

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 #4165.02-.03

Facility ID # 0-002674

Yavapai County

Circle K Store #2701576

1245 E. Gurley Street

Prescott, AZ 86301

On July 25, 1995, ADEQ received notification that a release occurred at the site. Approximately 90 gallons of gasoline was spilled on the ground when a customer inadvertently drove away with the fueling dispenser nozzle placed in the vehicle's gasoline tank. The fuel flowed across the concrete surface of the site and collected in the Arizona Department of Transportation (ADOT) right-of-way, adjacent to and north of the Circle K facility. ADEQ assigned LUST File No. 4165.01 to the release. On August 24, 1995, SECOR International Incorporated oversaw the excavation of approximately 88.5 tons of petroleum- contaminated soil near the ADOT right of way. ADEQ later transferred LUST File No. 4165.01 to its Solid Waste Division. In 2004, Blaes Environmental Management, Inc. (Blaes) conducted environmental site assessment activities as part of the Phillips 66 (then, ConocoPhillips Company) transfer of ownership of Circle K to Alimentation Couche-Tard Inc. During the investigation, Blaes advanced four soil borings in the vicinity of the existing UST basin (T1 through T3 and T4/P1) and one boring adjacent to each of the four fuel dispensers at the site (D1 through D4). Soil samples collected at the boring locations were analyzed for volatile fuel hydrocarbons (VFH) using Environmental Protection Agency (EPA) Method 8015 and volatile organic compounds (VOC) using EPA Method 8260B. Select samples were also analyzed for polynuclear aromatic hydrocarbons (PAHs) using EPA Method 8310. Because of detections of benzene, total xylenes, 1, 2,4-trimethylbenzene (TMB) and 1,3,5-TMB at concentrations exceeding their respective ADEQ-established residential soil remediation levels (rSRL), ADEQ assigned LUST File Nos. 4165.02 at the northeast dispenser and 4165.03 at the southeast dispenser.

In February and March 2005, ATC (then, ATC Associates Inc.) conducted a site investigation to define the extent of petroleum hydrocarbon impact in soil and groundwater. Investigative activities included the sampling of soil and groundwater at installed monitor well locations MW-1 through MW-7. Samples were analyzed for VOCs using EPA Method 8260B, VFH using EPA Method 8015 and benzene, toluene, ethylbenzene and xylenes (BTEX) using EPA Method 8021B. Laboratory analysis of soil samples collected by ATC at each boring location did not indicate the presence of VOCs or BTEX at concentrations exceeding their, if established, rSRLs or minimum Groundwater Protection Levels (GPLs). The subsequent Site Characterization Report was submitted to ADEQ on May 9, 2005. On June 8, 2005, ADEQ issued Site Characterization Notice of Deficiency, stating that the extent of groundwater contamination at the site had not been completely characterized. In order to address ADEQ's concerns, ATC submitted a Site Characterization Report Addendum on May 12, 2008, which describes the installation of and groundwater sample collection at, groundwater monitor, wells MW-8 through MW-13. ADEQ approved the Site Characterization Report on June 30, 2008.

Various remedial techniques have been used at the site including multi-phase extraction (MPE), and the placement of oxygen releasing compound-Advanced® (ORC) socks in specific monitoring wells.

Groundwater monitoring wells MW-1 and MW-5 are contaminated with benzene, 1,2-dichloroethane (1,2-DCA), and/or ethylene dibromide (EDB) at concentrations that exceed applicable Aquifer Water Quality Standards (AWQS). 1,2-DCA and EDB were lead scavengers used in leaded gasoline.

Data provided by ATC, on behalf of Phillips 66 (Andeavor), in the *Corrective Action Completion Report* received July 28, 2018 and all other available site information has been used by ADEQ to determine whether remaining levels of contaminants at the site are adequately protective of human health and the environment. A site-specific risk assessment and detailed file/information search were also completed.

