

PROPOSED LEAKING UST (LUST) CASE CLOSURE

The Arizona Department of Environmental Quality (ADEQ) is considering closure of the following leaking underground storage tank (LUST) cases:

LUST Case File #: 5448.01
Facility ID # 0-001455
Pima County

Circle K No. 01631
2 West Valencia Road
Tucson, Arizona 85706

This commercial property is located at 2 West Valencia Road in Tucson. According to the LUST file, (3) 1,000 gallon USTs and the rest of the system was installed in April 1985. A consultant reported a suspected release to ADEQ in April 2004 based on a property transfer environmental assessment. A new consultant confirmed the suspected release and ADEQ assigned a release number to the UST basin in March 2005. ATC determined that the release was from the southern UST. Site characterization activities included soil and groundwater sampling after the installation of five monitoring wells. MW-1 was installed at the source. The Site Characterization Report was approved in 2006. Active soil and groundwater remediation using air sparge and vapor extraction (AS/VE) was used between September 2008 and May 2013.

A site specific risk assessment and detailed file/information search were also completed. MW-1 shows volatile organic compound (VOC) contamination. Benzene, 1,2-DCA (1,2-dichloroethane) and EDB (ethylene dibromide) are the remaining contaminants present in concentrations over an applicable regulatory standard. The benzene concentrations have declined from 3,760 µg/L to 1,340 µg/L between August 2015 and November 2015. During the same sampling events, the concentration of 1,2-DCA has dropped from 37 µg/L to 29.5 µg/L and the EDB concentration has dropped from 9.6 µg/L to 6.2 µg/L. 1,2-DCA and EDB were additives found in leaded gasoline. TCE (trichloroethylene) is present in concentrations over the applicable regulatory standard in all five monitoring wells. The site is located within the boundaries of the Tucson Airport Remediation Project (TARP) of the Tucson International Airport Area Federal Superfund National Priorities List (NPL) site. The groundwater flow direction has been historically north-northwest. The depth to water in November 2015 was approximately 82 feet.

Based upon the results of remedial activities and site specific information, the above-referenced LUST site is eligible for alternative LUST closure under Arizona Revised Statutes (A.R.S.) §49-1005(E). Arizona Administrative Code (A.A.C.) R18-12-263.04 allows case closure of a LUST site with groundwater contamination above the AWQS or Tier 1 Standards. ADEQ has considered the results of a site specific assessment and the rule specific criteria below:

- 1. *Threatened or impacted drinking water wells:*** The site is located within the boundaries of the Tucson Airport Remediation Project area of the Tucson International Airport NPL site which has contaminated groundwater which is non-potable. The ADWR database search shows there are three registered domestic wells located downgradient within ¼ mile of the characterized groundwater plume. There are three registered City of Tucson wells located within ¼ of the site but the wells are up gradient to side gradient in location. These wells are screened within the deeper zone of the aquifer, which is separated from the contaminated upper zone by an aquitard. The only other identified sensitive receptors like schools, daycare centers etc. within ¼ mile of

the Site are the San Miguel High School located southwest of the site, and the Colonial Mobile Home Park located 1,000 feet northeast of the site. ADWR well #55-638733 (registered as a domestic well) is located downgradient of the site and was sampled in December 2015. No contamination was reported. The well is inoperable, so the sample was collected with a bailer.

