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Ontario's Geologic Carbon Storage – *Review and Recommendations – Protecting our Industries, Advancing a Cleaner Future*

Lagasco Inc., Canada's exclusive freshwater gas explorer/producer

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Overview Scenario

Ontario is entering a new era of smart emissions support. Our Province is wisely seeking to advance a sustainable carbon sequestration and storage (CS) framework which aims to encourage emitting industries to stay, grow and prosper here. This objective can be achieved effectively if we foster innovation within the boundaries of exemplary commercial realities, as we rely on and adapt our existing regulatory tools to fit our anticipated needs.

In Ontario, Lagasco has developed practical experience and knowledge of the subsurface formations where CS activities may occur at utility scale through existing operations and wells on Lake Erie. Our Company is staffed with the experts and engaged personnel, which have been dedicated to working and optimizing the geology 'downhole' for many decades. We understand the nature of this government's objectives and are ready, willing and focussed to assist in the facilitation of a first provincial CS HUB plan, which includes a transitional regulatory framework and a permanent one.

It is fortunate that Ontario, within the Canadian and North American context, has robust capacity in its existing legal structures and conventional regulatory constructs to effect and implement a reliable CS regime. Much of what we need to establish a CS framework is already in place and will only require some customized adjustments.

We have:

- an MNRF that will soon have amended jurisdiction, with extensive expertise in Ontario's subsurface;
- an effective quasi-judicial economic regulator in the *Ontario Energy Board*, ("OEB"), which is highly capable in assessing and approving sensible energy system expansions;

- an independent electricity system operator and quasi-regulator that provides a reliable power system within the NERC rules; and
- the CSA, TSSA and ESA, which agencies integrate and evolve our technology advancements in a safe and coordinated manner.

Lagasco observes that our existing coordinated energy and industrial network ranks amongst the top in the western world, so introducing a practical CS framework should be a relatively straightforward implementation prospect using many of our legal, regulatory and practical tools that already exist.

Lagasco proposes to respond to this Review by answering the questions in the order posed by the MNRF. Throughout, Lagasco will provide its responses from a broader public interest perspective but will be upfront about its own views on the issues as they would affect Lagasco's existing and future commercial subsurface operations, which matter considerably.

As the MNRF is aware, Lagasco is currently the only Ontario sub-lake operator, so it takes this CS review very seriously. Lagasco and its current staff and consultants have many years of experience in safe lake Erie operations and all required vessels and personnel to operate offshore.

Responses to MNRF Questions

Question 1.

Would initially scoping the framework to only allow commercial-scale projects to store CO2 within saline aquifers and depleted oil and gas wells in southwestern Ontario at depths of at least 800m or more meet industry's current needs and maintain public comfort in the development of these projects?

Answer 1.

As a general proposition and irrespective of whether the horizon is located onshore or offshore, Lagasco submits that as long as CS occurs in a proven, secure geological horizon, it could be permitted by the MNRF. The proposed 800m depth for commercial-scale projects will be workable and sufficiently secure to effect utility scale storage, however, Lagasco feels that this depth restriction is unnecessary as CS can occur at shallower depths as well and limiting the depths will possibly exclude otherwise technically and economically feasible projects unnecessarily.

Lagasco acknowledges and confirms that the geology under certain areas of Lake Erie is suitable for CS.

Question 2.

Would you support using a competitive process to select projects looking to store carbon dioxide on Crown land? Why or why not?

