FINAL
FEASIBILITY STUDY REPORT
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WQARF REGISTRY SITE
PHOENIX, ARIZONA

ADEQ
Arizona Department
of Environmental Quality

June 2018

Arizona Department of Environmental Quality
Remedial Projects Unit
1110 West Washington St., Phoenix, Arizona 85007

FINAL
FEASIBILITY STUDY REPORT
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE
PHOENIX, ARIZONA

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS (continued)

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AMEC	Amec Foster Wheeler Environment & Infrastructure, Inc.
A.R.S.	Arizona Revised Statutes
AWQS	Aquifer Water Quality Standard
bgs	Below ground surface
bls	Below land surface
CAB	Community Advisory Board
cis-1,2-DCE	cis-1,2-dichloroethene
COC	Chemical of concern
COP	City of Phoenix
CSM	Conceptual site model
DNAPL	Dense non-aqueous phase liquid
Earth Tech	Earth Technology Corporation
ECP	East Central Phoenix
EPA	U.S. Environmental Protection Agency
ERA	Early response action
FS	Feasibility study
H+A	Hargis + Associates, Inc.
HGL	Hydrogeologic, Inc.
IDW	Investigative derived waste
LAU	Lower Alluvial Unit
mg/kg	milligrams per kilogram
MAU	Middle Alluvial Unit
MNA	Monitored natural attenuation
msl	Mean sea level
Park Avenue	Park Avenue Cleaners
PCE	Perchloroethene/tetrachloroethene
PDB	Passive diffusion bag
PRAP	Proposed Remedial Action Plan

ACRONYMS AND ABBREVIATIONS (continued)

RI	Remedial investigation
ROs	Remedial objectives
Rose Formal Wear	Rose Formal Wear, Inc.
SECOR	SECOR International, Inc.
the Site	38th St and Indian School Road
Sonic	Rotosonic drilling methods
SRP	Salt River Project
SVE	Soil Vapor Extraction
TCE	Trichloroethene
UAU	Upper alluvial unit
VOCs	Volatile organic compounds
WOOD	Wood Environment & Infrastructure Solutions, Inc.
WQARF	Water Quality Assurance Revolving Fund
µg/kg	micrograms per kilogram
µg/L	Micrograms per liter
µg/m^3	Micrograms per cubic meter

FINAL
FEASIBILITY STUDY REPORT
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE
PHOENIX, ARIZONA

EXECUTIVE SUMMARY

This document presents a Feasibility Study (FS) for the 38th Street and Indian School Road site (the Site), of the East Central Phoenix (ECP) Water Quality Assurance Revolving Fund (WQARF) area, located in Phoenix, Arizona. This FS report has been prepared by the Arizona Department of Environmental Quality (ADEQ) in accordance with Arizona Administrative Code (A.A.C.) Title 18, Environmental Quality, Chapter 16, Section 407 (R18-16-407) to identify a reference remedy and alternative remedies capable of achieving the remedial objectives (ROs) proposed for the Site. However, identification and screening of remedial technologies and alternatives are not necessary because groundwater at the Site no longer exceeds the Arizona aquifer water quality standard (AWQS) of 5 µg/L for tetrachloroethene (PCE).

In 2015, ADEQ established ROs for the Site soil and it was determined at that time that the soil ROs have been met. In 2015, ADEQ also established ROs for the Site's groundwater. In 2018, it was determined that the groundwater ROs have been met, because the Site no longer exceeds the Arizona AWQS of 5 µg/L for PCE.

FINAL
FEASIBILITY STUDY REPORT
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE
PHOENIX, ARIZONA

1.0 INTRODUCTION

This document presents a Feasibility Study (FS) for the 38th Street and Indian School Road site (the Site), of the East Central Phoenix (ECP) Water Quality Assurance Revolving Fund (WQARF) area, located in Phoenix, Arizona (Figure 1). This FS report has been prepared by the Arizona Department of Environmental Quality (ADEQ) in accordance with Arizona Administrative Code (A.A.C.) Title 18, Environmental Quality, Chapter 16, Section 407 (R18-16-407) and the FS Workplan (ADEQ, 2015b). However, identification and screening of remedial technologies and alternatives are not necessary for this Site because groundwater at the Site no longer exceeds the Arizona AWQS of 5 µg/L for PCE. This FS, documents rationale for site delisting from the WQARF Registry.

The purpose of a FS is to identify proposed remedies that may be capable of achieving the remedial objectives (ROs) proposed for the Site (ADEQ, 2015a) and to select a preferred remedy from among them which:

1) Assures the protection of public health, welfare, and the environment;
2) To the extent practicable, provides for the control, management, or cleanup of hazardous substances so as to allow for the maximum beneficial use of waters of the state;
3) Is reasonable, necessary, cost-effective, and technically feasible, and
4) Addresses any well that either supplies water for municipal, domestic, industrial, irrigation or agricultural uses or is a part of a public water system, if the well currently, or in the foreseeable future would produce water that would not be fit for its current or reasonably foreseeable end use without treatment.

2.0 SITE BACKGROUND

The following descriptions are excerpted from selected reports prepared on behalf of ADEQ for the Site (Amec Foster Wheeler [AMEC], 2018; Earth Technology Corp. [ETC], 1995a; Growth Environmental Services, Inc. [GEC], 1996; Hargis + Associates, Inc. [H+A], 2015a, 2015b, 2015c, 2015d, 2016, 2017 and 2018; HydroGeoLogic, Inc. [HGL], 2014; SECOR International, Inc. [SECOR], 2003, 2007a, 2007b; Wood Environment & Infrastructure Solutions, Inc. [WOOD], 2018. These reports can be reviewed for more detailed Site information.

2.1 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) was developed to aid in understanding the likely contaminant transport and exposure pathways associated with the Site. The CSM integrates available site data and information including the operational history, geologic and hydrogeologic framework, potential source areas, and groundwater quality dynamics of the Site.

2.1.1 Site Description

The Site is located in the 3700 block of East Indian School Road in a mixed residential and commercial area of Phoenix, Arizona. The Site is one of five remaining ECP WQARF sites (Figure 1). The current site is bounded by Indian School Road to the North, 38th Street to the East, East Piccadilly Road to the South and 35th Street to the West (Figure 2). In 1998, the Site was placed on the WQARF Registry with a score of 20 out of a possible 120 based on detection of PCE in soil and groundwater.

2.1.2 Local Geology and Hydrogeology

The hydrostratigraphic units underlying the Site have been defined based on a review and evaluation of data generated during groundwater assessments. The Site is located in the western portion of the Salt River Valley. The Site hydrogeology has been investigated to a maximum depth of 283 feet bgs within the Upper Alluvial Unit (UAU), based on exploratory drilling and installation of 17 monitor wells in 12 different locations. The base of the UAU has not been encountered during drilling activities to date; however, it has been reported that the UAU ranges in thickness from approximately 125 to 300 feet in the ECP area. The UAU at the Site consists of predominantly fine-grained, clayey silts and silt with sand to sandy silts with trace amounts of gravel.

The horizontal hydraulic conductivity of silt/silty sand sediments at the Site is estimated to range from 1 to 6 feet per day based on slug tests conducted at monitor wells CMW-03 and CMW-04; and approximately 10 feet per day based on a reported aquifer test at one of the monitor wells (EarthTech, 1995a; SECOR, 2007a). Reported values of the hydraulic conductivity of the UAU in the vicinity of the Site are slightly higher, on the order of 21 to 30 feet per day (ADWR, 2009).

2.1.3 Chemicals of Concern

Volatile organic compounds (VOCs) have been detected in soil vapor, soil, and groundwater samples collected at the Site. PCE is the chemical of concern (COC) associated with the Site. However, both PCE and trichloroethene (TCE) have historically been discovered in soil vapor, soil, and groundwater samples collected. TCE, when detected, is often an order of magnitude less than PCE (H+A, 2015b).

2.1.4 Potential Source Areas

Results of the industrial survey and Site investigations provide evidence of releases and the presence of PCE due to dry cleaning operations at the The Cleaners/Norgetown Laundry Dry Cleaning Center, Rose Formal Wear Cleaners and Park Avenue Cleaners aka $1.99 Cleaners. Historical operational information for these facilities is presented below:

- **The Cleaners/Norgetown Laundry Dry Cleaning Center** – The Cleaners/Norgetown Laundry Dry Cleaning Center was located near the intersection of North 38th Street and Indian School Road, on Parcel 127-25-123, at 3727 East Indian School Road (Figure 2). The Cleaners/Norgetown Laundry Dry Cleaning Center was a dry cleaning and laundry facility that had been in operation from 1972 to the 1995. According to information provided to ADEQ, the dry cleaning process involves mixing dry cleaning solvent and detergent together in a dry cleaning machine. According to a 1995 work plan, Perclene (PCE) and Staticol were used in the dry cleaning process. According to a June 28, 1996, soil boring investigation report, wastewater containing PCE was discharged to the municipal sanitary sewer in the City of Phoenix alley to the south of The Cleaners [TIDEQP 1059-1060]. Waste PCE and spent filters were removed and disposed by Safety-Kleen Corporation (H+A, 2015b).

- **Rose Formal Wear -** Rose Formal Wear Cleaners was located near the intersection of North 38th Street and Indian School Road, on Parcel 127-25-121A at 3703 East Indian School Road. The facility was operated as a dry cleaning facility from approximately 1982 until approximately 1996. However, dry cleaning operations under Rose Formal Wear may have ended in 1994 or 1995, when Park Avenue Cleaners began dry cleaning operations next door at 3711 East Indian School Road [TIDEQP 866-867, 1017-1043, 1259, 1266; TIHGLC 382]. The predominant dry cleaning solvent used was PCE. PCE was added directly to the dry cleaning machine by the distributor [TIDEQP 1814]. Safety-Kleen Corporation was retained to transport and dispose of generated dry cleaning process waste products (H+A, 2015b).

- **Park Avenue Cleaners/$1.99 Cleaners** – Park Avenue is located near the intersection of North 38th Street and Indian School Road, on Parcel 127-25-121A, at 3711 East Indian School Road. The facility has been operating as a dry cleaning facility from approximately 1994 to the present. Hazardous waste manifests indicate that waste PCE was collected from Park Avenue by Clean Harbors Environmental Services, Inc., Triad Transport, SLT Expressway, and Transchem Environmental.

2.1.5 Water Levels and Groundwater Movement

Water levels in the UAU have been monitored since April 1992 (H+A, 2015b). Monitor wells installed at the Site are screened across both shallow (water table) and deeper intervals within the UAU. In general, depths to water in groundwater wells at the Site have been consistently shallowest in the northeastern portion of the Site and deepest in the southwestern portion of the Site. Water levels in co-located shallow and deeper screened monitor

wells are generally nearly identical. During the period of record for the Site monitor wells, the depth to water has ranged from approximately 27 feet below ground surface (bgs) in the mid 1990's to approximately 52 feet bgs in May 2018 (H+A, 2018).

The direction of groundwater flow historically has been to the west-southwest with gradients ranging from approximately 0.006 to 0.007 feet per foot (ft/ft). Vertical gradients between the shallow and deeper zones of the UAU monitored at the Site are generally negligible. Estimates of horizontal hydraulic conductivity of the UAU range from 1 to 30 feet per day (ADWR, 2009).

2.1.6 Current and Future Groundwater Uses

The City of Phoenix (COP) and Salt River Project (SRP) pump groundwater as needed when surface water supplies cannot meet their customer needs. Current and future groundwater uses within the Site include the following (H+A, 2015a):

- The most accessible alternate water source for the COP is local groundwater. The COP currently has no plans to develop groundwater within the Site but will consider the area for well development in the future. Therefore, the potential exists for the COP to install future municipal wells within or within one mile of the 38th Street and Indian School Road Site.

- While there are no SRP wells in the immediate vicinity, SRP operates and maintains seven irrigation wells within one-mile of the 38th Street and Indian School Road Site (Figure 3).

- SRP will continue to need the irrigation wells in the Site area to be operational to supplement surface water supplies. SRP has indicated that they may change water usage from irrigation to drinking water within the foreseeable future to accommodate COP needs.

2.1.7 Previous Remedial Actions or Early Response Actions/Interim Remedial Actions

A small scale soil vapor extraction (SVE) system, adjacent to the former The Cleaners facility, was placed into operation in 1994 as an early response action (ERA), then ceased operation in 1995. Extraction occurred from one single-completion SVE well and two nested SVE wells. An approximate total of 7.7 pounds of PCE was removed by the SVE system (Earth Technology, 1995; Growth Environmental Services, Inc., 1996). This SVE system significantly decreased PCE in soil vapor in the vadose zone and was decommissioned in March 2003 (SECOR International, Inc. [SECOR], 2003).

A multi-injection pilot test for in-situ chemical oxidation (ISCO) consisting of a catalyzed hydrogen peroxide reagent was implemented on plume monitor wells CMW-06B and CMW-10 on October 31, 2017, November 27, 2017 and January 29, 2018, during the Feasibility Study (FS). ISCO injections were conducted to supplement the planned monitored natural attenuation (MNA) remedy. If successful, a reduced time frame for MNA remedy

would be carried forward into the Proposed Remedial Action Plan and Record of Decision (ROD). Prior to ISCO, detections of PCE of 110 µg/L and 17 µg/L were confirmed in monitor wells CMW-10 and CMW-06B, respectively. Two confirmatory groundwater sampling events, of monitor wells CMW-10 and CMW-06B on January 2, 2018 and April 5, 2018 confirmed the PCE concentration are now below the Arizona AWQS of 5 µg/L (WOOD, 2018). A site wide sampling event of all groundwater monitor wells on May 14, 2018, confirmed that PCE and TCE concentrations are below the Arizona AWQS of 5 µg/L of PCE in all monitoring wells (Hargis, 2018).

