

**PROPOSED UNDERGROUND STORAGE TANK (UST)  
RELEASE CASE CLOSURE EVALUATION SUMMARY**

**LUST Case File #: 5534.01**  
**Facility ID # 0-003506**  
**Maricopa County**

**Target Store #0209 (former Fedmart Store #249)**  
**740 W. Camelback Road**  
**Phoenix, Arizona 85013**

*Background:*

The Site is located at the northwest corner of West Camelback Road and North 7th Avenue in Phoenix, Arizona. The Site is part of the Camelback Village Square Shopping Center. The Site is to the east of LA Fitness. The previous location of the USTs and product dispensers is now the parking area, with asphalt and desert vegetation at the surface. Nearby properties mainly consist of commercial businesses, except for an apartment complex located north of the shopping center and a church located to the east across 7th Avenue.

According to ADEQ records, in 1965 three 12,000-gallon gasoline underground storage tanks (USTs), four fuel dispensers, and associated piping were installed at the Site in 1965, and were removed in 1990. Subsurface investigation activities performed in 2009 and 2010 indicated that fuel releases from the USTs (release number 5534.01) and the product piping (release number 5534.02) had occurred. Twenty-six soil borings were installed, and sampled. Eight of the soil borings were completed as groundwater monitoring wells, one boring was completed as an air sparge (AS) well, and one was completed as a soil vapor extraction (SVE) well. In 2010, ADEQ approved the *Site Characterization Report*, and closed release 5534.02. In 2012, the State Lead Unit contracted with Brown & Caldwell (BC) to initiate remedial actions.

*Removal or control of the source of contamination:*

According to the ADEQ records, the UST system was removed from the Site in 1990. In February 2013, BC conducted AS and SVE pilot tests at the Site. Based on the results of the pilot tests, ten nested AS/SVE remediation wells were installed. In September 2013, an AS/SVE remediation system was started. The AS/SVE system operated until it was shut down on April 27, 2015. The SVE system removed a cumulative mass of approximately 16,800 pounds of Volatile Organic Compounds (VOCs).

Four in-situ chemical oxidation injection (ISCO) events were performed (June 2015, October 2015, June 2016 and December 2018) using Persulfox®. VOC concentrations in groundwater have significantly decreased by three orders of magnitude in the source area since active remediation commenced in September 2013.

Site-wide average concentrations for benzene, toluene, ethylbenzene, and total xylenes have decreased from the first groundwater-sampling event in January 2013 to the most current sampling event in August 2019 as follows:

- Average benzene concentrations from 3,858 µg/L to <1 µg/L

- Average ethylbenzene concentrations from 1,018 µg/L to <1.6 µg/L
- Average toluene concentrations from 7,502 µg/L to <0.4 µg/L
- Average total xylene concentrations from 3,743 µg/L to <1 µg/L

Assuming the change in average concentrations across the Site is representative of the change in contaminant mass, the above concentration reductions would correlate to a mass reduction of over 99 percent.

As of August 2019, the concentration of benzene in well MW-1 was 5.89 µg/L (higher reported concentration between the sample and its duplicate) and the concentration of benzene in well MW-2 (up gradient) was 2.07 µg/L. An average of the two concentrations produces 3.98 µg/L. Based on this concentration, it is estimated that there is approximately 0.007 pounds of benzene remaining in the groundwater at the Site. Assuming benzene is 3 percent of the total petroleum hydrocarbons, there is an estimated 0.25 pounds of dissolved-phase total petroleum hydrocarbons remaining in the groundwater.

*Characterization of the groundwater plume:*

In November 2009, eight monitoring wells were installed at the Site to characterize groundwater conditions. Historical groundwater depths range from approximately 62 feet to 70 feet below ground surface (bgs). Except for a silty clay sequence generally encountered between 10 and 25 feet bgs, the lithology beneath the Site consists of mixtures of clean to silty sands to a depth of at least 75 feet. In January 2011, the depth to groundwater was approximately 60 feet and the groundwater flow direction was reported towards the south-southeast. Only one soil boring, GES-1/MW-1, located within the former UST pit, contained chemicals of concern (COCs) with concentrations that exceed the Tier 1 Cleanup Standards and/or minimum Groundwater Protection Levels (GPLs). COCs in groundwater exceeding the Arizona Aquifer Water Quality Standards (AWQS) consisted of benzene, toluene, ethylbenzene, total xylenes, 1, 2-dichloroethane (1, 2 -DCA), and ethylene dibromide (EDB). 1, 2-DCA and EDB are chemicals found in leaded gasoline. The highest concentrations of these COCs were reported in well MW-1 (source well).

Groundwater gradient, determined from the most recent monitoring event (August 2019), is approximately 0.0063 feet per foot, with a flow direction to the south. Monitoring well MW-1 is considered the center (source area) of the plume, well MW-2 is located up gradient, and well MW-6 is a down gradient well. MW-7 is located up gradient of a Salt River Project well and was a down gradient well when the flow direction was south-southeast. The highest benzene concentration reported at the site occurred at MW-1 (14,000 micrograms per liter [µg/L]) on January 18, 2013. The benzene concentration in MW-1 in August 2019 was 5.89 µg/L.