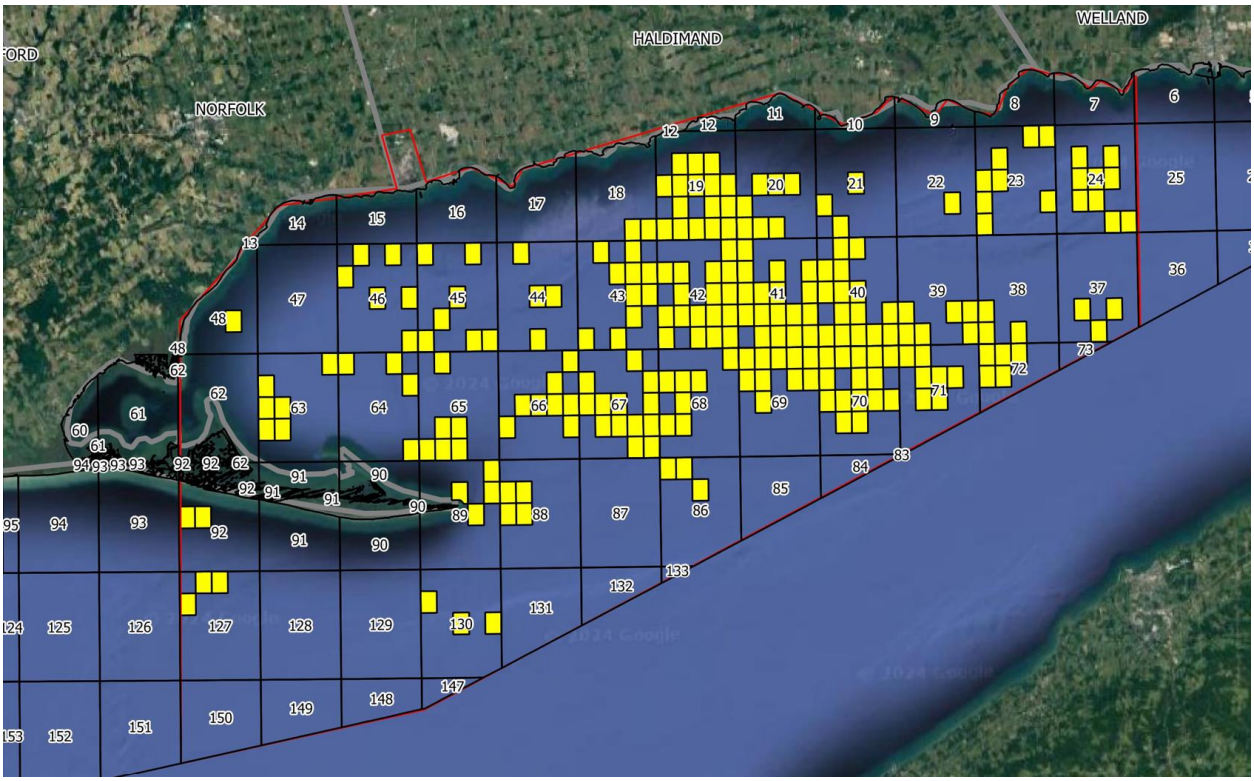
Answer 2.

Lagasco is supportive of the MNRF deploying competitive elements to select projects on Crown land, where this makes sense. There will need to be accommodation and preservation of pre-existing rights to recognize circumstances such as prior and predecessor interests, which could and should limit or preclude the usefulness of open public competition in, for example, a previously leased geographical area.

As a general proposition, looking to conventional subsurface developments, before an entity would be seeking approval to store a substance in a geological formation pursuant to a competition for Crown lands, Lagasco recommends that the entity should/must have the primary starting point which are the Petroleum and Natural Gas (P&NG) legal rights in the formations before moving forward with a CS proposal. This is well recognized in British Columbia, and the regulatory recognition of mineral rights primacy over CS rights is well established in oil and gas producing states such as Texas, Oklahoma, Montana, Wyoming and West Virginia.

More specifically, as Lagasco's regulator, the MNRF is aware that Lagasco has pre-existing P&NG rights as stated in its leases and licences. The lease language observes and states clearly that Lagasco has the ongoing pre-existing established rights of development of the full extent of the reservation of resource horizons accorded under these leases and the rights to the gas in place in all horizons covered by the blocks and tracts with an intrinsic value for these reserves. Recognizing sanctity of contract, it would respectfully be inappropriate as a starting point for the Crown to open competition to other developers *in* (and immediately adjacent to) these leased areas due to the real risk of carbon plume migration into legally reserved and existing, protected leasehold areas. This is especially the case if the Province desires a suitable CS Hub in preferred horizons without interference to existing leasehold rights.

