



March 20, 2009

## **Underground Salt Storage Concept Question & Answer Update**

Corridor Resources was pleased to have the opportunity to present an update about the Underground Salt Storage Concept to the public at a community meeting hosted by the Quality of Life Initiative and held at Hampton High School on February 25, 2009.

Questions received at, and following the meeting can be found below. Corridor is in the early stages of researching the Underground Storage concept and therefore may not have detailed answers to all the questions at this stage. Information will continue to be updated on an ongoing basis as it becomes available.

Should you require further information at any time, please contact us at 1-888-429-4511 or via [info@corridor.ca](mailto:info@corridor.ca); or visit [www.corridor.ca](http://www.corridor.ca).

### **Question and Answers**

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#### **Is Corridor familiar with the Salt Springs area? Where are your offices?**

Corridor is a Maritimes firm that started in Halifax and has exploration properties in New Brunswick, Newfoundland, Prince Edward Island and Quebec. Corridor employs about 30 people in New Brunswick and Nova Scotia. There are 10 permanent employees working out of the Penobscis office. Corridor management routinely visits working sites, and potential project sites.

#### **How are residential wells going to be protected? If wells are contaminated, how will residents be compensated?**

As part of the required Environmental Impact Assessment and approvals process, we would have to ensure there would not be a detrimental impact to residential wells as a result of our operations. If potential impacts are identified, appropriate mitigation would be proposed to address the impacts. The water supply for this potential project does not need to be potable (drinking water).

Corridor is committed to selecting a water source that is safe for residential water wells. The construction, development and operation of the caverns would be undertaken according to the highest safety, technical and environmental standards, that incorporate measures to minimize any potential impacts. If an impact were demonstrated to have resulted from Corridor activity, Corridor would need to take steps to address the impact.

#### **Will Corridor compensate property owners if there is a drop in property value?**

It is important to note that Corridor has some flexibility regarding facility placement. The facility would be set back away from residences, and every effort made to minimize any potential impacts to the landscape and property values.

#### **Where is the water going to come from to remove the salt and create storage? If seawater was used, would a pipeline be required and where would it go?**

At this early stage, Corridor has not identified the specific project components or a source of water supply. The Department of Environment will require Corridor to assess the water supply source and potential impacts as part of the Environmental Impact Assessment process. An expert in this field will



review the options for the water supply. In addition, there are a variety of federal and provincial permits associated with the selection of a water source that would be required to create caverns.

Given the water supply does not need to be potable (drinking water), a broad range of potential supply sources are available, such as the use of deep saline water or sea water. If we were to proceed, Corridor would assess all options, including water sources and disposal.

We do not know at this time if there will be a pipeline for seawater or where it could be located.

**What is the capacity of the two aquifers you are exploring? How will you combat depletion or negative impacts to these aquifers given the amount of water required to construct the salt caverns?**

Corridor is in the very early stages of investigating the concept of underground salt storage, including the investigation of possible water sources. Should Corridor decide to proceed, the company would assess all options available for potential water supplies. If Corridor decides to explore for a ground water source to construct the underground storage caverns, the company will be required to follow the Water Supply Source Assessment Process administered by the Department of Environment. This process requires the company to demonstrate that potential ground water uses are safe for residential water wells. Corridor does not want to be involved in a project that is not considered safe for residential water wells.

**How will you ensure non-potable wells drilled in one layer won't impact potable (drinking) water?**

As part of the required Environmental Impact Assessment and approvals process, we would have to ensure that there would not be a detrimental impact to residential wells as a result of our operations. If potential impacts are identified, appropriate mitigation would be proposed to address the impacts. The construction, development and operation of the caverns would be undertaken according to the highest safety, technical and environmental standards, that incorporate measures to minimize any potential impacts.

**The Penobscis potash mine is leaking millions of litres a day. The Cassidy Lake potash mine (3 km from Corridor's proposed project) is under water. Will this impact Corridor's operations?**

No. As we move forward with our research, we will be required to make a thorough evaluation of all nearby active or abandoned subsurface mining activities. Such evaluations must investigate possible impacts on the potential storage facility, and if we were to proceed, Corridor would take appropriate actions to mitigate any potential impacts.

