

## SIDEBAR:

### What's in the Wastewater?

The wastewater that will be used in the Mallula well injectivity tests comes from the Konstantinides well in Van Etten. There are different kinds of wastewater that come from a gas drilling operation: water used in drilling that is returned to the surface (flowback) and water that is produced by the well during production (brine). Brine contains a lot of salts, including high levels of sodium and chloride.

Jeff Soule, chief operator for the Ithaca Area Wastewater Treatment Plant recently told *Broader View Weekly* that the levels of dissolved solids and salts present in gas well wastewater would overwhelm the treatment facility. Water tests from the Konstantinides Well in Chemung County, NY and a well in Indiana County, PA show chloride levels of 397,000 ppm (parts per million) and 138,030 ppm respectively. This level of salts would inhibit or kill the bacteria essential to the treatment process, Soule explained.

Another concern is the presence of heavy metals such as lead and arsenic. The level of barium found in the Indiana County well brine (1170 ppm) is too high for the Ithaca treatment plant. "We would ask the companies to run a TCLP test for hazardous waste," Soule said. TCLP, short for the Toxicity Characteristic Leaching Procedure, tests for 40 contaminants and can cost as much as \$3,000.

That is just the brine. Once the Marcellus drilling begins, the wastewater will include fracking chemicals and, possibly, radioactive materials.

A comparison of well brines from two wells.

	Indiana County, PA	Konstantinides, Chemung Co, NY
ph	5.51	5.39
Total Dissolved solids mg/l	229,526	270,000
arsenic mg/l	2.1	
barium mg/l	1170	
calcium mg/l		26,500
chloride mg/l	138,030	397,000
iron mg/l	130	111
lead mg/l	4.77	
magnesium mg/l		2760
manganese mg/l	19.2	18.4
potassium mg/l		5050
sodium mg/l	64,500	72,100

Data for the Indiana County, PA well is from "Gas Well Drilling and Your Private Water Supply" (water facts #28) published by Penn State. Data for the Konstantinides well is from tests conducted by Benchmarks Analytics Inc. for Fortuna Energy, April 2008.

There are no results from Benchmark Analytics indicating that they tested for heavy metals in the Konstantinides well. Milligrams per liter (mg/l) is the equivalent of parts per million (ppm).