See below Map outlining Lagasco Inc. mineral rights in Eastern Lake Erie with proposed DSA for a carbon storage project:



Lagasco advocates that for large, utility-scale CS projects under Crown land, the MNRF should develop legislation that aligns with Ontario's conventional natural gas storage utility-type regulatory practices, amended as necessary for CS. This would include the setting of development boundaries on an exclusive basis, and effectively drawing a DSA (as in Ontario natural gas storage) around the cluster of leasehold interests, in order to protect the area for a suitable HUB development, without intrusion or interference.

One recognized benefit of this approach is that in advanced jurisdictions, which seek to invoke competitive principles, their application may very well be applied and deployed to achieve the competitive objective(s) at different points on and throughout the facility development spectrum. So, similar to other industries, which enjoy positive characteristics of competitive forces, a CS HUB may very well be subjected not only to the appropriate level of technical supervision, but also be subjected to a range of ongoing economic regulatory supervision, if it is

meant to serve multiple CS depositors. This type of competitive outcome implementation is in the public interest, while private capital is deployed to fund the endeavor.

It is a well-accepted precept that the point of permitting a monopoly-type service delivery is to allow the delegated economic regulator to act as the *surrogate for competition*, where customers may expect the regulator to ensure 'just and reasonable' rates, effectively mimicking a market-based, competitive experience. Here is where competition legitimately enters this CS discussion. This economic, 'surrogate-for-competition' philosophy has guided Ontarians in our energy service delivery for decades. Since the early days of Union Gas Limited in the 1900s, and since with its successors, and especially since 1960 when the *Ontario Fuel Board* was replaced by the *Ontario Energy Board*, the fundamentals of monopolistic efficiencies have been well documented and recognized as being in the public interest.

Lagasco's point is quite straightforward. Competitive forces are beneficial and have a place in the Ontario market. Balanced with primacy of pre-existing leasehold interests and recognizing the need for a broader publicly available CS HUB facility, Lagasco is advocating for a light-handed, CS regulatory regime based on the normal utility franchise model and financially sustainable principles within the context of competitive practices. This HUB would be located within Lagasco's Lake Erie leasehold operations, where a DSA boundary could be drawn and staged development could occur as CS expansion is required within the boundary.

Question 3.

How should proponents obtain rights to pore space? What are the benefits and challenges associated with adopting the models currently being used in western Canada and US States discussed above?

Answer 3.

Lagasco assumes that for the purposes of this process, the MNRF is considering the issue of rights to pore space for both private lands and Crown lands. To date, only pore space under private lands has been accessible through the 'special projects' application process, which requirements have been set out in recent amendments to the *Oil, Gas and Salt Resources Act* ("OGSRA").

Private Lands

In Ontario's common law regime, landowners own from the 'center of the earth to the heavens above'. Therefore, unless there is a legislative change overriding this fundamental premise of land ownership (effective expropriation), which deems pore space under private lands to be provincially controlled, or a landowner's subsurface rights have been otherwise alienated (divided and sold separately from the land surface), each landowner has full continuity of ownership rights to the pore spaces under the lands to which they hold title.

For CS to occur under private lands, one or more of three models would have to prevail:

1. Ontario could pass legislation allowing for full provincial Crown control over the entire pore space of the province, similar to what Manitoba has recently confirmed through passage of legislation.

2. Ontario could pass legislative amendments to allow a qualified CS developer to effectively 'force-pool' under private lands, and compensate the affected landowners within a declared and approved CS boundary to comply with the order; or

3. Ontario passes limited enabling legislation to permit a CS developer to sign-up all directly affected landowners (voluntary basis) and any anticipated adjacent landowners, similar to the 'inside acres' and 'outside acres' regulatory framework, which prevails today in the gas storage framework.

In the first alternative, the province would be effectively removing a specific and not insubstantial slice of private landowners' subsurface ownership, presumably to create a provincially controlled regime, but this would be overtly done *in the public interest*. A similar public interest approach was taken when aircraft, first invented, proceeded to invade/traverse private (and public) air spaces. The 'airline or airspace cases' as they are referred to generally involved a legally based recognition that the public interest was inevitably served by allowing aircraft to routinely utilize private airspace, within an acceptable rules-based regulatory framework. This long-accepted, necessary, compromised approach has worked well and has its notable exceptions for nuisance, spying and other such offensive and intrusive activities. So, there is a conceptual approach, which would involve a large-scale societal expropriation of subsurface lands, undertaken in the context of the public interest.

