

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 # 5619.01
Facility ID # 0-002553
Maricopa County

former Melrose Gas and Food
4405 North 7th Avenue
Phoenix, Arizona 85013

The site is currently vacant and protected by a temporary chain-link fence. The site was previously occupied by the Melrose Gas & Food service station, located at the northeast corner of the intersection of North 7th Avenue and West Turney Avenue in Phoenix. An aerial photograph from January 1979 shows that the site had been developed with the existing fuel canopy and service station/store building. The property has an area of approximately 0.30 acres and contains a 989 square foot convenience store with a canopy over the former fuel island. The former UST pit was located southeast of the building. The rest of the property is asphalt-paved parking and driveway areas. On March 26, 2014, one 4,000-gallon and two 10,000-gallon gasoline USTs and the associated fuel dispensers and product lines were removed from the property. The tank removal activities were documented by Hydro Geo Chem (HGC), contractor for the State Lead Unit, in a report titled *UST Closure Assessment Report*, dated April 5, 2014. In the report, HGC indicated that the tanks had been installed in 1969. Based on the detection of several polynuclear aromatic hydrocarbons (PAHs) in soil samples collected during UST closure activities, a confirmed release was identified at product lines located at the northern fuel island.

In December 2014, site characterization activities were performed by SCS Engineers (SCS), as the contractor for the State Lead Unit. SCS drilled and sampled four soil borings (B1 through B4) to assess the vertical and horizontal extent of soil contamination associated with the UST system. Three borings (B2 through B4) were drilled to depths of 55 feet below ground surface (bgs); boring B1 was drilled to a depth of 65 feet bgs to assess the depth of groundwater, which was encountered at approximately 58 feet bgs. Soil samples were collected and analyzed for volatile organic compounds (VOCs) using EPA Method 8260B and specific soil samples were analyzed for PAHs using EPA Method 8270 SIM (selective ion monitoring) and tetraethyl lead. The concentration of BTEX and TMBs exceeded the residential soil remediation levels (rSRLs) and/or the minimum groundwater protection levels (GPLs) in soil samples collected from 25 through 55 feet bgs in borings B1 and B4 and from 35 through 55 feet bgs and 35 through 45 feet bgs in borings B2 and B3, respectively. In addition, the concentration of benzene detected in the grab groundwater sample collected from boring B-1 exceeded the AWQS.

In February 2015, SCS drilled and sampled six additional soil borings (B-5 through B-10) and four groundwater monitoring wells (MW-1 through MW-4). The soil borings were drilled to a depth of 55 feet bgs and the four groundwater monitoring wells were drilled to a depth of approximately 75 feet bgs. MW-1 was installed in the center of the source area, with MW-2,

MW-3, and MW-4 installed southeast, southwest, and north of MW-1, respectively. Numerous VOCs were detected in the soil samples collected from each boring. The concentration of BTEX, and TMBs exceeded the rSRLs and/or the minimum GPLs in one or more of the soil samples collected from each boring, except in the samples collected from the boring for well MW-4. The vertical extent of the soil contamination reached groundwater encountered at a depth of approximately 58 feet bgs. Groundwater beneath the site appeared to flow to the south-southeast with a very flat hydraulic gradient of 0.004 ft/ft. Based on the analytical results obtained from the groundwater samples collected from the four wells at the site, benzene and EDB were the only VOCs that exceeded the AWQS. Groundwater samples were collected between March 2015 and April 2018. Samples were analyzed for VOCs, and EDB by EPA Method 504.1 to obtain a detection limit below the AWQS.

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:* The residual groundwater contaminant plume consists of gasoline constituents, with EDB remaining as the only constituent above its AWQS at the source well only. The contaminant plume has impacted the Upper Aquifer Unit of the Phoenix Basin, which is not used for potable water supply near the subject site. Water supply wells in the central Phoenix Basin typically derive water from the Middle and Lower Aquifer Units. The closest such supply well is owned by the COP and is located greater than 1 mile from the site. Currently the City of Phoenix (COP) uses surface water [Salt River Project (SRP) reservoirs and the Colorado River] as its main source of drinking water. Nearly 50% comes from the Colorado River, which may begin to have shortages as soon as 2020 according to the Bureau of Reclamation. Because of this, COP views all water within their service area boundary as a potential water supply source in the event that Colorado River allocations are curtailed during a drought declaration.

