that excludes ideological considerations (Lehtonen et al., 2020).

The concept of social license has faced increasing scrutiny for its vagueness, lack of conceptual precision, and tendency to restrict debates to local concerns while omitting broader systemic issues (Lehtonen et al., 2022). Like participatory and partnership approaches in general, social license can be deployed instrumentally in attempt to legitimize questionable corporate practices under a veneer of respectability (Stuart et al., 2023). Local benefit schemes—commonly used to secure social license—are frequently criticized as forms of bribery, much like Impact Benefit Agreements (IBAs) and Community Benefit Agreements (CBAs), that function to mask deeper structural inequalities (e.g., Zalik, 2016; Lehtonen and Kojo, 2019; Scott, 2020).

Boutilier and Thomson (2011) highlight that given the contentious nature of nuclear waste management (marked by long timescales, potential for harm, and safety concerns) the state's role in governance is both critical and complex. The state often has a vested interest in promoting social license for nuclear waste projects (e.g., Lehtonen et al., 2020). Under such conditions, institutionalized trust may reflect asymmetric power relations rather than genuine community approval or ownership. Future conceptual refinements should work to integrate local and societal levels of analysis within a unified social license framework (Stuart et al., 2023).

Viewing social license solely as a business strategy or sociological construct fails to address the actual needs of affected stakeholders. There is little consensus on whether social license requires more than merely avoiding opposition strong enough to halt operations (Stuart et al., 2023; Miller, 2014). In this perspective, social license hinges less on stakeholder and rights holder opinions and more on their ability to mobilize resistance (Syn, 2014). Often, rights holders and stakeholders (especially those with low socio-economic power) lack the power to halt operations. As a result, their opposition to a project may have little impact, even if they reject it (Syn, 2014). Consequently, marginalized, divided, or disempowered communities may find themselves unable to withdraw social license and more vulnerable to environmental injustice.

To address these shortcomings, scholars have emphasized the importance of seeking free, prior, and informed consent (FPIC) in social license (Stuart et al., 2023). FPIC recognizes communities' right to grant or withhold permission for projects within their territories (Scott et al., 2023), but the Canadian settler state makes clear in its interpretation, and in its concerns about adopting UNDRIP, that FPIC does not equate to a veto (Szablowski, 2010; Land, 2019; Kebaowek First Nation v. Canadian Nuclear Laboratories, 2025). In my analysis I argue that a key distinction between social license and consent frameworks is that the latter should maintain the option of refusal. This follows Webler and Tuler (2021) who assert that valid consent processes must include the power to reject a proposal, not just react to it (p. 101).

Scholars have articulated seeking FPIC as an outcome of a social license processes situates social license as an evolving governance mechanism that upholds communities' right to self-determination, while challenging industry-driven social license definitions designed to justify ongoing operations (Syn, 2014). Others have considered FPIC as a form of negotiated justice, a regime in which decision making is a result of negotiations that emphasize the rights of parties to autonomy, free choice, and the right to bind themselves and others through formal agreements (Szablowski, 2010). Furthermore, seeking consent underscores the importance of social risk—both the negative impacts and perceived threats communities face—rather than solely focusing on industry perception of risk, and liability to the state and proponents (Stuart et al., 2023). While this interpretation of social license moves in the right direction, social license falls short as a framework in many ways, aiming to achieve a baseline of “bare minimum;” general acceptance and peripheralizing opposition.

This research emphasizes the importance of robust public participation to effectively illustrate and mitigate community concerns. Understanding and having the scope of concerns documented and available for review promotes a process that is more transparent, and allows for monitored (and ideally, audited) mitigation that can shape projects to gain broader acceptance. To achieve consent from rights holders, the process must look beyond social license schemes and consider impacts to Aboriginal rights and title from Indigenous perspectives and through Indigenous legal orders. Indigenous consent is inevitably tied to a community's ability to collect culturally relevant information so that it can meaningfully decide and assess what the impacts of the project will be from its Indigenous perspective, guided by laws, norms, spirit, and culture (Scott et al., 2023).

Indigenous-led Impact Assessments and the Role of Legal Pluralism

Undertaking an Indigenous-led IA necessarily considers the plurality of legal systems in Canada, shaped by the survival and resurgence of Indigenous legal orders, and their interactions with settler law in the context of approval processes, including environmental or impact assessments for energy infrastructures.[12] A central question that remains unanswered, though explored in this dissertation is whether recognition of the plurilegal system play a role in addressing the dynamic of colonial power imbalances. Glen Coulthard critiques the politics of recognition, which he suggests serves the state by

[12] "Settler law" refers to legislation and doctrine enacted by federal, provincial, and territorial governments in Canada or endorsed by settler courts.

enticing Indigenous peoples to identify with asymmetrical and nonreciprocal structures imposed on them by the settler state and can act as a tool for reinforcing state legitimacy in colonial projects (2014). This framing illustrates how the state practice of recognition is often experienced as a performative assimilationist tool that prioritizes consultation over consent while frequently using the language of self-determination and reconciliation (Daigle, 2019; Spice, 2018).

Conversely, Dale Turner contends that if Indigenous peoples wish to assert their distinct worldviews and emphasize the importance of these differences in their political relationship with the state (moving beyond a plurilegal distinction into one that is plurinational), they will need to engage more effectively with the state's legal and political frameworks (2006). Plurinationalism expands beyond the plurality of legal orders in Canada and refers to the recognition of multiple distinct nations within its political order, including English, French, Acadian, and Indigenous peoples (Borrows, 2018). Morales and Nichols (2018) suggest that the state's limited willingness to legitimize true nation-to-nation relationships with Indigenous peoples is constrained by conceptions of Crown sovereignty and reveals the failure of reconciliation efforts to move beyond symbolic gestures. A central throughline in this dissertation is an interest in how recognizing a plurilegal system—acknowledging Indigenous legal systems, which are rooted in deep cultural histories but often overshadowed in colonial decision-making frameworks (Borrows, 2010)—through Indigenous-led IA could lead to more effective engagements, as suggested by Turner, in the context of nuclear waste siting. This will be illustrated in Chapter Four through the examination of Kebaowek First Nation’s legal challenge to CNL (*Kebaowek First Nation v. Canadian Nuclear Laboratories, 2025 FC 319*) below.

Conclusion

In this chapter, I aim to show how environmental justice offers a critical and appropriate theoretical framework for evaluating the fairness of nuclear waste siting processes, particularly when comparing two sites: one where community consent is sought, and one where it is not. While environmental justice is often used to illustrate patterns of inequitable distribution of environmental harms and benefits, it also concerns the *processes* that determine those outcomes (Scott, 2014). These processes must meaningfully include those most affected, especially historically economically and racially marginalized communities. In nuclear waste siting, which often targets remote, rural, or Indigenous territories, failing to seek and secure consent violates this principle. The environmental justice framework enables us to interrogate how power dynamics, procedural inequities, and colonial legacies shape decisions about where and how risk is distributed, and by whom.

The concept of "wastelands" is central to environmental justice critiques of nuclear infrastructure, as both of the currently proposed sites have been historically and/or are currently seen by extractive firms and the state as 'useless' for anything else. Like the concept of 'wastelands' referred to in this dissertation, critical geography and postcolonial theory have shown how settler states discursively construct certain landscapes (often Indigenous lands) as empty, degraded, or disposable, enabling their use for waste disposal. In Chalk River, there is no formalized mechanism to seek or produce consent, this logic is clearly at play. Drawing on both socio-legal and environmental studies literatures, I frame such siting decisions as reproductions of slow violence: the gradual, often invisible accumulation of harm across generations. These harms are not merely environmental, but social, cultural, and epistemic.

In Chapter Five, I contrast the siting process of a nuclear waste site in Chalk River with a nuclear waste site that utilizes a consent-seeking process, and 'consent' is interrogated through environmental justice theory that pays broader attention to power. I argue that consent must be free, prior, and informed and not the result of coercion, economic desperation, or manufactured "social license." Scholars in socio-legal studies and critical geography have warned of how industries often seek legitimacy through selective community engagement, creating so-called "nuclear communities" where knowledge and identity become intertwined with nuclear infrastructure. In these cases, consent may be less about autonomy and more about acquiescence under constrained conditions. By examining these processes through a theoretical framework grounded in environmental justice, I am pushed to question whether community consent is substantive or conceded, and whether it can be genuine despite being situated within broader structures of economic inequality and colonial governance.

Ultimately, environmental justice theory situates nuclear waste siting within broader histories and contexts of colonialism, capitalism, and environmental racism. It brings into focus not only who is harmed and how, but whose voices are heard, whose knowledge counts, and ultimately, who decides. The framework integrates insights from postcolonial studies on the legacies of dispossession, from critical geography on spatialized inequality, and from socio-legal studies on the dynamics of consent and authority. In doing so, it allows for a more accountable assessment of siting processes.

Chapter Three:

The Cold War's Embers

This chapter details patterns of nuclear militarism, beginning in the Cold War era, through selected examples in the Marshall Islands, Ukraine, the Northwest Territories, Japan, New Mexico, and Pennsylvania. The purpose of these selected vignettes is to provide context of nuclear militarism, and to offer a platform to critique the risks of nuclearity, highlighted in chapter two. It is to consider how a location becomes militarized through nuclearity, and consider the weight that holds.

How the Cold War Influenced Nuclear Infrastructure Development in Canada

The Cold War profoundly influenced the trajectory of nuclear energy development in Canada. The geopolitical imperatives of the era shaped nuclear infrastructure into a dual-purpose system that served both military and civilian interests (Hewlett & Holl, 1989). As nuclear research, testing, and infrastructure expanded, so too did the uranium industry, with its devastating environmental and social consequences disproportionately affecting Indigenous communities. This was particularly true on the "front end" of the nuclear fuel chain. The experience of the Serpent River First Nation demonstrates that where uranium mining, processing, and its contaminating effects became a defining feature of what Anishinaabe scholar Leanne Leddy calls "Cold War colonialism" (Leddy, 2022). Leddy situates this concept within the broader context of settler-colonial policies that prioritized economic development, resource extraction, and assimilation over Indigenous rights. For the people of Serpent River First Nation, this period brought rapid and disruptive changes. While community leaders appeared to have some degree of agency, their choices remained constrained by economic realities and by colonial policies that favored industrial expansion over Indigenous sovereignty (Leddy, 2022, p. 9). The Cold War, often framed as a conflict that remained "cold" by avoiding direct military engagement, was anything but for Indigenous communities who faced, and are still navigating the violent consequences. The legacies of this era persist, as the contamination, displacement, and marginalization that accompanied Cold War resource development continue to shape the present.

This chapter offers a historical overview of the Cold War's influence on the power of the nuclear industry today tailored to an environmental justice approach. Chapter Four will center on the experiences of contemporary aspects of environmental injustice, and together these examinations will help to "solve the puzzle" of if and how consent mechanisms and procedures can be operationalized in a way that does not undermine Indigenous sovereignty. Thus, to address the unsolved puzzle, this analysis moves beyond reductive models of power that attribute outcomes solely to material or institutional asymmetries—whether between states or between state and civil society. This chapter does not rely on explanations that focus exclusively on material resources (such as money, technology, or military strength) or institutional structures (such as governments and legal systems). Rather, it examines the more complex and layered ways in which power operates—through community experiences, historical contexts, and shifts in public perception. The historical roots of nuclear infrastructures in Canada are embedded in settler colonialism and traced here to illustrate the evolution into more nuanced forms of (nuclear/Cold War) colonialism. This process has given rise to "nuclear communities" and has shaped the socio-political relationships that sustain a deeply embedded nuclear industry—one that demands sacrifice and compromise from the Canadian public and Indigenous communities, all under the veil of state trust and the rhetoric of for the benefit of the greater good.

A historical reckoning that reaches both further back and further afield locates Canada's nuclear trajectory within longer-standing negotiations of sovereignty, security, and development. Canada, like other settler-colonial formations, navigated an ambivalent position within Western power structures—both subject to, and complicit in, imperial geographies. Throughout the late nineteenth and early twentieth centuries, the Canadian state (following the United States) positioned technological and industrial advancement as central to national viability. In this context, nuclear power became more than a technical pursuit, promising increased peace, and modernity to benefit the Canadian public (Alexis-Martin & Davies, 2017); it emerged as a node within broader assemblages of economic modernization and geopolitical alignment. To examine the NSDF then, which can be considered somewhat of a 'trojan horse,' enabling the continuation of nuclear activities more broadly at CRL, I will look beyond narratives of coercion or inevitability and engage with the ways in which "nuclearity" was embedded in shifting landscapes of political economy, environmental transformation, and cultural meaning. This requires attention not only to official discourses but also to the affective and material terrains through which acceptance of nuclear programs was cultivated, sustained, and contested.

The Cold War established a framework in which nuclear energy was celebrated both a technological innovation and a tool of geopolitical strategy. The United States, through initiatives like *Atoms for Peace*, positioned nuclear technology as a means of securing international influence and maintaining control over the global nuclear order (Drogan, 2019). Canada, while beginning to distance itself from nuclear weapons after the Cold War, leveraged its nuclear program to solidify its position as a leader in civilian nuclear technology, and developed the CANDU reactor as an alternative to American and Soviet designs (Mellor, 2019). This development was not merely a matter of technological preference but a strategic response to Cold War dynamics and an assertion of sovereignty over nuclear resources and expertise in a landscape dominated by superpower rivalry (Creager, 2013).

At the core of Cold War nuclear policy was the question of control over resources, technology, and governance. The United States' nuclear energy policy was inseparable from its military-industrial complex. For example, in 1946 while discussing a proposal for the international control of nuclear weapons, Robert Oppenheimer, who was the head of the program that developed the first atomic bombs framed the issue starkly: "We know very well what we would do if we had signed such a convention [against making nuclear weapons]: we would not make atomic weapons, at least not to start with, but we would build enormous plants, and we would design those plants in such a way that they could be converted with maximum ease and the minimum time delay to the production of atomic weapons" (Oppenheimer, 1963).

In Canada, nuclear policy has been shaped by interests in balancing energy independence while maintaining alliance with the United States and framing the industry as benevolent to the Canadian public by centering its role in radiation for cancer treatment (CNA, 2025). Resource extraction and development were central to both nations' nuclear strategies, even as access to uranium became a site of economic and political contestation (Voyles, 2015). The U.S. and Canada both used reactor sales and nuclear agreements to extend their influence globally (Röhrlich, 2016).

Atomic Energy of Canada Limited (AECL) was established as a Crown Corporation in 1952, reflecting a state-driven approach to nuclear development. This positioned nuclear energy as an economic asset, a tool of state sovereignty, and a matter of national security (Churchill, 1993). AECL's mandate was to "further the peaceful development and research of the Canadian nuclear industry" (CNSC, 2016). That same year, in 1952, AECL assumed responsibility for Chalk River Laboratories (CRL), where the NRX reactor experienced a partial core meltdown—the first recorded nuclear accident in Canadian history. Future U.S. president Jimmy Carter, then a young naval officer, assisted CRL workers in responding to the crisis (Semeniuk, 2023). Despite efforts to consolidate control of the industry under a Crown Corporation, nuclear development was not a purely unilateral process. Through formal legal avenues and direct action, assertions of Indigenous rights and title challenged the settler-state's ability to claim unrestricted access to nuclear resources, revealing the limits of Cold War-era sovereignty (Leddy, 2022). The governance of nuclear energy was not merely a matter of technological advancement; it has always been a contested political process shaped by broader struggles over land, jurisdiction, and resource control (Churchill, 1993; Leddy, 2022).

As the Cold War progressed, nuclear energy became key for the production and reproduction of hegemony, legitimizing a specific configuration of power, security, and capitalist accumulation. The expansion of nuclear power was not merely a technical or economic development but a hegemonic project that naturalized a particular vision of modernity—one that positioned economic growth as both inevitable and desirable, reinforcing a historical bloc in which resource extraction and industrial development were central pillars (Müller & Nielsen, 2023). The hegemonic discourse surrounding nuclear power has evolved in the context of the climate crisis, where it is now framed as an indispensable solution to balancing sustainability with ever-growing energy demands. At the same time, opposition groups have contested the normalization of nuclear development; from Indigenous communities resisting uranium extraction and anti-nuclear movements challenging the epistemic and material structures that sustain nuclear proliferation (Endres, 2023). These ongoing struggles reveal the enduring contradictions of nuclear power, exposing its embeddedness within colonial and capitalist logics and the contested nature of its legitimacy (Churchill, 1993; Ramana, 2024).

Vignettes Documenting the Heat of the Cold War

Chalk River Laboratories played a pivotal role in nuclear research and development, contributing to a global nuclear arms race that left a legacy of radioactive contamination and human suffering. One of my interview subjects who had been frequenting the Chalk River site since the 1980s described it as, "[I knew a bit about the history of] Chalk River as the sort of birthplace of the nuclear arms race, because it's where scientists from countries around the world came to learn to make weapons, to make plutonium, to fabricate it into weapons. And then they went back to their own countries and started up their own weapons programs. [And] I knew there was the big stack that would emit radioactive gases" (December 21, 2023). Tucked away deep into the forest, and two hours away from Ottawa, the nearest city and the nation's capital, CRL's activities displaced (and continue to displace) Algonquin communities whose territory the site is situated on. Environmental justice implications reverberated with far-reaching impacts for communities in the Canadian Arctic, Japan, and the Marshall Islands. These regions—home to Sahtu´Dene, Diné, Inuit, Japanese, and Marshallese Islanders—experienced radiation exposure and contamination despite being far removed from the decision-making centers of the nuclear program. The spread of radioactive materials from CRL and other Canadian-linked nuclear activities, along with their impacts on ecosystems and human health in affected communities, raise environmental justice concerns distinct from those of nuclear accidents. These distinctions will be briefly discussed in the discussion at the end of this chapter.

Trails of Uranium: the Entangled Histories of Sǫmba K’oe (Port Radium) and Hiroshima, Japan

The 1930s marked the beginning of uranium ore extraction from the Northwest Territories at Port Radium, an Eldorado mine site near Great Bear Lake. It was in 1942 that Eldorado secured a contract with the United States military to supply uranium for the Manhattan Project (Government of Canada, 2023). Sahtu´Dene workers from Délı̨nę territory were employed to hand-carry heavy sacks of uranium ore concentrate with no protective gear (Fletcher, 2015, p.137). They were never informed of the health hazards, despite internal government knowledge by the 1930s that radioactive dust exposure caused severe lung disease and cancer (Bird, 2020). The Sahtu´Dene handled “leaking sacks of uranium ore,” and spillage was common – ore that fell out was simply shoveled into the lake waters (Government of Canada & Délı̨nę First Nation Government, 2005; Pentz Gunter, 2020). In the decades following, many Sahtu´ Dene mine laborers and their families, mostly men and children, suffered high rates of cancers and illnesses; the community of Délı̨nę was impacted so severely, they were colloquially called the “Village of Widows” due to the many premature deaths of men who worked at the port and mine (Van Wyck, 2010; Blow, 1999; Pentz Gunter, 2020).

The uranium from Great Bear Lake was refined in Port Hope, Ontario, and was used in the core of the “Little Boy” atomic bomb dropped on Hiroshima in 1945 (Bird, 2020). Hiroshima had a population of approximately 280,000 to 290,000 civilians, along with 43,000 military personnel. It is estimated that between 90,000 and 166,000 individuals lost their lives within four months of the explosion (Atomic Heritage Foundation, 2014).

According to the U.S. Department of Energy, the death toll may have exceeded 200,000 within five years due to the bombing (Atomic Heritage Foundation, 2014). The city of Hiroshima estimates that around 237,000 people were killed, either directly or indirectly, by the 'Little Boy' atomic bomb, including deaths caused by burns, radiation sickness, and cancer (Atomic Heritage Foundation, 2014). Though it was not known to the miners, the uranium extracted from Délı̨nę territory became material that was used for the atomic bomb. Danny Gaudet, who has been the Chief of the Délı̨nę Got'ı̨nę Government since 2022, chaired the Canada-Délı̨nę Uranium Table which culminated in a final report titled "Concerning health and environmental issues related to the Port Radium Mine" in 2005. As an outcome of this report, Gaudet anticipated an apology from Canada for exposing the Sahtu´Dene people to adverse health effects due to uranium mining conducted without their knowledge, as well as for concealing the devastating consequences of the bomb's use on a largely civilian population in Japan (Toth, 2020). Although the Sahtu´Dene are still awaiting a response from the federal government, six Sahtu´ Dene Elders visited Hiroshima to apologize for their unknowing complicity in the devastating atomic bomb. Today, the bombing of Hiroshima would be recognized as illegal under international law. Although it was justified by claims that military personnel and infrastructure were the targets, over 70,000 civilians—many of them women and children—were killed instantly. This would violate three key principles of the law of armed conflict codified in Additional Protocol I of the Geneva Conventions: distinction, proportionality, and precaution (McKinney et al., 2020).

The Marshall Islands

Nuclear colonialism in the Marshall Islands has left a devastating environmental legacy with severe health consequences. While the Manhattan Project itself did not involve nuclear testing in the Marshall Islands, it set the stage for postwar U.S. nuclear policy, including the large-scale atmospheric nuclear tests that devastated the region. Between 1946 and 1958, the U.S. conducted 67 nuclear tests whose fallout irradiated vast areas of land and sea (Rust, 2019). Decades later, parts of the Marshall Islands remain dangerously contaminated – Bikini and sections of Enewetak Atoll are still saturated with radiation and researchers from Columbia University found that the levels of radiation on Bikini Island make it unsafe for habitation (Bordner et al., 2016). Aside from the nuclear tests that targeted the Marshall Islands because of their remoteness from large settlement areas, a large concrete coffin called the 'Runit Dome,' was built to contain nuclear waste on Enewetak and it now leaches toxic material (like plutonium-239) into the ocean, posing a "ticking time bomb" threat to the fragile marine ecosystem (Makhijani & Ruff, 2023; Niedenthal, 2025).

This prolonged contamination has directly harmed the Marshallese people's health. Islanders exposed to the tests initially suffered acute radiation sickness, and over the years they have experienced elevated rates of cancers and other illnesses. Thyroid tumors, birth defects, and radiation-related diseases surged across generations, with a

2004 study attributing over 530 cancer cases directly to the nuclear tests with additional cases expected to emerge in coming years (National Cancer Institute, 2010; Niedenthal, 2025). Beyond the physical devastation, the nuclear testing program uprooted entire communities and severed the Marshallese from their ancestral lands, causing profound cultural displacement. Whole populations from atolls like Bikini and Rongelap were forced to evacuate their homes – often for decades or permanently – due to dangerous radiation levels (Makhijani & Ruff, 2023). This displacement destroyed traditional ways of life; people could no longer fish, farm, or live as they had for centuries on their home islands. Displaced Marshallese found themselves in overcrowded resettlement areas, dependent on foreign aid and processed foods instead of their customary subsistence lifestyle (Makhijani & Ruff, 2023). Separated from their lands, they became alienated from sacred sites and cultural practices handed down through generations. Elders worry that important indigenous knowledge and customs cannot survive when youth grow up away from their home atolls – the loss of land access and loss of life has "severely inhibite[d] the ability to produce or reproduce cultural knowledge" essential to the community's identity and continuity (Johnston & Barker, 2008). The displacement had intergenerational impacts on the social fabric of Marshallese society, eroding communal bonds and traditional stewardship of the islands.

The Slow Violence of Nuclear Infrastructures

> "If it messes up...it's about as green as Chernobyl"—Tony McQuail, resident of Bruce County (Quoted in Wilkins, 2015).

The nuclear accidents at Three Mile Island (1979), Chernobyl (1986), Fukushima Daiichi (2011), and the Waste Isolation Pilot Plant accident (2014), exemplify the contest of ideological narrative over technological risk in the nuclear context. Acknowledging the reality of risk is especially true when the two proposed waste sites in Canada, the DGR and the NSDF, intend to keep the environment safe from radiation for thousands of years. A 2016 supplement to the U.S. Department of Energy's environmental impact statement on the proposed Yucca repository released by the U.S. Nuclear Regulatory Commission (NRC) claims the Yucca DGR will be safe for *one million years* (U.S. DOE, 2008, p. F-15 [emphasis added]). Aside from human error, the state of the earth that far into the future is based on projections, and there is much uncertainty as to what challenges the evolving conditions of climate change pose. These incidents expose not only systemic failures in safety culture and risk communication but also the ways in which dominant ideological structures shape public perception of nuclear energy. The persistence of nuclear power, despite its catastrophic potential, reflects the role of state and corporate actors in maintaining acceptance through discourse that downplays risk and displaces accountability. Moreover, the uneven distribution of harm—where marginalized communities disproportionately bear the burdens of nuclear mishaps and waste storage—demonstrates the operation of passive revolution, in which structural inequalities are reconfigured rather than resolved to sustain the prevailing order (Morton, 2007, p.10-11).