**The cause of the destruction of the Penobscis water supply is still unknown. Should Corridor continue with its investigation in Salt Springs?**

Corridor is not responsible for the issues surrounding the water supply in Penobscis. Our investigations in the Salt Springs area may involve some seismic testing, drilling water exploration wells, and/or drilling core holes to evaluate the salt. Corridor will work with individual residents to ensure that we do not cause any impact to their water wells during the exploration of the area.

If we were to proceed beyond our initial investigation, we would assemble a team of experts to carefully investigate the design of cavern development and its potential impact on local aquifers. Studies would identify ways to mitigate and overcome any potential impacts. Corridor would not proceed with any new development or project unless it was safe for residential water wells.



**Salt Spring residents don't use natural gas to heat their homes. Why should they support underground storage in this area? What are the benefits to residents of Kings County?**

The area is being investigated for its unique natural salt deposits and its proximity to US and Canadian markets. If a project is determined to be viable, local benefits could include:

- On-site employment during construction of caverns and facility development;
- On-site employment during operations – long term, permanent positions created;
- Spin-off benefits of persons working on the project and spending money in the local area;
- Access to Corridor's Community Sponsorship Program for support of local projects;
- Increased municipal tax revenue; and
- Possible future access to natural gas in the surrounding area.

**According to your geology maps from Jacques Whitford consultants, Corridor's four proposed well sites are very close to the flooded PCS mine (Site 1 is 1450m, Site 2 is 900m, Site 3 is 1500m and Site 4 is 400m). Will salt water be used to flood these sites as well?**

The Jacques Whitford (2005) report was a very preliminary look at whether or not groundwater sources in the area would support the volume of water needed to construct underground salt caverns. The study concluded that only deep groundwater (90 to 250 m) has the potential to yield the volumes of water required, but a groundwater exploration program would be required to confirm the results of the desktop study. Four potential groundwater exploration sites were identified in the report. The groundwater exploration program would investigate the potential impacts of extracting deep groundwater on residential water wells. If these studies determine that using deep groundwater for constructing the caverns will cause potential impact to residential water wells, Corridor would need to take steps to mitigate the impact.

Corridor is in the very early stages of investigating the concept of underground salt storage, including the investigation of possible water sources. If Corridor decides to explore for a groundwater source to construct the salt caverns, the company will be required to follow the Water Supply Source Assessment Process administered by the Department of Environment. This process requires the company to demonstrate that potential groundwater uses are safe for residential water wells.

Furthermore, companies investigating the potential to build underground salt storage caverns must make a thorough evaluation of all nearby active or abandoned subsurface activities. Such evaluations must investigate potential impacts on the potential storage facility.

**Corridor's report (Jacques Whitford, 2005) suggests that domestic water supplies from the Mabou Group of rock may be affected by mine activities in lower formations like the Windsor salts. Activity in the lower formations can impact the higher. Is this correct?**

The Jacques Whitford (2005) report was a very preliminary look at whether or not groundwater sources in the area would support the volume of water needed to construct underground salt caverns. The study concluded that only deep groundwater (90 to 250 m) has the potential to yield the volumes of water required, but a groundwater exploration program would be required to confirm the results of the desktop study. The groundwater exploration program would also investigate the potential impacts of extracting deep groundwater from on residential water wells. If these studies determine that using deep groundwater for constructing the caverns is likely to cause impact to residential water wells, Corridor would need to take steps to mitigate the potential impact.

Much more study is required on other options for water supply source. Potable (drinking) water is not required. Corridor will investigate water sources other than groundwater, such as seawater, to construct the caverns. Corridor will not be involved in a project that is considered harmful to residential water wells.



The storage caverns will be constructed in the salt formations. There will be a substantial thickness of salt between the top of the caverns and the overlying Mabou Group rocks. This thickness of salt, together with the natural cap rock that forms on the top of the salt, will prevent any interaction between water in the Mabou Group aquifers and the salt formations.