SCS conducted a review of the Arizona Department of Water Resources (ADWR) available records to identify potential water production wells within one half mile of the subject site. The site is within central Phoenix and is served by municipal water. The two wells that are potentially receptors are labeled on the map. ADEQ identified 48 registered wells within 0.5 miles of the LUST site. 45 of the wells are registered monitoring or “other”. Two wells are registered as “non-exempt. Well #55-608379 is owned by SRP and is 1,100 feet up to cross gradient. SRP did not object to closure in the water provider questionnaire. No VOCs reported in the well when last sampled in June 2017. Well #55-482524 (abandoned in 2013) was located 2,000 feet to the north-northwest of the site at 727 W. Highland Avenue. One well (#55-639634) is registered as “exempt and is located at 1101 W. Heatherbrae between ¼ and ½ mile to the southwest of the site. The imaged record shows irrigation and domestic use.

2. *Other exposure pathways:* Subsurface soil VOC contamination was found over rSRLs in 2014 during the UST system removal. Two soil borings were advanced to collect current soil concentration data to assess direct exposure and ingestion risk. Two 15 foot soil borings (B11 and B12) were installed in November 2018. The only detections were naphthalene and acetone at concentrations well below the rSRLs. Six temporary soil vapor probes were installed on November 15, 2018 to evaluate potential inhalation risk from the subsurface soil contamination that may be left after active remediation. SCS used the EPA screening level Johnson-Ettinger Model to calculate the vapor intrusion risk. The cumulative cancer risk value from petroleum COCs in the source area is $9.28 \text{ E-}07$, which is below the target value of $1 \text{ E-}06$. The cumulative hazard quotient from petroleum COCs in the source area is 0.056, well below the target value of 1. All of these calculated values indicate an acceptable level of vapor intrusion risk into hypothetical, concrete slab on-grade on-site buildings, used for residential purposes.

Incidental dermal contact with the groundwater is considered *de Minimis* risk under A.R.S. §49-1001. SCS also completed a sensitive receptor survey for the site for a one-half mile radius. The site is in a commercial corridor along Central Avenue in Phoenix surrounded by residential and mixed use land. The Osborn Middle School is located at 1102 W. Highland Avenue to the northwest of the site approximately 0.5 miles and the other is the Little Kids N Co, daycare at 626 W. Campbell Avenue approximately 0.2 miles to the northeast of the site. The minor residual soil contamination is limited to the site and the vapor risk is acceptable as discussed. The groundwater contamination is limited to one well located on-site. There are no complete exposure pathways for the sensitive receptors identified. No hospitals or nursing homes were observed within a one-half mile radius of the site.

3. *Groundwater plume stability:* To evaluate the stability of the residual groundwater contamination by petroleum hydrocarbons from the subject release, SCS completed a Mann-Kendall statistical evaluation of benzene and EDB for MW-1. Benzene exhibited a statistically significant downward trend and has not been detected in the last 5 rounds of sampling. EDB exhibited a “no trend” result, meaning the trend did not meet the statistical confidence to conclude the raw trend is valid. All EDB results are below 1 microgram per liter ($\mu\text{g/l}$), so the variation in results contributing to the trend is in part due to analytical variation. Concentrations of COCs in groundwater from the subject release have been reduced by remedial activities to below detectable concentrations and well below ADEQ AWQs, with the exception of EDB.

The down-gradient extent of the plume was estimated using centerline output from EPA's BIOSCREEN Natural Attenuation Decision Support System, version 1.4, 1997 (BIOSCREEN) modeling software. SCS completed a BIOSCREEN simulation of the residual EDB concentrations. Estimates were input for aquifer properties and a conservative (i.e., higher than expected) residual mass of EDB of .01 kilograms was used. The geochemical parameters from the MNA sampling were used for the instantaneous reduction model. In general, EDB is expected to degrade similarly to other petroleum compounds in an aerobic environment. BIOSCREEN computes the source decay based on the dissolved concentration and flow rate assuming an LNAPL source, which doesn't apply here. The plume is simulated as constant source so the output does not show decay of the source area. The output shows that all three

mechanisms simulated (first-order decay, instantaneous reaction, and no degradation) result in the EDB concentrations falling to near zero within 50 feet of the source. Given the low concentrations of less than 1 µg/L, these results should be considered qualitative. The results are consistent with EDB only being detected at MW-1 with no apparent migration beyond the immediate source.