Three Mile Island

The Three Mile Island accident in Pennsylvania in 1979 was caused by equipment failure and operator mistakes, leading to a partial meltdown of Reactor Unit 2 (U.S. Nuclear Regulatory Commission, 2024). Though the containment structure prevented significant radiation releases, public perception was that of a catastrophic event. Official reports confirmed that radiation exposure to the public was negligible, yet panic-driven evacuations ensued, primarily affecting lower-income residents with fewer relocation options (WNA, 2022). The psychological distress, loss of property value, and long-term mistrust in nuclear power were more consequential than any health impact.

Chernobyl

The Chernobyl disaster, by most accounts, was caused by reactor design flaws and severe operator errors, which led to a massive explosion and radiation release (CNSC, 2023). The accident happened on April 26, 1986, though official government acknowledgement of the accident was withheld until May 14, 1986 (Petryna, 2013). Since the time of the accident, information has been withheld from both tourists and the general public in an effort to downplay the scale of the Chernobyl catastrophe and to maintain a stance of denial regarding health impacts such as cancer linked to the disaster (Petryna, 2013). Dispelling narratives associated with the continued 'slow violence' as a consequence of the accident, official dimensions of the contaminated zone vary depending on which political party is in power, and which research methodologies are given priority (Nixon, 2011). Unlike Three Mile Island, Chernobyl had immediate and severe health consequences, with 28 emergency workers dying from Acute Radiation Syndrome and long-term increases in thyroid cancer cases, especially among children (CNSC, 2023). The Soviet government's secrecy exacerbated the public's exposure and psychological trauma, leading to widespread misinformation and social stigma (Havenaar et al., 2016). Rural Ukrainian and Belarusian communities, often poor and politically marginalized, suffered the most. The displacement of over 100,000 residents, economic devastation, and long-term exclusion zones created environmental refugees who received inadequate support (Havenaar et al., 2016). Moreover, many of the 600,000 "liquidators"—soldiers, workers, and miners—were sent into hazardous conditions with little protection, highlighting the disproportionate burden placed on lower-income populations and conscripts (Havenaar et al., 2016).

Fukushima Daiichi

The Fukushima disaster was triggered by a 9.0-magnitude earthquake and tsunami, but human failings in plant design and crisis management worsened the outcome (WNA, 2024). The loss of backup power led to core meltdowns in three reactors, hydrogen explosions, and radiation releases. The evacuation itself caused over 2,300 indirect deaths, primarily among elderly and hospitalized residents who suffered from stress, disrupted care, and suicide (WNA, 2024). The perceived risk of radiation led to prolonged displacement, economic hardship, and lasting social stigma despite scientific reassessments showing that many evacuated areas are safe for habitation. Farmers and fishermen in the Tōhoku region bore the brunt of economic losses (Bird and Grossman,

2011) while Tokyo, the primary beneficiary of Fukushima's electricity, was largely unaffected—a clear example of environmental injustice in the benefits versus burden of nuclear energy distribution. The Fukushima disaster is an example of the impacts on otherwise "safe" infrastructures impacted by unanticipated climactic events.

Waste Isolation Pilot Plant, Carlsbad, New Mexico

> "The city power folks were the people who wanted the facility. But people in general had a variety of concerns about it, but ultimately a lot of concerned folks in Carlsbad were intimidated, some of them lost their jobs. Their kids got harassed...it got to the point that it was very hard to publicly say anything against WIPP"—Anonymous (quoted in Murphy and Kuhn, 2006).

The Waste Isolation Pilot Plant (WIPP) located near Carlsbad, New Mexico, an area with a history of economic marginalization, is the only operational deep geological repository for nuclear waste in the United States, designed to store transuranic waste from the nation's nuclear weapons program (Klaus, 2019). In 2014, two serious accidents occurred within days of each other: a fire from an improperly maintained vehicle and a radiation release caused by a chemically reactive waste drum that ruptured. The human errors behind these incidents were striking—the Los Alamos National Laboratory had mistakenly used organic kitty litter instead of an inorganic absorbent in packing waste, leading to an exothermic reaction that caused the drum to explode underground (Brumfiel, 2015). The radiation release exposed 21 workers and led to a three-year shutdown of the facility, costing taxpayers billions of dollars (Ialenti, 2021). While radiation doses were low, the accident significantly eroded public trust in nuclear waste management (Thrower & Martinez, 2000). The local population, which includes Indigenous and Hispanic communities, was largely excluded from decision-making about the repository's safety procedures. The long-term risks of underground contamination and exposure disproportionately affect these residents, raising serious environmental justice concerns.

Discussion

I have engaged in numerous conversations with colleagues, students, Indigenous youth, and proponents of nuclear energy about the decline in opposition to nuclear power in recent decades. A 2022 poll by Angus Reid found that 57% of Canadians supported the extension of nuclear power, up from 52% in 2021 (Angus Reid, 2023). While polling data provides a useful snapshot of public opinion, it is important to critically examine the socio-political conditions under which this shift has occurred. My discussions suggest that nuclear energy is increasingly framed as an inevitable, even necessary, solution to climate change—an urgency that fuels despair, particularly among younger generations.

There is resistance to the conception that nuclear energy is necessary to fight climate change evidenced by, for example, Austria filing legal action against Brussels over its classification of nuclear and gas-powered electricity generation as 'sustainable' in 2022 (see Ramana, 2024, p.95; Sovocool, 2014). However, researchers at the University of Virginia found that climate despair among youth decreased when technological and engineered solutions to climate change were discussed (Carter, 2024). The reframing of nuclear as a climate-change hero coincides with the temporal distancing of nuclear disasters and militarized nuclear projects, rendering their material and social legacies less immediately visible.

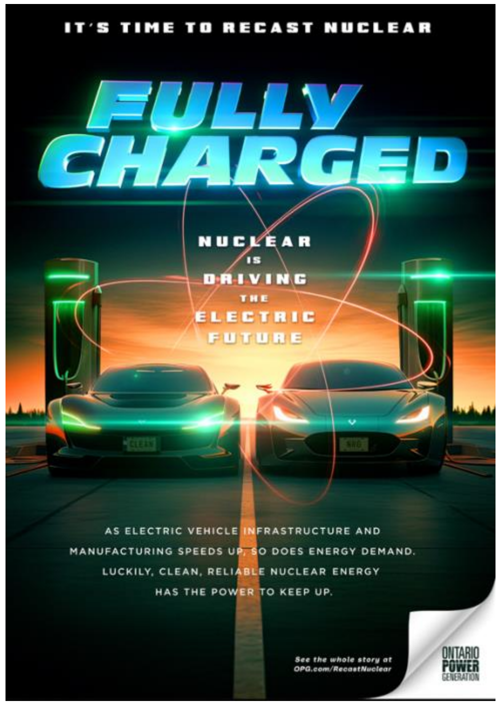

Figure 3 Advertisement from Ontario Power Generation's "Recast Nuclear" Campaign, 2024

Ontario Power Generation, for instance, has promoted a pro-nuclear narrative in urban centers like Toronto through its "Recast Nuclear" campaign (see Figure 2.), which positions the nuclear industry's negative public perception as an artifact of pop culture rather than a reflection of its material risks. The campaign attempts to reframe nuclear energy as misunderstood rather than contested, eliding histories of environmental harm and socio-political resistance. Meanwhile, cultural productions such as HBO's Chernobyl (2019) and Christopher Nolan's Oppenheimer (2023) have reanimated nuclear histories, offering dramatic retellings of past disasters and scientific breakthroughs that had devastating consequences. While these widely consumed narratives are compelling, they operate within particular discursive frames, foregrounding the spectacle while obscuring the slower, less visible forms of nuclear harm. Here, my aim is to align with Pitkanen and Farish's (2018) observation that critical geographical inquiries into nuclear landscapes are moving beyond the iconic—the Trinity site, the mushroom cloud—to attend to the less spectacular yet deeply consequential landscapes of nuclear power (p.862). In this sense, nuclear discourse is not only shaped by moments of catastrophe but also by the bureaucratic, infrastructural, and regulatory regimes that render nuclear risks mundane, permissible, and ultimately, governable. As the analysis outlined in this dissertation contends, the environmental justice implications of nuclear power are not confined to catastrophic failures alone; rather, they emerge through the structural and procedural mechanisms that enable slow violence to persist across the nuclear fuel chain.

Conclusion

One of the clearest manifestations of nuclear hegemony in Canada is the creation of sacrifice zones—territories designated to bear the burden of nuclear waste and contamination. These sacrifice zones are not distributed randomly but follow long-standing colonial patterns of dispossession and are increasingly being justified as required for the "green transition" (Scott, 2020). This chapter has highlighted the legacy of uranium mining on Indigenous territories, such as the Sahtú Dene experience at Port Radium, among other examples, which demonstrates how these communities have been systematically exposed to radioactive harm without adequate consent or compensation (Pentz-Gunter, 2020). The concentration of contamination on Indigenous lands also aligns with what Voyles (2015) calls *wastelanding,* as introduced in chapter two—the framing of certain landscapes as empty or expendable to justify their use for hazardous activities. The recent push for securing a solution for used nuclear fuel waste follows a similar pattern, with economically vulnerable regions being courted as 'willing host communities.' However, as I will explore in the next chapter, such processes are rarely as voluntary as they appear, and are shaped by economic dependencies, limited alternatives, and long histories of environmental injustice. Securing consent for radioactive waste has become a central goal for nuclear states across the world. Dominic Kelly (2014) examines how public uncertainty and resistance to nuclear power in Japan were strategically overcome through a politics of consent. Kelly argues that the U.S.-Japan alliance framed nuclear power as both a safeguard against communism and a pathway to modern prosperity, generating a dual psychological state of fear and hope. Notably, Kelly highlights the parallels between public persuasion efforts in the U.S. and Japan, reinforcing nuclear power as a key pillar of American influence in the post-war order (837). These dynamics are also present in the Canadian context. The following chapter will detail the NSDF siting process, the limitations of consultation, and will examine the role of the CNSC as a captured regulator.

Chapter Four:

Limits to Consent in the NSDF Siting Process

> "We have always been here… We have maintained our inherent rights under our own jurisdiction, our own custom, law and governance, known as Ona'ken'age'win, and this is our law, our supreme law that talks about the landscape and our freedom to conduct our traditions of hunting, gathering and to live sustainably through our inherent responsibility of our lands and waterways for our future generations. The Kichi-Sibi is important for our identity, central to our culture. It is our school. We learn from it. It has our history. It has our stories, our culture and our traditional practices held throughout. It is our church."
> — Chief Lisa Robinson, Wolf Lake First Nation (CNSC, 2022, p. 175).

Previous chapters have provided context of Canada's role in nuclear colonialism globally and locally. This chapter will present the detailed empirical case study of the NSDF at Chalk River Laboratories to generate insights about what can make public participation mechanisms more robust and meaningful. A central research question that I aim to address in this chapter is what, if anything, could make the process for siting radioactive wastes just. As discussed previously, the process for siting the NSDF for what the proponent characterizes as "low-level" radioactive waste does not occur under the Nuclear Waste Management Organization's (NWMO) "willing host model." Instead, it is evaluated according to the environmental assessment process under the *Canadian Environmental Assessment Act, 2012*, and the CNSC's licensing process which includes a public hearing process that gives involved parties and members of the public (called "intervenors") an opportunity to be heard before the Commission.

As discussed previously, Chalk River Laboratories is located adjacent to Deep River, ON, on the traditional territory of the Algonquin Anishinabeg. Five Algonquin

Nations, (Kebaowek First Nation, Wolf Lake First Nation, Mitchikanibikok Inik, Algonquins of Pikwàkanagàn, and Kitigan Zibi Anishinabeg) provided written submissions and presented oral interventions during public hearings as part of the CNSC's licensing process. The efforts of Kebaowek First Nation (KFN) and Kitigan Zibi Anishinabeg (KZA) are distinguished in this dissertation as central, given the relationship built between the researcher and members of these Nations, and because of the significant documentation of KFN and KZA's efforts, in particular, the Indigenous-led Impact Assessment the Nations conducted to assess the NSDF proposal. KFN and KZA's rights and territory is important context to understand their strategies toward influencing the NSDF licensing decision. As such, this chapter begins with a background section providing an overview of KFN and KZA's assertion of rights and title and follows with a mapping of the various avenues taken by these Nations to assert their right to apply or withhold consent. In their supplemental written submission published on the CNSC's website April 29, 2022, and presented during the oral hearing June 2, 2022, KFN states,

> "The proposed CNL NSDF project is located within KFN's traditional territory and adjacent to KFN's title territory, and accordingly has the potential to significantly affect it and KFN's rights attached to it… On January 23, 2013, Kebaowek First nation, Wolf Lake First Nation (WLFN) and Timiskaming First Nation (TFN) jointly released a Statement of Asserted Rights and Title (SART) which summarizes the Aboriginal rights, including title, which our three First nations assert and provides detailed evidence to substantiate it including around the Chalk River nuclear site [see Figure 4]… there is no treaty covering the Algonquin Nation's traditional territory. KFN's title territory lies within this traditional territory, northwest and upstream of the CNL site and consequently we have active Aboriginal title with respect to our lands. KFN's Aboriginal title stems from its historic occupation of its territory specifically. Its title has remained intact and survived the assertion of British sovereignty and has never been ceded or surrendered by treaty. KFN's title claim is about our ownership, not only of the land portion of its territory, but includes the airspace, land covered by

> water, offshore and inshore water bodies, foreshore, rivers, lakes and streams. First Nations enjoy a number of important rights as a result of our Aboriginal title. The Supreme Court of Canada has clarified that with Aboriginal title comes the right to:
>
> 1. benefit from the land, including to profit from it economically;
> 2. decide how the land will be used;
> 3. enjoy and occupy the land;
> 4. possess the land; and
> 5. pro-actively use and manage the land.
>
> These rights that flow from title have an important impact on the Crown's duty to consult and accommodate. They become the rights and interests for which consultation is owed, meaning that a project's potential impacts on any of the above-listed rights that flow from title must be mitigated and accommodated. This is in addition to the consultation that is owed to the KFN on our constitutionally protected Aboriginal rights to engage in activities such as fishing, hunting, trapping, and gathering. While the site in question is not within KFN's title territory, the impacts of the proposed project will undoubtedly be felt upstream from it. Consequently, our rights that flow with our title to our land are engaged in this process" (Kebaowek First Nation, 2022, pp.1–7).

Notably, the SART Nations have all publicly opposed the proposed NSDF at Chalk River Laboratories and shared support for each other in respective interventions. Governance protocols between SART Nations exist and are practiced outside of the settler regulatory system, and KFN and KZA have consistently asserted their right to influence decisions or have authority over land-use propositions that have the potential to impact rights holders on SART Asserted Aboriginal Rights Area shown in green in Figure 4.

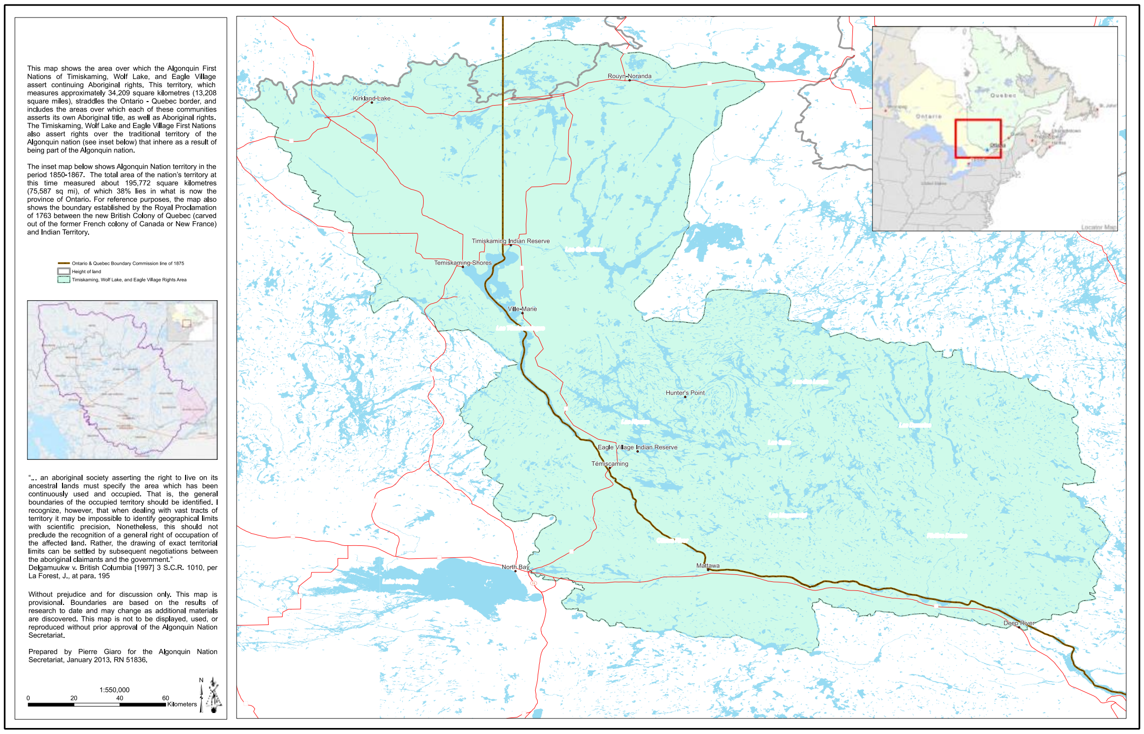

Figure 4 Timiskaming First Nation, Wolf Lake First Nation, and Kebaowek First Nation (Eagle Village) Map of Asserted Rights and Title

The willing host model is described in this chapter because the siting process for the NSDF occurs in *the absence* of a formal consent mechanism, like the willing host model used in the Nuclear Waste Management Organization's siting of a DGR for radioactive waste. The willing host model relies on communities volunteering themselves as potential "host communities" interested in hearing more about the project, followed by community engagements, and ultimately, the municipality and most proximate First Nation providing willingness to host the site (NWMO, n.d.).

The *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) is discussed by Algonquin Nations throughout the CNSC's regulatory process for licensing the NSDF, as it contains several articles that pertain specifically to the rights of Indigenous peoples when hazardous waste sites are being considered for siting, for example, Article 29.2 which states, "States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their *free, prior and informed consent* [emphasis added]." Also relevant is Article 32, which requires, "states to consult and cooperate with Indigenous peoples to obtain consent before approving projects affecting Indigenous lands or territories: States shall consult and cooperate in good faith with the Indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources…" (United Nations, 2008, p.11; p.12).

On June 21, 2021, the *United Nations Declaration on the Rights of Indigenous Peoples Act* was granted Royal Assent and came into effect immediately. The Canadian government submits that the Act marks a significant step toward advancing the implementation of the Declaration and strengthening the Government of Canada's relationship with Indigenous peoples. Its primary aim is to affirm the Declaration as an international human rights instrument that can guide the interpretation and application of Canadian law, while also establishing a federal framework for its implementation (Canada, 2021). How UNDRIP is interpreted in the NSDF licensing decision is a key aspect of analysis in this chapter, as it is a primary tool for Indigenous Nations to be able to apply or withhold consent in the absence of a “formal mechanism,” such as the willing host model.

The federal government has a duty to consult Indigenous groups when proposed projects could potentially impact Aboriginal or treaty rights, consistent with Section 35 of the *Constitution Act, 1982*. Section 35 recognizes and affirms the existing Aboriginal and treaty rights of Indigenous peoples in Canada. While the section itself does not explicitly mention consultation, the Supreme Court of Canada has established through case law (especially *Haida Nation v. British Columbia (2004)*) that: The Crown has a constitutional duty to consult and, where appropriate, accommodate Indigenous peoples when it considers actions or decisions that may affect their Section 35 rights. The adequacy of consultation conducted by Canadian Nuclear Laboratories (CNL) with potentially affected First Nations will be discussed throughout this chapter. In the following section I will trace previous governing models enacted to manage legacy waste at Chalk River Laboratories leading up to the NSDF proposal.

Legacy Waste Management at Chalk River Laboratories Prior to the NSDF Proposal

The NSDF is proposed to manage legacy waste that has been accumulating on site since the 1940s. According to Natural Resources Canada (NRC), “More than half of the nuclear legacy liabilities under the responsibility of the GoC... are the result of Cold War activities during the 1940s, 50s and early 60s... the remaining liabilities stem from R&D for nuclear reactor technology, the production of medical isotopes, and national science programs” (NRC, 2011). The governance of these nuclear legacies is deeply entangled with militarism, broader questions of state responsibility, and the shifting terrains of risk management in new eras of neoliberal restructuring. The Nuclear Legacy Liabilities Program (NLLP), initiated in 2006 and managed by Natural Resources Canada, represents a pivotal moment in the Canadian state’s efforts to manage the environmental and financial burdens of its nuclear past (Standing Committee on Environment and Sustainable Development, 2022). These burdens, embedded in the landscapes of Ontario, Manitoba, Quebec, and Nova Scotia, reveal the material and ideological contradictions of nuclear modernity—where the promises of technological progress have left behind a toxic legacy.[13]

The NLLP was framed as an initiative designed to reduce the risks of radioactive contamination while implementing a more 'cost-effective' approach to decommissioning and waste management. Yet, beneath the surface of project milestones and risk mitigation strategies are a deeper logic of austerity and privatization. Overseeing approximately $870 million in expenditures from 2009 to 2015, the program sought to dismantle and contain the physical remnants of Canada’s nuclear research infrastructure (NRC, 2025). However, rather than marking a resolution to the nuclear liability crisis, the program instead became a prelude to a broader restructuring of state-industry relations through the

[13] A Natural Resources Canada Report (2025) evaluating the Nuclear Legacies Liability Program stated, “Chalk River Laboratories in Ontario; Whiteshell Laboratories in Manitoba; Nuclear Power Demonstration Reactor in Ontario; Gentilly-1 Reactor in Quebec; and Douglas Point Reactor in Ontario need to be safely decommissioned to meet federal and international regulatory requirements, and appropriate long-term solutions need to be developed and implemented for the resulting waste management.”

Government-Owned, Contractor-Operated (GoCo) model, wherein Atomic Energy Canada Limited (AECL) (the Crown corporation owning CRL) was restructured transferring cleanup operations to a private-sector operator (Canadian Nuclear Laboratories) under AECL's oversight. The termination of the NLLP in 2015 and the privatization of management and operations of CRL raised concern about management and oversight of federal funding to address Canada's nuclear legacy liabilities (Hendrickson & McClenaghan, 2017).

The transition to a GoCo model in 2015 was presented as an effort to introduce private sector 'efficiency' and 'innovation' into nuclear decommissioning, yet it also signified a withdrawal of direct state management, transferring operational control to private contractors while maintaining public ownership of nuclear liabilities. This shift reflects the broader neoliberal imperative of offloading state responsibilities onto market actors, wherein risk remains socialized while potential profits are privatized (Hendrickson & McClenaghan, 2017).

Under Stephen Harper's federal government (2006-2015) the GoCo model proceeded and a long-term nuclear waste infrastructure at Chalk River (what would become the 'NSDF' proposal) was introduced as the solution to the liability waste at the Chalk River site. Under the GoCo model, the Canadian public ultimately shoulders the financial and environmental risks associated with nuclear decommissioning, as liability remains with the state while operational control is outsourced. Taxpayer funds continue to finance cleanup efforts, but private contractors benefit from guaranteed payments without assuming the long-term risks of nuclear waste management. Local communities near nuclear sites experience the material consequences via the risk of environmental degradation while government officials benefit politically by presenting the transition as both a solution to a long-standing problem and a cost-saving measure. Corporate interests (particularly private firms specializing in environmental remediation and decommissioning) further capitalize on this restructuring by securing lucrative contracts and externalizing liability to the state.

In 2016, CNL – as the Chalk River Laboratories operator – proposed the NSDF as a long-term disposal facility for AECL's low-level radioactive waste (AECL, 2018). Chalk River was chosen as the location because the majority of the legacy waste (90%) is already at the CRL site, eliminating the need for additional long-distance transport; the remaining waste would be transported from Manitoba along with "other Canadian sources, such as universities and hospitals" (Canadian Nuclear Laboratories, 2020, p.2-6). As will be discussed in more detail later in this chapter, shipping waste from other AECL sites to fill the 10% capacity of the NSDF is a central aspect of opposition for many intervenors. The NSDF is planned as an engineered mound capable of containing up to 1,000,000 cubic metres of low-level waste, including materials from "65 years of operations at the Ontario site, waste from the remediation of contaminated lands, and debris from ... decommissioning activities" (CNL, 2025). By permanently disposing of these wastes in a modern facility, CNL and AECL aim to remediate legacy contamination, tear down obsolete buildings, and "revitalize" the Chalk River site (AECL, 2018).

