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January 11, 2019

Mr. Bruce Kiley
Chief Clerk of the Board
Nova Scotia Utility and Review Board
3rd Floor, Summit Place
1601 Lower Water Street
Halifax, NS B3J 3P6

Dear Mr. Kiley:

RE: Alton Natural Gas Storage LP – (Alton) Request for Extension to Approval to Construct an Underground Hydrocarbons Storage Facility; M08974

On November 14, 2018, Alton applied to the Nova Scotia Utility and Review Board (NSUARB or Board) for an Extension to its Approval to Construct (Extension Request). As part of the regulatory review process, members of the public were invited to submit letters of comment by December 14, 2018. In accordance with the Board's process schedule, Alton provides its reply to these letters of comment.

Alton has focused its reply on matters raised within the letters of comment which fall within the NSUARB stated mandate in relation to this matter. However, many letters commented on matters which are outside of the scope of the NSUARB's review. In an effort to address misconceptions outlined in the letters of comment, Alton has also provided commentary on these matters. Alton notes that information to address these matters is readily available to all members of the public online through a number of sources, a listing of which is found in Appendix 1 of the attached.

Should you have any questions, please contact the undersigned.

Yours truly,

Tim Church
President, Alton Natural Gas Storage
Vice-President, Stakeholder Relations
AltaGas Ltd.

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1. Overview of Alton Project, Construction Update & Scope of NSUARB review of extension request

1.1 Overview of Alton Project

The Alton Project will help provide Nova Scotians with affordable and reliable natural gas year-round. The underground facility will store natural gas when demand is low so customers can withdraw natural gas when demand increases, typically in colder winter months. Given the recent natural gas production declines and closing of Nova Scotia's two producing natural gas projects (the Sable Offshore Energy Project and Deep Panuke), natural gas storage will provide an increasingly important supply cushion for consumers which is currently lacking in the local market.

As noted in AltaGas' original Application for Approval to Construct[1], the Alton Project consists of multiple caverns being developed by solution mining in an underground salt deposit. Solution mining is the process where water is used to dissolve a salt deposit to form caverns, which then can be used as storage facilities. In the case of Alton, the salt deposit is a natural geological formation. The caverns, to be located at an approximate depth of 800m, and their accompanying facilities will be capable of safely storing millions of cubic meters of natural gas during peak production/low demand periods and delivering it back to the natural gas pipeline system during periods of supply deficits. Salt cavern natural gas storage has been used extensively in North America for approximately five decades.[2]

The caverns will be developed and operated in a manner that minimizes or eliminates adverse effects on the environment and provides significant economic benefits to Colchester County and the Province of Nova Scotia.

1.2 Construction Update

Alton has constructed many elements of the Alton Project which are ancillary to the underground hydrocarbon storage facilities that are the subject of this application to the Nova Scotia Utility and Review Board ("the Board" or "NSUARB"). The already constructed elements include: water pumping facilities, facilities to support brining, and the drilling of three wells for potential cavern storage at the site. As well, 12 km of water and brine line pipelines have been installed linking the cavern site to the river site. Construction has largely been completed at the river site, including the construction of a mixing channel and its associated intake infrastructure, known as a gabion wall, brine and water holding ponds and associated buildings which house pumps and control equipment. Alton is progressing work on the natural gas pipeline which includes fulfilling related permitting, environmental and safety requirements prior to beginning construction. Approximately $70 million has been spent on the Alton Project to date.

Future construction activity will include additional cavern well drilling at the cavern site. Some letters of comment raised concerns about the proximity of the cavern locations to residential

[1] M04172, Application for Approval to Construct (redacted), Exhibit: U-1, June 1, 2011

[2] Final Report: Environmental Registration Document for the Proposed Alton Natural Gas Storage Project, 2007, P-i

homes. Alton will not utilize the well that is close to the edge of the property, closest to the Brentwood Road and residents, for cavern development. As such, cavern wells will now be developed further away from residents on the Brentwood Road than was previously planned by Alton. Any well that will not be used will be properly decommissioned according to regulatory requirements and industry best practices.

1.3 Scope of NSUARB Review of Extension Request

As noted in the Board's Public Notice for the Extension Request, the NSUARB's review of Alton's Extension Request is to consider issues of public safety. The NSUARB's mandate on the matter does not include environmental matters, nor is it the economic regulator of Alton.

