The Northern Review
Exploring human experience in the North
The Northern Review 58: 111–126
https://doi.org/10.22584/nr58.2025.010
Published at Yukon University, Canada

Commentary

Baseline Data, Bill 5, and Development in the Ring of Fire, Ontario, Canada: Lessons from Quebec's James Bay Project

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Abstract: Ontario's 2025 *Protect Ontario by Unleashing Our Economy Act* (Bill 5) authorizes the creation of special economic zones that suspend environmental assessment requirements for selected projects, including those in the mineral rich Ring of Fire region of the James Bay Lowlands in Northern Ontario. This policy directly conflicts with the ongoing federal regional assessment, co-led with fifteen Treaty 9 First Nations whose purpose is to establish baseline data and cumulative-effects frameworks before development begins. By allowing development to proceed in advance of these baselines, Bill 5 removes the scientific control condition required to distinguish natural variation from mining impacts and undermines Indigenous participation in environmental governance. Historical evidence from the 1975 James Bay and Northern Quebec Agreement demonstrates that accelerated project approvals without adequate baseline science produced decades of ecological and health harm. The Ring of Fire presents a comparable inflection point: safeguarding both scientific integrity and Indigenous self-determination depends on completing multi-year baseline studies before development proceeds.

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Governance by Exemption

On June 5, 2025, Ontario enacted Bill 5, the *Protect Ontario by Unleashing Our Economy Act*,[1] granting cabinet authority to create special economic ones (SEZ) where environmental assessment requirements can be suspended or modified for selected projects. On the same day, the province announced that the Ring of Fire would be among the first areas designated as an SEZ.[2] The Ring of Fire is a mineral-rich region of the James Bay Lowlands, located roughly 500 kilometres northeast of Thunder Bay, Ontario, containing major deposits of chromite, nickel, copper, and platinum on or near the Traditional Territories of fifteen James Bay Treaty (Treaty 9) First Nations.[3] The government's decision arrived only a few months after the federal regional assessment, co-led with these Nations, finalized its terms of reference[4] and before any baseline data collection had started. This overlap placed a policy focused on accelerating mining development in direct conflict with a federal process still establishing how cumulative impacts would be measured and how Indigenous participation in environmental governance would occur.

The Ontario government has framed Bill 5 as a strategy to accelerate investment while building economic partnerships with First Nations. In its April 2025 announcement,[5] the province pledged to "cut red tape and streamline approvals to speed up critical mineral and resource development projects," presenting efficiency and competitiveness as the primary goals. The provincial minister responsible for economic and community partnerships in the Ring of Fire region described First Nations as "full partners in achieving prosperity" through infrastructure and energy development, but the statement made no reference to environmental baselines or cumulative assessment.[6] Although the news release emphasizes collaboration, its language suggests that scientific baselines are being positioned within the same category as procedural delay, portrayed as requirements imposed by academics rather than as measures essential to credible oversight. By suggesting that monitoring can occur in parallel with development, the government implies that evidence can follow development instead of guiding it.

In toxicology and impact assessment, pre-disturbance baselines are not an academic luxury but the control condition that makes inference about environmental changes possible.[7] Multi-year observations collected before development are often required in order to characterize the natural range of variation in water levels, temperature, contaminant cycling, and wildlife

populations. For Indigenous communities, baseline data is also grounded in a holistic world view that treats local environmental conditions, cultural practices, and socio-economic well-being as part of a connected system. Without those observations, adaptive management loses the anchor it needs to decide whether a measured exceedance reflects mining effects, climate oscillation, or normal inter-annual variability. Adaptive management only works if you know what you are adapting from; once development begins, the original state of the system cannot be reconstructed, so the capacity to separate signal from noise is permanently lost. This is partly what a regional assessment addresses.