No VOC concentrations exceeding the AWQS have ever been reported at monitoring well MW-7 (down gradient of the source area) or MW-8 (cross gradient of the source area). Furthermore, no concentrations of VOCs, have been reported above AWQS at monitoring well MW-6 since January 2016, suggesting that the plume is characterized and does not extend off site. Groundwater elevations in the monitoring wells have decreased approximately 7 feet between the first groundwater event (January 2013) and the latest event in August 2019. Liquid-phase hydrocarbons have not been detected in any of the monitoring wells during groundwater

monitoring events for several years. Currently, only the concentration of benzene and EDB in well MW-1 exceed AWQS.

*Groundwater plume stability:*

The initial groundwater sampling conducted in January 2013 confirmed the presence of VOCs in exceedance of Arizona AWQS in monitoring wells MW-1, MW-2, and MW-4. Since that time, remediation efforts have reduced the groundwater plume significantly. The most recent groundwater sampling event (August 2019) reports that well MW-1 is the only well with VOC concentrations above Arizona AWQS (benzene at 5.89 µg/L and EDB at 0.200 µg/L, respectively). MW-1 is a source area well located at the former UST pit location. The Mann-Kendall trend analysis was used to evaluate benzene and EDB data from well MW-1 and reports decreasing trends for both compounds. For reference, EDB has not reported an exceedance of the Arizona AWQS in any other site monitoring well throughout the monitoring history. Vadose zone remediation efforts applied near MW-1 have removed significant quantities of hydrocarbons from the subsurface and provide evidence that existing impacts will continue to decrease over time.

BC determined that based on analytical results from the August 2019 groundwater-sampling event, the area of the Site with dissolved-phase petroleum hydrocarbon impacted groundwater is estimated to be approximately 7,850 square feet (ft<sup>2</sup>), which is the area of a circle with a 50-foot radius surrounding well MW-1. The 50-foot radius assumption is a conservative estimate because groundwater benzene concentration at MW-4 located approximately 70 feet down gradient of MW-1 is less than half the Arizona AWQS.

*Natural Attenuation:*

Natural attenuation processes include diffusion, dispersion, sorption, volatilization, and biodegradation. A decreasing trend in VOC concentrations in groundwater has been established, which supports that natural attenuation is occurring. Hydrologic and geochemical data can be used to indirectly demonstrate the type(s) of natural attenuation processes. The extent of the dissolved benzene plume is restricted to the immediate vicinity of source well MW-1.

Monitored natural attenuation parameters were sampled on August 31, 2018, and reported the following:

Nitrate concentrations within the remediated plume are low (<1 milligram per liter [mg/L]) and nitrate concentrations outside the remediated plume area are greater (>5 mg/L). The low concentrations of nitrate within the plume potentially indicate depletion of nitrate as an electron acceptor in the source area. However, significantly elevated nitrate remains in cross-gradient groundwater east of the Site.

Ferrous iron is present in wells MW-1 (0.07 mg/L) and MW-8 (0.01 mg/L).

Sulfate concentrations within the remediated plume are high (>7,000 mg/L) due to the addition of sodium persulfate, and sulfate concentrations outside the remediated plume are low (<350 mg/L). Sulfate concentrations are detected down gradient (MW-6) at lesser concentrations than reported in the source area.

Low levels of methane are present in the source area wells (MW-1 and MW-4), indicating an oxidizing environment remains in the source area since the last ISCO injection took place in

December 2018. In contrast, the presence of higher methane concentrations would be indicative that methanogenesis, a process of microbial metabolism in anaerobic environments, is occurring. Methane was not detected in the cross-gradient wells, which is also consistent with an oxygen rich environment.

Additionally, DO concentrations were collected routinely, most recently in August 2019. DO concentrations within the remediated plume were elevated immediately following ISCO but are now low (<1.0 mg/L), and DO concentrations outside/down-gradient of the remediated plume are increasing with distance from the source area (>12 mg/L).

ISCO injections have resulted in significant reserve quantities of the electron acceptor sulfate in and up gradient of the source area.

A BIOSCREEN analysis was performed using the most recent VOC data (August 2019) from well MW- 1. Natural attenuation data supports the process of biodegradation. Benzene and EDB concentrations from the center of the plume at source area well MW-1, MW-4 to the south, and the down gradient well MW-6 were used in the BIOSCREEN model. The results of the model analyses are provided below.

The model predicts both the benzene and EDB concentrations will decline below Arizona AWQS within 10 feet down gradient of well MW-1 and will be below Arizona AWQS at well MW-1 within 1 year.

The parcel boundary is approximately 60 feet cross-gradient and 115 feet down gradient of well MW-1.

#### *Threatened or impacted drinking water wells:*

A Receptor Survey was previously conducted within a 1/4-mile radius of the Site, as reported in the 2016 Remedial Progress Report prepared by BC. In addition, BC conducted an updated search of the Arizona Department of Water Resources' (ADWR's) well registry database in 2018 extending the radius to 1/2-mile to confirm that no drinking water wells are registered. ADEQ identified 26 registered wells. Twenty-four of the wells are registered as monitoring or "other". Two wells are registered as "non-exempt". One registered well was abandoned in 2013. The other well is located approximately 320 feet down gradient from MW-1, and is owned by Salt River Project (SRP) (ADWR #55-608423 and SRP well # 13E-9.1N). The registered use is for irrigation (also listed as a recovery well), with a screened interval from 150 to 400 feet bgs. Current groundwater elevations are approximately 70 feet bgs, which allows for 80 feet of vertical displacement between the water table and the top of the irrigation well screen. In addition, MW-6 is located approximately mid-way down gradient between MW-4 and the SRP well and has been below the detection limits for all chemical of concern (COCs) since July 2016. MW-7 is located up gradient of the SRP well and has never shown VOC detections. The SRP well is located along 7<sup>th</sup> Avenue just north of the Camelback Road intersection, on the west side of the street. This well has not shown any petroleum related contamination present over laboratory reporting limits according to the water provider questionnaire returned by SRP in August 2018. SRP did not object to the proposed closure.

