COGCC PRELIMINARY RESPONSE TO DEBEQUE WATER FLOW

Complaint No. 200382895
Well API No. 05-077-10211

DeBeque, Mesa County, NENE Sec 28, T8S, R97W, 6th P.M.

approximately 100 feet east of Glenwood Avenue and 900 feet north of 6th Street

September 4, 2013

Kenneth Bohl contacted Kevin King (COGCC engineering) on July 9, 2013. Mr. Bohl informed Mr. King that he observed water flowing from the ground during the evening of July 7, 2013 near the northwest corner of a pasture on a parcel owned by Jim and Judy Lake. Mr. Bohl is the Lake's neighbor and the local irrigation ditch manager. The Lakes were out of town when Mr. Bohl contacted them on July 7, 2013. The Lakes purchased the parcel in 1971, and during subsequent inquiries by COGCC staff, the Lakes indicated that this was the first time they observed a water flow at that location. Initially, Mr. Bohl suspected that the water flow originated from a municipal water supply pipeline, and therefore, he contacted the Town of DeBeque to investigate the suspected pipeline leak. A representative of the Town of DeBeque tested the water flow for chlorine and determined that the flow was not likely associated with their municipal water supply because chloride levels in the flow were inconsistent with levels they would expect for treated potable water. Mr. Bohl suspected the water flow may have been associated with historic oil and gas operations in the area and called Mr. King. However, Mr. Bohl was still uncertain, because he informed Mr. King that he was aware of an historic cistern in the area that may have been fed by a natural spring. Mr. Bohl informed Mr. King that the water flow was directed toward an adjacent irrigation ditch.

COGCC engineering staff conferred with COGCC environmental staff after receiving the call from Mr. Bohl on July 9, 2013 and concluded environmental staff should assess the situation and collect water samples for laboratory analysis.

COGCC Environmental staff contacted Mr. Bohl on July 9, 2013. Mr. Bohl estimated the flow to be approximately 20 gallons per minute. The water was flowing to an irrigation ditch, which normally flows into Roan Creek. However, Mr. Bohl indicated that he diverted the water flow to a pasture above the creek to prevent discharge into Roan Creek. Mr. Bohl also stated that the water was clear and the flow had not increased much since July 7, 2013. COGCC retained The Walter Group to collect water samples on July 10, 2013. The Walter Group obtained one

water sample from the "spring" itself and one sample downstream in the irrigation ditch. The Walter Group reported the following, based on water sample analytical results:

- Water from the "spring" is a sodium chloride type.
- Benzene and xylenes were detected at concentrations below Table 910-1 in the water flowing from the "spring". DRO and ORO were detected (1.2 mg/l and 0.15 mg/l, respectively) in the water flowing from the "spring".
- Petroleum constituents were below the minimum laboratory method detection limit in the water collected from the irrigation ditch (located downstream).
- Sodium, chloride, TDS, and barium concentrations were higher in the water flowing from the "spring" than from the irrigation ditch (located downstream).

The Walter Group collected water samples from the same two locations on July 22, 2013, and The Walter Group reported the following:

- The sample results were similar to the first round of sampling on July 10, 2013. The most notable difference was that the sample collected from the irrigation ditch was higher in TDS, Chloride, and sodium during the second round.

COGCC attributed elevated TDS, chloride and sodium to less dilution resulting from a lower flow rate in the irrigation ditch water during the second sampling event.

On July 18, 2013, COGCC environmental staff met with Mr. Bohl and Mr. Guy Patterson (Administrator for the Town of DeBeque) to witness and assess field conditions. A metal detector was used to locate metal beneath the ground surface in the vicinity of the source (a possible pipeline or well).

On July 19, 2013, Alex Fischer (COGCC environmental) contacted Judy Lake and Richard Bumgardner (surface owner where water flow was being diverted) and discussed the July 10, 2013, sample results in addition to the COGCC's path forward in identifying the water source.

Historical Review: During the environmental assessment, COGCC engineering staff reviewed available historical information (U.S. Congressional Series Set, U.S.G.S. Bulletin 531, Contributions to Economic Geology, 1911). The water flow location is labeled as the "Blair Well" on a 1911 DeBeque oilfield map. Two references to "Blair" were available in the associated narrative, "The Blair-McMullen No. 1 well was drilled in 1902 and is reported to be between 300 and 400 feet deep. No trace of the well now remains and no further information concerning it was obtainable" and "At the Blair-McMullen No. 2 well very few data were obtainable. It is reported that a rig was put up, but no information could be obtained concerning the amount of drilling done."

Based on COGCC's environmental assessment and the historical review indicating that the water flow was possibly related to historic oil and gas operations, the project was re-assigned to COGCC engineering staff on July 19, 2013 to conduct temporary mitigation. COGCC retained Magna Energy Services (Magna) to excavate around the source of the water flow, determine if the flow was associated with a leaking oil & gas well, and cap the well. A Purchase Order was approved on July 24, 2013 in the amount of $12,560, and Jay Krabacher (COGCC engineering) was assigned as the Project Manager.

COGCC and Magna performed a pre-construction meeting to check access, and Magna completed a "One Call" utility locate on July 26, 2013. After utilities were cleared, a backhoe was used to excavate around the source of the water flow. A one-inch metal pipeline was encountered approximately 18 inches below ground level. A slight flow of water was observed in the pipeline, which could be stopped by manually holding the pipe. Further excavation on July 27, 2013 revealed a length-wise pipeline split. A metal-detector was used to delineate the pipeline location. As excavation continued, the pipeline was found to be connected to a wellhead. The wellhead was approximately 3 feet to 4 feet east of the original water flow. The pipeline was disconnected from the wellhead, and the wellhead was sealed to stop the water flow. The excavation was backfilled on July 28, 2013 using the excavated material. Mr. Lake installed a fence around the wellhead.

Mr. Krabacher inspected the location on July 29 and July 30, 2013 and observed a slight flow of gas at the wellhead seal but no water flow. COGCC has informed the Lakes that the seal on the well is a temporary solution to stop the water flow, but COGCC intends to move back onto the location with a rig during fall 2013 to permanently plug and abandon the well.

On August 6, 2013, Carlos Lujan (COGCC environmental) contacted the Lakes to follow-up on activities performed by COGCC staff and contractors. They expressed their satisfaction with the work and COGCC's expediency in handling the situation. The Lakes are aware that the work done to stop the water flow was a temporary solution, and that COGCC would return to complete plugging and abandonment of the well.