Bill 5 could undercut both the scientific foundation and the promise of meaningful participation for First Nations investing time and personnel in the Regional Assessment of the Ring of Fire area. While Treaty 9 Nations may differ on development timing or terms, Bill 5 could remove the baseline information needed for informed negotiation by any of the Nations. In announcing the court action initiated by Marten Falls First Nation on August 7, 2025, Chief Bruce Achneepineskum said his community had not been consulted and that they were "not willing to be stepped on or stepped over."[8] This concern is consistent with his earlier view that, when government dictates the process, First Nations become "merely … pawns," and that decisions must be open and transparent, and "collaborative and inclusive" with the Nations.[9] The regional assessment was created to place knowledge in sequence before disturbance so that later decisions rest on shared evidence rather than assumptions. By contrast, the SEZ approach accelerates permitting while that evidence is still being assembled.

The request for a regional assessment did not arise from opposition to a single project but from the scope of the Ring of Fire. Multiple mines, access roads, and transmission lines will operate within interconnected watersheds, and contaminants, hydrological changes, and habitat fragmentation move across these systems rather than remaining within project boundaries.[10] That logic reinforces the assessment's design, which standardizes sampling methods across the region and sequences seasonality to capture inter-annual variability across multiple years.

As of now, the regional assessment is set to conclude in mid-2027. The province's new authority under Bill 5 could compress that timeline by allowing approvals for mining activity within shorter timeframes and allow development to proceed by ministerial order.[11] The practical effect of Bill 5 seems to shift the burden of uncertainty from the government onto communities and the ecosystems they rely on for food security, health, and intergenerational teachings. It may also increase industry certainty by streamlining mineral tenure, potentially limiting Indigenous governments' negotiating power in future development. If

monitoring occurs only once development is underway, which is possible under the streamlined process created by Bill 5, the lack of a coordinated pre-development baseline will make attribution to mining uncertain. Mitigation will then be reactive. Consequently, this is not a debate about methodological refinement. It is the difference between science that prevents harm and science that only measures it after the fact.

The Regional Assessment: Why Time, Process, and Baseline Matter

The Regional Assessment[12] of the Ring of Fire arises from years of advocacy by Treaty 9 First Nations who have argued that individual project reviews cannot account for the cumulative impacts of large-scale mining in the James Bay Lowlands.[13] That advocacy led the federal minister of environment and climate change to announce in 2020 that a regional assessment would be created under section 92 of the *Impact Assessment Act*[14] in partnership with the fifteen Treaty 9 Nations. The assessment seeks to combine Indigenous Knowledge and scientific data to build a shared body of information before development begins.

Communities welcomed the federal commitment, but others questioned whether the process would produce genuine influence or simply repeat earlier patterns of consultation without consent. Neskantaga First Nation has consistently raised concerns that the assessment process fragments evidence and undermines shared decision making. In correspondence with the Impact Assessment Agency of Canada,[15] the Nation warned that the current approach "is making shared decision-making and Nation-building worse," and stressed that meaningful consultation cannot occur without being present in the community. Such skepticism emphasizes the challenge of balancing scientific credibility and governance with Indigenous authority in decision making.

The regional assessment's draft terms of reference[16] set out a multi-year schedule determined by geography, access, and climate rather than bureaucratic timing. Travel among remote northern communities depends on short winter-road seasons and, often, limited flights, so each visit requires weeks of coordination and several days of meetings with Chiefs, Councils, Elders, and community members. Community leaders emphasize that consultation must also remain Nation specific. Each First Nation faces distinct ecological and cultural concerns; grouping them all together would erase these differences and reduce sovereign governments to a single administrative category. Chief Solomon Atlookan of Eabametoong First Nation stated that his Nation has repeatedly told Ontario that changing laws cannot alter inherent Indigenous Rights, and that genuine partnership among neighbouring First Nations must replace the tokenism of simply being offered a seat at the table.[17]

Scientific fieldwork is shaped by the same seasonal and geographic limits that structure how knowledge is gathered and shared across Treaty 9 territory. These gaps cannot be addressed quickly. Building dependable baselines requires coordinated sampling networks, hydrological modelling, and field seasons that capture natural variation across spring, summer, and fall. Traditional Knowledge research proceeds through verified parallel protocols by local Knowledge Holders and during visits to the places being described. Nations participating in the regional assessment emphasized that Traditional Knowledge must guide the process alongside Western science. Both the Neskantaga First Nation and the Eabametoong First Nation noted that knowledge grounded in experience on the land cannot be generated through short-term or remote studies, and that meaningful inclusion requires time, travel, and participation by multiple Knowledge Holders.[18]