**In Hutchinson, Kansas (2001), 100-foot thick shale was not enough to keep gas from leaking into peoples wells?**

Our understanding is that no gas leaked through the 100-foot shale. The shale did its job as it was supposed to do. The gas leakage stems from damage made to the steel casing in the well.

Our review of the reports of this accident show that the storage site was put out of service and abandoned in the 1980's and then was brought back into service by another operator in the 1990's. During the original abandonment, cement plugs were placed in the well to seal it off. When the second operator brought the facility back into service, they damaged the well as they were drilling out the cement plug and this allowed gas to leak up the side of the well. After the accident, there were several changes to the regulations recommended by experts. One proposed change prohibits re-using cavern wells once they have been plugged and abandoned, as was the case in Hutchinson, Kansas.

If we were to proceed beyond our initial investigation, we would assemble a team of experts to carefully investigate the design of cavern development and consider all safety aspects. Studies would include the identification of all risks and hazards and ways to mitigate and overcome them. Highly trained people would be hired to work on the project during construction and operation. Corridor would have safety, emergency response, operations and other procedures developed to ensure continued safety throughout all phases of development.

**In Nova Scotia, the Department of Environment hydro-geologist said that the Alton gas storage proposal was so novel that no one in the Department had the expertise to evaluate it. They went ahead and approved the project anyway. Should we?**

Underground storage in salt caverns is new to Atlantic Canada, but these storage practices have been in use for about 60 years worldwide. Many lessons have been learned by regulators in other jurisdictions regarding the safe design, construction and operation of salt caverns. The requirements for underground salt storage caverns in Canada are described in Standard Z341.2-06 published by the Canadian Standards Association. Overall, the oil and gas industry is a highly regulated industry.

The New Brunswick Underground Storage Act allows for the development of underground storage in the province. The regulator has the responsibility to evaluate proposals for underground storage. If Corridor decides to make an application to the government for the Salt Springs area, it will be up to the government regulators to evaluate the proposal and determine if proceeding with such a proposal is in the best interest of the people of New Brunswick.

**What defines "low risk" of seismic activity? Is that different than "no risk"?**

Seismic activity (earthquakes) occurs most commonly at tectonic plate boundaries. The San Andreas fault in California is a fault located at a tectonic plate boundary, hence there is a high risk of seismic activity there. Similarly, the Vancouver area is located at a plate boundary and this area is also considered high risk for seismic activity.

New Brunswick is located in the interior of a tectonic plate; the North American plate. One boundary of this plate is located on the west coast of North America (i.e. California and Vancouver) and the other is located in the middle of the Atlantic Ocean (Mid-Atlantic Ridge). Since New Brunswick is at the interior of a plate, this area is a "low risk" of seismic activity. Some earthquakes have occurred in New Brunswick in



the past (i.e. Doaktown on March 8, 2009). However, these earthquakes tend to be very small and cause little to no damage.

The Earth is a tectonically active planet. There is no such thing as “no risk” of seismic activity on our planet. However, there are some places that are considered lower risk than others. New Brunswick is a low risk area.

That being said, Corridor will be required to study the seismic activity of the Salt Springs area and assess the possible impact of potential future earthquakes on a salt storage cavern. The results of such a study will be made known to the public. Corridor does not want to be involved in a project that is not safe.

**Does Corridor’s permit cover a feasibility study to go ahead with the removal of salt? You have stated that you are only using 1% of your exploration license. What you will be doing with the remaining 99%?**

Corridor does not have permission to go ahead with removal of salt for constructing a salt cavern. We have an underground storage exploration license that allows for the exploration of the salt deposit and the study of a large area to determine the site that is best suited for a particular development. If we decide to move forward, a site would be selected and a regulatory application made. Corridor would seek to convert the exploration license around the site to a lease. The area of this lease will be less than 1% of the area of the exploration license. The remainder of the exploration license (99%) would be turned back to the government. At that point, the land would be open for other companies to explore, if they so wish.