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 Arizona AWQS or Tier 1 Corrective Action Standards. ADEQ has considered the results of a site-specific assessment and the rule specific criteria below:

1. *Threatened or impacted drinking water wells:* According to the Arizona Department of Water Resources (ADWR) records, there are 131 registered wells within ½ mile of the site. Of these registered wells, there are 20 exempt and no non-exempt wells. The exempt wells are likely domestic use irrigation wells. The remaining registered wells are listed as monitoring wells or other. The City of Prescott has no municipal wells within the City. Sources of water in the City of Prescott include groundwater, surface water, reclaimed water, and stored water credits. Only groundwater is used as potable drinking water. Groundwater beneath the site is part of the Prescott Active Management Area (AMA). The City of Prescott obtains its groundwater from six wells located in Chino Valley, which is stored in a 5,000,000 million gallon storage tank located at the Chino Production Facility. The water is then pumped via high-pressure lines into the City of Prescott. Thirty water storage tanks/reservoirs and thirty-six booster stations are maintained to provide water throughout sixty-six pressure zones to serve the City. The City of Prescott has code requirements that contain limitations for private water connection/use of a private service line if the property boundary is within 200 feet of a City water main, so it is unlikely that a private water connection will be placed at the site in the future. Arizona's Assured Water Supply (AWS) Rules became effective in 1995 for AMAs. These Rules require a demonstration of at least 100 years of renewable water supplies for new development. City of Prescott has designation DWR 86-401501.0001 according to the *List of Municipal Water Providers Designated as Having an Assured or Adequate Water Supply* dated January 4, 2018. Any new or replacement well located at or near this site would need to meet the criteria of A.A.C. R12-18-1302 (B) (3).

2. *Other exposure pathways:* Historic volatile organic compounds (VOCs) soil contamination was present. On June 16, 2009, ATC advanced soil boring CB-D1 immediately adjacent to soil boring D1 and approximately seven feet southwest of groundwater monitor well MW-1. This boring is associated with LUST release 4165.02. ATC advanced soil boring CB-D4A on December 23, 2013 five feet northwest of groundwater monitor well MW-2/VE-2 and immediately adjacent to soil boring SB-1. This soil boring is associated with LUST release 4165.03. One soil sample, collected at the same depth of the historic contamination, at each boring was collected and analyzed for VOCs using EPA Method 8260B. Analytical results indicated the absence of concentrations exceeding their applicable, if established, rSRL or GPLs. Incidental dermal contact and ingestion of the groundwater is considered *de minimis* risk since this water is not used a potable water. In a ¼-mile land use/receptor survey, there are no schools, day care centers, hospitals or other sensitive populations.

3. *Groundwater plume stability:* Operation of the MPE remediation system appears to have decreased dissolved phase VOCs at the locations of groundwater monitor wells MW-1 through MW-5 in the vicinity and down gradient of the release points. ATC ran the BIOSCREEN model to determine the maximum theoretical extent of the dissolved phase benzene and EDB relative to the location of MW-9, which is the down gradient edge of the plume. Using the first-order decay rate assumption, the model predicts that the maximum extent of dissolved phase benzene at concentrations exceeding its AWQS is about nine feet down gradient of MW-9. Using the same assumption, the model predicts that the maximum extent of dissolved phase EDB at concentrations exceeding its AWQS is about eight feet down gradient of MW-9. In order to evaluate the stability of dissolved phase VOCs at offsite groundwater monitoring wells MW-9 through MW-11, ATC analyzed the groundwater laboratory analytical data collected from June 2015 through April 2018 using the Mann-Kendall Statistical Test Toolkit. The Mann-Kendall analysis (an applied Microsoft Excel spreadsheet developed by the State of Idaho Department of Environmental Quality – Waste Management and Remediation Division) utilizes up to ten data inputs to generate an output trend. The Mann-Kendall Statistic outputs generally indicate that the concentrations of dissolved phase COC at monitor wells MW-9 through MW-11 are either decreasing or stable. This data supports that the contaminant plume will continue to shrink over time.

