ADEQ Arizona Department of Environmental Quality

PUBLIC NOTICE

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 #: 5244.01-.02
Facility ID # 0-009710
Yuma County

Rancho Viejo School former Bus Facility
930 South Avenue C
Yuma, Arizona 85364

This commercial property is located at 930 South Avenue C in Yuma. The property was formerly used as a school bus maintenance facility as part of the old Rancho Viejo School complex. In February 2001, one 550-gallon underground storage tank (UST) and its dispenser was removed. Soil samples were collected and detected benzene at levels that exceeded the applicable regulatory standards. Benzene, toluene, ethylbenzene, xylene (BTEX) and 1,2-dichloroethane (1,2-DCA) were seen in the soil and groundwater results, so the indication was a leaded gasoline release. In February 2009, the maintenance building was demolished and the property is currently undeveloped.

Crane Elementary School District #13 (the property owner and the UST Owner/Operator) has conducted site characterization and remedial activities. Site characterization included the installation of soil borings and monitoring wells. 600 tons of petroleum contaminated soil was removed from the area. In 2009 a Perozone™ sparge system to remediate the volatile organic compound (VOC) contamination in the soil and groundwater. The system operated until 2014.

A site specific risk assessment and detailed file/information search were also completed. Benzene analytical groundwater results in MW-4R remain above applicable regulatory standards. 1,2-DCA analytical groundwater results in MW-10 and MW-12 remain above applicable regulatory standards.

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 Aquifer Water Quality Standards (AWQS). 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 no threatened or impacted drinking water wells within ¼ mile of the site. The shallow groundwater is high in total dissolved solids (1,800 to 2,000 mg/L), so it is not a source of potable water for the City of Yuma or any domestic use wells.

1. *Other exposure pathways*: Contaminated soil was excavated to a depth of approximately 10 feet beneath the former bus maintenance building in 2013 and additional soil was excavated near MW-4 in 2014. Approximately 600 tons of petroleum contaminated soil was removed from the property. After the soil excavation, sodium persulfate was added to the base of the excavation to continue to remediate any remaining contamination. The contamination was successfully removed so dermal contact and ingestion are not complete exposure pathways. The vapor intrusion risk to indoor air was determined to be acceptable based on groundwater

data collected and modeled using the GWSCREEN of the Johnson and Ettinger model by the contractor. Incidental dermal contact with the groundwater is considered *de minimis* risk. There are sensitive receptors within ¼ mile of the site. The Salida del Sol Elementary School [kindergarten to 3rd grade] and the Rancho Viejo Elementary School [4th to 6th grades] are located to the west of the site. The VOC contamination is limited to on site groundwater and does not pose a threat to these sensitive receptors.

2. *Groundwater plume stability*: Groundwater plume stability is demonstrated by the remaining VOC contamination present over a regulatory standard in groundwater is limited to on site. Groundwater monitoring wells and their respective sampling results at the property boundaries indicate that the plume is delineated and decreasing in areal extent. Dissolved-phase benzene is limited to on site well MW-4R and the historic concentrations are trending downward. Dissolved-phase 1,2-DCA is limited to on-site wells MW-10 and MW-12 and the concentrations are remaining stable. The depth to groundwater is approximately 9 feet below the ground surface.

3. *Characterization of the groundwater plume:* Monitoring wells were installed and collection of VOCs samples has taken place since 2008. Dissolved-phase petroleum hydrocarbons have been characterized. VOCs remaining over AWQS in MW-4R is benzene at 339 µg/L in August 2016. This concentration is down from the highest concentration of 7,300 µg/L in August 2014. 1,2-DCA was detected in MW-10 at 10.9 µg/L in August 2016. The highest 1,2-DCA concentration was 22.4 µg/L in February 2016. 1,2-DCA was detected in MW-12 at 24.7 µg/L in August 2016. The highest 1,2-DCA concentration was 38 µg/L in December 2014.