The Road to the NSDF: Participation and the Challenge of Consent

Procedural Timeline

In Canadian regulatory practice, an environmental assessment (EA) or impact assessment (IA) is a formalized mechanism intended to ensure that projects are evaluated with due consideration for their potential environmental impacts.[14] It is a process that unfolds within a framework of laws and policies that reflect a settler-state logic—one that assumes authority over land use decisions resides within a centralized, bureaucratic structure.

Even though it unfolded between 2017 and 2021, the environmental assessment process for the NSDF occurred under the *Canadian Environmental Assessment Act, 2012* instead of the Impact Assessment regime that came into effect in 2019 (as a result of it having begun under the previous legislation). The CNSC makes decisions on the licensing of major nuclear facilities through a public hearing process, which gives involved parties and members of the public (called "intervenors") an opportunity to be

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[14] Environmental assessments are conducted under *Canadian Environmental Assessment Act, 2012*, for projects submitted prior to the *Impact Assessment Act, 2019* coming into force. Environmental assessments are more limited in scope and focus on primarily biophysical environmental impacts. Impact Assessments are undertaken for projects proposed after the enactment of the *Impact Assessment Act, 2019*. Changes to the framework include a new mandatory early planning and engagement phase which includes early dialogue with Indigenous peoples, provinces, the public and stakeholders to identify and discuss issues early. Impact Assessments also have more flexible timelines than environmental assessments and are intended to have early and inclusive engagement and participation at every stage, with the aim of securing consent through processes based on recognition of Indigenous rights and interests from the start (Canada, 2024). Indigenous governments have greater opportunities to exercise powers and duties under the *Impact Assessment Act* (Canada, 2024).

heard before the Commission. An overview of the timeline according to CNL is as follows:

- March 2017: Draft Environmental Impact Statement submitted to the CNSC.
- May – August 2017: Formal public and Indigenous comment period on draft EIS.
- September 2017: CNL receives all comments and information requests on the draft EIS.
- November 2019: CNL addressing responses to comments on draft EIS. Revised draft EIS submitted.
- May 2021: CNL submits final EIS and responses to public and Indigenous comments to the CNSC.
- July 2021: CNSC Staff deem EIS and licensing application documents acceptable.
- February 22, 2022: CNSC Commission Hearing Part 1.
- May 3- June 2, 2022: CNSC Commission Hearing Part 2.
- July 2022: Procedural Direction Announced.
- July 2023: Written submission for Procedural Direction.
- August 2023: Final written submissions and oral presentations.
- January 2024: CNSC Commission amends Chalk River Laboratories licence authorizing the construction of the NSDF.

The case study analysis in this chapter focuses on participant observation activities between May 2022 and August 2023. Ultimately, the NSDF Project hinged on three major regulatory decisions (see CNSC, 2022b). The first was an environmental assessment (EA) decision under *CEAA 2012*. This assessment was designed to consider the full lifecycle of the proposed facility. The second decision concerned the license amendment required to authorize construction, granted by the Nuclear Safety and Control

Act. Unlike the EA, which extended across the entire project lifespan, the license amendment decision was confined to the act of building the facility (CNSC, 2024).

Both decisions, by necessity, engaged the CNSC in its capacity as a regulator and an agent of the Crown. This brought into play its obligations under section 35 of the *Constitution Act, 1982*—specifically, the duty to consult and, where appropriate, accommodate Indigenous rights. Therefore, the third regulatory decision to be made by the Commission was to establish that these obligations had been met. Yet, the nature of these consultations, the scope of participation, and the delineation of authority within the regulatory framework raise deeper questions. What does it mean for Indigenous Nations to be consulted, but not to have the final say? How does a process bound by colonial law intersect with Indigenous governance systems? The approval of the NSDF Project did not just mark a regulatory milestone—it underscored the ongoing tensions between state authority and Indigenous jurisdiction over land and environmental stewardship.

Additional details outside of CNL's timeline will be discussed in this chapter, including legal action taken *after* the CNSC authorized the NSDF. Prior to CNL submitting the EIS in 2017, CNL announced its intention to apply for the construction of a waste facility, on October 23, 2015, triggering a sequence of procedural steps. On April 1, 2016, CNL submitted its initial application, setting the wheels in motion for the EA process for what would become known as the NSDF Project. Shortly after, on May 6, 2016, the Canadian Nuclear Safety Commission (CNSC) issued a notice of commencement, formalizing the start of this assessment (CNSC, 2024).

The determination of what factors should be considered in the EA was made on March 8, 2017, when the Commission decided that the scope would include limited elements under the Canadian Environmental Assessment Act, 2012 (CEAA 2012; CNSC, 2024). No additional considerations were introduced, despite the complexities inherent in a project of this magnitude. On March 31, 2017, CNL submitted an application to amend its license, seeking approval for construction. This application was later updated on March 26, 2021, incorporating revised technical documentation, reflecting the iterative nature of regulatory compliance (CNSC, 2024).

CNL speaks to the Environmental Impact Statement as a tool intended to hear concerns from potentially impacted communities and provide mitigation measures.[15] The methods for consulting First Nations during the EA process, however, was perfunctory. For example, consultation attempts with Kebaowek First Nation resulted in three letters and two phone calls between July 15, 2016, and March 24, 2017. This represents an aspect of procedural inequality. Oftentimes, First Nations communities are bombarded with requests from proponents or the Crown who want to exploit their land, and many communities have limited financial and staff capacity to keep up with such requests, as raised by both Kebaowek Councillor Justin Roy, and Kitigan Zibi Elder Verna McGregor at the CNSC public hearings June 2, 2022 (see also Sankey and Tanguay, 2023, p.13).[16] Tony Wawatie, who was the Chief of Mitchikanibikok Inik at the time of the 2022

[15] Interview with CNL executive, August 8, 2024.
[16] This sentiment was captured in my observation notes on site, and reconfirmed in the hearing transcription I received on request.

hearings, articulated this well, "…So these consultations that we get all the time, you know, every little thing that you guys want to exploit. Consultation, consultation. So, I think maybe instead of bringing Elders like that, you know, you need to listen to us. We have a checklist, too. You want that checklist of accommodating…and if we don't answer and if we don't respond…are we saying it's okay? Silence is consent? I say, no, it's not consent." [17]

Despite repeated interventions from First Nations expressing concerns of inadequate consultation, public engagement formed a central—if constrained—aspect of the regulatory process. The Commission held a two-part public hearing, beginning with a virtual session on February 22, 2022, where the CNSC and CNL made presentations (see CNL, 2022; CNSC, 2022). The second part of the hearings took place from May 30 to June 3, 2022, in Pembroke, Ontario and served as a platform for presenting evidence and submissions, not only from CNL and CNSC staff but also from 165 intervenors. This exercise in public participation was, however, found to be incomplete. On July 5, 2022, the Commission announced that additional time would be needed to address gaps in engagement and consultation efforts with Kebaowek First Nation (KFN) and Kitigan Zibi Anishinabeg (KZA). In response, KFN, KZA, AECL, CNL, and CNSC staff were invited to provide further input (CNSC, 2024). Details of these hearings are provided below.

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[17] This sentiment was captured in my observation notes on site, and reconfirmed in the hearing transcription I received on request.

By May 17, 2023, the Commission had reviewed the additional submissions and declared itself satisfied with the information received (CNSC, 2024). This announcement paved the way for an August 10, 2023, a hearing that the CNSC scheduled to be virtual, but the KFN and KZA, after several requests to appear in-person, organized a gathering with Algonquin communities and allies, while the CNSC attended virtually. Those who had intervened during Part 2 of the public hearing (May 30 to June 3, 2022) were given the chance to submit final written statements (CNSC, 2024). Details of both the May-June 2022 hearing, and the August 10th, 2023, oral hearing are described in more detail below.

In the Absence of a "Willing Host" Mechanism for the NSDF

The value in assessing the parallel siting processes of two similarly contentious permanent nuclear waste sites is in the distinction between what characteristics qualify one infrastructure for a consent-based model (the DGR) and not the other (the NSDF). In 2021, when we began researching for the report *Operationalizing Indigenous-led Impact Assessments* (2023), led by Principal Investigator Dr. Dayna Scott, and supported by a team of engaged researchers, our focus extended beyond whether an Indigenous nation had the opportunity to grant or withhold consent within the IA process. We also sought to understand how those decisions were reached. We examined the recent trend towards Indigenous-led Impact Assessments (IAs) and mapped out their implementation along a spectrum. On one end, we included assessments conducted under settler-state processes, following settler IA protocols, with final decisions resting in the hands of state regulatory bodies. On the other end is the "willing host model" used by the Nuclear Waste Management Organization (NWMO) to site a DGR for used nuclear fuel waste, which emerged from Ontario Power Generation's (OPG) similar commitment to not build a Deep Geological Repository for low- and intermediate level radioactive waste on Saugeen Ojibway Nation's territory without obtaining consent.[18] In that case, the Saugeen Ojibway Nation voted against the site, the decision was respected, and OPG moved forward with identifying an alternative location for the site with a willing host. However, even in the absence of approval for a deep geological repository to store nuclear waste, and in the absence of a "willing host model," the Saugeen Ojibway Nation continues to host a nuclear waste storage facility at the Bruce Nuclear site, where waste remains above ground like in other cases where nuclear reactors are located. Regardless of future decisions regarding long-term nuclear waste storage, the Crown has a clear obligation to engage with the Saugeen Ojibway Nation regarding the ongoing storage of nuclear waste on their lands—a process that has been established without consultation (Land, 2019). In many ways, the consent model employed by OPG successfully acknowledged the jurisdiction of the Saugeen Ojibway Nation by recognizing the legitimacy of their Indigenous governance model and decision-making authority. This

[18] As I will discuss in chapter four, the willing host model is not without its complications. Its implementation has been uneven and its limitations in practice raise questions about how it could be made more robust, more legitimate, and more widely accepted. The purpose of introducing the willing host model into the scope of this chapter is to raise the inquiry of why one permanent radioactive waste infrastructure gives communities who host the opportunity to oppose the infrastructure, while the other does not.

approach established a precedent for how the licensing of future projects should be conducted.

The central reasons offered by CNL for the NSDF not adhering to a consent-based structure like the willing host model included: risk determination—that the waste characterized by CNL as "low level" will remain radioactive for hundreds, not thousands or millions of years[19] that most of the waste (90%) is already in place at the Chalk River site;[20] that the Deep Geological Repository is a brand new site[21], effectively establishing the host community as a "nuclear community;" and that the willing host model is too expensive and takes too much time.[22] In the absence of a "willing host" model for the NSDF, the opportunities for engagement and participation for the public and Indigenous communities were reduced to the requirements held in *CEAA 2012*, as well as constitutionally protected rights under Section 35 of the *Constitution Act, 1982*.

As argued by KFN and KZA, principles of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) should have also been incorporated. During the June 2022 hearings, the Algonquins of Pikwakanagan argued for their right to be recognized as willing hosts (Algonquins of Pikwakanagan First Nation, 2022). Amanda Two-Axe Kohoko, speaking for the Algonquins of Pikwakanagan, cited the (Joint Iroquois and) Anishinaabeg Nation's Declaration on nuclear waste, in which the

[19] Interview with CNL executive, August 8, 2024.
[20] Interview with CNL executive, August 8, 2024.
[21] Interview with CNL executive, August 8, 2024.
[22] Interview with Senior Municipal Leader in the region, August 28, 2024.

proposed NSDF breaks all but one principle arrived upon (see also Anishinabek News, 2017). Interestingly, as of 2023, following the signing of a long-term relationship agreement, CNL now considers the Algonquins of Pikwakanagan to be "willing hosts."

The "Willing Hosts" of the NSDF

Despite no formal mechanism or process, CNL claims they have secured "willing hosts" for the NSDF; the Town of Deep River, the Algonquins of Pikwakanagan, and Renfrew County.[23] What does this mean in the absence of a formal mechanism? In the Town of Deep River, which identifies as a host community, there was no vote because only one person came to town council to vote against; if there was a significant amount of rhetoric against it, a municipal official claimed a plebiscite would be considered.[24] The Canadian Association of Nuclear Host Communities are currently considering what benefits should be received by communities where nuclear infrastructure is sited,[25] largely due to the stigma that comes along with being a host community. In my interview with a senior municipal leader in the region on August 28, 2024, they clarified that nobody wants to live in a toxic community, so the first benefit would have to be safety, and following a safety assurance, monetary compensation would be second.[26] An impact of Chalk River felt by the town of Deep River is the stigma that comes from being a nuclear community;

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[23] In an interview with a CNL executive, August 8, 2024, it was emphasized that CNL has willing host communities in the Town of Deep River and the Algonquins of Pikwakanagan. The CNL executive stated they achieved securing a willing host community, but followed a different approach than the NWMO.
[24] Interview with Senior Municipal Leader in the region, August 28, 2024.
[25] Interview with Senior Municipal Leader in the region, August 28, 2024.
[26] Interview with Senior Municipal Leader in the region, August 28, 2024.

“activist” groups posting photos of highlighter-green ooze with every update that comes from the site that could be construed as harmful, whether it’s someone breaking a leg on site, or municipal sewage contamination. However, Deep River does not necessarily associate with being negatively stigmatized, because it was voted the best place to live two years in a row.[27] The Algonquins of Pikwakanagan did not publicize how they developed frameworks for consent, or how they decided to express their willingness toward the project, but CNL publications signal the expression of consent to be via the signing of a “long term relationship agreement.”

The lack of a formal consent mechanism for the NSDF in place for a long-term relationship agreement reflects a semblance of the conditions described by Dayna Nadine Scott’s characterization of “consent by contract,” in the context of IBAs. According to Scott, this governance model attempts to structure the social, political, ecological, and economic relations surrounding Indigenous lands through confidential negotiations between private extraction companies and First Nations, while still allowing the state to play a central role in shaping the terms (Scott 2020, p.272–73). Scott further argues that this form of contracting produces distinct outcomes: while it facilitates extractive industries’ access to Indigenous lands, it also provides a short-term resolution that postpones addressing regulatory failures in public law (2020, p.272). Crucially, Scott emphasizes that these agreements do not simply fill a gap in governance but rather exist because the state deliberately maintains conditions that allow extraction contracting to

[27] Interview with Senior Municipal Leader in the region, August 28, 2024.

function (Scott, 2020, p.273). This process, Scott contends, “insulates the settler law from demands for reform” and prolongs state authority over contested lands, delaying deeper structural changes that could lead to the meaningful redistribution of wealth from industry to Indigenous peoples (Scott. 2020, p. 273).

CNL’s reliance on informal agreements—such as the passive endorsement from Deep River and the undisclosed consent process of the Algonquins of Pikwakanagan concluded by the signing of a “long term relationship agreement”—suggests that consent is being achieved through contractual rather than democratic means. By framing these arrangements as voluntary, the state and industry reinforce existing power structures while avoiding more substantive conversations about Indigenous jurisdiction, environmental risk, and equitable benefit-sharing.

Between May 30 and June 2, 2022, Canada’s nuclear regulator, the CNSC, held a five-day public hearing to deliberate on CNL’s request to amend its nuclear research and operating license for the Chalk River Laboratories site to accommodate the construction of a near-surface disposal facility (NSDF) for low-level radioactive waste. Under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), the NSDF was required to undergo a federal environmental review before any license could be granted. At the center of these proceedings was the unresolved question of radioactive waste accumulated over 70 years at Chalk River, housed in surface-level interim storage. CNL presented the NSDF as the long-overdue solution—one that promised to remediate the site, mitigate federal nuclear liabilities, and provide a repository for future waste generated at the facility. The estimated cost of the project stood at $750 million. Designed to operate for 50 years before entering a closure phase, the NSDF would then remain under "institutional control" until the CNSC determined its release from regulatory oversight.

I attended these hearings in the basement of the Best Western hotel in Pembroke, ON, with the gallery and intervenors facing an elevated board of CNSC members. Several intervenors noted that this was not a culturally appropriate way to consult with or hear concerns and grievances from affected First Nations. Amanda Two-Axe Kohoko, the Consultation Coordinator for the Algonquins of Pikwakanagan, for example, stated in her oral intervention, "...making such a presentation in a formal technical setting is not a good way to build relationships. It's just because it's uncomfortable for us."[28] Councillor Justin Roy from Kebaowek First Nation noted that in Algonquin tradition, these conversations would be more appropriate taking place in community, in a circle where everyone could be seeing each other as equals. Nevertheless, the hearings proceeded over five days from May 30-June 2, 2022. The structure of the hearing consolidated the EA and licensing matters, with each day assigned a thematic focus. In the following sections, I rely on my notes from the hearing. Quotes are transcribed from the hearing recording that was made publicly available on the CNSC website.

[28] This sentiment was captured in my observation notes on site, and confirmed in the hearing transcription I received on request.

The first day of hearings on May 30, 2022, was dedicated to the environmental assessment, where 17 industry, government, and public interest intervenors presented their cases in tightly allotted 10-minute slots. CNL and the CNSC staff, however, were granted opportunities to open each day's proceedings—raising questions about procedural equity among public interest intervenors.

The second day of the hearing turned to the long-term safety case of the NSDF, with twenty intervenors, including industry associations and public interest groups presenting their analyses and concerns. CNL opened the day by asserting that their proposed facility met or exceeded Canadian regulatory guidelines, emphasizing that the NSDF could withstand seismic events 100 times more powerful than the strongest earthquake recorded in Eastern Canada over the past 350 years. The CNSC's regulatory staff followed with a presentation on potential exposure scenarios, concluding that, even in the worst-case scenario analyzed, radiation exposure levels would remain below Canada's average background radiation dose (CNSC, 2022b). According to CNSC staff, the NSDF's design was built to last over 550 years, at which point, less than 1% of radionuclides would remain based on their half-life decay.

Despite these reassurances, concerns from intervenors quickly emerged. Dr. Ole Hendrickson of the Concerned Citizens of Renfrew County and Area questioned the exposure models used to assess public radiation levels, comparing the NSDF to similar facilities worldwide and highlighting accident scenarios that involved grouting failures and drop-and-load incidents. These, he argued, presented significant risks of dust inhalation and gamma radiation exposure—risks inadequately addressed by CNL's models. Concerns over worker safety and public exposure to routine incidents punctuated the day's discussions. The Concerned Citizens of Renfrew County and Area raised additional alarms about the nature of the waste slated for disposal, arguing that research facility waste like that from Chalk River should be classified as higher-hazard material requiring more stringent management. The Concerned Citizens of Renfrew County and Area pointed to an existing primary decommissioning plan for Chalk River, asserting that this plan should serve as the foundation for determining waste volumes rather than an entirely new disposal strategy (Concerned Citizens of Renfrew County and Area, 2022).

In one striking moment, CNL representative George Dolinar sought to quell concerns over environmental discharge, declaring that the facility would pose "*no significant adverse effects* to biota and humans in the area." This sweeping statement met with swift scrutiny from intervenors, who challenged its validity given the range of radionuclides—both from legacy contamination and anticipated future waste—slated for storage in the NSDF. "We keep hearing that the amount of long-lived radionuclides make up a small proportion of the total waste. This is simply not true. Tritium would be released in immense quantities," countered Dr. Ole Hendrickson of the Sierra Club Canada, calling into question the credibility of CNL's risk assessment. "It doesn't provide great confidence in the work that's been done to assess this facility."

The Old Fort William Cottagers Association expressed particular concern over the NSDF's proximity to the Ottawa River—a drinking water source for millions—

questioning why a site so close to a critical watershed had been chosen when alternative locations, further removed from ecologically and culturally significant wetlands, could have been considered (Old Fort William Cottagers Association, 2022). As the first downstream community that would be affected by any radiation breach, the Association voiced deep apprehension about the potential environmental and health impacts of the project. Additionally, the Old Fort William Cottagers emphasized that the NSDF was being placed on unceded Algonquin territory, pointing out that the rock formation itself held immense spiritual and cultural significance for local Indigenous communities (Old Fort William Cottagers Association, 2022). This echoed broader concerns about the project's failure to adequately consider Indigenous rights, governance, and stewardship of the land. Kerry Blaise intervened on behalf of the Canadian Environmental Law Association and illustrated questions of inter/intra generational justice. She stated,

> "...according to *CEAA, 2012*, the CNSC must take action that promotes sustainable development. Sustainability represents a goal in which biophysical, human, and socio-economic systems co-exist. It's also the process or program that allows for development which meets the needs of the present, without compromising the ability of future generations to meet their own needs…unfortunately CNL's consideration of sustainability remains critically flawed, and their evaluation criteria does not capture inter- and intra-generational justice concerns surrounding the distribution of economic, health and safety and environmental costs, risks, and burdens over its lifetime."

The third day of the hearing, June 1, 2022, continued to focus on the long-term safety case. The Radiation Safety Institute of Canada questioned why CNL's Environmental Impact Statement (EIS) failed to model a catastrophic event. CNL's response—that modeling catastrophic events could give "the public a wrong impression"—was met with skepticism by Dr. Caldwell of the Institute. “I remain skeptical that the approach answers what the normal person living on the Ottawa River would be concerned about. Deciding not to analyze a catastrophic intentional dumping into the Ottawa River is a mistake in my opinion. I don’t think you can predict what will happen in 50 years, or when there may not be a CNSC or CNL.”

Intervenor Nira Dookeran, a retired high school teacher and provincial election candidate, raised concerns about climate change risks, citing Ottawa’s recent severe weather events. When commissioners invited Peter Kimbell of Environment and Climate Change Canada to respond, he admitted his lack of expertise, stating, “I’m not a climatologist so I can’t really speak to the climate change angle.”

Dr. James Walker challenged CNL’s characterization of the NSDF as a disposal facility, arguing that given the longevity of many radionuclides, it more closely resembled waste storage rather than permanent disposal. Gracia James of the Provincial Council of Women of Ontario highlighted procedural fairness concerns, criticizing the 10-minute limit imposed on intervenors despite their expertise. She also pointed to the likelihood of geomembrane liner leaks, citing landfill failures using the same technology. Dr. Gordon Edwards of the Canadian Coalition for Nuclear Responsibility condemned the NSDF as “a quick and dirty approach to a 16-billion-dollar radioactive waste strategy,” presenting data on the long half-lives of stored radionuclides. As the hearing progressed, skepticism and resistance from the public, scientists, and advocacy groups remained palpable. The fundamental question of whether the NSDF truly represents a safe and sustainable solution for Canada's nuclear waste lingered unresolved.

The final day of scheduled hearings were reserved primarily for First Nations interventions. The Algonquin Nation consists of 11 communities under the Indian Act—nine in Quebec and two in Ontario. Currently, an active land claim on Algonquin territory exists between Pikwakanagan First Nation and an organization known as the Algonquins of Ontario.[29] Unfortunately, governments frequently rely on this organization for consultation on various files, as they are often in agreement. This dynamic played a role in the relicensing approval for CNL, which was granted based on consultation with the Métis Nation of Ontario and the Algonquins of Ontario alone (Van Schie, 2024). This context sets the stage for the licensing approval process.

The day opened with remarks from the CNSC President, Rumina Velshi, followed by an opening prayer by Elder Barbara Sarazin, who is also a Council Member of the Algonquins of Pikwakanagan. Elder Sarazin smudged the room and sang a ceremonial song of the Creator. Next, staff from CNL and the CNSC presented on their efforts toward consultation with Indigenous communities. Amanda Two-Axe Kohoko, speaking for the Algonquins of Pikwakanagan (AOPFN) opened the First Nations interventions

[29] This dissertation does not engage substantively with the broader controversy surrounding the Algonquins of Ontario (see Algonquin Nation Secretariate, 2016; Hafez, 2021). However, reference to the majority of Algonquin Nations' opposition to the legitimacy of the Algonquins of Ontario is included insofar as it relates to the implications for rights-holders in the NSDF siting process. Specifically, the consultation practices of CNL, which engaged in a colonially constituted entity rather than recognized rights-holders, raises concerns about procedural equity in the NSDF licensing process.

and outlined the several reasons that AOPFN were opposed to the NSDF proposal; namely, that AOPFN has not provided their free, prior, and informed consent; that AOPFN was not consulted in the scoping of the proposed site; and that AOPFN was not given the opportunity to follow Algonquin law to determine if the community would be a "willing host" for the nuclear waste site. Two-Axe Kohoko also emphasized that while the CNSC asserted the project would not significantly impact Indigenous rights, it failed to recognize the potential for fear among those who practice traditional medicine-making, hunting, and fishing, as well as the anxiety surrounding possible land contamination.