2. **Other exposure pathways:** There isn't a risk posed by the dermal contact or ingestion exposure pathways since the confirmation soil boring indicated no contamination present over an applicable regulatory standard between the depths of 5 and 15 feet. The VOC contamination that is remaining between 20 and 70 feet is at concentrations magnitudes below applicable regulatory standards but above laboratory reporting limits. The vapor intrusion risk was determined to be acceptable based on soil vapor data collected and modeled using the Johnson and Ettinger on-line screening version. Incidental dermal contact with the groundwater is considered *de minimis* risk.
3. **Groundwater plume stability:** Groundwater plume stability is demonstrated by the remaining VOC contamination present over a regulatory standard in groundwater is limited to the source well MW-1. Overall VOC concentrations are trending downward and are expected to continue to attenuate. In addition to the data indicating no groundwater contamination remaining in the other on-site monitor wells above the applicable regulatory standards, the contractor provided isopleth maps to show the contamination over an applicable standard is present closest to the source. These factors indicate that the groundwater plume is stable.
4. **Characterization of the groundwater plume:** Five monitoring wells were installed and collection of VOC samples has taken place between October 2005 and November 2015. Dissolved-phase petroleum hydrocarbons have been characterized and the only petroleum related VOCs remaining over AWQS are benzene, 1,2-DCA and EDB in MW-1. TCE is present in MW-2 and MW-4 at concentrations that exceed the applicable regulatory standard.
5. **Natural Attenuation:** Natural attention can be demonstrated by the decreasing VOC concentrations below applicable regulatory standards at the site for all chemicals except the benzene, 1,2-DCA and EDB at the source well MW-1. 1,2-DCA is a recalcitrant compound so it remains long after other VOCs have been removed. The concentrations will continue to aerobically degrade since the dissolved oxygen concentrations are high (above 0.5 mg/L). Once the dissolved oxygen levels drop below 0.5 mg/L, anaerobic bioremediation will continue to degrade the remaining contamination.
6. **Removal or control of the source of contamination:** Both contaminated groundwater and soil has been removed or controlled through the use of AS/VE. The system recovered approximately 11,193 pounds (equivalent to approximately 1,599 gallons) of volatile fuel hydrocarbons. The benzene concentrations have declined from a maximum of 12,000 µg/L to 1,340 µg/L. The concentration of 1,2-DCA has dropped from 290 µg/L to 29.5 µg/L and the EDB concentration has dropped from 54 µg/L to 6.2 µg/L. The toluene and ethylbenzene concentrations have dropped from 10,000 µg/L and 2,700 µg/L, respectively to less than the applicable regulatory standard.
7. **Requirements of A.R.S. §49-1005(D) and (E):** The results of the corrective action completed at the site assure protection of public health, welfare and the environment, to the extent practicable, the clean-up activities completed at this site allow for the maximum beneficial use of the site, while being reasonable, necessary and cost effective.

8. **Other information that is pertinent to the LUST case closure approval:** The facility and LUST files were reviewed for information regarding prior cleanup activities, prior site uses and operational history of the UST system prior to removal.

Groundwater information: **Monitor Well MW-1 (source well)**

Date	Benzene AWQS is 5 µg/L	1,2-DCA AWQS is 5 µg/L	EDB AWQS is 0.5 µg/L	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Depth to water (Feet)
2/23/2009	12,000	290	34	-256	NM	88.55
3/01/2010	6.9	34	5.7	124	1.3	89.69
3/30/2011	5,200	130	54	-128	1.0	84.73
3/7/2012	588	28.7	45.4	-157	2.6	81.34
2/11/2013	7,400	77.5	35.9	-276	0.85	79.16
2/10/2014	93.8	3.5	<0.01	-34	1.49	77.35
8/4/2015	3,760	37	9.6	-359.9	0.26	79.19
11/3/2015	1,340	29.5	6.2	-67.7	1.85	82.39

NM= Not Measured

Site specific information concerning this closure is available for review during normal business hours at the ADEQ Records Center <http://www.azdeq.gov/function/assistance/records.html>, 1110 W. Washington St., Suite 140, Phoenix, AZ 85007. ADEQ welcomes comments on the proposed LUST case closure. Please call the Records Center at 602-771-4380 to schedule an appointment. A 30-day public comment period is in effect commencing **February 8, 2017** and ending, **March 8, 2017**. Comments should be submitted in writing to the Arizona Department of Environmental Quality, Waste Programs Division, Attention Scott Goodwin, 1110 W. Washington Street, Phoenix, AZ 85007.

