



## Alton Construction Update at River and Cavern Sites

October 21, 2016

Construction progressed at the Alton Natural Gas Storage Project near Stewiacke, NS over the summer months and into the Fall of 2016.

The construction activity focused on two locations, the Project's river site adjacent to the Shubenacadie River and the cavern site about 12 kilometres away.

On a daily basis, the number of workers at Alton ranged from an average of 25 to as many as 40. More than 100 safety orientations were conducted for staff and contractors.

Work continues within marked and/or fenced areas at the two locations. These areas remain active construction sites where entry continues to be restricted.

### River Site Update

At the river site, modifications were made to the channel and dike.

#### The Channel

The channel was connected to the Shubenacadie River in August. Leading up to this important step, armour stone was used to line the channel one metre thick on the sides and bottom up to a height of six metres to help reduce erosion. The armour rock extends above the highest tide height.

The channel is bowl-shaped and is where tidal water will be drawn from the river for brining. In the channel, a gabion wall which is an engineered rock wall with very small openings, screens the water from the river so that fish and other organisms are not drawn in.

Brining creates the natural gas storage caverns by using the water to slowly dissolve a salt deposit about one kilometre underground. The mixture of water and dissolved salt, called brine, is gradually released back to the river via the channel in a controlled process through perforated pipes buried under a metre of armour stone.

#### Controlling Salinity

The Shubenacadie River has a wide range of natural salinity. During the dry weather conditions in Nova Scotia in the summer of 2016, salinity levels in the river naturally exceeded 28 parts per thousand (ppt). When natural river salinity is greater than 28 ppt, brining operations at Alton are automatically stopped to protect the river. At this time, water will continue to be circulated in the cavern and brining activity will be temporarily suspended.

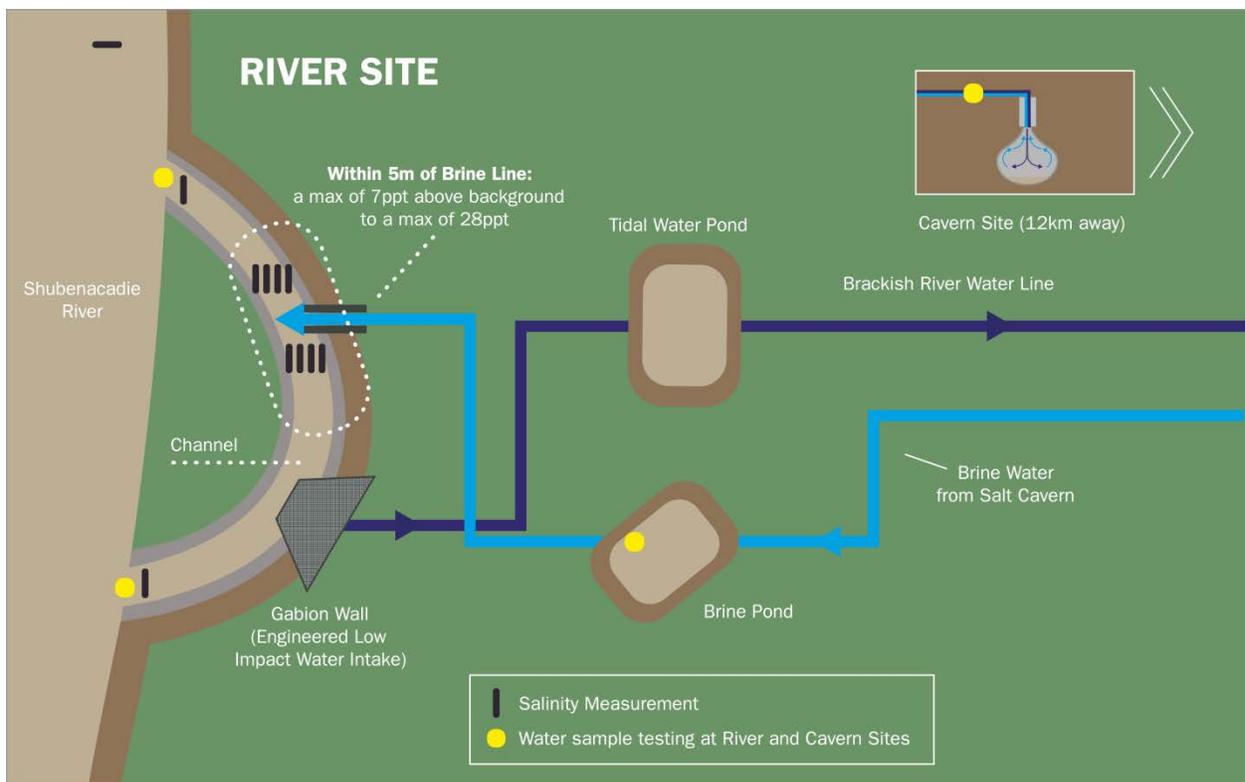
To check salinity levels in the river, there are salinity monitors upstream and downstream of the brine release point to constantly measure the river in real time. The monitors also control the brine release rates.

