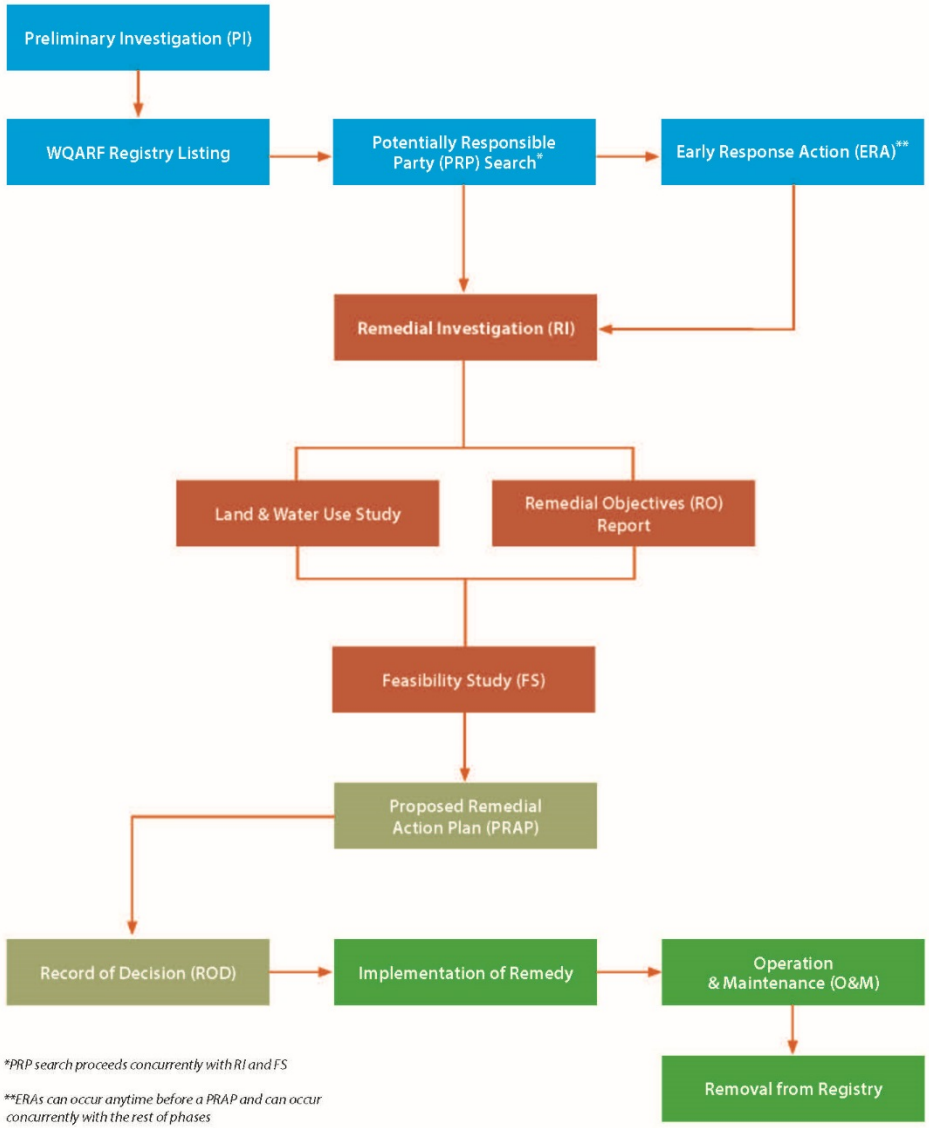
Central Phoenix Water Quality Assurance Revolving Fund (WQARF) Sites Community Advisory Board (CAB) Presentation

August 2, 2017

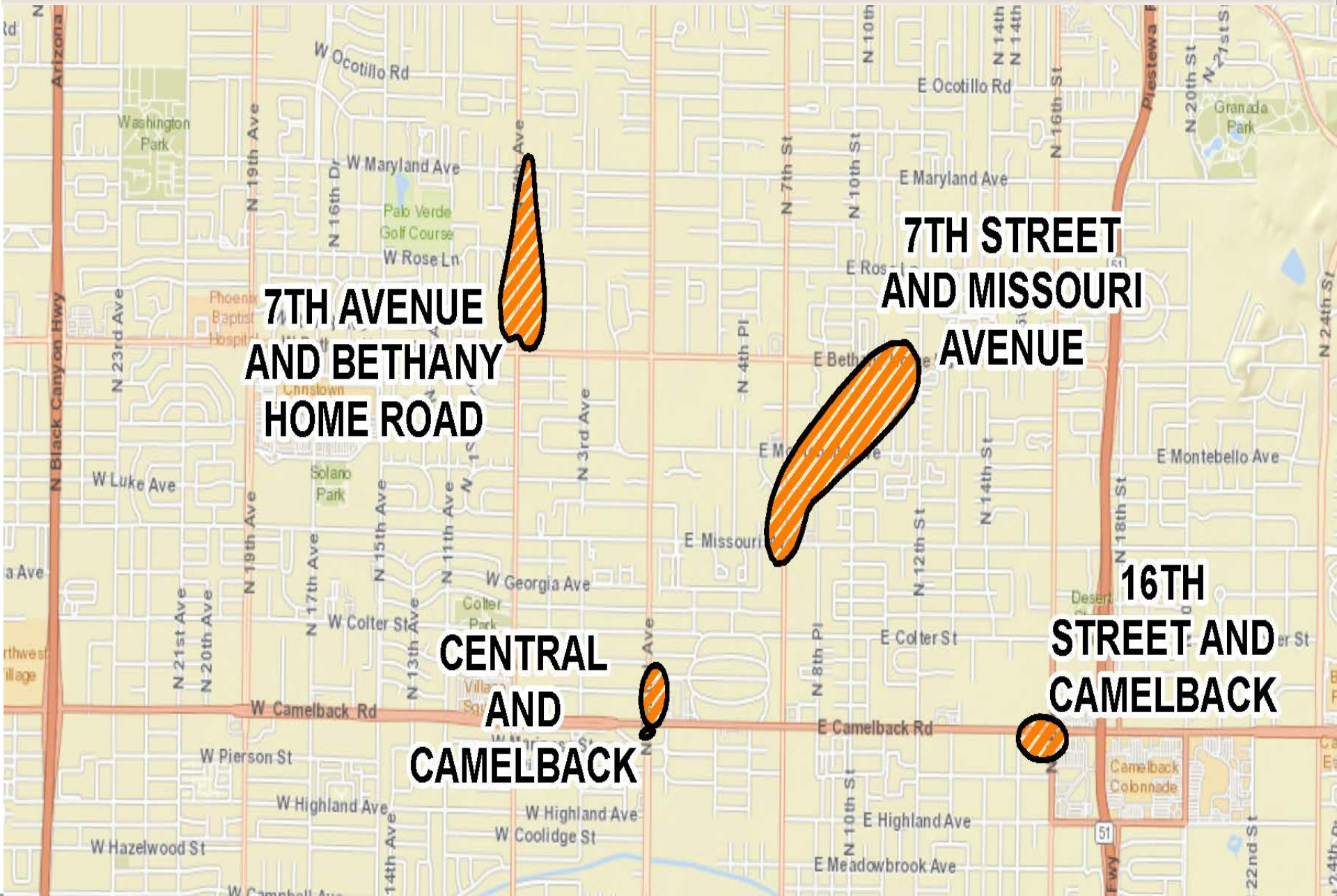
Wendy Flood, Community Involvement Coordinator
Kevin Snyder, Project Manager