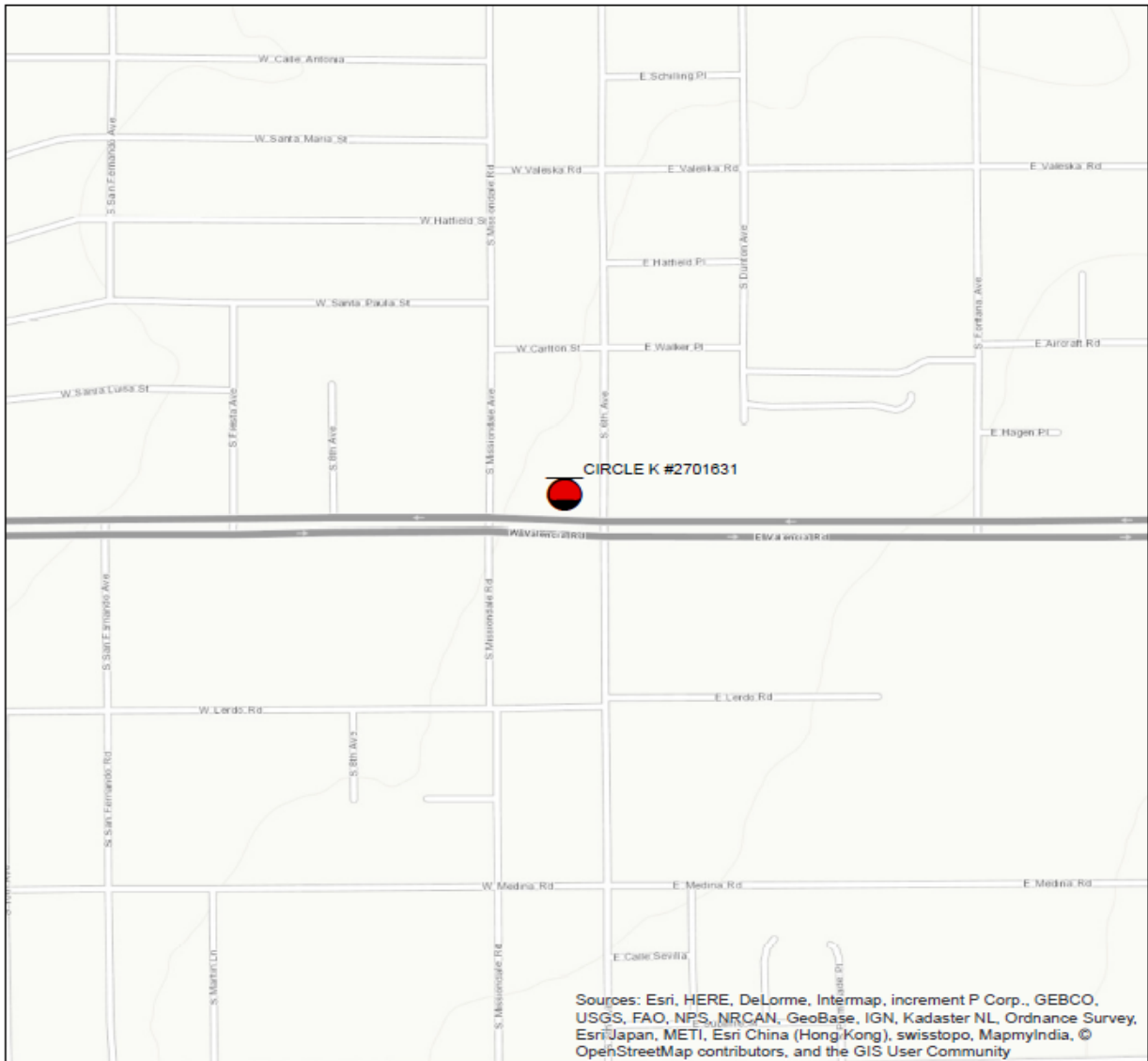
If sufficient public interest is demonstrated during the public comment period, ADEQ will announce and hold a public meeting. ADEQ will respond to written comments following the public comment period. For more information on this notice, please contact Scott Goodwin at 602-771-4452 or 800-234-5677 ext. 771-4452 or at sdg@azdeq.gov.