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. Currently the City of

Phoenix (COP) uses surface water [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. There are no COP wells located within 1 mile of the LUST site. However, ADEQ solicited input from COP regarding the proposed Site closure. The COP returned a water provider questionnaire in August 2018, with a recommendation that additional groundwater remediation be conducted. ADEQ did another ISCO event in December 2018, along with three groundwater-monitoring events.

The lateral extent of the dissolved contaminant plume has significantly shrunk and it is currently restricted to the immediate vicinity of well MW-1. Benzene has not been detected in the closest down gradient well MW-6 over AWQS since June 2016. Benzene or EDB has ever been detected in down gradient MW-7, or in MW-8, which is located cross gradient from the source area.

According to ADWR, any new or replacement well located at or near this LUST site would need to meet the criteria of A.A.C. R12-15-1302 (B) (3).

*Other exposure pathways:*

A commercial building (LA Fitness) is located west of MW-3, and is outside the plume boundary. Potential exposure routes for the COCs in the soil and groundwater at the Site were addressed in detail in the *2016 Remedial Progress Report*. Soil samples collected during the initial monitoring well installations (November 2009) were analyzed for VOCs. Soil samples collected between 5 and 15 feet had no VOC contamination present over an applicable regulatory standard, so dermal contact and ingestion are not complete exposure pathways. On February 12, 2015, BC conducted a soil vapor survey and laboratory analytical results indicated the presence of benzene, toluene, ethylbenzene, total xylenes (BTEX) and other volatile organic compounds (VOCs) in each of the four soil vapor samples. The soil vapor survey was conducted to evaluate residual subsurface soil VOC contamination for vapor intrusion risk. ADEQ evaluated the soil vapor data using the on-line screening version of the Johnson & Ettinger model, using typical residential parameters. The modeling demonstrates the inhalation exposure route shows an acceptable cancer ( $7.85 \times 10^{-7}$ ) and non-cancer risk (0.019). Based on the results of a field receptor survey, there are no surface water, agricultural, or ecological receptors within one-quarter mile of the site.

*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.

*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 tables representing source area and down gradient conditions:

Groundwater data for MW-1 (center of source)  
Total Depth: 80 feet. Screened 50-80 feet.

Date	Benzene AWQS 5.0 µg/L	EDB AWQS 0.05 ug/L	Depth to Water (feet)
January 2013	<b>14,000</b>	<b>4.7</b>	60.90
September 2013 SVE/AS start	Not sampled	Not sampled	Not measured
February 2014	<b>6,480/6,380</b>	<b>68.5/64.8</b>	62.39
July 2014	<b>3,500/3,400</b>	<b>&lt;25/&lt;25</b>	63.65
October 2014	<b>3,180/3,140</b>	<b>&lt;500/&lt;500</b>	63.35
December 2014	<b>489</b>	<b>5.00</b>	63.42
February 2015	<b>280</b>	<b>&lt;10</b>	63.64
March 2015	<b>559/478</b>	<b>&lt;25/&lt;25</b>	63.74
April 2015 SVE/AS end	Not sampled	Not sampled	Not measured
June 15, 2015 ISCO in MW-1	Not sampled	Not sampled	Not measured
July 2015	<b>&lt;5.0/&lt;5.0</b>	<b>&lt;10/&lt;10</b>	64.94
August 2015	<b>299</b>	<b>1.02</b>	64.87
October 7, 2015 ISCO in MW-1	Not sampled	Not sampled	Not measured
November 2015	<b>&lt;5.0/&lt;5.0</b>	<b>&lt;25/&lt;25</b>	65.18
January 2016	<b>425</b>	<b>1.41</b>	64.92
June 1-3, 2016 ISCO in MW-1	Not sampled	Not sampled	Not measured
July 2016	<b>&lt;0.5</b>	<b>&lt;0.5</b>	66.42
August 2016	<b>97.2</b>	<b>&lt;5.0</b>	66.42
December 2016	<b>182</b>	<b>&lt;25</b>	66.36
February 2017	<b>111</b>	<b>&lt;2.5</b>	66.61
May 2017	<b>161/45.5</b>	<b>&lt;25/&lt;25</b>	67.31
February 2018	<b>273/249</b>	<b>&lt;20/&lt;20</b>	68.19
August 2018	<b>172</b>	<b>0.0847*</b>	69.6
December 13, 2018 ISCO in MW-1	Not sampled	Not sampled	Not measured
February 2019	<b>&lt;0.185/&lt;0.185</b>	<b>&lt;0.00432*</b>	69.95
May 2019	<b>2.17/0.47</b>	<b>0.0653*</b>	70.55
August 2019	<b>5.89/5.79</b>	<b>0.200*</b>	70.79

\*EDB analysis by low-level detection (EPA Method 8011)

Groundwater data for MW-4 (source area)  
Total Depth: 80 feet. Screened 50-80 feet.