ADEQ
Arizona Department of Environmental Quality

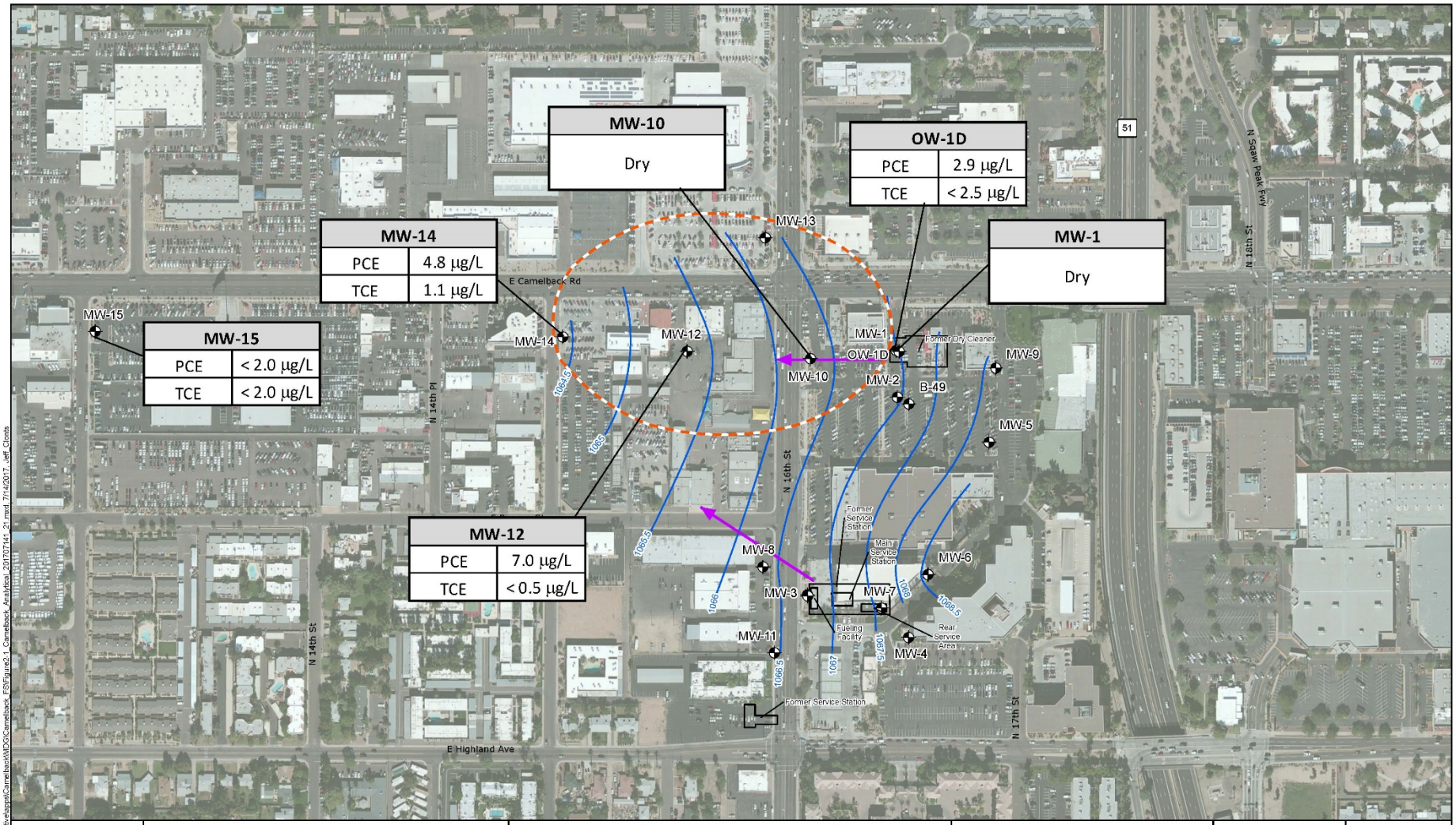
WQARF PHASES



Central Phoenix WQARF Sites



16th Street and Camelback ROD O&M



Drawn By: JKC	Legend	Notes:	Recent Groundwater Chemistry Results from Sampling in May 2017 16th Street & Camelback WQARF Site July 14, 2017
QC'd By: CW	Groundwater Potentiometric Contour; Approximate Plume Boundary for PCE at AWQS of 5 ug/L; Groundwater Flow Direction; Former Buildings	AWQS for PCE = 5 µg/L; TCE = 5 µg/L; All 1,2-DCA results are < 0.5 µg/L at north plume wells	
Drawing Date: 7/14/2017			

ADEQ Arizona Department of Environmental Quality | Matrix Environmental | CALIBRE

0 125 250 Feet

Figure 2-1

FILE: G:\gis_projects\ADEQ\activeprojects\Camelback\MDG\Camelback_FS\Figure2-1_Camelback_Analytical_20170714_21.mxd, 7/14/2017, Jeff Clonts

Historical and Current Contaminant Data

- PCE is currently the only contaminant of concern detected in groundwater at the site at concentrations greater than the Aquifer Water Quality Standard (AWQS) of 5 micrograms per liter (ug/L).