Elder Verna McGregor from Kitigan Zibi Anishinabeg reminded the Commission of historical acts of oppression and dispossession of Algonquins and added that not only has the state attempted forced sterilization of Indigenous women (including herself), but that radioactive waste risks the fertility of the earth. Elder McGregor was then asked by CNSC Commissioner Marcel LaCroix, "...a very simple question, with regards to the near surface disposal facility: do you think that the reconciliation process is in the right direction? Are we proceeding correctly? If not, what could we do to improve things?"[30] Setting aside the striking irony that such a complex issue was framed as a "very simple question," Elder McGregor responded with generosity. She detailed how experiences of colonization, the lack of legitimacy given to Indigenous Knowledge when it conflicts with Western science, and the fact that the Kitigan Zibi have never been consulted (adequately or appropriately) with any infrastructures or activities at the Chalk River site

[30] Research notes confirmed quote as transcribed in CNSC public hearing transcript, p. 92, 2 June 2022.

since it was constructed in 1944, among other things. Elder McGregor articulated further in her final response,

> "... the focus on nuclear, with all this push towards now —we are in the age of climate change, but we have also destroyed 80 percent of biodiversity. We are in the age of climate change, so one of the solutions now is to switch all the vehicles to electric, but that will fuel also...the need for nuclear. So again, even our process of consultation here with you ... it always comes into a confrontation. It's not meant to be that way. Our process was the circle, that everybody is in the circle, and although it does take more time...it's the ability to also come up with unique solutions and sometimes that's for everyone. So, our biggest concern short term is that as Algonquin First Nations we weren't consulted properly, especially on the Québec side. *So, no* (emphasis added)."[31]

Elder Verna McGregor also articulated that consultation activities should have been delivered by a framework contemplated and accepted by Algonquin communities as a collective, iterative process that was created by community governance, laws, and protocols.

Later in the hearing, legal counsel for Kebaowek First Nation, Renée Pelletier, raised a point on the Duty to Consult and Accommodate—that there is a procedural component (did meetings take place? How many? Were First Nations consulted in a manner of their choosing?), and a substantive process (aimed at determining whether the concerns raised by the Indigenous group consulted have been addressed or "accommodated"). Pelletier noted that Kebaowek asked for an adjournment of the hearings because they needed more time to prepare, and because the Commission did not have a list of Kebaowek's concerns and potential rights impacts, they could not be

[31] Research notes confirmed quote as transcribed in CNSC public hearing transcript, June 2, 2022.

accommodated. Therefore, the CNSC could not satisfy the requirements under *Canadian Environmental Assessment Act, 2012,* or meet the conditions under the *Nuclear Safety and Control Act.* Interventions were heard from the Algonquins of Pikwakanagan, Wolf Lake First Nation, Kebaowek First Nation, Kitigan Zibi Anishinabeg, and Mitchikanibikok Inik. None of the intervening First Nations offered their Free, Prior, and Informed Consent, and all of the intervening Algonquin Nations drew attention to the inadequacy of consultation by CNL.

As the hearings came to a close, the Corporation of the Town of Deep River, followed by the County of Renfrew provided presentations. Both municipal bodies expressed strong support for the proposed NSDF citing the trust in experts at CNL and employment benefits associated with the project. Later in the day, the Mayor of Pembroke appeared, similarly voicing full endorsement. This broad municipal support was counterbalanced later in the morning by Jane Toller, the elected Warden of the Municipalité régionale de comté de Pontiac, the region my parents live in. Toller emphasized that the Pontiac region had unanimously passed a resolution opposing the NSDF, primarily on the grounds of its proximity to the Ottawa River. She articulated concerns regarding the existing public health challenges within Pontiac, stating that the Pontiac has the worst health in any of Quebec's counties, where residents experience cancer, respiratory and heart disease, and diabetes. Warden Toller noted that community members fear the project could exacerbate these conditions, particularly in the event of leakage. Addressing the CNSC, she implored regulators to prioritize the well-being of those downstream.

Intervenor John Jackson, representing Nuclear Waste Watch, underscored the lack of community acceptance of the NSDF. He referenced a 2017 study conducted by Nuclear Waste Watch in collaboration with an independent consultant, which assessed public awareness and support for the project through surveys and roundtables. The findings revealed limited public awareness and significant divisions within the community regarding the project's desirability. Jackson further noted that Nuclear Waste Watch had applied for participant funding to conduct a follow-up study on current public opinion but was denied funding. When Commissioner Maharaj inquired about the rationale for this denial, CNSC staff responded that an independent funding body had deemed the proposed study to be outside the scope of relevant considerations.

To close, CNSC President Rumina Velshi delivered a statement on the deficiencies in Indigenous consultation and engagement. She asserted that "persistence is not enough. This requires a new way of reaching out" and acknowledged that both CNL and CNSC had fallen short in their efforts to engage Indigenous communities. Velshi underscored that the concerns of First Nations communities must be meaningfully addressed moving forward. This sentiment set the stage for what came next.

Resistance Builds the Road to Additional Participation

For context, when the project commenced in 2016 through the CNSC and the request to conduct the assessment by CNL, no First Nation community or member of the public was engaged in defining the scope of the NSDF project (Van Schie, 2024). This exclusion placed all communities sharing the Ottawa River watershed in a position where they had no opportunity to propose an alternative location away from the river. CNL justified this by stating that they were following the recommendations under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012) rather than the *Impact Assessment Act, 2019,* which requires public input prior to the completion of the Environmental Impact Statement (EIS) whereas *CEAA 2012* does not.[32]

As the regulatory body overseeing the assessment, the CNSC lacked significant experience and capacity in Indigenous consultation and environmental assessment (Van Schie, 2024). This was the first environmental assessment conducted by the CNSC under *CEAA 2012*, as the task had been delegated to them by the Agency. Kebaowek First Nation, familiar with participating in environmental assessments—for example, with the Timiskaming Dam Complex—quickly identified inadequacies in how the CNSC handled the assessment (Van Schie, 2024). After receiving presentations from five Algonquin First Nations during the June 2022 hearing, the commissioners issued a procedural direction requiring consultation with KFN and KZA. However, they provided a very short timeline of just six months to complete this work. Given the project's complexity—which involved extensive document review—and the fact that these communities had not previously been engaged regarding the proponent's EIS, the consultation process had to be conducted under significant time constraints. Despite these efforts, the CNSC failed to fully meet its consultation obligations, as not all Algonquin Nations were included. Specifically, the Algonquins of Barriere Lake and other Algonquin Nations within the

[32] Interview with CNL executive, August 8, 2024.

territory were excluded. Nevertheless, KFN and KZA proceeded with the consultation process (Van Schie, 2024).

Given the knowledge that this was a contentious project, it remains curious as to why there was no willingness by the proponent to consider some of the updates to engagement in the *IAA, 2019*, or to consider some of the recommendations in the Government of Canada's Expert Panel (2017) for the review of impact assessment processes. For example, the expert panel recommended, "Should Indigenous Groups without modern treaties wish to undertake their own IA processes, they should be able to do so, and co-operation arrangements with these Groups should be negotiated. Federal IA governance structures and processes should support Indigenous jurisdiction" (Gélinas et al., 2017, p. 24).

In 2022, KFN formally made a submission to the CNSC arguing that the NSDF's potential impacts on its rights have not been assessed, remain entirely unknown to the commission, and that it had not been consulted on the project. The CNSC subsequently filed a procedural direction, allowing First Nations to file additional information by the following year. So, despite the lack of a formal co-operation arrangement that supported Indigenous-led assessment, KFN and KZA undertook their own Indigenous-led IA. KFN and KZA's Indigenous-led assessment filled many of the gaps that they saw with the official assessment. Driven by the community's motivation to be a part of the solution, the assessment uncovered several concerns. These include the destruction of a sacred mountain inhabited by many denning bears, heightened toxicity of traditional foods like walleye and sturgeon due to radionuclide exposure in the river, and of moose feeding and moving through Perch Creek where wastewater discharge is planned. Central to KFN and KZA's analysis is the examination of interconnected impacts with a commitment to preserve and honour ecosystem balance. In other words, their refusal to consent was based on good reasons.

KFN negotiated a process agreement with CNL to establish a framework for accessing the site and to conduct "ground-truthing" as a foundation to KFN and KZAs assessment. As part of this effort, KFN also consulted with its membership, conducted social, cultural, and economic surveys, and gathered input on values identified through the ground-truthing exercise. The consultation received 113 responses, while the Timiskaming Dam assessment gathered 170 responses, highlighting what the assessment referred to as high-value components (Van Schie, 2024). KFN and KZA sought a more holistic, self-determined approach to the assessment. Their findings revealed that the proposed project site is located on a large mountain that drains into Perch Lake and Perch Creek, both of which feed into the Ottawa River watershed. The plan involves the complete removal of the mountainside and its replacement with a multi-story nuclear waste facility designed to store low- and intermediate-level waste. The assessment also identified the site as a winter deer yard, which is ecologically significant because it is connected to the habitat of the eastern wolf—a species of special concern under the Species at Risk Act, with a pending order to reclassify it as threatened (Van Schie, 2024). This raised immediate concerns about why CNL had not conducted baseline studies on the deer and moose habitats. Additionally, it was discovered that CNL has been lobbying against the reclassification of the eastern wolf to a threatened status (Van Schie, 2024). COSEWIC tried to up list in 2015, but CNL said it would cost them $160M because this location would no longer be considered for the NSDF (Woolf, 2024).

Procedural Direction Established by the CNSC

The Procedural Directive was issued on July 5th, 2022, which provided an initial deadline of January 31st, 2023, (then extended to May 1st, 2023) the CNSC allowed KZA, KFN, and Mitchikanibikok Inik to make their submissions orally (in the "spirit of reconciliation and in recognition of the Indigenous oral tradition for sharing knowledge") though, the hearing was received virtually by the CNSC, AECL and CNL, despite repeated requests for an in-person gathering. On May 17th, 2023, the Commission announced that it was satisfied with the information on the record relating to CNL's application and that it did not require any additional information and that it was ready to proceed to the final submissions stage of the hearing, therefore, the oral submissions were not allowed to introduce any new information.

As a result of the CNSC's Procedural Direction, the final oral hearing was set for August 10th, 2023, when intervening Indigenous Nations and allied groups and individuals met at 50 Sussex Avenue in Ottawa, the site of The Royal Canadian Geographical Society. Community members from Kitigan Zibi brought a beautiful birch bark canoe to the location with the intent of a community paddle down the Ottawa River, passing Parliament Hill, following the hearings. The hearing was set up with a room inside with a panel of intervenors, and seating for many observers. Outside, there was additional seating for overflow, which was filled most of the day, while a fire keeper maintained a Sacred Fire. Elder Verna McGregor articulated the significance of the location and the birch bark canoe:

> "The Algonquin Omàmiwininiwak, we are known as nomads, would meet here in the summer at the Chaudière Islands. The method of travel on the Ottawa River watershed and other tributaries was the carbon-free birchbark canoe. Being nomadic was part of the land and resource management system in the caretaking of the land and water. Being nomadic and moving was also based on the seasons and knowing the availability of certain animals and their patterns…The Algonquin clan system was based on watershed, and we would meet at the Chaudière to discuss issues and share knowledge. The Chaudière Falls was also a sacred site and offerings would be given to the water by the falls, and that was how important the water was. It still is. Gatherings at the site were guided by a system of governance. The protocol included commencing with a ceremony such as the sacred fire outside this morning to ground the decision-makers in the circle with a reminder of the interconnectedness of everything in the web of life." (Transcribed from August 10, 2023, hearing recording).

Algonquin communities were vocal the previous summer about refusing consent for the NSDF, but a few months before the final hearing date was set, the Algonquins of Pikwakanagan signed a long-term relationship agreement with AECL and CNL. Each Indigenous Nation was allotted 30 minutes to make their final submissions, while CNL, the proponent, had 60 minutes. Chief Haymond of KFN was the first to speak, stating that consent has still not been provided, and meaningful consultation has not been achieved between the proponent and KFN. Chief Haymond added that what was once shared on Algonquin Territory under Treaties of Peace and Friendship with Europeans has been abused, as Algonquin ancestors never contemplated their territories to be nuclear and to-date, Algonquins have not been adequately consulted about nuclear development on their land.

Chief Whiteduck followed and confirmed that KZA had also not been consulted about nuclear developments on their territory. Chief Whiteduck also highlighted two critical points: First, that at a recent gathering of the Assembly of First Nations (AFN) in Halifax, Resolution No. 37 was unanimously approved by the Chiefs, affirming the AFN's opposition to the proposed NSDF; Second, a concern was raised regarding institutional bias and conflicts of interest regarding the roles of the CNL and the CNSC. Chief Whiteduck asserted that both organizations were compromised by conflicts of interest, undermining their credibility in assessing and regulating the project. The Chief made a call for international oversight, with the argument that an independent third-party entity, such as the International Atomic Energy Agency (IAEA), should be involved in addressing the alleged wrongdoing and systemic injustices associated with the regulatory and approval processes.

Councillor Justin Roy from KFN highlighted the potential rights impacts, including harvesting, governance, and maintaining a cultural and spiritual connection with the territory. Harvesting —hunting, fishing, gathering medicines and governance— the right to make decisions about the land, not only to protect our rights, but also the rights of the voiceless: the animals, the trees, the water, and the land itself. In a community survey, KFN members overwhelmingly agreed they had the responsibility to protect animals and the innate natural environment as stewards and guardians of the land and spoke about how nuclear development and waste disposal has contaminated their relationship with the territory.

Kerrie Blaise, legal counsel for KFN, and KZA raised that both made submissions that the duty to consult had still not been met, adding that CNL has not met the onus of establishing that the project will not cause significant adverse environmental effects to both the social and ecological systems that underpin sustainability. The precautionary principle, which is a core criterion in sustainability, places the evidentiary burden on CNL to show the project will not cause irreversible effects. Reneé Pelletier and Victoria Wicks, legal counsel for KZA and KFN, and Mitchikanibikok Inik, respectively, made statements concerning procedural justice and equity that will be highlighted later in this chapter. Ultimately, August 10th, 2023, was a perfunctory hearing following the submission of KFN and KZA's assessment, where the commission did not ask any questions, or offer any comments. Renée Pelletier, a lawyer who assisted KFN with its intervention, put it bluntly: "the information CNSC staff received from the First Nations wasn't going to change anything, and this is reflected in the fact that staff did not seem concerned at all about any of the gaps that Kebaowek and Kitigan Zibi raised" (CNSC, 2023, p. 46).

Legal Challenges, Who Decides, and on What Terms?

The Canadian Nuclear Safety Commission (CNSC) approved the Near Surface Disposal Facility (NSDF) at Chalk River on January 8, 2024, after an environmental assessment process riddled with gaps exposed by Kebaowek First Nation and Kitigan Zibi Anishinabeg's Indigenous-led Impact Assessment. Two months later, the Minister of Environment and Climate Change Canada issued a permit putting endangered species and their habitats at risk to accommodate the facility's construction. These decisions sparked three legal challenges, each raising fundamental questions about governance, consent, and environmental responsibility.

But what does it mean to challenge these approvals? Who gets to decide what happens on the land, and by what authority? In the logic of the Canadian settler legal system, regulatory approval for projects like the NSDF are rooted in a framework that assumes the exclusive jurisdiction of a state actor—one where a federal commission or a minister wields the power to permit environmental damage and impacts to Treaty Rights, regardless of opposition. But First Nations and community groups resisting this decision operate from a different set of principles—ones that acknowledge relationships with the land, obligations to future generations, and legal orders that predate and persist beyond Canadian regulatory structures.

Judicial Review I: Kebaowek First Nation v. Canadian Nuclear Laboratories, 2025, FC 319

Kebaowek First Nation has launched a judicial review of the CNSC's decision to license the NSDF, arguing that the commission violated the United Nations Declaration on the Rights of Indigenous Peoples Act by failing to obtain free, prior, and informed consent before approving hazardous waste disposal on Algonquin lands.

The case was heard in Ottawa on July 10–11, 2024, before Justice Julie Blackhawk. Kebaowek's lead counsel, Robert Janes, an experienced litigator in

Indigenous rights cases, made the case with precision and force. The tone of this hearing was well-received following what felt like a moral blow from the last scheduled hearing on August 10th. But regardless of the court's ruling, Kebaowek FN made a larger assertion: that their authority over their lands does not stem from the state. It is not the CNSC's to grant or deny. It is inherent, continuous, and exercised as a responsibility.

Like the others, this case is about more than legal statutes. It is about competing claims to authority and opportunities for legal pluralism. Who has the right to determine what is permissible? And whose laws—whose responsibilities—will ultimately shape the future of the land? This case represents a critical intersection of Indigenous rights, environmental law, and regulatory governance. At its core, the dispute challenges the legal adequacy of Indigenous consultation in the context of nuclear waste disposal, with broader implications for how Canadian settler law integrates international Indigenous rights frameworks such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

Several legal questions were presented, primarily concerning the adequacy of the Crown's duty to consult KFN under section 35 of the *Constitution Act, 1982*. KFN contends that the consultation process was inadequate and that the CNSC failed to integrate the principles of UNDRIP, as mandated by Canada's *UNDRIP Act, 2021*. KFN asserts that the decision-making process should have incorporated the principle of FPIC and that the environmental impact assessment (EIA) lacked sufficient safeguards for traditional land and resource use.

CNL and the CNSC countered that the consultation process met the standard set by Canadian constitutional and administrative law. They argued that the duty to consult does not guarantee a veto power and that the CNSC, as a statutory tribunal, is not empowered to unilaterally implement UNDRIP beyond the common law duty to consult (CNL Factum, 2024). CNL contends that, even if the duty to consult and accommodate was engaged, the obligations owed to Kebaowek fell at the lower threshold of the Haida Nation spectrum[33], requiring only notification, disclosure of relevant information, and discussion of concerns raised. Further, they argue that, in practice, the consultation undertaken in this case met the higher end of the spectrum, thereby fully satisfying the Crown's duty. Conversely, KFN asserts that the adoption of the UNDRIP into Canadian law introduces an enhanced standard of consultation, necessitating an interpretative shift beyond the common law duty grounded in section 35 of the *Constitution Act, 1982*. KFN emphasizes that reducing the duty to consult to a mere procedural obligation fails to capture the transformative potential of UNDRIP's principles. Justice Blackhawk agreed with KFN, rejecting the CNL's argument that KFN's claim conflates consultation with a substantive right to consent. CNL's framing reduces the divergence between the duty to consult and accommodate and the principle of FPIC to a binary distinction—procedural versus substantive—overlooking the nuanced relationship between these legal constructs. Crucially, the ruling underscores that Canada's legislative incorporation of UNDRIP

[33] The Haida Spectrum can be understood as, "…the duty to consult varies with the circumstances from a "mere" duty to notify and listen at one end of the spectrum, to a requirement of Aboriginal consent at the other end" (see *Haida Nation v. British Columbia, 2004*, para 30).

through the United Nations Declaration on the Rights of Indigenous Peoples Act (UNDA) necessitates more than the continued application of the section 35 framework in its traditional form. As emphasized by former Minister of Justice and Attorney General Jody Wilson-Raybould, language holds significance, and legal interpretation must reflect the substantive commitments embedded in UNDRIP rather than serve as an instrument of rhetorical appropriation (Wilson-Raybould, 2018). The decision thus reinforces that the UNDRIP's textual meaning, development, and interpretative guidance must inform the Crown's approach to the duty to consult and accommodate, signaling a jurisprudential shift towards a more robust, rights-affirming application of Indigenous consultation standards.

Moreover, CNL argued that, given that the Chalk River site has been restricted for security reasons since its establishment in the 1940s and is not actively used for traditional purposes, the potential adverse effects on KFN's rights are minimal. KFN argued that historic exclusion from the land should not negate their claims to cultural and environmental considerations, or be justification for making this exclusion permanent, which would further exacerbate impacts to rights under Section 35 of the *Constitution Act, 1982.* Justice Blackhawk acknowledged the significant reality that the Algonquin have been without access to a portion of their traditional territory for decades and will continue to face this loss for generations. However, Justice Blackhawk found that Kebaowek did not identify any new or distinct adverse effects beyond those originally caused when the land was taken for nuclear development in the 1940s (para. 209-210).

Another significant issue highlighted was the NSDF's potential environmental impact. KFN challenges the adequacy of mitigation measures, particularly a future Forest Management Plan (FMP) that CNL has committed to developing. KFN argues that relying on an undeveloped FMP as a mitigation measure constitutes an improper delegation of decision-making authority to CNSC staff and undermines the consultation process. The CNSC argued that they were entitled to approve the environmental assessment process for the NSDF with future mitigation measures and mandatory conditions as set out in their FMP, and they argue that this was not an improper delegation of the Commission's authority (para 8). Justice Blackhawk noted, "This application… requires a consideration of the doctrine of reconciliation, which seeks to reconcile the pre-existence of Indigenous societies with the imposition of Crown sovereignty. This application tests our commitment as Canadians to reconciliation and what is truly required to move towards achieving these objectives. This application also tests Canada's commitments to implement the principles set out in the UNDRIP, in particular the standard of 'free, prior and informed consent'" (para. 10).

In the ruling, Justice Blackhawk found that if the Commission believed it lacked jurisdiction to assess the applicability of the UNDRIP and the UNDA, it should have sought clarification from the Federal Court on the legal question at hand. Doing so was crucial to ensuring a thorough examination of both factual and legal aspects in determining whether the Crown had met its duty to consult and accommodate in this case. As such, the Commission's failure to interpret its statutory authority or seek judicial guidance constituted a legal error (Kebaowek First Nation v. Canadian Nuclear Laboratories, 2025, para. 65; para. 73).

Had the CNSC engaged Algonquin communities from the start, empowered rather than hindered the process of conducting an Indigenous-led Assessment, and taken the outcomes of the assessment into consideration, a just process may have ensued, trust between the regulator and communities might have been built, and the approvals may still have been granted. The continued opposition and legal challenges brought from KFN highlight the lack of care taken by CNL and the CNSC in understanding concerns raised by intervening Algonquin Nations, and the absence of proposed mitigation measures.

Kebaowek First Nation was partially granted the application, with a mandate that consultation continue, and be completed by September 30, 2026. The ruling reinforces that consultation must go beyond procedural formalities to be meaningful, adaptive, and responsive to the concerns of Indigenous communities. By requiring a more substantive engagement, the decision marks a significant step in aligning Canadian administrative law with Indigenous self-determination and advancing consultation processes beyond colonial legal frameworks toward greater equity and reconciliation. This ruling will contribute to the evolving jurisprudence on Indigenous participation in environmental decision-making in Canada through meaningful interpretations of UNDRIP.

Judicial Review II: Concerned Citizens of Renfrew County, Ralliement contre la pollution radioactive, and Canadian Coalition for Nuclear Responsibility vs. Canadian Nuclear Laboratories

A coalition of environmental groups—Concerned Citizens of Renfrew County and Area, Ralliement contre la pollution radioactive, and the Canadian Coalition for Nuclear Responsibility—has also sought a judicial review of the CNSC's decision, arguing that the NSDF approval is reckless and unlawful. Their case raises key points: first, the proposed waste site poses unacceptable radiation risks; second, the NSDF fails to clearly define or control what materials will be dumped; and lastly, the assessment ignored cumulative environmental impacts.

The case was heard in Federal Court by Justice Whyte Nowak on November 19–20, 2024. A decision is expected in late 2025. But even as they wait, the plaintiffs insist that the state's legal frameworks are failing—that permitting processes are not neutral mechanisms, but rather, instruments of state-sanctioned environmental harm. The question is not just whether the CNSC followed its own rules, but whether those rules serve the public interest at all.

Judicial Review III: Kebaowek First Nation, Concerned Citizens of Renfrew County and Area, Canadian Coalition for Nuclear Responsibility, and Sierra Club Canada Foundation v. Canadian Nuclear Laboratories

A third challenge—led by Kebaowek First Nation alongside Concerned Citizens of Renfrew County and Area, the Canadian Coalition for Nuclear Responsibility, and Sierra Club Canada Foundation—targets the Minister of Environment and Climate Change's decision to allow the destruction of at-risk species and their habitats for NSDF construction.

Their argument is straightforward:

- The NSDF proponent failed to consider all viable alternatives;
- Instead of selecting the least ecologically harmful site, they chose one rich in biodiversity—simply because it was cheaper to transport waste there; and
- This violates the Species at Risk Act, which mandates minimizing harm to protected species.

Under settler environmental law, issuing a permitting license for energy infrastructure can function as a form of legal amnesia—allowing 'critical infrastructures' to proceed as though the decision had been meaningfully weighed and mitigated (Singh & Gacek, 2023, p.126). Yet, Kebaowek FN and their allies assert that environmental responsibility is not something that can be overridden by bureaucratic approval. It is a duty, exercised through relationships with the land, not reduced to technical compliance.