The Alton Project has been the subject of considerable review, including, but not limited to, the following:

- Provincial Environment Assessment (EA) approval, with conditions: Alton Underground Natural Gas Storage Project (December 2007)
- Provincial EA approval, with conditions: Alton Natural Gas Storage Pipeline project (May 2013)
- Industrial Approval to Operate a Brine Storage Pond, with conditions (2016)
- Nova Scotia Utility and Review Board – Approval to Construct, with conditions (2013), including oversight by a Board-appointed Certifying Authority (CA)
- Department of Fisheries and Oceans (DFO) review and approval with conditions regarding impacts to fish and fish habitat and Species at Risk (2010)
- A Nova Scotia Environment and DFO approved Estuary Monitoring Plan (2015)
- The Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) third party review of the project on behalf of the Assembly of Nova Scotia Mi'kmaq Chiefs and the subsequent technical working committee that was established among the Mi'kmaq of Nova Scotia, the provincial and federal governments and Alton as the proponent. This review focused on the potential impacts of cavern development on the marine environment and took place in 2014-2015.

Recognizing the various regulatory authorities that have jurisdiction over the Alton Project, the extensive evaluation of the Project that has already occurred (including a detailed review of Alton's original application for Approval to Construct) and the comprehensive ongoing regulatory oversight in respect of the execution of the Project, it is Alton's understanding that the focus of the Board's review should be on issues of public safety in connection with extending the time period of the Approval.

Furthermore, Alton submits the Extension Request should not necessitate a wholesale re-evaluation of the safety of the cavern development as that evaluation has already been performed by the Board with the assistance of the Certifying Authority (CA). Moreover, the safety of the cavern development is subject to the ongoing regulatory oversight of the NSUARB and its CA as a result of the detailed conditions included in the Board's original Approval to Construct, which Alton is not proposing to alter.

Although significant progress has been made on the project since the Approval to Construct was issued, Alton has faced delays. The in-service date for cavern storage is 2022. Alton's Extension Request to the NSUARB reflects the need for additional time to complete cavern development. Additional construction activity, such as construction of the natural gas pipeline and compression facilities at the cavern site, will take place concurrently with cavern development. However, such developments will require a separate Approval to Construct from the NSUARB which will assess the safety of the proposed activities.

Given that Alton is not proposing to alter the substantive conditions attached to the original Approval to Construct, including those that involve the ongoing oversight of the CA, the Extension Request does not have any additional impact on public safety. Alton therefore submits that the Board grant Alton's Extension Request.

2. Responses to Letters of Comment

The following sections address matters noted in letters of comment.

2.1 Legal and regulatory compliance

Some letters of comment suggest that Alton will operate without complying with laws or regulatory requirements. Alton will continue to comply with all regulatory and legal requirements. As noted in the Approval to Construct, Alton is required to ensure that all works are carried-out and completed in accordance with all federal, provincial, municipal laws and in particular, the *Underground Hydrocarbon Storage Act*, the *Underground Hydrocarbon Storage Regulations* and *The Code of Practice Respecting the Underground Storage Regulations of Hydrocarbons* (Code of Practice), as amended from time to time; and, all applicable codes and standards, as amended from time, to time.

2.2 Suggestion to delay NSUARB decision pending approvals from other regulators; independent review

Some letters of comment recommended a delay in the NSUARB's decision on Alton's application for an extension until other approvals, or conditions of approvals, are met. Alton submits that this proposal is unworkable and unnecessary given the involvement of multiple agencies (provincial, federal) and the number of permits that need to be issued as the development progresses. There are numerous regulatory approvals and agencies that need to be engaged and each must regulate within its specialized jurisdiction, and respect what is within the jurisdiction of other authorities. Alton further submits that compliance and enforcement mechanisms exist in relation to the various regulatory approvals and as such an appropriate level of oversight is already in place.

Some letters of comment suggested that an independent review should be undertaken regarding project safety in relation to the Extension Request. Alton submits that this is already being addressed through the oversight of the Board, an independent quasi-judicial body, and its third-party CA.

2.3 Suitability of salt caverns for gas storage and Expert review

Some letters of comment question the suitability of salt formations as a safe method for storing natural gas. The Stewiacke Formation is the main salt formation within the Windsor Group which is made up of several geologic formations. The Stewiacke Formation underneath the Alton Hydrocarbon Storage-Area Lease offers areas of ideal conditions to provide safe, secure storage for natural gas. As noted in the Alton EA (2007), salt is an ideal substance in which to develop storage[3]. Salt forms a tight seal through which stored fluids or gas cannot escape.

Expert review

Alton has undertaken extensive technical work in the area to ensure that the development will be a safe, state-of-the-art, modern storage facility. This has included assessments by geologists, geophysicists and globally recognized cavern experts. These experts hold professional designations such as Professional Geologist (P.Geo) and Professional Engineer (P.Eng). The work by these professionally accredited experts has involved de-risking all aspects of the cavern development. This work helps ensure the caverns will be built to the highest standards and according to all accepted professional procedures, regulations, codes and safety standards. In particular, Alton has engaged recognized geological, geomechanical and solution mining experts as part of the Project's development.