4 *Characterization of the groundwater plume:* There are seven groundwater monitor wells (MW-1 through MW-7) located on the Circle K site property and six (MW-8 through MW-13) located at the Yavapai County Community College (YCCC) campus on the opposite side of East Gurley Street. Groundwater monitoring and sampling events began in February 2005 for the onsite wells and in June 2006 for the offsite wells. Based on groundwater elevation data collected between September 23, 2010 and January 26, 2016, the average calculated flow direction is northeast under an average calculated gradient of 0.0499 foot per foot (ft. /ft.). Eleven compliance (post-purge) events occurred at the site between December 3, 2012 and November 9, 2016. ATC conducted three limited compliance groundwater monitoring and sampling events at the locations of monitor wells MW-9 through MW-11 between October 11, 2017 and April 19, 2018. Laboratory analytical results of samples collected at the locations of monitor wells MW-6 and MW-7 located east and south of the release points, respectively, indicate the absence of COC at concentrations exceeding their established AWQS. Laboratory analytical results also show that the concentrations of dissolved phase COC at offsite wells MW-8, MW-12 and MW-13 continue to be below applicable Tier 1 Cleanup Standards and AWQS. ATC has conducted sampling activities at MW-10 since June 2006 and the well has shown inconsistent benzene concentrations that exceed the AWQS. The most recent AWQS exceedance was in September 2014. Benzene concentrations have exceeded the AWQS in up gradient well MW-9 and down-gradient well MW-11 during every applicable sampling event conducted since June 2006. This inconsistency suggests that contamination at MW-11 is due in part from hydrocarbon migration from the location of ADEQ Facility ID No. 0-002728.

5. *Natural Attenuation:* Natural attenuation processes include diffusion, dispersion, sorption, volatilization, and biodegradation. A historic decreasing trend in chemical concentrations in groundwater has been established which supports natural attenuation is occurring. Hydrologic and geochemical data can indirectly demonstrate the type(s) of natural attenuation processes. ATC analyzed the biodegradation and transport of dissolved phase benzene at, and down-gradient of, monitor well MW-9 using BIOSCREEN Version 1.4. The BIOSCREEN software uses a combination of site-specific data and assumed values to simulate contaminant transport and attenuation through biodegradation. The software allows the user to analyze a groundwater plume under one of three assumptions regarding the rate of natural attenuation: No Decay, First-Order Decay or Instantaneous Decay. According to the EPA BIOSCREEN Natural Attenuation Decision Support System User's Manual, the First-Order Decay Model

is most appropriate for petroleum hydrocarbon contamination. ATC ran the BIOSCREEN model to determine the maximum theoretical extent of the dissolved phase benzene and EDB relative to the location of MW-9, which is the edge of the plume. Using the first-order decay rate assumption, the model predicts that the maximum extent of dissolved phase benzene at concentrations exceeding its ADEQ established AWQS is about nine feet downgradient of MW-9. Using the same assumption, the model predicts that the maximum extent of dissolved phase EDB at concentrations exceeding its ADEQ established AWQS is about eight feet downgradient of MW-9. The BIOSCREEN analyses appear to support the hypothesis that natural attenuation processes are decreasing the concentrations of EDB and benzene as groundwater flows from MW-9 towards MW-10 and MW-11.