**Does Corridor Resources have any concerns about local rock quarries blasting near their caverns? There are at least two rock quarries near their proposed site. What would happen if they used too heavy of a charge with explosives?**

Corridor will make a thorough investigation of all surface and subsurface activities in the immediate and surrounding area prior to proceeding with a project. Such investigations must evaluate all potential impacts on the potential storage facility. Corridor would not proceed with any new development or project unless it was safe.

**How many caverns do you propose to build? Where do you propose to build them?**

At this stage, we do not know where or how many storage caverns there could be, or if underground storage is an economically viable project for this area. We have only been granted permission to explore the salt deposits found in the Salt Springs area. However, an initial project could involve 2 to 3 caverns.

**How big are the caverns? How much gas or liquids can be stored there?**

Corridor is in the very early stages of investigating the concept of underground salt storage. Much work remains to be done, including evaluating the geology to determine the size of cavern that is appropriate for the Salt Springs area. Preliminary work indicates that the area may be able to house caverns that are 800 ft tall and 200 ft wide. Such a cavern would be able to hold a liquid volume of 25 million ft<sup>3</sup> and a gas volume of about 3.5 billion ft<sup>3</sup> of working gas capacity.

**The volume of a cylinder 800 ft tall and 200 ft wide has a volume of about 25,000,000 ft<sup>3</sup>. This is far less than the 2-3 billion ft<sup>3</sup> of gas that Corridor has suggested will be stored in a salt cavern. What is the reason for the discrepancy?**

The volume of 25,000,000 ft<sup>3</sup> is the volume that the cavern would hold for a non-compressible fluid, such as water. Natural gas is a compressible fluid and therefore the 800 ft by 200 ft cavern can hold much more natural gas. The reason is that the gas is stored under pressure. Think about a barbeque tank. It holds much more gas when it is full and under pressure than when it is “empty”, but the volume of the



barbeque tank never changes. In fact, when the tank is "empty" it still contains gas, but at atmospheric pressure.

**We are concerned with safety. There have been accidents in the US. How do you propose to safeguard the surrounding areas from a catastrophic accident?**

Safety is a top priority for Corridor, our employees and contractors. We ensure that appropriate safety measures and policies and procedures are in place at all of our facilities. We have had no major occurrences at any of our facilities.

Underground salt storage has been in use for about 60 years worldwide. Many lessons have been learned by regulators in other jurisdictions regarding the safe design, construction and operation of salt caverns. For example, salt storage is common in Canada and Europe, but accidents in these areas are far fewer than in the US. If Corridor decides to proceed with a potential project, the company will abide by and exceed where possible the government regulations and industry standards to ensure safe construction, development and operation.

If we were to proceed beyond our initial investigation, we would assemble a team of experts to carefully investigate the design of cavern development and consider all safety aspects. Studies would include the identification of all risks and hazards and ways to mitigate and overcome them. Highly trained people would be hired to work on the project during construction and operation. Corridor would have safety, emergency response, operations and other procedures developed to ensure continued safety throughout all phases of development.

Corridor would not proceed with any new development or project unless it was safe.

**What percentage of the gas you propose to store will go to NB customers? What percentage will go to the US?**

Corridor is in the very early stages of investigating the concept of underground salt storage, and at this time we do not have any customers.

**What is the carbon footprint of this project?**

Corridor is only conducting preliminary investigations to determine the potential to develop underground salt storage caverns and has not identified the key project components. As a result, a determination of the carbon footprint is not possible at this time. During detailed design of its facilities, Corridor looks for ways to reduce all potential emissions, including carbon, and incorporates these considerations into the final design. Nevertheless, natural gas is a much cleaner burning fuel than either oil or coal. The storage project under consideration by Corridor may increase the use of natural gas in New Brunswick by providing a more reliable supply of gas and a more stable price environment. For example, natural gas from the McCully Field is now the main energy source for the nearby potash processing plant, displacing oil. This has likely resulted in a net reduction in the CO<sub>2</sub> emissions of the area.