One possible justification to the public landowner base is that the province needs to more broadly and directly participate in controlling the sequestration of atmospheric emissions for the benefit of its citizenry for reasons of climate change and mitigating its impacts on society. What the political consequences of this pro-action would be are less certain, but Ontario could watch the consequences of this legislative move unfold in Manitoba before taking its next steps towards broad public expropriation of pore space. Lagasco feels that this first alternative would be very time consuming and would lead to significant public opposition. In addition, there are landowners with existing P&NG and storage leases under their lands, which lease rights would have to be respected, essentially "carved out" and given primacy in this approach.

The second alternative above represents a smaller but more easily manageable progressive step towards facilitating CS under private lands. The forced pooling concept is well established globally in oil and gas law; it allows for landowner compensation, but then the question associated with CS would be for how long does the forced pooling endure, as this is a CS injection process which *will* end, someday, and the hosting landowner will receive no further compensation once the CS injection is completed. All of these issues on compensation and ultimate custodial responsibility will need to be thought-through and addressed. Lagasco feels that force pooling on a project-by-project basis would be a more reasonable approach for the province to take, rather than a full pore space expropriation.

The third alternative above is much the same as alternative 2 above and our current approach to natural gas storage development, where landowners may agree to or decline subsurface developments under their lands. If the majority of the affected landowners agree to lease their lands and on the landowner compensation model for CS, but there remain holdouts, the province should approve the CS project on the basis of studies submitted. This model may prove time consuming and expensive for proponents.

Crown Lands

In a proposed Crown land CS framework, pore space that is already encumbered with leasehold interests known to the MNRF (and the spaces around the existing leaseholds) should be reserved, protected and considered inaccessible to applicant third parties.

Crown lands that are unencumbered by any non-interfering leasehold interests should be eligible for competitive pore space applications based on the staged qualifications mentioned above, provincial needs test, and then evaluated on the merits and benefits of the detailed application(s) submitted, similar to the comprehensive filing requirements of the 2022 *Porous*

Rock Regulation for Compressed Air Energy Storage. The MNRF is fully familiar with these rigorous regulatory requirements. Besides the technical qualifications and operational experience of the proponent, merits could include compensation to the Crown, open access storage to public, and development, remediation and decommissioning planning processes.

As an important practical matter, it is worth noting that where any CS applicant, such as Lagasco, has a series of adjacent and near-adjacent leasehold interests, any such CS applicant should be accorded the first opportunity to 'in-fill' those appurtenant open spaces (some of which may have once been previously leased) in order to properly and effectively concentrate the C02 plume within the predetermined DSA boundaries, as it pressurizes in and through the leased and unleased spaces, which are proposed and approved. If this is not allowed in the new C02 framework, the risk will be that third party-generated plumes could (may well) penetrate and intrude into the original leased space and violate the legal rights in the lease, none of which is desirable and all of which is avoidable. There is also value to natural gas reserves granted under existing P&NG leases that can not be ignored. Lagasco feel that both P&NG rights and storage rights to pore space should be required prior to development of a CS project, as is the precedent with natural gas storage development.

Question 4.

Would a staged approach to authorising carbon storage projects be desirable? If so, how should authorisations be staged?

Answer 4.

Staging CS projects within an overarching, approved plan is prudent. As CS is a new step in carbon management, there will be much to learn from the early projects. Learning will include selecting and demonstrating which are the suitable formations based on geology and containment, pressure testing the permeability and porosity of these horizons, and other technical tests which prove the suitability of the CS project. If the proposed project is a HUB serving multiple interests, then the applicant should be obligated to provide a detailed plan which describes how its services will be delivered to prospective customers. This should include the rates to be charged, anticipated returns and details of its financial model (confidentially filed with an economic regulatory agency) and its expansion plans over predicted time horizons, depending on volumes to be stored.

There also should be a manner in which a project could begin as a private endeavour and later be changed over to a HUB model.

