

State A-B Sampling Results

Recent soil sampling at the State of Colorado A-B facility found elevated hydrocarbon levels at two locations: SB 04 and SB 08. A review of aerial photographs for the period from 1972 through 2015 indicates that these sampling locations correspond to an approximate 55 by 55 foot historic pit that closed sometime between September 1992 and June 1993, some 20 years before Carrizo acquired the facility. They do not correspond to the much smaller 10 by 10 foot pit that Carrizo closed during late 2014, which was the subject of Carrizo's Form 27, Site Investigation and Remediation Workplan dated June 17, 2016. Because any release from the historic pit predated Carrizo's involvement with the facility Carrizo is not responsible for the conditions in question and should not be required to further delineate or mitigate them.

Facility Operators

Records available on the COGCC website do not indicate when the facility began operating. Amoco Production Company spud the State of Colorado AB well in February 1972 and began producing it in February 1973. Change of operator forms indicate that the well operator later changed as follows:

- Quinoco Petroleum, Inc. assumed operations in July 1983;
- Roemer Oil Company assumed operations in July 1990;
- Whiting Petroleum Corp. assumed operations in April 1991;
- Thorofare Resources, Inc. assumed operations in July 1993;
- McCartney Engineering, LLC assumed operations in June 2001;
- Hillcorp Energy Co. assumed operations in August 2011; and
- Carrizo assumed operations in January 2013.

Carrizo is just one of eight companies that operated the facility over the past 43 years, and Carrizo's operations cover only the three most recent years of the facility's history.

Pits

Aerial photographs indicate that two pits were constructed and operated at the facility at different times and in different locations. First, a larger pit was constructed in the northwest corner of the facility on or about 1972 and was later closed in 1992 or 1993. Its exterior dimensions were approximately 55 by 55 feet, and its interior dimensions were approximately 33 by 37 feet. Second, a smaller 10 by 10 foot pit was constructed about 60 feet east of the prior pit. This smaller pit existed as of 1998 and may date back to 1989. It was used intermittently through 2009, and Carrizo closed it in late 2014. When Carrizo acquired the facility in 2013, the fencing included the smaller pit but excluded almost all of the larger pit site. The following is a brief chronology of the pits based primarily upon the aerial photographs:

May 1972: An aerial photograph indicates that a large pit exists in the northwest corner of the facility. It is not clear whether the pit contains water, and excavation of the pit may still be underway. There is no sign of a smaller pit to the east.

May 1973: Amoco submits an application for a 40 by 55 foot earthen pit, which is approved by the COGCC in July 1973. An accompanying hand-drawn diagram indicates that the pit is to be constructed 99

feet west of the treater and 102 feet north of the tank battery, which would place it in the general location of the 1972 pit. But the application is for a new pit and not an existing pit, which suggests that it does not refer to the 1972 pit. What appears to be an internal COGCC memorandum recommends “a small covered skim pit, and that the retaining pits be kept free of oil,” but no conditions are imposed on the authorization. It is unclear what this application refers to and whether the authorized pit was constructed.

October 1977, May 1980, and October 1983: Additional aerial photographs indicate the large pit in the northwest corner of the facility is full of water. There is no sign of a smaller pit to the east.

March 1985: The COGCC conducts a lease inspection, which refers to a pit, which is unlined, covered, and approximately 20 by 20 feet in size. The facility also contains two 300 barrel steel tanks.

October 1988: An aerial photograph indicates that the large pit in the northwest corner of the facility remains in existence and the pit appears to contain at least some water. The pit appears to be much larger than that described in the 1985 inspection report, and it seems unlikely that a pit of this size would be covered. There is still no sign of a smaller pit to the east.

November 1989: Another aerial photograph indicates that the large pit in the northwest corner of the facility is full of water. There may also be small pit to the east which contains water.

October 1991: Another aerial photograph indicates that the large pit in the northwest corner of the facility is full of water. It is unclear whether there is a small pit to the east.