Contaminant	December 1999	August 2007	April 2014	February 2015	April 2016	May 2017
PCE	160 ug/l	20 ug/l	11.4 ug/l	25.2? ug/l	16 ug/l	7.0 ug/l
1,2-DCA	400 ug/l	<2.0 ug/l	0.62 ug/l	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
1,2-DCP	15 ug/l	<2.0 ug/l	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l

Recent Activities

- Monitored and sampled groundwater at select wells.
- Installed additional sentinel well to the west of the contaminant plume.
- Conducted an enhanced reductive de-chlorination (ERD) injection to continue expedition of contaminant remediation.
- ERD is included as a contingency in Record of Decision (ROD).

Future Planned Work

- Continue to monitor and sample groundwater.
- Abandon groundwater monitor wells at former southern plume location.
- Evaluate ERD injection data for accelerated cleanup.

7th Avenue & Bethany Home Road ROD O&M

Legend

- Shallow Monitoring Well
- Deep Monitoring Well
- SRP Well
- Private Well
- City of Phoenix Well 58 (55-626549)
- Estimated PCE Plume Boundary
- Dashed Where Inferred

N

0 300 600
Feet
1 in = 600 ft

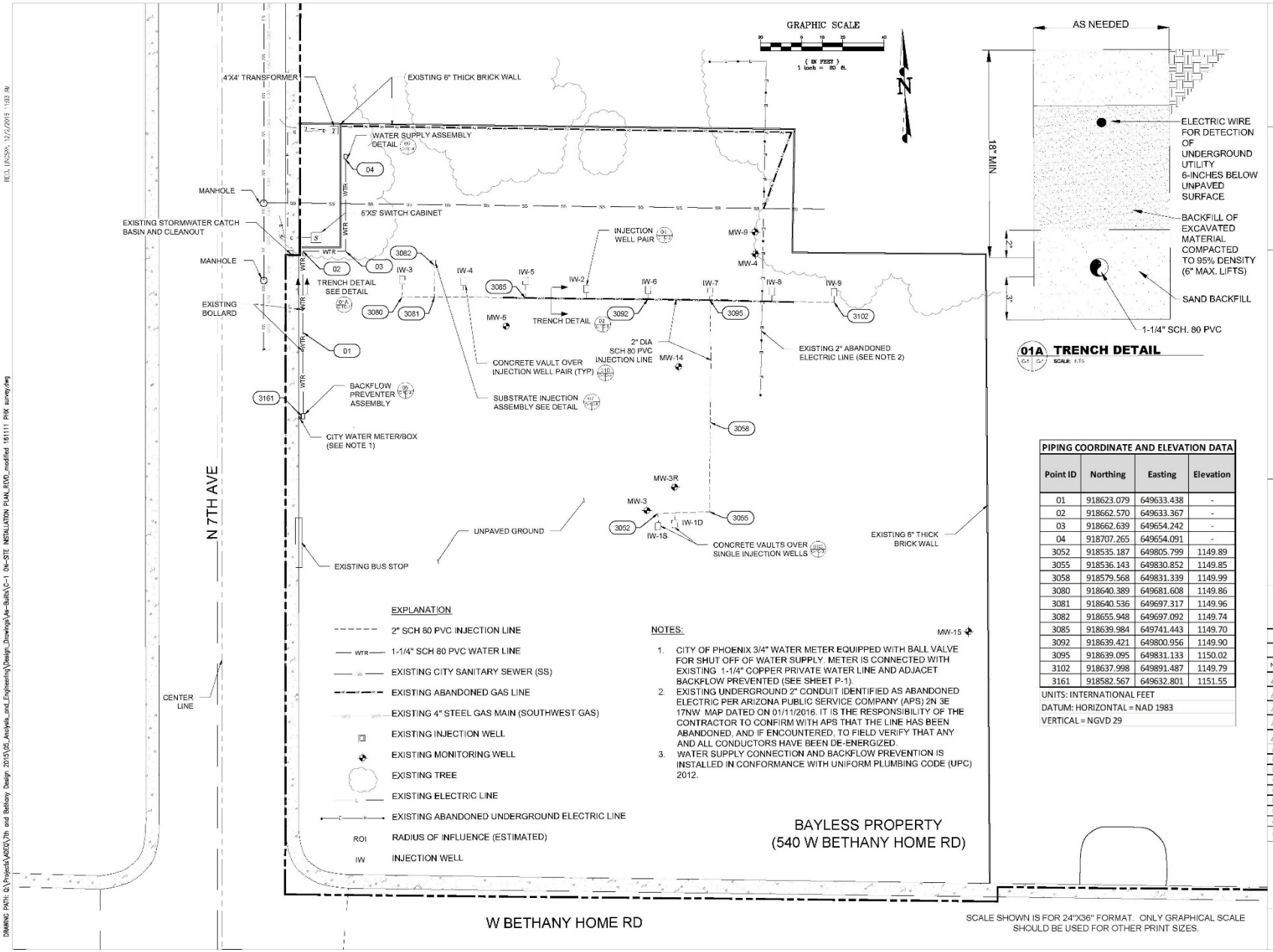
Source:
Project Features: ARCADIS 2014
Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar

Figure 1
Site Map with Existing Wells, and Estimated Plume Boundary
7th Ave & Bethany Home Rd
WQARF Site

Recent Activities

- Installed seven nested injection wells at northeast property.
- Installed injection system at northeast property.
- Conducted enhanced reductive de-chlorination (ERD) injections at the injection wells in the northeast property.
- Conducted two rounds of groundwater monitoring and sampling.