6. *Removal or control of the source of contamination.* ATC installed and began operation of a multi-phase extraction (MPE) system in April 2008. The system initially utilized a 250 cubic feet per minute thermal/catalytic (TCAT) oxidizer and an aqueous phase carbon treatment vessel. In September 2009, the TCAT was removed and replaced with a positive displacement blower and a vapor phase carbon treatment system. The MPE system was shut down on April 19, 2012. Operation of the MPE system for 26,919 hours (approximately 1,122 days) resulted in the recovery of approximately 3,396 pounds (equivalent to approximately 485 gallons) of VFH. The MPE system also processed 468,888 gallons of petroleum hydrocarbon-impacted groundwater prior to discharge into the City of Prescott sanitary sewer system. The remediation system was not restarted following system shutdown due to low (approximately one pound per day) VFH recovery rates from February 2012 through April 2012. ATC deployed oxygen releasing compound-Advanced® (ORC) socks inside the well casing at the locations of groundwater monitor wells MW-1, MW-4 and MW-9 through MW-11 on December 5, 2014. ORC socks were removed two weeks prior to groundwater monitoring and sampling events and re-deployed following completion of those events. The ORC socks were removed without redeployment on December 15, 2015. ATC deployed ORC socks inside the well casing at MW-11 on July 17, 2017. The ORC socks were removed two weeks prior to groundwater monitoring and sampling events and re-deployed following completion of those events. The ORC socks currently remain deployed at MW-11.

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 data for MW-1 (source area)

Date	Benzene AWQS is 5 µg/L	Depth to water (ft.)
February 2005	950	---
March 2005	490	19.35
October 2005	2,100	25.10
June 2006	1,400	28.35
September 2006	1,800	28.15
March 2007	1,400	29.63
September 2008	57.9	24.60
September 2009	20	25.79
September 2010	23	25.98
September 2011	9.2	23.30
July 2012	2.2	25.29
June 2013	<1.0	27.09
September 2014	12.3	22.38
December 2014 ORC placed in well	---	---
March 2015	2.2	21.04
June 2015	8.3	22.54
October 2015	4.5	25.06
December 2015 ORC removed	---	---
January 2016	6.5	25.78
March 2016	1.2	24.41
June 2016	6.4	25.90
August 2016	20.4	23.33
November 2016	34.3	25.10

Groundwater data for MW-5 (on-site down gradient of MW-1)

Date	Benzene AWQS is 5 µg/L	Depth to water (ft.)
March 2005	430	18.97
October 2005	330	24.49
June 2006	210	28.75
September 2006	340	28.91
March 2007	380	30.88
September 2008	83.2	24.63
September 2009	<1	25.05
September 2010	<1	25.21
September 2011	1.2	22.45
July 2012	<1.0	22.61
June 2013	3.1	28.17
September 2014	2.9	21.69
March 2015	2.0	20.57
June 2015	0.82	22.02

October 2015	1.4	24.81
January 2016	2.6	25.49
March 2016	<0.50	24.19
June 2016	8.5	26.06
August 2016	88.8/90.9	22.88
November 2016	55.8	25.02

Groundwater data for MW-9 (offsite at YCCC)

Date	Benzene AWQS is 5 µg/L	1,2-DCA AWQS is 5 µg/L	EDB AWQS is 0.05 µg/L	Depth to water (ft.)
June 2006	180	---	---	29.33
September 2006	96	---	0.18	26.00
March 2007	200	---	0.75	28.73
September 2008	179	---	0.065	25.14
September 2009	93	---	0.072	24.98
September 2010	9.2	---	<0.025	24.00
September 2011	34.3	---	<0.0061	24.39
July 2012	29.2	---	<0.0098	24.56
June 2013	46.9	---	<0.020	26.27
September 2014	74.9	---	<0.0098	23.12
December 2014 ORC placed in well	---	---	---	---
March 2015	81.7	<1.0	<0.097	23.00
June 2015	134	2.6	0.78	23.45
September 2015	92.9	3.3	0.94	24.75
December 2015 ORC removed	---	---	---	---
January 2016	115	3.7	0.49	25.22
March 2016	85.3	<5.0	0.82	24.25
June 2016	73.8	2.5	0.43	25.30
August 2016	39.9	0.98	0.21	24.09
November 2016	28.6	<2.5	0.15	24.44
October 2017	16	<5.0	<5.0	23.56
January 2018	260	<20	<20	25.71
April 2018	240	<20	<20	25.64