Examining the Role of the CNSC in the NSDF Process

Regulatory Capture

As has been discussed as criteria for securing social license and FPIC, ensuring integrity and public trust in the regulation of nuclear is necessary. Securing public trust necessitates decision-making processes that are both independent and demonstrably free from actual and perceived bias (Ramana & Blaise, 2024). Legal scholars emphasize that an effective regulatory body must be "designed, located, and empowered to be an independent and impartial servant of the long-term public interest, insulated to the extent possible from political influence, which tends to favour immediate partisan priorities" (Gibson et al., 2021, p. 49; Sinclair et al., 2018, p. 166).

On its surface, the CNSC appears to embody these principles, as reflected in its stated strategic priority of being a "trusted regulator, recognized as independent, open, and transparent" (Canadian Nuclear Safety Commission, 2022, p. 3). However, concerns persist regarding its degree of institutional independence from the nuclear industry it oversees (Blaise et al., 2019). The CNSC's predecessor, the Atomic Energy Control Board, was legislatively mandated to "promote" nuclear power—a function that was removed with the enactment of the Nuclear Safety and Control Act (NSCA) in 2000. Nevertheless, the CNSC continues to report to Parliament through the Minister of Natural Resources, who is widely perceived as conflicted, and whose mandate under the Nuclear Energy Act explicitly includes the development and expansion of nuclear energy (Natural Resources Canada, 2017). This structural alignment has raised apprehensions among civil society groups, given the potential for regulatory priorities to be influenced by government policy objectives. While debate continues regarding the extent of CNSC's separation from Natural Resources Canada, public perception of bias remains widespread (Ramana & Blaise, 2024).

In *Committee for Justice and Liberty et al. v. National Energy Board et al. (1978),* the Supreme Court of Canada established that the test for bias does not require proof of actual bias but rather a reasonable apprehension of bias held by "...reasonable and right minded persons, applying themselves to the question and obtaining thereon the required information, the test of 'what would an informed person, viewing the matter realistically and practically—conclude?" (Committee for Justice and Liberty, 1978). This standard has repeatedly been invoked in critiques of the CNSC's independence. In 2020, several civil society organizations petitioned Canada's Auditor General, citing concerns about a conflict of interest, and urging that oversight responsibility be transferred to the Minister of Environment and Climate Change (Office of the Auditor General, 2020; Concerned Citizens of Renfrew County and Area et al., 2020). Similarly, in 2016, fourteen environmental groups addressed an open letter to the Prime Minister, highlighting the CNSC's perceived lack of independence (de Souza, 2016). The CNSC's approval of the NSDF at Chalk River prompted public outcry, with Indigenous leaders describing the Commission as "a captured regulator" that lacks true autonomy from industry interests (Forester, 2023; Bui, 2024).

Concerns regarding regulatory bias extend beyond public perception. In 2017, a federal Expert Panel reviewing environmental assessment processes (chaired by former

Environment Minister Johanne Gélinas) found that "the single most often cited concern" among participants was bias or conflict of interest within the CNSC, concluding that such concerns—"whether real or not"—undermine confidence in the CNSC as a regulator (Gélinas et al., 2017). Further, a 2020 CNSC-commissioned public confidence report revealed that significant portions of the public had either "no confidence" or only "average confidence" in the Commission's independence, with only a minority expressing "complete confidence" (Nanos, 2020). The CNSC report included candid public statements, such as: "I think they [i.e., CNSC] operate more as an approvals agency rather than a regulator, they are just enabling nuclear power and not regulating"; "By observation, their intent seems to be to permit nuclear activities to move forward, which I believe is unethical"; "Their mandate is fundamentally at odds with the public interest"; and "They never deny applications for licenses. They rarely take reason from independent interveners into account" (Nanos, 2020). At a minimum, these findings should have signaled to the CNSC that public trust in its independence is severely eroded (Ramana & Blaise, 2024).

The Expert Panel reviewing environmental assessment processes found that the technical expertise required to assess nuclear projects necessitates CNSC oversight, while others strongly opposed its role in conducting assessments (Gélinas et al., 2017). A recurring concern found in the Panel's 2017 report was the perceived lack of independence and neutrality arising from the close relationship between the CNSC and the nuclear industry (Gélinas et al., 2017). Participants frequently described the Commission as a "captured regulator" whose function appears more aligned with promoting industry projects than ensuring rigorous regulatory oversight. The erosion of public confidence in the CNSC's neutrality was particularly pronounced when contrasted with the Impact Assessment Agency of Canada, which was perceived as less susceptible to industry influence (Gélinas et al., 2017). Given these systemic concerns, many participants recommended that all impact assessments be conducted by a single, independent, and impartial body to enhance public trust and ensure consistency in decision-making. Others advocated for strengthening the Impact Assessment Agency's capacity to assume this role (Gélinas et al., 2017). Despite differing views on whether regulators or elected officials should ultimately make IA decisions, there was broad agreement on the need for greater transparency and clearer reasoning in regulatory determinations (Gélinas et al., 2017). Similarly, Zalik (2016) analyses how social license practices in the oil industry in Alberta's Tar Sands and the Niger Delta can *de facto* become a substitute for effective regulatory regimes. In place of social license, which is often sought in exchange for benefits agreed to in private contracts, Zalik argues for "stringent, legally enforceable state monitoring policy… [enforced by] institutions that are rigorously autonomous from industry" (2016).

The CNSC's regulatory approach has faced further scrutiny in relation to its handling of radioactive waste management. In 2019, the Commission denied a request from leading public interest organizations to participate in a virtual meeting concerning the approval of a suite of regulatory documents on radioactive waste (CELA, 2020). This decision has been criticized as emblematic of a broader pattern in which regulatory processes privilege industry stakeholders over public and Indigenous participation. The approval of these regulatory documents in part paved the way for the approval of the NSDF at Chalk River, and two entombments of decommissioned reactors, all under CNSC review (CELA, 2020).

Taken together, these developments illustrate a broader pattern of governance that continues to raise concerns about the independence and accountability of Canada's nuclear regulatory framework. Given the fundamental importance of regulatory structural independence to public trust, ensuring a governance structure that is demonstrably free from industry influence remains an urgent priority towards seeking procedural justice within the CNSC's regulatory processes.

Procedural Justice

Aspects of 'just outcomes' in the NSDF siting process do not emerge as a result of the CNSC's process, but rather despite it. The attribution of justice is owed to Kebaowek First Nation, Kitigan Zibi Anishinabeg, and all intervening Algonquin Nations whose persistent advocacy and solidarity have shaped the contours of this struggle. The licensing process, as structured, has created space for certain procedural interventions—most notably, the June 2022 hearings—yet has failed to ensure meaningful consultation. While process (in this case, the CNSC's public licensing hearings) implies respect for parties and their positions, it is insufficient if it does not result in meaningful outcomes of accommodation (Sossin, 2010).

Settler decision-making bodies not understanding Algonquin land-use, laws, and governance, is partly what prompted the Statement of Asserted Rights and Title (see

Figure 4.), signed by Wolf Lake First Nation, Timiskaming First Nation, and Kebaowek (Eagle Village) First Nation (Algonquin Nation Secretariat, 2013). During the hearings on June 2, 2022, Commissioner Marcel LaCroix humbly stated, "...you gave me a different perspective on things and I must acknowledge that my knowledge, Indigenous knowledge is zilch, none, nada. I have no knowledge on Indigenous knowledge, and this really bothers me in a sense that we talk—everything that I have heard thus far about the reconciliation process comes from Western culture…" This statement, while honest, highlighted the limits of the CNSC's process in engaging with Indigenous legal orders and knowledge systems in a meaningful way. Moreover, when Wolf Lake First Nation raised that they had not been consulted, the CNSC's response was to inquire about the community's proximity to the project site. This question underscored fundamental gaps in the assessment process, failing to account for the historical and ongoing nomadic nature of Algonquin communities following the watershed, and not rigid boundaries.

Renée Pelletier, legal counsel for KFN and KZA, referenced the British Columbia Superior Court's ruling in the 2014 Squamish Nation case[34], which reaffirmed that consultation must occur at the earliest stages of decision-making. The court emphasized in that case that deferring consultation until later phases creates institutional momentum toward project approval, rendering it difficult—if not impossible—to revisit foundational decisions. Late-stage consultation not only undermines procedural fairness but also forecloses opportunities for Indigenous nations to shape the assessment process,

[34] Squamish Nation v. British Columbia, 2014 BCSC 991

contribute to the scope of necessary studies, or propose design modifications to mitigate adverse impacts.

In this case, engagement with Kebaowek, Kitigan Zibi, and other affected Algonquin Nations was initiated far too late. Nevertheless, the process was not entirely irredeemable—had the assessment conducted by KFN and KZA which highlighted substantive gaps in the assessment been meaningfully considered and mitigation measures provided, the outcome might have been different. Addressing these deficiencies would likely have required revisiting previous decisions, commissioning of additional studies, and possibly delaying the project further. However, CNSC staff demonstrated a clear reluctance to reconsider completed aspects of the assessment. Instead, their engagement was largely performative, confined to collecting information on First Nations' rights without any substantive integration of Indigenous perspectives into the decision-making framework. This approach—critiqued as mere "box-checking"—falls short of the legal and ethical obligations enshrined in the duty to consult and accommodate and FPIC, as signified in Justice Blackhawk's decision.

Conclusion

The NSDF approval process and its broader implications reveal a fundamental tension between technocratic governance and the political realities of environmental justice, Indigenous sovereignty, and public trust in regulatory institutions. The siting of the NSDF at Chalk River exemplifies the structural challenges inherent in nuclear waste management, where historical legacies of contamination intersect with contemporary debates over consent, legitimacy, and procedural justice. While proponents frame the project as a necessary step toward remediating Canada's nuclear liabilities, opposition from Indigenous nations, environmental groups, and concerned citizens underscores the limits of the existing regulatory framework in accommodating diverse perspectives and legal orders.

A central issue throughout the NSDF hearings and legal challenges has been the absence of a formalized "willing host" mechanism. The decision-making process is rooted in state-defined environmental assessment protocols and has largely treated consultation as a procedural hurdle rather than an opportunity for co-governance. The contrast between the NSDF and the Deep Geological Repository's "willing host" model highlights the inconsistencies in the application of participatory principles. At Chalk River, consent has been fragmented, negotiated through agreements that obscure power asymmetries rather than engaging with Indigenous jurisdiction in a substantive way.

The Indigenous-led impact assessments conducted by Kebaowek First Nation and Kitigan Zibi Anishinabeg offer a compelling counterpoint to the dominant regulatory discourse. These assessments reveal critical gaps in the proponent's environmental review, particularly concerning site ecology, species at risk, and long-term stewardship responsibilities. Moreover, they reflect a broader assertion of Indigenous governing authority, challenging the settler-state's articulated claim to authority over decision-making processes affecting Algonquin territory. The subsequent legal challenges against the CNSC and Environment Canada further illustrate the inadequacy of Canada's existing regulatory mechanisms in meaningfully integrating the principles of Free, Prior, and Informed Consent (FPIC) as articulated in UNDRIP and incorporated in Canadian law.

The NSDF hearings also exposed deep-seated concerns about regulatory capture, with the CNSC repeatedly criticized for its proximity to the nuclear industry and its apparent reluctance to act as a neutral arbiter. This perception erodes public confidence in the decision-making process, reinforcing the broader argument that nuclear waste governance in Canada remains structurally predisposed toward industry interests rather than genuine public accountability. Ultimately, the NSDF case underscores the need for fundamental shifts in environmental governance. A process that truly centers procedural justice would require early and meaningful Indigenous participation, the operationalization of Indigenous-led assessments as legitimate decision-making tools, and a regulatory framework that prioritizes the long-term sustainability of both ecosystems and communities. Without these reforms, projects like the NSDF risk perpetuating patterns of environmental injustice, where the burdens of nuclear waste disposal are disproportionately borne by Indigenous nations and marginalized communities, while decision-making power remains concentrated within state institutions and corporate interests. Moving forward, the unresolved tensions surrounding the NSDF offer an opportunity for deeper reflection on how nuclear waste management intersects with broader struggles for Indigenous sovereignty, environmental stewardship, and democratic accountability.

Chapter Five:

Willing Host? Addressing Avenues to Seek Consent

> "Those who would claim "their" uranium fuels the engines of empire, both at home and abroad, will unlikely accept a polite (if firm) "no" in response to their desires. Strategies must be found through which this "no" may be enforced."— LaDuke and Churchill (1985)

Introduction

The siting of a deep geological repository (DGR) for radioactive waste in Ontario has (re)ignited debates surrounding consent, justice, risk, and the role of economic incentives in securing community cooperation. Since its establishment in 2002, the Nuclear Waste Management Organization (NWMO) has committed to implementing a "willing host model," an approach that relies on selecting a site from a group of communities who have self-identified as willing to learn more about hosting a permanent DGR for high-level radioactive waste in the form of used nuclear fuel. In 2020, the amount of high-level radioactive waste produced by Canada's nuclear power plants and research facilities weighed a combined 58,200 tonnes, enough to fill eight hockey rinks to the boards—that is three million spent nuclear fuel bundles and this number will continue growing, and at least double when it's time to fill the DGR (McIntosh, 2022). Ultimately, the selected host community will house radioactive waste in exchange for economic benefits and long-term development opportunities. This strategy, while discursively grounded in participatory, consent-based principles, has sparked controversy, particularly among Indigenous groups and neighbouring communities excluded from direct negotiations, benefits, and ultimately, determinations of willingness (Bernauer et al., 2024). Central to these controversies is the tension between genuine, informed consent and manufactured consent that relies on privileging industry-discourse and expertise, economic persuasion used to secure agreements, raising questions about procedural and distributive justice. It also invites closer attention to the spatial, political, and historical conditions under which such willingness is negotiated. What kinds of communities are asked to be willing? How are decisions shaped, not only by procedural frameworks, but also by broader geographies of governance and uneven development?

The challenges of the NWMO's willing host model (WHM) highlight prevailing ethical and operational tensions in consent-seeking processes for energy infrastructures and industrial development. These tensions are heightened due to the profound geographic and temporal implications. The NWMO's WHM for nuclear waste management reflects a notable shift in how legitimacy, consent, and risk are conceptualized and enacted within nuclear waste siting in Canada. This research seeks to examine whether the WHM can be structured to be more robust, ethically sound, and procedurally fair.

Background

This chapter provides background on the conceptual origins of the NWMO's WHM and how it has been operationalized. This is by an evaluation section organized according to how the NWMO's WHM interpreted six Seaborn Panel recommendations on securing social acceptance, as developed during the environmental assessment process of the

1980s–1990s.

Origins of the "Willing Host" Model

Concerns about nuclear waste in Canada gained traction in the mid-1970s, as Ontario's Royal Commission on Electric Power Planning flagged the issue as a key policy challenge (Royal Commission on Electric Power Planning, 1978, p. 95). The Canadian Shield, with its ostensibly stable geology, was identified early on as an ideal site for long-term disposal. Atomic Energy of Canada Limited (AECL) began outreach efforts in 1977, though initial negotiations—such as those with Ignace—were not successful (Cordeiro, 2022). 1978 Federal/Ontario policy directive split responsibilities between AECL (for disposal) and Ontario Hydro (for interim storage), envisioning site selection by 1983 and operationalization by 2000 (Boulton, 1978, p. 60). That timeline was quickly unsettled, however, as public opposition prompted a 1981 policy revision that required social approval before any site could proceed.

By the mid-1980s, government began experimenting with new participatory mechanisms. The Siting Process Task Force on Low-Level Radioactive Waste Management, established by the Canadian government in 1986, sought to locate a disposal facility through community-based willingness. Its 1987 report recommended a volunteer-driven siting model, and between 1988 and 1996, this approach was trialed across Ontario. A tentative agreement with the Town of Deep River—home to Chalk River Laboratories—marked a high point, but the process ultimately failed when no legal contract was reached (Jaferi, 2007). The Town of Deep River remains dependent on the nuclear industry, but at the time of these negotiations, over half of the population was employed by the AECL, and the secretariat decided that the cooperative approach was too participatory, and the Town of Deep River was not eligible to be as a full partner in the siting decisions (Murphy & Kuhn, 2006, p.9). Still, the Task Force's emphasis on community willingness and local engagement offered an early template for the WHM, introducing a new framework for willingness into nuclear waste infrastructure planning.

Meanwhile, national policy continued to evolve. The Seaborn Panel, active from 1989 to 1998, marked a significant moment in Canadian environmental governance. The Seaborn Panel was a federal government-appointed environmental assessment panel that conducted public consultations and released a report in 1998 on the issue of nuclear fuel waste management. Its hearings across five provinces underscored the limits of a purely technical approach and emphasized the need for public trust, Indigenous involvement, and ethical scrutiny (Murphy & Kuhn, 2001). Its final report outlined six conditions for social acceptability, including broad public support, safety (both technical and social), Indigenous approval, and a stable regulatory framework, effectively reframing the problem of nuclear waste as much social and political as it was technical.

The Seaborn Panel's findings helped lay the groundwork for institutional reforms. The Nuclear Fuel Waste Act (NFWA), passed in 2002, established the NWMO, a not-for-profit entity funded by the nuclear industry but mandated to operate at arm's length from government. From its inception, NWMO was tasked with more than technical design—it was expected to generate legitimacy through engagement, consultation, and the development of a siting process grounded in fairness and transparency.

In 2005, following a nationwide consultation, NWMO recommended Adaptive Phased Management (APM), a framework that coupled geological containment with phased decision-making, reversibility, and the active pursuit of social license. This framework was formally adopted by the federal government in 2007 and marked a clear move toward a governance model in which technical and social criteria were co-constitutive (NWMO, 2025).

Operationalizing Willingness

The WHM was officially launched in 2010. Communities were invited to express interest in learning more about the project, with no obligation to proceed. Over two dozen municipalities—primarily rural and resource-dependent regions in Ontario and Saskatchewan—entered the initial phases (NWMO, 2010). The spatial patterning here is worth noting: communities facing structural economic challenges may have been more open to engagement, raising questions about the kinds of choices available to them and the broader conditions that shape voluntariness (Murphy, 2010, p.133).

The siting process unfolded in multiple stages: expressions of interest, preliminary technical assessments, borehole drilling, and socio-economic studies. At each step, NWMO provided financial support and their technical perspectives. Local councils and liaison committees emerged as key sites of deliberation, tasked with facilitating dialogue and representing community perspectives. While municipalities held votes or referenda, the position of Indigenous nations was more uneven (Murphy & Kuhn, 2006, p. 36-38). Some were invited to participate; others were not fully engaged unless they engaged as rights holders—and even then, communities were excluded, revealing ongoing tensions around sovereignty and recognition (see, for example, *Eagle Lake First Nation v. Canada (Attorney General), 2024, FC*).

By 2024, the process had narrowed to two communities: Ignace, ON and South Bruce, ON. The closest Indigenous communities (Wabigoon Lake Ojibway Nation, and the Saugeen Ojibway Nation, respectively) would also be included in willing host processes but were not involved in volunteering to "learn more" about being a host community, so primary negotiations targeted the municipalities. In both cases, local referenda were held. Ignace registered 77% support, while South Bruce saw a narrower margin of 51% (Stimpson, 2024b). These results were interpreted as evidence of willingness, yet they also highlight the fragility of consent when measured through snapshot metrics.

Figure 5 Map of Selected DGR Site Near Ignace, Ontario, in the Unincorporated Rural Community of Borups Corners. Map Produced by Scatliff+Miller+Murray (2022).

The formation of a "nuclear community" happens organically within the region based on social networks, economic reliance on the nuclear industry, and shared visions of the future tied to nuclear innovation and waste storage. Bruce County, Ontario, once the other potential candidate site for the DGR, is home to a nuclear generating station and is itself a "nuclear community" (Bell, 2024). Bell (2024) found that residents express a sense of responsibility for addressing nuclear waste issues and see it as part of their ethical obligation to future generations. Trust in the safety measures of the industry and the science behind nuclear technologies underpins the community's acceptance and pride in being a potential host for nuclear waste storage. Nevertheless, without consent from the Saugeen Ojibway Nation, and given the narrow margin of “willingness” from South Bruce, the NWMO selected the Revell Lake site near Ignace in late November 2024 as the preferred location for Canada’s deep geological repository (NWMO, 2024). The site is situated within the traditional territory of the Wabigoon Lake Ojibway Nation (see Figure 5; The City of Dryden, Wabigoon Lake First Nation, and Eagle Lake First Nation Are All shown on the map).

At the core of the NWMO’s WHM is a commitment to informed consent. The NWMO has prioritized educational outreach, community benefits agreements, and participatory planning through Adaptive Phased Management. These efforts are often framed as a form of recognition and reconciliation, but they also raise questions about power, scale, and the governance of dissent. For municipalities, promised benefits ranging from infrastructure investments to long-term employment can be significant, particularly in contexts of economic precarity. Yet such incentives also function to align local development goals with the country's nuclear waste needs and raises questions of whether economically vulnerable communities can offer “genuine consent.”

On its surface, the WHM appears to respect community self-determination by soliciting interest from potential host communities for the DGR. Yet, when critically examined through the spatial and ethical frameworks developed by Jeremy Webber (2010) and Webler and Tuler (2021), this model appears less a vehicle of empowerment than a technocratic recalibration of consent. The WHM deploys democratic language to obfuscate enduring hierarchies of risk and power and functions as a spatialized strategy to manage dissent, selectively activating the agency of communities deemed both disposable and governable.

As Webber (2010) argues, liberal theories of consent often reduce legitimacy to procedural inclusion while ignoring historical and structural conditions that distort voluntariness (p. 6). The "willingness" expressed by economically marginalized or geographically peripheral communities is not produced in a vacuum. It is shaped by colonial legacies, uneven development, and limited access to alternative futures. Webler and Tuler (2021) emphasize that voluntariness requires the absence of coercion or manipulation, including the more subtle dynamics of "situational coercion," where offers become irresistible due to desperation or precarity (p. 103). In this light, rural communities courted by the NWMO with the promise of economic revitalization must be understood as constrained actors, not free agents in a free marketplace of risk.

Moreover, the NWMO's framework, as I will show later in this chapter, reflects what Webber (2010) critiques as "imputed consent": the projection of hypothetical or inferred agreement onto populations through orchestrated processes of consultation (p. 10). Liberal consent theories, as Webber highlights, often depend on abstracted scenarios of idealized agreement, which do not reflect the realities of historical injustice and constrained choice (p. 9). This enables governing institutions to claim legitimacy not based on explicit assent, but on presumed alignment with a generalized will. Webler and Tuler (2021) similarly warn against equating consent with acceptance, noting that consent implies the capacity to shape offers and to refuse them—features that are often undermined by top-down agenda-setting and power asymmetries (pp. 100–102). The WHM largely defines the terms of the engagement itself, including what kinds of risks are discussed, what benefits are deemed negotiable, and what counts as legitimate evidence or community voice. This form of technocratic containment risks turning consent into an aesthetic, rather than a substantive, democratic practice.

Critically, both Webber (2010) and Webler and Tuler (2021) stress the temporal and relational dimensions of consent. Webber (2010) calls for an understanding of consent as an ongoing relationship rooted in mutual recognition and historical accountability, not as a singular moment of agreement (p. 6). True legitimacy arises from practices of dialogue, mutual adjustment, and sustained recognition of obligations across time. Webler and Tuler (2021) similarly argue that timing, understanding, and the opportunity to revisit or revoke consent are crucial for its legitimacy (pp. 104–105).

The question of who consents—and on behalf of whom—further complicates the model's democratic veneer. Webber (2010) critiques the assumption that state-imposed institutions can legitimately speak for Indigenous nations, especially when their authority derives from colonial imposition. He emphasizes that the meaning and authority of consent depend on the nature and legitimacy of the political community from which it arises. Similarly, Webler and Tuler (2021) identify a "consenter identification problem," in which it is not always clear who can speak for a community, particularly when traditional authorities, youth, or marginalized subgroups are excluded from decision-making. The NWMO's engagements with band councils or municipal leaders may satisfy procedural requirements but fall short of securing broader legitimacy in contexts where community authority is diffuse, contested, or rooted in land-based legal orders.

The NWMO seeks to territorialize consent within bounded, governable spaces—municipalities, councils, designated "communities"—while disregarding the wider political ecologies of harm, history, and interdependence. Webler and Tuler (2021) highlight this issue of "nested hierarchies and interconnected communities," arguing that "energy facilities rarely respect political boundaries," and that consent must therefore be understood in multi-scalar and relational terms (p. 102). Without such a shift, the model risks legitimizing localized consent while perpetuating broader patterns of environmental injustice. It enables a form of technocratic legitimacy that compartmentalizes risk while avoiding deeper questions of justice, sovereignty, and historical redress.