2.1.8 Extent of Contamination

2.1.8.1 Unsaturated Zone

The distribution of PCE in soil vapor was not evaluated as part of the remedial investigation (RI); however, soil vapor samples were collected in both 1996 and 2007 to evaluate potential rebounding of soil vapor concentrations following cessation of the SVE system in August 1995, and the subsequent drop in water levels occurring from 1998 to 2007 (H+A, 2015b).

The 1996 investigation occurred when water levels were relatively high (as they were during operation of the SVE system in 1995), and concluded that the soil and soil vapor concentrations in the vicinity of the former The Cleaners had been successfully reduced. The 2007 investigation occurred following a nearly 15-foot decline in water level elevations to within several feet of current water levels. Results of the 2007 sampling indicated that soil vapor concentrations in the vicinity of the former The Cleaners were orders of magnitude less than they had been in 1996, suggesting rebound of PCE concentrations in soil vapor had not occurred ten years following SVE operation. Furthermore, these declining trends suggest a significant continuing soil source is no longer present (H+A, 2015b).

In April 2015, three SV samples were collected at the former The Cleaners from borings VW-01, VW-02D and VW-03D. Analytical results for the samples demonstrated PCE concentrations of 520 micrograms per cubic meter (µg/m3), 540 µg/m^3, and 320 µg/m^3 µg/m^3 at 10 feet, 18.5 feet, and 18.5 feet bgs, respectively. As the property is non-residential, the SV results were compared to the EPA Region IX Industrial Air Screening Level (target cancer risk of 10^{-6} and a target hazard quotient of 1.0) for PCE. An attenuation factor of 0.03 was used to compare the subsurface SV results with the indoor Industrial Air Screening Level. The application of the 0.03 attenuation factor to the 47 µg/m^3 Industrial Air Screening Level for PCE yields a vapor intrusion screening level of 1,567 µg/m^3. The analytical results from soil vapor samples collected from borings VW-01, VW-02D and VW-03D are less than the calculated vapor intrusion screening level, and therefore indicate that soil vapor conditions at the property do not indicate excess risk to human health. Figure 4 shows historical soil vapor concentrations at Site wells. Soil vapor data is also included in Appendix A.

2.1.8.2 Groundwater

Historically localized high concentrations of PCE in groundwater have been observed at monitor well

CMW-01 located downgradient of the former The Cleaners (34,000 µg/L in April 1992) and monitor well RMW-01 located downgradient of the former Rose Formal Wear (2,500 µg/L in February 1998) (H+A, 2015b; Appendix A).

The distribution of PCE in groundwater suggests a low concentration plume remains downgradient of the former The Cleaners and the former Rose Formal Wear. In source area monitor well RMW-01, the PCE groundwater concentration was 7.2µg/L in 2014, 4.0 µg/L in 2015, and 3.1µg/L in 2016 (Table A-1; Figures 5 and 8).

Additional monitoring rounds were conducted at the Site after publication of the RI report (September/October 2015 [H+A, 2015d]; August 2016 [H+A, 2016]; June 2017 [H+A, 2017]; January 2018 [WOOD 2018], April 2018 [WOOD 2018] and May 2018 [H+A, 2018]). In June 2017, newly installed upgradient well CMW-10 and mid-plume well CMW-06B had the highest concentrations of 110ug/l and 17ug/l, respectively (Figures 6 and 8). On May 14, 2018, the third consecutive monitoring event where PCE concentrations were below the AWQS of 5ug/l, groundwater monitoring wells CMW-10 and CMW-06B had concentrations of 2.5ug/l and 1.6ug/l, respectively (H+A, 2018) and PCE was non-detect in downgradient monitor well CMW-11 (Figures 7 and 8).

2.1.9 Risk Evaluation Summary

The RI report (H+A, 2015b) presented an analysis of migration or "exposure" pathways potentially taken by contaminants from the Site as they migrate away from the sources through the environmental media to potential environmental receptors.

Given the current depth to groundwater (approximately 50 feet bgs), human receptor contact is improbable. Although, a potential groundwater pathway could be established if active groundwater supply wells in the vicinity of the Site were to pump PCE-impacted groundwater to the surface. However, all groundwater concentrations are below the AWQS of 5 µg/L.

There are no natural surface water bodies within a one mile radius of the former The Cleaners, former Rose Formal Wear and Park Avenue sites. Surface water impacts resulting from facility dry cleaning solvent releases are improbable. However, the ECP Site area irrigation is supplied by the SRP through the lateral canal system which connect to the Arizona and Grand Canals. The canal water is supplied by groundwater pumped from SRP wells (H+A, 2015b).

Migration of PCE and or TCE by the air pathway is possible, given their high potential for volatilization from liquid to gas. Given that the Site is covered by asphalt or concrete and mitigation of groundwater plume concentrations through the ISCO pilot test, a direct exposure pathway from soil gas to potential receptors is improbable and, therefore, considered incomplete.

PCE-impacted soil has been documented at the Site. A PCE pathway from soil to groundwater has been established as detectable concentrations of PCE in groundwater have been identified. Given that the majority of

the Site is covered by asphalt or concrete, a direct exposure pathway from residual high concentrations of PCE adsorbed on soil particles or trapped in pore spaces between soil particles to potential receptors, is incomplete. Additionally, all soil concentrations are below the SRLs and GPLs.

Biota transport can occur if contaminated groundwater is used in agricultural or livestock practices. There are no operational production wells within a 1,000-foot radius of the Site. Therefore, the biota exposure pathway is incomplete (H+A, 2015b).

3.0 FEASIBILITY STUDY SCOPING

3.1 REGULATORY REQUIREMENTS

Arizona Revised Statutes (A.R.S.) 49-287.03 Section A states that ADEQ may conduct an FS to evaluate alternative potential remedies to the extent necessary to select a final remedy in a manner consistent with the rules and procedures adopted pursuant to A.R.S.49-282.06 ("Remedial Action Criteria: Rules"). Additionally, A.R.S. 49-287.03 Section F states that the FS shall be fully integrated with the results of the remedial investigation and shall include an alternative screening step to select a reasonable number of alternatives in a manner consistent with the rules and procedures adopted pursuant to A.R.S. 49-282.06. This FS has been conducted in accordance with the Remedy Selection Rule R18-16-407, Sections A, B, E, F, G, H, and I. A complete FS following the Remedy Selection Rule R18-16-407 is not necessary for the Site because groundwater no longer exceeds the Arizona AWQS of 5 µg/L for PCE.

3.2 DELINEATION AND DESCRIPTION OF REMEDIATION AREAS

3.2.1 Vadose Zone Soils

The RI concluded that a significant continuing soil source of PCE is no longer present in areas where historic PCE soil gas concentrations had been detected at several orders of magnitude higher. The RI also concluded that additional remedial action was not recommended for the vadose zone (Figure 4; H+A, 2015b).

The maximum concentration of PCE in soil gas samples collected in April 2015 was 540 µg/m3 (Figure 4; Appendix A). Using a calculation and default values outlined in ADEQ (2011), this soil gas concentration relates to an approximate total soil concentration of 0.00084 mg/kg. The calculation is as follows:

$$C_t = \frac{C_g\left[\frac{K_{OC} f_{OC} \rho_b}{H_O} + \frac{\theta_w}{H_O} + (\theta_t - \theta_w)\right]}{\rho_b}$$

Where:

C_t = Total concentration in soil (µg/kg)

C_g = Concentration in soil vapor (µg/L) is 0.540 based on April 2015 observed maximum concentration

f_{oc} = Mass fraction of natural soil organic carbon content (grams organic carbon/grams soil) - (0.006, ADEQ recommended default value)

K_{oc} = Soil organic carbon-water partitioning coefficient (milliliter per gram) – 155 for PCE

ρ_b = Dry Bulk Density (kilograms per liter) – 1.5 ADEQ recommended default value

H_o =Henry's Law Constant (dimensionless) – 0.754 for PCE

θ_t = Total soil porosity (volume of voids/volume total) - 0.43 recommended ADEQ default value

θ_w = Volumetric Water Content (volume of water/volume of soil) – 0.15 recommended default value

The current Arizona Soil Remedial Level (SRL) for PCE in soil is 0.51 mg/kg for residential land use at 10^{-6} cancer risk. The estimated total soil concentration for PCE using 2015 data is well below this SRL. Based on existing data, there is no indication that there are areas in the vadose zone that require remediation.

3.2.2 Groundwater

Groundwater at the site does not require remediation based on the January 2018, April 2018, May 2018 groundwater monitoring events. Groundwater samples collected from the Site monitor wells during these events did not exceed the Arizona AWQS of 5 µg/L for PCE. The distribution of residual PCE in groundwater for the May 2018 monitoring event is shown on Figure 7 with the highest PCE concentration of 2.5µg/L in monitor well CMW-10.

3.3 REMEDIAL OBJECTIVES

ADEQ discussed and proposed ROs for the Site in 2015 (ADEQ, 2015a). Pursuant to A.A.C. R18-16-406 (I)(4), the ROs were chosen with consideration for the current and reasonably foreseeable future uses of land and water of the state that have been or are threatened to be affected by a release of a hazardous substance. PCE was identified as the sole COC for the Site. The source areas of the PCE were determined to be at The Cleaners/Norgetown Laundry Dry Cleaning Center, Rose Formal Wear and Park Avenue Cleaners. Although the former dry cleaner properties are currently zoned for commercial use, reasonably foreseeable use may be residential (ADEQ, 2015a). Therefore, appropriate Soil Remediation Levels (SRLs) apply and the ROs for land use at the former drycleaner properties are:

> *"To restore soil conditions to the remediation standards for intended end use specified in A.A.C. R18-7-203 (specifically background remediation standards prescribed in R18-7-204, predetermined remediation standards prescribed in R18-7-205, or site specific remediation standards prescribed in R18-7-206) that are applicable to the hazardous substances identified (PCE). This action is needed for the present time and for as long as the level of contamination in the soil threatens its intended end use."* (ADEQ, 2015a).

The current soil concentrations are below SRLs and the ROs for soil have been met.

Current groundwater use in the Site is for irrigation, however, the regional aquifer is considered to be a drinking water source for the COP and SRP. Therefore, the current and future use of the regional aquifer must be protected. (ADEQ, 2015a). The ROs for current and future use of groundwater supply is as follows:

> *"The remedial objective for regional groundwater at the site is to protect for the use of the groundwater supply by the COP and SRP from contamination at the Site. This action is currently needed and will be needed if/when groundwater use changes to municipal/drinking water uses. This action will be needed for as long as the level of contamination in the groundwater threatens the use of the regional groundwater for municipal/drinking water uses."* (ADEQ, 2015a).

The current groundwater concentrations are below the AWQS for PCE of 5 µg/L and the ROs for groundwater have been met.

4.0 IDENTIFICATION AND SCREENING OF REMEDIATION TECHNOLOGIES

Although technically feasible, identification and screening of remedial technologies and alternatives are not reasonably cost effective or necessary pursuant to A.R.S. 49-282.06 because groundwater at the Site no longer exceeds the Arizona AWQS of 5 µg/L for PCE, and ROs have therefore been met.

5.0 DEVELOPMENT OF A REFERENCE REMEDY AND ALTERNATIVE REMEDIES

Development of a Reference Remedy and Alternative Remedies is not necessary because groundwater at the Site no longer exceeds the Arizona AWQS of 5 µg/L for PCE.

6.0 DETAILED COMPARISION OF REFERENCE REMEDY AND ALTERNATIVE REMEDIES

Detailed comparison of the Reference Remedy and the Alternative Remedies is not necessary because groundwater at the Site no longer exceeds the Arizona AWQS of 5 µg/L for PCE.

7.0 PROPOSED REMEDY

A Proposed Remedy is not necessary because groundwater at the Site no longer exceeds the Arizona AWQS of 5 µg/L for PCE. In 2018, it was determined that the soil and groundwater ROs have been achieved and ADEQ may proceed with closure of the Site and removal from the WQARF Registry in accordance with Arizona Revised Statues (A.R.S.) §49.287.01 (K) and A.A.C R18-16-414(A)(3)(c).

8.0 COMMUNITY INVOLVEMENT

Public concerns and comments are considered throughout the entire WQARF process. This helps ADEQ to complete its mission of protecting public health, welfare and the environment in Arizona. The public is invited to

attend the Community Advisory Board meetings and receive 38th Street and Indian School Road Site updates, as well as updates for other ECP WQARF sites. Site meeting agendas and meeting minutes can be found at:

http://www.azdeq.gov/environ/waste/sps/reg.html.

The latest Site information, documents, and notices can be found at:

http://www.azdeq.gov/environ/waste/sps/East_Central_Phoenix_38th_Street_Indian_School_Road.html

A notice of the availability for the FS work plan (ADEQ, 2015b) was mailed to the Site mailing list, the Community Advisory Board (CAB), and other interested parties on May 14, 2015. The FS work plan was also discussed during the Summer/Fall 2015, Fall 2016 and Spring 2017 CAB meetings.

Community involvement is no longer necessary for the ECP 38th & Indian School site because groundwater at the Site no longer exceeds the Arizona AWQS of 5 µg/L for PCE, and this Site is recommended for delisting from the WQARF Registry. However, community involvement for the remaining ECP sites in the area (as shown on Figure 1) will continue until a remedy or remedies are selected for the remaining ECP sites.

9.0 REFERENCES

Arizona Department of Environmental Quality (ADEQ), 2011. Soil Vapor Sampling Guidance. Revised May 19, 2011 (original publication date July 10, 2008).