For example, RESPEC is a global leader in geoscience and engineering and was engaged to perform a geomechanical study to determine the feasibility of storing natural gas in the Stewiacke Formation and the geomechanical stability of cavern design.[4] During this study RESPEC assessed cavern geometry, operating conditions, stratigraphy, rock properties, fluids, salt dilation, non-salt strength properties, in-situ temperature, stress fields, and built numerical models which were used for performance simulations. Furthermore, RESPEC has also worked extensively to evaluate safe cavern operating pressures, anticipated cavern closure rates, production casing strains, and ground subsidence associated with the caverns.[5]

In addition, contrary to the suggestion that there was not an independent evaluation of the information submitted in support of Alton's original Approval to Construct, the Board-appointed Certifying Authority (CA) was and will continue to be extensively involved in the evaluation and ongoing oversight of the cavern development.

Independent Certifying Authority (CA)

A CA is an independent, technical body which provides expert review and advice on a given subject matter. Regulators globally engage CAs to review development projects, proponent applications, ongoing operations and other matters. BGC Engineering Inc. (BGC), an applied earth sciences company, was designated by the Board as the CA for the Alton Project[6]. BGC

[3] Final Report: Environmental Registration Document for the Proposed Alton Natural Gas Storage Project, 2007, pp 9, 46.
[4] M04172, Exhibit: U-1, Appendix F.
[5] RESPEC Geomechanical Evaluation of Alton Natural Gas Storage Cavern No. 1RSI-2613 Final, 2016
[6] Alton understands that the NSUARB is in the process of designating a new CA in place of BGC.

reviewed Alton's Application for its Approval to Construct. The project team from BGC which reviewed the application consisted of personnel with technical expertise in the following areas: rock mechanics, underground caverns, underground storage caverns and regulatory requirements, geomechanics and solution mining, petroleum geomechanics, mechanical and electrical engineering.

Following an in-depth review, the CA recommended that the NSUARB grant an Approval to Construct, with conditions, for the Alton cavern development.[7] The Board issued the Approval to Construct, which included 13 conditions and 28 compliance requirements[8]. Since the Approval was granted, Alton has provided information to the CA and has responded to its inquiries. Alton will continue to report to the Board and the CA as the cavern development progresses.

In addition, Alton will ensure that the Project is designed, constructed, operated, maintained and decommissioned in accordance with all applicable standards, laws and regulatory requirements, including the following:

1. *Underground Hydrocarbons Storage Act*
2. *Underground Hydrocarbons Storage Regulations*
3. *Code of Practice, (NS Department of Energy and Mines).*
   The Code provides both requirements and guidance in the management of storage facilities throughout project life, with a primary purpose of safe operation to protect both the public and the operator's employees. Section 3.1 includes requirements for the geology of cavern storage projects.
4. *CSA Z341 Storage of Hydrocarbons in Underground Formations*
   The CSA Z341 standard sets the requirements for the design, construction, operation, maintenance, abandonment and safety of underground storage systems, with section 5.3 addressing the geology of cavern storage projects. The technical committee, which consists of regulatory, industry, government and other experts from across Canada and the United States, is responsible for the CSA[9] standard and investigates every pertinent incident worldwide and reviews the latest relevant technology, to ensure that the standard covers all potentially hazardous situations.[10]

2.4 Past incidents & cavern safety

Safety incidents which have occurred at other facilities were noted in some letters of comment. While one letter of comment referenced a journal article (P. Bérest & B. Brouard: 2003) to question the safety of salt cavern storage, Alton wishes to draw the Board's attention to the article abstract which plainly notes salt cavern storage is the safest way to store large quantities of hydrocarbons and describes how lessons learned from past incidents have led to considerable improvements in storage design and operation:

[7] M04172 BGC Report of Alton Natural Gas Storage Project, Exhibit U-3, filed May 29, 2013.

[8] M04172 Approval to Construct, Document 55170, filed Sept 4, 2013.

[9] CSA Group is accredited by the Standards Council of Canada, a crown corporation which promotes efficient and effective standardization in Canada.

[10] Final Report: Environmental Registration Document for the Proposed Alton Natural Gas Storage Project, 2007: p 25.

Thousands of salt caverns (100 in France alone) are being used to store hydrocarbons. This is the safest way to store large quantities of hydrocarbons: salt formations are almost perfectly impermeable, and fire or explosion is impossible underground. However, a small number of accidents (blow-out, product seepage, cavern instability) have occurred in the past. Cavern abandonment is also a concern in some cases. This paper describes several accidents and the lessons that have been drawn from them, leading to considerable improvements in storage design and operation.