Recent Activities



PIPING COORDINATE AND ELEVATION DATA			
Point ID	Northing	Easting	Elevation
01	918623.079	649633.438	-
02	918662.570	649633.367	-
03	918662.639	649654.242	-
04	918707.265	649654.091	-
3052	918535.187	649805.799	1149.89
3055	918536.143	649830.852	1149.85
3058	918579.568	649831.339	1149.99
3080	918640.389	649681.608	1149.86
3081	918640.536	649697.317	1149.96
3082	918655.948	649697.092	1149.74
3085	918639.984	649741.443	1149.70
3092	918639.421	649800.956	1149.90
3095	918639.095	649831.133	1150.02
3102	918637.998	649891.487	1149.79
3161	918582.567	649632.801	1151.55
UNITS: INTERNATIONAL FEET			
DATUM: HORIZONTAL = NAD 1983			
VERTICAL = NGVD 29			

Recent Activities

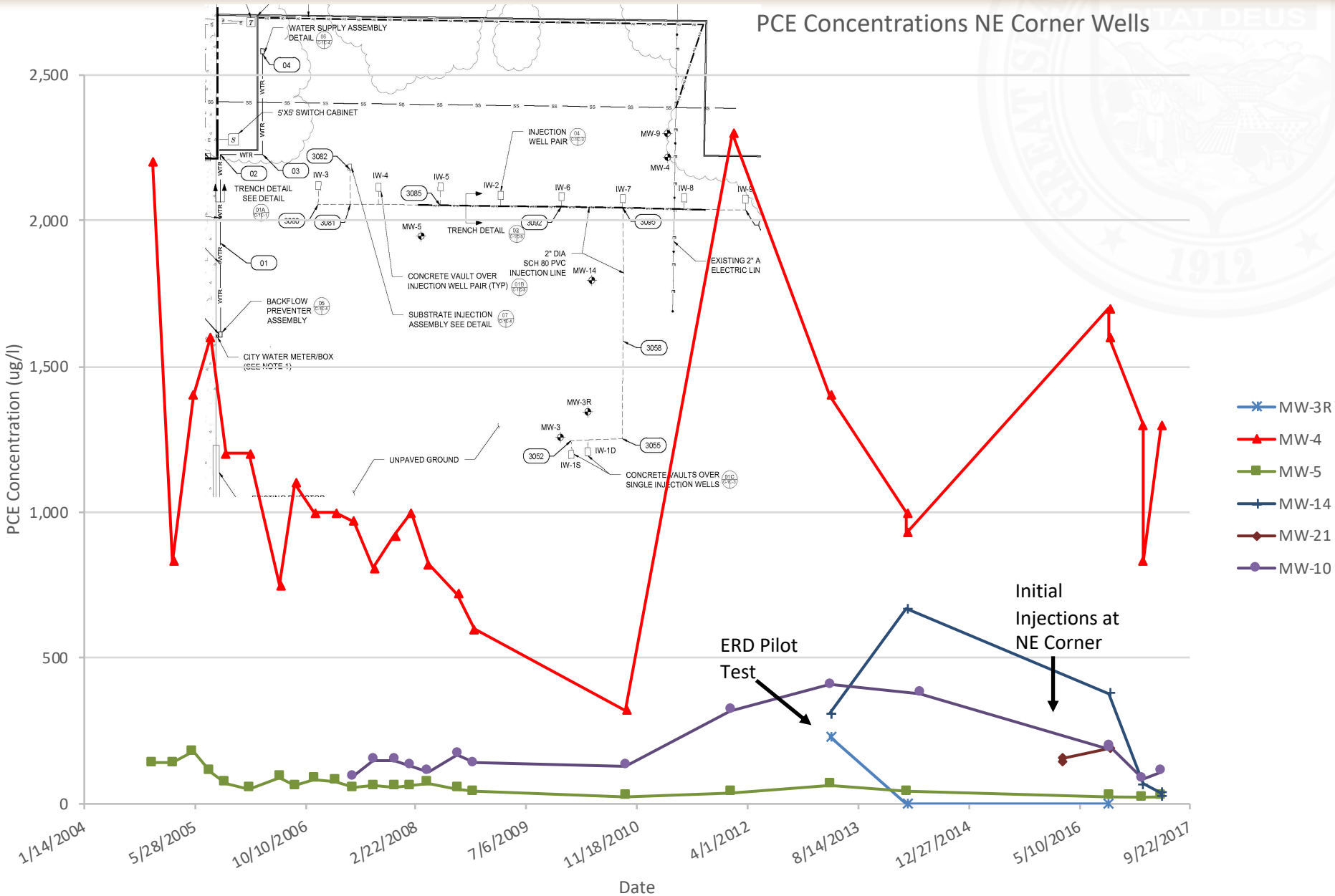
PHOTOGRAPH 5 - Underground injection header piping (view to west)

PHOTOGRAPH 20 - Completed site grading with IW-5 through IW-9 wellhead vault installations (view to east)

PHOTOGRAPH 8 - IW-6 wellhead connection assemblies, typical of all nested pair injection wells

