

## Injectivity Testing to Happen at Mallula Well in Van Etten

by Sue Smith-Heavenrich

*Broader View Weekly*, November 7, 2008

Sometime before the end of this year, Fortuna Energy hopes to complete a series of “injectivity” tests at the Mallula Well in Van Etten. The tests will help engineers at Fortuna determine whether the depleted gas well can function as a disposal well for Marcellus and Trenton Black River wastewater.

Drilling in the Mallula well, off Rumsey Hill Road, began in late May 2005 and was completed in October that year. The well was drilled to a depth of around 9560 in order to extract natural gas from the Trento Black River formation. According to Mike Brown, an operations engineer at Fortuna, the company is now looking at the Mallula well as a potential repository for brine water produced by other wells.

Before the well can be used as a disposal site Fortuna engineers need to test how much water the well can accept, and at what pressure. This means placing some equipment down the borehole to measure and record information including the temperature and pressure of the water they pump into the well.

“During testing we’ll pump in up to 2,000 barrels of water,” Brown explained. The water they’ll be injecting is brine wastewater produced from other Trenton Black River wells in the surrounding area. “This is produced water from the formation as well as condensate produced from the gas,” Brown added.

The wastewater, called “brine” by Fortuna, contains a number of salts in a highly saturated solution, mostly sodium chloride and calcium chloride. At 42 gallons/barrel that adds up to 84,000 gallons of wastewater that will potentially be pumped into the Mallula Well.

Brown explained that engineers will start with a low rate of injection, about 400 barrels/day, and work up to see what rate the well can take. In addition to their calculations, the engineers will monitor the pressure in the well to assure that it never reaches “fracking pressure” – the pressure that would fracture the formation.

Once the wastewater has been pumped in, the engineers will shut in the well. The gauges and recording devices are left inside the well, and will continue to record information for what Brown called a “fall-off” test. From watching how the pressure decreases the engineers can determine the permeability of the well.

Gas in the Trenton Black River formation was found in small pockets, and the engineers at Fortuna want to see if they can fill those empty pockets with wastewater. Brown compares the formation to a sponge, with fissures and holes, and noted that it might have up to 2 percent porosity. That may not sound like much, but apparently it’s an attractive

number to engineers like Brown. The information they get from the test will let them know how much water the dolomite nearly 9600 feet below the earth's surface will hold.

Because the well is so deep, thousands of feet below the aquifers used for drinking water, and because the formations above seem impervious, old deep wells provide an attractive option for disposal of wastewater for drilling companies – assuming they don't fracture or leak.

Though they do not do on-site inspections during the testing process, the New York Department of Environmental Conservation (DEC) provides oversight on the testing process. Before the testing could begin Fortuna had to apply for, and receive, a State Pollutant Discharge Elimination System (SPDES) permit. They received a permit to allow the injection testing in Mallula Well for six months, October 1 – April 30.

“Fortuna then submits the test data to DEC,” said Nancy Rice, from the DEC Division of Water. If the data indicate that the well would serve as a disposal well, then Fortuna will have to make an additional application for another SPDES permit. Notice of these applications must be published in the weekly “Environmental Notice Bulletin” published on the DEC website as well as a local newspaper.

“In addition to the SPDES permit, they must also apply for a UIC [underground injection control] permit through the EPA,” Rice explained. The EPA permit falls under the Safe Drinking Water Act while NY DEC permits (SPDES) fall under Clean Water Act.

## **Sidebar** 180 words

### **What's required for a SPDES Permit?**

By Sue Smith-Heavenrich

Filling out an SPDES permit, referred to as a “speedies” permit, is anything but speedy. A complete application may include, in addition to the DEC application form:

- A map showing the precise location of the project
  
- A general site plan that shows the property to be affected by the project, and the location of the wastewater treatment facilities to be built in relation to natural landforms (hills, creeks, wetlands, etc.) Some items that should be shown on the site plan include: location of buildings; water wells on the property or adjacent properties; topography of the area at a contour interval prescribed by the region; and property lines.
  
- Information necessary for the requirements of the State Environmental Quality Review Act (SEQR) and the State Historic Preservation Act (SHPA). Among other things, this will include an Environmental Assessment Form and, in certain cases, a Draft Environmental Impact Statement.

- Other relevant information which DEC staff may determine is necessary to adequately review and evaluate the application, such as an engineers report or letter from the county health department.