REMEDIAL INVESTIGATION REPORT

East Central Phoenix
48th Street and Indian School
Water Quality Assurance Revolving Fund Site
Phoenix, Arizona

Prepared on Behalf of:

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Attn: Lisa Kowalczyk

Re: Remedial Investigation Report
48th Street and Indian School Road WQARF Registry Site
Phoenix, Arizona

We certify that this document and attachments presented in this report are accurate and complete. This report was prepared by the staff of Wood Environment and Infrastructure Solutions, Inc. (Wood) under our supervision to ensure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who are directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate and complete.

If you have any questions or comments regarding this report, please contact Jim Clarke at (602) 733-6055.

Respectfully submitted,

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ACRONYMS AND ABBREVIATIONS

µg/L	Micrograms per liter
µg/m^3	micrograms per cubic meter
°F	degrees Fahrenheit
%	percent
40th & OSB site	40 Street and Osborn Road WQARF site
48th & IS site	48 Street and Indian School Road WQARF site
A.A.C.	Arizona Administrative Code
A.R.S.	Arizona Revised Statutes
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AMA	Active Management Area
amsl	above mean sea level
AWQS(s)	Aquifer Water Quality Standard(s)
bgs	below ground surface
btoc	Below top of casing
CAP	Central Arizona Project
CEV	Camelback East Village
cis-1,2-DCE	cis-1,2- dichloroethene
COC	contaminant of concern
COP	City of Phoenix
COPC	compound of potential concern
Earth Tech	Earth Technologies, Inc
ECP	East Central Phoenix
ERA	Early response action
ft	feet
Ft/ft	Feet per foot
GPL(s)	Groundwater Protection Level(s)
gpm	gallons per minute
H+A	Hargis + Associates, Inc.
HEG	Hartman Environmental Geoscience
HGL	HydroGeoLogic, Inc.
HI	Hazard Index
HPMG	H&P Mobile Geochemistry Inc.
HWICU	Hazardous Waste Inspections and Compliance Unit
IAQ	Indoor air quality
IARSL	indoor air Regional Screening Level
IIARSL	industrial indoor air Regional Screening Level
IRA	interim remedial action

J-E	Johnson-Ettinger
LAU	Lower Alluvial Unit
lbs	pounds
LRL(s)	Laboratory reporting limit(s)
MAU	middle alluvial unit
mg/kg	milligrams per kilogram
ng	nanograms
NRCS	National Resources Conservation Service
PCE	tetrachloroethene
ppmv	parts per million vapor volume
PSG	Passive soil gas
RI	remedial investigation
RIARSL	residential indoor air Regional Screening Level
ROs	remedial objectives
ROW	Right(s)-of-way
RPD	Relative percent difference
RSRL(s)	Residential Soil Remediation Level(s)
Sandy's Cleaners	Sandy's Magic Touch Cleaners
SECOR	SECOR International, Inc.
SRP	Salt River Project
Stantec	Stantec Consulting Services, Inc.
SVE	soil vapor extraction
SVMW	soil vapor monitoring well
TCE	trichloroethene
TCR	Target cancer risk
TSVB	temporary soil vapor borings
UAU	upper alluvial unit
Univar	Univar USA, Inc.
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Society
VI	Vapor intrusion
VISL	Vapor Intrusion Screening Level
VOC	volatile organic compound
Wood	Wood Environment & Infrastructure Solutions, Inc.
WQARF	Water Quality Assurance Revolving Fund
WSRV	western portion of the Salt River Valley

EXECUTIVE SUMMARY

This report summarizes the findings of remedial investigation (RI) activities conducted by the Arizona Department of Environmental Quality (ADEQ) at the 48th Street and Indian School Road Water Quality Assurance Revolving Fund (WQARF) site (herein referred to as the 48th & IS site; **Figure 1**) of the East Central Phoenix (ECP) WQARF study area located in the City of Phoenix (COP), Arizona. The 48th & IS site is located in the vicinity of the intersection of 48th Street and Indian School Road, and as of December 2018 the groundwater "plume," which consists of elevated concentrations of tetrachloroethene (PCE), extends to the southwest as depicted in **Figure 2**.

The investigation of the 48th & IS site began in 1983 when Salt River Project (SRP) collected groundwater samples from several wells that they were pumping in the Salt River Valley. This included SRP Well 17.9E-7.5N, which is located directly downgradient of the 48th & IS site and west of the intersection of 40th Street and Osborn Road and within the current 40th Street and Osborn Road WQARF site (herein referred to as the 40th & OSB site) (**Figure 1**). PCE was detected at a concentration of 53 micrograms per liter (µg/L) in the sample collected from SRP Well 17.9E-7.5N, which is above the Aquifer Water Quality Standard (AWQS) of 5.0 µg/L. SRP took the well off-line in 1990 but continued operating the well periodically to collect water quality samples. The maximum PCE concentration of 210 µg/L was reported in the 1998 sample. PCE concentrations decreased to non-detect in the 2016 sample (ADEQ, 2019). The 48th & IS site was placed on the WQARF registry in 1999 (ADEQ, 1998).

The 48th & IS site has historically contained dry cleaning facilities, service stations, and printing shops, with some of the dry cleaners operating since 1962. In 1989, ADEQ performed soil gas sampling at several facilities within the ECP study area, including facilities within the 48th & IS site. After investigations, the source area of the PCE was determined to be dry cleaning facilities that operated at the northwest corner of 48th Street and Indian School Road. The facilities were identified as One Hour Martinizing (1966 to 1987) and Sandy's Magic Touch Cleaners (Sandy's Cleaners) (1987 to present). Sandy's Cleaners is currently located in Arcadia Towne Center, a multi-tenant shopping center. The locations of One Hour Martinizing and Sandy's Cleaners relative to the 48th & IS site features and PCE plume are shown on **Figures 3 and 4,** respectively.

From 1992 to November 2018 soil borings, vapor monitoring points, and monitoring wells were installed at the 48th & IS site and adjacent 40th & OSB site to assess the areal and vertical extents of PCE contamination. Soil sampling conducted at Sandy's Cleaners in 1992 found only residual concentrations of PCE in the soil below current residential soil remediation levels (RSRLs) (**Table 3**). The soil sample locations, identified as B-1 through B-7, are shown on **Figure 7.** Monitoring well SMW-01 was installed in boring B-7. Ten (10) additional soil borings identified as DP-1 through DP-10 on **Figure 8** were drilled and soil sampled in 1996. As shown in **Table 3**, residual concentrations of PCE in the soil were below the current RSRLs. Soil samples were also collected during installation of the following: monitoring wells SMW-6, SMW-7 and SMW-8; soil vapor extraction wells SSVE-1 and SSVE-2; and soil gas points SG-13 through SG-18 in 2012. The locations of SSVE-1, SSVE-2 and SG-13 through SG-18 are shown on **Figure 9**. The analytical results are summarized in **Table 3.** With the exception of 2.4 milligrams per kilogram (mg/kg) of PCE reported in sample SMW-07-25, PCE was not detected above the minimum laboratory reporting limits (LRLs) in the above samples. The minimum LRLs were below the RSRL of 0.51 mg/kg. The 2.4 mg/kg of PCE reported for sample SMW-07-25 exceeded the RSRL of 0.51 mg/kg. Considering that PCE was non-detect in the other soil samples, the PCE detected in sample SMW-07-25 is considered a laboratory error.

In 2000, SRP designed and installed a soil vapor extraction (SVE) system at Sandy's Cleaners to remove vapor contamination from the soil. The SVE system operated from February 2006 until December 2011. The SVE system removed a total of 319 pounds (lbs) of PCE from the soil.

Soil vapor sampling was performed at the 48th & IS site in 1996, 2011, 2012, 2013, and 2015. PCE and TCE were detected in the soil vapor samples. Soil vapor sampling was performed at neighboring areas located to the west of Sandy's Cleaners and at Sandy's Cleaners.

The neighboring area located to the west of Sandy's Cleaners includes the neighborhood west of Sandy's Cleaners, Arcadia High School, and the neighborhood west of Arcadia High School (**Figures 13-15)**. Soil vapor samples were collected from these areas in 2011, 2012, 2013, and 2015. The sampling was performed to define the extent of the PCE vapor plume to the EPA vapor intrusion screening level (VISL) (United States Environmental Protection Agency [USEPA], 2018a) and to evaluate if there was a potential vapor intrusion (VI) risk from the soil and groundwater. PCE concentrations ranged from <20 micrograms per cubic meter (µg/m^3) (multiple samples) to 50,000 µg/m^3 (SG-400-7') and exceeded the 2018 VISL of 367 µg/m^3 (USEPA, 2018a) in 51 of the 113 samples. The extent of the PCE soil gas plume based on the 2012 and 2013 data are presented on **Figures 14** and **15.** TCE concentrations ranged from <2.14 µg/m^3 (SG-10A) to 84 µg/m^3 (A-23) and exceeded the VISL of 16 µg/m^3 in three of the 113 samples. Based on the results of the soil vapor sampling, an indoor air sampling program was conducted during August 2013 to evaluate if a VI risk to indoor air existed. The indoor air sampling program included Arcadia High School. **Figures 17** and **18** and **Table 7** show the indoor air analytical results compared to the November 2018 Residential Indoor Air Regional Screening Level (RIARSL) of 11 µg/m^3 (USEPA, 2018b). PCE did not exceed 11 µg/m^3 in samples collected from residences. PCE concentrations exceeded 11 µg/m^3 in five of 30 samples collected in buildings at Arcadia High School, ranging from 14 µg/m^3 to 34 µg/m^3. The type of classroom sampled was not indicated in the report documenting the investigation (Hartman Environmental Geoscience [HEG], 2014). However, PCE was not detected in samples collected from adjoining classrooms, was not detected above RIASRLs in the confirmation samples collected at the locations and was not detected in associated soil vapor samples collected during 2012. Therefore, the elevated PCE concentrations detected in the five indoor air quality (IAQ) samples collected at Arcadia High School did not originate from soil vapor. Based on the results of the indoor air sampling, the maximum concentrations of PCE in the soil vapor are protective of residential use, which is also protective of students and workers/faculty at Arcadia High School.

Soil vapor sampling was performed at Sandy's Cleaners in 1996, 2011, 2012, 2013, and 2015. PCE and trichloroethene (TCE) were detected in the soil vapor samples. Based on the 2015 sample results, PCE and TCE were detected in sub-slab (less than 10 ft below ground surface [bgs]) samples at maximum concentrations of 19,400 and 1,160 µg/m^3, respectively (**Table 4**). These concentrations exceed the November 2018 VISLs for PCE and TCE of 367 and 16 µg/m^3, respectively. Based on attenuation factors estimated from indoor air sampling performed in the neighboring area, the maximum PCE and TCE concentrations in the sub-slab soil vapor samples do not appear to represent a VI risk to workers at Sandy's Cleaners and Arcadia Towne Center. As of the November 2015 sampling event, the maximum PCE concentration reported in deep (10-15 ft bgs) soil vapor samples was 28,000 µg/m^3 (SG-03C) (**Table 5**).

Historical site characterization associated with the preliminary investigations, ERA, and RI have demonstrated that the vadose zone was impacted by vapor-phase PCE at the site of Sandy's Cleaners. Soil vapor monitoring conducted through 2015 has provided delineation of the PCE vadose zone impacts. The investigations have defined both the lateral and vertical extent of the impacts, with no vadose zone characterization data gaps noted. Residual VOC concentrations also do not appear to pose an unacceptable VI risk under a residential site redevelopment scenario, which is significantly more conservative than the current commercial site use and exposure scenario.