In addition, several letters of comment inaccurately reference United Kingdom – HSE Statistics as reported in HSE Research Report RR 671 (2008)[11]. By way of explanation, the report says on page 2: *The failure rate for a geological failure of the storage cavity in UGS [underground storage] facility is of the order of 10^{-5} failures per well year…In major hazard terms this equated to a risk that can be considered negligible.* Further the report says the risk is dominated by release from the well connecting the storage cavity to the surface, but that has a similar order of failure of 10^{-5} per year. Furthermore, Alton meets all five of the report's recommendations.

The Alton EA (2007) reviewed the incidents noted in several letters of comment, including those that occurred in Fort Saskatchewan, Alberta and Yaggy, Kansas [Hutchinson].[12] Alton will apply all applicable learnings to ensure that the Alton facility operates at the highest levels of safety.

Applying lessons learned from past incidents is a key driver for continuous safety improvement for Alton. Similarly, as noted above, standards such as CSA are updated frequently to incorporate learnings from past incidents and improvements in technologies and other industry developments.

In addition, it is important to note that several of the incidents referenced in letters of comment are not analogous to the Alton Project. For example, the incident at Aliso Canyon, California in 2015 did not involve modern, engineered salt caverns. Aliso Canyon involved a depleted hydrocarbon reservoir that had been drilled in the 1950s and was converted to store natural gas. A casing leak in the well led to the storage failure. Investigations note that a contributing factor in the incident was the removal of safety valves in the 1970s that were never replaced.

The 2014 incident at the Prud'homme salt cavern storage facility in Saskatchewan, which was built in the 1960s, was the result of a failed steel casing pipe two metres below the surface. During the incident no one was hurt.

To avoid these types of incidents, Alton will verify the integrity of all casings prior to the injection of any natural gas into the cavern, and prior to the facility becoming operational. Testing will continue throughout the life-cycle of the facility to verify the integrity of the cavern infrastructure. Further, CSA Z341, which Alton must follow, contains specific requirements to ensure ongoing integrity of the cavern, including casings, and associated infrastructure.

[11] Failure rates for underground gas storage: Significance for land use planning assessments**.** Prepared by Deborah Keeley, Health and Safety Laboratory for the Health and Safety Executive 2008.

[12] Final Report: Environmental Registration for the Proposed Alton Natural Gas Storage Project (2007), p 25.

2.5 Geology

Salt is often found in large, relatively homogenous deposits. It dissolves easily with water, making cavern formation through dissolution possible. Unlike other rock types which can fracture in a brittle manner and maintain leakage zones, under significant pressure and temperature, salt deforms in a plastic manner. When this plastic salt flow ceases, the salt resolidifies. At Alton this "flowage" happened approximately 330 Ma, (million years ago). The Stewiacke Formation has been rock salt for the last 300 Ma.

Extent of Geological Information

Mr. Grantham suggested in his letter of comment that the Stewiacke Formation may not be suitable for cavern development and that the geological information in relation to the Project has been limited. To the contrary, as described above, Alton has undertaken significant analysis of the Stewiacke Formation to ensure that the cavern locations are appropriate for cavern development. During the geologic reviews which have occurred to date, all available subsurface data have been used, including well data from the three wells which were drilled in 2014, all nearby mineral hole data, 2-D and 3-D seismic data, gravity surveys, academic research papers, industry reports and independent consultant reports. The Provincial EA review in 2007 noted that Alton drew on a range of geological information that was available at the time, and not just one well.[13]

In addition, a full geological data review was conducted in 2016 for the Alton Project which included all geological, geo-mechanical, geophysical, gravity and drilling information in the vicinity of the Alton storage lease. The conclusions of the review reaffirmed that the Stewiacke Formation over the Alton Hydrocarbon Storage Area Lease has all required characteristics to support a gas storage facility.

Alton will continue to apply any new geological knowledge it acquires to the Project and would be pleased to provide the NSUARB and its CA an updated report in this regard. Alton notes that all geological data, including well logs from drilling conducted in 2014, have been submitted to the appropriate Nova Scotia Government department. This point corrects one letter of comment which suggested that well logs and other data have not been provided to government.

Geologic faults

Some letters of comment assert that there is an unacceptable risk associated with geologic faults in the region. The Shubenacadie Basin is a half graben with the bounding faults north of the Alton facility. These faults are not dramatic events which develop huge offsets during an earthquake, rather they have displacement over long spans of geologic time.