Recent Activities

Recent Activities

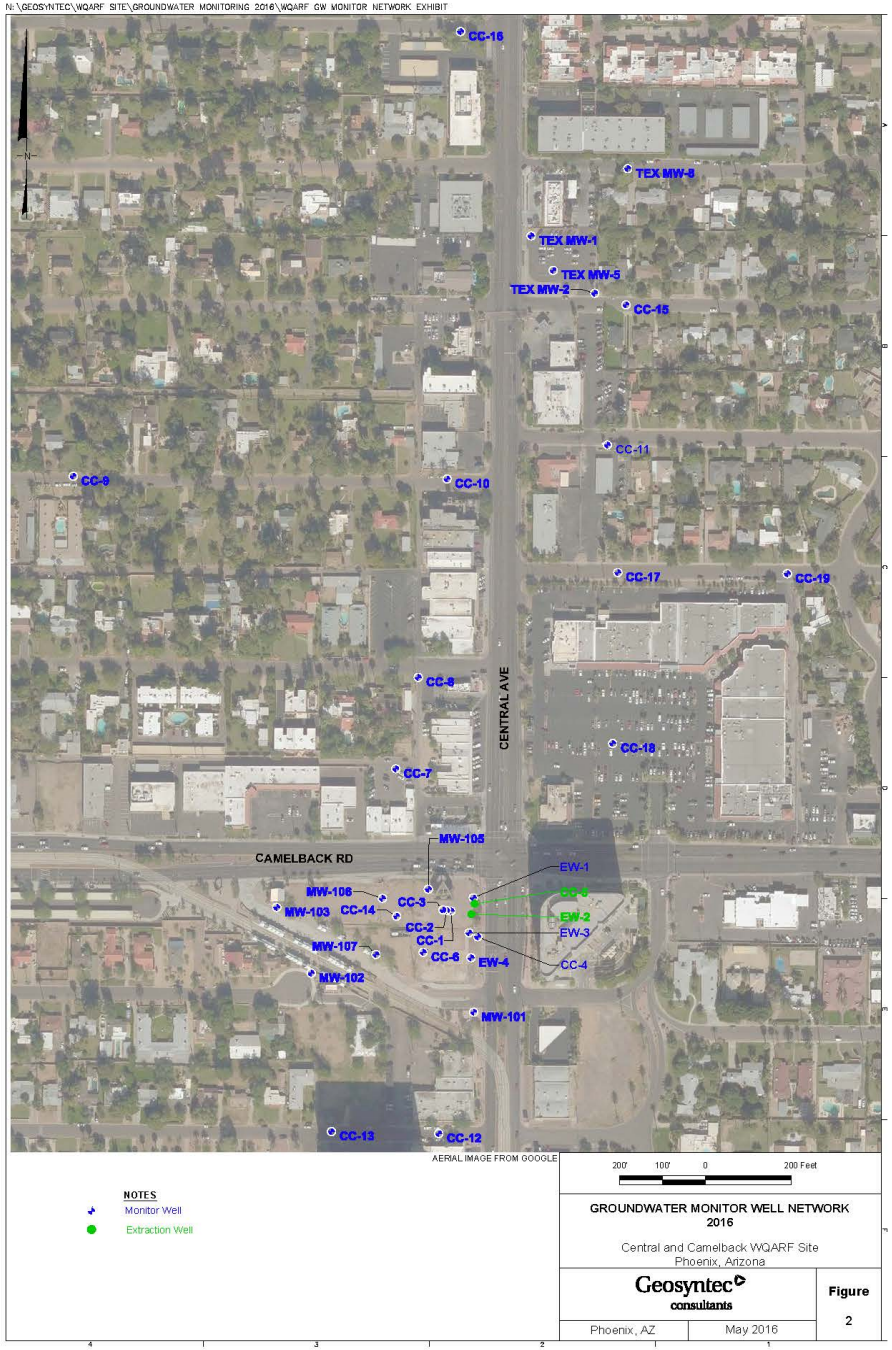


Future Planned Work

- Install additional injection wells/remediation system at site and conducting periodic ERD injections.

- Monitoring and sampling groundwater monitor wells.

Central and Camelback PRAP Review



Central and Camelback

Recent Activities

- Finalized the PRAP for public review and comment.
- The groundwater system has removed approximately 296.2 lbs. of PCE from water as of June 2017.
- The Soil Vapor Extraction (SVE) system has removed approximately 6,830 lbs. of PCE from soil as of June 2017.

Recent Activities

- Groundwater samples were collected from the extraction wells and groundwater treatment system quarterly and monthly, respectively. Vapor samples were collected from the SVE system monthly.

- Groundwater samples were collected from groundwater monitor wells in September 2016 and April 2017.

- Abandoned monitor well CC-9.

Recent Activities

- Currently only extraction wells CC-5 and EW-2 are operating and are sampled
  - Extraction Well EW-4 was shutdown on January 20, 2009
  - Extraction Well EW-3 was shutdown on May 6, 2009
  - Extraction Well EW-2 was shutdown on May 20, 2009 and restarted on October 29, 2009
  - Extraction Well EW-1 was shutdown on March 13, 2013

PCE Concentrations in Extraction Well Samples

Well Number	June 2016	September 2016	December 2016	March 2017	June 2017
CC-5	30	26	16	4.2	14
EW-1	NS	NS	NS	NS	NS
EW-2	2.0	3.1	14	6.3	13
EW-3	NS	NS	NS	NS	NS
EW-4	NS	NS	NS	NS	NS

Recent Activities

NOTES

AERIAL IMAGE FROM BING

- Monitor Well
- Extraction Well
- Groundwater Dewatering Well Sampled
- Tetrachloroethene (PCE) concentration isopleths in micrograms per liter (µg/L)
- (2.4) PCE concentrations in µg/L
- * Not part of this sampling event
- (NS) Not Sampled