The groundwater investigation started in 1992 with the installation of wells SMW-01 and SMW-02 at Sandy's Cleaners. Elevated concentrations of PCE were detected at Sandy's Cleaners in Well SMW-01 at a concentration of 2,300 µg/L in April 1992. Nested wells SMW-03-60 and SMW-03-138 were installed in May 1994. SRP installed groundwater monitoring wells ECP-1 through ECP-3 in 2001. The downgradient groundwater investigation continued from 2007-2018, involving the installation of 13 groundwater monitoring wells (SMW-04 – SMW-07, SMW-08, SMW-11, SMW-12, SMW-16B, BMW-05A, BMW-05B, BMW-06A, BMW-06B, and BMW-12B) and drilling and groundwater sampling of two borings (BMW-15D and SMW-14B). The historical groundwater analytical results are summarized in **Table 8.**

The contaminant of concern (COC) in the groundwater at the 48th & IS site is PCE, which has been historically detected above the AWQS of 5.0 µg/L. PCE was detected at a maximum concentration of 6,200 µg/L in the March 13, 1997 sample collected from source area well SMW-01. Due to early response action (ERA) SVE and natural attenuation, PCE has not been detected (detection limit below AWQS) in samples collected from SMW-01 since April 12, 2011. As of the December 2018 groundwater sampling event, the maximum PCE concentration reported was 31 µg/L in sample SMW-03-60 at 42 ft bgs. As shown in the PCE concentration versus time graph for SMW-03-60 (**Appendix B**), PCE concentrations have decreased in samples from a maximum of 1,400 µg/L on October 19, 2011. Based on the results of the December 2018 groundwater monitoring event, the furthest downgradient sample detected with PCE above 5.0 µg/L is sample BMW-05B at 111.5 ft bgs (7.1 µg/L).

The PCE that impacted the groundwater migrated primarily in the vapor-phase through the vadose zone, impacting the shallow groundwater. The PCE plume then migrated downgradient under the influence of downgradient pumping wells, becoming deeper with distance from the source. Based on the non-detectable PCE concentrations in post-SVE groundwater samples collected from source area wells SMW-01, ECP-01, and SMW-04, the nearly six years of SVE remediation effectively performed vadose zone cleanup, reducing soil vapor concentrations to levels that no longer represent a continuing source of groundwater contamination.

Other compounds detected in the groundwater at the Site above the AWQSs are TCE and cis-1,2-dichloroethene (c-1,2-DCE). Neither of these compounds are currently at concentrations that exceed the AWQSs.

The conclusions of the RI are as follows:

- The source of the subsurface impact is dry cleaning facilities that have operated at the northwest corner of 48th Street and Indian School, which are One-Hour Martinizing and Sandy's Cleaners.
- PCE concentrations in soil at the source are below the RSRL and are fully characterized.
- PCE concentrations in soil gas have been characterized and have been remediated to levels that no longer represent a threat to groundwater.
- The residual PCE and TCE concentrations in soil vapor at the Site do not appear to pose a risk to residents and commercial workers at the Site.
- The groundwater impact is limited to PCE (maximum concentration of 31 µg/L) and the vertical and lateral extents of groundwater impact have been characterized to the AWQS.
- No significant data gaps are identified.

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) has prepared this Remedial Investigation (RI) Report for the East Central Phoenix (ECP) 48th Street and Indian School Road Water Quality Assurance Revolving Fund (WQARF) site (herein referred to as the 48th & IS site) located in Phoenix, Arizona (**Figure 1**). The 48th & IS site is located in the vicinity of the intersection of 48th Street and Indian School Road (**Figures 1** and **2**). The boundary line between the 48th & IS site and the adjacent (west) 40th Street and Osborn Road WQARF site (herein referred to as the 40th & OSB site) is currently 42nd Street (**Figure 1**). Wood was contracted by Arizona Department of Environmental Quality (ADEQ) to prepare this report under the Arizona Superfund Response Action Contract.

The investigation of the 48th & IS site began in 1983 when Salt River Project (SRP) collected groundwater samples from several wells that they were pumping in the Salt River Valley. This included SRP's irrigation Well 17.9E-7.5N, which is located directly downgradient of the 48th & IS site west of the intersection of 40th Street and Osborn Road and within the current 40th & OSB site (**Figure 1**). Tetrachloroethene (PCE) was detected at a concentration of 53 micrograms per liter (µg/L) in the sample collected from SRP Well 17.9E-7.5N, which is above the Aquifer Water Quality Standard (AWQS) of 5.0 µg/L. SRP took the well off-line in 1990 but continued operating the well periodically to collect water quality samples. The maximum PCE concentration of 210 µg/L was reported in the 1998 sample. PCE concentrations decreased to non-detect in the 2016 sample (ADEQ, 2019).

The 48th & IS site has historically contained dry cleaning facilities, service stations, and printing shops, with some of the dry cleaners operating since 1962. In 1989, ADEQ performed soil vapor sampling at several facilities within the ECP study area, including facilities within the 48th & IS site. After investigations, the source area of the PCE was determined to be dry cleaning facilities that operated at the northeast corner of 48th Street and Indian School Road. The facilities were identified as One Hour Martinizing (1966-1987) and Sandy's Magic Tough Cleaners (Sandy's Cleaners) (1987-present). Sandy's Cleaners is currently located in the Arcadia Towne Center, a multi-tenant shopping center. The locations of One Hour Martinizing and Sandy's Cleaners relative to the Site wells and PCE plume are shown on **Figures 3 and 4,** respectively.

The current boundaries of the 48th & IS and 40th & OSB sites are defined by the approximate limits of the groundwater PCE plumes (**Figures 1** and **2)**. The PCE plume boundary depicted on the 48th & IS Site Plan (**Figure 2**) represents ADEQ's interpretation of the data available as of December 2018.

The 48th & IS site was placed on the WQARF Registry List in April 1999 with a score of 27 out of a possible 120 (ADEQ, 1998). In June 2007, ADEQ sent out notices in accordance with Arizona Revised Statute (A.R.S.) §49-287.03 initiating the RI for the 48th & IS site. A RI work plan was prepared and submitted by SECOR International, Inc. (SECOR) in February 2008 (SECOR, 2008).

This report describes the results of RI activities conducted from 1992 through December 2018. Historical information presented herein is a summary of investigations conducted by previous consultants and is summarized as necessary to meet the RI objectives described below.

1.1 Remedial Investigation Objectives

This RI report was prepared in accordance with Arizona Revised Statutes (A.R.S.) §49-287.03 and Arizona Administrative Code (A.A.C.) R18-16-406(A). This RI report summarizes field investigations in accordance with A.A.C. R18-16-406(C).

1.2 Report Organization

This RI report summarizes the following information and data pertaining to the site:

- Physical setting of the site, including topography, climate, geology, and hydrogeologic setting;
- Site plans showing sampling locations;
- Analytical results for soil, soil vapor, and groundwater samples, including comparisons to appropriate regulatory standards, criteria, and guidance;
- Soil vapor extraction (SVE) system operations, maintenance, and monitoring;
- Groundwater flow direction, concentrations of groundwater contaminants of concern (COCs), and vertical profiling;
- Exposure route pathways;
- A discussion of the physical and analytical results;
- A land and water use study;
- A human health risk evaluation; and
- Identification and evaluation of data gaps.

1.3 Site History

The site is located in an area of mixed commercial and residential development. In 1997, ADEQ established the WQARF Registry, replacing the WQARF Priority List. In 1998, the ECP Study Area (of which this site was a part) was divided into six individual WQARF Registry sites:

- 48th & IS;
- 40th & OSB;
- 40th Street and Indian School Road;
- 38th Street and Indian School Road;
- 32nd Street and Indian School Road; and
- 24th Street and Grand Canal.

A 1988 study, which covered the ECP Study Area, identified Sandy's Cleaners located at 4730 East Indian School Road as a potential PCE source (Earth Technologies, Inc. [Earth Tech], 1989). The review of historical Phoenix city directories for operators in the 4700 block of East Indian School Road indicates that a dry-cleaning facility has operated in the area of suspected PCE contamination since 1966. Dry cleaners have been listed at 4710, 4712, and 4730 East Indian School Road; however, the physical location of the dry-cleaning facility has not changed (**Figures 3 and 4**). Current Phoenix city directories and recent ADEQ source documents use the 4730 East Indian School address. The two dry cleaners that have operated at these addresses are One Hour Martinizing and Sandy's Cleaners. Based on the investigative history, these dry-cleaning facilities have been identified as the source of the PCE impact at the 48th & IS site. Sandy's Cleaners is a tenant of the Arcadia Towne Center, a retail shopping center. The Arcadia Towne Center is occupied by Safeway, CVS Pharmacy, and other smaller businesses.

A general chronology of site history, facility ownership, and operations for the sources at the 48th & IS site is described below.

1.3.1 Former One Hour Martinizing Facility

One Hour Martinizing operated using the 4710 and 4712 East Indian School Road addresses from 1966 to 1987 (**Figure 3**). An ECP project summary states that a dry-cleaning company called Cleaners by George operated at East Indian School Road in the early 1970s; however, City directories only show One Hour Martinizing at this location. A November 7, 1983 City of Phoenix (COP) Fire Department occupancy activity report shows that One Hour Martinizing was in violation of two sections of the fire code. The business had not obtained a permit from the fire department to operate a dry-cleaning facility and required a larger "gage wire extension cord" in certain areas. Both of these violations were corrected by November 22, 1983. An exhaustive search of ADEQ files, Arizona Corporation Commission records, Dun & Bradstreet, LexisNexis, Maricopa County Air Quality Department files, COP Water Services Department files, and the Internet produced no other information regarding the operational history of One Hour Martinizing at the site (HydroGeoLogic, Inc. [HGL], 2012).

1.3.2 Sandy's Cleaners

Sandy's Cleaners operated from 1987 to 2005 using the 4712 East Indian School Road address, and from 2006 to the present at the 4730 East Indian School address (**Figure 4**). The facility houses one dry cleaning machine and a number of commercial washers and dryers. Activities at the location include dry cleaning, washing, drying, ironing, and miscellaneous repair operations. (HGL, 2012).

Sandy's dry-cleaning machine was installed in September 1987 and had a capacity of 65 pounds (lbs). The machine's make and model was noted as a "VIC 1065," which is a low volume PCE dry cleaner that uses less than 140 gallons of PCE each year (HGL, 2012).

A May 30, 1998, COP Fire Department hazardous materials incident report indicates that a release of PCE occurred at Sandy's. The report notes that 20 gallons of PCE were released from a storage tank that was part of a fixed system. The storage tank had a capacity of 50 gallons. The "fixed system" noted on the incident report likely refers to the facility's dry-cleaning machine or PCE distillation unit. In approximately 2002, the dry-cleaning machine was placed on a heavy-duty black rubber containment system. All sides of the rubber containment have approximately a 4-inch lip to contain any drips from the machine.

An August 11, 2005, Maricopa County Air Quality Department inspection report shows that, at the time of the facility inspection, no odors were detectable and PCE appeared to be stored properly at the facility. PCE use was noted to be 6 gallons per month. The inspector noticed a water leak in a line leading to a sensor panel. No violations were reported. While no wastewaters from the machine were reportedly discharged to the sewer, the dry-cleaning machine did have filters that, once used or spent, become hazardous waste and were stored in a hazardous waste storage area outside of the facility. At the time of the 2005 compliance audit, Sandy's was using a distillation unit to recover and recycle PCE. The still was located in a separate room behind the dry-cleaning equipment and produced a small amount of PCE waste. According to Sandy's owner, the operation generated approximately 14 gallons of waste PCE each month in 2005. The wastes were stored in four 15-gallon black plastic totes, which were on secondary containment. Generated wastes were picked up under contract and disposed of by Univar USA, Inc. (Univar).