4. *Natural Attenuation*: Benzene degrades faster in aerobic groundwater conditions. In MW-4A, field parameters indicate the dissolved oxygen concentrations are well above 0.5 mg/L and the temperature of the groundwater has increased. These parameters indicate aerobic degradation is occurring. In MW-10 and MW-12, the contaminant remaining is 1,2-DCA. If the Oxidation Reduction Potential is negative and the dissolved oxygen values are low which indicate a reducing or anaerobic environment, will degrade the 1,2-DCA more efficiently than in aerobic groundwater conditions. 1,2-DCA is a more recalcitrant compound, so it will take longer to degrade than a more volatile compounds like benzene.

5. *Removal or control of the source of contamination*: Source control has been completed by the removal of the UST in 2001.The secondary source of hydrocarbons remaining in soil and groundwater has been effectively removed or reduced through the use of multiple remedial technologies. 600 tons of petroleum contaminated soil was removed from the site. A Perozone™ sparge system to remediate the VOC contamination in the soil and groundwater operated between 2009 and 2014.

6. *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 competed at this site allow for the maximum beneficial use of the site, while being reasonable, necessary and cost effective.

7. *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: MW-4R

Date	Benzene AWQS is 5 µg/L	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Depth to water (Feet)
8/21/2014	7300			9.33
12/2/2014	2400			9.01
3/13/2015	130			9.68
6/1/2015	88	278.5	0.83	8.97
11/4/2015	326			9.31
2/10/2016	441	135.6	1.04	9.88
5/10/2016	367	123.7	1.13	9.33
8/29/2016	339	79.5	1.37	9.88

Groundwater information: MW-10

Date	1,2-DCA AWQS is 5 µg/L	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Depth to water (Feet)
8/26/2013	16			8.73
2/19/2014	18/19			8.74
5/5/2014	4.0/4.1			7.96
8/21/2014	18/17			8.52
12/2/2014	2.2/2.2			8.18
6/1/2015	3.1	-83	0.81	8.18
11/4/2015	1.37			8.44
2/10/2016	22.4	-43.9	0.81	9.02
5/9/2016	2.17	129	1.19	8.53
8/29/2016	10.9	-109.2	0.85	9.11

Groundwater information: MW-12

Date	1,2-DCA AWQS is 5 µg/L	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Depth to water (Feet)
8/26/2013	33			8.32
2/19/2014	15			8.30
5/5/2014	12			7.55
8/21/2014	22			8.09
12/2/2014	38			7.80
6/1/2015	11	250.9	0.95	7.75
11/4/2015	13.2			7.91
2/10/2016	17.9	148.6	1.49	8.65
5/9/2016	15.4	135.6	1.22	8.10
8/29/2016	24.7	127.6	1.03	8.69

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 **March 17, 2017 and ending April 17th, 2017**. Comments should be submitted in writing to the Arizona Department of Environmental Quality, Waste Programs Division, and Attention: Rick Brunton, 1110 W. Washington Street, Phoenix, AZ 85007.