Ground water data for MW-11 (downgradient of MW-10, MW-9 at YCCC)

Date	Benzene AWQS is 5 µg/L	1,2-DCA AWQS is 5 µg/L	EDB AWQS is 0.5 µg/L	Depth to water (ft.)
February 2008	36	---	<0.025	28.96
March 2008	410	---	<0.025	29.21
September 2008	512	---	---	31.99
September 2009	540	---	---	31.86
September 2010	370	---	---	30.65
September 2011	418	---	---	32.94
July 2012	477	---	---	32.94
June 2013	417	---	---	33.21
September 2014	265	---	---	31.69
December 2014 ORC placed in well	---	---	---	---
March 2015	187	<0.10	<0.097	29.82
June 2015	232	<3.3	<4.6	30.98
September 2015	217	0.87	<1.0	32.39
December 2015 ORC removed	---	---	---	---
January 2016	216/239	<2.5	<2.5	32.79
March 2016	170	<2.5	<2.5	31.90
June 2016	174/199	<2.5	<20	32.64
August 2016	244	<2.5	<2.5	32.60
November 2016	200/196	<2.5	<0.0098	32.18
October 2017	170/160	<20	<20	31.34
December 2017 ORC placed in well	---	---	---	---
January 2018	160/160	<20	<20	33.11
April 2018	150/150	<20	<20	33.45

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 **December 7, 2018 and ending January 7, 2019**. Comments may be submitted by mail or email. Written comments should be sent to:

Arizona Department of Environmental Quality
Waste Programs Division
Attn: Debi Goodwin
1110 W. Washington Street
Phoenix, AZ 85007

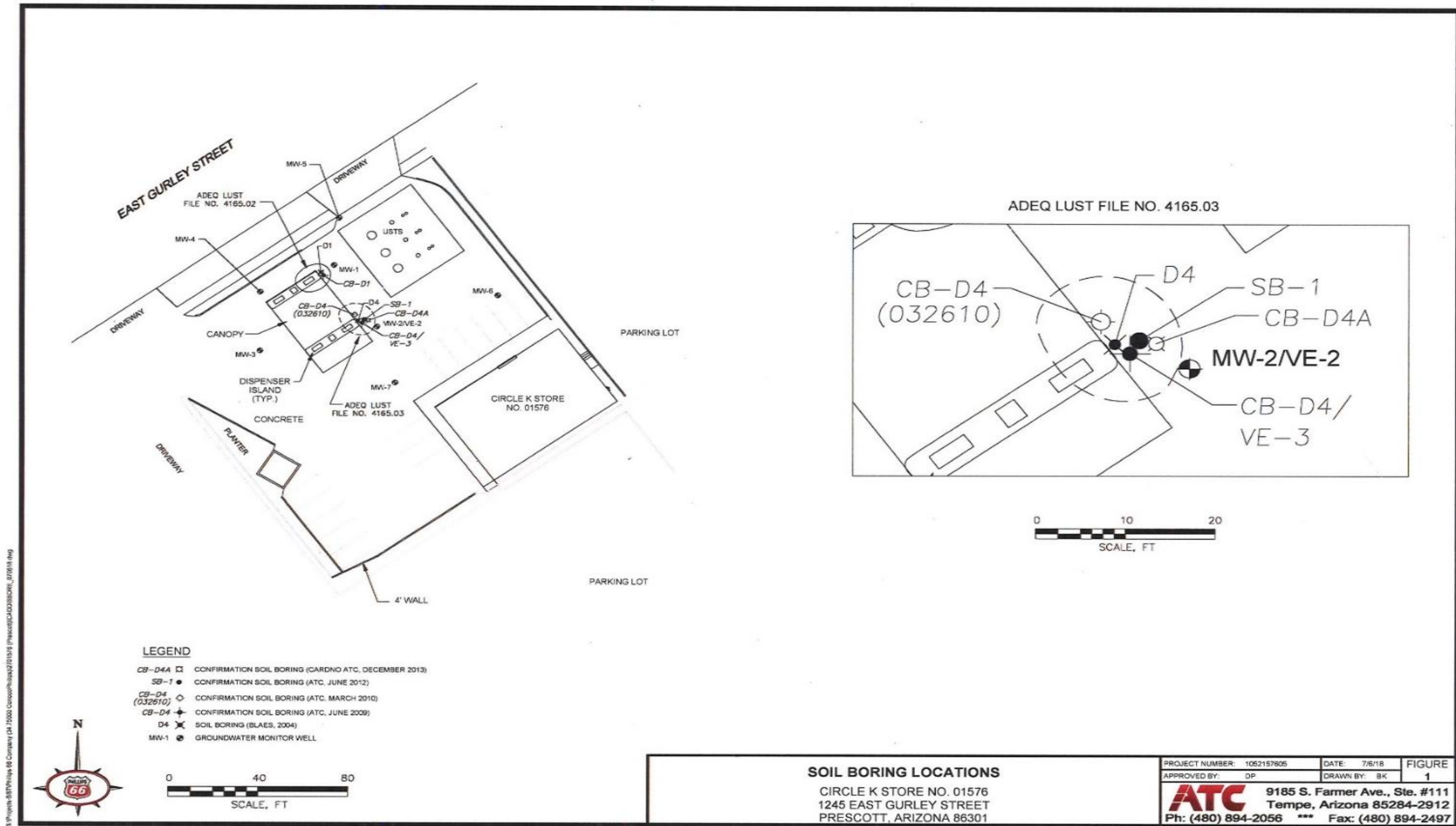
or electronically mailed to: dg1@azdeq.gov.