The 2005 compliance audit of Sandy's notes a concrete sump with a cement cover near the center of the outside waste storage area. The cover to the sump was cracked and had multiple layers of plastic placed

underneath the cover. Inspectors also noticed a "brownish soapy liquid in the two-part sump." They did not detect any odors. The owner reported that the concrete-lined sump was approximately 5 feet (ft) deep and was used to collect lint from the regular washing machines. The sump contained a concrete separation that does not go all the way to the bottom, which allowed the lint to be trapped and the water to be discharged to the sewer system. The compliance audit report includes several photographs of the facility, including the containment system, filters, hazardous waste storage area, and sump (HGL, 2012).

The 2005 compliance audit also noted staining on the pad in the area of the waste storage shed outside; however, the audit notes that the pad appeared to be in good condition, with no cracks or seams. Wastes stored in the shed at the time of the audit were stored in four 15-gallon black plastic totes, which were on secondary containment. Sandy's owner stated that wastes were historically picked up and disposed of by Safety-Kleen Systems, Inc., but that he had recently contracted with Univar, to provide this service. (HGL, 2012).

An October 28, 2009, Maricopa County Air Quality Department compliance observation report states that a leak was detected near a "button trap" and was not repaired until November 13, 2009. Upon inspecting the repair job, the investigator discovered another leak in a gasket near the condenser outlet. That leak was repaired one week later on November 20, 2009. It is not clear exactly what substance was leaking or on what machine.

A June 8, 2011, COP Fire Department general inspection report details a leak that occurred in the facility's "PRC system" that day. The leak caused an odor to spread through the building. Arcadia Urgent Care, operating in a nearby unit, had several patients and employees complain of nausea, shortness of breath, and other respiratory symptoms. The fire department metered both the urgent care clinic and the dry-cleaning facility and recommended that additional monitoring of the atmosphere be conducted before reoccupying the facility (HGL, 2012). The same 2011 general inspection report notes that Sandy's had several code violations, including improper hazardous material placarding. (HGL, 2012).

Based on waste manifests reviewed by HGL, approximately 34,845 lbs of hazardous waste were generated by Sandy's Cleaners from 1994-2011, presumed by ADEQ to be entirely PCE (HGL, 2012).

On June 14, 2012, the ADEQ Hazardous Waste Inspections and Compliance Unit (HWICU) performed a waste inspection of Sandy's Cleaners (ADEQ, 2012). The inspection report included the following information:

Permits or Activities	Information
EPA Notification Form 8700-12 Status/Year	Less than 1,000 kilograms per month - 1988
Facility Annual Report Status/Year	CESQG/2011
Annual ADEQ Facility Registration Fee Status/Year	CESQG/2011
Database Manifest Totals/Year	476 lbs/2011
Air Quality Permits	Maricopa County G04205
Drywells	None
Sewer System/Septic	COP sewer
Aquifer Protection Permit Number	None
Arizona Pollution Discharge Elimination System or National Pollution Discharge Elimination System Number	None
Landfill/Dumpster/Hauler	Republic Services, Inc.
Hazardous Waste Hauler	TransChem Environmental L.L.C
Precious Metals Hauler	None
Scrap Metal Recycler	None
Underground Storage Tanks	None
Last Fire Department Inspection	June 2011

Notes:
CESQG – Conditionally exempt small quantity generator
COP – City of Phoenix
Lbs – pounds

The ADEQ HWICU report did not identify any violations. However, waste manifests for 2011 and 2012 were requested. As indicated above, 476 lbs of hazardous waste were disposed in 2011. An additional 492 lbs of hazardous waste were disposed in 2012 (ADEQ, 2012).

1.4 Contaminants of Concern and Potential Concern

PCE is the only compound at the Site currently detected at concentrations above regulatory levels in groundwater. Therefore, PCE is considered a COC in groundwater. PCE and TCE also exceed the vapor intrusion screening levels (VISL) in the most recent soil gas samples. Therefore, PCE and TCE are identified as compounds of potential concern (COPCs) in soil gas.

Other compounds previously detected in the groundwater at the Site that are no longer present at concentrations exceeding regulatory levels include TCE and c-1,2-DCE.

2.0 PHYSICAL SETTING

The following subsections provide the physical setting of the site, including topography, climate, and surface water.

2.1 Topography

Arizona is primarily divided into two main physiographic provinces: the Colorado Plateau and the Basin and Range (United States Geological Society [USGS], 1996). The site is situated within the Basin and Range physiographic province. The Basin and Range physiographic province consists of broad alluvial basins dissected by northwest-southeast trending block-faulted Precambrian through Tertiary igneous, sedimentary, and metamorphic highlands. These basins are filled with Holocene age alluvial sediments that are primarily derived from the weathering of these adjacent highlands, and consist primarily of fine-grained, well-sorted sediments, but also include coarse to gravelly channel, terrace, and alluvial fan deposits at depth (Rascona, 2005).

The 48th & IS site is located within the United States Geologic Survey Topographic 7.5 Minute Phoenix map, which has a general topographic trend of decreasing elevations from the northeast to southwest. The ground surface at the 48th & IS site slopes to the southwest and drops approximately 32 ft between wells SMW-01 (1,241.21 ft above mean sea level [amsl]) and BMW-12B (1,209.13 ft amsl) (**Figure 5**).

2.2 Climate

The 48th & IS site is located within the semiarid climate of the northern Sonoran Desert. The region experiences hot summers and mild winters. Daytime high temperatures in July, typically the hottest month, are generally between 100 degrees Fahrenheit (°F) and 110°F, with overnight lows usually between 75°F and 85°F. January, usually the coolest month, typically experiences daytime highs between 60°F and 70°F and nighttime lows from 35°F to 45°F.

Annual precipitation is low, averaging from 7 to 8 inches for the greater Phoenix area. There are two distinct but erratic precipitation periods during the year: the monsoon season and the winter rains. The monsoon season occurs primarily in July and August, and in the winter months there are less intense but more widespread and longer-lasting rainfall events (Schmidli, 1996).

Prolonged droughts are common and shorter periods of drought even more so. Spring runoff from snow melt in the Salt, Gila, and Verde River watersheds provides most of the surface water stored by the reservoirs that serve portions of the metropolitan area's population. During years of winter drought, reduced surface water availability can result in elevated groundwater pumping (Schmidli, 1996).

2.3 Surface Water

The nearest man-made surface water body is the Arizona Canal, located approximately 0.17 miles from the nearest point on the 48th & IS site plume. The closest natural surface water body to the 48th & IS site is the Salt River, located approximately 4 miles south of the Sandy's Cleaners property.

Surface water usage within the site is for residential irrigation. The surface water source generally comes from the Salt River via the Arizona Canal, Grand Canal, associated laterals and various groundwater pumping wells (Wood, 2019).

2.4 Geology

2.4.1 Regional Geology

The Site is located on the western portion of the Salt River Valley (WSRV), a broad, relatively level alluvial valley in the Basin and Range physiographic province of Central Arizona. This alluvium represents a combination of deposits from the surrounding mountains and fluvial deposits from the Salt River.

The stratigraphy of the WSRV is divided into the Mountain Bedrock, Pre-Basin and Range Sediments, Lower Basin-Fill, Upper Basin-Fill, and Stream Alluvium (Anderson et al., 1990). In upward sequence, the Mountain Bedrock consists of igneous, metamorphic, and consolidated sedimentary rocks ranging from Precambrian to Cenozoic in age. The Pre-Basin and Range Sediments consist of moderately to highly-consolidated continental deposits of silt, clay, gravel, and conglomerate, primarily Tertiary in age. Examples of these sediments would be the Camels Head Formation and the Tempe Beds, exposed in the Papago Park area of east Phoenix. These sediments generally exceed several thousand ft in thickness (Hargis + Associates, Inc. [H+A], 2014).

Above the Pre-Basin and Range Sediments lie the Lower Basin-Fill Sediments. The thickness, areal extent, and grain size of the Lower Basin-Fill Sediments are variable, but generally consist of weakly to highly consolidated gravel, sand, silt, and clay and may include interbedded evaporate deposits and volcanic rocks at selected locations. The Lower Basin-Fill Sediments typically include 2,000 to 7,000 ft of fine-grained sediments of silt and clay at the base, in the center of the basins in which these deposits are found (H+A, 2014).

The Upper Basin fill is generally composed of unconsolidated to moderately consolidated fanglomerates and alluvial deposits laid down during the last stages of the Basin and Range disturbance. This unit also grades into finer-grained facies towards the interiors of the basins but is generally coarser than the lower unit and with less evaporites. This unit generally produces substantial amounts of groundwater compared to the lower units. Some fine-grained deposits in this unit impede the vertical migration of groundwater, such that perched or semi-perched conditions exist. The Upper Basin fill is composed mainly of silt, sand, and gravel; locally, relatively thin clay layers can be present. Within the WSRV, the unit is predominantly gravel and sand with some thick zones of cobbles near the present channels of the Salt River. Gravel and sand are also found in areas north and south of the present-day channel, where ancestral channels were located (H+A, 2014).

The upper-most geologic unit in the WSRV is the Stream Alluvium, which represents stream channel and related sediments typically up to 1,200 ft thick. This sedimentary unit was deposited after the basins were filled, and during the establishment of the present drainage system. Stream Alluvium sediments consist of floodplain, channel-fill, alluvial-fan, and playa deposits. The Stream Alluvium is generally unconsolidated, except where cemented by caliche. Grain size ranges from boulder-and cobble-size gravel in the alluvial fans to clays in local playa deposits. In general, sand and gravel are found along the stream channels (Anderson et al., 1990).

2.4.2 Surficial Soil

According to review of 2019 data from the National Resources Conservation Service (NRCS) (United States Department of Agriculture [USDA], 2019), surficial soil in the area consists of the following:

- Mohall Loam, MLRA 40 – 71 percent (%)
- Valencia Sandy Loam – 18%
- Estrella Loam – 11%.

The Mohall Loam, MLRA 40 has up to 3% slopes, The Gilman loam is described as a loam to a depth of 16 inches, clay loam from 16 to 43 inches, and sandy loam from 43 to 64 inches. The Valencia Sandy Loam has up to 1% slopes. The Valencia Sandy Loam is described as a sandy loam to a depth of 26 inches, sandy clay loam from 26 to 45 inches, and sandy loam from 45 to 60 inches.

2.4.3 Site Geology

The site-specific geology was developed based a on a review of available boring logs (**Appendix A**). The 48th & IS site has been assessed to a total depth of 216 ft below ground surface (bgs) in the northeast portion of the 48th & IS site at well SMW-16B (**Figures 2** and **5**), and 261 ft bgs towards the southwest portion of the 48th & IS site at well SMW-14B (**Figures 2** and **5**).