Seismic and well interpretation indicate that the fault system likely began in the Middle Carboniferous, (~330 Ma), and ceased movement towards the end of the period (300 Ma).

[13] Final Report: Environmental Registration Document for the Proposed Alton Natural Gas Storage Project, 2007, p 46.

Seismicity and risk of earthquakes

Some letters raised concern with earthquakes. It is notable that this matter was previously addressed in Section 2.7 of the Application for Approval to Construct. By way of background, the Maritime region is located in a stable continental region within the North American Plate and, as a consequence, has a relatively low rate of earthquake activity. When describing plate tectonics, the Maritimes is a trailing edge plate margin, unlike converging, divergent and transform plate boundaries, where the rate and size of seismic activity is directly correlated with plate interaction.

Mr. Grantham quotes a paper which suggests that a dissolution process in Bulgaria "has generated, and continues to generate magnitude 4 earthquakes since the dissolution began". The extensive cavern developments and salt mining in Bulgaria are in a very active seismic area. The Bulgarian developments are near the Vrancea earthquake region which is one of the most active seismic regions in Europe with the deepest earthquakes in the entire Carpathian area.[14] As previously mentioned, the Maritime region is stable and has relatively low earthquake activity.

Concerns about isostatic rebound and its effect on the cavern development are unfounded with respect to the Alton Project. It is true that North America is still feeling the effects of isostatic rebound, (typical rates in North America are 1 centimeter per year or less). However, there is no parallel between isostatic rebound and the “bumps” in coal mines in Springhill, Nova Scotia.[15] There are well-established salt mining operations in Nova Scotia and New Brunswick. The underground workings at each of those locations would dwarf the size of the caverns planned for Alton. If isostatic rebound was a concern, the effects would have already been evident at these well-established mining operations.

Dolomites

The Stewiacke Formation proposed for cavern development at Alton is suitable for natural gas storage. Although the Stewiacke Formation is time equivalent with other salt deposits in Nova Scotia, such as in Canso as noted in one letter, it cannot be compared to those deposits when considering appropriateness for natural gas storage. Unlike other formations in the area, such as the MacDonald Road and Green Oaks Formations which lie stratigraphically above the Stewiacke Formation, there are no dolomites in the Stewiacke Salt Formation where the Alton caverns will be constructed.

[14] EQ Report: Vrancea earthquake zone : one of the most active seismic areas in Europe (Carpathians): August 20, 2011

[15] Notley, K.R, “Rock Mechanics Analysis of the Springhill Mine Disaster, October 23, 1958” Mining Science and Technology, 1 (1984) 149-163.

Subsidence

The issue of subsidence was raised in some letters of comment. Subsidence is a concern with any underground activity including solution mining. The subsidence concerns surround how drainage and surface structures will be affected.

CSA Z341 requires that a subsidence modeling program be implemented and that annual surveys be conducted to measure changes in elevation. Surface subsidence predictions were performed by RESPEC using sophisticated proprietary computer programs. For the Alton site, a maximum subsidence of 3.6 mm was predicted at the end of a 30 year simulation. The predicted subsidence decreases to less than 1.0 mm at a distance of approximately 500 m from the center of the cavern.

RESPEC concluded that values of vertical subsidence are very small and are not expected to have any significant effect on the area drainage or surface structures[16].

2.6 First Nation Consultation

Alton is committed to building long-term, mutually beneficial working relationships with Indigenous communities while recognizing and respecting aboriginal and treaty rights, individual values and traditions. Through Alton's ongoing engagement with area First Nations, including Sipekne'katik, and the various regulatory processes undertaken to assess the project (including two EAs and an approval to operate the Brine Storage Pond), serious efforts have been made to identify and address the concerns of First Nations with respect to the Alton Project. The commitments made by Alton, coupled with the conditions imposed by the regulators, reflect these efforts.

Sipekne'katik has written to the Board expressing concern about the proposed extension of the Approval to Construct, stating the construction and operation of the caverns will involve mining and suggesting that there is the potential to adversely impact Sipekne'katik's Aboriginal and treaty rights. Similarly, other letters of comment have suggested that impacts on the Mi'kmaq of Nova Scotia have not been appropriately taken into consideration.

Alton notes that the issue of the adequacy of Crown consultation in relation to the project is currently being considered by the Minister of Environment in relation to the issuance of the Industrial Approval to operate the Brine Storage Pond, pursuant to a decision of the Nova Scotia Supreme Court *Sipekne'katik v Nova Scotia (Environment) 2017 NSSC 23*. In the event that Sipekne'katik disagrees with the Minister's determination, Sipekne'katik may elect to continue its appeal to the Supreme Court of Nova Scotia which already has placed before it an extensive record supplemented by affidavit evidence. In Alton's submission, the Board should not undertake a duplicative review in such circumstances.