Although the proposed schedule for the regional assessment likely appears long to the provincial government, it produces efficiency over time. By investing in a regional baseline at the outset, the process avoids duplication and inconsistent data in future project reviews. Once shared data sets and environmental thresholds are in place, proponents can design site-specific assessments more quickly and with consistent reference points. Compressing this timeline under Ontario's SEZ framework would save little time while undermining both data quality and consultation depth, and risk additional delays from potential legal action by First Nations. Furthermore, the ecosystems of the North recover slowly and are characterized by wide seasonal differences.[19] Scientific and cultural knowledge cannot be compressed to meet political deadlines. The regional assessment's duration is therefore not an administrative delay, but the minimum time required to build the foundation for accountable development.

Ecological and Human Stakes of the Ring of Fire

The Ring of Fire lies within the James Bay Lowlands, one of the largest continuous peatland complexes on Earth. Extending across northern Ontario and western Quebec, these wetlands store billions of tonnes of carbon in their soils and function as a major global carbon sink.[20] They regulate atmospheric greenhouse gases through the slow accumulation of organic matter under saturated conditions. Disturbance from road construction, open-pit excavation, or dewatering can rapidly convert this carbon sink into a carbon source. Drainage exposes peat to oxygen, accelerating decomposition and releasing carbon dioxide and methane, both of which contribute to climate change and undermine Canada's commitments to achieve net-zero emissions by 2050.[21] These same wetlands regulate water flow, maintain base water levels during dry seasons, and filter contaminants before they

enter river systems. Once altered, their hydrology is difficult to restore, and even small changes in drainage can increase the mobility of contaminants, amplifying bioaccumulation in fish and wild game. As these processes operate across watersheds that span thousands of square kilometres, the regional assessment's broad-scale framework is the only scientific approach capable of capturing the baseline environmental conditions.

The ecological consequences of disturbance extend directly into human health and cultural continuity. For the fifteen First Nations within the Ring of Fire Regional Assessment area, the rivers, lakes, and wetlands of the Lowlands are not only ecosystems but food systems. Fish remain a primary protein source for many households, harvesting game supports food security and local economies, and the transfer of knowledge is passed between generations. When contaminant levels rise because of development, communities lose both nutritional security and the cultural practices that sustain identity. For example, Neskantaga First Nation, which has lived under a boil-water advisory since 1995, approaches new industrial development with caution. Its insistence that comprehensive baseline studies be completed before any road or mine construction begins reflects experience, not obstruction. These studies should include detailed aquatic, benthic, and socio-economic data collection to understand how proposed access roads could affect its waterways, fish habitats, and community well-being.[22] These scientific and ethical concerns should be inseparable from governance.

The special economic zones authorized under Bill 5 allow cabinet to exempt designated projects from parts of Ontario's environmental legislation and to modify regulatory requirements by ministerial order. Section 7 of Bill 5 states that the lieutenant governor in council may "provide that one or more Acts or provisions of Acts do not apply" or "modify the application of one or more Acts."[23] This framework fragments oversight by enabling project-specific approvals that ignore cumulative environmental effects. A mine, a processing facility, and an access road may each appear compliant in isolation, but together they alter hydrology and emissions across shared watersheds in a cumulative manner. When assessments proceed individually, each community must navigate separate consultations and timelines, a process that favours industrial proponents or government with greater technical and financial capacity. The regional assessment, by contrast, establishes a shared knowledge base that allows all parties to negotiate on equal terms. Diluting or bypassing that foundation would erase the transparency required for meaningful consent, and may, perhaps, disregard the duty to consult.[24] The peatlands of the James Bay Lowlands regulate the global climate, and the fish and wildlife they sustain anchor regional health and identity for the Peoples who live there. Proceeding with development before the baseline is complete risks destroying the empirical record needed to protect both.