The length of plume was calculated to be 36 feet from the source based on Darcy's Law under saturated conditions. Data from a down gradient LUST site located less than ¼ mile, Automatic Transmission Experts (F: 0-007681, L: 2238.01 - .04) was reviewed and the well data confirmed no dissolved concentration of any CoCs above AWQS.

4. *Characterization of the groundwater plume:* After the start of SVE/AS operations, SCS performed two groundwater monitoring events in 2016, and three in 2017. The four groundwater monitoring wells at the site were sampled during each monitoring event (MW-1 through MW-4). Three of these wells were also used as soil vapor extraction wells (MW-1 through MW-3); therefore, the SVE system was shut down prior to performing the sampling of these wells, and restarted after sampling. As discussed in the October 16, 2017 *Periodic Site Status Report*, the number of analytes detected in the well samples and their concentrations decreased significantly in MW-3 and MW-4 by August 2016, by March 2017 in MW-2, and by May 2017 in MW-1. The concentrations of benzene, methyl-tert butyl ether (MTBE), ethylene dibromide (EDB, aka 1, 2-dibromoethane), and 1, 2-dichloroethane (1, 2-DCA) that exceeded the respective AWQS were reduced and no longer exceeded the AWQS. In general, those compounds that were detected in the samples during the remediation activities were reduced to non-detectable levels and/or were below the AWQS. All compounds are below the aquifer water quality standards (AWQS) except for EDB at MW-1. Benzene has not been detected above the AWQS since March 2017 and has not been detected for the last five rounds of sampling.

5. *Natural Attenuation:* Natural attenuation processes include diffusion, dispersion, sorption, volatilization, and biodegradation. A decreasing trend in chemical concentrations in groundwater has been established, which supports natural attenuation is occurring. Hydrologic and geochemical data can be used to indirectly demonstrate the type(s) of natural attenuation processes. Field measurements for oxidation-reduction potential, conductivity, pH, temperature and dissolved oxygen) were recorded at regular intervals. Monitored natural attenuation (MNA) sampling was conducted in November 2018. MW-1 is the source area well and MW-4 represents background. EDB degrades aerobically and the objective of the MNA sampling was demonstrate that the geochemical conditions are appropriate to support aerobic biodegradation. The DO is somewhat depleted at MW-1 compared to MW-4, which suggests some biodegradation of the low concentrations of petroleum compounds remaining is occurring. Conditions, however, remain aerobic, with DO over 1 mg/L. The similar sulfate and nitrate concentrations at both wells show there is no significant reduction occurring utilizing these potential electron donors. The iron and manganese results show nearly complete oxidation and also suggest aerobic conditions conducive to biodegradation persist. Since the only compound of concern is EDB, the lack of detected methane, ethane, and ethene is consistent with the benzene (and other organics)

being depleted, as expected. Overall, the MNA parameters provide additional support that the geochemical conditions are supportive of MNA.

6. *Removal or control of the source of contamination:* The UST system was removed in March 2014. During the period of February 2016 through August 2017, SCS implemented soil vapor extraction (SVE) and air sparging (AS). Based on the calculations, SCS estimated the mass of hydrocarbons removed was 85,359 pounds. The site lithology is very fine grained with “silty clay and presence of caliche” in vadose zone, and “clay with fine silt and sand” in saturated zone. Soil sampling performed in the smear zone/groundwater interface in B1-65’, showed no VOC contamination present over rSRLs. The down gradient well, MW-2, is located from nearest air sparge well by about 25 feet which appears to be beyond the radius of influence of air sparging for fine grained lithology. Therefore, shrinking of plume was due to diffusion or concentration gradient toward source area which and was being remediated effectively in this site. Confirmation of no long-term rebound (per groundwater monitoring) justifies absence of residual contamination beyond MW-2.