_____, 2015a. Remedial Objectives Report, 38th Street and Indian School Road Water Quality Assurance Revolving Fund Registry Site, Phoenix, Arizona. April 24, 2015.

_____, 2015b. Feasibility Study Work Plan, East Central Phoenix, 38th Street and Indian School Road WQARF Registry Site, Phoenix, Arizona. May 2015.

Arizona Department of Water Resources, 1993. A Regional Groundwater Flow Model of the Salt River Valley – Phase I, Phoenix Active Management Area, Hydrogeologic Framework and Basic Data Report. April, 1993.

_____, 2009. Regional Groundwater Flow Model of the Salt River Valley, Phoenix Active Management Area, Model Update and Calibration. April, 2009.

_____Earth Technology Corporation, 1995a. Work plan for Installation and Startup of Interim Remediation System, The Cleaners Facility, 3727 East Indian School Road, East Central Phoenix Water Quality Assurance Revolving Fund Area, Phoenix, Arizona. April, 1995.

EPA, 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water. U.S. Environmental Protection Agency (EPA). EPA/600/R-98/128. 78 p.

Growth Environmental Services, Inc., 1996. Soil-Vapor Extraction Final Optimization Report, The Cleaners Facility, 3727 East Indian School Road, East Central Phoenix WQARF Area, Phoenix, Arizona. March 15, 1996.

Hargis + Associates, Inc. (H+A), 2015a. Final Land and Water Use Report, 38th Street and Indian School Road Site, East Central Phoenix Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. April 21, 2015.

_____, 2015b. Remedial Investigation Report, East Central Phoenix, 38th Street and Indian School Road, Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. Prepared for Arizona Department of Environmental Quality. April 30, 2015.

_____, 2015c. Groundwater and Soil Vapor Monitoring Report (January 2013 through May 2015), , East Central Phoenix 38th and Indian School Road Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. June 29, 2015.

_____, 2015d. Groundwater Monitoring Technical Memorandum – Fall 2015, East Central Phoenix 38th Street and Indian School Road Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. December 15, 2015.

_____, 2016. Summary of Drilling/Sampling at Borehole CMW-10 / August 2016 Groundwater Monitoring, East Central Phoenix 38th Street and Indian School Road Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. November 16, 2016.

_____, 2017. Summary of Spring 2017 Limited Groundwater Monitoring Technical Memorandum East Central Phoenix 38th Street and Indian School Road, Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. June 27, 2017.

_____, 2018. Groundwater Monitoring Technical Memorandum – May 2018, East Central Phoenix 38th Street and Indian School Road, Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. May, 2018

HydroGeoLogic, Inc. (HGL), 2014. Final Letter Report – Remedial Investigation, ECP 38th Street and Indian School Road WQARF Registry Site, Contract No. 13-048324, ADEQ Task Assignment No. 14-055490, HGL Project No. AR8003. March 10, 2014.

SECOR International, Inc., 2003. Soil Vapor Extraction System Removal, 3727 East Indian School Road, East Central Water Quality Assurance Revolving Fund Site, Phoenix, Arizona. April 8, 2003.

_____, 2007a. Summary of Aquifer Slug Testing Conducted at the 38th Street and Indian School Road WQARF Site, Phoenix, Arizona. September 20, 2007.

_____, 2007b. Summary of Soil Vapor Testing Conducted at the 38th Street and Indian School Road WQARF Site, Phoenix, Arizona. October 3, 2007.

Wood Environment & Infrastructure Solutions, Inc., 2018. ISCO Treatment Results East Central Phoenix 38th Street and Indian School Road WQARF Site. April 2018.

FIGURES

East Central Phoenix WQARF Sites

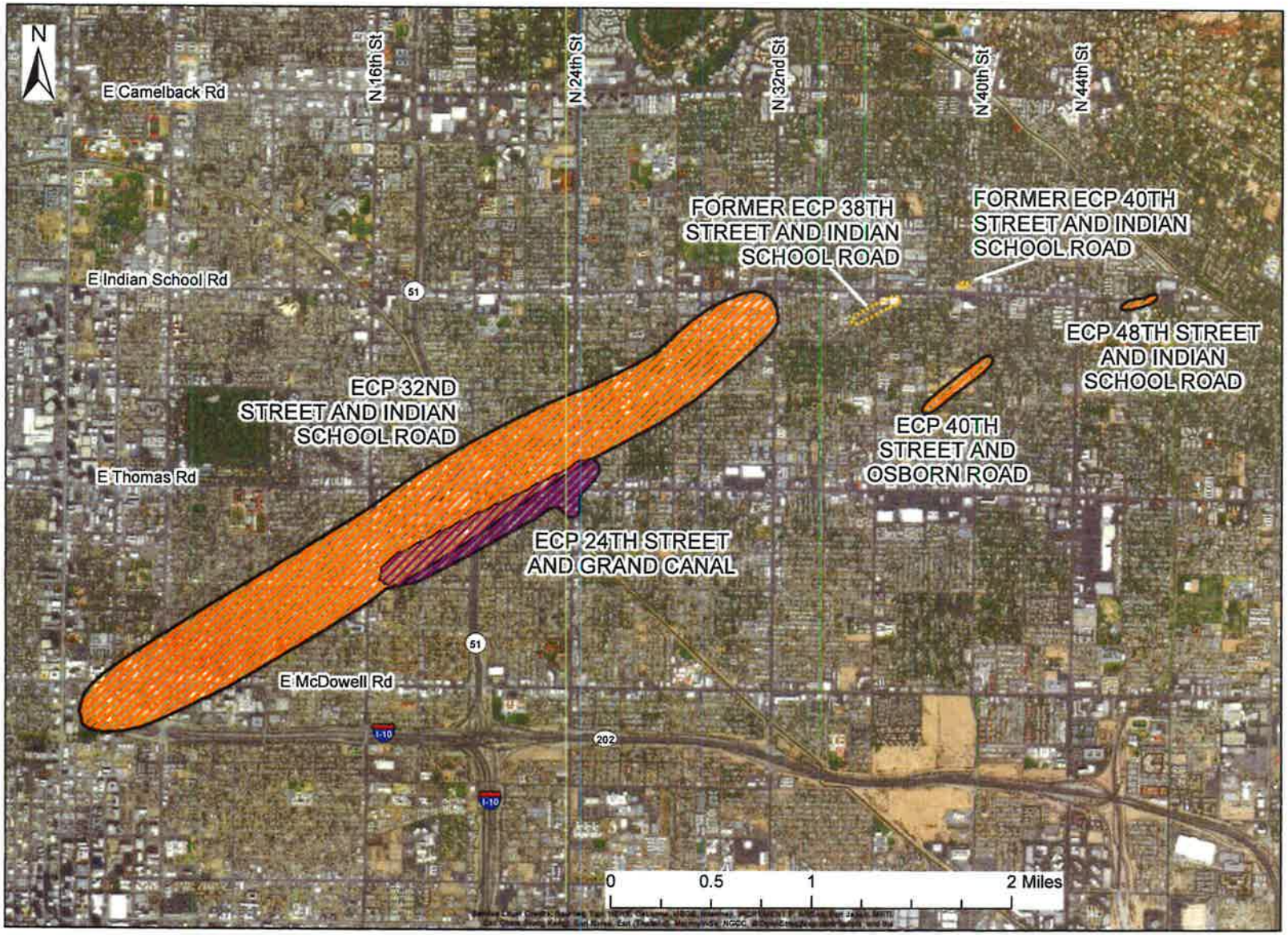


Figure 1

Estimated WQARF Plumes

- ECP 24TH ST AND GRAND CANAL
- ECP 32ND ST AND INDIAN SCHOOL RD
- ECP 40TH ST AND OSBORN RD
- ECP 48TH ST AND INDIAN SCHOOL RD
- FORMER ECP 38TH ST AND INDIAN SCHOOL RD
- FORMER ECP 40TH ST AND INDIAN SCHOOL RD

Plume update: 05/01/2018

Plume boundaries depicted on the site map represent ADEQ's interpretation of data available at the time the map was constructed. The map is intended to provide the public with basic information as to the estimated geographic extent of known contamination as of the date of map production. The actual extent of contamination may be different. Therefore, the plume for this site may change in the future as new information becomes available.