Lagasco is confident that the CS implementation framework can be much better managed than the current haphazard roll-out of the EV charging infrastructure across Canada. Between the MNRF and the OEB as the twin recommended regulatory agencies, the prospects for this specialized infrastructure development should work well, especially given the successful experience at building, commissioning, operating, monitoring and decommissioning we already have.

Question 5.

When and how should potential impacts to the agricultural land base and the agri-food network (e.g., operations, infrastructure, agribusinesses, etc.) be considered?

Answer 5.

Asking the 'when and the how' are both very important questions, to be considered more broadly than just in the agricultural sector.

Potential impact assessments to the nearby or local agricultural land base and agri-food network should be clear, delineated and anticipated to the extent possible in a similar manner as would any other development business that requires these types of assessments under the circumstances.

The MNRF's sister agencies may be involved in some of these approvals, and these should also be identified and known for planning purposes, prior to an applicant filing. These agencies may include the Ministry of the Environment, Agriculture, local planning authorities, which take into account local conditions, MPAC and the Ministry of Municipal Affairs and Housing for land use planning and compliance.

The IESO recently announced their procurements deploying an Agricultural Impact Assessment ("AIA") which may be a useful tool to the MNRF, so as not to replicate or duplicate unnecessarily a process the MNRF does not need to recreate.

That said, Lagasco would emphasize that it is very important for the MNRF to receive *all* of the information it needs to protect the environment, the public and grant its approvals – conditionally or otherwise; it is equally important to a project proponent raising its funding that

the information required is provided in a sensible, logical and timely order to complement the overall project development schedule. Sometimes, an agency demanding all of the studies to be completed *before* a preliminary approval is granted, can dissuade or halt an applicant from continuing to develop a project, either due to lack of funding or regulatory certainty.

Question 6.

How should proponents of commercial-scale geologic carbon storage projects notify and engage with Indigenous communities and other parties who may be affected by their proposed projects?

Answer 6.

Lagasco is aware and supportive of the Crown's duty to notify and consult with indigenous peoples on its projects before they proceed. Identifying the affected Indigenous bands and understanding and respecting their treaty rights is the first step to opening the dialogue for an effective consultation.

As the Crown's agent leading the consultations, project proponents have access to the information the affected indigenous peoples will require to learn about the CS project, and to earn their support for the project. Early engagement with local indigenous development organizations is one important avenue by which the dialogue may commence at a stage when the development is in its formative stages, not when it is a designed and fully engineered *fait accompli*.

Ontario has some good, positive and evolved precedent experiences in advancing indigenous consultations. There is every reason to look at these already successful models when considering indigenous consultation, dialogue and participation.

Question 7.

What operational controls should be put in place to help ensure commercial-scale carbon storage projects would be developed, operated, and decommissioned in a safe and responsible manner?

Answer 7.

Fortunately, the *CSA Z-741 Geological Storage of Carbon Dioxide* is already in place, and evolving with experience, so that no new wheels need to be fully re-invented. The way the CSA

works is by taking the experience gleaned by developers and learning from it and codifying its lessons learned from developments. Lagasco's engineers are fully confident that there is a substantial and sufficient base in the CSA codes to move towards CS development in Ontario, with the associated monitoring during operations.

Lagasco believes that the MNRF's CS roundtable format will go a long way to ensure that at the outset of Ontario's CS developments, the building and operations, along with compliance requirements would form an early roadmap of government, industry, First Nations and community involvement. Once this is understood and the expectations of the MNRF and broader government mandates are implemented, then an emphasis on successful information gathering and sharing from monitoring activities will become the next step in the CS development process. Keeping the CS monitoring sensibly clear and relatively simple ought to be a priority for all stakeholders.

It would seem sensible that designing the details of decommissioning would wait for a later time, although Lagasco is certain that at some point, post decommissioning, responsibility will ultimately have to rest with the Government of Ontario. Whatever rates are eventually charged for CS, a part of that revenue stream must be allocated to a fund for managing the inevitable closure and post closure monitoring and legal responsibilities.

During operations, Lagasco is supportive of a reasonable and practical annual filing requirement for the first several years of these developments in order for the province to gain experience and comfort with ongoing developments. That filing requirement, together with a CS committee structure, reporting to the Minister of the MNRF, would allow for growing public confidence in the CS industry, which Lagasco views as highly important.

