

ABSTRACT

In December 2000, fugitive natural gas liquids (NGLs) were encountered while activating a recently drilled cathodic protection well at the Williams Midstream Natural Gas Liquids' (Williams) Conway Underground East (CUE) Storage Facility in Conway, Kansas (approximately 8 miles west of McPherson, Kansas). The cathodic protection wellhead was recompleted to allow for NGL recovery. A relief well was also installed near the cathodic protection well for additional NGL recovery.

Nearly 300 active and plugged and abandoned underground solution-mined storage caverns exist in the Conway area for storing NGLs and refined liquid products. Significant challenges exist for (1) evaluating active storage wells and caverns as potential sources for fugitive NGLs, (2) characterizing the geologic and hydrologic components of the potential NGL pathways, and (3) developing an investigative program for characterizing the extent of the fugitive NGLs as well as an appropriate NGL recovery program.

An expedient prioritized well testing program was developed that included wellhead pressure monitoring of shut-in wells and temperature monitoring of wells containing high vapor pressure products. An understanding of the geologic and hydrologic systems in the area was developed through examination of more than 200 open-hole well logs and data collection from new exploratory/test well drilling. A hydrologic testing program was developed and implemented for determining if there is interconnection between the brine aquifer on the dissolution boundary of the Hutchinson Salt Member that appears to be hosting the fugitive NGLs and the shallow freshwater aquifer.