If sufficient public interest is demonstrated during the public comment period, ADEQ may announce and hold a public meeting. ADEQ will consider all submitted comments and reserves the right to respond to those comments following the public comment period. For more information on this notice, please contact the Sr. Risk Assessor, Debi Goodwin at (602) 771-4453 or at dg1@azdeq.gov or the Case Manager, Jorge Espinoza at (602) 771-4258 or at je5@azdeq.gov.

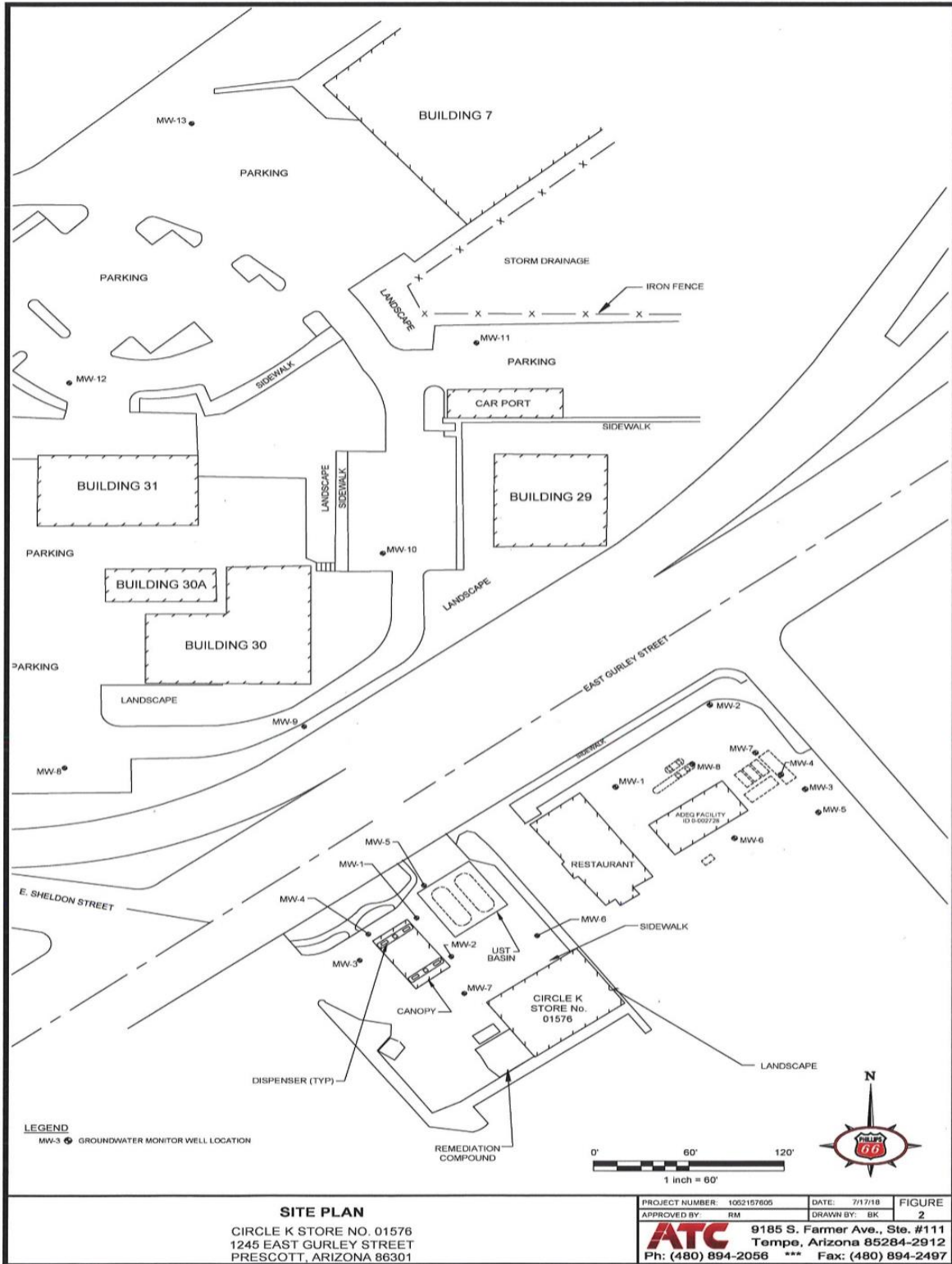
Copies of the cited statutes and rules can be found at:
<http://www.azleg.gov/ArizonaRevisedStatutes.asp?Title=49>, and
http://www.azsos.gov/public_services/Title_18/18-12.htm

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, ASL interpretation, CART captioning services or disability accommodations must be made at least 48 hours in advance by contacting Ian Bingham, Title VI Nondiscrimination Coordinator at 602-771-4322 or Bingham.Ian@azdeq.gov. Teleprinter services are available by calling 7-1-1 at least 48 hours in advance to make necessary arrangements.

ADEQ tomará las medidas razonables para proveer acceso a los servicios del departamento a personas con capacidad limitada para hablar, escribir o entender inglés y / o para personas con discapacidades. Las solicitudes de servicios de interpretación de idiomas, interpretación ASL, subtítulos de CART, o adaptaciones por discapacidad deben realizarse con al menos 48 horas de anticipación contactando a Ian Bingham, Coordinador de Anti-Discriminación del Título VI al 602-771-4322 o Bingham.Ian@azdeq.gov. Los servicios de teleimpresores están disponibles llamando al 7-1-1 con al menos 48 horas de anticipación para hacer los arreglos necesarios.