Date	Benzene AWQS 5.0 µg/L	Depth to Water (feet)
January 2013	<b>13,000/12,000</b>	62.08
September 2013 SVE/AS start	Not sampled	Not measured
February 2014	<b>208</b>	63.52

July 2014	<10.0	64.84
October 2014	<5.0	64.53
December 2014	Not sampled	Not measured
March 2015	4.9	64.94
April 2015 SVE/AS end	Not sampled	Not measured
June 15, 2015 ISCO in MW-4	Not sampled	Not measured
July 2015	<b>11.6</b>	65.85
August 2015	<b>11.1/10.8</b>	65.92
October 7, 2015 ISCO in MW-4	Not sampled	Not measured
November 2015	<b>11.0</b>	66.24
January 2016	<b>11.7/11.7</b>	66.06
June 1-2, 2016 ISCO in MW-4	Not sampled	Not measured
July 2016	<5.0/<0.5	67.41
August 2016	<b>6.3/5.6</b>	67.61
December 2016	<25/<25	67.54
February 2017	<b>19.8/19.1</b>	67.81
May 2017	<b>27.5</b>	68.57
February 2018	<b>17.8</b>	69.39
August 2018	<b>19.8</b>	70.80
December 13, 2018 ISCO in MW-4	Not sampled	Not measured
February 2019	<0.185	71.2
May 2019	<1	71.77
August 2019	1.59	71.97

Groundwater data for MW-6 (down gradient from source area)  
Total Depth: 80 feet. Screened 50-80 feet.

Date	Benzene AWQS 5.0 µg/L	EDB AWQS 0.05 µg/L	Depth to Water (feet)
January 2013	<1	<1	62.09
September 2013 SVE/AS start	Not sampled	Not sampled	Not measured
February 2014	0.82	<0.5	63.30
July 2014	1.00	<1.0	64.67
October 2014	<5.0	<5.0	64.36
December 2014	Not sampled	Not sampled	Not measured
March 2015	1.50	<0.021*	64.78
April 2015 SVE/AS end	Not sampled	Not sampled	Not measured
August 2015	2.65	<1.0	65.71
November 2015	<b>5.57</b>	<0.5	65.98
January 2016	<b>6.10</b>	<0.0285*	65.81
June 1-2, 2016 ISCO in MW-6	Not sampled	Not sampled	Not measured
July 2016	<0.5	<0.5	67.14
August 2016	<0.5	<0.5	67.37
December 2016	<0.5	<0.5	67.34

February 2017	<1.0	<5.0	67.59
February 2018	<0.100	<0.200	69.13
August 2018	<0.185	<0.38	70.59
February 2019	<0.185	<0.00448*	70.25
May 2019	<1	<0.00448*	71.34
August 2019	<0.331	<0.00240*	71.66

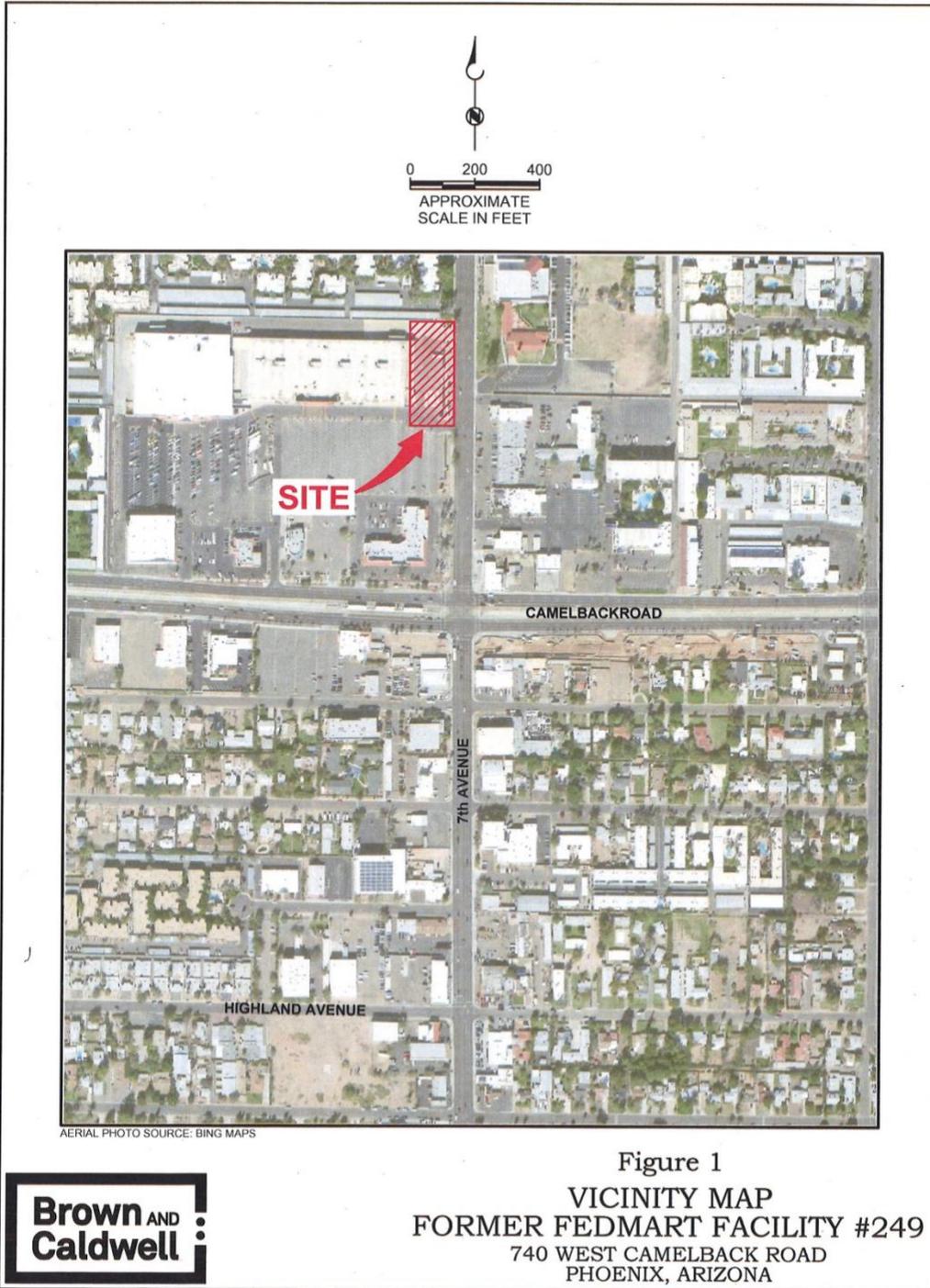
\*EDB analysis by low-level detection (EPA Method 8011)