ADEQ Arizona Department of Environmental Quality

Date Map Saved: 5/8/2018

Publication Number: M 18 - 32

DC7S:\gis\ev\dc7\WQARF\ECP\EastCentralPhx2018.mxd

East Central Phoenix WQARF Sites
Former 38th Street and Indian School Road

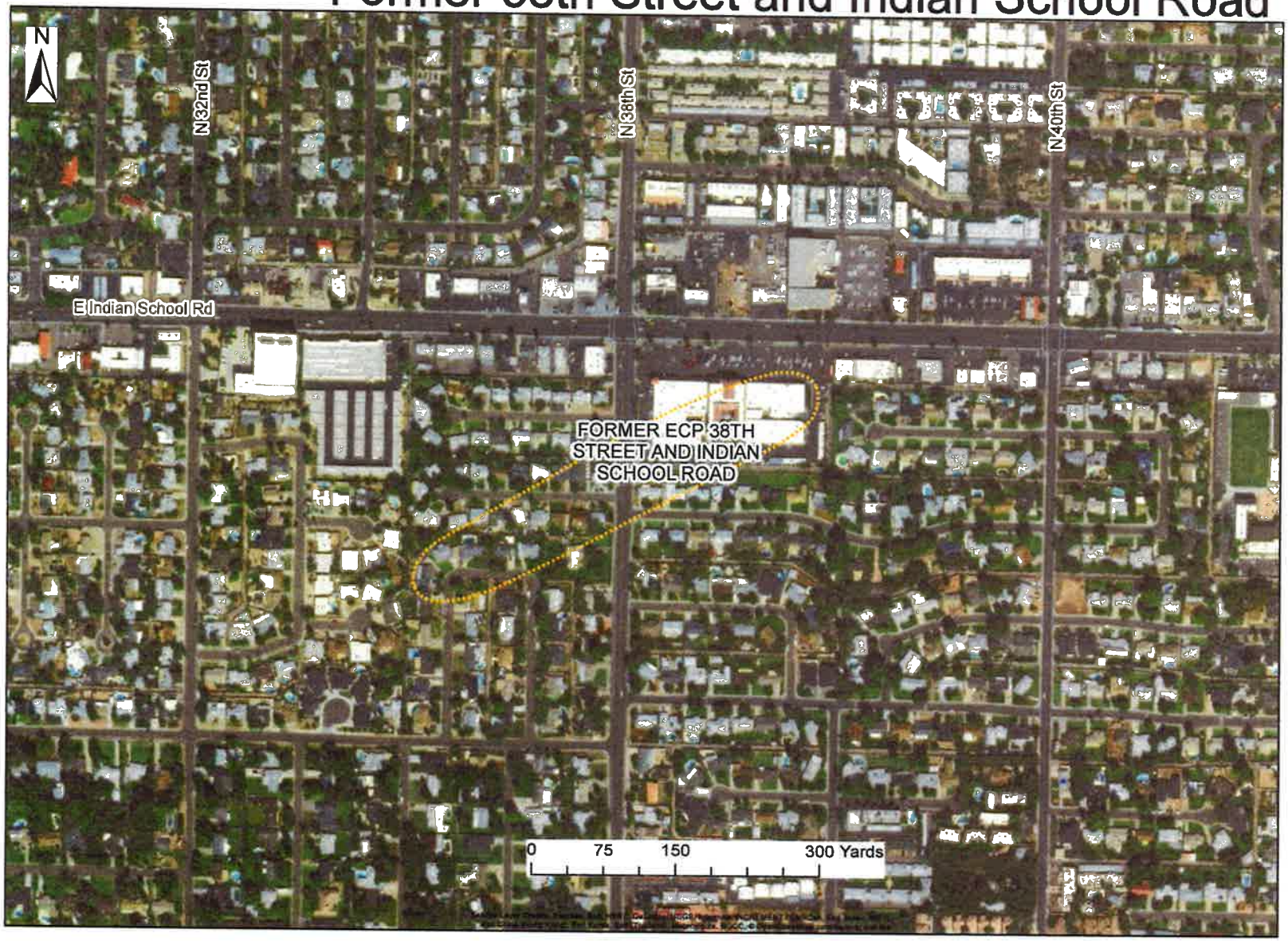


Figure 2

Former WQARF Plumes

38th St and Indian School

Plume update: 05/01/2018

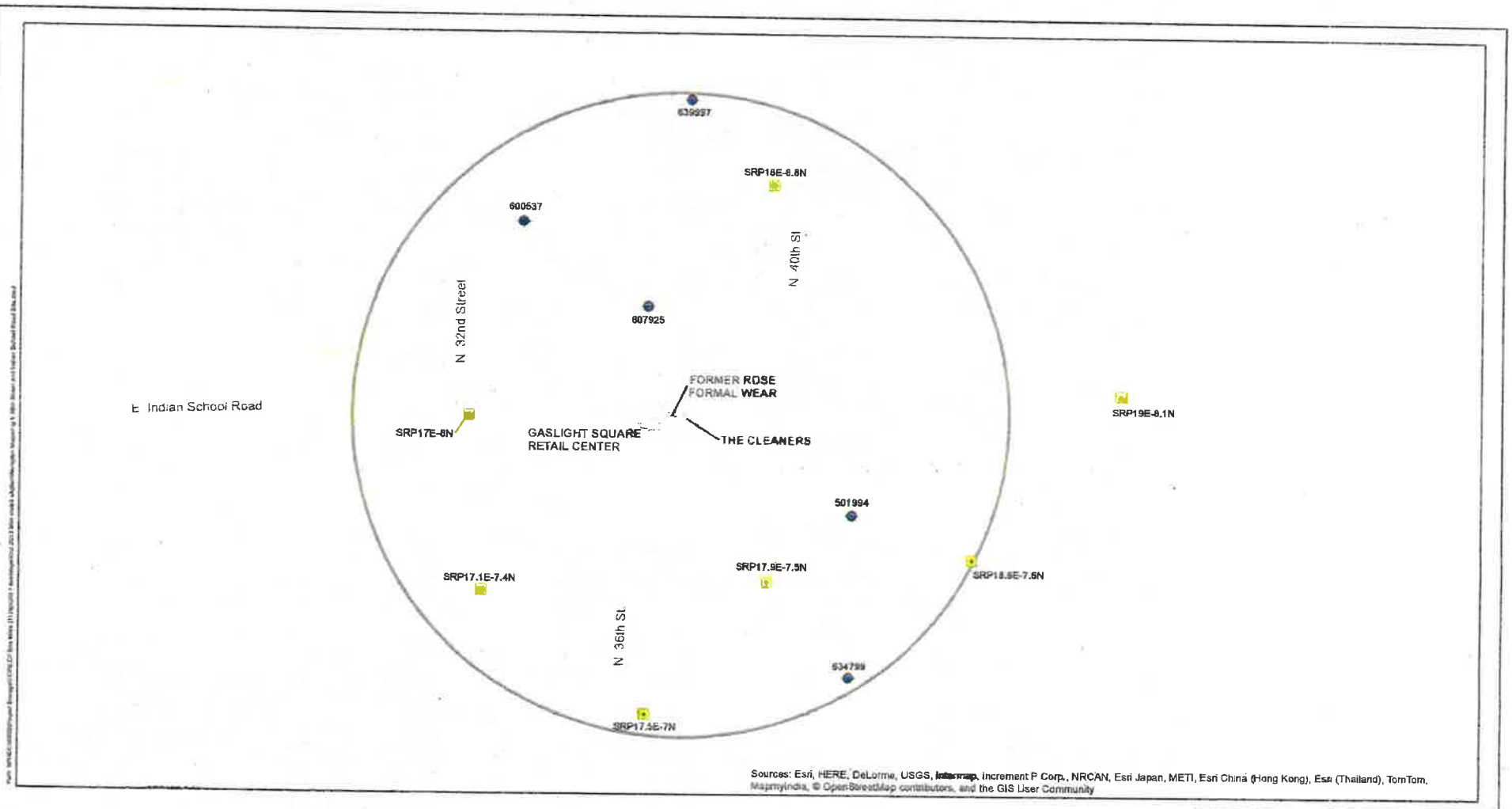
Plume boundaries depicted on the site map represent ADEQ's interpretation of data available at the time the map was constructed. The map is intended to provide the public with basic information as to the estimated geographic extent of known contamination as of the date of map production. The actual extent of contamination may be different. Therefore, the plume for this site may change in the future as new information becomes available.

ADEQ Arizona Department of Environmental Quality

Date Map Saved: 5/8/2018

Publication Number: M 18 - 08

DC7S:\gisdev\dc7\WQARF\ECP\38thSt_IndSch.mxd



1 Mile Area

SRP Production Well Locations

Exempt Well Locations — A groundwater well with maximum capacity of <35 gallons per minute

518068 – Well Registry Number for State of Arizona (55-XXXXXX)

NOTES:

- ARS = Arizona Revised Statutes
- WQARF = Water Quality Assurance Revolving Fund
- This map falls within the City of Phoenix municipal service area.
- Well informaiton obtained from Arizona Department of Water Resources 55 Registry.

N

0 375 750 1,500 Feet

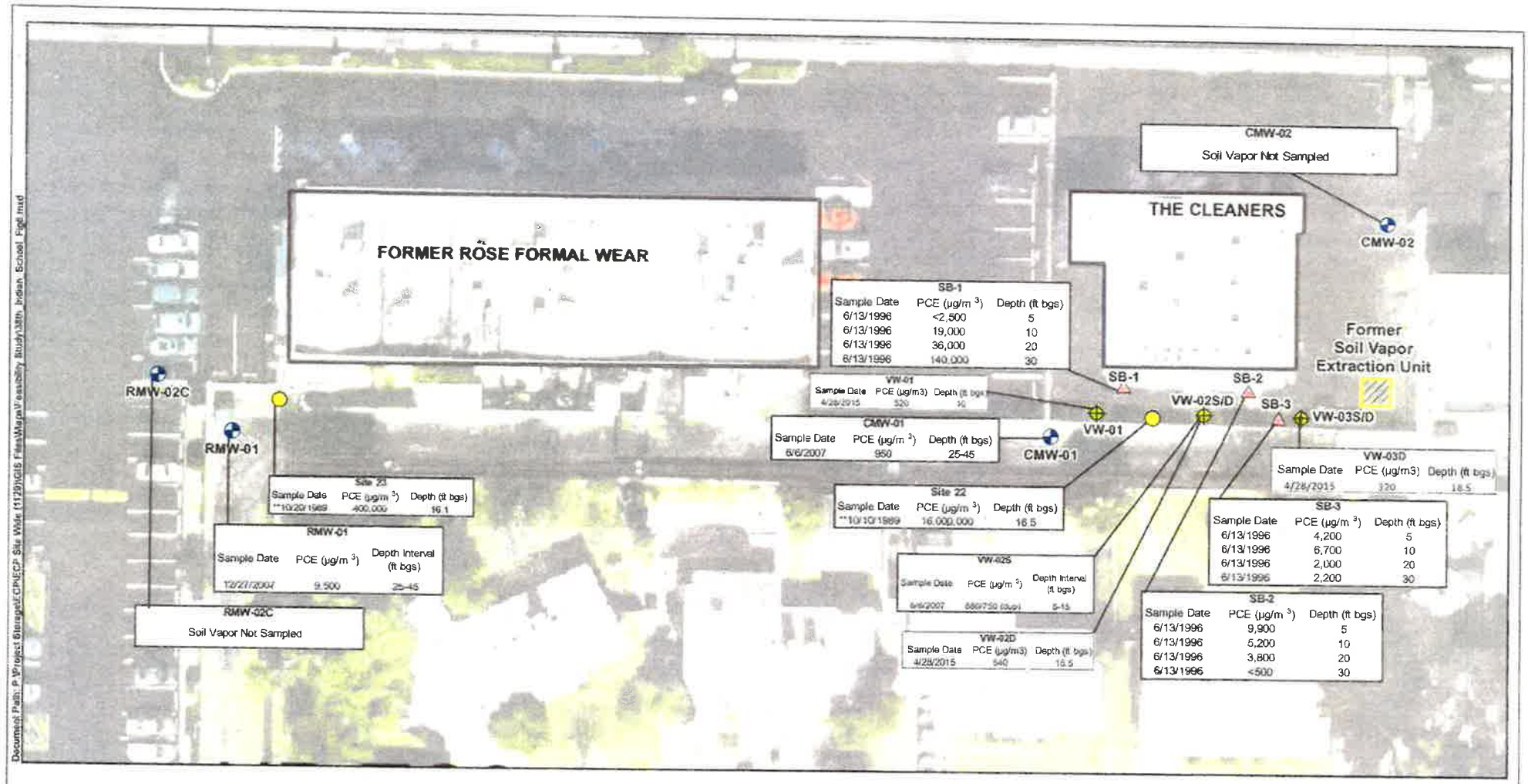
EAST CENTRAL PHOENIX
WQARF SITE
PHOENIX, ARIZONA

REGISTERED WITHDRAWAL WELLS
WITHIN 1-MILE RADIUS OF SITE
38TH STREET AND INDIAN SCHOOL ROAD

HARGIS ASSOCIATES 10/1/2014

FIGURE 3

PREP BY NKR REV BY LJM RPT NO 1135.41



SB-1

Sample Date	PCE (µg/m 3)	Depth (ft bgs)
6/13/1996	<2,500	5
6/13/1996	19,000	10
6/13/1996	36,000	20
6/13/1996	140,000	30

VW-01

Sample Date	PCE (µg/m3)	Depth (ft bgs)
4/28/2015	520	10

CMW-01

Sample Date	PCE (µg/m 3)	Depth (ft bgs)
6/6/2007	950	25-45

Site 23

Sample Date	PCE (µg/m 3)	Depth (ft bgs)
**10/20/1989	400,000	16.1

Site 22

Sample Date	PCE (µg/m 3)	Depth (ft bgs)
**10/10/1989	16,000,000	16.5

RMW-01

Sample Date	PCE (µg/m 3)	Depth Interval (ft bgs)
12/27/2004	9,500	25-45

VW-02S

Sample Date	PCE (µg/m 3)	Depth Interval (ft bgs)
6/6/2007	660/730 (dup)	5-15

VW-02D

Sample Date	PCE (µg/m3)	Depth (ft bgs)
4/28/2015	540	16.5

SB-2

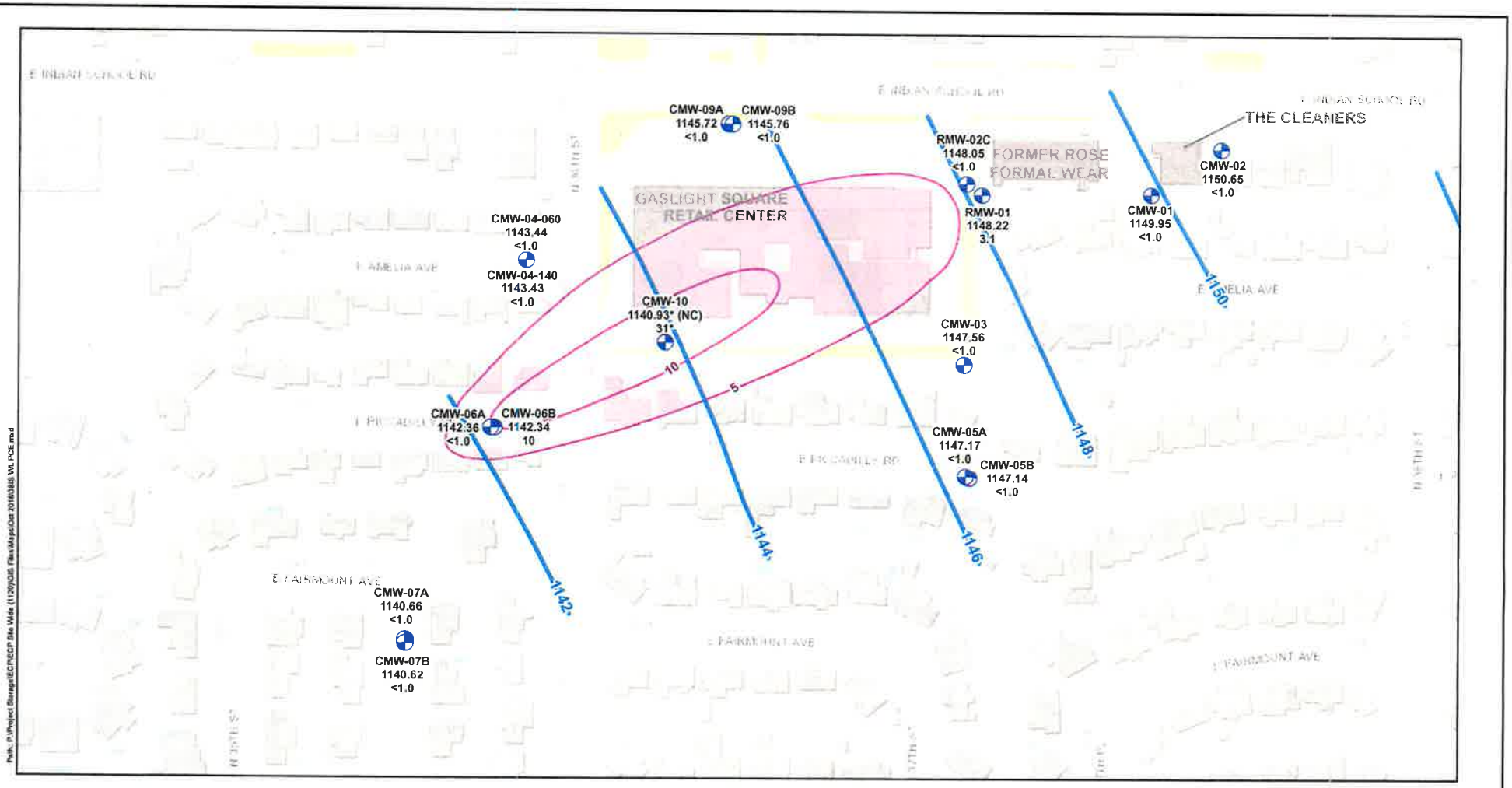
Sample Date	PCE (µg/m 3)	Depth (ft bgs)
6/13/1996	9,900	5
6/13/1996	5,200	10
6/13/1996	3,800	20
6/13/1996	<500	30

SB-3

Sample Date	PCE (µg/m 3)	Depth (ft bgs)
6/13/1996	4,200	5
6/13/1996	6,700	10
6/13/1996	2,000	20
6/13/1996	2,200	30

VW-03D

Sample Date	PCE (µg/m3)	Depth (ft bgs)
4/28/2015	320	16.5



EXPLANATION

- Groundwater Monitor Well Location
- 1150 Groundwater elevation (in feet above mean sea level)
- Groundwater Elevation Contour (in feet above mean sea level)
- Estimated Direction of Groundwater Flow
- <1.0 August 2016 PCE concentration (in micrograms per liter)
- Estimated Area where PCE greater than 5 micrograms per liter in groundwater

Note: Water levels collected on August 25, 2016.