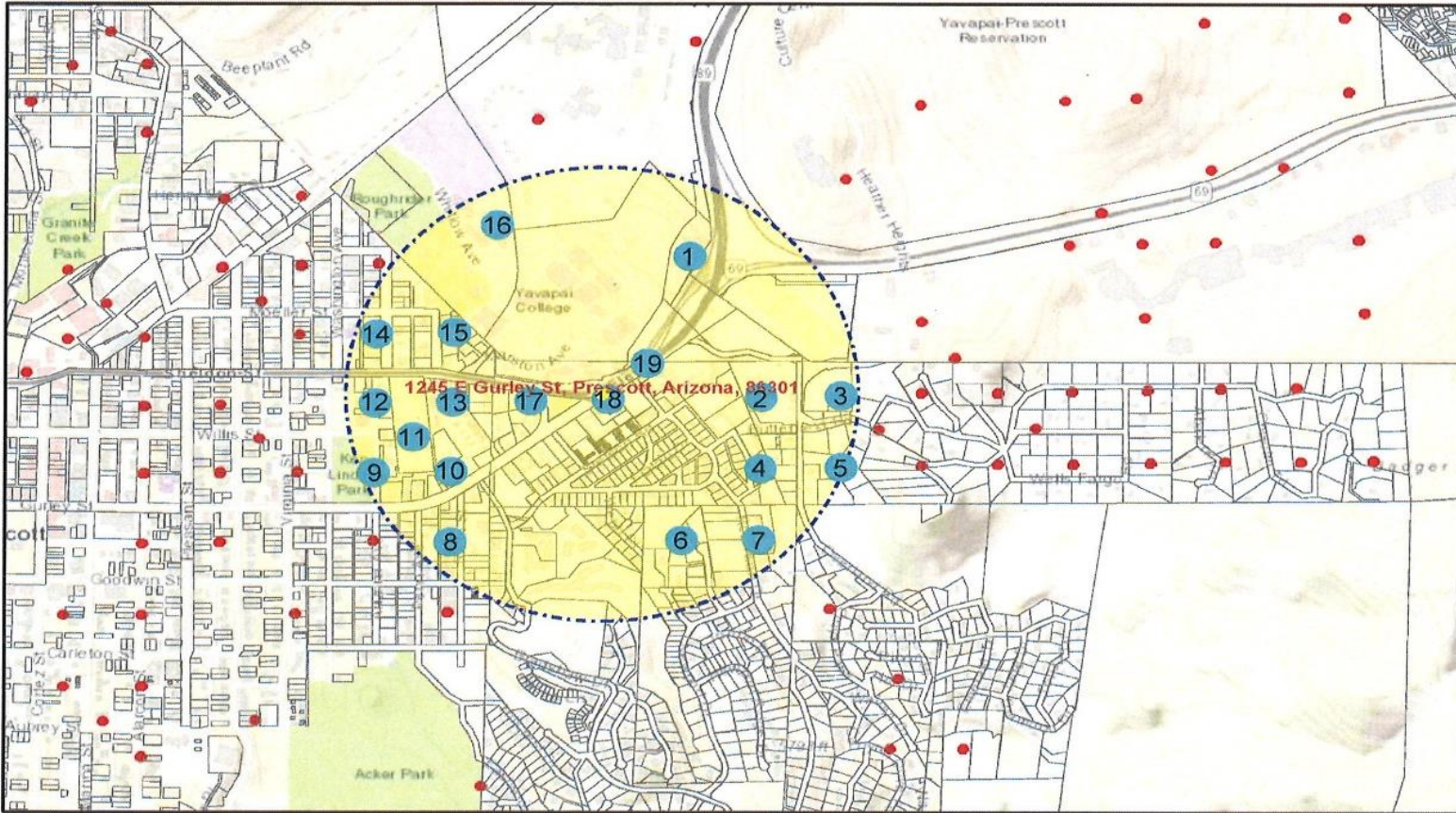


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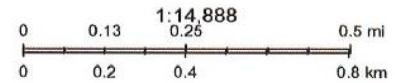
Circle K Store No. 01576- ADWR-Registered Wells



May 30, 2018

LEGEND

- 1 - GROUP NUMBER REFERENCING TABLE - ADWR-REGISTERED WELLS WITHIN A 0.5-MILE RADIUS



Arizona Department of Water Resources. Sources: Eri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN,

Arizona Department of Water Resources

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