Groundwater data for MW-7 (MW located up gradient of the SRP well and down gradient of source area)

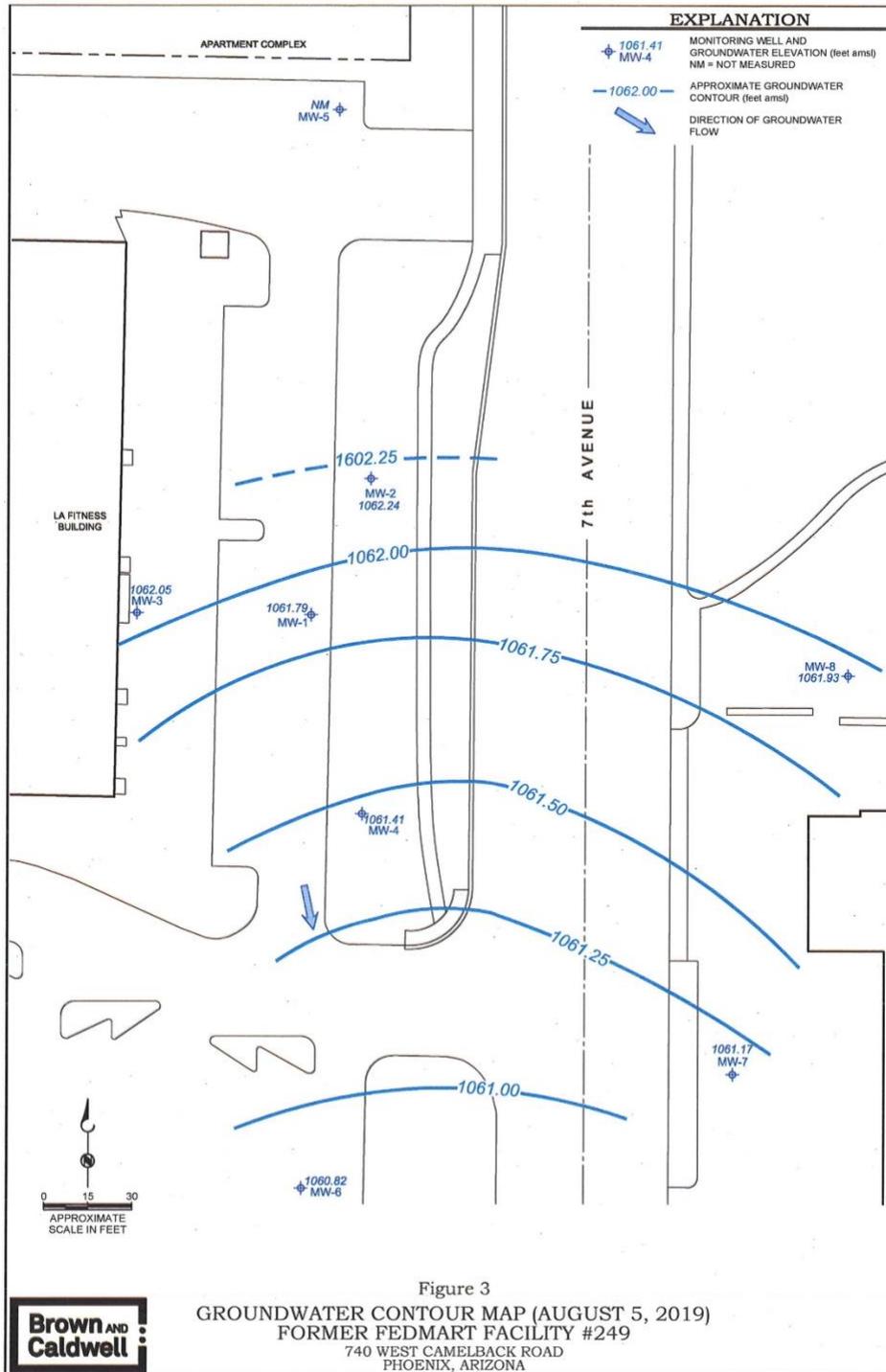
Total Depth: 80 feet. Screened 50-80 feet.