The upper alluvial unit (UAU) at the 48th & IS site consists predominantly of silt, clay, sand mixed with silt and/or clay, and gravel. The following summarizes lithology at SMW-16B:

Depth (ft bgs)	Summary Description
0-29	silty sand
29-60	silt to sandy silt with occasional gravel
60-77	silty sand
77-83	sandy silt with gravel
83-87	silty sand
87-98	sandy to gravelly silt
98-108	silty sand with gravel, with occasional silt lenses
111-137	silt to sandy silt with occasional gravel
137-148	sand to silty sand with gravel
148-160	sandy silt
160-172	sandy and clayey silt
172-193	silt and sandy silt
193-214	silty sand with gravel
214	bedrock – Upper Camels Head Formation

Notes:
ft bgs – feet below ground surface

The following summarizes the lithology at SMW-14B:

Depth (ft bgs)	Summary Description
0-74	sandy silt with occasional silty sand lenses
74-83	silty sand with occasional gravel
83-157	sandy silt with occasional silty sand lenses
157-185	silty sand with gravel, with occasional silt lenses
185-191	silty gravel with sand
191-194	gravelly silt
194-203	silty sand with gravel, with occasional silt lenses
203-205	clayey silt to sandy silt with occasional gravel
205-210	silty gravel with sand
210-215	silty sand
215-221	sandy silt
221-224	silty sand with gravel
224-237	sandy silt with gravel lens at 228 ft
237-245	silty sand
245-256	gravelly silt
256-261	bedrock – Upper Camels Head Formation

Notes:
ft bgs – feet below ground surface

As indicated above, bedrock, identified as the Camels Head Formation, was encountered at a depth of 214 ft below top-of-casing (btoc) (1,026 ft amsl) at SMW-16B and at a depth of 256 ft btoc at boring SMW-14B (951 ft amsl). Therefore, the UAU/Camels Head Formation contact drops approximately 75 ft in a southwesterly direction across the area, which is a slope of approximately 0.02 ft per ft (ft/ft) (**Figure 5**).

2.5 Hydrogeologic Setting

2.5.1 Regional Groundwater Conditions

The 48th & IS site lies within the WSRV Sub-basin of the Phoenix Active Management Area (AMA), which includes the communities of Phoenix, Buckeye, Surprise, Glendale, Peoria, Goodyear, Tolleson, and Avondale. The WSRV is one of seven sub-basins located in the Phoenix AMA. The AMA was established due to the 1980 Arizona Groundwater Management Act. Although conditions and circumstances vary across the Phoenix AMA, groundwater is generally pumped from the deeper portions of the UAU. Natural groundwater recharge occurs along stream channels and from mountain-front recharge. Groundwater also enters the sub-basin from the Lake Pleasant, northern Hassayampa, and East Salt River Valley sub-basins, and from the Maricopa-Stanfield Sub-basin in the Phoenix AMA. Agricultural irrigation water and effluent discharged from the COP 23rd and 91st Avenue wastewater treatment plants also recharges the groundwater (NV5 Environmental Services, 2015).

2.5.2 Site Hydrostratigraphy

In 1993, the Arizona Department of Water Resources (ADWR) released the results of its modeling study of the Salt River Valley (Corkhill *et al*., 1993). For modeling purposes, the ADWR defined three hydrogeologic units in the basin-fill by differences in grain size that occur throughout most of the Phoenix Basin and are generally correlative with the hydrostratigraphic units defined by the United States Bureau of Reclamation in 1976. These include from the shallowest to deepest: the UAU, the Middle Alluvial Unit (MAU), and the Lower Alluvial Unit (LAU). The MAU and LAU are not present at the 48th & IS site.

The UAU consists of unconsolidated sands and gravels deposited by flowing drainages and is the most permeable unit. According to the ADWR, the UAU is typically 300 to 400 ft thick in the WSRV. Where thick saturated sections of the UAU are present, the groundwater production rates are the highest in the region. At the 48th & IS site, the UAU ranges from 214 ft thick at SMW-16B to 256 ft thick at SMW-14B.

2.6 Site Hydrogeology

The hydrostratigraphic units have been defined based on review and evaluation of data generated during groundwater assessments at the ECP WQARF sites. The hydrogeology has been investigated to a maximum depth of approximately 256 ft bgs within the UAU. The base of the UAU was encountered at SMW-16B and SMW-14B. At the 48th & IS site, the UAU ranges from 214 ft thick at SMW-16B to 256 ft thick at SMW-14B. The UAU at the 48th & IS site consists of predominantly fine-grained sands, silts and silt with sand, to sandy silts with trace amounts of gravel. The groundwater surface within the 48th & IS site lies within the UAU.

Monitoring well construction details for the 48th & IS site are presented in **Table 1**. Groundwater elevations in the UAU at the 48th & IS site have been monitored since April 1992 (**Table 2**; **Appendix B** - hydrographs). Monitoring wells installed at the 48th & IS site are screened across both shallow (water table) and deeper intervals within the UAU (**Figure 5** and **Table 1**). Groundwater elevations have generally declined at the 48th & IS site since early 1994. The current depth to water at the 48th & IS site ranges from 39.20 ft btoc (1201.23 ft amsl) at SMW-07 to 39.85 ft btoc (1,169.28 ft amsl) at BMW-12B (**Figure 6**).

The current and historical direction of groundwater flow (**Figure 6**) has been to the west-southwest with a relatively consistent gradient of approximately 0.01 ft/ft. Vertical gradients between the shallow and deeper zones of the UAU monitored at the 48th & IS site are generally negligible. The estimated horizontal hydraulic conductivity of the UAU at the 48th & IS site is variable due to the heterogeneity of the UAU. Based on the

results of groundwater modeling that has been performed, the horizontal hydraulic conductivity ranges from 21 to 30 ft/day (Fluid Solutions, 2000).

2.7 Ecology

The site is located in an urban setting that provides low-quality habitat for native terrestrial or aquatic biota. Given the presence of roads and extensive man-made structures, it is likely that the natural vegetation, soils, and hydrology have been altered by filling, grading, and improvement activities in the past. There is a low potential for native terrestrial or aquatic biota to occur in the area. The closest large, natural open space (Camelback Mountain) is located approximately 1.2 miles to the northeast of Sandy's Cleaners.

Based on information provided through the United States Fish and Wildlife Service (USFWS) online Information, Planning and Conservation System and by the Ecological Services Program, there are seven federally listed endangered species with the potential to occur on lands within Maricopa County, including: ocelot (Leopardus or Felis pardalis), Sonoran pronghorn (Antilocapra americana sonoriensis), California least tern (Sterna antillarum browni), Mexican spotted owl (Strix occidentalis lucida), Southwestern willow flycatcher (Empidonax traillii extimus), yellow-billed cuckoo (Coccyzus americanus), and Yuma clapper rail (Rallus longirostris yumanensis). Additionally, there are a six species of endangered fish and four species of flowering plants (USFWS, 2018). The 48th & IS site and immediate vicinity do not contain suitable habitat for these species.

3.0 INVESTIGATION SUMMARY

This section presents a summary of investigations performed at the 48th & IS site. The investigation of the 48th & IS site began in 1983 when SRP collected groundwater samples from several wells that they were pumping in the Salt River Valley. This included SRP Well 17.9E-7.5N (ADWR 55-617857), which is located directly downgradient of the 48th & IS site and west of the intersection of 40th Street and Osborn Road (**Figures 1** and **2**). SRP Well 17.9E-7.5N is located within the current 40th & OSB site. Water pumped from this well was used for irrigation purposes. PCE was detected at a concentration of 53 µg/L in the sample collected from SRP Well 17.9E-7.5N, which is above the AWQS of 5.0 µg/L. SRP subsequently decreased pumping from the well and took it off-line in 1990. The well has been periodically pumped since 1990 to collect groundwater samples. In 1998, PCE was detected at a concentration of 210 ug/L, which was the highest concentration reported to date (Wood 2019a, H+A 2014).

The 48th & IS site has historically contained dry cleaning facilities, service stations, and printing shops, with some of the dry cleaners operating since 1962. In 1989, ADEQ performed soil vapor sampling at several facilities within the ECP study area, including facilities within the 48th & IS site. PCE was detected at a concentration of 670 µg/L in a soil vapor sample collected at Sandy's Cleaners. After investigations, the source area of the PCE was determined to be dry cleaning facilities that operated at the northeast corner of 48th Street and Indian School Road. The facilities were identified as One Hour Martinizing (1966-1987) and Sandy's Cleaners (1987-present). The locations of One Hour Martinizing and Sandy's Cleaners relative to the 48 & IS site features are shown on **Figures 3 and 4**, respectively.

The investigations conducted per impacted media are summarized in the following subsections in chronological order.

3.1 Soil Investigation

3.1.1 1992 Investigation

An initial soil and groundwater investigation was conducted at Sandy's Cleaners in 1992 by ADEQ. Eight soil borings, identified as B-1 through B-7 on **Figure 7**, were drilled and sampled. The soil sampling found only residual concentrations of PCE in the soil below the current RSRL (**Table 3**) (Earth Tech, 1996).

3.1.2 1996 Investigation

A second soil investigation was conducted at Sandy's Cleaners during May 1996 by ADEQ. Ten direct push soil borings, identified as DP-1 through DP-10 on **Figure 8,** were drilled and sampled. Soil sampling found only residual concentrations of PCE in the soil below current RSRL (**Table 3**).

3.1.3 2012 Investigation

Soil sampling was performed during 2012 as follows:

- Installation of monitoring wells SMW-07 and SMW-08 during January 12-13, 2012 (**Figures 1** and **2**) (Stantec Consulting, Inc. [Stantec], 2012a);
- Installation of SSVE-1, SSVE-2, and SG-13 through SG-18 from January 17-23, 2012 (**Figure 9**) (Stantec, 2012a); and
- SMW-06 in April 2012 (**Figure 1** and **2**) (Stantec, 2012a).

The analytical results are summarized in **Table 3** and the analytical reports are included in **Appendix C.** With the exception of 2.4 milligrams per kilogram (mg/kg) of PCE reported in sample SMW-07-25, PCE was not detected above the minimum laboratory reporting limits (LRLs) in the above samples. The minimum LRLs were below the RSRL of 0.51 mg/kg. The 2.4 mg/kg of PCE reported for sample SMW-07-25 exceeded the RSRL of 0.51 mg/kg. Considering that PCE was non-detect in the other soil samples, the PCE detected in sample SMW-07-25 is considered a laboratory error.

3.2 Soil Vapor Investigation

Soil vapor investigations can be either active or passive and are used to identify source/release locations; evaluate the extent of soil, soil vapor, and groundwater contamination; the potential for vapor intrusion (VI) to indoor air; and, the potential for vapor-phase impact to groundwater. Active soil vapor results are reported as a mass per volume and can be used in risk assessment to evaluate the potential for VI to indoor air and the potential for the vapor-phase contaminant to impact groundwater. COPCs for VI to indoor air are identified by comparing results to the vapor intrusion screening levels (VISLs) (USEPA, 2018a). Vapor concentrations are attenuated both vertically and horizontally in the subsurface soils, referred to as the attenuation factor. Therefore, the concentration inside a building is typically lower than the associated soil vapor concentration. The VISLs are calculated by dividing the November 2018 ambient air RIARSLs (USEPA, 2018b) by a default attenuation factor of 0.03. The default attenuation factor is based on a sub-slab sample collected no deeper than 5 to 8 ft bgs. The VISLs for PCE and TCE are 367 and 16 micrograms per cubic meter ($\mu g/m^3$), respectively. The VISLs are not applicable to deeper samples. Site-specific attenuation factors are typically lower and can be obtained using a model such as the Johnson-Ettinger (J-E) Model (Johnson, P.C., and Ettinger, R.A., 1991), Indoor air quality (IAQ) sampling can also be used to evaluate if the soil vapor represents a risk to indoor air. Specifically, if the indoor air sampling results are less than the RIARSLs or

ambient concentrations, then the maximum concentrations in the soil vapor are evaluated as protective of residential vapor intrusion. Indoor air sampling is discussed in Section 3.3.