* Water level and concentrations collected during drilling

NC not used in contouring

PCE = Tetrachloroethene

0 75 150 Feet

N

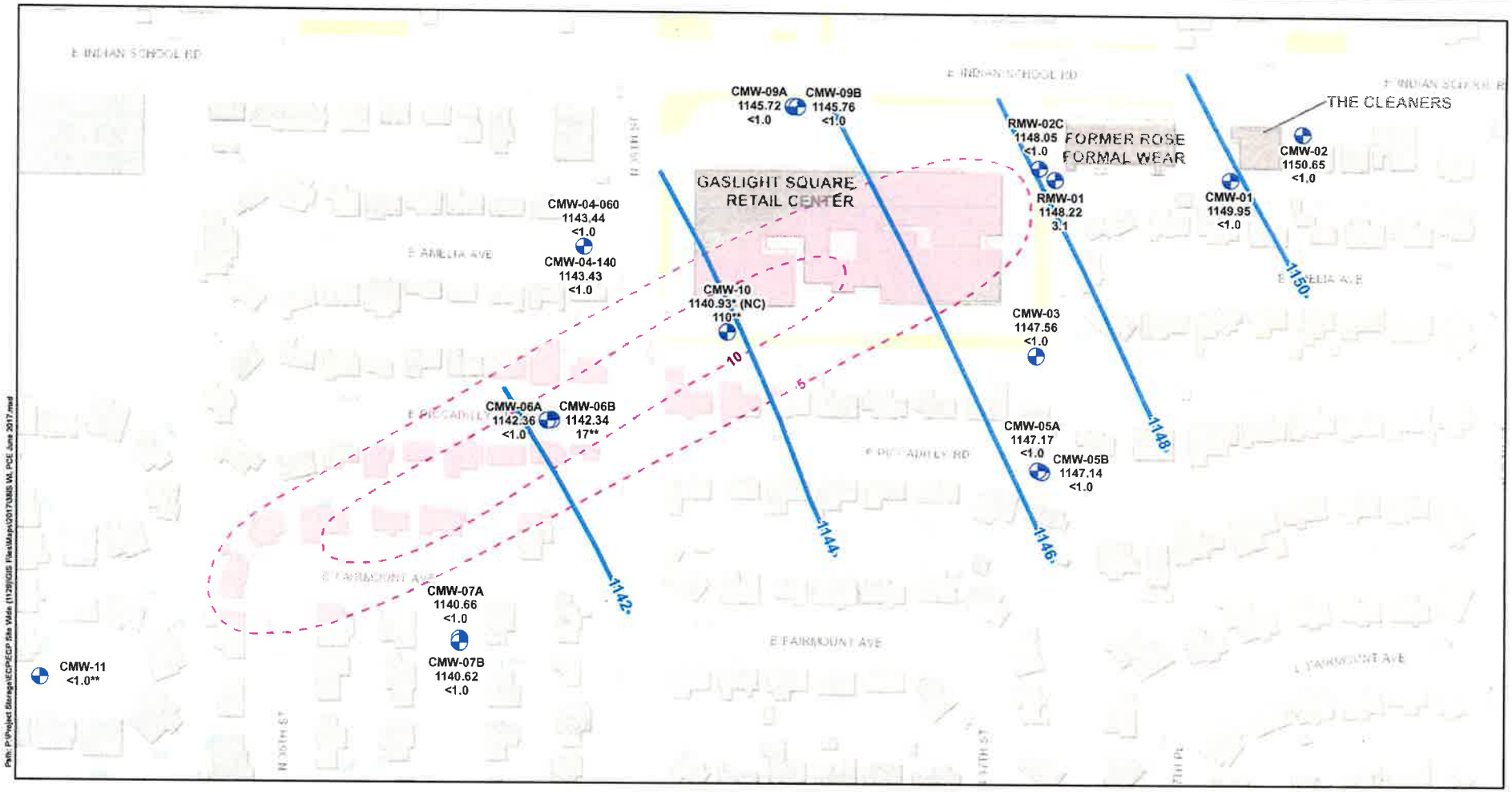
EAST CENTRAL PHOENIX
WQARF SITE
PHOENIX, ARIZONA

AUGUST 2016
WATER LEVEL ELEVATION AND TETRACHLOROETHENE IN GROUNDWATER
38TH STREET AND INDIAN SCHOOL ROAD SITE

HARGIS + ASSOCIATES, INC
HYDROGEOLOGY · ENGINEERING

5/23/2018
FIGURE 5

PREP BY NKR REV BY LL JM RPT NO 1135.4f



EXPLANATION

- Groundwater Monitor Well Location
- 1150 Groundwater elevation (in feet above mean sea level)
- Groundwater Elevation Contour (in feet above mean sea level)
- Estimated Direction of Groundwater Flow
- <1.0 August 2016 PCE concentration (in micrograms per liter)
- Estimated Area where PCE greater than 5 micrograms per liter in groundwater

Note: Water levels collected on August 25, 2016.

* Water level and concentrations collected during drilling

** PCE Data from June 2017 sampling

NC not used in contouring

PCE = Tetrachloroethene

0 75 150 Feet

N

EAST CENTRAL PHOENIX
WQARF SITE
PHOENIX, ARIZONA

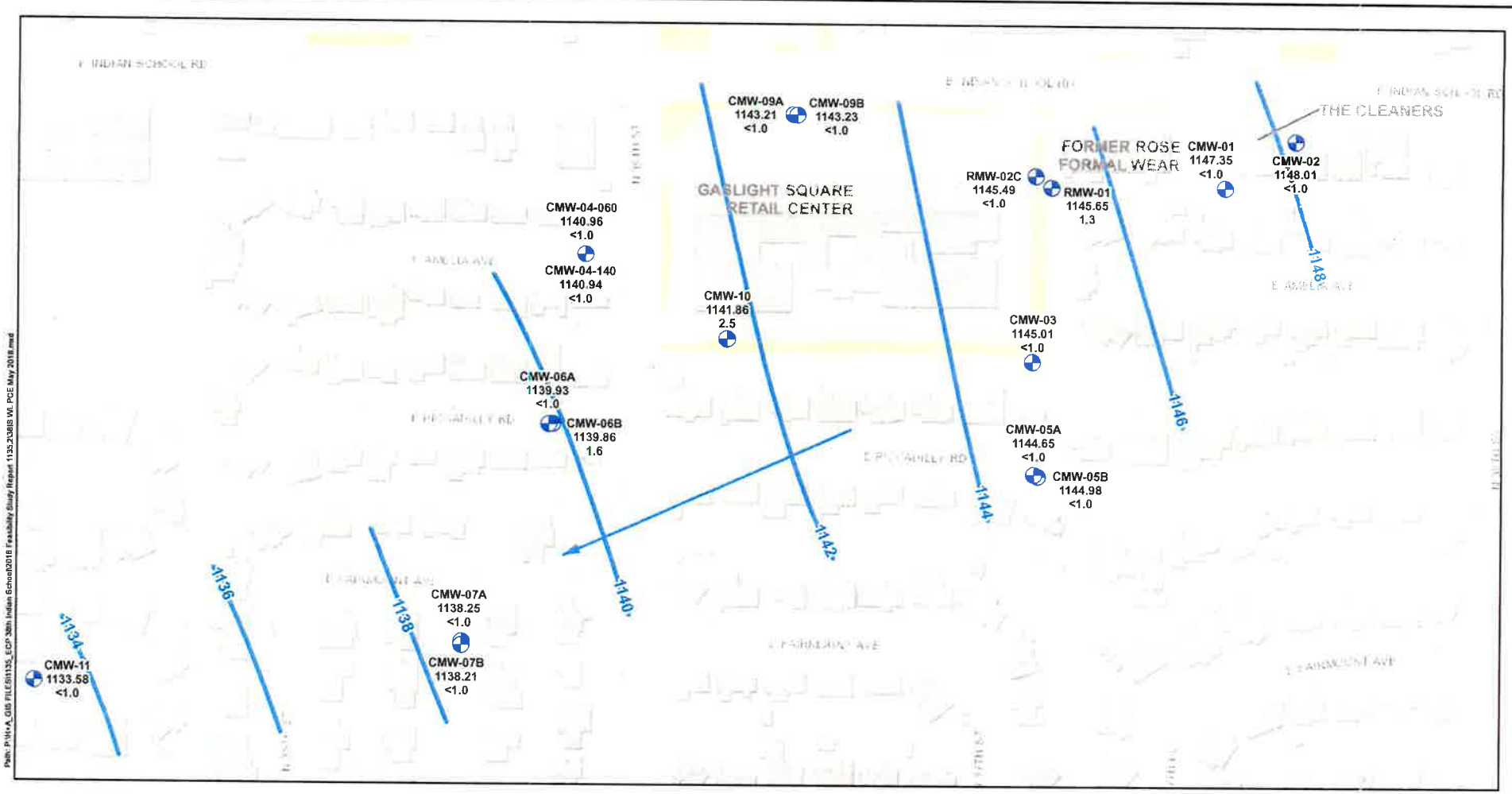
JUNE 2017
WATER ELEVATION AND
TETRACHLOROETHENE IN GROUNDWATER
38TH STREET AND INDIAN SCHOOL ROAD SITE

HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

5/23/2018

FIGURE 6

PREP BY NKR REV BY LLJM RPT NO 1135.2



EXPLANATION

- Groundwater Monitor Well Location
- 1150 Groundwater elevation (in feet above mean sea level)
- Groundwater Elevation Contour (in feet above mean sea level)
- Estimated Direction of Groundwater Flow

<1.0 May 2018 PCE concentration (in micrograms per liter)

Note: Water levels collected on May 2, 2018.

PCE = Tetrachloroethene

0 75 150 Feet

N

EAST CENTRAL PHOENIX
WQARF SITE
PHOENIX, ARIZONA

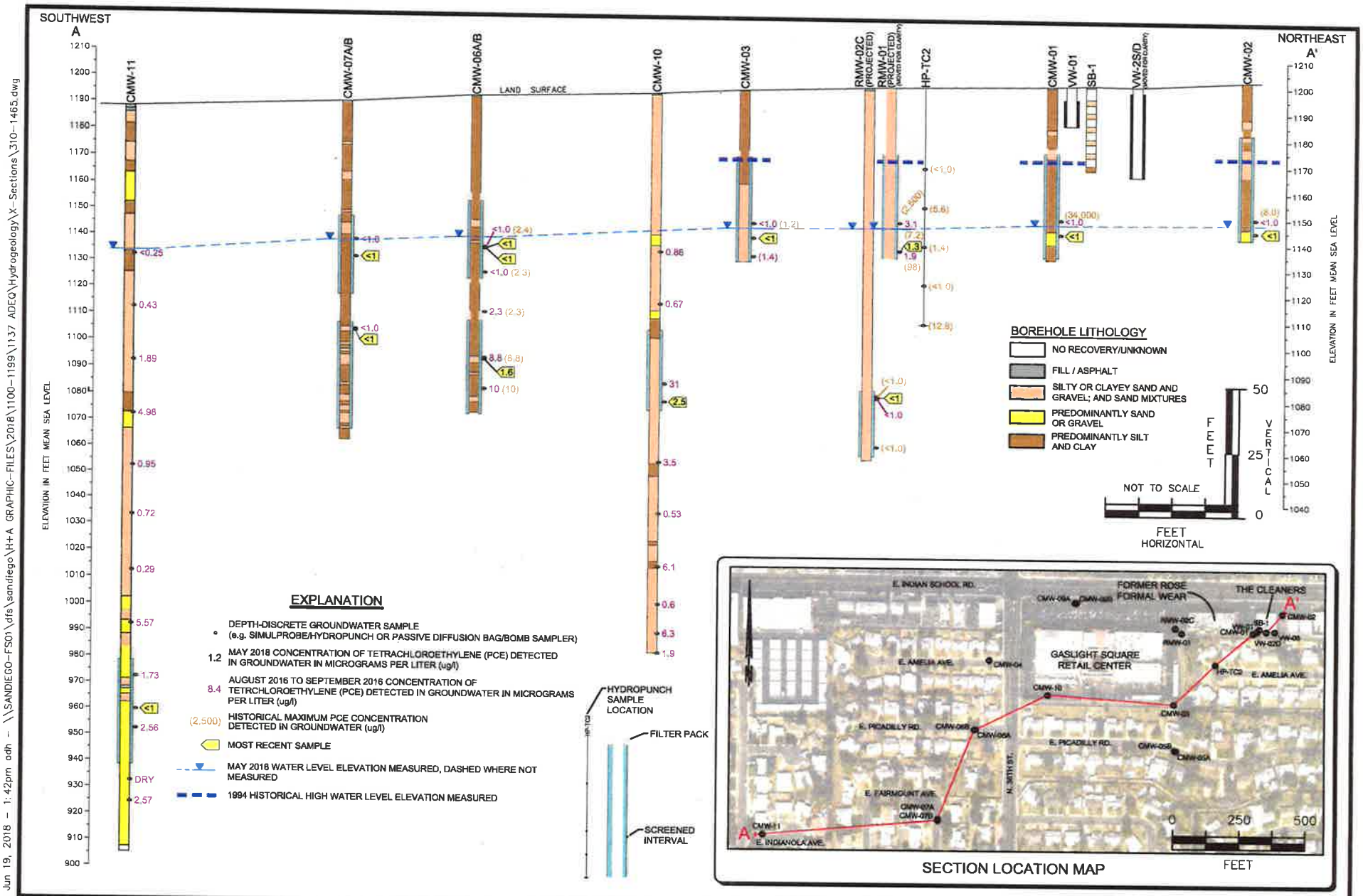
MAY 2018
WATER ELEVATION AND
TETRACHLOROETHENE IN GROUNDWATER
38TH STREET AND INDIAN SCHOOL ROAD SITE