Date	Benzene AWQS 5.0 µg/L	EDB AWQS is 0.05 ug/L	Depth to Water (feet)
January 2013	<1	<1	60.41
September 2013 SVE/AS start	Not sampled	Not sampled	Not measured
February 2014	<0.5	<0.5	61.57
July 2014	<1.0	<1.0	62.98
October 2014	<5.0	<5.0	62.61
December 2014	Not sampled	Not sampled	Not measured
March 2015	<1.0	<0.021*	63.07
April 2015 SVE/AS end	Not sampled	Not sampled	Not measured
August 2015	<1.0	<1.0	64.03
November 2015 (well head under puddle of water)	Not sampled	Not sampled	Not measured
January 2016	<0.5	<0.0285*	64.08
December 2016	<0.5	<0.5	65.47
February 2017	<0.5	<0.5	65.77
February 2018	Not sampled	Not sampled	Not measured
August 2018	<0.185	<0.38	68.67
February 2019	<0.185	<0.00459*	68.86
May 2019	<1	<0.0199*	69.49
August 2019	<0.331	<0.00240*	69.75

\* EDB by low-level detection (EPA Method 8011)



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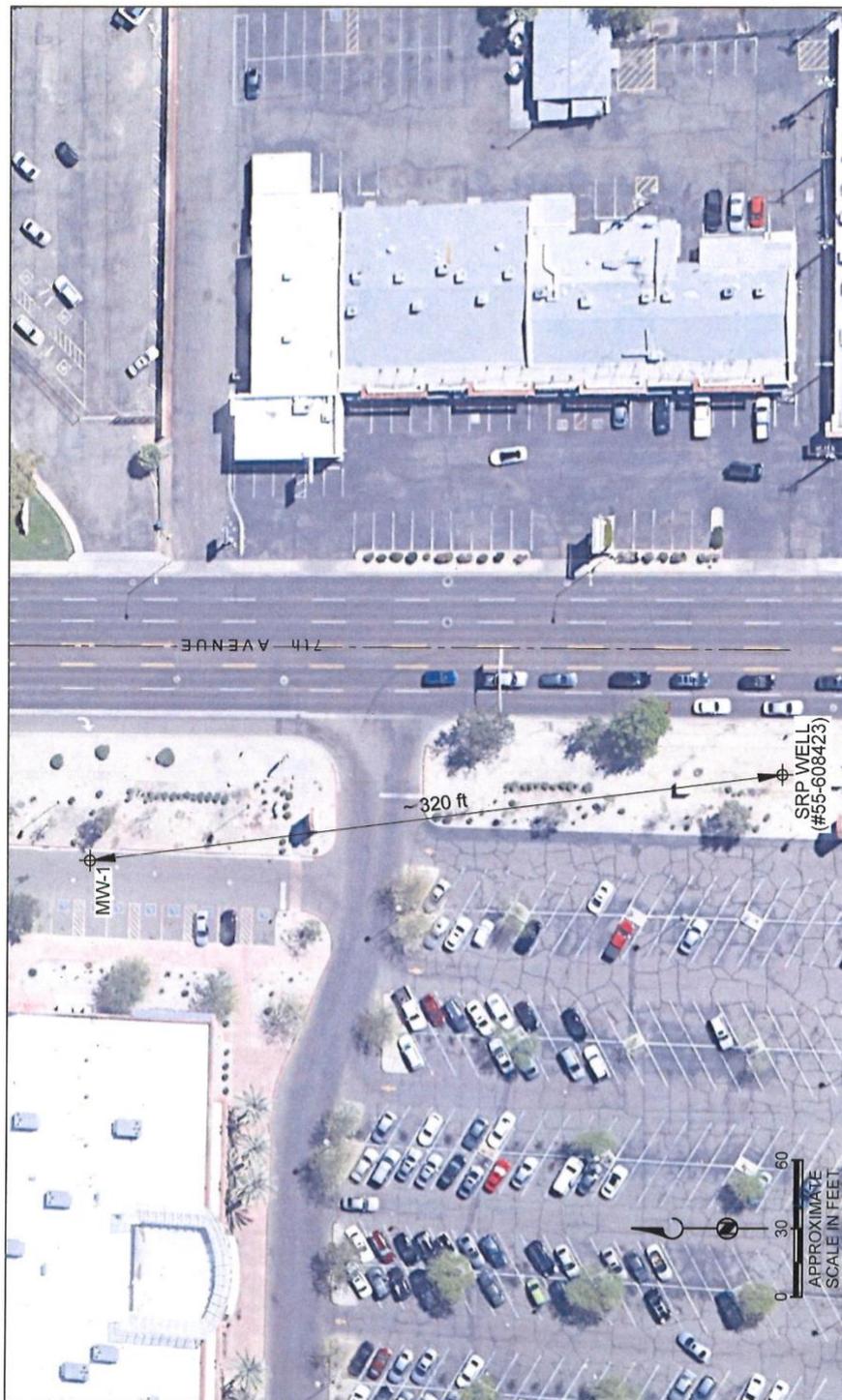