Timeline of the WHM

The WHM has evolved from the recommendation of having social acceptance of burying waste in a DGR in 1977. A brief outline of the timeline is as follows:

- 1977: The report titled "The Management of Canada's Nuclear Wastes" (more commonly known as 'the Hare report') recommended underground disposal of nuclear wastes
- 1978: Environmental Assessment (Seaborn Panel) of the AECL concept of geological disposal in the Canadian Shield began

- 1998: Seaborn Panel calls for a socially legitimate and ethically grounded siting process. The Panel recommended creation of a waste management agency to study options.
- 2002: NFWA establishes NWMO and mandates industry responsibility.
- 2005–2007: APM is proposed and formally adopted as national policy.
- 2010: NWMO launches its WHM process; 22 communities initially participate.
- 2012–2015: Preliminary assessments and geoscientific studies begin.
- 2017–2019: Detailed fieldwork—including borehole drilling—is conducted.
- 2021–2023: Engagement deepens in Ignace and South Bruce; community-led evaluation frameworks are developed.
- 2024: Community votes are held; Revell Lake site is selected.

This trajectory has unfolded within a shifting regulatory landscape. The *Canadian Environmental Assessment Act, 2012* (since replaced by the *Impact Assessment Act, 2019*) and the *Nuclear Safety and Control Act* structure the federal oversight of environmental and safety concerns. The CNSC serves as regulator, but as mentioned in chapter four, concerns remain about regulatory capture and its role in adjudicating both technical standards and matters of social legitimacy. Furthermore, it would be difficult to conceptualize the CNSC as an 'arm's length' regulator, as recommended by the Seaborn Panel Report (1998). The environmental assessment of the proposed DGR is planned to be undertaken by the CNSC and the Impact Assessment Agency of Canada (MacBride, 2025).

The NWMO claims that it is not their role to consider rural municipalities and First Nations outside of the ones who have volunteered 'willingness,' and that their participation through consultation will come later—the Duty to Consult is the role of government (MacBride, 2025). That NWMO is funded by the nuclear industry adds further scrutiny; while designed to operate independently, its role as both creator and solution of wastes raises concerns about transparency and accountability. So do the community benefits offered to prospective host communities, which will be discussed later in this chapter. These benefits are intended to provide recognition of the burden being taken on, but are perceived by some as coerced consent, aligning local futures with long-term disposal goals.

The WHM opens up new questions about the future of nuclear waste governance and potential for extractive and energy infrastructure siting in Canada. It attempts to center participation, community partnership, and adaptive planning. As the DGR project advances toward regulatory approval and potential construction, its legitimacy will hinge not only on technical robustness, but on the extent to which it can address the historical and social conditions that shape willingness, resistance, and the meaning of consent itself.

The 1998 Environmental Assessment Panel (the "Seaborn Panel") introduced earlier in this chapter recommended that to be considered acceptable, a solution for managing nuclear fuel wastes must:

1. have broad public support;
2. be safe from both a technical and a social perspective;

3. have been developed within a sound ethical and social assessment framework;
4. have the support of Aboriginal people;
5. be selected after comparison with the risks, costs and benefits of other options; and
6. be advanced by a stable and trustworthy proponent and overseen by a trustworthy regulator.

The next section is framed by the above six criteria, against which the NWMOs implementation of such recommendations will be assessed. An examination of the nature of the WHM will help to determine how and if it can and should be scaled up to create more justice-oriented procedures in nuclear waste infrastructure siting (and beyond).

NWMO's 'Willing Host Model': Testing Alignment with Seaborn Panel's Recommendations for Acceptability

1. Broad Public Support

The Seaborn Panel considered 'broad public support' to be, among other things, "… from an informed Canadian public, particularly from public review participants representing technical, social, environmental, and other groups, as well as from residents of the proposed siting territory and individual members of the public (Environmental Assessment Panel, 1998). The NWMO rejects broad public opinion polls, referenda, or plebiscites for two reasons: the public, while stakeholders in nuclear waste management, are positioned as lacking the necessary knowledge or capacity and engagement to make informed judgments (NWMO, 2005). This positioning raises concerns about exclusion of communities with capacity constraints that nonetheless are equally deserving of being informed and willing hosts. Rather than attempting a broad, neutral measurement of collective will, "public support" here functions as a constructed and strategically mobilized discourse, one that privileges institutional authority while circumscribing democratic input (Bell, 2022).

Scholars Seth Tuler and Thomas Webler conducted a study in 2021 using Q-methods to examine consent-based siting methods. The study identified four broad perspectives: the first perspective focused on obtaining consent from a community expediently by getting the science right and ensuring the community understands the risks and benefits. Rather than maximizing participation, this view prioritizes community engagement and supports decision-making issued by elected officials because, "if you left the siting of critical infrastructure up to referendums, we'd never build anything anywhere, ever" (Tuler & Webler, 2023). The NWMO draws on public attitude research (Navigator, 2003) to support their decision to narrow the scope from 'broad public' to 'local municipality,' suggesting that Canadians feel ill-equipped to evaluate complex technical matters and prefer decisions to be made by trusted experts through credible processes (NWMO, 2008). Rather than defining public support as an outcome of collective judgment, NWMO reframes it as an attribute of a well-designed process. What is concerning is that if public support is assumed by institutional design, opposition, dissent, or disengagement can be rendered futile.

In this iteration of the WHM, the legitimacy of the decision becomes a function of the credibility of the process, not the substance of the agreement—a move that effectively insulates institutions from political accountability. Moreover, the NWMO's reporting on the Navigator (2003) study constructs "the public" as disengaged, overwhelmed, and generally uninterested in nuclear waste governance unless specifically prompted. This characterization not only rationalizes low levels of engagement, but also legitimizes a narrow form of participation. The public is cast as passive and preoccupied, while experts are positioned as guardians of long-term risk. O'Faircheallaigh (2010) clarifies that the public is often reluctant to participate unless they are convinced they will have real influence over decision-making; this reluctance can transition to cynicism and ultimately weaken the legitimacy of government (p. 25).

Arguably, there is a confluence of factors at play here. The NWMO facilitated a poll through IPSOS Reid in 2008 to understand Canadian's familiarity with nuclear waste management and the NWMO's role, among other things. While managing nuclear waste was important to 74% of Canadians, 90% of Canadians were not aware of the NWMO, and only 22% of Canadians reported to be familiar with nuclear waste and how it is managed (NWMO, 2008, pp. 8–13). Without a significant threshold of general knowledge about nuclear waste, 91% of Canadians agreed that the citizens of a community should be directly involved in deciding whether or not their community should host a nuclear waste facility (NWMO, 2008, p.23). This speaks to the necessity that Canadians are being informed about all stages of the nuclear fuel chain before legitimizing any statistic that purports to report on whether or not Canadians “support nuclear.”

I presented at the EUGEO Conference in September 2023 and attended a panel co-moderated by Tapio Litmanen, a leading scholar in environmental sociology and Vice Dean at the University of Jyväskylä, Finland. Finland is currently constructing the world’s first Deep Geological Repository for used nuclear fuel waste on Olkiluoto, a small island on the Southwest coast of Finland. Olkiluoto is also an existing “nuclear community,” hosting three nuclear reactors (World Nuclear Association, 2024). During the discussion, Tapio expressed his surprise at the results of a survey (n=1600) he conducted with a group of researchers to gauge public acceptance of a Small Modular Reactor (SMR) located in the Helsinki metropolitan area—contrary to expectations, the public was in support. As a group, we discussed that generally, the public’s acceptance towards the DGR and the SMR was likely because there is a high level of trust of the Finnish government, and that even when new leadership comes into office, there is respect for the previous government's actions and commitments. I was curious, however, if the survey that was circulated to gauge social license for the SMR asked the respondents if they would also host the waste in the city center—the answer was “no”—the survey did not touch on any aspect of waste management. Such considerations, albeit unintentionally in this case, support the nuclear industry’s efforts to strategically divorce nuclear waste management from broader social and ethical questions of nuclear energy generation, associating safety with passive disposal (Durrant 2009; Durant and Stanley, 2009).

Drawing on the Seaborn Panel's recommendation that support be demonstrated at multiple points, the NWMO proposes an 'adaptive management' process that can adapt to changing circumstances and public expectations (Environmental Assessment Panel, 1998; NWMO, 2005). This temporal elasticity allows institutions to maintain discursive control over the meaning of "support." As values shift, and participation ebbs and flows, legitimacy is maintained not by sustained consensus but by the ability to reinterpret processual adherence as evidence of ongoing public alignment. Consent, in this formulation, becomes a moving target—one that can be continuously rearticulated to align with institutional imperatives. The NWMO's framework repeatedly emphasizes openness, transparency, and inclusivity (NWMO, 2023). The forms of public participation envisioned are largely consultative rather than deliberative or co-decisional. Participation is invited within prestructured parameters, rather than negotiated through dialogic processes that might challenge institutional assumptions.

Critical constructivist scholarship has long distinguished between "invited spaces" of participation, created and managed by authorities, and "claimed spaces," where communities assert their own agency (see Cornwall, 2002). NWMO's process design privileges the former, thereby reproducing the very power asymmetries that participatory rhetoric seeks to overcome. As a result, the promise of inclusion may function more as a strategy of legitimation than as a genuine shift in authority or control. Reflecting on the earlier failures of siting radioactive waste through consent processes, Hunold (2002) argues that these efforts failed largely due to the reliance on what he calls 'democratic localism', a model that forces citizens to define their community in the narrowest of terms, limiting the prospects for social inclusiveness and democratic legitimacy. (p.51). This approach poses two key problems: First, it misaligns with the scale of the issue, as radioactive waste involves broader health and safety concerns that extend beyond local boundaries—making it an unsuitable framework for policymaking. Second, it makes the process more vulnerable to state manipulation, since small publics are easier to influence, and governments can exploit rivalries among municipalities competing to host the facility (Hunold, 2002). While appealing to state agencies seeking to maintain control and minimize political risk, this model ultimately limits democratic legitimacy and inclusiveness. An examination of the NWMO's assessments for what constitutes 'broad public support' engages with Michelle Murphy's inquiry of, "who counts?...Who and what is counted, who does the counting, and how do these numbers carry an affective change?" (Murphy, 2017, p. 59)

The uneven distribution of risks and benefits in hosting nuclear waste facilities, versus a nuclear waste facility and a nuclear generating facility, highlights significant issues of distributive justice within Canada's nuclear energy sector. This disparity underscores the inequities in how the risks and rewards of nuclear energy are allocated. Though conversely, I am also interested in the process of becoming a "nuclear community," and the absence of democratic decision-making schemes. Some argue that as residents of Ontario, we are all responsible for the generation of nuclear waste, as we use electricity primarily powered by nuclear. But in the absence of participatory decision-making about the infrastructures that supply our homes with energy–is it fair that we've, for some unwillingly, become residents of a nuclear province?

In Bruce County, long-standing relationships with the nuclear industry have generated a substantial amount of nuclear expertise and have fostered a sense of ownership and acceptance of nuclear activities. The community benefits from stable employment, infrastructure investments, a healthy tax pool, and a shared identity tied to their role in supporting Canada's energy grid. But by contrast, Ignace is being primed for waste disposal from Ontario, New Brunswick, and Quebec—a task associated with significant long-term risks and fewer perceived benefits.

Moreover, by constructing the public as deferential, segmenting the population into tiers of relevance, and equating institutional transparency with legitimacy, the NWMO redefines support in terms that ensure the continuity of its governance project. This reveals how consent is not merely sought but produced through discursive practices, institutional design, and the strategic invocation of public attitudes. This critique of the WHM invites deeper engagement with the politics of participation in nuclear waste governance. Who defines the terms of involvement? What voices are heard, and which are excluded? And how is risk made governable through the management of public perceptions? These questions are central not only to the case of NWMO, but to broader debates about consent processes and the governance of long-term environmental risks.

2. Safe from a Technical and Social Perspective

The NWMO explicitly acknowledges that "notions of safety are social constructs," positioning itself within a socially responsive model of risk governance (NWMO, 2005). However, examination of how this acknowledgment functions discursively and institutionally reveals that in treating safety as an open-ended, negotiated concept, the NWMO reifies public understandings into fixed inputs to be translated through technical systems, thereby reinforcing the hierarchy of industry rhetoric over public concerns. Safety, as framed by the NWMO, serves both as a normative value and as a measurable objective. It is described as “the most important” of the NWMO’s (n.d), thirteen guiding principles acting as an anchor around which legitimacy is constructed. Although the NWMO claims to define safety based on public understanding, it reserves for itself the task of “fleshing out” this concept through expert knowledge. Stanley (2005) describes the way the NWMO strategically uses the concept of uncertainty to legitimate its authority over defining risks and safety, overshadowing alternative, Indigenous epistemologies and experiences regarding the impacts of nuclear materials: “The act of distancing uncertainty from knowledge production makes it possible for knowledge to appear epistemologically robust when making claims in space time conditions where empirical experience is not possible” (p.211). This establishes an epistemic hierarchy in which public values of safety and risk are not co-produced, but mediated and validated through institutional expertise (Juraku & Sugawara, 2021).

Public participation is central to the NWMO’s legitimacy narrative. The organization claims to derive its assessment criteria from broad public consultation and asserts that the acceptability of any approach depends on its alignment with public notions of safety (NWMO, 2005). Yet, “the public” is not a singular, coherent entity but a constructed category—one that often excludes Indigenous and alternative ontologies. Leanne Betasamosake Simpson provides a vital counterpoint to subsuming Indigenous ontologies into “broad public” engagements, articulating Indigenous knowledge production as grounded in land-based, relational, and iterative practices that challenge both colonial governance and extractive epistemologies (2017, p. 63-66). Simpson’s emphasis on constellations of co-resistance and freedom offers a radically different understanding of what it means to govern safely: not through state-led consultation and risk management, but through grounded, community-specific practices of care and accountability. Within this framing, the NWMO’s notion of public engagement appears as a simulation of responsiveness, lacking the relational depth that Simpson identifies as foundational to genuine wellbeing (p.107). Moreover, the mechanisms the NWMO used to engage with “the public”—surveys, forums, focus groups—to determine technical and social aspects of safety are not neutral instruments of discovery, but techniques of framing that delimit the terms of acceptable discourse and obscure deeper structural critiques (Smith, 1999, p.56).

What counts as legitimate knowledge is produced through situated power relations that privilege dominant epistemologies—particularly those aligned with Western scientific rationality—and uphold specific regimes of evidence, interpretation, and expertise. These regimes, shaped by the social norms of industry and the state, elevate certain forms of data while casting others (especially those rooted in lived experience, affective insight, or land-based knowledge) as anecdotal or unreliable (Frickel & Vincent, 2007; Juraku & Sugawara, 2021).

In the House of Commons Standing Committee on Environment and Sustainable Development, MP Leah Taylor Roy asked Dr. M.V. Ramana, Professor, School of Public

Policy and Global Affairs at the University of British Columbia, “For ordinary Canadians to have those rational conversations [on becoming a willing host community], how much information do you think the people who are living in these areas have? We're down to two possible sites for the geological repository. How informed do you feel the people in these areas are about what this means for their region—not just for their town, but their region—and about how the waste will actually be moved and handled before it's put into these deep geological repositories?” (Taylor Roy, 2022). M.V Ramana responded,

> “I would say two things: One is that there's a wide range of information, and what the NWMO presents is just one aspect of that. If you look at studies of public attitudes towards technologies in general, and nuclear power in particular, they are concerned about a range of issues. It's not just one particular number, whether it's the volume of waste or the probability of the radioactive dose that might come from it or something like that. They're concerned about potential risks to future generations. They're concerned about the possibility of major accidents and things that may go out of control… Secondly, they're also concerned about what they will be able to do in the event of one of these things. When you look at all those studies, all you can conclude is that the technical approach to saying that these are the only things that matter and that this is the only information that matters, is sort of second-guessing what the public ought to know. The other point I want to say is that talking about the benefits of this—but in terms of jobs, in terms of the amount of investment that will be going into these communities—is like offering them a small bribe, in a way, dangling a big golden carrot in front of them in exchange for their accepting certain risks” (Ramana, 2022).

What emerges is not a process of enabling *informed* consent, but one where the appearance of choice is constructed by selective sharing of knowledges, uneven access to expertise, and institutional control over what counts as relevant knowledge.

The CLEAR Lab at Memorial University, led by Michif scholar Max Liboiron, exemplifies anti-colonial science in its methodological commitments. As they write, “being a scientist means taking [political] sides… These politics happen in ways that seem harmless, but have far-reaching effects: you ask some questions and not others… Creating knowledge is a political act where some values and interests are reproduced and others are not. There is no way around this. We can only be more or less intentional in these choices" (CLEAR Lab, 2017). The NWMO's "political side" privileges the knowledge and outputs of nuclear industry "experts," while sidelining the questions of risk and inclusion raised by affected publics and Indigenous rights holders. Without legitimating these concerns, the NWMO's claims to participatory engagement and assessments of safety remain partial and politically constrained.

There are no active DGRs for us to study or have certainty over the long-term impacts. One of the central challenges of the safety of the DGR is ensuring the stability of geological formations over the extensive timescales required for nuclear waste isolation (Ramana, 2019). Other risks associated with radioactive waste, including transportation and potential containment failure, extend well beyond the boundaries of host communities. This raises ethical concerns about whether a single community—particularly a small, economically vulnerable, and politically unstable one—can genuinely consent to a project with far-reaching impacts.[35]

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[35] Interview with member of Northwestern Ontario resident January 23, 2025: "There is lack of trust in Ignace council making a decision like this on behalf of the people of Ignace–even for those who are not opposed to the DGR. The Ignace council has rolled over completely in the last three cycles. The last two mayors resigned before their tenure was over due to bullying…"

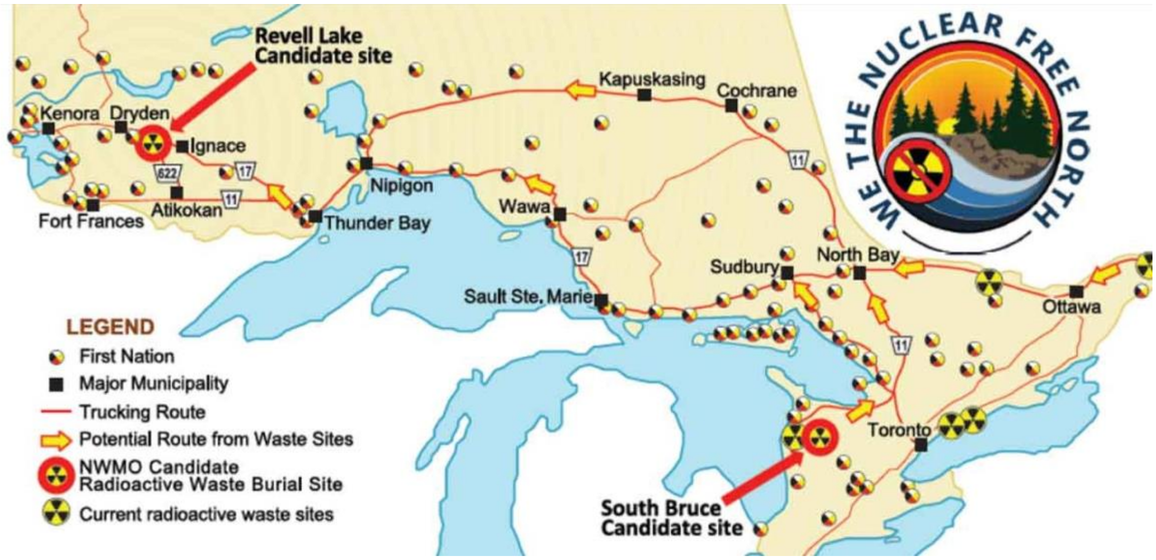

Figure 6 Draft Transportation Route for Used Nuclear Fuel Waste (We the Nuclear Free North, 2025)

For example, if a DGR is located at the proposed Revell Lake site, 45 kilometers west of Ignace in northwestern Ontario, the transportation of nuclear waste would involve extensive routes spanning at least Ontario, New Brunswick, and Quebec. According to the NWMO's plan, radioactive waste would be transported by truck for over 40 years, with shipments traveling a cumulative distance of approximately 84 million kilometers (Leiss, 2024). This scale of transport poses significant risks, as evidenced by past incidents in Germany and New Mexico where radioactive material leaked despite industry assurances the material was in safely engineered containers (Nilsen, 2008). Any unanticipated accidents along these routes could affect numerous First Nations and municipalities.

The NWMO does show some sensitivity to temporality, recognizing that societal understandings of safety evolve and must be accounted for over the long implementation horizon of nuclear waste management (NWMO, 2023). Yet even this flexibility is treated as a problem of institutional design—something to be solved through adaptive phased management rather than through continued negotiations with diverse ways of knowing. Responsiveness, in this model, remains structurally top-down.

3. Developed within a Sound Ethical and Social Assessment Framework

> "There's been so much discussion of benefits, but I want to remind you today that there was a mine in Attawapiskat First Nation, and DeBeers went in there they did their mining and they left and First Nation is still the same. It hasn't changed they're still living in poor housing conditions, they're still struggling the way they did before DeBeers came in and after DeBeers left, it' still the same. They're not living more prosperous than they were before they just left and these things happen over, and over again." Chief Rudy Turtle, Grassy Narrows First Nation, "Anishinaabek Anti-Nuclear-Waste Rally" (April 30, 2024), speaking about the lack of lasting benefits to Attawapiskat First Nation, who signed an IBA with DeBeers in 2005.

The Seaborn Panel (1998) recommended, among other things, that a sound ethical and social framework would include consideration of: "…equitable distribution of costs, risks and benefits among groups, areas and generations; a net benefit for society at large and for those directly affected, commensurate with protection of the environment; acceptable costs, commensurate with risks and benefits; input from social and applied scientists; and a voluntary siting approach in which a potential host community gives its consent freely and without undue economic pressure." Yet in the NWMO's process, once a community is deemed "willing," a cascade of investments, planning, and legal arrangements make retraction increasingly difficult. The NWMO, powered by waste producers Ontario Power Generation, New Brunswick Power, and Hydro Québec, has a well of resources and the support of the state eager to promote new nuclear reactors and technologies, must like the dynamics of extractive industries and the state (Szablowski, 2010).

In 2020, the township of Ignace and Grey Bruce County became the two final candidates considered to host the DGR, down from the initial 22 communities who identified as interested to 'learn more' about the process (NWMO, n.d). As of August 2024, the Nuclear Waste Management Organization (NWMO) has paid the Township of Ignace $1.5 million, marking the first payment under a Municipal Hosting Agreement signed in March 2024 (Township of Ignace, 2024). These payments are structured to continue annually as specific milestones in the development process are reached. Additionally, the NWMO has funded infrastructure projects and other community purchases in Ignace, including the redevelopment of the Ignace Shopping Plaza, the creation of a Seniors' Walk and Urban Art Trail, and the construction of the Silver Tops Senior Centre and Seniors Housing Complex (Township of Ignace, 2024b). Other contributions include purchasing essential equipment such as a fire truck, playground equipment, a plow truck with a sander, a rescue truck, and various tools and vehicles to support municipal operations (Stimpson, 2024).

The NWMO provides payments for the signing of most (if not all) significant agreements; for the hosting agreement, community benefits agreement, and the "learn more" agreements. For example, when the City of Dryden (adjacent to Ignace) signed a "learn more" agreement in 2022, they were awarded $982,424; between 2014 and 2022, the NWMO paid the City of Dryden $1.5 million to take part in the process (Nesbitt, 2022). The economic incentives for Wabigoon Lake Ojibway Nation are not publicly disclosed, unlike the hosting agreement signed by Ignace. However, the Band's 2021 consolidated financial statement, the most recent available, indicates that 25% of their annual revenue came from the NWMO (BDO Canada, 2021).

It could be argued that it would be unethical not to compensate a small, struggling township for the time and resources it has devoted to the NWMO's decade-long 'learn more' process. This might be particularly true for a First Nation that is involved not because of its own expressed interest, but due to its proximity to a township that opted to participate, receiving benefits. However, is it ethical to approach a community that has already endured the boom-and-bust cycles of other industries and ask them to accept significant risks in exchange for a desperately needed economic boost (WCI, 2024)?

Extractive contexts pose similar questions. In the Ring of Fire, for example, industry and the state are eager to develop the region for the extraction of "critical" minerals. To access the sites of extraction, roads would need to be built through sensitive ecosystems and into a remote region, cautioned by some as a hall-pass to "open" the region up to continued extraction (Scott, 2022). Dayna Scott (2024) notes that, even though communities will receive some benefit of some amount from mining, they will need to contend with the dependence this creates on the extractive economy to meet their basic fiscal needs. The DGR, too can be looked at as a hall pass for new nuclear, given that it will be reported as a solution to the nuclear waste crisis. As the benefits continue to dwindle past the hosting agreement and construction phase, are communities prepared to be the site of multi-generational radioactive waste import? These questions raise scrutiny on the NWMO's reliance on economic incentives, parallel to some critiques of Impact Benefit Agreements (IBAs) and Community Benefit Agreements (CBAs) in extractive contexts (Szablowski, 2019; Zalik, 2016). Offering financial compensation and job opportunities may appear to align with principles of distributive justice by addressing immediate needs within host communities, but it also risks being perceived as coercive (Stimpson, 2023). A central question that remains unanswered in this dissertation is how to sequence consultations and payments to reduce the risk of coercion.