HARGIS + ASSOCIATES, INC
HYDROGEOLOGY ENGINEERING

5/30/2018

FIGURE 7

PREP BY NKR REV BY LLM RPT NO 1135.2



Jun 19, 2018 - 1:42pm adh - \\SANDIEGO-FS01\dfs\sandiego\H+A GRAPHIC-FILES\2018\1100-1199\1137 ADEQ\Hydrogeology\X-Sections\310-1465.dwg

HARGIS + ASSOCIATES, INC
Hydrogeology/Engineering

6/18	RPT NO. 1135	310-1465	A

FIGURE 8. CROSS SECTION A-A'
38TH STREET AND INDIAN SCHOOL ROAD, EAST CENTRAL PHOENIX WQARF SITE

APPENDIX A
GROUNDWATER AND SOIL VAPOR DATA

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-01	Non-specific depth	4/21/1992	NA	NA	34,000.0
38IS	CMW-01	Non-specific depth	4/21/1992	NA	NA	30,000.0
38IS	CMW-01	Non-specific depth	5/22/1992	NA	NA	29,000.0
38IS	CMW-01	Non-specific depth	8/11/1992	NA	NA	13,000.0
38IS	CMW-01	Non-specific depth	8/11/1992	NA	NA	8,700.0
38IS	CMW-01	Non-specific depth	12/16/1994	NA	NA	1,600.0
38IS	CMW-01	Non-specific depth	3/29/1996	NA	NA	2,700.0
38IS	CMW-01	Non-specific depth	3/13/1997	NA	NA	490.0
38IS	CMW-01	Non-specific depth	5/8/1997	NA	NA	310.0
38IS	CMW-01	Non-specific depth	5/8/1997	NA	NA	370.0
38IS	CMW-01	Non-specific depth	11/20/1997	NA	NA	160.0
38IS	CMW-01	Non-specific depth	2/5/1998	NA	NA	130.0
38IS	CMW-01	Non-specific depth	2/5/1998	NA	NA	94.0
38IS	CMW-01	Shallow	9/5/2002	36.6	1163.29	3.7
38IS	CMW-01	Shallow	12/2/2002	36.6	1163.37	2.6
38IS	CMW-01	Shallow	3/6/2003	38.1	1161.85	2.1
38IS	CMW-01	Shallow	6/3/2003	38.9	1161.04	2.6
38IS	CMW-01	Shallow	10/12/2004	45.0	1154.88	3.6
38IS	CMW-01	Shallow	3/22/2005	46.6	1153.33	1.2
38IS	CMW-01	Shallow	10/7/2005	44.2	1155.71	2.6
38IS	CMW-01	Shallow	3/15/2006	44.2	1155.75	<1.0
38IS	CMW-01	Shallow	10/16/2007	46.5	1153.42	<1.0
38IS	CMW-01	Shallow	4/29/2008	47.0	1152.92	<1.0
38IS	CMW-01	Shallow	10/6/2008	46.5	1153.42	2.0
38IS	CMW-01	Deep	3/27/2002	63.0	1136.97	4.7
38IS	CMW-01	Deep	9/5/2002	62.6	1137.29	9.2
38IS	CMW-01	Deep	12/2/2002	62.6	1137.37	2.1
38IS	CMW-01	Deep	3/6/2003	63.1	1136.85	1.9
38IS	CMW-01	Deep	6/3/2003	62.9	1137.04	2.0
38IS	CMW-01	Deep	12/10/2003	62.5	1137.46	1.2
38IS	CMW-01	Deep	3/30/2004	62.7	1137.23	1.0
38IS	CMW-01	Deep	10/12/2004	63.0	1136.88	<0.4
38IS	CMW-01	Deep	3/22/2005	62.6	1137.33	<1.0
38IS	CMW-01	Deep	10/7/2005	63.2	1136.71	20.0
38IS	CMW-01	Deep	3/15/2006	63.2	1136.75	<1.0
38IS	CMW-01	Deep	10/26/2006	62.4	1137.49	<1.0
38IS	CMW-01	Deep	3/15/2007	61.7	1138.24	<1.0
38IS	CMW-01	Deep	10/16/2007	61.5	1138.42	<1.0
38IS	CMW-01	Deep	4/29/2008	61.5	1138.42	<1.0
38IS	CMW-01	Deep	10/6/2008	61.5	1138.42	1.6
38IS	CMW-01	Deep	10/23/2013	56.3	1143.62	<1.0
38IS	CMW-01	Deep	5/20/2014	50.6	1149.32	<1.0
38IS	CMW-01	Deep	12/16/2014	50.6	1149.32	<1.0
38IS	CMW-01	Deep	3/18/2015	50.6	1149.32	<1.0
38IS	CMW-01	Deep	5/15/2015	50.6	1149.32	<1.0

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-01	Deep	10/28/2015	50.6	1149.32	<1.0
38IS	CMW-01	Deep	8/25/2016	50.6	1149.32	<1.0
38IS	CMW-01	Deep	5/2/2018	56.3	1143.62	<1.0
38IS	CMW-02	Non-specific depth	8/11/1992	NA	NA	<0.2
38IS	CMW-02	Non-specific depth	12/13/1994	NA	NA	**8.0**
38IS	CMW-02	Non-specific depth	3/20/1996	NA	NA	**2.3**
38IS	CMW-02	Non-specific depth	3/12/1997	NA	NA	**0.6**
38IS	CMW-02	Non-specific depth	5/7/1997	NA	NA	<0.5
38IS	CMW-02	Non-specific depth	11/18/1997	NA	NA	**1.1**
38IS	CMW-02	Non-specific depth	2/3/1998	NA	NA	<1.0
38IS	CMW-02	Shallow	9/5/2002	38.4	1163.98	<0.5
38IS	CMW-02	Shallow	12/2/2002	38.3	1164.13	**0.8**
38IS	CMW-02	Shallow	3/6/2003	39.8	1162.64	<0.5
38IS	CMW-02	Shallow	6/3/2003	40.7	1161.74	<0.5
38IS	CMW-02	Shallow	10/16/2007	48.0	1154.41	<1.0
38IS	CMW-02	Shallow	4/29/2008	49.0	1153.41	<1.0
38IS	CMW-02	Shallow	10/6/2008	47.5	1154.91	<1.0
38IS	CMW-02	Deep	3/27/2002	57.7	1144.72	<0.5
38IS	CMW-02	Deep	9/5/2002	58.4	1143.98	<0.5
38IS	CMW-02	Deep	12/2/2002	58.3	1144.13	<0.5
38IS	CMW-02	Deep	3/6/2003	57.8	1144.64	<0.5
38IS	CMW-02	Deep	6/3/2003	57.7	1144.74	<0.5
38IS	CMW-02	Deep	12/10/2003	60.2	1142.18	<0.5
38IS	CMW-02	Deep	3/30/2004	58.5	1143.95	<0.5
38IS	CMW-02	Deep	10/12/2004	57.7	1144.70	<0.4
38IS	CMW-02	Deep	3/22/2005	58.3	1144.10	<1.0
38IS	CMW-02	Deep	10/7/2005	57.9	1144.49	<1.0
38IS	CMW-02	Deep	3/15/2006	57.9	1144.52	<1.0
38IS	CMW-02	Deep	10/26/2006	57.2	1145.25	<1.0
38IS	CMW-02	Deep	3/15/2007	57.4	1144.98	<1.0
38IS	CMW-02	Deep	10/16/2007	56.5	1145.91	<1.0
38IS	CMW-02	Deep	4/29/2008	56.5	1145.91	<1.0
38IS	CMW-02	Deep	10/6/2008	56.5	1145.91	<1.0
38IS	CMW-02	Deep	10/23/2013	57.4	1145.01	<1.0
38IS	CMW-02	Deep	5/20/2014	52.3	1150.11	<1.0
38IS	CMW-02	Deep	12/16/2014	52.3	1150.11	<1.0
38IS	CMW-02	Deep	3/18/2015	52.3	1150.11	<1.0
38IS	CMW-02	Deep	5/15/2015	52.3	1150.11	<1.0
38IS	CMW-02	Deep	10/28/2015	52.3	1150.11	<1.0
38IS	CMW-02	Deep	8/25/2016	52.3	1150.11	<1.0
38IS	CMW-02	Deep	5/2/2018	57.4	1145.01	<1.0
38IS	CMW-03	Non-specific depth	8/10/1992	NA	NA	<0.2
38IS	CMW-03	Non-specific depth	8/10/1992	NA	NA	<0.2
38IS	CMW-03	Non-specific depth	12/12/1994	NA	NA	<0.5
38IS	CMW-03	Non-specific depth	3/29/1996	NA	NA	<0.5

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-03	Non-specific depth	3/12/1997	NA	NA	<0.5
38IS	CMW-03	Non-specific depth	5/7/1997	NA	NA	<0.5
38IS	CMW-03	Non-specific depth	5/7/1997	NA	NA	<0.5
38IS	CMW-03	Non-specific depth	11/18/1997	NA	NA	**1.4**
38IS	CMW-03	Non-specific depth	2/3/1998	NA	NA	<1.0
38IS	CMW-03	Non-specific depth	2/3/1998	NA	NA	<1.0
38IS	CMW-03	Shallow	9/5/2002	2.0	1195.20	**1.2**
38IS	CMW-03	Shallow	12/2/2002	2.0	1195.20	**1.0**
38IS	CMW-03	Shallow	3/6/2003	2.0	1195.20	<0.5
38IS	CMW-03	Shallow	6/3/2003	2.0	1195.20	**0.7**
38IS	CMW-03	Shallow	10/16/2007	46.5	1150.70	<1.0
38IS	CMW-03	Shallow	4/29/2008	47.0	1150.20	<1.0
38IS	CMW-03	Shallow	10/6/2008	45.5	1151.70	<1.0
38IS	CMW-03	Deep	3/25/2002	62.8	1134.41	**1.4**
38IS	CMW-03	Deep	9/5/2002	62.5	1134.66	**1.1**
38IS	CMW-03	Deep	12/2/2002	63.2	1133.99	**0.9**
38IS	CMW-03	Deep	3/6/2003	62.9	1134.27	<0.5
38IS	CMW-03	Deep	6/3/2003	62.6	1134.56	<0.5
38IS	CMW-03	Deep	12/10/2003	63.4	1133.79	<0.5
38IS	CMW-03	Deep	3/30/2004	62.5	1134.66	<0.5
38IS	CMW-03	Deep	10/12/2004	63.1	1134.12	<0.4
38IS	CMW-03	Deep	3/22/2005	62.4	1134.77	<1.0
38IS	CMW-03	Deep	10/7/2005	63.1	1134.06	**1.0**
38IS	CMW-03	Deep	10/7/2005	63.1	1134.06	<1.0
38IS	CMW-03	Deep	11/20/2006	62.3	1134.89	<1.0
38IS	CMW-03	Deep	3/15/2007	61.6	1135.62	<1.0
38IS	CMW-03	Deep	10/16/2007	61.5	1135.70	<1.0
38IS	CMW-03	Deep	4/29/2008	61.5	1135.70	<1.0
38IS	CMW-03	Deep	10/6/2008	61.5	1135.70	<1.0
38IS	CMW-03	Deep	10/23/2013	55.9	1141.30	<1.0
38IS	CMW-03	Deep	5/20/2014	50.3	1146.90	<1.0
38IS	CMW-03	Deep	12/16/2014	50.3	1146.90	<1.0
38IS	CMW-03	Deep	3/18/2015	50.3	1146.90	<1.0
38IS	CMW-03	Deep	5/18/2015	50.3	1146.90	<1.0
38IS	CMW-03	Deep	10/28/2015	50.3	1146.90	<1.0
38IS	CMW-03	Deep	8/25/2016	50.3	1146.90	<1.0
38IS	CMW-03	Deep	5/2/2018	55.9	1141.30	<1.0
38IS	CMW-04-60	Non-specific depth	5/19/1994	NA	NA	**5.8**
38IS	CMW-04-60	Non-specific depth	12/14/1994	NA	NA	**6.8**
38IS	CMW-04-60	Non-specific depth	3/20/1996	NA	NA	**8.0**
38IS	CMW-04-60	Non-specific depth	3/11/1997	NA	NA	**12.0**
38IS	CMW-04-60	Non-specific depth	5/6/1997	NA	NA	**13.0**
38IS	CMW-04-60	Non-specific depth	11/19/1997	NA	NA	**6.3**
38IS	CMW-04-60	Non-specific depth	2/3/1998	NA	NA	**7.7**
38IS	CMW-04-60	Shallow	9/5/2002	38.9	1156.79	**1.6**