**Is there a "life span" for a salt cavern storage facility?**

The determination of the life span of salt caverns is part of our preliminary investigation stage and the research we are undertaking. Information will be updated as it becomes available.



**How does one remediate an out-of-date salt cavern and what budgetary provisions does a company have to put in place to do so to ensure the safe evacuation of all gas and prevention of sinkhole collapse in the future? Is Corridor willing to invest in perpetuity bonds much like they are required to do in the uranium/nuclear and mining industries?**

We are still looking into this aspect, but what we do know is that Chapter 13 of the CSA standard Z341.2-06 describes the abandonment, plugging and restoration of underground salt storage caverns. Corridor would follow all requirements pertaining to this standard.

**Additional scientific and environmental study, along with ongoing data from existing sites, sometimes suggests modifications to the best-practice construction of a salt cavern storage facility both above and below ground. If Corridor's salt cavern project goes ahead, how will the company ensure the facility and caverns are kept up-to-date in terms of safety?**

As with any technology or industry, the body of knowledge grows over time, as do the "best practices." Our research to date indicates that this is true of underground storage as well. If we were to proceed, we would anticipate following best practices and adjusting as we learn over time.

**If Corridor proceeds with a salt cavern plan, what will they do to ensure that all best-practice guidelines are met on a continuing basis with no access to "grandfathering" of existing parts of the facility?**

There is still more research to be done on this aspect and plans would have to be developed addressing use and remediation of storage caverns. This information will become available as we move forward with our investigation of the concept.

**Is Corridor willing to fund independent research conducted by experts chosen by the public?**

Corridor is responsible for bearing the cost of the initial and ongoing research to determine the viability of the project. This research will be done by highly reputable, independent experts. If we were to proceed to the Environmental Assessment application stage, the research would be included in the application. This information will be available to the public for review. Funding of experts selected by the public to research or review regulatory applications is traditionally provided by government agencies for certain types of projects.

**At the meeting you stated you have to ask permission from the home owner to do seismic testing on their property. What if every home owner said "no", what would be your next step?**

There are several options available to Corridor if there is a concerted effort by local residents to obstruct the evaluation of mineral resources belonging to the people of New Brunswick. As you may be aware, landowners hold the surface rights to their land. However, the underlying mineral resources are owned by the people of New Brunswick. In the event that many landowners say "no" in a given area, Corridor can elect to conduct its seismic along public roads or crown reserve roads. However, New Brunswick legislation does have a mechanism called "Right of Entry" to allow for access to private land to conduct seismic. Corridor has never used this mechanism and is proud of its record of obtaining consent from landowners prior to conducting any exploration activities.

We are committed to building lasting relationships with the residents of the communities where we do business and operate. Corridor has been a member of the community for more than 7 years and we hope to be a member for many more to come. We have successful natural gas drilling and production operations in the McCully area in Penobscus and plan to stay and work in the area. New Brunswick is still the focus area for our business and operations. We hope to build an understanding of the underground storage concept and put people's concerns to rest.



**There was a report on the radio of a water spill that occurred at the McCully Field, operated by Corridor Resources. I was informed at the February 25<sup>th</sup> meeting that there was no way possible that any foreign substance could enter a well causing a spill, or air getting into the mines (caverns) that could cause an explosion. What caused the spill and how can you guarantee that it will not occur again? Do you still stand behind the position that you stated at the meeting that a spill could never occur?**

The water referred to in the news report is what is normally called "formation water". It is similar to groundwater in the sense that it is water held in the rock formation, but formation water is located at a great depth (e.g., 2.5 km) and in association with natural gas. The formation water is not a foreign substance. It is 100% naturally occurring. However, formation water does not occur in salt. Formation water is found in sandstone and conglomerate, mainly.

The formation water is not a risk to anyone or anything, and it is not a spill. The water is an issue for Corridor because it blocks the flow of natural gas from the well. A small amount of water collects at the bottom of the well, and the water blocks the gas from flowing up the well bore. As a result, the gas production in that well stops.

Corridor does indeed stand by its statement that no foreign substances or air can get into a cavern to cause an explosion.