Here's how the process works. The control system takes readings from the salinity monitors upstream of the brine release point. The system compares these readings to readings from salinity monitors downstream of the release point. Based on this comparison, the control system sends a signal to the valve controlling brine release. If salinity starts to increase downstream, the valve reduces the brine release to ensure that the readings at the downstream monitors do not exceed a permitted level of 7 ppt above the river's salinity level. If the readings are ever greater than the maximum permitted level of 28 ppt, a shut down valve automatically closes and stops any further brine release from the pipe.

In the current schedule, it is expected that brining operations will now begin in 2017 to allow for completion of work and final checks at the river site.

## Modifications to the Dike

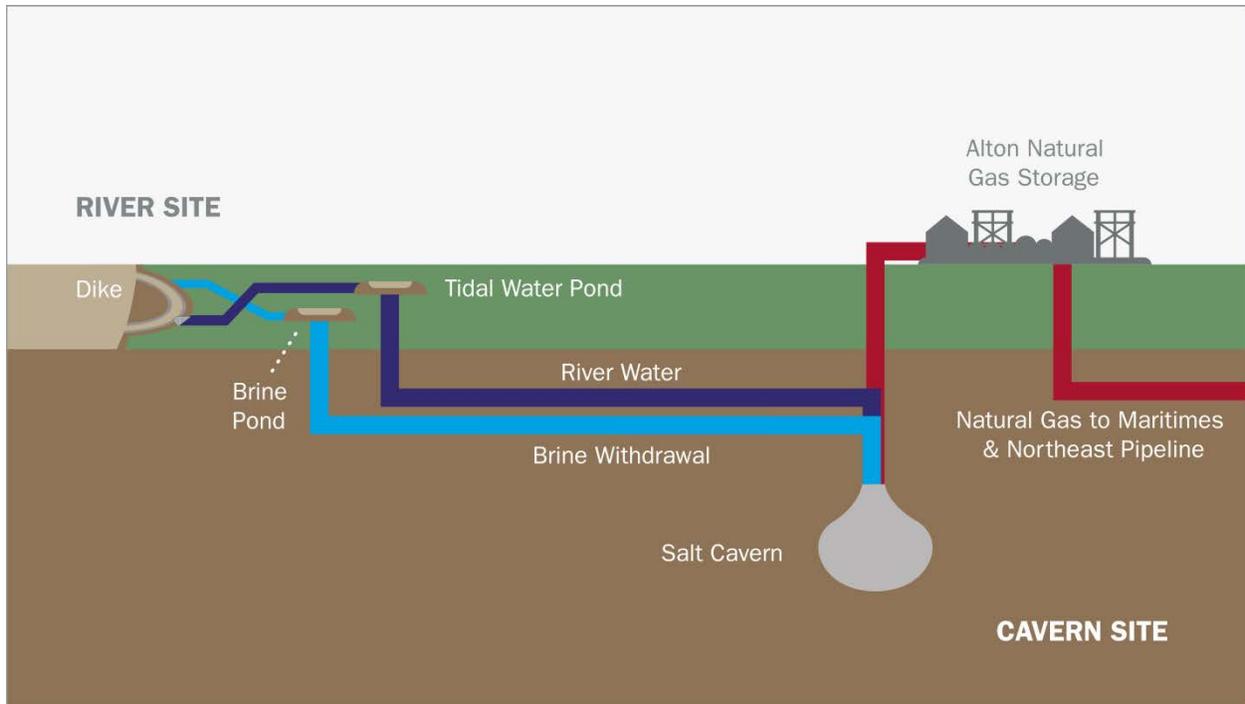
In addition to modifying the dike to connect the channel and Shubenacadie River, the Nova Scotia Department of Agriculture required Alton to raise the height of all existing dike on the Alton site by about half a metre to provide enhanced flood protection. The work to raise the dike was completed in early September.



## Cavern Site Update

Starting this summer through early fall, additional piping was installed to make final connections from the first cavern well to the brining system. Additional checks and maintenance were also performed to ensure equipment is operating properly for brining operations to begin.

Later this fall, we expect the drilling rig stored at the cavern site to be removed by the owner. The Alton Project used the rig to drill three wells for potential cavern development during the 2014-2015 drilling program, and will not be using this rig again. Any future drilling would require mobilization of another rig.



[Visit our new Alton YouTube channel](#) to watch an eight-minute educational video on science research on the Shubenacadie.

## About Alton

To help meet the increasing demand for affordable natural gas year-round in Nova Scotia and to support the demand for clean, reliable energy, Alton Natural Gas Storage L.P. is developing an underground natural gas storage facility and associated pipelines in the Stewiacke Salt Formation. Natural gas and natural gas storage have an important role to play in Nova Scotia's energy future. The new gas storage facility will help stabilize Nova Scotia's natural gas security of supply. Storage of natural gas will allow consumers to use natural gas bought during times of lower pricing. Salt caverns for natural gas storage are a proven and safe system for storing natural gas.