Soil vapor data can also be used to evaluate if the vapor-phase VOC is a continuing source of groundwater contamination. The ADEQ GPL spreadsheet is used to calculate vadose zone soil vapor concentrations at the water table that are in equilibrium with the groundwater concentration (ADEQ, 2008). The soil vapor concentrations corresponding to the AWQSs of 5.0 µg/L for PCE and TCE are 3,770 and 2,110 µg/m^3, respectively,

Passive soil gas (PSG) surveys only provide the mass of contaminant sorbed to the sampling device. Therefore, they cannot be used in risk assessment. However, they can be used to identify source/release locations, the extent of contamination, and intrusive sampling (soil, soil vapor, and groundwater) locations.

The following subsections summarize the soil vapor investigations in chronological order conducted at the 48th & IS site.

3.2.1 1996 Soil Vapor Investigation

Soil vapor samples were collected from soil borings DP-1 through DP-10 in May 1996. A table included in **Appendix D** summarizes the PCE, TCE, dichloroethene (DCE), and 1,1,1-trichlorethane (TCA) results in micrograms per liter (µg/L). TCE, DCE, and TCA were not detected in groundwater samples collected from SMW-01 on March 28, 1996 (discussed in Section 3.4 and presented in **Table 8**). Therefore, PCE was identified as the COC. **Figures 10 through 12** show the PCE soil vapor distributions in µg/L at five, 10, and 15 ft bgs (Earth Tech, 1996). The PCE and TCE soil vapor results were converted to µg/m^3 in **Table 4** by multiplying the result in µg/L by 1,000.

3.2.1.1 Sub-Slab Soil Vapor Samples

Figure 10 shows the PCE soil vapor distribution at 5 ft bgs. The PCE and TCE results for the samples collected at 5 ft bgs are summarized in **Table 4** and are compared to the VISLs. The soil vapor sampling reported that all the samples, with the exception of DP-8-5, exceeded the VISL of 367 µg/m^3 for PCE, ranging from 270,000 (DP-3-5) to 5,400,000 µg/m^3 (boring DP-5-5). TCE exceeded the VISL of 16 µg/m^3 in samples DP-1-5 (6,100 µg/m^3) and DP-3-5 (2,000 µg/m^3).

3.2.1.2 Deep Soil Vapor Samples

Figures 11 and 12 show the PCE soil vapor distributions at 10 and 15 ft bgs, respectively. The PCE and TCE results for the samples collected at 10 and 15 ft bgs are summarized in **Table 5**. The reported PCE concentrations ranged from less than (<) 1,000 µg/m^3 in samples DB-8-10 and BP-8-15 to 5,600,000 µg/m^3 in sample BP-6-15. PCE was reported at a concentration of 4,000 µg/L in the March 28, 1996 groundwater sample collected from well SMW-01 (**Table 8**). The corresponding soil vapor concentration at the water table calculated using the ADEQ GPL calculator is 3,016,000 µg/m^3. Due to the absence of residual PCE in the soil and elevated PCE concentrations of PCE in soil vapor, the source of the groundwater contamination was identified as vapor-phase PCE in the vadose zone below Sandy's Cleaners.

3.2.2 Passive Soil Gas Investigation

During 2009 and 2011, a total of 53 PSG modules were deployed during three separate mobilizations: January 2009, February 2011, and March 2011. The modules were deployed approximately 50-foot on center

in the COP rights-of-way (ROWs) in four locations: 1) along North 45th Place (south of Indian School Road), 2) the private driveway west of Arcadia High School (south of Indian School Road), 3) North 47th Street (north of Indian School Road), and 4) the alley west of the Arcadia Towne Center Shopping Plaza.

- A total of 14 modules were deployed on January 22, 2009, in the City ROW along the east side of North 45th Place from Piccadilly Road north to Indian School Road and were retrieved on February 11, 2009. The results of the Sample 9 module were considered suspect due to evidence of possible sample device tampering observed during sample collection.
- A total of 39 modules were deployed in City ROW on February 13, 2011, some at each of four separate locations. These include: 1) the east side of North 45th Place (south of Indian School Road), 2) the private driveway west of Arcadia High School (south of Indian School Road), 3) North 47th Street (north of Indian School Road), and the alley west of the Arcadia Towne Center Shopping Plaza. Because modules PSG-1 through PSG-9 were stolen from the installed locations, 30 modules were retrieved on February 28, 2011.
- On March 11, 2011, replacement modules for PSG-1 through PSG-9 were deployed and retrieved on March 29, 2011.

The locations are shown on figures provided in **Appendix E**. The PCE and TCE results are summarized in **Table 6** and **Appendix E** includes the analytical report (Stantec, 2012b). The PCE mass observed in the samples ranged from less than 25 nanograms (ng) to 3,512 ng. PSG results are useful in tracking the extent of shallow soil vapor originating either from a vadose zone soil source or from the groundwater and were used to identify the locations for future active soil gas samples.

3.2.3 2011 Soil Vapor Monitoring Well Installation and Sampling

In June 2011, ADEQ installed 12 permanent Soil Vapor Monitoring Wells (SVMWs) (SG-1 to SG-12) adjacent to the PSG sample locations. SG-1 to SG-8 are triple-nested SVMWs (SG-1 to SG-8) drilled and installed to a total approximate depth of 15.5 ft bgs. SG-9 to SG-12 are single-depth SVMWs (SG-9 to SG-12) were installed to a depth of 5 ft bgs. SVMW SG-4A/B/C was installed in the neighborhood north of Indian School Road and west of Sandy's Cleaners. SVMWs SG-5 through SG-12 were installed in COP ROW in the neighborhood west of Arcadia High School. Boring logs and well completion diagrams are included in **Appendix A**. The soil vapor well locations are shown on **Figure 9** (Stantec, 2012b).

Soil vapor samples were collected from SVMWs SG-1 through SG-12 on October 12 to 13, 2011, which was before the soil vapor extraction (SVE) system was shut down in December 2011 (see Section 4) (Stantec, 2012c).

The PCE and TCE analytical results are summarized in **Tables 4 and 5**. **Figure 13** provides the PCE and TCE analytical results. Analytical reports are included in **Appendix F**.

3.2.3.1 Sub-Slab Soil Vapor Samples

3.2.3.1.1 Sandy's Cleaners Samples

PCE was detected in all vapor samples collected from the sub-slab SVMWs (**Table 4**) and ranged from 16 µg/m^3 (SG-01A) to 40,000 µg/m^3 (SG-03A). SVMW SG-03 is located approximately 150 ft to the southwest of Sandy's Cleaners and approximately 75 ft to the south of the former SRP SVE system (**Figure 9**). PCE

exceeded the VISL of 367 µg/m^3 in three of the four samples. Since 1996, PCE concentrations in the sub-slab samples have decreased from a maximum 5,400,000 µg/m^3 to a maximum of 40,000 µg/m^3.

TCE was not detected above minimum LRLs in the soil vapor samples. Since 1996, TCE concentrations in the sub-slab samples have decreased from a maximum 6,100 µg/m^3 to a maximum of <220 µg/m^3.

3.2.3.1.2 North of Indian School Road

PCE was detected at a concentration of 7,000 µg/m^3 in sample SG-04A (**Table 4**), which exceeds the VISL of 367 µg/m^3. TCE was detected in soil vapor sample SG-04A at a concentration of 34 µg/m^3 (**Table 4**), which exceeds the VISL of 16 µg/m^3.

3.2.3.1.3 Neighborhood West of Arcadia High School

PCE was detected in all vapor samples collected from the sub-slab SVMWs and ranged from 51 µg/m^3 (SG-10A) to 1,700 µg/m^3 (SG-05A). PCE exceeded the VISL of 367 µg/m^3 in five of the eight samples (SG-05A, SG-06A, SG-07A, SG-09A, and SG-12A) (**Table 4**). As discussed in Section 3.2.3.2.3, the PCE detected in the soil gas samples originated from the groundwater.

TCE was detected in only SG-07A at a concentration of 10 µg/m^3 (SG-07A), which is below the VISL of 16 µg/m^3.

3.2.3.2 Deep Soil Vapor Samples

3.2.3.2.1 Sandy's Cleaners Samples

In the deep samples (**Table 5**), the PCE concentrations ranged from 140 µg/m^3 (SG-01B) to 59,000 µg/m^3 (SG-03C). The highest concentrations of PCE were reported for samples collected from SVMWs SG-03B (50,000 µg/m^3), and SG-03C (59,000 µg/m^3). On October 27, 2011, PCE was reported at a concentration of 9.0 µg/L in the groundwater sample collected from monitoring well ECP-01. PCE was reported at a concentration of <1.0 µg/L in the groundwater sample collected from monitoring well SMW-01 (**Table 8**). The corresponding soil vapor concentrations for these groundwater concentrations are 6,790 and 750 µg/m^3, respectively. Since 1996, PCE concentrations in the deep samples had been decreased from a maximum 5,600,000 µg/m^3 to a maximum of 59,000 µg/m^3. This is reflected in the decreased PCE concentrations in the groundwater.

TCE was not detected in the deep samples. Since 1996, TCE concentrations in the deep samples have decreased from a maximum 11,000 µg/m^3 to a maximum of <330 µg/m^3.

3.2.3.2.2 North of Indian School Road

PCE was detected at concentrations of 9,300 µg/m^3 and 11,000 µg/m^3, respectively in samples SG-04B and SG-04C, respectively (**Table 5**). PCE was detected at a concentration of 6.9 µg/L in the October 19, 2011 groundwater sample collected from nearby well SMW-04 (**Table 8**). The corresponding soil vapor concentrations for this groundwater concentration is 5,200 µg/m^3. Therefore, the soil vapor at this location was possibly impacting groundwater.

TCE was detected only in SG-04B at a concentration of 45 µg/m^3.

3.2.3.2.3 Neighborhood West of Arcadia High School

In the deep samples (**Table 5**), the PCE concentrations ranged from 610 µg/m^3 (SG-08C) to 3,500 µg/m^3 (SG-07C). The nearest monitoring well to these samples is SM-03-60. The groundwater sample collected from SM-03-60 on October 19, 2011 at 59.5 ft bgs was detected with 1,400 µg/L of PCE (**Table 8**). The corresponding soil vapor concentration for this groundwater concentration is 1,055,600 µg/m^3. Therefore, the PCE detected in the deep soil vapor samples originated from the groundwater.

TCE was detected only in samples SG-7B (19 µg/m^3) and SG-7C (28 µg/m^3).

3.2.4 February 8-9, 2012 SVMW and SVE Well Installation and Vapor Sampling

On January 20 and 23, 2012, ADEQ installed five additional triple-nested SVMWs (SG-13 through SG-17) at Sandy's Cleaners. SVE wells SSVE-1 and SSVE-2 were also installed to total depths of 40 and 35 ft bgs, respectively, on January 17 and 19, 2012. These SVMWs and SVE wells were installed to perform an enhanced SVE system pilot test. The locations are shown on **Figure 9** and the boring logs and well completion diagrams are included in **Appendix A** (Stantec, 2012d).

Soil vapor samples were collected from nine triple-nested SVMWs (SG-01 through SG-03, and SG-13 through SG-18) at 5 (A), 10 (B), and 15 (C) ft bgs prior to SVE pilot testing on February 8 and 9, Soil vapor samples were not collected from the SVMWs located in the neighborhood west of Arcadia High School. The PCE and TCE analytical results are summarized in **Tables 4 and 5**. Analytical reports are included in **Appendix F**. Soil vapor samples were also collected during pilot testing on February 15, 2012.