Scientific Foundations: Baselines as the Control Condition

Baseline data establish what exists naturally so that change can be measured against it. In the James Bay Lowlands, that reference condition is still forming through the regional assessment. The system's variability is immense. Water levels fluctuate seasonally and between years, carbon concentrations in peatlands shift with temperature and water chemistry, and vegetation responds to natural cycles of fire, flooding, and wildlife activity. Without pre-disturbance data, any attempt to attribute later changes to mining development is a guess rather than a conclusion. This is where the provincial argument for adaptive management collapses.

In practice, beginning development before baseline studies are complete erases the very information that adaptive management depends on. Adaptive management fails when there is no baseline to show whether observed changes fall within or beyond natural variation. Once mining begins, the ecosystem is altered, and each subsequent measurement reflects a system already in transition. Baseline conditions also change over time due to non-anthropogenic processes such as natural cycles in weather and temperatures that should be measured, making pre-development even more important. For example, if walleye tissue methylmercury concentrations are measured as having risen to 0.50 mg Hg/kg after three years of mining activity near a water body, that number is meaningless without knowing whether the baseline was lower or higher than 0.50 mg Hg/kg before development. Natural fluctuations can also vary greatly between years, making it impossible to separate inherent environmental variability from industrial effects without a record of baseline data. A recent review[25] of fifty years of mining assessments across Canada found that projects are routinely approved with "incomplete information, inaccessible records, and fragmented oversight," a pattern that demonstrates how development-first timelines erode the scientific basis for accountability.

Bill 5's justification rests on the claim that approvals can be accelerated without reducing environmental protection, even as the legislation weakens the mechanisms that provide that protection. The legislation[26] removes requirements under the Ontario *Environmental Assessment Act*[27] and repeals the definition of a "recovery strategy" under the Ontario *Endangered Species Act*,[28] reducing the tools used to understand and prevent ecological harm. In announcing the legislation,[29] the minister of energy and mines described it as a "bold plan" to "reduce government review time by 50% to get shovels in the ground," framing accelerated development as a matter of national self-reliance and economic sovereignty. That logic treats environmental data as a formality to overcome rather than the foundation of accountability and good management practice.

The Ontario government's position is that economic uncertainty is unavoidable and that mining should proceed to offset this problem while environmental data accumulate as development advances. The assumption is that any emerging problem can be mitigated via adaptive management and ministerial orders once detected.[30] However, this view ignores both toxicokinetics and ecology. Contaminant accumulation in fish and wildlife, for example, takes years to appear and decades to reverse. By the time elevated concentrations are detected, contamination has already entered the food web, and human exposure may have occurred depending on consumption patterns. Adaptive management cannot undo that exposure; it can only record it after the fact.

Experience from other northern developments demonstrates that recovery from contamination is extremely slow.[31] For example, in long-lived species such as walleye and lake trout, methylmercury body burdens decline only gradually even after source inputs stop. Some fish populations affected by Quebec's James Bay Project still exhibit elevated concentrations more than fifty years later. The contamination was not unforeseen, but its intensity and persistence exceeded predictions,[32] as early modelling had predicted moderate, short-lived increases. Instead, fish methylmercury concentrations in some reservoirs rose to as much as five times Health Canada's tissue guideline of 0.50 mg Hg/kg. While some levels declined slightly over subsequent decades, others have remained elevated or are even higher.[33]

The regional assessment's timeline, extending through 2027, is not excessive but proportional to scientific reality. Early stages of coordination and data collection were also slowed by pandemic restrictions that limited travel to remote northern communities and delayed federal–provincial administrative approvals. These disruptions compounded the logistical barriers already inherent to northern fieldwork, reinforcing the need for a longer timeline rather than a shorter one. Compressing the time frame or beginning mining activity as quickly as possible, as the SEZ framework seems to allow, would destroy the control condition necessary for credible science. The result would not be accelerated development guided by evidence, but development carried out in ignorance of its own consequences. Baseline data are not optional or symbolic; they are the empirical boundary between knowledge and assumption.