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	EDB AWQS is 0.5 µg/L	Depth to water (feet)
March 2015	67	0.28	58.48
December 2015	412	0.221	61.3
August 2016	73.5	0.0374	62.82
December 2016	68.7	0.42	63.27
March 2017	8.74	0.565	63.96
May 2017	<1	0.0252	63.95
September 2017	<1	0.603	63.85
April 2018	<1	0.23	65.82
November 2018	<1	0.829	68.83

Groundwater data for MW-2 (down gradient approximately 30 feet from MW-1)

Date	Benzene AWQS is 5 µg/L	EDB AWQS is 0.5 µg/L	Depth to water (feet)
March 2015	86	<1.0 (EPA Method 8260B)	58.4
December 2015	326	0.0198	61
August 2016	262	<0.01	62.63
December 2016	21.5	0.0582	63.6
March 2017	<1	0.0177	63.69
May 2017	<1	<0.01	63.76
September 2017	<1	<0.01	64.46
April 2018	<1.0	<0.01	65.54

Groundwater data for MW-3

Date	Benzene AWQS is 5 µg/L	EDB AWQS is 0.5 µg/L	Depth to water (feet)
March 2015	470	<1.0 (EPA Method 8260B)	58.65
December 2015	129	<0.01	61.53
August 2016	1.93	<0.01	63.19
December 2016	<1	<0.01	63.55
March 2017	<1	<0.01	64.28
May 2017	<1	<0.01	63.45
September 2017	<1	<0.01	65.02
April 2018	<1	<0.01	66.09

Groundwater data for MW-4

Date	Benzene AWQS is 5 µg/L	EDB AWQS is 0.5 µg/L	Depth to water (feet)
March 2015	11	<1.0 (EPA Method 8260B)	58.58
December 2015	236	<0.01	61.35
August 2016	<1	<0.01	62.95
December 2016	<1	<0.01	63.31
March 2017	<1	<0.01	63.99
May 2017	<1	<0.01	64.01
September 2017	<1	<0.01	64.83
April 2018	<1	<0.01	65.88

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 **May 21, 2019 and ending June 21, 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: dgl@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 goodwin.debi@azdeq.gov or the Project Manager, Samar Bhuyan at bhuyan.samar@azdeq.gov or at (602) 771-4252.

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.

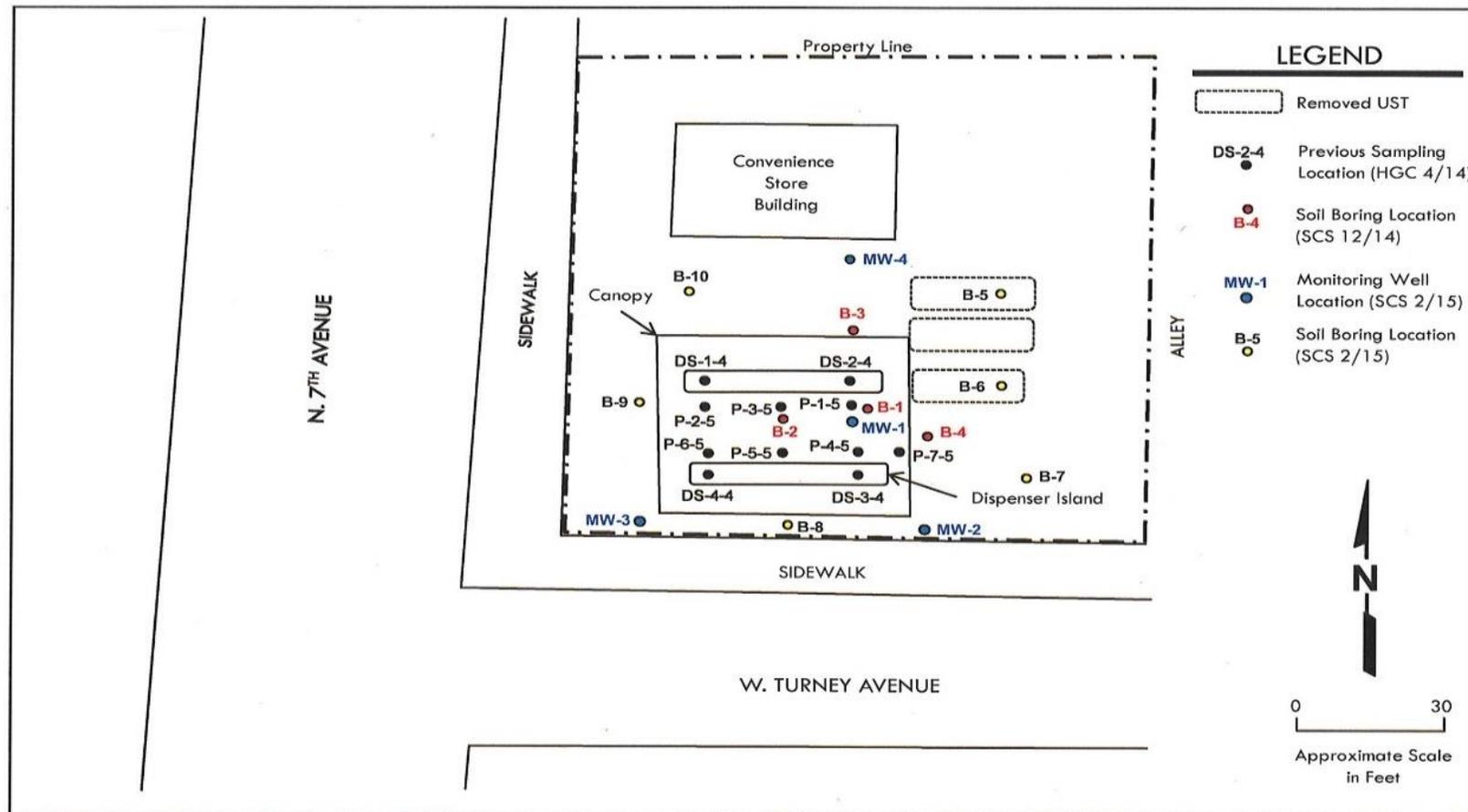
ADEQ tomará las medidas razonables para proveer acceso a los servicios del departamento a personas con capacidad limitada para hablar, escribir o entender inglés y / o para personas con discapacidades. Las solicitudes de servicios de interpretación de idiomas, interpretación ASL, subtítulos de CART, 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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4405 North 7th Avenue
Phoenix, Arizona