3.2.4.1 Sandy's Cleaners Sub-Slab Soil Vapor Samples

PCE was detected in all the sub-slab SVMWs, ranging from 24 µg/m^3 (SG-1A) to 32,000 µg/m^3 (SG-3A). PCE exceeded the VISL of 367 µg/m^3 in five of the nine samples (**Table 4**). Since 1996, PCE concentrations in the sub-slab samples had been decreased from a maximum 5,400,000 µg/m^3 to a maximum of 32,000 µg/m^3.

TCE was not detected in the February 8-9, 2012 samples. However, the LRLs were elevated due to sample dilution compared to the 2011 sampling event.

3.2.4.2 Sandy's Cleaners Deep Soil Vapor Samples

PCE concentrations in the deep soil vapor samples ranged from 120 µg/m^3 (SG-1B) to 61,000 µg/m^3 (SG-3C) (**Table 5**). The highest concentrations of PCE were reported for samples collected from SG-3B (44,000 µg/m^3) and SG-3C. SG-3 is located approximately 150 ft to the southwest of Sandy's Cleaners and approximately 75 ft to the south of the former SRP SVE system (**Figure 9**). The result for SG-3C was slightly higher than the October 27, 2011 sample. Well SMW-07 was installed in January 2012 and is located near SG-3C. PCE was detected at a concentration of 6.8 µg/L in the February 8, 2012 sample collected at 35 ft from SMW-07. Therefore, the deep PCE soil gas at SG-3C was a continuing source of the PCE above 5.0 µg/L at SMW-07.

TCE was not detected in the February 8-9, 2012 samples. However, the LRLs were elevated due to sample dilution compared to the 2011 sampling event.

3.2.5 February 29, 2012 SVE Pilot Test Sampling

Soil vapor samples were collected from the nine triple-nested SVMWs after SVE testing to evaluate the effect of vapor extraction on PCE soil vapor concentrations. The PCE and TCE analytical results are summarized in **Tables 4 and 5**. Analytical reports are included in **Appendix F**. Soil vapor samples were also collected during pilot testing on February 15, 2012. Soil vapor samples collected during SVE pilot testing activities indicated that PCE concentrations decreased in all the SVMWs (27 of 27 depth-specific samples) when compared to the PCE concentrations prior to testing. After pilot testing, concentrations of PCE rebounded (increased from concentrations detected during testing) as expected. (Stantec, 2012d).

3.2.5.1 Sandy's Cleaners Sub-Slab Soil Vapor Samples

PCE was detected in all vapor samples collected from the sub-slab SVMWs. The concentrations ranged from 32 µg/m^3 (SG-1A) to 17,000 µg/m^3 (SG-3A). PCE exceeded the VISL of 367 µg/m^3 in four of the nine samples. However, concentrations were lower than the pre-SVE pilot test PCE concentrations in six of the nine samples (67%).

TCE was not detected in the February 29, 2012 samples. However, the LRLs were elevated due to sample dilution compared to the 2011 sampling event.

3.2.5.2 Sandy's Cleaners Deep Soil Vapor Samples

PCE was detected in all vapor samples collected from the SVMWs. The concentrations ranged from 32 µg/m3 (SG-01A) to 37,000 µg/m3 (SG-03C). The highest concentrations of PCE were reported for samples collected from SG-03B (24,000 µg/m3) and SG-03C. However, concentrations were lower than the pre-SVE pilot test PCE concentrations in 13 of 18 samples (72%). The groundwater sample collected from monitoring well SMW-07-35' on April 20, 2012 was reported with 14 µg/L of PCE (**Table 8**).

TCE was not detected in the February 29, 2012 samples. However, the LRLs were elevated due to sample dilution compared to the 2011 sampling event.

3.2.6 March 2012 SVE Well Installation

In March 2012 ADEQ installed five additional SVE wells (SSVE-3 through SSVE-8) (Stantec, 2012e). The locations of these SVE wells are shown on **Figure 9**. These SVE wells were included in soil gas sampling events conducted in 2013 and 2015. Boring logs and well completion diagrams are included in **Appendix A**.

3.2.7 June 2012 Area-Wide Soil Vapor Sampling

From May 30 to June 8, 2012, soil vapor samples were collected from 18 permanent triple-nested SVMWs and 68 temporary soil vapor borings (TSVBs). The 18 nested SVMWs (SG-01 to SG-18) were installed previously at depths of 5, 10, and 15 ft bgs and sampled by H&P Mobile Geochemistry Inc. (HPMG). The 68 TSVBs were advanced and sampled by HPMG using a truck-mounted Strataprobe™ direct push rig, with samples collected at seven and 15 ft bgs. The purpose of the soil vapor sampling and analysis was to further investigate the extent of PCE and TCE in the vadose zone soil vapor beneath the 48th and IS site (Stantec, 2012f). A total of 173 samples were collected for PCE/TCE analysis according to H&P Method TO-14 and 32 samples were collected for VOC analysis according to Method 8260SV (**Tables 4 and 5**). The sampling locations and PCE results are shown on **Figure 14**.

Soil vapor samples collected from TSVBs and existing SVMWs were analyzed on-site by a mobile laboratory provided by HPMG for PCE and TCE according to H&P Method TO-14. HPMG received certification from the ADHS for VOC analysis according to modified Method TO-14 on June 7, 2012. Modified Method TO-14 is an alternate method developed by HPMG and, therefore, the Method SOP was considered proprietary. Approximately 10% of the sample locations were analyzed for VOCs according to Method 8260SV (as listed on the HPMG reports). The PCE and TCE results are provided in **Tables 4 and 5.** Copies of the laboratory analytical reports and chain-of-custody records are included in **Appendix F** (Stantec, 2012f).

HPMG soil vapor sampling activities for the 48th & IS site was performed concurrently with soil vapor sampling activities at the 32nd Street and Indian School Road ECP WQARF Site. The laboratory analytical reports provided by HPMG in **Appendix F** include results from soil vapor samples collected at both sites. Some of the laboratory analytical data provided in **Appendix F** were collected from SVMWs and TSVBs within the 32nd Street and Indian School Road ECP WQARF Site (Stantec 2012f).

3.2.7.1 Sub-Slab Soil Vapor Samples

3.2.7.1.1 Sandy's Cleaners Samples

PCE was detected above the LRL of 69 µg/m^3 in all eight samples collected from the permanent SVMWs. In the TO-14 samples, the detected concentrations ranged from 160 µg/m^3 (SG-18A) to 34,000 µg/m^3 (SG-03A). The results for the samples analyzed by Method 8260SV were lower than the TO-14 results, but within an acceptable relative percent difference (RPD) for the methods. PCE exceeded the VISL of 367 µg/m^3 in five of the eight samples. Compared to the pre-SVE pilot test results, PCE concentrations had increased in the eight sample points. The largest change was observed in SG-13A where PCE concentrations increased from 420 to 11,000 µg/m^3 (**Table 4**). However, since 1996, PCE concentrations in the sub-slab samples are decreased from a maximum 5,400,000 µg/m^3 to a maximum of 34,000 µg/m^3. However, as discussed in Section 3.3.1, the PCE concentrations in the soil vapor are considered protective of residential use, which is also protective of workers at Arcadia Towne Center.

TCE was not detected above the LRL of 55 µg/m^3 in the samples.

3.2.7.1.2 North of Indian School Road

In **Table 4** and on **Figure 14**, the TSVBs located north of Indian School Road are labeled as 400 series samples. A sample was also collected from SVMW SG-04A. PCE was detected in three of the 11 samples, SG-401-7 (760 µg/m^3) and SG-400-7′ (50,000 µg/m^3), and SG-04A (14,000 µg/m^3). TVMB SG-400 is located south of SG-04A and approximately 250 ft southwest of SG-03A. These results exceeded the VISL of 367 µg/m^3 (**Table 4**). However, PCE was not detected above the RIASRL of 11 µg/m^3 in IAQ samples 48-026 (5.6 µg/m^3), 48-027 (3.9 µg/m^3), 48-036 (11 µg/m^3), 48-038 (9.0 µg/m^3), and 48-039 (5.0) collected from residences in this area (**Section 3.3, Table 6, and Figures 16-17**). Therefore, the maximum PCE concentrations in soil vapor are considered protective of residential indoor air. A further assessment of this data is provided in Section 3.3.

TCE was only detected above the LRL of 55 µg/m^3 in one TO-14 sample, SG-400-7′ (60 µg/m^3). The detected concentration is above the VISL of 16 µg/m^3. The on-site TO-14 method does not differentiate between TCE, chloroform and BDCME. According to Blayne Hartman, PhD, the TCE values from the on-site TO-14 analysis are possibly biased high due to interferences from chloroform and BDCME. These compounds are likely associated with drinking water chemicals, potentially released to the subsurface as part of landscape irrigation activities, and not associated with the past and current dry-cleaning operations (HEG, 2014).

3.2.7.1.3 Neighborhood West of Arcadia High School

In **Table 4** and on **Figure 14**, the TSVBs located in the neighborhood west of Arcadia High School are labeled as 500 series samples. Sub-slab soil vapor samples were also collected from SVMWs SG-05A through SG-12A. PCE was detected above the laboratory LRL of 69 µg/m^3 in 15 of the 22 samples. In the TO-14 samples, the detected concentrations ranged from 280 µg/m^3 (SG-505-7′) to 5,500 µg/m^3 (SG-507-7′). PCE exceeded the VISL of 367 µg/m^3 in 13 of the 22 samples (**Table 4**). However, PCE was not detected above the RIARSL of 11 µg/m^3 in IAQ samples collected from residences in this area (**Section 3.3, Table 7, and Figures 16-17**). Therefore, the maximum PCE concentrations in soil vapor are considered protective of residential indoor air. A further assessment of this data is provided in Section 3.3.

TCE was not detected above the LRL of 55 µg/m^3 in the samples.

3.2.7.1.4 Arcadia High School and Scottsdale Unified School District Property

In **Table 4** and on **Figure 14**, the samples collected on Arcadia High School and Scottsdale Unified School District property are labeled as 600 series samples. PCE was detected at or above the LRL of 69 µg/m^3 in 23 of the 42 samples. In the TO-14 samples, the detected concentrations ranged from 90 µg/m^3 (SG-621-7′) to 4,300 µg/m^3 (SG-612-7′). Schools are commonly regulated at the commercial VISL since the occupants exposed for the longest periods, and hence at highest risk, are the faculty and other workers, not students. The commercial VISL is 1,567 µg/m^3. However, for the purposes of this RI Report, the data was compared to the lower residential VISL. Based on this, PCE exceeded the residential VISL of 367 µg/m^3 in 20 of the samples. As discussed in Section 3.3, the IAQ data was used to evaluate that the maximum PCE concentrations in the soil vapor are protective of residential indoor air.

TCE was not detected above the LRL of 55 µg/m^3 in the samples.

3.2.7.2 Deep Soil Vapor Samples

3.2.7.2.1 Sandy's Cleaners Samples

PCE was detected at or above the LRL of 69 µg/m^3 in 25 of the 26 samples collected from the permanent SVMWs. In the TO-14 samples, the detected concentrations ranged from 230 µg/m^3 (SG-18B) to 98,000 µg/m^3 (SG-03C). With the exception of sample SG-18C, the results for the samples analyzed by Method 8260SV were lower than the TO-14 results, but within an RPD for the methods. Compared to the pre-SVE pilot test results, PCE concentrations had increased in 23 of the 26 sample points. The largest change was observed in SG-03C where PCE concentrations increased from 59,000 to 98,000 µg/m^3 (**Table 5**).

TCE was not detected above the LRL of 55 µg/m^3 in the samples.