The James Bay and Northern Quebec Agreement: Lessons Learned?

To understand why the Ring of Fire Regional Assessment timeline is both justified and necessary, it is helpful to revisit Canada's most influential precedent in northern resource governance. The James Bay and Northern Quebec Agreement (JBNQA) stands as both a warning and a model, illustrating the costs of rushing development without full consultation and, conversely, the benefits of taking time to negotiate comprehensive frameworks that address Indigenous rights and environmental protection together.

In April 1971, the Quebec government announced an ambitious plan to harness the rivers flowing into James Bay for hydroelectric power. The James Bay Project would eventually flood more than 11,000 square kilometres of land. However, the announcement came without consultation with Cree First Nations and Inuit communities in the region. The late Billy Diamond, later Grand Chief of Eeyou Istchee, recalled learning of the decision only after returning from the spring goose hunt, when radio reports described plans to flood Cree territory.[34] The realization that such a profound transformation of their homeland had been decided without notice or consent emphasized the sense of disbelief and betrayal felt across First Nations.

As a result, Cree First Nations and Inuit launched a legal challenge seeking to halt development. In November 1973, the Quebec Superior Court granted an injunction,[35] concluding that proceeding without addressing Indigenous rights would cause "irreparable harm" to Peoples in the region. The ruling was overturned on appeal one week later, but it forced the province to negotiate. Over the next year and a half, Cree First Nations and Inuit representatives engaged in intense discussions that culminated in the signing of the JBNQA on November 11, 1975.

The JBNQA became the first modern treaty in Canada, establishing rights to harvesting, creating co-management boards for wildlife, providing financial compensation, and establishing Indigenous participation in environmental review. It was a milestone that produced meaningful benefits for northern communities, but it was also the product of enormous political pressure. With billions of dollars invested and construction already underway, the Quebec government sought a quick settlement. Negotiators for Indigenous community members faced pressure from multiple sides, including government urgency, community expectations, and the knowledge that refusing to sign might mean the project proceeding without any protections at all.

The speed of the negotiation also left several weaknesses. Environmental assessment before the signing was limited in scope and failed to anticipate long-term cumulative impacts. Flooding vast areas of organic-rich soils produced extensive methylmercury contamination in fish in the reservoirs.[36] In communities such as Chisasibi, fish mercury levels exceeded safe consumption thresholds for decades following reservoir flooding.[37] Elders have recalled how families who had always relied on fish were suddenly told that the fish were no longer safe to eat; many described the disorientation of being forced to abandon a central food source.[38] Health officials told communities that methylmercury concentrations in fish would fall within a few years of reservoir flooding, but elevated concentrations persisted for decades[39] in many waterbodies, leaving households with long-term consumption advisories or exposure to methylmercury when fish were consumed.[40]

The history of the JBNQA shows that the costs of rushing consultation and assessment ultimately exceed the costs of waiting. What appeared to be fast-tracked progress in the 1970s led instead to half a century of conflict. The timeline tells the story: the James Bay Project was announced in 1971, the JBNQA was signed in 1975 after only eighteen months of negotiations, and by the early 1980s major generating stations were operational. Except, the following decades were dominated by litigation, mercury crises, and further negotiations. This period culminated in Cree First Nations campaigning, which halted the Great Whale Project in the 1990s and resulted in new benefit-sharing arrangements signed nearly thirty years later.

The JBNQA is relevant for the Ring of Fire because it demonstrates that negotiated frameworks combining environmental science, Indigenous rights, and shared governance can succeed when they are given sufficient time and authority. It also shows how political pressure to move quickly can permanently weaken those same frameworks. The dual legacy of the JBNQA, its successes in co-management and its failures in environmental protection, offers Ontario a potential guide for what could be emulated and what should not be repeated.

Implications of JBNQA for Bill 5's Governance and Accountability: Lessons Used?