Alton would propose not to duplicate this record before the Board unless the Board directs.

[16] RESPEC Geomechanical Evaluation of Alton Natural Gas Storage Cavern No. 1RSI-2613 Final: 2016

Throughout this response and in the original application and associated documents for the Approval to Construct, Alton has identified measures that are in place to ensure the safety of the construction of the storage caverns and limit any impacts. The Nova Scotia Environment (NSE) EAs considered impacts on Aboriginal and treaty rights. Such impacts have not changed as a result of Alton's Extension Request. Alton is not proposing any changes to the Board's Order other than an extension to the Approval to Construct and, as a result, there are no anticipated additional impacts on First Nations associated with the Application currently before the Board. As required in the Board's original Approval to Construct, Alton will continue to comply with all applicable laws and codes and will provide a copy of required federal, provincial and municipal approvals to the Board and CA prior to commencing construction of those portions of the proposed works which would be subject to such permits and approvals.

In addition to the efforts that have been made to identify and address First Nation concerns about the Project, Alton is committed to ongoing engagement with First Nations throughout the life of the Project so that any issues or concerns that may arise can be addressed in a timely manner. Such ongoing engagement has been made a condition of several Project approvals. Additional information on Alton's engagement with Indigenous communities can be found on its website, under Indigenous Relations, as noted in Appendix 1.

Alton remains open to entering into Agreements with Mi'kmaq communities on matters including safety, environmental protection and economic development.

2.7 Community Engagement

Contrary to the suggestion that Alton has not engaged with the community, Alton has been engaged in ongoing information sharing and discussions with the community about the Project for many years.

As noted above, two EAs were conducted for the Alton Project. Both assessments included public consultation and involvement components.

Alton has been participating in community meetings and events as well as meeting with local stakeholders, responding to emails and phone calls to address questions about the Project. Examples of local meetings and events are listed in the Public Consultation section of the FAQ on the Alton website. The FAQ itself is based on questions received from members of the community.

A Community Liaison Committee (CLC) was established in November 2015, and is working as an advisory committee, providing practical advice and feedback from the community on the company's activities. The CLC meets regularly and includes representatives of local government, landowners, business and community members. Alton follows the Nova Scotia Department of the Environment's Guide for the Formation and Operation of a Community Liaison Committee. The Terms of Reference for the Alton CLC are readily available on the Alton website as are summaries of minutes from the meetings. The Alton website (www.altonnaturalgasstorage.ca) is a transparent platform to share project information that

includes links to regulatory filings (including the two EAs and the 3rd party science review led by the Mi'kmaq), and an open invitation to join the contact list for project updates.

2.8 Emergency Response Plan (ERP)

Several comments were made in relation to evacuation and response plans in the event of an emergency. Protecting public safety and the environment are core values of Alton. The purpose of an ERP is to ensure there are documented procedures and training to manage emergency situations should they arise. ERPs are developed to support a given phase of development, ranging from the construction phase to operational phase when a facility is in-service. An ERP is presently in place for use on the Alton Project during active site construction. A second construction plan will be developed to address brining operations and a third plan will be in place prior to the storage facility becoming operational, which is expected in 2022.

Each ERP is intended to provide guidance and direction for responding to unplanned events during a particular stage of the Project. This helps ensure, as the Project activities change, that the ERP is appropriate for the current activities. All personnel will be properly trained on the ERP for the appropriate phase of development. Alton will work with emergency responders, including the local fire departments, to ensure familiarity with facilities and proper training on the ERP.

The ERPs will identify residents who could potentially be impacted by an unplanned event at the Alton facilities. During brining operations and construction activities, there is no situation that could result in a need for a response by residents. The brining operation will be ongoing for 24 to 36 months during which time brine and water are being transported to and from the river location. No natural gas will be present at either site during this time.

Once the caverns have been constructed, an ERP will be put in place that will address the risks and potential impacts for hydrocarbon storage operations. Development of the ERP will include discussions and planning with local first responders. Based on the identified events and the potential impact areas, residents located within these areas will receive relevant communications pertaining to Emergency Response Planning well in advance of the project becoming operational in 2022.