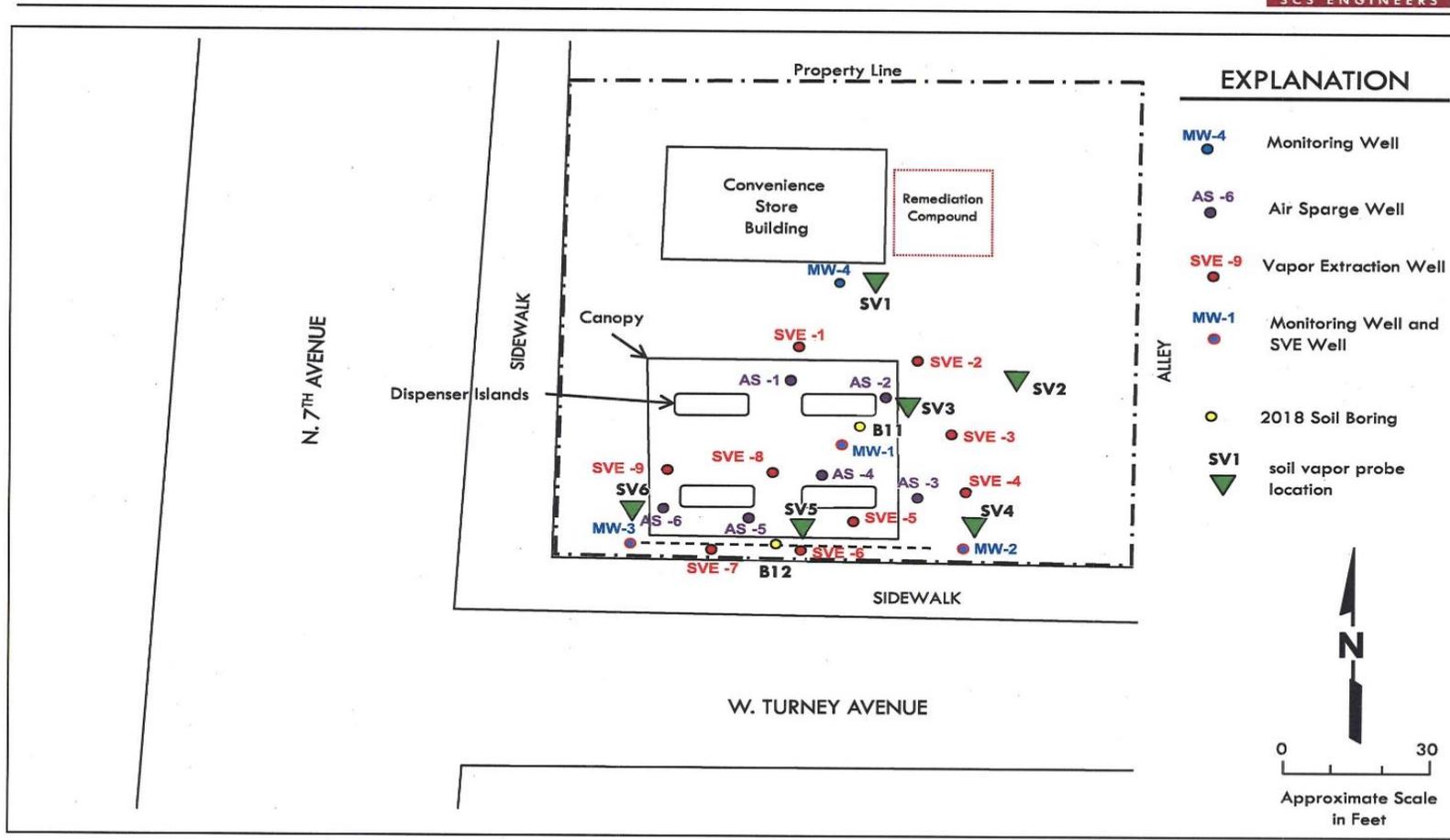
Figure 1
Site Vicinity



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ADEQ
Former Melrose Gas & Food
4405 North 7th Avenue
Phoenix, Arizona