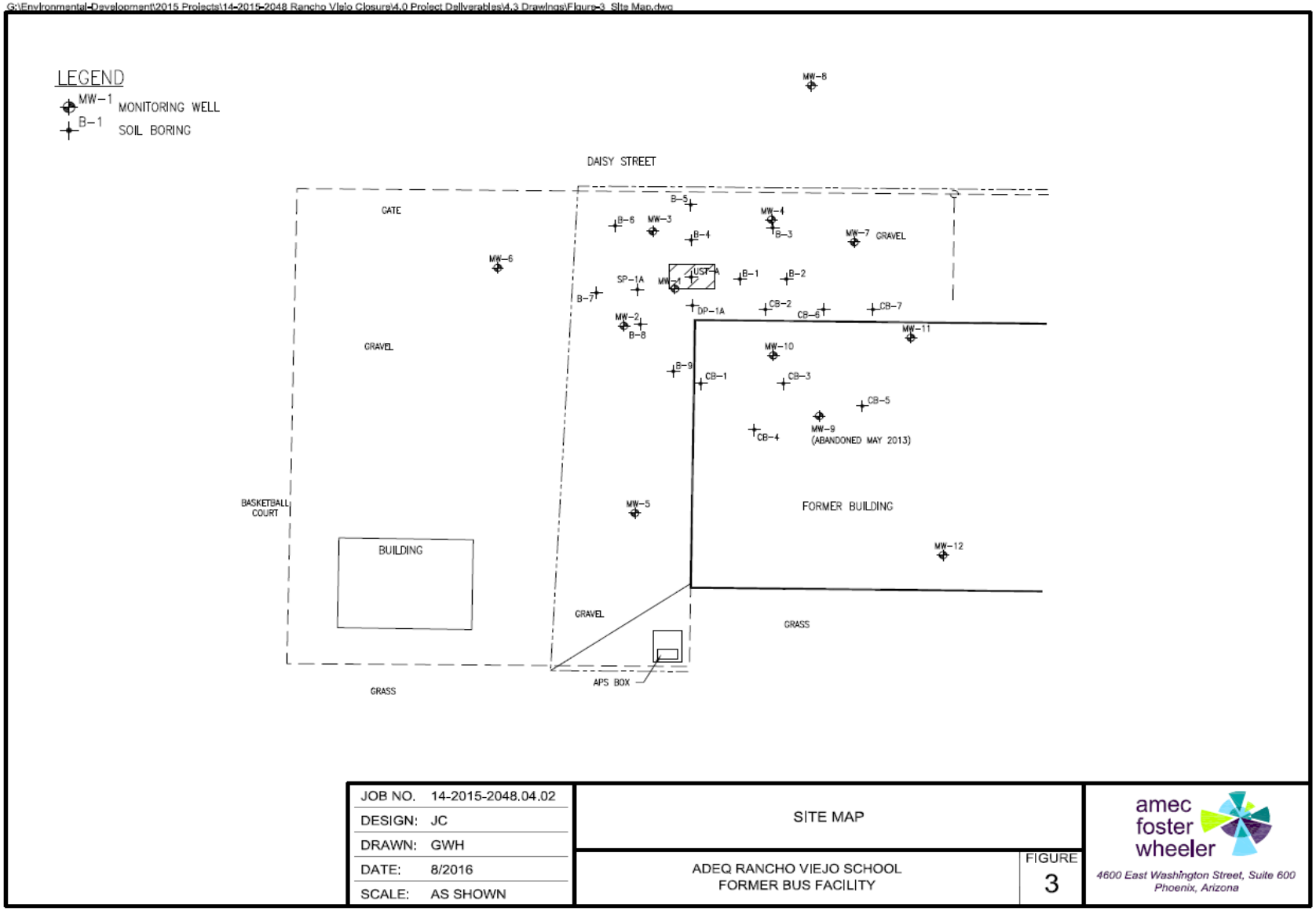
If sufficient public interest is demonstrated during the public comment period, ADEQ will announce and hold a public meeting. ADEQ will respond to written comments following the public comment period. For more information on this notice, please contact Rick Brunton at (602) 771-4175 or at rlb@azdeq.gov.

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 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 idb@azdeq.gov.

G:\Environmental-Development\2015 Projects\14-2015-2048 Rancho Viejo Closure\4.0 Project Deliverables\4.3 Drawings\Figure-3_Site Map.dwg



JOB NO.	14-2015-2048.04.02
DESIGN:	JC
DRAWN:	GWH
DATE:	8/2016
SCALE:	AS SHOWN

SITE MAP

ADEQ RANCHO VIEJO SCHOOL
FORMER BUS FACILITY

FIGURE 3

amec foster wheeler
4600 East Washington Street, Suite 600
Phoenix, Arizona

ADEQ Arizona Department of Environmental Quality

Job No.:	1420152048
PM:	JC
Date:	10/10/2016
Scale:	1" = 400 feet

N

Arizona Department of Environmental Quality
Rancho Viejo Remediation
Yuma, Arizona

The map shown here has been created with all due and reasonable care and is strictly for use with Amec Foster Wheeler Project Number 1420152048. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Amec Foster Wheeler assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

Site and Vicinity Map

FIGURE 1

amec foster wheeler

Path: X:\Projects\2015 Projects\1420152048 Rancho Viejo\MXD\Groundwater Monitoring\Figure 1 SiteLocation.mxd