260' 130' 0 260 Feet

PCE CONCENTRATIONS
APRIL 2017

Central and Camelback WQARF Site
Phoenix, Arizona

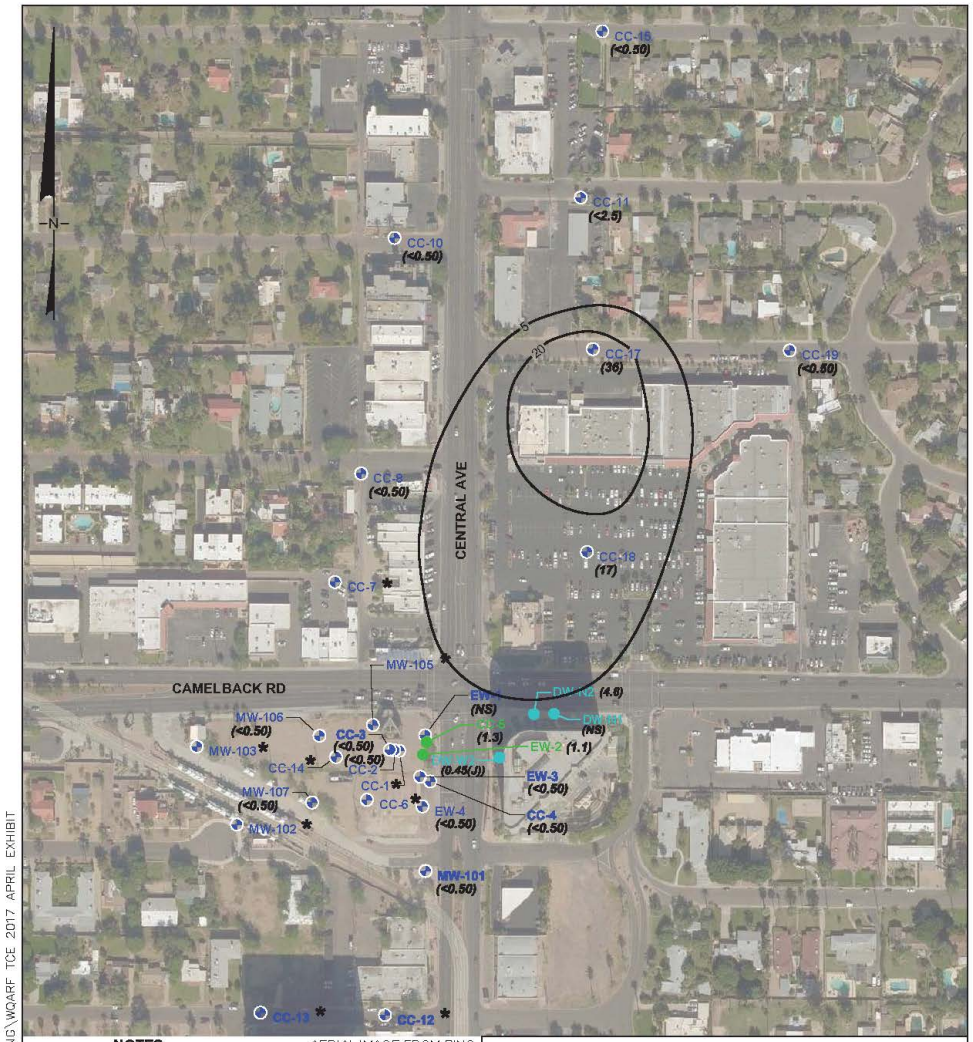
Geosyntec consultants

Phoenix, AZ | May 2017

Figure 6

N:\GEOSYNTEC\WQARF SITE\PCE MONITORING\WQARF PCE 2017 APRIL EXHIBIT

Recent Activities



NOTES

AERIAL IMAGE FROM BING

- Monitor Well
- Extraction Well
- Groundwater Dewatering Well Sampled
- Trichloroethene (TCE) concentration isopleths in micrograms per liter (µg/L)
- (2.4) TCE concentrations in µg/L
- * Not part of this sampling event
- J Estimated concentration below laboratory minimum reporting level but above method detection limit
- (NS) Not Sampled