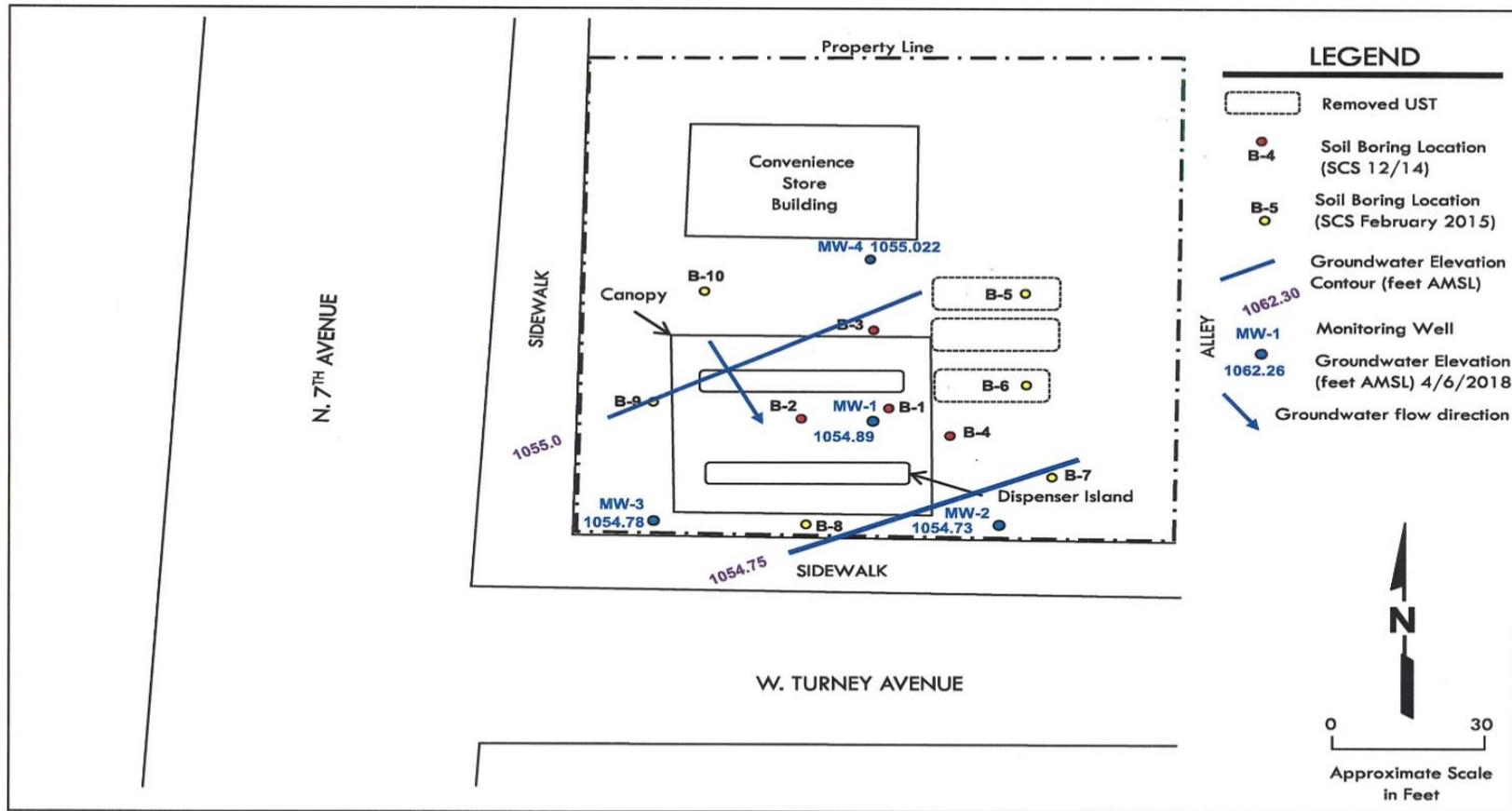
Figure 2
Site Plan



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 4405 North 7th Avenue