ADEQ Arizona Department of Environmental Quality

ADEQ Arizona Department of Environmental Quality

Memorandum

Date: February 17, 2017

To: LUST File

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

Subject: Tier 3 Closure Evaluation
Rancho Viejo Bus Yard
F 0-009710 L 5244.01-.02

Background

This vacant property is located at 930 South Avenue C in Yuma. The Site was formerly used as a school bus maintenance facility as part of the old Rancho Viejo School complex. The property owner, Crane Elementary School District # 13 is also the UST Owner/Operator. In February 2001, one 550-gallon UST and its dispenser was removed. Soil samples were collected and detected benzene at levels that exceeded the applicable regulatory standards. BTEX and 1,2-DCA were seen in the soil results, so the indication was a leaded gasoline release. Site characterization activities occurred beginning in 2008. Eight groundwater monitoring wells were installed in 2008 and confirmed the groundwater was contaminated over AWQS. Twelve soil borings were installed in 2008 and confirmed that the vadose zone had contamination present over rSRLs. In February 2009, the maintenance building was demolished and additional soil borings were installed. In September 2009 a Perozone™ sparge system was installed to remediate the soil and groundwater. In September 2010, seven soil borings (CB-1 through CB-7) were drilled at the former building location.

Purpose

AMEC, contractor to the State Lead Unit, has conducted site characterization and remediation activities. AMEC submitted a draft *Site Characterization Report*. The intention is 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.

Risk Assessment

Soil

The Perozone™ system operated until April 2014 and was removed in May 2014. Contaminated soil was excavated to a depth of approximately 10 feet beneath the former bus maintenance building in 2013, and sodium persulfate was added to the bottom of the excavation. Additional soil was excavated near MW-4 in 2014 and sodium persulfate was again used to treat the remaining soil. Approximately 600 tons of petroleum contaminated soil was removed from the property. Based on soil data collected, the contamination was successfully removed. Soil was also analyzed for organic lead and PAHs in composite excavation samples in November 2012, nothing was detected. However, since discrete soil samples were not collected, the groundwater was evaluated for these CoCs.

Groundwater
The depth to groundwater is approximately 10 feet bgs in an alluvial aquifer. The shallow, regional groundwater is not used as potable drinking water since the total dissolved solids content is high (1,800 to 2,000 mg/L). An ADWR database search shows there are no domestic or public drinking water wells located within ¼ mile of the characterized groundwater plume.

There are identified sensitive receptors like schools, daycare centers etc. within ¼ mile of the Site. The Salida del Sol Elementary School (kindergarten to 3rd grade) and the Rancho Viejo Elementary School (4th to 6th grades) are located to the west.

There are currently eleven monitoring wells located at the site. The historic VOC contamination that was present over applicable AWQSs are BTEX and 1,2-DCA. Remedial activities have remediated the toluene, ethylbenzene and xylene to below their applicable AWQSs. Benzene and 1,2-DCA concentrations remain above the AWQSs. Organic lead and PAHs were evaluated in MW-1R and MW-4R in August 2016.

AMEC evaluated the benzene and 1,2-DCA contamination present in the groundwater for possible vapor intrusion risk using GWSCREEN. The data indicated an acceptable risk from vapor intrusion from the groundwater into indoor air.

Conclusions and Recommendations
Soil
Under A.A.C. R18-7-206(D), multiple contaminants, multiple pathways of exposure, uncertainty of exposure and sensitive populations are evaluated as part of a site specific risk assessment. There isn't a risk posed by the dermal, ingestion, or inhalation exposure routes since the 5 foot soil samples indicated no contamination present.

Groundwater
For alternative groundwater closure, several criteria under R 18-12-263.04 must be met. The contamination has been characterized and analytical data supports that the plume is stable and localized on-site. The groundwater VOC concentrations have significantly declined. The water that is impacted by VOC contamination over an applicable regulatory standard is not used as a potable water source. The groundwater demonstrates that the residual petroleum contamination present does not pose an unacceptable inhalation risk to indoor air. The dermal contact and ingestion would be considered *de minimis* risk since the water is not used as a potable water source.

It is recommended that the LUST releases 5244.01-.02 be closed under R18-12-263.04.

If there any questions regarding this memo, please contact me at dg1@azdeq.gov, or 771-4453.