260' 130' 0 260 Feet

TCE CONCENTRATIONS
APRIL 2017

Central and Camelback WQARF Site
Phoenix, Arizona

Geosyntec consultants

Phoenix, AZ | May 2017

Figure 7

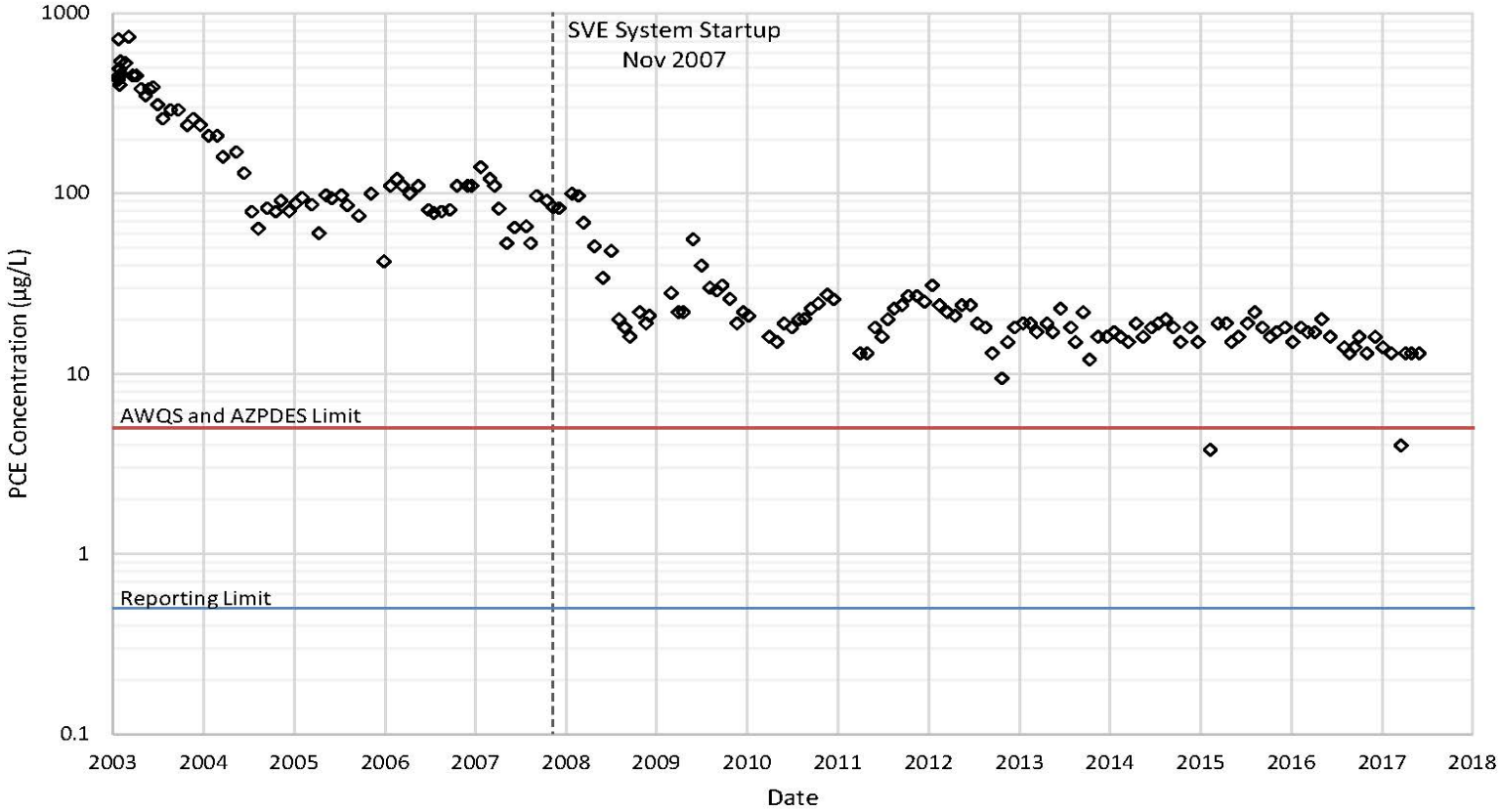
N:\GEOSYNTEC\WQARF SITE\TCE MONITORING\WQARF TCE 2017 APRIL EXHIBIT

Operation & Maintenance Statistics for the GW Treatment System

Quarter	Gallons Treated	Percent Operational	VOC/PCE Removed (Lbs.)
3rd Qtr 2016	4,200,800	79.1%	0.66/0.48
4th Qtr 2016	3,730,900	100%	0.65/0.47
1st Qtr 2017	903,200	23.1%	0.10/0.06
2nd Qtr 2017	3,537,900	92.7%	0.56/0.39

Analyte	Range 1st & 2nd Quarter 2003	March 2017	June 2017	AWQS
Chloroform	1.8 – 2.8	2.8	3.1	100
PCE	350 - 740	4.0	13	5
TCE	9.7 – 16	0.4	1.1	5
Cis-1,2-DCE	8.5 - 20	<0.50	<0.50	70

Operation & Maintenance Statistics for the GW Treatment System



Notes:
Aquifer Water Quality Standard (AWQS) is 5 µg/L
Arizona Pollutant Discharge Elimination System (AZPDES) Permit Limit is 5 µg/L

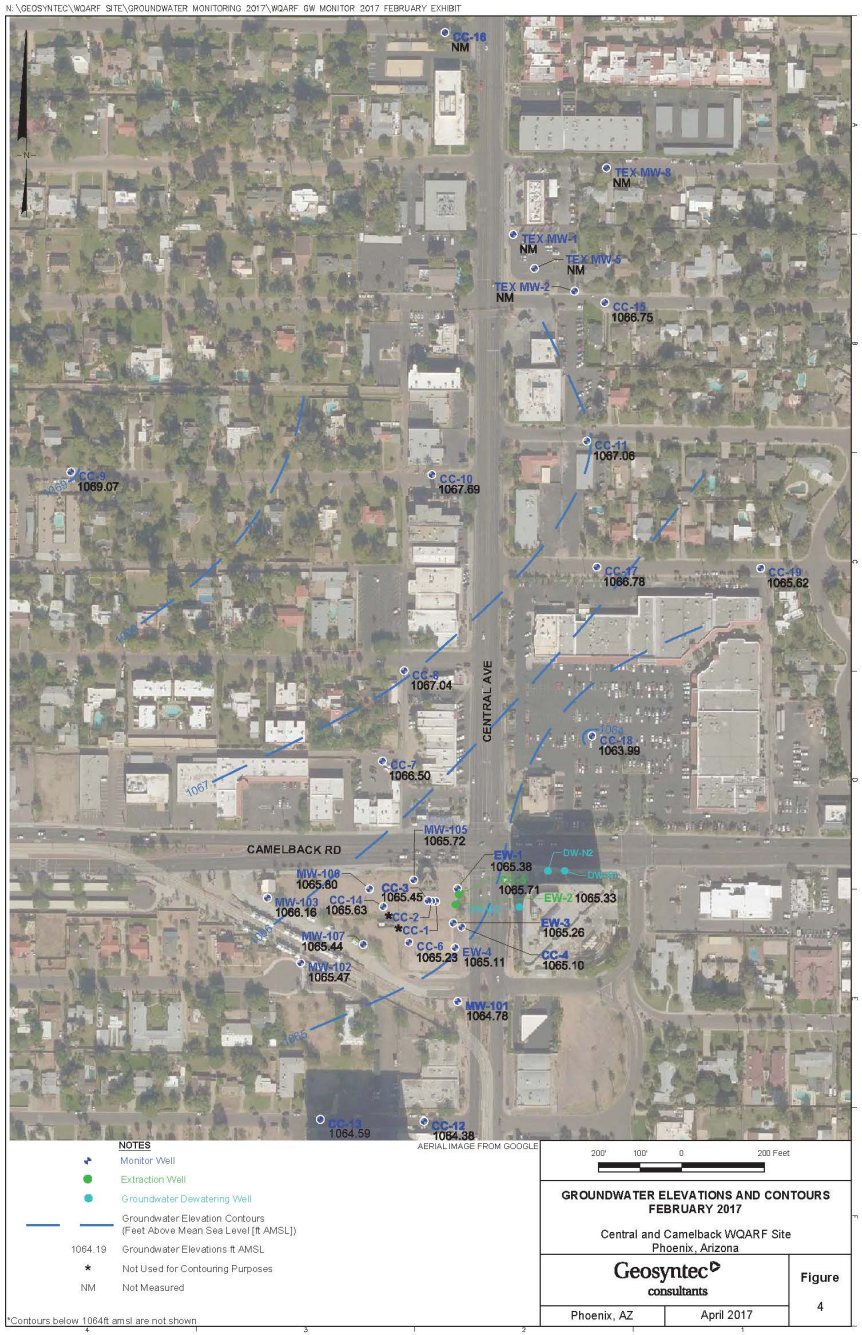
PCE Concentrations in Total Influent Samples
Central and Camelback WQARF Site, Phoenix, Arizona