2.9 Construction Safety

Some letters of comment raised concern about noise and safety during the active construction phase of the project. A Health, Safety and Environment Construction Management Plan (HSECMP) is written for the Project and outlines the applicable health, safety and environment (HSE) considerations. As per the Plan, all personnel are expected to demonstrate the necessary positive HSE work behavior to achieve a vision of zero harm to people, property, and the environment. Everyone must demonstrate continuous commitment to the following HSE behaviors:

- stop any work if it is deemed unsafe or could harm the environment;
- ensure hazards are identified, risks assessed and adequate control measures are

implemented;
- proactively participate and follow HSE requirements;
- proceed only if you are adequately qualified, suitably trained, and have sufficient experience to perform tasks;
- report all hazards and incidents.

Regarding truck traffic during active construction, Alton will continue to ask all truck traffic to travel 10km/h below the posted speed limit when traveling to and from the Project sites. While construction of any kind will produce some noise, noise emissions generated during construction and operations will not exceed provincial guidelines at the property boundaries of the site.[17]

2.10 Gas Facility and Pipeline Safety

Some letters of comment raised questions regarding the safety of Alton's planned facilities and pipeline. Surface facilities will be designed and constructed in accordance with the requirements of ASME Standard B31.3, Process Piping and the appropriate sections of the ASME Boilers and Pressure Vessels Code. Pipelines will be designed and constructed in accordance with CSA Standard Z662, Oil and Gas Pipeline Systems, which is the national pipeline safety standard in Canada.

The gas facility will be designed with redundant safety controls and emergency shutdown safety valves. The gas facility will have fire detection, gas monitors, isolation systems, emergency shut-down devices and automated fire extinguishers. All gas piping and equipment will be pressure tested and all gas pipeline welding will be x-rayed. Clean, processed and market-ready natural gas from the Maritimes & Northeast Pipeline system will be used for storage in the salt caverns. There are no liquid petroleum products involved in the Project.

Prior to the start of construction, Alton will be required to apply to NSUARB for an Approval to Construct for its pipeline and compression facilities. Such reviews will assure the safety of this infrastructure.

2.11 Compliance with monitoring plan requirements and federal Fisheries Act

While beyond the scope of the NSUARB review of the Extension Request, several of the letters incorrectly assert that Alton is not in compliance with the "Fish and Fish Habitat" sections of its provincial Environment Assessment, has not appropriately developed a monitoring plan, or is not in compliance with the federal *Fisheries Act*.

Alton must be in compliance with all federal, provincial and local requirements, including all provisions of the *Fisheries Act*. The Project has been the subject of considerable review by regulators and expert government departments. In particular, DFO has said that as designed,

[17] Final Report: Environmental Registration for the Proposed Alton Natural Gas Storage Project (2007), p. 23

and with mitigation in place, the Project is not likely to contravene the fish habitat protection provisions of the Fisheries Act, or the Species At Risk Act.[18]

The Project's river monitoring plan, which was required by the terms and conditions of the NSE Minister's EA Approval, was finalized based on input and or direction from:

- federal and provincial departments and regulators, including Environment and Climate Change Canada (ECCC), DFO, NSE and the Nova Scotia Office of Aboriginal Affairs;
- expert engineering and biological consultant advice;
- the results of a Mi'kmaw–led independent science review in 2015; and,
- biological research undertaken by Dalhousie University, Bible Hill Campus, over the past 10 years.

The monitoring plan is readily available on the Alton website, along with presentations and other background information.

As required by condition 2.1(b) of the NSE Minister's EA Approval, the monitoring plan was shared by Alton with ECCC for its review and comment.

The monitoring plan requires salinity to be within naturally occurring background levels for the Shubenacadie River Estuary within 5 metres of either side of the mixing area in Alton's engineered channel. The monitoring plan also requires Alton to undertake laboratory toxicity testing on Striped Bass once brining operations have commenced. Although the brining has not yet started, initial toxicity testing by researchers at Dalhousie University using simulated brine and salt core samples from the Alton site has taken place.

The tests to date confirm project assumptions that, as designed, the Project will not impact fish or fish habitat. Information about the toxicity testing can be found on the Alton website The toxicity testing will continue when the brining process begins.

Some work will be required at the river site to remove silt which has built-up in the mixing channel. This build-up of silt occurred because the solution mining process, which involves the flow of water in and out of the channel, has not yet started. Some letters of comment suggest that Alton is either not fully aware of this matter or does not intend to work with regulators to develop plans to remove the silt. To the contrary, Alton has discussed the matter with DFO and will develop a plan which meets regulatory requirements prior to solution mining activities. The removal of mud and silt through the use of pumping equipment or dredging is common practice in Nova Scotia and all marine environments. Alton will meet all regulatory requirements and environmental protection best practices in this regard.

