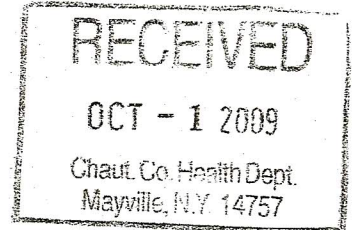




Department of Geosciences

September 30, 2009

Mr. David Wilson
Chairman, Water Quality Task Force
c/o
Soil and Water Conservation District
Chautauqua County
Bratt Ag. Center
3542 Turner Road
Jamestown, NY 14701



Mr. William Boria
Water Resources Specialist
Chautauqua County Department of Health
Clothier Building, 4th Floor
7 North Erie St.
Mayville, NY 14757

Mr. Jack Dahl
Director
Bureau of Oil and Gas Regulation
NYS Dept. of Environ. Conservation
625 Broadway
Albany, NY 12233

Regarding: Water well contamination, 2641 Donelson Rd., Jamestown, NY 14701

Dear Mr. Wilson, Mr. Boria, and Mr. Dahl:

Conclusory Statement

After reviewing letter reports by Mr. William Boria (6-1-09) and Mr. Jack Dahl (7-6-09), and inspecting land conditions in the Donelson Road region with reference to air photos, topographic and soil maps, I concluded that the Boria and Dahl reports make a powerful case that a thorough site investigation be conducted of the causation(s) of contamination of the Ferrugia home water well at 2641 Donelson Road, Jamestown, NY. Such investigation must include data from test borings, monitoring wells, and soil and water samples that result in analyses of aquifer geometry, hydraulic connection, and chemical or other finger-printing.

Reason for this Report

While attending the Chautauqua County Water Quality Task Force (WQTF) meeting of 8-17-09, attendees discussed the Ferrugia drinking water supply degradation. We decided that one or more of us should review the case, volunteers were requested, and I agreed to review the case and write comments.

The purpose of the WQTF is to track water resources issues in the county and provide a forum for interagency and public communication and education about water issues. The goals are for more effective agency decisions and functions and a better public water supply. WQTF is similar to other county water quality coordinating committees created across New York State by actions of the New York State Department of Environmental Conservation (NYS-DEC) and the United States Environmental Protection Agency (US-EPA), beginning about 1989.

Review of Letter Reports on Ferrugia Well

In a letter of 6-1-09 Mr. William Boria of the Chautauqua County Department of Health (CCDOH) described his investigation of possible contamination of the Ferrugia water well near Jamestown, NY. Mr. Boria had sufficient information to describe and analyze the three basic components of a ground water contamination investigation: aquifer geometry, hydraulic connection and fingerprinting (chemical, in this case). Aquifer geometry for the site consists of glacial till over highly fractured shale over shale bedrock. The soil and fractured rock aquifer dip from a petroleum well toward a water well and then toward septic-system treatment components. The hydraulic connection information consists of topographic slope as control of hydraulic flow and pressure; the resulting flow direction is from the gas well to the water well. Chemical fingerprinting consists of chemical analyses viewed as Piper diagrams; these diagrams indicate a change in water quality from regional background chemistry to brine impacted. Mr. Boria concluded that the available information was evidence for gas well brine contamination of the home water well. Then, in his letter, Mr. Boria requested that the NYS-DEC Division of Mineral Resources, "...thoroughly investigate to identify the cause of contamination and assist the Ferrugias in correcting their water quality problems."

Mr. Jack Dahl, Director of NYS-DEC Bureau of Oil and Gas Regulations, responded to Mr. Boria in a letter of 7-6-09. Mr. Dahl added information and insight to the case history. Relative to aquifer geometry, Mr. Dahl drew attention to the southerly dip of bedrock bedding planes and the potential influence of artificial hydraulic fracturing on aquifer geometry (fracturing that was used to stimulate the home water well). Next, owing to the artificial hydraulic fracturing around the home water well, a hydraulic flow direction to that well in opposition to topographic-controlled flow was postulated. Lastly, chemical-fingerprints were described as resulting from near-surface shale-bedrock sources (non-brine). Mr. Dahl ended his letter by saying that unless new evidence emerged, "...I conclude that the water quality impacts to Ferrugia's water well are unrelated to gas well drilling or development and that consequently the Division will take no further action."