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-04-60	Shallow	12/2/2002	38.6	1157.04	**1.5**
38IS	CMW-04-60	Shallow	3/6/2003	40.2	1155.47	**0.9**
38IS	CMW-04-60	Shallow	6/4/2003	40.9	1154.72	<0.5
38IS	CMW-04-60	Shallow	10/16/2007	49.0	1146.66	<1.0
38IS	CMW-04-60	Shallow	4/29/2008	49.5	1146.16	<1.0
38IS	CMW-04-60	Shallow	10/6/2008	48.5	1147.16	<1.0
38IS	CMW-04-60	Deep	3/26/2002	58.1	1137.61	<0.5
38IS	CMW-04-60	Deep	9/5/2002	57.9	1137.79	**0.6**
38IS	CMW-04-60	Deep	12/2/2002	57.6	1138.04	**0.8**
38IS	CMW-04-60	Deep	3/6/2003	58.2	1137.47	<0.5
38IS	CMW-04-60	Deep	6/4/2003	57.9	1137.72	<0.5
38IS	CMW-04-60	Deep	12/10/2003	58.7	1136.96	**0.8**
38IS	CMW-04-60	Deep	3/30/2004	57.8	1137.91	**0.5**
38IS	CMW-04-60	Deep	10/12/2004	62.3	1133.41	<0.4
38IS	CMW-04-60	Deep	3/22/2005	58.1	1137.60	<1.0
38IS	CMW-04-60	Deep	10/7/2005	57.7	1137.93	<1.0
38IS	CMW-04-60	Deep	3/15/2006	58.4	1137.23	<1.0
38IS	CMW-04-60	Deep	10/26/2006	57.8	1137.82	<1.0
38IS	CMW-04-60	Deep	3/15/2007	58.9	1136.73	<1.0
38IS	CMW-04-60	Deep	10/16/2007	56.5	1139.16	<1.0
38IS	CMW-04-60	Deep	4/29/2008	56.5	1139.16	<1.0
38IS	CMW-04-60	Deep	10/6/2008	56.5	1139.16	<1.0
38IS	CMW-04-60	Deep	10/23/2013	57.5	1138.16	<1.0
38IS	CMW-04-60	Deep	5/20/2014	52.5	1143.16	<1.0
38IS	CMW-04-60	Deep	12/16/2014	52.5	1143.16	<1.0
38IS	CMW-04-60	Deep	3/18/2015	52.5	1143.16	<1.0
38IS	CMW-04-60	Deep	5/18/2015	52.5	1143.16	<1.0
38IS	CMW-04-60	Deep	10/28/2015	52.5	1143.16	<1.0
38IS	CMW-04-60	Deep	8/25/2016	57.5	1138.16	<1.0
38IS	CMW-04-60	Deep	5/2/2018	57.5	1138.16	<1.0
38IS	CMW-04-140	Shallow	10/23/2013	101.4	1094.20	<1.0
38IS	CMW-04-140	Shallow	5/20/2014	101.4	1094.20	<1.0
38IS	CMW-04-140	Shallow	12/16/2014	101.4	1094.20	<1.0
38IS	CMW-04-140	Shallow	3/18/2015	101.4	1094.20	<1.0
38IS	CMW-04-140	Shallow	5/18/2015	101.4	1094.20	<1.0
38IS	CMW-04-140	Shallow	10/28/2015	101.4	1094.20	<1.0
38IS	CMW-04-140	Shallow	8/25/2016	101.4	1094.20	<1.0
38IS	CMW-04-140	Deep	5/2/2018	101.4	1094.20	<1.0
38IS	CMW-04-140	Deep	10/7/2005	137.7	1057.94	<1.0
38IS	CMW-04-140	Deep	3/15/2006	138.4	1057.20	<1.0
38IS	CMW-04-140	Deep	10/26/2006	134.8	1060.81	<1.0
38IS	CMW-04-140	Deep	3/15/2007	137.9	1057.71	<1.0
38IS	CMW-04-140	Deep	10/16/2007	136.5	1059.10	<1.0
38IS	CMW-04-140	Deep	4/29/2008	136.5	1059.10	<1.0
38IS	CMW-04-140	Deep	10/6/2008	136.5	1059.10	<1.0

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-05A	Shallow	4/11/2014	50.1	1145.42	<1.0
38IS	CMW-05A	Shallow	5/20/2014	50.1	1145.42	<1.0
38IS	CMW-05A	Shallow	12/16/2014	50.1	1145.42	<1.0
38IS	CMW-05A	Shallow	3/18/2015	50.1	1145.42	<1.0
38IS	CMW-05A	Shallow	5/18/2015	50.1	1145.42	<1.0
38IS	CMW-05A	Shallow	10/28/2015	50.1	1145.42	<1.0
38IS	CMW-05A	Shallow	8/25/2016	50.1	1145.42	<1.0
38IS	CMW-05A	Shallow	5/2/2018	55.6	1139.92	<1.0
38IS	CMW-05A	Intermediate	4/11/2014	55.6	1139.92	<1.0
38IS	CMW-05A	Deep	4/11/2014	61.1	1134.42	<1.0
38IS	CMW-05A	Deep	4/11/2014	66.6	1128.92	<1.0
38IS	CMW-05B	Shallow	4/11/2014	84.3	1111.27	<1.0
38IS	CMW-05B	Shallow	5/20/2014	84.3	1111.27	<1.0
38IS	CMW-05B	Shallow	12/16/2014	84.3	1111.27	<1.0
38IS	CMW-05B	Shallow	3/18/2015	84.3	1111.27	<1.0
38IS	CMW-05B	Shallow	10/28/2015	84.3	1111.27	<1.0
38IS	CMW-05B	Shallow	5/18/2015	84.3	1111.27	<1.0
38IS	CMW-05B	Shallow	8/25/2016	84.3	1111.27	<1.0
38IS	CMW-05B	Shallow	5/2/2018	84.3	1111.27	<1.0
38IS	CMW-05B	Intermediate	4/11/2014	90.1	1105.47	<1.0
38IS	CMW-05B	Intermediate	4/11/2014	95.8	1099.77	<1.0
38IS	CMW-05B	Intermediate	4/11/2014	101.6	1093.97	<1.0
38IS	CMW-05B	Deep	4/11/2014	107.4	1088.17	<1.0
38IS	CMW-05B	Deep	4/11/2014	113.2	1082.37	<1.0
38IS	CMW-05B	Deep	4/11/2014	118.9	1076.67	<1.0
38IS	CMW-06A	Shallow	4/11/2014	52.4	1141.02	<1.0
38IS	CMW-06A	Intermediate	4/11/2014	57.3	1136.12	**2.4**
38IS	CMW-06A	Intermediate	5/20/2014	57.3	1136.12	**2.3**
38IS	CMW-06A	Intermediate	12/16/2014	57.3	1136.12	<1.0
38IS	CMW-06A	Intermediate	12/16/2014	57.3	1136.12	<1.0
38IS	CMW-06A	Intermediate	3/18/2015	57.3	1136.12	<1.0
38IS	CMW-06A	Intermediate	5/18/2015	57.3	1136.12	<1.0
38IS	CMW-06A	Intermediate	10/28/2015	57.3	1136.12	<1.0
38IS	CMW-06A	Intermediate	8/25/2016	57.3	1136.12	<1.0
38IS	CMW-06A	Intermediate	5/2/2018	57.3	1136.12	<1.0
38IS	CMW-06A	Intermediate	4/11/2014	62.2	1131.22	**2.5**
38IS	CMW-06A	Deep	2/9/2014	68.0	1125.42	**2.0**
38IS	CMW-06A	Deep	4/11/2014	67.1	1126.32	**2.3**
38IS	CMW-06A	Deep	5/20/2014	67.1	1126.32	**2.0**
38IS	CMW-06A	Deep	12/16/2014	67.1	1126.32	<1.0
38IS	CMW-06A	Deep	3/18/2015	67.1	1126.32	<1.0
38IS	CMW-06A	Deep	5/18/2015	67.1	1126.32	<1.0
38IS	CMW-06A	Deep	10/28/2015	67.1	1126.32	<1.0
38IS	CMW-06A	Deep	8/25/2016	67.1	1126.32	<1.0
38IS	CMW-06A	Deep	5/2/2018	67.1	1126.32	<1.0

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-06B	Shallow	4/11/2014	82.2	1111.22	**1.4**
38IS	CMW-06B	Shallow	5/20/2014	82.2	1111.22	<1.0
38IS	CMW-06B	Shallow	12/16/2014	82.2	1111.22	**1.9**
38IS	CMW-06B	Shallow	3/18/2015	82.2	1111.22	**1.6**
38IS	CMW-06B	Shallow	3/18/2015	82.2	1111.22	**1.3**
38IS	CMW-06B	Shallow	5/18/2015	82.2	1111.22	<1.0
38IS	CMW-06B	Shallow	10/28/2015	82.2	1111.22	**1.7**
38IS	CMW-06B	Shallow	8/25/2016	82.2	1111.22	**2.3**
38IS	CMW-06B	Shallow	6/2/2017	82.2	1111.22	**3.2**
38IS	CMW-06B	Shallow	4/11/2014	88.0	1105.42	**1.5**
38IS	CMW-06B	Intermediate	4/11/2014	93.7	1099.72	**2.2**
38IS	CMW-06B	Intermediate	4/11/2014	99.5	1093.92	**2.7**
38IS	CMW-06B	Intermediate	5/20/2014	99.5	1093.92	**2.6**
38IS	CMW-06B	Intermediate	12/16/2014	99.5	1093.92	**4.9**
38IS	CMW-06B	Intermediate	3/18/2015	99.5	1093.92	**3.7**
38IS	CMW-06B	Intermediate	3/18/2015	99.5	1093.92	**4.7**
38IS	CMW-06B	Intermediate	5/18/2015	99.5	1093.92	**6.1**
38IS	CMW-06B	Intermediate	10/28/2015	99.5	1093.92	**7.2**
38IS	CMW-06B	Intermediate	8/25/2016	99.5	1093.92	**8.8**
38IS	CMW-06B	Intermediate	6/2/2017	99.5	1093.92	**10.0**
38IS	CMW-06B	Intermediate	5/2/2018	99.5	1093.92	**1.6**
38IS	CMW-06B	Deep	2/9/2014	118.0	1075.42	**5.3**
38IS	CMW-06B	Deep	4/11/2014	105.3	1088.12	**3.2**
38IS	CMW-06B	Deep	4/11/2014	111.0	1082.42	**3.4**
38IS	CMW-06B	Deep	4/11/2014	116.8	1076.62	**1.9**
38IS	CMW-06B	Deep	5/20/2014	111.0	1082.42	**3.6**
38IS	CMW-06B	Deep	12/16/2014	111.0	1082.42	**4.6**
38IS	CMW-06B	Deep	3/18/2015	111.0	1082.42	**5.3**
38IS	CMW-06B	Deep	5/18/2015	111.0	1082.42	**6.5**
38IS	CMW-06B	Deep	5/18/2015	111.0	1082.42	**6.8**
38IS	CMW-06B	Deep	10/28/2015	111.0	1082.42	**8.4**
38IS	CMW-06B	Deep	8/25/2016	111.0	1082.42	**10.0**
38IS	CMW-06B	Deep	6/2/2017	111.0	1082.42	**17.0**
38IS*	CMW-06B	Intermediate	1/2/2018	99.5	1093.92	<2.0
38IS*	CMW-06B	Deep	1/2/2018	111.0	1082.42	<2.0
38IS*	CMW-06B	Intermediate	4/5/2018	99.5	1093.92	<2.0
38IS*	CMW-06B	Deep	4/5/2018	111.0	1082.42	<2.0
38IS	CMW-07A	Shallow	4/11/2014	52.2	1138.42	<1.0
38IS	CMW-07A	Shallow	5/20/2014	52.2	1138.42	<1.0
38IS	CMW-07A	Shallow	12/16/2014	52.2	1138.42	<1.0
38IS	CMW-07A	Shallow	3/18/2015	52.2	1138.42	<1.0
38IS	CMW-07A	Shallow	5/18/2015	52.2	1138.42	<1.0
38IS	CMW-07A	Shallow	10/28/2015	52.2	1138.42	<1.0
38IS	CMW-07A	Shallow	8/25/2016	52.2	1138.42	<1.0
38IS	CMW-07A	Shallow	5/2/2018	58.2	1132.42	<1.0

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-07A	Intermediate	4/11/2014	58.2	1132.42	<1.0
38IS	CMW-07A	Intermediate	4/11/2014	64.3	1126.32	<1.0
38IS	CMW-07A	Deep	4/11/2014	70.3	1120.32	<1.0
38IS	CMW-07A	Deep	3/24/2014	73.0	1117.62	<1.0
38IS	CMW-07B	Shallow	4/11/2014	86.3	1104.30	<1.0
38IS	CMW-07B	Shallow	5/20/2014	86.3	1104.30	<1.0
38IS	CMW-07B	Shallow	12/16/2014	86.3	1104.30	<1.0
38IS	CMW-07B	Shallow	3/18/2015	86.3	1104.30	<1.0
38IS	CMW-07B	Shallow	5/18/2015	86.3	1104.30	<1.0
38IS	CMW-07B	Shallow	10/28/2015	86.3	1104.30	<1.0
38IS	CMW-07B	Shallow	8/25/2016	86.3	1104.30	<1.0
38IS	CMW-07B	Shallow	5/2/2018	86.3	1104.30	<1.0
38IS	CMW-07B	Intermediate	4/11/2014	97.8	1092.80	<1.0
38IS	CMW-07B	Intermediate	4/11/2014	103.6	1087.00	<1.0
38IS	CMW-07B	Intermediate	4/11/2014	109.4	1081.20	<1.0
38IS	CMW-07B	Deep	4/11/2014	115.1	1075.50	<1.0
38IS	CMW-07B	Deep	4/11/2014	115.1	1075.50	<1.0
38IS	CMW-07B	Deep	4/11/2014	120.9	1069.70	<1.0
38IS	CMW-07B	Deep	3/24/2014	125.0	1065.60	<1.0
38IS	CMW-09A	Shallow	4/11/2014	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	5/20/2014	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	5/20/2014	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	12/16/2014	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	3/18/2015	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	5/18/2015	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	10/27/2015	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	8/25/2016	53.2	1144.74	<1.0
38IS	CMW-09A	Shallow	5/2/2018	58.7	1139.24	<1.0
38IS	CMW-09A	Intermediate	4/11/2014	58.7	1139.24	<1.0
38IS	CMW-09A	Deep	4/11/2014	64.2	1133.74	<1.0
38IS	CMW-09A	Deep	4/11/2014	69.7	1128.24	<1.0
38IS	CMW-09B	Shallow	11/19/2013	57.0	1140.90	<1.0
38IS	CMW-09B	Shallow	11/19/2013	76.0	1121.90	<1.0
38IS	CMW-09B	Intermediate	4/11/2014	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	5/20/2014	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	12/16/2014	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	3/18/2015	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	5/18/2015	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	10/28/2015	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	8/25/2016	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	5/2/2018	82.9	1115.00	<1.0
38IS	CMW-09B	Intermediate	4/11/2014	88.0	1109.90	<1.0
38IS	CMW-09B	Deep	4/11/2014	93.1	1104.80	<1.0
38IS	CMW-09B	Deep	11/19/2013	96.0	1101.90	<1.0
38IS	CMW-09B	Deep	4/11/2014	98.2	1099.70	<1.0