Copies of the cited statutes and rules can be found at:
<http://www.azleg.gov/ArizonaRevisedStatutes.asp?Title=49>, and
http://www.azsos.gov/public_services/Title_18/18-12.html

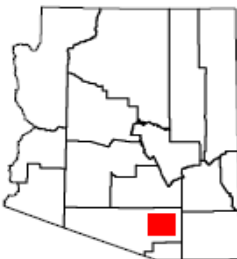
ADEQ will take reasonable measures to provide access to department services to individuals with limited ability to speak, write, or understand English and/or to those with disabilities. Requests for language interpretation services or for disability accommodations must be made at least 48 hours in advance by contacting: 7-1-1 for TDD; (602) 771-2215 for Disability Accessibility; or Ian Bingham, Title VI Nondiscrimination Coordinator at (602) 771-4322 or idb@azdeq.gov.

ADEQ tomará medidas razonables para proveer acceso a los servicios del departamento para personas con capacidad limitada para hablar, escribir o entender Inglés y / o para las personas con discapacidad.

Las solicitudes de servicios de interpretación del lenguaje o de alojamiento de discapacidad deben hacerse por lo menos 48 horas de antelación poniéndose en contacto con Ian Bingham, Title VI Nondiscrimination Coordinator al (602) 771-4322 o ldb@azdeq.gov.



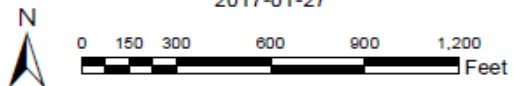
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Site Location Map

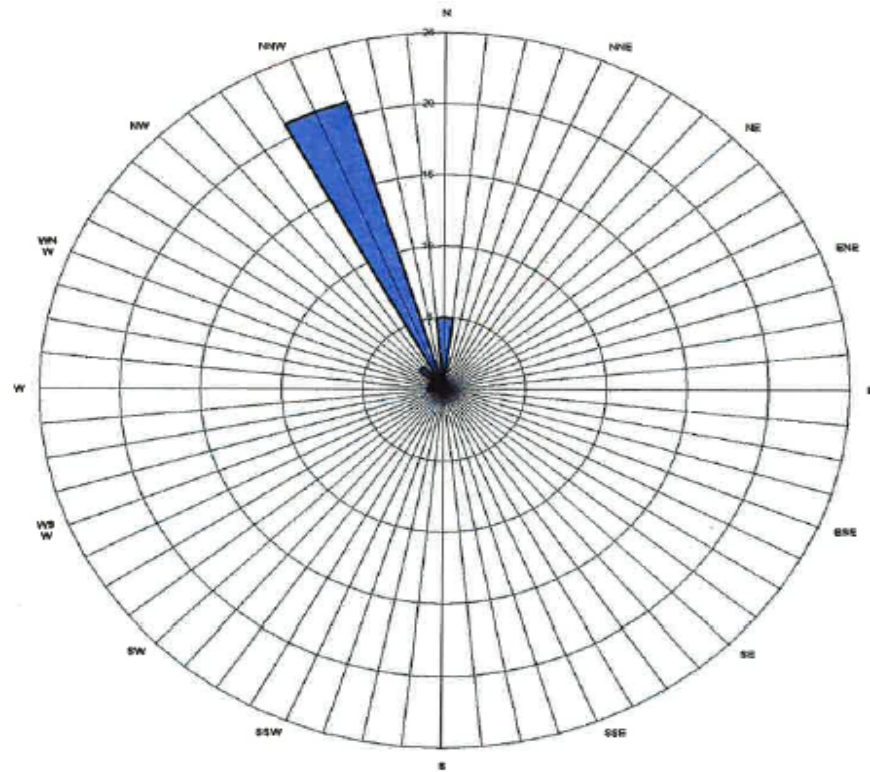
Circle K #2701631
2 W Valencia Rd
Tucson, Arizona