 Phoenix, Arizona

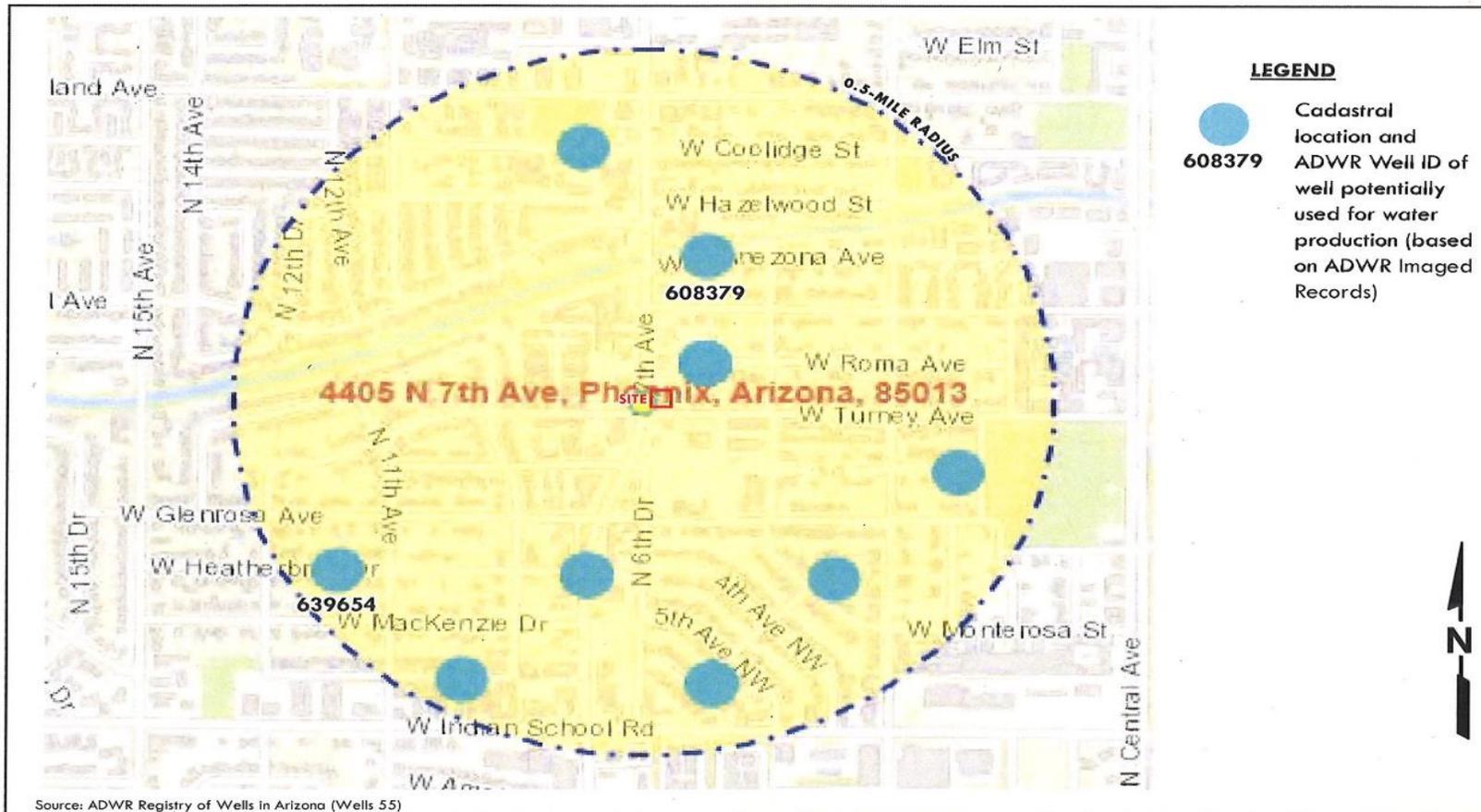
Figure 4
 2018 Soil Vapor and Boring Sampling Locations