The MNRF may wish to call upon the province's oil and gas producer community to assist with the monitoring for potential CS plume migrations or unlikely leaks to surface through the province's thousands of registered, licenced wells. Many may be suitable in areas where CS will be located on public and Crown lands, and the Crown should be cooperative with the oil and gas industry in pursuing these already existing monitoring opportunities.

Question 8.

Would allowing proponents to transfer responsibility for the long-term monitoring and stewardship of carbon storage projects to the Crown help ensure carbon storage projects,

including the wells, geologic storage areas and carbon stored in geological formations, would be adequately cared for over the long-term?

Answer 8.

Lagasco believes that the only practical pathway forward for managing the long-term responsibilities associated with CS lies in the Province of Ontario continuing to take the lead in monitoring these activities and the ultimate stewardship of these CS sites.

Corporations come and go; we can try to certify them, regulate their activities, monitor their performance, acquisitions, sales, even finances, but ultimately for the CS industry, which is within the realm of the 'forever' storage industry, the government of the people will be the ultimate 'keepers' of this CS industry. And in a way, that is a reasonable outcome as the carbon stored, as mentioned above, is a societal responsibility for all generations, not just the 'temporary' corporation, which takes on that important task for its gain and the benefit of the society now and in the future.

It is the Crown which is responsible for the CS industry from its outset. As agent of the Crown, the MNRF is the agency that write the rules and sets expectations and standards for the industry. Post closure monitoring falls into the same logical pathway of the life cycle of these storage facilities. Lagasco shares the views of many in the subsurface CS industry that the Government of Ontario is the only practical entity in which the final stewardship can and should vest.

Concurrent with these long-term, permanent responsibilities, which remain forever with the Government of Ontario, there is an obligation for users of these CS facilities to pay for their usage of them, and their eventual closure. Lagasco is very familiar with the user-pay principle and submits that those standards should prevail throughout the life of the CS projects via fees, or rates collected at HUBs and allocated to the government. Taxpayers should not have to cover the entire bill for the use of these types of facilities by a few large emitting industries. It is financially prudent that these facilities bear their own costs, remain sustainable and charge the rates to ensure their longevity. That outcome is logically ensconced and in the public interest.

The underdeveloped and contrived nature of the Carbon market adds a great deal of uncertainty to the economics of potential CS projects. For this reason, predictability and consistency from government in setting value for carbon is important as carbon dioxide has limited inherent value as a commodity. In developing regulation, the concept of fees and

compensation must be measured due to the uncertainty and seemingly tight margins adding to project risk for proponents. Layering on costs and fees in addition to the risks outlined above may drive proponents and lenders to delay or withdraw investment.

If Ontario is serious about CS, discussions with the federal government must take place as soon as possible to ensure recognition of the Ontario program for ITCs and extend the provision of ITCs beyond 2030 to align with the project development timelines and allow for some economic certainty for making investment decisions. Current timing of ITCs will prevent the credits from being considered in Ontario CS project economics.

Question 9.

Would you support components of this framework being delivered by an external entity and if so, what components?

Answer 9.

Possibly, depending on which components and under the appropriate conditions and circumstances.

If the ultimate responsibility for this framework is born by the government of Ontario, as discussed above, then it may be acceptable for the government to delegate certain limited aspects of the framework to external entities, assuming they have the necessary expertise and are capable of managing and preserving confidential and commercial information. Technical expertise is one such category of potential delegated review for monitoring and possibly compliance purposes.

Lagasco would prefer that the MNRF accept and only delegate where necessary. An external entity will not likely have the same expertise and experience which CS facility owners expect from the MNRF, at least in terms of working together to manage regulatory responsibilities, which must, in Lagasco's opinion, remain with the Crown. Administration of policy and penalties must also rest with the Crown in order to be effective and properly appealable.

The stakes for CS implementation are high and the outcomes will matter, not only in Ontario, but across the country and internationally, where Ontario is considered a leader in industrial applications. Our Provincial Government's MNRF needs to work closely with those who it regulates and avoid distractions and non-commercial intrusions by third parties unless there is a measurable efficiency gained which is beneficial to the public.