Part of the JBNQA's legacy is in the creation of boards that gave Cree First Nations and Inuit direct roles in decisions affecting wildlife and land use. These institutions, such as the Cree Regional Authority (now Cree Nation Government) and Cree Board of Health, have survived for nearly five decades because they were designed with clearly defined jurisdictions, stable funding, and authority embedded in law. Ontario can mirror this success by ensuring that Treaty 9 Nations have equivalent

authority in the regional assessment process and any future development decisions. That authority should extend beyond consultation to include co-development of research protocols, control over data, and binding participation in future project approvals, should the Treaty 9 Nations wish. Where Quebec's process eventually empowered Indigenous governments through institutional permanence, Ontario can build that structure from the start by embedding Indigenous decision making directly into assessment and monitoring governance.

The other part of the JBNQA's legacy is the weakness that came from what was done too quickly. Environmental baselines were incomplete, cumulative effects were not assessed, and development began before the full consequences of flooding and mercury mobilization were understood. Those scientific omissions produced decades of harm that no later negotiation could fully repair. Ontario now faces a direct parallel. If development begins in the Ring of Fire before baseline data collection is complete, the resulting uncertainty about contaminants, environmental disturbance, and hydrological change will make it impossible to attribute impacts or design mitigation with confidence. The province therefore has an opportunity to learn from Quebec's mistakes by preserving the integrity of the regional assessment timeline rather than treating it as a bureaucratic obstacle.

To apply the lessons of the JBNQA, Ontario must allow the regional assessment to be completed before approving major development. This would mirror the JBNQA's long-term co-management successes while avoiding its environmental failures. This means respecting the 2027 timeline rather than circumventing it through SEZ exemptions. Stable, long-term funding for Indigenous-led monitoring would ensure that oversight continues after project approvals, preventing the inequities that arose when JBNQA compensation was front-loaded while environmental monitoring remained underfunded. Benefit-sharing mechanisms should be linked to measurable environmental outcomes rather than one-time financial offsets, creating accountability that aligns economic interests with environmental protection.

Most importantly, giving Treaty 9 Nations joint authority over assessment protocols and data ownership would transform participation from consultation into co-governance, which is the condition that produced the strongest elements of the JBNQA. This authority must include meaningful control over research design, data interpretation, and decision-making thresholds. Without such structural changes, there are risks of replicating earlier patterns where Indigenous participation remained advisory rather than decisive. For the Ring of Fire, success will depend on whether Ontario treats this history as precedent rather than warning. The province can either invest time in science and partnership now, or face generations of remediation and renegotiation, and possibly litigation, later.

Conclusion: Scientific Integrity as the Basis of Governance

The conflict between Ontario's Bill 5 and the federal regional assessment is more than a jurisdictional dispute. It is a test of whether environmental decisions will be grounded in evidence or accelerated for development, and whether Treaty 9 Nations will retain the conditions necessary for informed governance of their lands. That outcome depends on understanding environmental change before development begins. Allowing development to proceed without baseline studies removes the empirical foundation needed to distinguish natural variation from human impact, replacing prevention with uncertainty.

The regional assessment's multi-year structure, integrating Indigenous Knowledge and Western science, is the only credible means of generating information that can support adaptive management and defensible approvals. Compressing this process to accelerate development undermines environmental protection, weakens public accountability, and erodes the legitimacy of future decisions. Scientific standards cannot be adjusted to meet political timelines; ecological processes set their own pace. Without complete baseline data there can be no accountability, and without accountability, there can be no claim of responsible development.

Author Biography

As a settler toxicologist and mercury specialist with training in impact assessment, I study how development moves contaminants through northern ecosystems and how these exposures affect human health. My goal is not to oppose development but to ensure that it rests on informed and accountable decision making. The concern lies in how development proceeds and whether the information required to prevent harm is in place before decisions are made. This commentary does not presume to limit or prescribe how Treaty 9 First Nations choose to negotiate resource development. It aims instead to clarify the scientific conditions that make informed decision making and accountability possible within Bill 5's accelerated framework.

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