2017-01-27



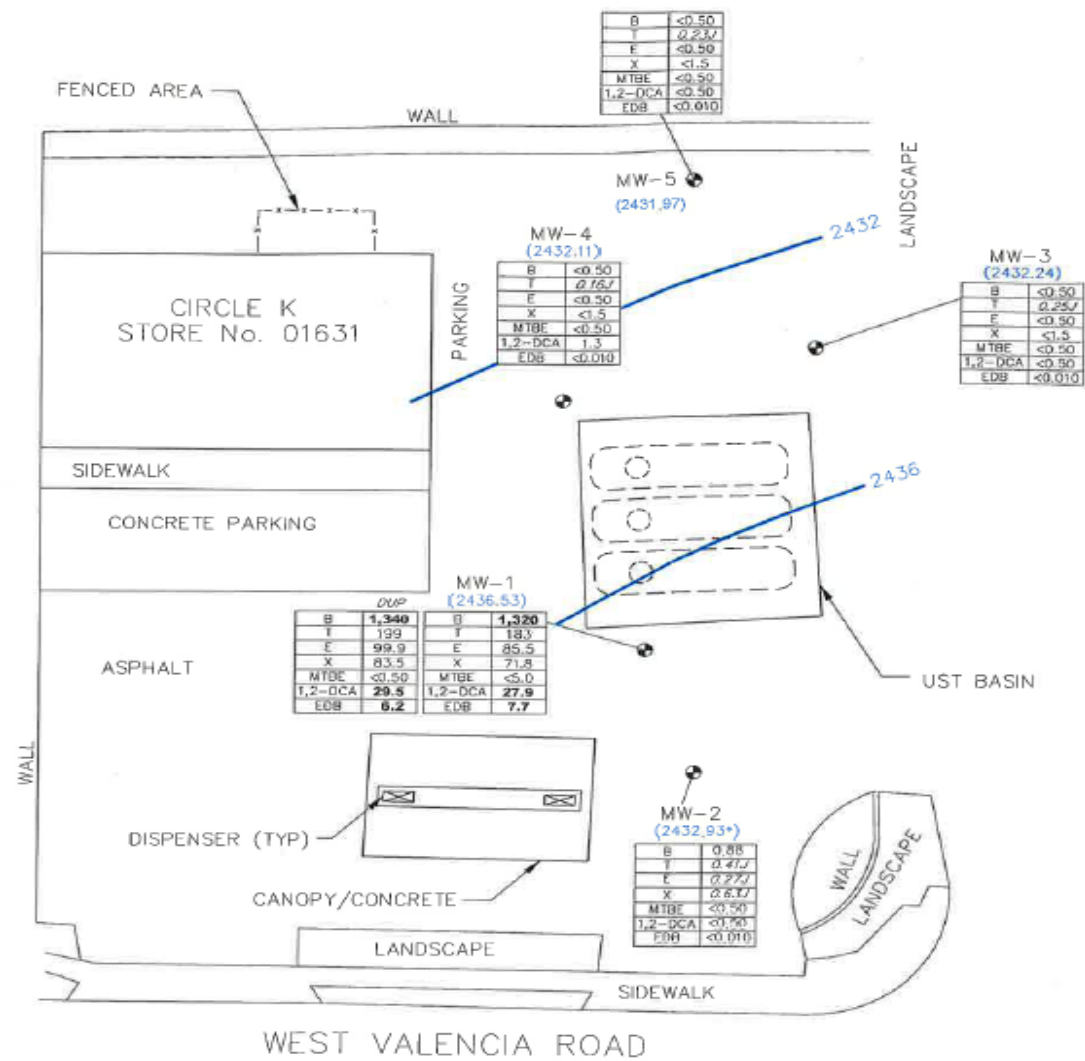
S:\gisdev\dc7\WQARF\CircleK_Tucson.mxd





GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

GROUNDWATER FLOW DIRECTION (TABLE 5)



LEGEND

B	3.510	BENZENE
T	5.75	TOLUENE
E	4.85	ETHYLBENZENE
X	31.2	TOTAL XYLENES
MTBE	<0.0	METHYL TERT BUTYL ETHER
1,2-DCA	34.7	1,2-DICHLOROETHANE
EDB	11.5	1,2-DIBROMOETHANE