Compounding these issues, communities are asked to consent to hosting the DGR prior to the completion of an impact assessment. This raises significant concerns, as there is presumably an information gap short of what would be required to be an "informed" host community, when generally the scope of risks remain largely unknown (see Webber's (2010) critique of liberal consent frameworks and 'imputed consent' previously in this chapter). Furthermore, the hosting agreement—public for Ignace, and private for Wabigoon Lake Ojibway Nation—provides limited avenues for communities to voice concerns or contest aspects of the project as it advances (like the parameters in a non-disclosure agreement) (NWMO & Township of Ignace, Article 17, 2024). This situation, similar to the long-term relationship agreement in the NSDF context, echoes what Dayna Scott (2020) calls "consent by contract," where agreements—often signed in the absence of full project knowledge (in this case, before the impact assessment)—are held up as evidence of consent. In such arrangements, consent is commodified, extracted through (often) confidential, bilateral agreements that can limit future protest, dissent, or deliberation, effectively pre-empting democratic engagement and inter-community comparison. In ‘consent by contract’ dynamics, expressions of support are often required prior to project execution, and the timing of regulatory approvals shifts leverage away from communities, who are asked to perform their side of the bargain first and benefit later—often after the project's most consequential approvals have already been granted (Scott, 2020).

The NWMO’s status as a federally mandated body funded by Canada’s nuclear power producers further complicates these ethical considerations. While its funding structure ensures significant resources to incentivize host communities, it also underscores the entrenched influence of the nuclear industry in shaping decision-making processes. This dynamic raises broader questions about the role of industrial actors in securing social license for projects with profound environmental and social implications.

In 2024, the Assembly of First Nations conducted regional dialogue sessions on the transportation and storage of used nuclear fuel to better understand community perspectives and address concerns (AFN, 2024). These sessions were funded by the NWMO, who presented for half of the day, while the second half was allocated to discussions among First Nations participants. However, there was no opportunity for academics or independent experts to challenge NWMO’s claims or offer alternative perspectives on risks. As a result, some community members expressed concerns about the lack of transparency in these sessions (AFN, 2024b).

One of the Seaborn Panel's recommendations (recommendation number six in this list) is that the process be operationalized by a trustworthy regulator, and the NWMO acknowledges that there is a lack of trust within the institution; can an institution that is not broadly trusted adequately conduct a sound ethical and social assessment framework? The insular nature of the NWMO risks re-centralizing power and displacing broader political contestation by privileging institutionalized forms of participation that are structured, moderated, and ultimately defined by the NWMO.

Moreover, the spatial politics of siting a deep geological repository are flattened through the construction of the "willing host community" as the primary locus of consent. This approach obscures the scalar complexities of nuclear waste governance, where risks extend beyond community boundaries and persist across generations by territorializing responsibility at the local level. The ethical framework, while presented as document open to dialogue, functions to stabilize the siting process through the incorporation of Indigenous knowledge, reconciliation language, and adaptive planning (Kuhn & Murphy, 2002; Bell, 2022). Here lies a risk in instrumentalizing alternative epistemologies rather than transforming the decision-making structure itself. Critically, the NWMO's 'ethical engagement' suggests a rationality that looks to legitimize the long-term project of nuclear waste disposal in a process that *recognizes* the epistemic hierarchies and socio-political and cultural confrontations of the proposal without fundamentally unsettling its underlying assumptions or power relations.

4. Have the Support of Indigenous People36

The Seaborn Panel recommended that the concept for nuclear fuel waste that involves lands inhabited, claimed, or used by Indigenous people should be co-developed by Indigenous people, and that the participation process should be designed by Indigenous people (Environmental Assessment Panel, 1998). This recommendation came following widespread opposition of the initial nuclear waste repository proposal from Indigenous groups during the Panel hearings. The reason for opposition was founded in experience of the disproportionate impacts of various aspects of the nuclear fuel chain, which challenged the industry's assertion that nuclear power in Canada is both safe and benign (Stanley, 2006). Nevertheless, the NWMO's implementation of the Seaborn Panel's requirement for Indigenous support in siting a DGR is steeped within settler colonial spatial logics rather than co-developed with Indigenous nations. While the NWMO gestures toward Indigenous autonomy by supporting community-designed *dialogue* processes, the structure and trajectory of the DGR siting remain predetermined by settler communities who have showcased their interest to be a "willing host" community; of the communities who showed interest to enter the willing host process, all were municipalities, making the most proximate Indigenous nation part of the process.

Moreover, while the NWMO publicly endorses the principle of free, prior, and informed consent (FPIC)—as articulated in the United Nations Declaration on the Rights

[36] The term "Aboriginal People" is used in the original language of the Seaborn Panel.

of Indigenous Peoples (UNDRIP), and since 2021, in Canadian law through the UNDRIP Act—its practical implementation remains uneven. FPIC serves as both a benchmark and a challenge; it stipulates that development projects on Indigenous lands must not proceed without the genuine and informed consent of *all affected communities* (the challenges of Webler and Tuler's 'consenter identification problem' is at play here). How can this be operationalized, and how do disputes between consenting and opposing communities get resolved in the process?

Temporal dimensions add another layer of complexity. The radioactive waste intended for deep geological storage remains hazardous for hundreds of thousands of years, far exceeding the lifespan of any existing political, economic, or social system (Ramana, 2019). This raises a concern of intergenerational justice, as it questions the ethical legitimacy of making decisions that impose risks on future generations. Common to some Indigenous legal orders is the seventh-generation principle, a leadership direction in decision-making to ensure sustainable, life-affirming choices are made for the current generation and at least seven generations into the future (Niganobe, 2022; Haudenosaunee Confederacy, n.d.). Chief Reg Niganobe, Grand Council Chief, Anishinabek Nation, Chiefs of Ontario intervened at the House of Commons Standing Committee on Environment and Sustainable Development February 15, 2022, to express the importance of the seventh-generation principle, and to share the five principles on nuclear waste determined by the Anishinabek nation and the Iroquois caucus. In his intervention, Chief Reg Niganobe stated:

> Since time immemorial, each of the 133 first nation communities in Ontario have endeavored to fulfill our traditional legal responsibilities by ensuring that our decisions are made with the best interests of the next seven generations. We must be collective in decisions about the land, think only of future generations, and allow this inherent responsibility to determine our decisions... Canada has ignored the role of traditional ecological knowledge systems before and has been subject to judicial review. Involving indigenous rights holders during the decision-making processes and not at the end will help rebuild our relationship and avoid costly and lengthy legal challenges. In fact, indigenous communities have expressed dismay of the time frames for the development of nuclear policies, which seem to be moving ahead very quickly even though we are still in the midst of a pandemic. If there is to be authentic and fair engagement, indigenous nations must be able to co-design the process" (Niganobe, 2022).

Chief Niganobe (2022) continued to highlight several principles on nuclear waste agreed on by the Anishinabek nation and the Iroquois caucus. First, rather than abandonment, there should be a policy of perpetual stewardship. The impacts of climate change triggers unpredictable weather events, so human-made storage must be resilient to ensure that radioactive materials stay out of the food we eat, the water we drink, the air we breathe and the land we live on. Second, the best possible containment must be used with adaptable packaging to align with changing environmental conditions. In addition, nuclear waste should be monitored and retrievable in a relationship of continuous guardianship. Among other principles, the Anishinabek Nation and Iroquois caucus declare that nuclear waste should be away from major water bodies (Niganobe, 2022). These principles were not considered in the NWMO's siting approach, regardless of the Seaborn Panel's recommendation to develop the concept with potentially affected First Nations. The NWMO's justification as to why is explored in section five.

The NWMO claims to align with the principle of FPIC. However, critics—many of whom are experiencing the process firsthand—argue that its practices reflect a divide-and-conquer approach, selectively engaging isolated communities while disregarding opposition from broader Indigenous coalitions. For example, Wabigoon Lake Ojibway Nation (WLON) has voted to proceed with the NWMO's "Site Characterization Process" for the proposed deep geological repository (DGR), following ten years of engagement. However, the referendum withheld final approval—yet the NWMO's public rhetoric presents WLON as a "willing host" (NWMO, 2024b; WLON, 2024).

Other regional Indigenous bodies—such as the Anishinaabeg of Kabapikotawangag Resource Council (AKRC), and Grand Council Treaty #3—have voiced strong opposition to the transportation and storage of nuclear waste through their territories (AKRC, 2024; Grand Council Treaty #3, 2024). Eagle Lake First Nation (ELFN) has raised serious concerns about the NWMO's consultative process. In December 2024, ELFN filed an application for judicial review of the NWMO's decision to site the DGR in an area where nuclear waste would be stored for millennia—within ELFN territory. The judicial review application notes that ELFN and WLON were historically one community at the time of signing Treaty 3 in 1873. Moreover, throughout all of ELFN's meetings with the NWMO, they reiterated that they must be considered a "host community" in the DGR siting process and must be able to provide or withhold their consent. Since late 2019, however, the NWMO has refused ELFN host community status—doing so without reason, justification, or willingness to engage in dialogue on the issue (Bernauer & Petrone, 2025).

The NWMO refrains from explicitly defining the characteristics of a "host" community, instead leaving this determination to those communities that express interest in learning more, which brings in Hunold's (2002) challenge of 'democratic localism.' While this approach may aim to convey flexibility and deference to community agency, it inadvertently creates a process lacking a clear foundation for transparency and thorough deliberation. As I attempted to illustrate above, the parameters around who is considered a "host" at the proposed Ignace site is too exclusionary to be acceptable.

A similar challenge arises in the absence of a defined framework for assessing "willingness." Delegating the determination of willingness to individual communities has fostered internal divisions and strained relationships between host communities and their neighbours. For example, Chief Jeffrey Copenace, Chief of Ojibways of Onigaming First Nation, resigned as Chair of the Grand Council Treaty #3 Chiefs Environment Committee due to the fragmenting of communities who accepted money from the NWMO, and feeling that his concerns of potential impacts to Treaty Rights that were being ignored in the name of economic benefits. Chief Copenace posted his resignation letter on Facebook, and included screen shots from members of the Environment Committee that he did not agree with (Copenace, 2024).

These moments underscore the limitations of a model that treats consent as spatially bounded and temporally fixed, rather than as part of a relational and ongoing process. Bernauer & Petrone wrote an opinion editorial in *Policy Options* that called for the federal government to step in and allow space for regionally opposed First Nations concerns to be heard, considered, and accommodated (2025). The NWMO responded in an op-ed that consultation would be covered by the regulators undertaking of the Duty to

Consult in the Impact Assessment phase of the process (MacBride, 2025). Notably, WLON did not initially self-identify as an "interested" host community. Their inclusion in the process stemmed from their marginally closer proximity to the township of Ignace, which had asserted interest in hosting the DGR. The NWMO has not provided any clear criteria it considered in determining which Indigenous communities would be granted host status. This selective application of "willingness" undermines the spirit of FPIC and Indigenous jurisdiction and raises broader questions about the scope and meaning of consent in long-term risk governance. When incorporating questions like how to secure or identify the willingness or consent of Indigenous communities, neither the willing host model or FPIC offer guidance on how to proceed when there is conflict between Nations' positions. This remains a key issue that is not resolved in this dissertation.

For all, participation is invited, but always within the contours of an already-articulated future that assumes the necessity and inevitability of deep geological disposal. In this way, Indigenous involvement is framed less as an expression of sovereign decision-making and more as a strategy of legitimation, designed to illustrate the project socially and politically palatable. On how they integrate this aspect of the Seaborn Panel's recommendation, the NWMO states:

> "[The] NWMO has entered into agreements with Aboriginal Peoples for Aboriginal Peoples to design and conduct their own dialogue process, in the manner they deem fit, in order to help shape the NWMO study and recommendation. Mechanisms to ensure Aboriginal Peoples will have ongoing input as the management approach is implemented will need to be built into implementation plans. These mechanisms will be in addition to mechanisms designed to ensure the public, and particularly those most impacted, will have a continuing role in shaping the implementation of the approach" (NWMO, 2005).

This mode of engagement risks producing what might be called manufactured consent: a form of procedural inclusion that displaces more fundamental questions of jurisdiction, land rights, and epistemic authority. The language of “ongoing input” subtly forecloses the possibility of refusal, while the institutional emphasis on culturally appropriate mechanisms may mask the deeper asymmetries of power at play (Bell, 2021). The NWMO has made a habit of responding to public critiques via op-ed. For example, MacBride (2025) and Bernauer and Petrone (2025) previously referenced exchange. Or, in 2022, the NWMO’s response to a CBC News Article that sheds light on the former NWMO employee who is now suing the organization for $320,000, claiming he was dismissed for being “too much on the side of the community” (Butler, 2022).

The NWMO has a section on their website with the heading “the NWMO Responds” where, perhaps more appropriately, the organization posts responses to letters addressed to the NWMO (along with some op-ed responses). One of the posted responses was to a letter penned by twelve First Nations in Northern Ontario on September 27, 2024, which outlined their central argument, that “...our First Nations in Northern Ontario say ‘no’ to nuclear waste storage and transport in the North” (Wawa News, 2024). The NWMO responded,

> “The interests, concerns and counsel of Indigenous peoples have been an integral part of the NWMO's work from the very beginning. It began as we studied options for the long-term management of Canada's used nuclear fuel, and it has continued throughout the implementation of all aspects of Canada's plan. The NWMO is reaching out to the chiefs who signed the letter and *offering to meet with them to share information and answer their questions.* Protecting people and the environment is the NWMO’s top priority. In fact, it’s the very purpose of our existence. Our job is to move used nuclear fuel from its temporary storage above ground to permanent storage roughly 700 metres underground, protected by a

> multiple-barrier system enclosed in rock that has been disconnected from surface water for millions of years. The transportation of used nuclear fuel to the deep geological repository is expected to start in the 2040s and will take 50 years to complete. Canadian and international transportation regulations for radioactive materials have been in existence for more than 60 years, and approximately one million packages of nuclear substances are transported in Canada every year. They move by land, air and sea, under strict regulations that ensure they are safe. Other countries have shipped 20,000 shipments of used nuclear fuel worldwide over the past 50 years by road, rail and water. There have been zero serious injuries, health effects or environmental consequences related to radiation...." (NWMO, 2024, emphasis added).

Here, the NWMO attempts to absorb Indigenous concerns into a narrative of inclusion, safety, and inevitability, while ultimately reaffirming settler-state authority over land and decision-making. By claiming that Indigenous consultation has been "an integral part" of its work, the statement presents consultation as already fulfilled, positioning Indigenous peoples as participants rather than rights-holders with the power to refuse. The emphasis on technical expertise and regulatory compliance attempts to depoliticize the issue, framing nuclear waste management as a neutral, scientific endeavor rather than a contested political project with profound implications for Indigenous sovereignty and territorial jurisdiction. Risks are rendered abstract and safe through national and international statistics, masking the local, intergenerational burdens disproportionately borne by Indigenous communities. Offers to "share information" with First Nations Chiefs suggest a paternalistic model of engagement that privileges state-defined processes of consultation over relational, nation-to-nation accountability. In invoking regulatory success and the absence of past harm, the NWMO leans on a hegemonic technocratic rationality that delegitimizes alternative knowledge systems and forecloses substantive debate, rendering the project as both safe and inevitable. This rhetorical framing reproduces the settler colonial logic of recognition without redistribution, containment without consent.

Indigenous-led impact assessments can be an opportunity for incorporating methods of Indigenous-decision making into nuclear waste siting processes. The Indigenous-led assessment by Kebaowek First Nation (KFN) and Kitigan Zibi Anishinabeg (KZA) of the proposed NSDF at Chalk River Laboratories, examined in Chapter Four, exemplifies a challenge to colonial frameworks of consent and consultation. The Algonquin-led assessment foregrounded inherent jurisdiction and responsibilities over the unceded Aki Sibi (Ottawa River watershed), rejecting the framing of the NSDF as a matter of mere environmental mitigation. Instead, the KFN and KZA assessment mobilized a culturally grounded ontology wherein the river and the land are sacred, relational entities—not extractive zones or 'wastelands' to be negotiated through colonial legal frameworks.

Through extensive ecological and cultural research—including community-led ground-truthing, wildlife studies, and intergenerational knowledge-sharing—the assessment documented risks not only to the environment but to Indigenous rights, land-based economies, and spiritual continuity. It revealed critical deficiencies in the federal environmental assessment process, especially its failure to reflect Algonquin laws and the communities' decision-making timelines (Kebaowek & Kitigan Zibi, 2023, pp. 6–8).

This case makes clear that Indigenous-led assessments are not supplementary inputs into existing frameworks, they are assertions of law, jurisdiction, and relational governance. They challenge the fundamental legitimacy of state and industry-driven environmental assessments by asking different questions, grounded in different epistemologies: not just “can we manage risk?” but “should this proceed at all, and who decides?” As Kebaowek and Kitigan Zibi's assessment insists, “There is no willing host for the NSDF” (Kebaowek & Kitigan Zibi, 2023, p. 32). This statement is despite the claim that Pikwakanagan is a “willing host” and reframes the infrastructure question from one of siting to one of sovereignty.

Moreover, Indigenous-led IAs embody the temporality of consent emphasized by Webber (2010), allowing communities to engage in evaluation processes that are dialogic, relational, and rooted in responsibility to future generations (p. 6). These processes are not only about determining harm but about sustaining lifeways. As Scott et al., (2023) note, robust Indigenous-led impact assessments are “oriented towards maintaining the life-affirming practices that flow from reciprocal relations with lands and waters” (Scott et al., 2023, p. 7).

The above cited report, “Operationalizing Indigenous-led Impact Assessment (Scott et al., 2023) also acknowledges limitations. Even where Indigenous participation is strong, as in Nunavut's co-managed IA processes, ultimate decision-making power often remains with the Crown. This highlights a fundamental tension: recognition without authority can render Indigenous leadership symbolic rather than substantive. As Webber (2010) reminds us, “consent without power is a mirage” (p. 11). Webler and Tuler (2021) echo this view, cautioning that "without institutional redesign, participatory processes risk creating the appearance of legitimacy while failing to redistribute power" (p. 104).

Indigenous-led impact assessment processes are not merely alternative models of participation—they are expressions of Indigenous legal orders in practice. Morales (2023) underscores that Indigenous assessments are not just culturally relevant—they are legally grounded. They assert Indigenous law as a basis for environmental decision-making, offering different metrics of harm and well-being.[37] For example, the assessments conducted by Kitigan Zibi and Kebaowek prioritize the integrity of sacred sites, seasonal multi-species land-use, and responsibilities to future generations, challenging the technocratic criteria used by CNL and accepted by the CNSC.

Borrows (2023) emphasizes that Canada's implementation of UNDRIP must treat Indigenous peoples not as stakeholders but as sovereign legal orders. Section 35 of the Constitution should be interpreted as a "full box of rights," which includes jurisdiction over land and environmental governance (Borrows, 2023, p. 46). Legal pluralism here is not an aspiration but a constitutional and moral requirement. As Pasternak and King (2019) illustrate, Indigenous-led FPIC protocols often exceed the procedural norms of

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[37] "Indigenous law" refers to the laws of Indigenous groups or nations derived from their distinct Indigenous legal orders and traditions, specific to their territories. Indigenous legal tradition in Canada consists of multiple Indigenous legal orders, all of which came before the common and civil law systems in Canada. Within these diverse legal orders are the unique laws and legal processes of each Indigenous group. Like all forms of law, Indigenous law is dynamic and evolves and regenerates to adapt to new issues requiring the application of legal principles to address and resolve them.

state assessments. They incorporate spiritual, ceremonial, and communal dimensions of governance that are rarely acknowledged by settler law.

Ultimately, Indigenous-led IAs provide a blueprint for rethinking consent not as a procedural output, but as an expression of jurisdictional pluralism and spatial justice. They have the potential to embody the very principles that the NWMO's WHM fails to realize authority grounded in place, community-defined legitimacy, and accountability to both past and future. As such, they represent not only a critique of existing models but a pathway toward a radically different infrastructural politics grounded in consent as relationship, not mere agreement. But still, this process does not resolve the spatial issues previously described; like the WHM and FPIC, Indigenous-led IA does not offer a solution to the problem of when one Nation consents, and a neighbouring Nation does not.

The NWMO's processes operate within anticipatory regimes that seek to govern affect and temporality—constructing a horizon of cooperation and shared responsibility that obscures the colonial histories and contemporary territorial conflicts that underpin nuclear waste governance, and ultimately, nuclear infrastructures as a whole, because Indigenous consent was not sought from the outset of infrastructure siting.

5. Selected after Comparison with the Risks, Costs and Benefits of Other Options

The Seaborn Panel (1998) suggested that alternatives to the DGR must be explored for three main reasons: "1) offering a choice will increase the likelihood of public acceptance; 2) showing that one option offers a greater net benefit will increase the likelihood of acceptance of that option; and 3) a second choice will serve as a back-up in case the first choice cannot be implemented. Despite the Seaborn Panel's recommendations, the architecture of choice in the NWMO's model is prefigured by institutional logics—bounded by what is deemed *practicable*, *reasonable*, and *technically feasible*. In other words, the horizon of decision-making is shaped not by the full range of social, political, or ecological imaginaries, but by a curated set of options that align with dominant technoscientific paradigms (Bell, 2022). The NWMO's process, described as "iterative and reflective," appears to be responsive, yet it operates within a pre-structured discursive terrain where alternatives are already predetermined by filtering through expert knowledge regimes.

While the Municipality of Ignace may bear the responsibility for deciding on hosting the repository, the communities of Dinorwic, Borups Corners, Butler, and Wabigoon township are closer, or as close to the proposed site (see Figure 5). Moreover, the potential impacts of such a facility ripple outward, affecting neighboring communities, Indigenous territories, and regions along transportation routes who face the risk but receive much less benefit, if any at all. These extended risks complicate the ethical legitimacy of consent secured solely from the host community. The AFN has asserted that communities along these routes (up to 210 First Nations) should have an equal voice in the decision-making process, despite not given the opportunity to participate with a veto as potential host communities do (AFN, 2024b). The inequitable distribution of risks and benefits intensifies the grey area over what constitutes meaningful and just consent. The challenge becomes twofold: Addressing the inequitable distribution of risk and benefits, and designing, a consent framework that incorporates the voices of all potentially affected stakeholders, ensuring a more equitable distribution of risks and benefits possible, without deterring industry from applying ‘voluntary’ consent frameworks.

Alternatives suggested by opposing groups fall outside the technocratic frame—ideas such as “rolling stewardship” without disposal, or community-based governance models that reject centralized authority—have been dismissed as unfeasible, irrational, or even irresponsible toward future generations (Edwards & Del Tredici, 2013). The NWMO maintains that they considered three options as required by the *Nuclear Fuel Waste Act,* but ultimately justified their decision to “shop around” only the DGR to potential willing hosts. In response to the Seaborn Panel’s recommendations, the NWMO states, “In NWMO’s study, the risks, costs, and benefits of each of these options is being identified and assessed over the course of an iterative and reflective study process. In this process, the interested public is engaged in a dialogue which progresses through successive levels of detail from the questions which should be asked and answered in the study, through to values and objectives, inferences, trade-offs, advantages and limitations of the approaches and final judgment” (NWMO, 2005). Thus, the comparative model functions not just as a decision-making tool but as an assertion of power and epistemic hierarchy, confining which futures are imaginable, actionable, and permissible within the governance of nuclear waste.