April and September 1992: More aerial photographs indicate the large pit in the northwest corner of the facility is full of water. There is no sign of a small pit to the east.

June 1993: An aerial photograph indicates that the large pit in the northwest corner of the facility no longer exists. There is no sign of a small pit to the east.

September 1998: Another aerial photograph indicates that the large pit no longer exists. To the east of it, there is a small pit that is full of water.

May 2000: Another aerial photograph indicates that the large pit no longer exists. The small pit is visible but appears empty.

March 2006: An aerial photograph indicates a faint outline where the large pit formerly existed in the northwest corner of the facility. The small pit is visible but appears empty.

June 2009: Another aerial photograph indicates that the large pit no longer exists. The small pit is visible and appears to contain water.

June 2010: Another aerial photograph indicates a change in vegetative cover where the large pit formerly existed. The small pit is visible but appears empty.

October 2015: Another aerial photograph indicates a change in cover where the large pit formerly existed. The small pit is now closed. The photograph also indicates the fence line as it existed when

Carrizo acquired the facility in 2013. The site of the small pit is within the facility fence, but the site of the large pit is almost entirely outside it.

Sampling Results

Soil samples recently collected in connection with the Form 27 found reportable levels of hydrocarbons at locations SB 04 and SB 08. The aerial photographs indicate that location SB 08 is on or immediately adjacent to the exterior boundary of the southeastern corner of the larger pit, while location SB 04 is about 20 feet further east and roughly equidistant between the larger pit and the smaller pit. All of the hydrocarbon levels are much higher at location SB 08 than at location SB 04. For example, the benzene level is .332 milligrams per kilogram (mg/kg) at location SB 08, while it is below the .050 mg/kg detection level at location SB 04. Similarly, the xylene level is 24.7 mg/kg at location SB 08, but only 1.42 mg/kg at location SB 04. In other words, the hydrocarbon levels increase significantly with proximity to the larger pit and distance from the smaller pit and they decrease significantly with proximity to the smaller pit and distance from the larger pit. This indicates that the hydrocarbon source is the larger pit and not the smaller pit.

Legal Requirements

The Oil and Gas Conservation Act authorizes the COGCC to require “the responsible party” to perform mitigation if the COGCC “determines that mitigation of a significant adverse environmental impact on any air, water, soil, or biological resource is necessary as a result of the conduct of oil and gas operations.” C.R.S. § 34-60-124(7). For this purpose, a “responsible party” means “any person who conducts an oil and gas operation in a manner which is in contravention of any then-applicable provision” of the Act, the regulations, or an order or permit “that threatens to cause, or actually causes, a significant adverse environmental impact.” *Id.* at § 34-60-124(8)(a). COGCC Rule 524.g restates this limitation on mitigation liability and this definition of responsible party.

Pursuant to these statutory and regulatory provisions, Carrizo is not legally responsible for hydrocarbon contamination associated with the operation and closure of the larger pit. Because such contamination predated Carrizo’s operation of the facility by more than two decades it could not have been caused by Carrizo and Carrizo cannot be characterized as a responsible party. Said differently, Carrizo did not cause the contamination in question and therefore Carrizo is not legally responsible for it. The site of the larger pit was also outside the fence when Carrizo acquired the facility, so it was not even part of the facility that Carrizo obtained and operated.

Nor does it appear that any of Carrizo’s predecessors is a responsible party for the contamination in question. The responsible party definition requires that the impact in question be caused by conduct that contravened “any then-applicable” statutory, regulatory, adjudicative, or permit requirement. When the larger pit was closed in 1992 or 1993, the pit closure standards required only backfilling and debris removal. Notice to the COGCC was not required until 1995, and soil and groundwater standards did not apply to pit closures until 1998. Under current Rule 911.f(4), the closure of pits prior to December 30, 1997, like the larger pit here, is not subject to Rules 905, 906, 907, 909, or 910.