ALL ANALYTICAL RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)

- BOLD** - CONCENTRATION EXCEEDS ADEQ ESTABLISHED AQUIFER WATER QUALITY STANDARD
- ✓ ESTIMATED CONCENTRATION ABOVE THE METHOD DETECTION LIMIT AND BELOW THE METHOD REPORTING LIMIT
- DUP DUPLICATE SAMPLE
- NA NOT ANALYZED
- MW-1 (2436.53) GROUNDWATER MONITOR WELL
- (2436.53) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- 2432 GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL)
- * NOT USED FOR CONTOURING

GROUNDWATER CONDITIONS MAP
 (11/03/15)
 CIRCLE K STORE NO. 01631
 2 WEST VALENCIA ROAD
 TUCSON, ARIZONA 85706

PROJECT NUMBER: 1052163104	DATE: 9/12/16	FIGURE
APPROVED BY: GM	DRAWN BY: BK	2
ATC		
9185 S. Farmer Ave., Ste. #111 Tempe, Arizona 85284-2912 Ph: (480) 894-2056 *** Fax: (480) 894-2497		



Memorandum

Date: January 24, 2017

To: LUST File

From: Debi Goodwin, Sr. Risk Assessor
UST-LUST Section

Subject: Corrective Action Completion Report
Circle K Store # 01631
F 0-001455 L 5448.01

Site Summary

This commercial property is located at 2 West Valencia Road in Tucson. According to the LUST file, (3) 1,000 gallon USTs and the rest of the system was installed in April 1985. A previous consultant reported a suspected release to ADEQ in April 2004 based on a property transfer environmental assessment. ATC confirmed the suspected release and ADEQ assigned a release number to the UST basin in March 2005. ATC determined that the release was from the southern UST. Site characterization activities included soil and groundwater sampling after the installation of five monitoring wells. MW-1 was installed at the source. The Site Characterization Report was approved in 2006 ATC conducted active soil and groundwater remediation (AS/VE) between September 2008 and May 2013. In October 2013, a permanent soil vapor monitor well was installed five feet away from MW-1. In September 2014, a LUST Case Closure Report was submitted to ADEQ. LUST Case Closure was denied in November 2014.

ATC Group Services, LLC (ATC) on behalf of Phillips 66 Company, has submitted a *Corrective Action Completion Report* which was received October 31, 2016. It is the intention that this submittal will satisfy the LUST closure criteria under R18-12-263.04. The information described above and all available information was utilized by ADEQ to determine whether levels of contaminants at the site are adequately protective of human health and the environment.

LUST Closure Evaluation

Soil

Remediation activities for soil and groundwater included vapor extraction (VE) and air sparge (AS). A confirmation soil boring was installed 5 feet west of MW-1 in June 2015. Soil samples were collected every 5 feet between five and 80 feet bgs. The soil samples were collected to evaluate for VOCs and organic lead (due to the date of the system install). The VOC and organic lead data from Table 1 shows that the VOC data is at or near laboratory reporting limits and show non-detect starting at 70 feet. No organic lead was reported according to Table 1. PAH data had been previously collected and no CoCs exceeded applicable regulatory standards. Subsurface soil consisted of interbedded clayey sand and clay to a depth of 75 feet. From 75 to 85 feet, the lithology was a high plasticity clay.

Soil Vapor

The permanent vapor well was sampled in October 2013 when it was installed and it was sampled again in June 2015. The samples were collected at 2.5 feet. The samples were analyzed by EPA Method TO-15. Laboratory and field QA/QC were acceptable. ATC conducted an inhalation risk evaluation. The soil vapor data portion of the risk assessment included all compounds of concern (CoCs) associated with the fuel releases and CoCs not associated with the fuel releases. The area was evaluated for future residential use. Conservative residential parameters were used for evaluation of the building, including an air exchange rate of 0.50 [hr⁻¹], sand for the soil type and it being a 100 square meter house built slab-on-grade. The maximum concentrations for the CoCs in the soil vapor were evaluated from each vapor point. The cancer risk (ELCR) and the hazard risk (HI) for the release areas were evaluated using the EPA's on-line version [forward calculation] of the Screening Level Johnson and Ettinger Model. Toxicity data from the EPA Regional Screening Level table for residential air was updated and entered into the model. ATC concluded that the data shows the cumulative ELCR below the acceptable risk level of 10⁻⁶ or the HI level of 1.