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Figure 1
Groundwater Conditions
(April 2018)



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Figure E2
 Well Listings Within 0.5 Mile of Site



Email completed form to: dq1@azdeq.gov

UST- LUST Section
GROUNDWATER USE QUESTIONNAIRE

LUST FACILITY NAME Melrose Gas & Food

ADDRESS 4408 North 7th Avenue, Phoenix, 85013

LUST FACILITY ID 0-002553

LUST CASE NO 5619.01

Please answer all questions. Mark "UNK" if the answer is unknown to you at the time of completion. Please attach any additional pages as needed.

Water user municipality/utility name: Salt River Project

Date Questionnaire was completed: April 25, 2019

Contact Name: Karis Nelson

Title: Senior Environmental Scientist

Address: Environmental Compliance and Permitting

PAB 359, P.O. Box 52025, Phoenix, AZ 85072

Phone Number: 602-236-2916

Email address: karis.nelson@srpnet.com

1. Please indicate current or near future anticipated groundwater development by the municipality/utility within 1 mile of the above named LUST site.

SRP operates water conveyance structures and groundwater supply wells within a 1-mile radius of the LUST site. SRP wells within the 1-mile radius include: 12.1E-8.9N, 13E-8.6 N, 13E-9.1N, 13.5E-9.4N, and 14E-8.5N. SRP wells produce water for SRP shareholder use. For the reasonably foreseeable future groundwater development, please see the response to question #2, below.

2. What is the future use (up to 100 years) for groundwater within 1 mile of the above named LUST site?

SRP anticipates that properties near the subject area will remain in use over the next 100 years. Water from supply wells in the vicinity could be included in the raw drinking water supply for the City of Goodyear (Goodyear), once the future Goodyear water treatment plant starts treating its raw water delivered by SRP.

SRP entered into an Agreement with Goodyear in 2017 to wheel Goodyear's surface water supplies through the SRP water delivery system to the future Goodyear water treatment plant. Although the water delivered to Goodyear will primarily be Goodyear's surface water supplies (i.e., entitlement of Central Arizona Project water), from an operational perspective some of that water may physically be comingled with water from groundwater wells that discharge from around the site.

3. Is the municipality/utility currently sampling groundwater wells within 1 mile of the above named LUST site? If so, how often is the sampling conducted? Are analytical results being submitted electronically to ADEQ's the groundwater database? If not, will you share the data with ADEQ?

SRP conducts routine groundwater sampling of its wells. Water quality records are submitted electronically to the ADEQ groundwater database.

4. Are there any groundwater wells owned by the water provider that are known to have been affected by the above named LUST site? If so, please list the ADWR well identification numbers. What is the current status of these wells (e.g.- shut down, still pumping)?

The SRP groundwater wells are currently not known to be affected by the LUST site:

12.1E-8.9N (55-214512) Active Well – Levels of BTEX, MTBE, and EDB were below laboratory reporting limits in June 2014.

13E-8.6 N (55-608379) Active Well – Levels of BTEX, MTBE, and EDB were below laboratory reporting limits in June 2017.

13E-9.1N (55-608423) Active Well – Levels of BTEX, MTBE, and EDB were below laboratory reporting limits in May 2018.

13.5E-9.4N (55-608425) Active Well – Levels of BTEX, MTBE, and EDB were below laboratory reporting limits in December 2018.

14E-8.5N (55-608422) Active Well – Levels of BTEX, MTBE, and EDB were below laboratory reporting limits in January 2018.

5. What is the future use (up to 100 years) for any wells that have been impacted by the above named LUST site?

Please see above responses to questions #2 and #4.

6. Is there any other information you wish to provide to assist ADEQ in the LUST case closure evaluation of this site?

SRP's water supply wells are a critical resource, especially in drought conditions, and it is very important that SRP has a reliable supply of water to meet customer and shareholder needs.