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	CMW-09B	Deep	4/11/2014	98.2	1099.70	<1.0
38IS	CMW-10	Deep	6/2/2017	92.2	1102.73	**86**
38IS	CMW-10	Deep	6/2/2017	98.2	1096.73	**[illegible]**
38IS	CMW-10	Deep	6/2/2017	104.2	1090.73	**12**
38IS	CMW-10	Deep	6/2/2017	110.2	1084.73	**13**
38IS	CMW-10	Deep	6/2/2017	116.2	1078.73	**3.5**
38IS*	CMW-10	Deep	1/2/2018	92.2	1102.73	<2.0
38IS*	CMW-10	Deep	1/2/2018	98.2	1096.73	<2.0
38IS*	CMW-10	Deep	1/2/2018	104.2	1090.73	<2.0
38IS*	CMW-10	Deep	1/2/2018	110.2	1084.73	<2.0
38IS*	CMW-10	Deep	4/5/2018	92.2	1102.73	<2.0
38IS*	CMW-10	Deep	4/5/2018	98.2	1096.73	**2.2**
38IS*	CMW-10	Deep	4/5/2018	104.2	1090.73	**2**
38IS*	CMW-10	Deep	4/5/2018	110.2	1084.73	**2.1**
38IS	CMW-10	Deep	5/15/2018	116.2	1078.73	**2.5**
38IS	CMW-11	Deep	3/27/2017	56.0	1132.02	<0.25
38IS	CMW-11	Deep	3/27/2017	76.0	1112.02	<0.25
38IS	CMW-11	Deep	3/28/2017	96.0	1092.02	0.43
38IS	CMW-11	Deep	3/28/2017	116.0	1072.02	**1.89**
38IS	CMW-11	Deep	3/28/2017	136.0	1052.02	**4.98**
38IS	CMW-11	Deep	3/28/2017	156.0	1032.02	**0.95**
38IS	CMW-11	Deep	3/29/2017	176.0	1012.02	**0.72**
38IS	CMW-11	Deep	3/29/2017	196.0	992.02	0.29
38IS	CMW-11	Deep	3/30/2017	216.0	972.02	**5.6**
38IS	CMW-11	Deep	3/30/2017	236.0	952.02	**1.7**
38IS	CMW-11	Deep	3/31/2017	264.0	924.02	**2.6**
38IS	CMW-11	Deep	6/2/2017	211.6	976.42	<1.0
38IS	CMW-11	Deep	6/2/2017	217.3	970.72	<1.0
38IS	CMW-11	Deep	6/2/2017	223.0	965.02	<1.0
38IS	CMW-11	Deep	6/2/2017	228.7	959.32	<1.0
38IS	CMW-11	Deep	6/2/2017	234.4	953.62	<1.0
38IS	CMW-11	Deep	6/2/2017	240.1	947.92	<1.0
38IS	CMW-11	Deep	6/2/2017	245.7	942.32	<1.0
38IS	CMW-11	Deep	5/2/2018	228.7	959.32	<1.0
38IS	RMW-01	Non-specific depth	12/15/1994	NA	NA	**12.0**
38IS	RMW-01	Non-specific depth	3/29/1996	NA	NA	**34.0**
38IS	RMW-01	Non-specific depth	3/12/1997	NA	NA	**24.0**
38IS	RMW-01	Non-specific depth	5/7/1997	NA	NA	**36.0**
38IS	RMW-01	Non-specific depth	11/19/1997	NA	NA	**1,700.0**
38IS	RMW-01	Non-specific depth	2/4/1998	NA	NA	**2,500.0**
38IS	RMW-01	Shallow	3/6/2003	38.8	1160.14	**20.0**
38IS	RMW-01	Shallow	3/6/2003	38.8	1160.14	**18.0**
38IS	RMW-01	Shallow	6/3/2003	39.6	1159.33	**12.0**
38IS	RMW-01	Shallow	6/3/2003	39.6	1159.33	**12.0**

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	RMW-01	Shallow	12/10/2003	41.2	1157.80	4.5
38IS	RMW-01	Shallow	3/30/2004	42.3	1156.68	6.2
38IS	RMW-01	Shallow	10/12/2004	46.1	1152.90	70.4
38IS	RMW-01	Shallow	3/22/2005	47.5	1151.49	30.0
38IS	RMW-01	Shallow	10/7/2005	45.1	1153.84	45.0
38IS	RMW-01	Shallow	3/15/2006	46.0	1153.00	28.0
38IS	RMW-01	Shallow	3/15/2006	46.0	1153.00	26.0
38IS	RMW-01	Shallow	10/26/2006	44.3	1154.70	29.0
38IS	RMW-01	Shallow	10/26/2006	44.3	1154.70	34.0
38IS	RMW-01	Shallow	3/15/2007	45.5	1153.50	33.0
38IS	RMW-01	Shallow	3/15/2007	45.5	1153.50	37.0
38IS	RMW-01	Shallow	10/16/2007	47.5	1151.45	51.0
38IS	RMW-01	Shallow	4/29/2008	48.0	1150.95	31.0
38IS	RMW-01	Shallow	4/29/2008	48.0	1150.95	36.0
38IS	RMW-01	Shallow	10/6/2008	46.5	1152.45	88.0
38IS	RMW-01	Shallow	10/6/2008	46.5	1152.45	93.0
38IS	RMW-01	Deep	12/2/2002	63.3	1135.70	7.0
38IS	RMW-01	Deep	3/6/2003	62.8	1136.14	9.8
38IS	RMW-01	Deep	6/3/2003	62.6	1136.33	12.0
38IS	RMW-01	Deep	12/10/2003	63.2	1135.80	4.6
38IS	RMW-01	Deep	12/10/2003	63.2	1135.80	4.0
38IS	RMW-01	Deep	3/30/2004	63.3	1135.68	6.5
38IS	RMW-01	Deep	3/30/2004	63.3	1135.68	6.0
38IS	RMW-01	Deep	10/12/2004	63.1	1135.90	8.6
38IS	RMW-01	Deep	10/12/2004	63.1	1135.90	8.8
38IS	RMW-01	Deep	3/22/2005	62.5	1136.49	8.0
38IS	RMW-01	Deep	10/7/2005	63.1	1135.84	<1.0
38IS	RMW-01	Deep	3/15/2006	63.0	1136.00	16.0
38IS	RMW-01	Deep	3/15/2006	63.0	1136.00	18.0
38IS	RMW-01	Deep	10/26/2006	62.3	1136.70	38.0
38IS	RMW-01	Deep	3/15/2007	63.5	1135.50	37.0
38IS	RMW-01	Deep	10/16/2007	61.5	1137.45	37.0
38IS	RMW-01	Deep	4/29/2008	61.5	1137.45	24.0
38IS	RMW-01	Deep	10/6/2008	61.5	1137.45	98.0
38IS	RMW-01	Deep	10/6/2008	61.5	1137.45	94.0
38IS	RMW-01	Deep	10/23/2013	56.9	1142.05	3.3
38IS	RMW-01	Deep	10/23/2013	62.3	1136.65	3.1
38IS	RMW-01	Deep	5/20/2014	51.3	1147.65	7.2
38IS	RMW-01	Deep	5/20/2014	62.2	1136.75	5.4
38IS	RMW-01	Deep	12/16/2014	51.3	1147.65	6.4
38IS	RMW-01	Deep	12/16/2014	51.3	1147.65	5.8
38IS	RMW-01	Deep	12/16/2014	62.2	1136.75	5.6
38IS	RMW-01	Deep	3/18/2014	51.3	1147.65	2.6
38IS	RMW-01	Deep	3/18/2015	62.2	1136.75	2.0
38IS	RMW-01	Deep	5/18/2015	51.3	1147.65	2.9

TABLE A-1
HISTORIC TETRACHLOROETHENE IN GROUNDWATER
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

Site	Well ID	Sample Interval Zone	Sample Date	Sample Depth (btoc in feet bgs)	Sample Elevation (feet amsl)	PCE (mg/L)
38IS	RMW-01	Deep	5/18/2015	51.3	1147.65	**3.9**
38IS	RMW-01	Deep	5/18/2015	62.2	1136.75	**1.9**
38IS	RMW-01	Deep	10/28/2015	51.3	1147.65	**4.0**
38IS	RMW-01	Deep	10/28/2015	62.2	1136.75	**3.3**
38IS	RMW-01	Deep	8/25/2016	51.3	1147.65	**3.1**
38IS	RMW-01	Deep	8/25/2016	62.2	1136.75	**1.9**
38IS	RMW-01	Deep	5/2/2018	62.2	1136.75	**1.3**
38IS	RMW-02C	Shallow	4/29/2008	117.0	1081.68	<1.0
38IS	RMW-02C	Shallow	10/6/2008	117.0	1081.68	<1.0
38IS	RMW-02C	Shallow	12/16/2014	117.5	1081.18	<1.0
38IS	RMW-02C	Shallow	3/18/2015	117.5	1081.18	<1.0
38IS	RMW-02C	Shallow	5/18/2015	117.5	1081.18	<1.0
38IS	RMW-02C	Shallow	10/28/2015	117.5	1081.18	<1.0
38IS	RMW-02C	Shallow	8/25/2016	117.5	1081.18	<1.0
38IS	RMW-02C	Shallow	5/2/2018	117.5	1081.18	<1.0
38IS	RMW-02C	Shallow	10/23/2013	119.1	1079.58	<1.0
38IS	RMW-02C	Shallow	5/20/2014	119.1	1079.58	<1.0
38IS	RMW-02C	Shallow	10/23/2013	126.9	1071.78	<1.0
38IS	RMW-02C	Deep	4/29/2008	136.5	1062.18	<1.0
38IS	RMW-02C	Deep	10/6/2008	136.5	1062.18	<1.0
38IS	RMW-02C	Deep	10/23/2013	134.7	1063.98	<1.0

Notes:

*= Note, Sample collected by Wood (formerly AMEC) for in-situ chemical oxidation (ISCO) treatment in source area
< 1.0= Concentration not detected at or above the reporting limit.
µg/L= Micrograms per liter
38IS= East Central Phoenix Water Quality Assurance Revolving Fund Site - 38th Street and Indian School Road Site
amsl= Above mean sea level
AWQS= Aquifer Water Quality Standard
bgs= Below ground surface
btoc= Below top of casing
J= An estimated concentration
PCE= Tetrachloroethene
BOLD= Indicates a concentration detected above the reporting limit.
BOLD= Indicates a concentration detected above AWQS for PCE.

TABLE A-2
SOIL VAPOR RESULTS
EAST CENTRAL PHOENIX
38TH STREET AND INDIAN SCHOOL ROAD
WATER QUALITY ASSURANCE REVOLVING FUND SITE

	Sample Location	Sample Date	Depth (feet bgs)	PCE ($\mu g/m^3$)
Pre-SVE[1]	Site ID No. 22	10/10/1989	16.5	16,000,000
	Site ID No. 23	10/20/1989	16.1	400,000
Post-SVE[1]	SB-1	6/13/1996	5	<2,500
			10	19,000
			20	36,000
			30	140,000
	SB-2	6/13/1996	5	9,900
			10	5,200
			25	3,800
			30	<500
	SB-3	6/13/1996	5	4,200
			10	6,700
			25	2,000
			30	2,200
	CMW-01	6/4/2007	25 - 45[3]	1,200
		6/6/2007		950
	VW-01	4/28/2015*	10	520
	VW-02S	6/4/2007	5 - 15	950
		6/6/2007		880
		6/6/2007		750
	VW-02D	6/4/2007	2 - 35	1,600
		6/6/2007	2 - 35	1,200
		4/28/2015*	18.5	540
	VW-03D	4/28/2015*	18.5	320
	RMW-01	12/27/2007	25 - 45[2]	8,100
				9,500
				9,500

NOTES

bgs = below ground surface
$\mu g/m^3$ = micrograms per cubic meter
PCE = Tetrachloroethene
SVE = Soil Vapor Extraction
WQARF = Water Quality Assurance Revolving Fund
DTW = Depth to water
[1] Soil Vapor Extraction System reportedly operated from July 7, 1995 thru August 17, 1995. Soil vapor was extracted continuously from wells VW-01, VW-02S/D, and VW-03S/D.
[2] RMW-01 is screened from 25-65 feet bgs. Approximate DTW in December 2007 is 45 feet bgs.
[3] CMW-01 is screened from 25-65 feet bgs. Approximate DTW in June 2007 is 45 feet bgs.
4/28/2015* Soil vapor samples analyzed by Modified TO-14 analysis method