3.2.7.2.2 North of Indian School Road

In **Table 5** and on **Figure 14**, the TSVBs located north of Indian School Road are labeled as 400 series samples. Samples were also collected from SVMWs SG-04B/C. PCE was detected in five of the 12 samples collected. In the TO-14 samples, the detected concentrations ranged from 490 µg/m^3 (SG402-15′) to 57,000 µg/m^3 (SG-400-15′). Compared to the October 2011 results, PCE concentrations increased in SG-04B and SG-04C.

TCE was only detected above the LRL of 55 µg/m^3 in SG-400-15′ (98 µg/m^3). The on-site TO-14 method does not differentiate between TCE, chloroform and BDCME. According to Blayne Hartman, PhD, the TCE values from the on-site TO-14 analysis are possibly biased high due to interferences from chloroform and BDCME. These compounds are likely associated with drinking water chemicals, potentially released to the subsurface as part of landscape irrigation activities, and not associated with the past and current dry-cleaning operations (HEG, 2014).

3.2.7.2.3 Neighborhood West of Arcadia High School

In **Table 5** and on **Figure 14**, the TSVBs located in the neighborhood west of Arcadia High School are labeled as 500 series samples. Samples were also collected from SVMWs SG-5B, SG-6B/C, SG-7B/C, and SG-8B/C. PCE was detected in 16 of the 21 samples collected. In the TO-14 samples, the detected concentrations ranged from 72 µg/m^3 (SG-502-15′) to 8,100 µg/m^3 (SG-508-15′).

TCE was not detected above the LRL of 55 µg/m^3 in the samples.

3.2.7.2.4 Arcadia High School and Scottsdale Unified School District Property

In **Table 5** and on **Figure 14**, the samples collected on Arcadia High School and Scottsdale Unified School District property are labeled as 600 series samples. PCE was detected in 21 of the 35 samples collected from TSVBs. In the TO-14 samples, the detected concentrations ranged from 120 µg/m^3 (SG614-15′) to 4,300 µg/m^3 (SG-609-15′).

TCE was not detected above the LRL of 55 µg/m^3 in the samples.

3.2.8 August and October 2013 Soil Vapor Sampling Event

In August 2013, soil vapor samples were collected from 31 TVMBs within the 48th & IS site. These data were used to define the extent of the soil vapor plume known to exist at the 48th & IS site based on the 2011 and 2012 soil vapor sampling events and to further identify structures to include in an indoor air assessment. In October 2013, soil vapor samples were collected from 18 SVMWs (SG-01C, SG-02C, SG-03C, SG-04B, SG-05B, SG-06C, SG-07C, SG-08B, SG-09A, SG-10A, SG-11A, SG-12A, SG-13A, SG-14A, SG-15C, SG-16C, SG-17C, and SG-18C) and nine SVE wells (SVE-1, SVE-2, and SSVE-01 – SSVE-07). The PCE and TCE results are provided in **Tables 4 and 5** and the sample locations and PCE results are shown on **Figure 15**. The samples were collected by HPMG and analyzed in the field using Method TO-14. Selected samples were analyzed by USEPA Method TO-15 to confirm the TO-14 results (**Tables 4 and 5**). Analytical reports are included in **Appendix F**.

Plume definition was based upon the PCE data as TCE was below the VISL of 16 µg/m^3 at all locations when PCE was below the VISL, except for one location, A-23. At this location, TCE exceeded the VISL of 16 µg/m^3 at both the 5 ft bgs (84 µg/m^3) and 15 ft bgs (310 µg/m^3) sampling depths. TCE was not detected in any of the neighboring soil vapor samples (HEG, 2014).

The following subsections summarize the results of the soil vapor sampling event (HEG, 2014).

3.2.8.1 Sub-Slab Soil Vapor Samples

3.2.8.1.1 Arcadia Towne Center

- Six TVMBs were sampled along the northern side of the property (A-10 to A-13) north of the Safeway building and along the eastern side of the property near North 48th Street (A-16 and A-17). PCE concentrations reported at all locations were below the VISL of 367 µg/m^3 (**Figure 15**; **Table 4**).
- TCE was not reported in the samples above the LRL of 20 µg/m^3.

3.2.8.1.2 North of Indian School Road

- Three TVMBs were sampled in the parking lot of the commercial building situated north of Indian School road toward East Monterosa Street to fill an existing soil vapor data gap (A-19 to A-21). PCE values at all locations were below the VISL of 367 µg/m^3 (**Figure 15**; **Table 4**).
- TCE was not reported in the samples above the LRL of 20 µg/m^3.

3.2.8.1.3 Neighborhood West of Arcadia High School

- Soil vapor was collected at 22 TVMBs in the neighborhood located west of Arcadia High School to define the western end of the soil vapor contamination plume (A-01 through A-09, A-22 through A-31, A-44 through A-46, and SVMWs SG-09A, SG-10A, SG-11A, SG-12A; **Figure 15**; **Table 4**). PCE concentrations above the VISL of 367 µg/m^3 were detected at six locations: A-02 (450 µg/m^3), A-03 (750 µg/m^3), SG-09A (1,600 µg/m^3), SG-10A (520 µg/m^3), SG-11A (530 µg/m^3), and SG-12A (910 µg/m^3). Compared to the June 2012 results, PCE concentrations decreased in SG-09A, SG-11A, and SG-12A and increased slightly in SG-10A. However, a confirmation sample collected from SG-10A on November 5, 2012 and analyzed by Method TO-15 was reported with 58.9 µg/m^3 of PCE, which is below the VISL of 367 µg/m^3 (**Table 4**). As previously discussed, PCE was not detected above the RIARSL of 11 µg/m^3 in IAQ samples collected from residences in this area (**Section 3.3, Table 7, and Figures 16-17**). Therefore, the maximum PCE concentrations in soil vapor are considered protective of residential indoor air. The sample locations to the north and west of A-01, A-02 and A-03 yielded results below the PCE VISL of 367 µg/m^3. A further assessment of this data is provided in Section 3.3.
- TCE was detected at location A-23 at 5 ft bgs (84 µg/m^3). However, PCE was reported below detection limits at both depths. TCE was not detected in the neighboring soil vapor samples. Confirmation samples collected from SG-09A and SG-10A were also analyzed using TO-15. In sample SG-09A, the TO-14 TCE result was <100 µg/m^3 and the TO-15 TCE result was 5.9 µg/m^3. In sample SG-10A, the TO-14 result was <100 µg/m^3 and the TO-15 TCE result of <2.14 µg/m^3. As previously discussed, the on-site TO-14 method does not differentiate between TCE, chloroform and BDCME. According to Blayne Hartman, PhD, the TCE values from the on-site TO-14 analysis are possibly biased high due to interferences from chloroform and BDCME (HEG, 2014). However, as discussed in Section 3.3, the TCE concentrations in the soil vapor are considered protective of residential use.

3.2.8.1.4 Sandy's Cleaners Samples

- Sub-slab soil vapor samples were only collected from SVMWs SG-13A and SG-14A. PCE was detected at concentrations of 20,000 µg/m^3 (SG-13A) to 30,000 µg/m^3 (SG-14A) (**Figure 15**;

Table 4). PCE exceeded the VISL of 367 µg/m^3 in both samples. Compared to the June 2012 sampling event, PCE concentrations increased in SG-13A (11,000 to 20,000 µg/m^3) and SG-14A (14,000 to 30,000 µg/m^3). However, as discussed in Section 3.3.1, the PCE concentrations in the soil vapor are considered protective of residential use which is also protective of workers at Arcadia Towne Center.

- TCE was detected at concentrations of 420 µg/m^3 (SG-13A) and 4,900 µg/m^3 (SG-14A), which exceed the VISL of 16 µg/m^3. The on-site TO-14 method does not differentiate between TCE, chloroform and BDCME. According to Blayne Hartman, PhD, the TCE values from the on-site TO-14 analysis are possibly biased high due to interferences from chloroform and BDCME (HEG, 2014). However, as discussed in Section 3.3, the TCE concentrations in the soil vapor are considered protective of residential use which is also protective of workers at Arcadia Towne Center.

3.2.8.2 Deep Soil Vapor Samples

3.2.8.2.1 Arcadia Towne Center

- Six TVMBs were sampled at 15 ft bgs along the northern side of the property (A-10 to A-13) north of the Safeway building and along the eastern side of the property near North 48th Street (A-16 and A-17). PCE was not detected in the samples above the LRL of 20 µg/m^3 (**Figure 15**; **Table 5**).
- TCE was not reported in the samples above the LRL of 20 µg/m^3.

3.2.8.2.2 North of Indian School Road

- Three TVMBs were sampled at 15 ft bgs in the parking lot of the commercial building situated north of Indian School road toward East Monterosa Street to fill an existing soil vapor data gap (A-19 to A-21). PCE was only detected above the LRL of 20 µg/m^3 in sample A-19-15′ (30 µg/m^3) (**Figure 15**; **Table 5**).
- TCE was not reported in the samples above the LRL of 20 µg/m^3.

3.2.8.2.3 Neighborhood West of Arcadia High School

- Soil vapor was collected at 15 ft bgs from 22 TVMBs in the neighborhood located west of Arcadia High School to define the western end of the soil vapor contamination plume (A-01 through A-09, A-22 through A-31, A-44 through A-46, and SVMWs SG-05B, SG-06C, SG-07C, and SG-08B; **Figure 15**; **Table 5**). PCE was detected in 17 of the 22 samples ranging from 30 µg/m^3 (A-08) to 3,300 µg/m^3 (SG-5B). The nearest monitoring well to these samples is SM-03-60. The sample collected on October 22, 2013 at 39.5 ft bgs was detected with <1.0 µg/L of PCE (**Table 8**). Therefore, the residual PCE detected in the deep soil vapor samples was not impacting groundwater.
- TCE was detected at location A-23 at 15 ft bgs (310 µg/m^3). However, PCE was reported below detection limits at both depths. TCE was not detected in the neighboring soil vapor samples. As previously discussed, the on-site TO-14 method does not differentiate between TCE, chloroform and BDCME. According to Blayne Hartman, PhD, the TCE values from the on-site TO-14 analysis are possibly biased high due to interferences from chloroform and BDCME (HEG, 2014).

3.2.8.2.4 Sandy's Cleaners Samples:

- PCE was detected in 17 of the 18 deep vapor samples collected from the SVMWs and SVE wells. The concentrations ranged from 110 µg/m^3 (SSVE-06-18') to 81,000 µg/m^3 (SG-03C) (**Figure 15**; **Table 5**). Groundwater samples collected from ECP-01, SMW-01, and SMW-07 on October 22, 2013 were reported with <2.0, <1.0 µg/L, and <2.0 of PCE, respectively (**Table 8**). Therefore, the residual PCE detected in the deep soil vapor samples, particularly at SG-03C, was not impacting groundwater.
- TCE was detected in 8 out of 22 deep vapor samples at concentrations ranging from 200 µg/m^3 (SG-18C) to 2,300 µg/m^3 (SV-01-25'). As previously discussed, the on-site TO-14 method does not differentiate between TCE, chloroform and BDCME. According to Blayne Hartman, PhD, the TCE values from the on-site TO-14 analysis are possibly biased high due to interferences from chloroform and BDCME (HEG, 2014).

3.2.9 April 2015 Event

On April 29, 2015, soil vapor samples were collected by H+A from 18 SVMWs (SG-01C, SG-02C, SG-03C, SG-04B, SG-05B, SG-06C, SG-07C, SG-08B, SG-09A, SG-10A, SG-11A, SG-12A, SG-13A, SG-14A, SG-15C, SG-16C, SG-17C, and SG-18C) and from SVE wells SVE-1, SVE-2 and SSVE-1 – SSVE-7 (**Figure 9**; **Tables 4 and 5**). The samples were collected by HPMG and analyzed in the field using Method TO-14. Selected samples were analyzed by USEPA Method TO-15 to confirm the TO-14 results (**Tables 4 and 5**) (H+A, 2015a). The results are summarized per depth in the following subsections.

