

Executive Summary - 90-Day Confirmed Release Report

Circle K Store #2705326

1910 N. State Route 89

Chino Valley, AZ 86323

ADEQ LUST 5953.01 / Facility ID 0-009194

5/17/2024

This Executive Summary includes a discussion of the 90-Day Confirmed Release Report (90-Day Report) for the above-referenced Circle K store, submitted to the Arizona Department of Environmental Quality (ADEQ) on May 20, 2024. The 90-Day Report includes detailed information regarding subsurface site investigation activities conducted between February 16 and May 15, 2024, following the discovery of a gasoline leak to the subsurface. The report also includes an ADEQ Leaking Underground Storage Tank LUST Site Classification Form, as well as other relevant attachments such as, a tabulated summary of soil, vapor and groundwater analytical data, a site plan, and various graphs. Information included in the 90-Day Report is consistent with information presented in the May 14, 2024 Town of Chino Valley / Circle K Stores Inc. Study Session.

Prior to conducting any investigation at the Circle K store, research was conducted to gain an understanding of the Little Chino Valley Sub-Basin groundwater conditions, regional subsurface soil types and geology. The research included references from ADEQ, the Arizona Department of Water Resources and The United States Geological Survey. Findings indicated that the Little Chino Valley Sub-Basin in the vicinity of the Circle K store is underlain with a fairly comprehensive “aquitard,” which is essentially a thick layer of subsurface soil consisting predominantly of clay. The clay was estimated to be 30 to 40 feet thick based on previous investigations conducted in the vicinity of the store and the regional aquifer (groundwater drinking water supply) was noted to exist below this clay at an estimated depth of approximately 200 feet below the surface. Research also indicated that the Chino Valley Sub-Basin includes areas where groundwater is observed above this confining clay layer, that these groundwater areas are isolated, not continuous throughout the Valley, and are not currently being used for drinking water supply within the vicinity of the release. These isolated groundwater “pockets” are termed “perched aquifers” in the official 90-Day report.

After preliminary analysis and investigations, subsurface site investigation activities began on February 16, 2024, with the drilling and sampling of soil in two locations in the area of the release. The objective for this initial investigation was to collect soil samples from the subsurface soil as near as possible to the release point to confirm that subsurface soil had been impacted with gasoline. This part of the investigation is required by the ADEQ to officially “confirm” the release that was suspected due to the equipment failure.

Investigation activities continued between February 19 and April 19, including drilling and sampling at 10 additional locations, both on the Circle K store parcel and at locations outside of the parcel to the west, north-northwest and north-northeast. The sample locations drilled during this period of time were intentionally positioned outside of the immediate release area to evaluate the degree to which the release spread horizontally in the subsurface soil. The placement of these drilling locations also allowed for the investigation of the regional aquifer, beneath the confining clay layer described above, without the threat of creating a conduit for the release to travel down into the aquifer while drilling. As a result, 6 groundwater monitor wells were installed during this time, four that extend into the regional aquifer beneath the clay (deep wells), and two that extend into the isolated “perched aquifer”.

The “deep wells” that extend into the regional aquifer, which is the primary source of drinking water in Chino Valley, were positioned in the estimated direction of groundwater flow (generally to the

north) based on the research conducted early in the investigation. To confirm the sample location was outside of the release area, subsurface soil samples were collected at 5-foot intervals in each location, prior to deciding whether to continue drilling through the confining clay horizon. In addition, out of an abundance of caution, a dual-casing drill rig was used which allowed for the subsurface soil and potential perched aquifers that exist above the confining clay layer to be isolated from the drill bit that would extend through and beneath the confining clay layer.

The direction of groundwater flow was confirmed with survey data and groundwater depth measurements collected after the installation of groundwater monitoring wells. Based on one round of data, evaluated as of the date of the 90-Day Report, groundwater flows west-northwest in the vicinity of the Circle K store. Groundwater flow will be evaluated on an ongoing basis with monthly measurements to ensure that any variation is noted in the event the flow direction is not consistent.

Positioning the “deep wells” in the direction of groundwater flow provides access points for the sampling of the regional aquifer (drinking water supply) at locations between the release point and the nearest private or commercially owned drinking water wells. This will allow for the detection of any potential contamination that may reach the regional aquifer prior to the contamination reaching a drinking water supply well-should there be any contamination to the regional aquifer.

The two shallow wells, placed within the “perched aquifer” are positioned on the Circle K store property. The shallow wells were intentionally terminated at a depth that did not extend through the confining clay layer out of an abundance of caution to protect the regional aquifer from these isolated perched zones, in the event they were to become contaminated by further migration of the release. Please note, “perched aquifer” conditions were not observed in every drill location, thereby confirming that the perched conditions are isolated and not continuous, as described in the previously discussed research.

As of the date of the official 90-Day Confirmed Release Report, all groundwater monitor wells have been sampled and all laboratory results indicated there are no detectable contaminants related to the release in the “deep wells” (drinking water supply aquifer). The laboratory reported estimated concentrations of three contaminants, which are not typical of a gasoline leak, in one of the “perched aquifer” wells (note: these wells do not extend into the drinking water aquifer). These contaminants were reported above the laboratory detection limit, but below the laboratory reporting limit. Continued routine groundwater sampling will track whether these detectable contaminants were an anomaly or whether they are consistent in subsequent sampling events, as the investigation continues. To reiterate, these three contaminants were detected at very low concentrations and **were not** detected in the “deep wells” used to monitor the drinking water aquifer.

The laboratory also reported elevated concentrations of contaminants related to gasoline in the subsurface soil, within the vicinity of the release, to depths of 155 feet below the surface (above clay layer). As a result, soil remediation (cleanup) was initiated early in the investigation to remove the contaminant mass as quickly as possible, which could help delay further migration of the contaminant. The technology used for soil remediation is called “soil vapor extraction” which utilizes a blower to pull a vacuum on the subsurface contaminated soil, accessed through wells that only extend into the soil (not beneath the clay). The vacuum allows the gasoline that is adsorbed (stuck) to the subsurface soil to change phase into a vapor, and to be directed out of the ground through hoses and piping to what is called a “thermal oxidizer.” The “thermal oxidizer” then destroys the gasoline vapors.

In addition to the groundwater monitor well sampling discussed above, nearby drinking water wells have been sampled weekly for gasoline contaminants since March 13, 2024. All sampling results have shown “non-detect” for gasoline contaminants.

Ongoing investigations include the routine sampling of the groundwater monitor wells and nearby drinking water wells. As stated previously, as of the date of the official 90-day Confirmed Release Report, all drinking water well samples and groundwater monitor “deep well” samples have been reported as having no laboratory detectable contamination. In addition, the remediation system will continue to operate indefinitely, utilizing two soil vapor extraction units (thermal oxidizers) to remove as much of the contaminant detected in the subsurface soil as quickly as possible.



APPROX. SCALE: 1 INCH = 30 FEET

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Circle K Stores Inc.
Store No. 2705326
1910 State Route 89
Chino Valley, Arizona 86323

Site Plan

FIGURE
1

Legend	
	Electrical and Possible Vent/Product Lines
	Septic System
	Water
	Natural Gas
	Irrigation Control Box
	Vent
	Property Boundaries
	Overhead Electrical Lines
	Approximate Tank Basin Location
	Underground Storage Tank
	Seepage Pit