Groundwater

The site is located within the boundaries of the Tucson Airport Remediation Project (TARP) of the Tucson International Airport Area NPL site. The groundwater at this NPL site is contaminated with chlorinated solvents and is non-potable. The groundwater flow direction has been historically north-northwest. The depth to water in November 2015 was approximately 82 feet. The ADWR database search shows there are three registered domestic wells located downgradient within ¼ mile of the characterized groundwater plume. There are three registered City of Tucson wells located within ¼ of the site but the wells are up gradient to side gradient in location. These wells are screened within the deeper zone of the aquifer, which is separated from the contaminated upper zone by an aquitard. The only other identified sensitive receptors including schools, daycare centers etc. within ¼ mile of the Site are the San Miguel High School located southwest of the site, and the Colonial Mobile Home Park located 1,000 feet northeast of the site. ADWR well #55-638733 (registered as a domestic well) is located downgradient of the site and was sampled in December 2015. No contamination was reported. The well is inoperable, so the sample was collected with a bailer.

Groundwater monitoring was conducted between October 2005 and November 2015. Compliance sampling began in December 2013. With the exception of MW-1, in the source area, operation of the AS/VE system has reduced dissolved phase VOCs (benzene, 1,2-DCA and EDB [1,2-DCA and EDB are indicators of leaded gasoline]) in the vicinity of the UST basin. In addition to the data indicating no groundwater contamination remaining in the other on-site monitor wells above the applicable regulatory standards, isopleth maps were also generated using SURFER software, to confirm that the mass of these contaminants is located near the source well, MW-1. Physical groundwater parameters show that the dissolved oxygen concentrations are high which indicate aerobic biodegradation conditions.

Based on the groundwater data reported in Table 2, MW-1 is the only well that has petroleum related VOC contamination present over the applicable regulatory standards. TCE is present in concentrations over the applicable regulatory standard in all five monitoring wells. TCE is related to the contamination present in the Tucson International Airport NPL site. MW-1 shows benzene, 1,2-DCA and EDB as the remaining contaminants present in concentrations over an applicable regulatory standard. The benzene concentrations have declined from 3,760 µg/L to 1,340 µg/L between August 2015 and November 2015. During the same sampling events, the concentration of 1,2-DCA has dropped from 37 µg/L to 29.5 µg/L and the EDB concentration has dropped from 9.6 µg/L to 6.2 µg/L.

LUST Case Closure Conclusions

Soil

There is no risk posed by the dermal contact or ingestion exposure pathways since the confirmation soil boring indicated no contamination present over an applicable regulatory standard between the depths of 5 and 15 feet. The VOC contamination that is remaining between 20 and 70 feet is at concentrations magnitudes below applicable regulatory standards but above laboratory reporting limits. The soil vapor data does support that there is no inhalation risk from contamination present near the source area.

Groundwater

For alternative groundwater closure, several criteria under R 18-12-263.04 must be met. The contamination has been characterized and data supports that the plume is stable and localized on-site to MW-1 (source area). The groundwater VOC concentrations have significantly declined due to active remediation. Natural attenuation has been demonstrated by the groundwater data collected. The water that is impacted by VOC contamination over an applicable regulatory standard is not used as a potable water source due to the contamination present in the NPL site which encompasses the site. There are no potable wells within ¼ mile of the property, and there were no identified sensitive receptors associated with the property. The dermal contact and ingestion risk would be considered *de minimis* risk since the water is not used as a potable water source.

It is recommended that LUST release 5448.01 be closed under R18-12-236.03 for soil and R18-12-263.04 for groundwater.

If there any questions regarding this memo, please contact me at dgl@azdeq.gov, or 771-4453.