2.12 Public good and impact on the environment as it relates to climate change

While beyond the scope of the Board's review of the Extension Request, some letters of comment note that the natural gas stored at Alton is primarily intended for the U.S. market and

[18] DFO letter to Alton Natural Gas Storage LP, November 5, 2010.

question the need and benefit of natural gas for the Province. To the contrary, the natural gas in the two storage caverns planned initially at Alton is for the growing number of natural gas customers in Nova Scotia. Additional cavern development to support industrial, commercial and residential expansion will depend on market demand.

The Alton Project will help sustain and grow Nova Scotia's competitiveness, reduce reliance on heavy oil and coal, support energy affordability and increase security of supply during winter peak days. The Project will also help ensure that residential, commercial, and industrial customers can access reasonably priced energy supplies.

Natural gas is used today by a wide range of customers in Nova Scotia including: many of Nova Scotia's largest industries and employers; commercial and manufacturing businesses; the majority of the Province's universities; publicly-funded institutions like hospitals and schools; and thousands of homes. By converting to natural gas, customers in Nova Scotia have collectively saved hundreds of millions of dollars on their energy bills, with further expected savings once the Alton Project is in operation.

The Project will invest more than $130 million in rural Nova Scotia and has invested approximately $70 million to date. Since 2014, more than 70 Nova Scotia companies have provided goods, services and labour to Alton. The first phase of storage service for two caverns, consisting of approximately 4 Bcf of storage, is expected to commence in 2022. The customer for the two caverns is Heritage Gas, the provincial natural gas distributor in Nova Scotia.

2.13 Natural gas pipeline and market ready natural gas

While beyond the scope of the NSUARB's review of this Extension Request, some letters of comment refer to the natural gas pipeline and market ready natural gas. Natural gas will move to and from the facility via a pipeline connected to the Maritimes & Northeast Pipeline system. This pipeline project has been approved, with conditions, via a provincial EA. Contrary to some points raised in letters of comment, Alton is active in meeting its pipeline EA conditions and is in regular contact with provincial regulators in this regard. Detailed design and fieldwork is underway. Alton expects to apply for its Approval to Construct to the Board for the pipeline in the first half of 2019. The pipeline will undergo a safety review before construction can take place and before it can be commissioned for operation.

Only market-ready natural gas (methane) will be stored at the Alton cavern facility. This means that there is no requirement for further processing to remove impurities in the product. In the caverns, the natural gas that will be stored will be in a compressed form, not liquid form (LNG), as some letters suggest.

3.0 Conclusion

Although significant progress has been made on the Project since the Approval to Construct was issued, Alton has faced delays. The in-service date for cavern storage is 2022 and Alton's Extension Request to the NSUARB reflects the need for additional time to complete cavern development.

After extensive expert review, including the detailed review of the Board appointed CA, the Board previously determined that it was appropriate to issue an Approval to Construct, subject to 13 conditions and 28 compliance requirements. Given that Alton is not proposing to alter the substantive conditions attached to the original Approval to Construct, including those that involve the ongoing oversight of the CA, an extension of the Approval to Construct will not have any additional impact on public safety. Alton will continue to meet all conditions imposed as well as all related legal requirements. Alton submits that the Board should grant Alton's Extension Request.

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Appendix 1: Online resources related to the Alton project

- The NSE Environmental Assessment Registry which categorizes the registration documents, and related regulatory decisions, for two EAs: the EA for the Proposed Alton Natural Gas Storage Project (Alton EA (2007), and the EA for the Proposed Alton Natural Gas Pipeline. Both EAs were approved, with conditions, by the Nova Scotia Minister of Environment. The documents include detailed environmental, safety and socio-economic analysis.

- NSUARB website which houses Alton's 2013 Application for its Approval to Construct, related information requests from the CA and Alton's responses, the CA's Certification Report and the Board's subsequent decision to grant the approval, which includes 13 conditions and 28 compliance requirements.

- Letters from the Nova Scotia Minister of Environment which previously dismissed six Appeals of the Industrial Approval issued to Alton to Operate a Brine Pond. The letters address many of the same matters which were raised in the letters of comment on the Extension Request.

- The Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) website provides information on the KMKNO review of the Alton Project as it relates to the marine environment, which was done on behalf of the Assembly of Nova Scotia Mi'kmaq Chiefs. This included a third-party review by Conestoga Rovers and Associates and a Mi'kmaq Peer Review Committee.

- The Alton website provides extensive resources, including a Frequently Asked Questions section on a range of matters including safety, environment, community engagement and socio-economic matters as well as an Indigenous Relations section. In addition, the website includes links to regulatory documents such as the approved river monitoring plan.

- The Nova Scotia Department of Energy and Mines website provides resources and links to relevant material, including the *Hydrocarbon Storage Act*, the Code of Practice, and FAQs on natural gas storage.

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