



Loudoun Water Statement on Results of Raspberry Falls Well F Turbidity Investigation

Loudoun Water has completed its investigation into an event on August 9, 2011 when elevated turbidity was experienced in a portion of the system, resulting in a shutdown of Well F, a water well serving Raspberry Falls.

Loudoun Water enlisted Emery & Garrett Groundwater, Inc., a company with a significant, positive track record of work in Loudoun County, to conduct an investigation into the incident. Emery & Garrett and Loudoun Water then conducted a series of pumping tests and water quality tests to further assess turbidity and bacteria to determine the cause of the elevated turbidity.

The investigation revealed that the event was caused by unforeseen hydraulic transients in the raw water main. These transients – which, in this case, were rapid fluctuations in flow and pressure – allowed the well pump to operate at higher discharge rates than it was designed to maintain. Well F was found to have been intermittently pumped at a rate higher than the recommended rate of 100 gallons per minute during the period between July 7 and August 9, 2011, which ultimately resulted in the elevated turbidity.

The investigation also found that when Well F began pumping, it was immediately, but briefly, sent into an over-pumping state due to low backpressure in the pipeline. This is referred to by Emery & Garrett as a “hard start”.

Water levels in Well F were also observed to rapidly fluctuate by one foot or more during some pumping intervals. These fluctuations confirmed that unstable (and variable) pumping rates were occurring and causing the water level to essentially surge and be agitated, increasing the turbidity in the well.

Emery & Garrett determined that Well F and the local bedrock aquifer were not permanently damaged as a result of the intermittent over-pumping and “hard starts” that caused the elevated turbidity. Finally, the investigation was ongoing when our area experienced a rare 5.8 earthquake on August 23, 2011. Turbidity monitoring recorded the expected spike caused by the quake followed by a return to normal, acceptable levels. Emery & Garrett did not find any evidence that the bedrock aquifer or Well F was damaged by the quake.

Given the results of the investigation, Emery & Garrett made short-term and long-term recommendations to address the elevated turbidity. As a result of their recommendations, Loudoun Water submitted a response plan to the Virginia Department of Health. If the plan that was submitted is approved by VDH, Loudoun Water will do the following: 1) Install, in consultation with the Virginia Department of Health, an automatic flow control valve on the raw water main at the water treatment plant – this will eliminate the “hard start” conditions and allow us to prevent over-pumping; 2) bring Well F back online at a production rate of 75 gallons per minute (gpm) for a minimum of three months. After that period of time, the pumping rate may be increased to 100 gpm to meet demands; and 3) monitor water levels, flow rates and turbidity continuously for the next 12 months.

The results of the investigation confirm that Well F is an acceptable water source and should not experience high turbidity if the pumping is controlled. Following the implementation of the response plan and approval of the work by VDH, Well F will again be used to supply water to Raspberry Falls.

For more information about the Well F investigation, please visit our website at www.loudounwater.org. Click on Community Systems on the homepage then Raspberry Falls.