Canadian jurisprudence can incorporate considerations for future generations, yet meaningfully interpreting intergenerational ethical responsibility into existing legal frameworks presents significant complexities. Ethical considerations related to intergenerational equity and environmental stewardship suggest a need for rigorous scrutiny of nuclear energy practices beyond current legislative standards, particularly as they pertain to waste and decommissioning infrastructures. The nuclear industry frequently emphasizes the urgent need to find an engineered solution for radioactive waste due to current inadequate storage methods (NWMO, 2004; CNL, 2025). Continuing nuclear energy production without a clear, definitive, and socially acceptable solution for radioactive waste storage creates ethical tensions and mistrust; that by siting a nuclear waste facility to manage *existing* legacy waste, there will be little leverage to halt the import of additional, current and future generation of wastes to be transported to the site. Victor (2003), in an NWMO Background Paper, identifies a critical limitation in the NWMO's public engagement process: discussions have explicitly excluded consideration of reducing or halting nuclear waste production entirely. Although NWMO highlights economic and community investment benefits, these short-term incentives inadequately reflect the profound long-term risks and burdens future generations will inevitably inherit. This oversight represents a significant gap in accountability and creates a sort of "trojan horse" dynamic to the waste site.[38]

[38] In a submission to the Impact Assessment Agency of Canada on the Terms of Reference for a Regional Assessment in the Ring of Fire Area, mining activist Joan Kuyek called the proposed Eagles Nest mine in the Ring of Fire a 'trojan horse' for new mines in the area. The DGR (and arguably NSDF) present similar dynamics; the promise of a solution coupled with economic vitality and other benefits, but that may

Lastly, the NWMO's "adaptive phased management" plan introduces significant uncertainties, as the proposed site design and operational scope remain subject to substantial modifications—including the potential addition of a second DGR on-site (NWMO & Township of Ignace, Article 6, 2024). These ambiguities underscore tensions within the model and raise concerns about the lack of procedural justice of the WHM in practice. When viewed through the lens of consent by contract, such governance strategies risk entrenching a system in which procedural forms obscure substantive injustices and sidestep collective deliberation on matters of shared environmental and cultural significance.

6. Be Advanced by a Stable and Trustworthy Proponent and Overseen by a Trustworthy Regulator

The NWMO acknowledges, "...that NWMO would not be viewed as a trustworthy proponent by some interested Canadians because it is fully funded by the nuclear industry, who make up its Board of Directors…[whereas] the Seaborn Panel's suggestion [was] that the nuclear waste management organization be established as an independent organization with a clear mandate to serve the public interest, exacerbated skepticism about the integrity of the NWMO and the appropriateness of any recommendation it may make" (NWMO, 2005).

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well legitimize and create infrastructure for the transport of additional radioactive waste than currently proposed.

The NWMO’s self-positioning as a “facilitator of dialogue” rather than a proponent of any single solution appears, at first glance, to reflect a shift toward more democratic, transparent modes of governance. However, the underlying spatial politics of institutional trustworthiness cannot be disentangled from the NWMO’s origins and embeddedness within the nuclear industry. Indeed, the fact that the organization is fully funded and governed by industry actors renders its claims to neutrality structurally tenuous. Public skepticism is not simply a matter of perception or misplaced suspicion, but it reflects a deeper awareness of how institutional geographies of power and accountability are produced and maintained (Bell, 2022). That the federal government disregarded the Seaborn Panel’s recommendation for an independent oversight body further entrenches this mistrust, pointing to a governance architecture that remains closely aligned with industry interests rather than rooted in public authority or democratic oversight. Though, it should be noted that independent oversight does not equate to legitimacy.

“A Captured Regulator”: Examining the Role of the CNSC in the NSDF

A central critique was that the 'informed' aspect of finding an 'informed and willing host' was undermined, as the information provided came solely from the NWMO, an organization composed of waste producers. To ensure that consent processes remain impartial and prioritize the interests of affected communities over those of powerful industry stakeholders, experts and First Nations have suggested that Canada’s nuclear regulatory framework must address concerns of 'regulatory capture' by first establishing a genuinely arms-length regulator, independent of industry influence (Hendrickson, 2022; AFN, 2024b). The regulator's role would include ensuring information shared with communities is transparent, balanced, and inclusive of diverse perspectives, including those of Indigenous-led assessments and independent experts, and would make their decision under with the same information, rather than relying solely on the industry that explicitly benefits. This approach might help foster uncoerced consent by guaranteeing that decision-making processes are guided by the needs and interests of communities rather than the objectives of the nuclear industry.

In this context, the NWMO's efforts to construct a participatory and transparent study process must be read critically—as a performative strategy to mitigate its legitimacy deficit rather than as a relinquishment of power. By outsourcing aspects of the agenda-setting and reporting to "third parties" and framing the study as guided by "society at large," the NWMO seeks to spatially redistribute responsibility while retaining institutional control over the broader discursive and material conditions of the process (NWMO, 2005, p.9). Its role as a "neutral platform" masks the fact that it continues to shape the terrain of engagement—what is discussed, who is included, and how legitimacy is conferred. This attempt to depoliticize the institution through procedural openness may create an aesthetic of accountability, but it does not resolve the core issue: that the governance of nuclear waste is being orchestrated from within an industry whose interests are not easily aligned with those of affected communities or broader publics. Therefore, the politics of trust here are not simply interpersonal—they are deeply spatial, institutional, and historical.

Conclusion

The NWMO's WHM underscores the nuanced intersections of consent, justice, and power in nuclear waste siting, dynamics that would likely be similarly reflected in other contested infrastructure projects. The WHM can be critiqued for relying on a procedural framework that appears inclusive but ultimately perpetuates colonial state tactics, dividing communities to achieve what can be publicly portrayed and internationally celebrated as consensus (See, for example, World Nuclear News, 2024). This analysis of consent-seeking processes reveals how local contexts, economic vulnerabilities, and uneven power dynamics shape decision-making, often privileging industry objectives over genuine community agency. In this case, the economic incentives offered by the NWMO to host communities such as Ignace and Wabigoon Lake Ojibway Nation raise concerns about the 'legitimacy' of consent, particularly when such offers may disproportionately appeal to communities facing histories of economic marginalization. The notion of "manufactured consent" emerges, highlighting how financial compensation can blur the lines between voluntary agreement and economic coercion, compromising the ethical legitimacy of the process.

The framing of consent as a procedural milestone in the WHM risks obscuring deeper geographies of inequality and dispossession. By emphasizing voluntariness at the community level, the model can suppress broader political economies, particularly the marginalization of rural and Indigenous peoples, and the long temporalities of colonial governance that shape how risk is distributed and legitimacy is claimed. Public resistance to hazardous waste facilities is often explained through a "not-in-my-backyard" framework and is dismissed as irrational, emotional, or self-interested (Coates, Heid and Munger, 1994). These accounts obscure the broader ethical commitments of many opponents, who object not only to the imposition of such facilities in their own communities but to their placement in *any* community (Hunold and Young, 1998).

Within scholarly debates, liberal thinkers typically support voluntary siting approaches, viewing them as both more effective and more legitimate than top-down regulatory or market-based methods (Rabe, 1994). In contrast, those further to the left caution that such strategies merely mask coercive dynamics under the guise of consent, facilitating "economic blackmail" of economically depressed, rural, and racialized communities (Hunold, 2002; Gould et al., 1996). While these positions diverge in their assumptions, both ultimately acknowledge the same outcome: hazardous infrastructures continue to be disproportionately sited in marginalized regions—a failure of justice neither approach fully resolves.

Moreover, considerations of spatial and temporal dimensions of justice draw attention to the broader, intergenerational impacts of nuclear waste management. The risks of radioactive material transport and containment failure extend well beyond host communities, raising questions about the inequitable distribution of both risks and benefits. The absence of a framework that seeks consent from all potentially impacted communities exacerbates this inequity, leaving neighbouring and downstream communities without a voice in decisions that could affect their way of life and future generations. To reconcile these tensions, it is essential to reimagine consent frameworks that are framed through local priorities structured according to local epistemologies, prioritize transparency, balance competing interests, and account for the complex spatial and temporal scales inherent in nuclear waste governance. It might also look like a reconfiguration of the characteristics that define “community” to extend beyond that of a municipality and the most proximate First Nation. This requires moving beyond industry or state-led processes toward inclusive, community-driven approaches that address structural power imbalances and uphold principles of distributive and procedural justice by shaping the design of the process from the beginning.

As a practical solution to address the epistemic tensions in the NWMO’s process, Bell (2022) suggests adopting a landscape-based approach that prioritizes epistemic equity. This approach would value knowledge that arises from relationships with the land and is rooted in specific contexts, rather than relying solely on abstract, decontextualized knowledge typically validated by modern scientific institutions. Epistemic equity involves not just including diverse forms of knowledge, but actively elevating those that have been marginalized. In the context of nuclear waste siting, organizations could promote epistemic equity by recognizing and supporting land-based knowledge systems alongside conventional scientific expertise. This might include creating platforms such as discussion panels that genuinely engage and uplift local critical lay experts and Indigenous knowledge holders, offering more opportunities to explore and present both local and nationally relevant Indigenous knowledges, and providing guidance, potentially through external facilitators, for municipal stakeholders who may be influenced by settler perspectives or dominant pro-nuclear narratives, helping them recognize and address their biases (p. 857). As she argued previously, while community-led processes are valuable, they risk reinforcing existing inequalities if local power imbalances aren't carefully considered during technological decision-making (Bell, 2021).

Chapter Six:

Conclusion: Beyond the 'Willing Host':

The Politics of Refusal and Reimagined Consent

The friction between nuclear waste management regimes and Indigenous sovereignty, both often treated as emergent policy challenges, is in fact deeply sedimented in Canada's technopolitical landscape. The Cold War, with its logics of secrecy, nationalism, and security, continues to cast a long infrastructural and ideological shadow. Its residues are not only radioactive but epistemological. Legacies of the Cold War have created regulatory frameworks and political norms that are entrenched in how risk is conceptualized, how authority is legitimized, and how waste is rendered governable through consent. This dissertation has traced how consent in nuclear governance is not a neutral procedure, but a process through which legitimacy is manufactured, contested, and sometimes refused. I have also attempted to surface alternative approaches to consent-seeking in nuclear governance—ones that acknowledge how the roots of infrastructure generate concerns and scrutiny that cannot be addressed through management paradigms alone, but instead call for grassroots, community-level restructuring of consent-seeking practices.

At Chalk River Laboratories (CRL), the buried histories of atomic weapons development, like the plutonium produced for U.S. bombs that devastated Hiroshima and Nagasaki, haunt the present politics of waste. The ground that new disposal facilities are being proposed on is already thick with histories of natural resource extraction, military secrecy, nuclear infrastructures constructed without consent, Indigenous dispossession, and colonial violence. These histories are not incidental; they shape the socio-material conditions and affect under which “consent” is now sought. Consent regimes do not begin at the moment of community engagement or consultation—they are downstream from histories of exclusion, and upstream from reimagined futures.

The Rush for Nuclear Solutions to the Climate Crisis

The urgency of addressing climate change has led governments and industries to rapidly identify and invest in low-carbon energy alternatives. Among these, nuclear energy is being re-evaluated and promoted for its ability to produce large-scale, baseload electricity without direct greenhouse gas emissions (Environment and Climate Change Canada, 2022). In Canada, and Ontario particularly, where nuclear power already comprises a substantial share of electricity generation, this momentum has translated into state-backed commitments to extend the lifespan of aging plants and explore new reactor technologies (Ontario Ministry of Energy and Mines, 2025).

This resurgence has emerged within what the Stockholm Environment Institute (2021) calls “carbon tunnel vision”—a narrow decarbonization agenda that prioritizes emissions reductions while sidelining broader ecological, social, and justice considerations. When policies are driven primarily by carbon metrics, they risk overlooking who is impacted, how harms are distributed, and which knowledge systems are excluded in the process. For example, the proposed siting of nuclear waste infrastructure—like the NSDF and DGR—on Indigenous lands is often justified by reference to climate mitigation goals, while the risks of long-term waste storage—and the question of who must bear those risks—are framed as secondary or manageable.

This framing illustrates the broader technocratic logic that dominates nuclear governance. In January 2025, The North Renfrew Times—a local Deep River newspaper—quoted Prime Minister Justin Trudeau as saying, “This is not a political decision… On this side of the House, we trust our experts.” In the same issue, one article reported that a Canadian Nuclear Laboratories (CNL) effluent leak was “within requirements,” while another paid tribute to former U.S. President Jimmy Carter, highlighting his role in managing the NRX reactor accident at Chalk River in 1952. The current political climate mirrors the past; however, the central project of modernity has shifted—changing from national security to decarbonization. Today, infrastructure and innovation are primarily governed by western science, economists, and state regulators, while more holistic and relational understandings of climate responsibility—particularly those rooted in Indigenous epistemologies—are marginalized or omitted. Indigenous knowledge systems, which emphasize intergenerational stewardship, cultural and ancestral responsibility, and legal obligations to land and more-than-human kin, are often treated as cultural supplements rather than foundational frameworks for climate governance.

This dissertation situates nuclear energy within this dual context: as a potential tool for climate mitigation, and as a flashpoint for contestation over land, consent, and jurisdiction. While the case made by proponents of nuclear energy is well understood, any serious effort to reconcile nuclear development with justice must move beyond carbon tunnel vision to embrace epistemic and legal pluralism, procedural equity, and a meaningful commitment to Indigenous sovereignty. This research critically examines the processes through which nuclear waste siting unfolds in Canada, focusing on the epistemological assumptions, institutional structures, and contested geographies that define the current landscape. Moving forward, there is work to be done to reimagine a governance model grounded in legal pluralism, intergenerational justice, and Indigenous-led environmental assessment.

Contested Jurisdictions and the Latest Dash to Dump

While the NWMO's WHM appears to align with democratic principles, the practice has been critiqued for failing to engage meaningfully with Indigenous jurisdiction and knowledge systems. Bell (2021) illustrates how local nuclear landscapes like Bruce County, Ontario is shaped by historical and ongoing relationships with the nuclear industry, which can bias public engagement and undermine genuine consent. Consent in Indigenous governance systems is not transactional. As Whyte (2020) argues, it is relational, situated in land-based responsibilities, ceremonial obligations, and intergenerational accountability. Treating consent as a one-time agreement between the NWMO and elected municipal councils pressures the most proximate First Nation to accept benefits with conditions, can ostracize First Nation communities from neighbouring Nations, and disregards Indigenous legal traditions and risks fragmenting Indigenous political authority.

While economic incentives offered to potential host communities, like the Township of Ignace, may address immediate local needs, these financial arrangements risk coercion, especially in light of economic marginalization. Moreover, the NWMO's process of securing "informed and willing hosts" arguably has procedural gaps, notably because communities must commit before environmental assessments are completed. Indigenous consent processes add scrutiny. Despite the NWMO's open commitment of Free, Prior, and Informed Consent (FPIC), the selective engagement of isolated Indigenous communities has resulted in internal divisions, somewhat normalized by the "divide and conquer" tactic of proponents seeking social license (Legault, 2022). Eagle Lake First Nation's exclusion from host status consideration and related judicial challenges exemplifies this and underscores the procedural inequities within the NWMO's consent framework.

The transportation of waste from elsewhere adds to the ethical challenges, which extend geographically and temporally. Transporting radioactive waste across multiple provinces involves risks affecting numerous non-host communities, raising questions about the fairness of securing consent from just one locality. The AFN has asserted that the over 200 communities along the transportation route should have an equal voice in the decision-making process (AFN, 2024b). There are several environmental justice principles that support the AFN's assertion in principle (as raised in chapter one), including the demand to cease the creation of radioactive wastes, and to hold past and current producers of waste accountable for containment at the point of production (First National People of Color Environmental Leadership Summit, 1991). Empirical evidence reveals that transportation has been a key concern for communities in both the NSDF and the DGR siting. Thus, the containment of wastes at the site of production to avoid transportation should be strongly reconsidered as a social and technical solution to the wastes, that could in turn contribute to a framework of rolling stewardship rather than disposal that carries such high spatial and temporal risks.

Moreover, nuclear waste remains hazardous far beyond the expected temporalities of current political and social systems, invoking intergenerational justice concerns aligned with Indigenous principles, such as the seventh-generation philosophy (Niganobe, 2022). In the simplest terms, the seventh-generation philosophy encourages considering the long-term impacts of our decisions for seven generations into the future. To ensure rigorous long-term monitoring of the waste in the DGR, and to ensure that understanding of the content buried is well understood, aspects of retrievability are desirable to ensure perpetual stewardship.

The concept of a "nuclear community" also reveals distributive justice issues (Bell, 2024). As discussed in Chapter three, one of the reasons the proponent of the NSDF gave for not needing as high of standard as the WHM is because the NWMO is proposing to create a new nuclear community, wherein Deep River has a deep identity as being a nuclear community, founded on the development of Chalk River Laboratories. Though, as also raised in chapter three, Algonquin communities were not permitted to play a role in decision-making when their territory became the site of a "nuclear community." Other communities already involved in nuclear power generation, such as

Bruce County, gain stable employment and expertise, whereas locations like Ignace are poised primarily to assume risks associated with long-term waste storage without comparable benefits (Bell, 2024). This uneven allocation of risks and benefits highlights significant distributive justice concerns within Canada's nuclear waste governance.

The Politics of Permission

Articulating a distinction between "social license" and "consent" is fraught. While state and industry actors invoke social license as a metric of legitimacy, it functions more often as a strategy of pacification—gathering performative assent rather than enabling substantive participation. In contrast, Indigenous refusals—legal, political, and ontological—confront the very terms on which consent is imagined. As Kebaowek First Nation's legal challenges to the NSDF underscore, refusal is not the absence of participation but an assertion of jurisdiction, an insistence that Indigenous legal orders and epistemologies must not be subsumed by colonial frameworks of recognition (see Coulthard, 2014).

By localizing consent, the NWMO and CNSC spatialize risk in a way that obscures the broader geographies and temporalities of harm. DGRs are pitched as solutions whose safety must be guaranteed for timescales beyond human comprehension—100,000 years or more. Yet the institutions that govern these decisions operate on election cycles, market rationalities, and settler temporalities that privilege short-term approval over long-term accountability. The ontology of nuclear waste is fundamentally out of sync with the political structures designed to manage it.

Environmental and Climate Justice: Intersections and Contradictions

The environmental and intergenerational burdens associated with nuclear waste management intersect profoundly with questions of jurisdiction, governance, and legal recognition. Indigenous peoples in Canada have long been subject to regulatory regimes that facilitate the alienation of Indigenous lands while denying meaningful jurisdiction over them.

This injustice is not only distributive but epistemological and legal. As Nichols (2023) argues, the Crown's claims to legitimacy rest on a fiction of Indigenous peoples as "domestic dependents," a logic that forecloses the recognition of Indigenous legal orders and makes jurisdictional refusal nearly impossible within settler frameworks (p. 85). The siting of nuclear waste facilities on Indigenous land thus becomes a continuation of this foundational dispossession, an act that imposes both technical risk and legal erasure.

In this context, the notion of environmental justice must extend beyond fair distribution of harms and benefits to include the recognition of governance authority. The Red Paper (Yellowhead Institute, 2019) emphasizes that Indigenous consent is meaningless unless tied to jurisdiction. It is not just about saying yes or no to a project, but about deciding how, when, and whether decisions are made in the first place. Without this recognition, nuclear waste (siting) policy risks reinscribing slow violence—gradual, cumulative, and often invisible harms that disproportionately impact Indigenous communities (Nixon, 2011).

The Limits of Procedural Inclusion

Participation mechanisms in nuclear governance are often structured to uphold the legitimacy of the project rather than to interrogate its premises. Bell (2022) highlights that NWMO's public engagement processes, while participatory on the surface, are epistemically constrained, prioritizing scientific knowledge systems and sidelining Indigenous law and lived experience. This reproduces a technocratic model of governance where Indigenous peoples are included as public interest groups, not as legal authorities.

This is a form of epistemic extraction: Indigenous knowledges are extracted for local insight, procedural due diligence, or performative reconciliation commitments, but are not treated as coequal frameworks of decision-making. Legal pluralism is essential to redress this. As Christie (2023) argues, Canada's legal system must learn to "braid" with Indigenous legal orders—not by subsuming them under Section 35 of the Constitution, but by acknowledging their internal legitimacy and enabling co-jurisdictional governance.

Without such structural transformation, procedural inclusion risks entrenching settler-colonial authority under the guise of engagement. As Morales (2023) warns, many current applications of FPIC fall short because they fail to integrate Indigenous legal traditions into environmental assessment, thus rendering consultation meaningless when power imbalances go unaddressed. True procedural justice requires not just voice, but authority—the ability to shape outcomes, define timelines, and set parameters for engagement (Sankey et al., 2023).

Refusal as Infrastructure

Where consent-seeking processes are too often instrumentalized as a lubricant for infrastructure development, refusal opens space for alternative political imaginaries. These include modes of governance that are relational rather than extractive, temporally expansive, and grounded in accountability rather than managed risk (Stanley, 2008). Exercising refusal, in this sense, is not reactive; it is generative—it is a "bubbling pot", even when the pot appears low (Million, 2023). It constitutes an infrastructure of its own—a scaffold for world-making, a refusal of futures already foreclosed. Refusal is often mischaracterized as obstruction—a negation, an unwillingness to participate, or a failure to engage (Simpson, 2023). But in the context of Indigenous politics, refusal is not a withdrawal from governance; it is a refusal to be governed by structures that deny relational accountability, Indigenous jurisdiction, and legal plurality (Coulthard, 2014; Stark, 2023; Starblanket, 2023). Refusal, as articulated by scholars like Audra Simpson (2014) is a political and ontological stance—one that makes visible the limits of state recognition and asserts the legitimacy of governance otherwise.

This dissertation has shown how the nuclear industry, much like extractive firms often backed by the state, create systems (like social licence and private agreements) that enclose local and Indigenous legal spaces, limiting how communities can express consent or refusal (Szablowski, 2019). These mechanisms can strip communities of meaningful choices, turning consent into a managed process and where the option of refusal is difficult or risky. But throughout the dissertation refusal has also been seen as capacity building, celebratory, and as an act of resistance and resurgence of Indigenous law and jurisdiction. Dian Million's view of refusal is beyond resistance, but as an embodied, spiritual, and relational act, a way of living grounded in Indigenous law, care, and responsibility (2013, p. 52). While Szablowski shows how the state, industry, and extractive firms often try to contain refusal by legal enclosure, we see through the various legal avenues and grassroots organizing of Kebaowek and Kitigan Zibi that refusal is also a presence—a practice of sovereignty and survival that resists being enclosed (see also Million, 2013). Looking at Szablowski's conceptualization of 'legal enclosure' together with Million's 'refusal as resistance to enclosure' provides a poignant framing for the analysis of Algonquin participation, resistance, and refusal in Canadian Nuclear Laboratories proposed NSDF provided in this dissertation.

In this light, the figure of the "willing host" dissolves into a more complex terrain of contested jurisdictions, asymmetric power, and enduring struggles over land. Moving beyond this figure requires not only recognizing the limitations of current consent regimes, but also affirming the legitimacy of alternative political orders. This is the work of mobilized movements of Indigenous jurisdiction and land back, of critical scholarship, refusal, and justice: to name the silences, trace the sedimented violence, and amplify the futures being built in the cracks of colonial infrastructure.

In the context of Chalk River Laboratories, refusal is not only a rejection of specific infrastructure projects but a rejection of the logic that renders land governable through technoscientific risk assessments and procedural consent (Webber, 2010; Webler and Tuler, 2023). It is a rejection of being positioned as stakeholders rather than rights holders. It is a refusal to be included only on terms that maintain the supremacy of settler legal and political authority (Simpson, 2014).

Here, refusal constitutes a form of governance that builds from Indigenous legal orders, community relationships, and ecological stewardship practices. Kebaowek and Kitigan Zibi's Indigenous-led assessment discussed in this dissertation is an act of refusal in this generative sense. They refuse the authority of the CNSC and CNL to define what counts as legitimate knowledge, acceptable risk, or procedural legitimacy. In their place, they offer a governance grounded in relational ethics, long-term responsibility, and territorial jurisdiction.

Refusal also operates temporally. It interrupts the forward-moving momentum of technocratic planning, demanding space for deliberation, dissent, and the assertion of alternative futures. It refuses the inevitability of nuclear development and instead insists on the legitimacy of Indigenous futurities—futures grounded not in containment and control, but in regeneration, reciprocity, and resurgence. As Tuck and Yang (2014) write, refusal is "a generative stance" that creates space for other worlds (p. 244). It is a form of intellectual and political labor that does not seek recognition from the state but builds governance from within Indigenous communities themselves. This is evident in land-based education programs, in legal orders that govern water and kinship, and in collective actions to protect territory from contamination (Simpson, 2017).

The politics of nuclear waste in Canada must be understood not only through the lens of consent, but through the more radical lens of refusal. This is a lesson that can be more broadly applied and adapted to other forms of extractive infrastructures. Refusal challenges the foundational assumptions of technocratic governance and offers a vision of justice grounded in plurinational responsibility and ecological care. To move beyond the “willing host” framework is not simply to fix participation mechanisms or improve consultation protocols; it is to recognize the legitimacy of refusal and the infrastructures of governance already being enacted outside and against the settler state. Moreover, nuclear waste governance is not just about managing risk. It is about managing legitimacy, futurity, and authority. And as Indigenous nations continue to resist the siting of nuclear infrastructure on their lands, they do more than say “no.” They enact the governance necessary to imagine and build worlds otherwise.

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