Geosyntec consultants

Phoenix, AZ | July 2016

Figure 3

Recent Activities

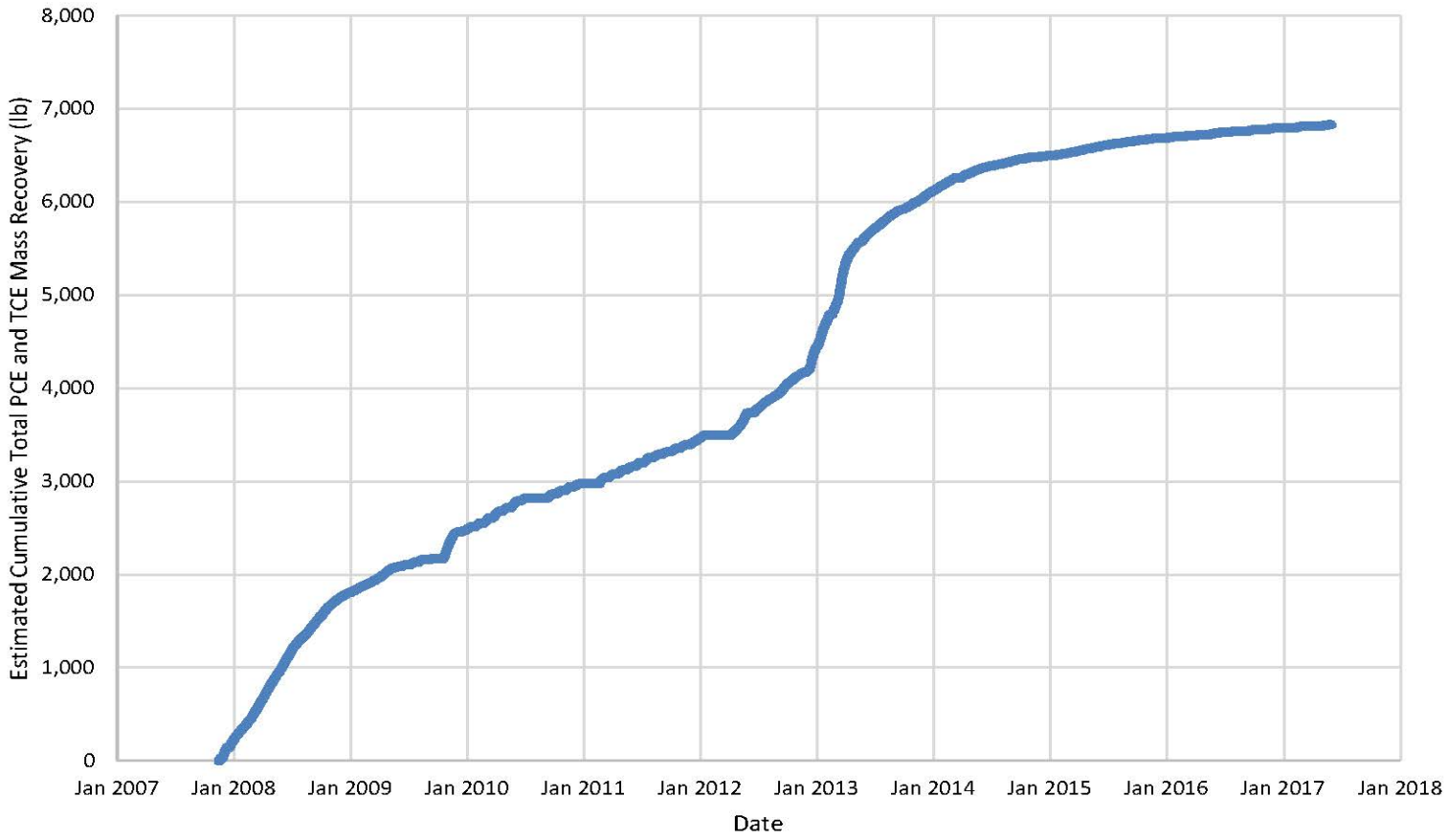


Operation & Maintenance Statistics for the SVE system

Quarter	Percent Operational	PCE/TCE Removed (Lbs.)
3rd Qtr 2015	100%	44.9
4th Qtr 2015	98%	30.5
1st Qtr 2016	90%	25.9
2nd Qtr 2016	68%	31.9

Quarter	Percent Operational	PCE/TCE Removed (Lbs.)
3rd Qtr 2016	48%	24
4th Qtr 2016	55%	25
1st Qtr 2017	43%	15
2nd Qtr 2017	40%	17

Operation & Maintenance Statistics for the SVE system



Estimated Cumulative Total PCE and TCE Mass Recovery

Central and Camelback WQARF Site, Phoenix, Arizona

Geosyntec consultants

Phoenix, AZ | July 2017

Figure 6

Proposed Remedial Action Plan (PRAP)

- ADEQ completed the PRAP. Currently available for public review and comment. Comment period ends on Tuesday October 24, 2017.
- Continue operation of the groundwater remediation and treatment system.
- Conduct targeted enhanced in-situ bioremediation (EISB) injection in vicinity of extraction well CC-5 and possibly other wells as a contingency.
- Continue groundwater monitoring and sampling at select monitor wells.
- Conduct rebound testing at the SVE system and if soil vapor concentrations still meet remedial objectives, shutdown system and decommission.

Proposed Remedial Action Plan (PRAP)

- Decommission groundwater remediation and treatment system after ROs are met.

- Abandon wells after ROs have been met.

PRAP Comments

- PRAP Comments:
  - If you would like to provide a written comment, please fill out the form provided.
  - If you would like to provide a comment verbally, please state the following:

    Name
    Organization/Company
    Address
    Phone and/or e-mail
    Summarize your Comment

- If you would like to provide a comment at a later date, please remember, all comments must be received no later than Tuesday October 24, 2017.

Future Planned Work

- Finalize PRAP and prepare ROD.
- Continue O&M activities for both SVE and GW systems.
- Monitor water levels quarterly and collect groundwater samples semiannually.

Questions?

Contacts

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