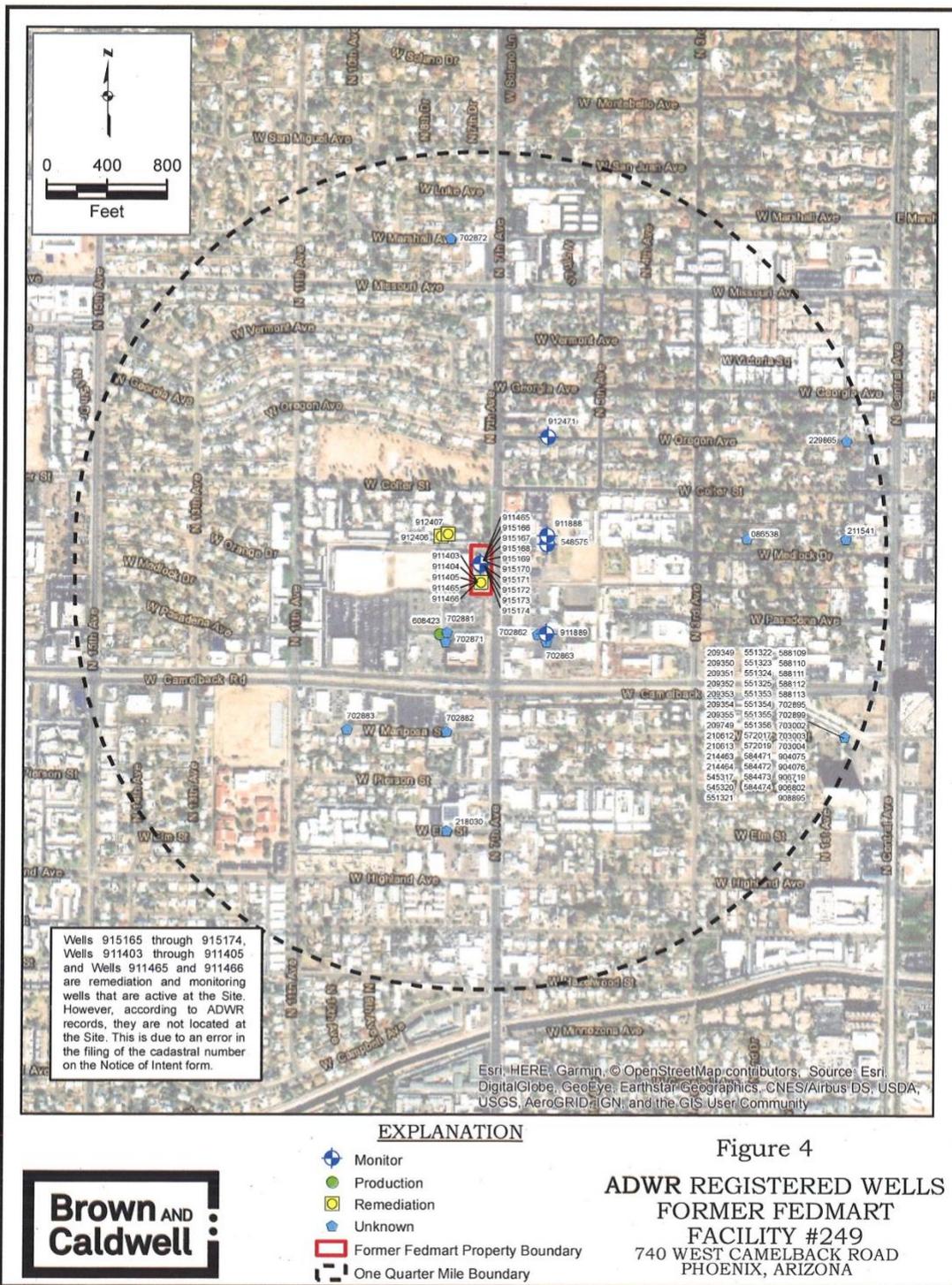


Figure 6  
NEARBY WELL MAP  
FORMER FEDMART FACILITY #249  
740 WEST CAMELBACK ROAD  
PHOENIX, ARIZONA



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Email completed form to: [dg1@azdeq.gov](mailto:dg1@azdeq.gov)

**UST- LUST Section**  
GROUNDWATER USE QUESTIONNAIRE

LUST FACILITY NAME former Fedmart #249  
ADDRESS 740 W. Camelback Road, Phoenix  
LUST FACILITY ID 0-003506  
LUST CASE NO 5534.01

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: August 22, 2018  
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: 13.5E-9.4N (55-608425), 13E-9.1N (ADWR 55-608423), 13E-8.6N (ADWR 55-608379), 12.5-10N (ADWR 55-608429), and 12.1E-8.9N (ADWR 55-214512)]. The SRP wells produce water for SRP shareholder use.

SRP also owns electrical distribution and transmission facilities within the 1-mile radius surrounding the LUST site.

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 all of the properties in the vicinity of the subject area, including the groundwater supply wells and the conveyance structures, will remain in use over the next 100 years. Additionally, the supply wells in the vicinity will transition to both irrigation to municipal service (potable supply) wells once the Goodyear water treatment plant becomes operational.

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)?

There are currently no known water quality impacts from BTEX (benzene, toluene, ethylbenzene, and total xylenes (including p-, m-, and o-xylene)) or Methyl-Tert-Butyl-Ether (MBTE) based upon recent analytical results for those compounds in SRP groundwater wells 13.5E-9.4N, 13E-9.1N, 13E-8.6N, 12.5-10N, and 12.1E-8.9N.

However, the water quality in wells 13.5E-9.4N and 13E-9.1N is impacted by tetrachloroethylene (PCE), which is likely caused by the neighboring 7<sup>th</sup> Avenue and Bethany Home Road WQARF site.

The current status of wells 13.5E-9.4N, 13E-9.1N, 13E-8.6N, and 12.1E-8.9N is "Active." Well 12.5E-10N is "Inactive."

Groundwater Use Questionnaire

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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.



**City of Phoenix**  
OFFICE OF ENVIRONMENTAL PROGRAMS

**RECEIVED**

AUG 22 2018

Waste Programs Division  
UST-LUST Section

August 17, 2018

Ms. Deborah Goodwin  
Arizona Department of Environmental Quality  
1110 West Washington Street  
Phoenix, AZ 85007

Re: ADEQ UST –LUST Groundwater Use Questionnaire  
Former Fedmart Facility #249 facility 0-003506 Lust case 5534.01  
740 West Camelback Road  
Phoenix, Arizona

Dear Ms. Goodwin:

The City of Phoenix (City) has reviewed the site closure assessment report along with the groundwater use questionnaire. The City has significant concern that the Arizona Department of Environmental Quality (ADEQ) is proposing to close a site that has 273 ug/l of benzene left in the groundwater. ADEQ's consultant modeled that the source would remain for 315 years before it attenuated to below the aquifer water quality standard (AWQS) of 5 ug/l. Due to the fact that extended drought could cause the water providers to initiate groundwater pumping to meet customer demand, the City is unclear if the gradient or flow direction would be effected to the point where the remaining contamination could migrate off-site and become a human health risk.

The City has completed ADEQ's questionnaire and appreciates the opportunity to review information concerning the site and comment as a water provider. If you have any questions please contact Julie Riemenschneider ([Julie.riemenschneider@phoenix.gov](mailto:Julie.riemenschneider@phoenix.gov)) or Nancy Allen ([nancy.allen@phoenix.gov](mailto:nancy.allen@phoenix.gov)).

Sincerely,

A handwritten signature in blue ink, appearing to read 'Nancy S. Allen'.

Nancy S. Allen  
Environmental Programs Manager  
Office of Environmental Programs, City of Phoenix



**ARIZONA DEPARTMENT  
OF ENVIRONMENTAL  
QUALITY**

*Email completed  
form to (preferred):*  
**DG1@azdeq.gov**

*Or mail completed form to:*  
UST-LUST Section  
1110 W Washington St  
Phoenix, AZ 85007

## GROUNDWATER USE QUESTIONNAIRE

LUST FACILITY NAME former Fedmart Facility #249

ADDRESS 740 W. Camelback Road

LUST FACILITY ID 0-003506

LUST CASE NO 5534.01

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: City of Phoenix Water System - AZ0407025

Date Questionnaire was completed: 8/16/2018

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

The City of Phoenix does not have any operating or inactive municipal supply wells within 1 mile of the subject LUST site.

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

Groundwater development could occur within 1 mile of the LUST site for municipal supplies during severe water supply shortages.

The majority of the City's current supply for drinking water source comes from surface water which is supplied by the SRP system (Salt and Verde Rivers) and Colorado River Water (CAP water). Nearly 50% of the City of Phoenix water supply comes from the Colorado River. The Bureau of Reclamation (BOR) who manages the Lower Colorado River operations has indicated in their 24-month study report issued August 15, 2018 that shortages on the Lower Colorado River could begin as soon as 2019 with deeper cuts predicted over time. Because of this possibility, the City views all water in our boundary as a potential water supply source in the event that CAP allocations are curtailed during a drought declaration.

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 groundwater database? If not, will you share the data with ADEQ?

No sampling is being conducted.

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)?

No COP wells are known to have been affected, as of the date of this questionnaire.

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

Not determined.

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

In reviewing the documents provided the City is concerned that the source well (MW-1) and an on-site downgradient well (MW-4) still have benzene in the wells at concentrations of 273 ug/L and 17.8 ug/L respectively. The modeling provided in the ADEQ document for closure indicate benzene in the source well will be above the Aquifer Water Quality Standard (AWQS) for 315 years. Three hundred and fifteen years is a long time, the City is unclear how the gradient and flow direction might change should pumping for groundwater be implemented which could reduce the stability of the plume. Although it appears from the report that in-situ chemical oxidation injection (ISCO) treatment has worked well at this site, the City does not concur that the site should be closed. The City is concerned that there still exists a significant amount of benzene in the groundwater, 273 ug/l of benzene (AWQS for Benzene is 5 ug/l.). The City would recommend that ISCO treatment continue at this site until the modeled time frame for attention below the AWQS is significantly shorter.