3.2.9.1 Sub-Slab Soil Vapor Samples

3.2.9.1.1 Sandy's Cleaners Samples

The sub-slab samples collected at Sandy's Cleaners were limited to SG-13A and SG-14A. The following summarizes the PCE and TCE results:

- PCE was detected at concentrations of 10,000 and 12,000 µg/m^3 in the samples collected from SG-13A and SG-14A, respectively. The results exceed the VISL of 367 µg/m^3 (**Table 4**). Compared to the October 2013 sampling event, PCE concentrations decreased in SG-13A from 20,000 µg/m^3 to 10,000 µg/m^3 and in SG-14A from 30,000 µg/m^3 to 12,000 µg/m^3. However, as discussed in Section 3.3.1, the PCE concentrations in the soil vapor are considered protective of residential use which is also protective of workers at Arcadia Towne Center.
- TCE was detected at concentrations of 220 and 710 µg/m^3 in the samples from SG-13A and SG-14A, respectively. The results exceed the VISL of 16 µg/m^3 (**Table 4**). Compared to the October 2013 sampling event, TCE concentrations decreased in SG-13A from 420 µg/m^3 to 220 µg/m^3 and in SG-14A from 4,900 µg/m^3 to 720 µg/m$^{3.}$ As previously discussed, TCE results reported by TO-14 are possibly biased high. However, as discussed in Section 3.3, the TCE concentrations in the soil vapor are considered protective of residential use which is also protective of workers at Arcadia Towne Center.

3.2.9.1.2 Neighborhood West of Arcadia High School

Sub-slab samples were collected from SG-09A, SG-10A, SG-11A, and SG-12A (locations shown on **Figure 9**). The following summarizes the PCE and TCE results:

- PCE was detected at concentrations of 490 µg/m^3 (SG-9A), 210 µg/m^3 (SG-10A), 430 µg/m^3 (SG-11A) and 560 µg/m^3 (SG-12A). Compared to the October 2013 sampling event, PCE concentrations decreased in the sampling points, which corresponds to declining PCE concentrations in the groundwater. Though the results for SG-9A, SG-11A, and SG-12A exceed the VISL of 367 µg/m^3, PCE was not detected above the RIARSL of 11 µg/m^3 in IAQ samples collected from residences in this area (**Section 3.3, Table 7, and Figures 16-17**). Additionally, a sample collected from SG-10A on November 5, 2012 was analyzed using method TO-15. PCE was detected at a concentration of 58.9 µg/m^3, which is below the VISL of 367 µg/m^3. Therefore, the maximum PCE concentrations in soil vapor are considered protective of residential indoor air. A further assessment of this data is provided in Section 3.3.
- TCE was not detected in the samples above the LRL of 20 µg/m^3.

3.2.9.2 Deep soil Vapor Samples

3.2.9.2.1 Sandy's Cleaners Samples

- PCE was detected in all vapor samples collected from the SVMWs and SVE wells. The concentrations ranged from 150 µg/m^3 (SSVE-06) to 19,000 µg/m^3 (SG-03C) (**Figure 9**; **Table 5**). Compared to the October 2013 results, PCE concentrations decreased in SVMWs and SVE wells. The most notable decrease was measured in SG-03C where concentrations decreased from 81,000 µg/m^3 to 19,000 µg/m^3. Groundwater samples collected from ECP-01, SMW-01, and SMW-07 on May 14, 2015 were reported with <2.0, <1.0 µg/L, and <2.0 µg/L of PCE, respectively (**Table 8**). Therefore, the residual PCE detected in the deep soil vapor samples, particularly at SG-03C, was not impacting groundwater.
- TCE was detected in nine out of 12 samples at concentrations ranging from 25 µg/m^3 (SG-02C) to 2,400 µg/m^3 (SVE-01). As previously discussed, TCE concentrations reported by TO-14 are biased high. TCE was not detected in groundwater samples (**Table 8**).

3.2.9.2.2 North of Indian School Road

- PCE was detected at a concentration of 2,500 µg/m^3 in the sample collected from SG-04B. Compared to the October 2013 results, PCE decreased from 15,000 µg/m^3 to 2,500 µg/m^3. The groundwater sample collected from SMW-04 on May 14, 2015 was reported with <2.0 µg/L of PCE (**Table 8**). Therefore, the residual PCE concentrations in SG-04B are not impacting groundwater.
- TCE was detected at a concentration of 82 µg/m^3. As previously discussed, TCE concentrations reported by TO-14 are biased high. TCE was not detected in groundwater samples collected from SMW-04 (**Table 8**).

3.2.9.2.3 Neighborhood West of Arcadia High School

- PCE was detected in the samples from SVMWs SG-05B, SG-06C, SG-07C, and SG-08B at concentrations of 920, 240, 290, and 310 µg/m^3, respectively. The nearest monitoring well to these samples is SMW-03-60. The sample collected on May 14, 2015 at 39.5 ft bgs was detected with <2.0 µg/L of PCE (**Table 8**). Therefore, the residual PCE detected in the deep soil vapor samples was not impacting groundwater.
- TCE was not detected above the LRL of 20 µg/m^3 in the samples.

3.2.10 November 2015 Event

On November 4-5, 2015, soil vapor samples were collected by H+A from 18 SVMWs (SG-01C, SG-02C, SG-03C, SG-04B, SG-05B, SG-06C, SG-07C, SG-08B, SG-09A, SG-10A, SG-11A, SG-12A, SG-13A, SG-14A, SG-15C, SG-16C, SG-17C, and SG-18C) and from SVE wells SVE-1, SVE-2 and SSVE-1 – SSVE-7 (**Figure 9**; **Tables 4 and 5**). The samples were collected by H+A and analyzed by USEPA Method TO-15 (**Tables 4 and 5**) (H+A, 2015b). The analytical reports are included in **Appendix F**. The results are summarized in the following subsections.

3.2.10.1 Sub-Slab Soil Vapor Samples

3.2.10.1.1 Sandy's Cleaners

- PCE was detected in all vapor samples collected from the SVMWs and SVE wells. The concentrations ranged from 21.3 µg/m^3 (SSVE-07) to 19,400 µg/m^3 (SG-14A) (**Figure 9**; **Table 4**). PCE exceeded the VISL of 367 µg/m^3 in six of the nine samples. Compared to the maximum PCE concentrations reported in the October 2013 samples, PCE concentrations decreased from 20,000 to 13,000 µg/m^3 in SG-13A and from 30,000 to 19,400 µg/m^3 in SG-14A. However, as discussed in Section 3.3.1, the PCE concentrations in the soil vapor are considered protective of residential use which is also protective of workers at Arcadia Towne Center.
- TCE was detected in six out of nine samples at concentrations ranging from 8.1 µg/m^3 (SSVE-01) to 1,160 µg/m^3 (SG-14A). TCE exceeded the VISL of 16 µg/m^3 in five of the samples. However, as discussed in Section 3.3.2, the TCE concentrations in the soil vapor are considered protective of residential use which is also protective of workers at Arcadia Towne Center.

3.2.10.1.2 Neighborhood West of Arcadia High School

Sub-slab samples were collected from SG-09A, SG-11A, and SG-12A (locations shown on **Figure 9**). The following summarizes the PCE and TCE results:

- PCE was detected at concentrations of 58.9 µg/m^3 (SG-9A), 230 µg/m^3 (SG-11A) and 356 µg/m^3 (SG-12A), which are below the VISL of 367 µg/m^3. Compared to the June 2015 sampling event, PCE concentrations decreased in the sampling points, which corresponds to declining PCE concentrations in the groundwater.
- TCE was not detected in the samples above the LRL of 20 µg/m^3.

3.2.10.2 Deep Soil Vapor Samples

3.2.10.2.1 Sandy's Cleaners

- PCE was detected in all vapor samples collected from the SVMWs and SVE wells. The concentrations ranged from 552 µg/m^3 (SG-18C) to 28,000 µg/m^3 (SG-03C) (**Table 5**). Compared to the April 2015 results, PCE concentrations for samples analyzed by TO-15 were variable. The most notable decrease was measured in SG-03C where concentrations decreased from 57,200 µg/m^3 (TO-15) to 28,000 µg/m^3. Groundwater samples were not collected from ECP-01, SMW-01, and SMW-07 during November 2015. The next groundwater sampling event was August 28, 2016. PCE was detected in samples from ECP-01, SMW-01, and SMW-07 at concentrations of 3.8 µg/L, <1.0 µg/L, and 10 µg/L of PCE, respectively (**Table 8**). PCE in the groundwater sample collected from SMW-07

was above the AWQS of 5.0 µg/L. Based on the relatively low PCE concentration in the groundwater, it does not appear that the residual PCE in soil gas at SG-03C is impacting the groundwater.

- TCE was detected in the eight samples at concentrations ranging from 2.9 µg/m^3 (SG-08B) to 1,210 µg/m^3 (SVE-01). TCE was not detected in groundwater samples collected in August 2016 and December 2018 (**Table 8**).

3.2.10.2.2 North of Indian School Road

- PCE was detected at a concentration of 6,600 µg/m^3 in the sample collected from SG-04B. Compared to the October 2013 TO-15 results, PCE decreased from 57,200 µg/m^3 to 6,600 µg/m^3. The groundwater samples collected from SMW-04 during August 2016 and December 2018 were reported with 1.6 and 2.5 µg/L of PCE, respectively (**Table 8**). Therefore, the residual PCE concentrations in SG-04B are not impacting groundwater.
- TCE was detected at a concentration of 45.5 µg/m^3. TCE was not detected in groundwater samples collected from SMW-04 (**Table 8**).

3.2.10.2.3 Neighborhood West of Arcadia High School

- PCE was detected in the samples from SVMWs SG-05B, SG-06C, SG-07C, and SG-08B at concentrations of 2,480, 644, 1,180, and 674 µg/m^3, respectively. The nearest monitoring well to these samples is SMW-03-60. The samples collected during August 2016 and December 2018 at 39.5 ft bgs from SMW-03-60 were detected with 7.7 and 31 µg/L of PCE, respectively (**Table 8**). The soil vapor PCE concentrations associated with the PCE groundwater concentrations are 3,250 and 13,080 µg/m^3, respectively, which are higher than the concentrations detected in the SVMWs. Therefore, the residual PCE detected in the deep soil vapor samples was not impacting groundwater.
- TCE was reported in the samples from SVMWs SG-05B, SG-06C, SG-07C, and SG-08B at concentrations of 6.0, <2.14, 8.3 and 2.9 µg/m^3, respectively. TCE was not detected in the groundwater samples collected during August 2016 and December 2018 from SM-03-60.

3.3 2013 Indoor Air Sampling

Based on the results of the soil vapor sampling, an indoor air sampling program was conducted during August 2013 to evaluate if a VI risk to indoor air existed. The results were compared to the USEPA November 2018 RIARSL of 11 µg/m^3 (USEPA, 2018b). PCE and TCE concentrations in IAQ samples can originate from the subsurface, referred to as vapor intrusion. As discussed previously, the concentrations are attenuated by the soil. However, they can also be affected by ambient air inside and outside the building, use of chemicals in the building, cooking activities, and dry-cleaned garments. If indoor air concentrations are higher than corresponding soil vapor concentrations, then it is concluded that the indoor air concentrations did not likely originate from the subsurface. Additionally, comparison to other nearby IAQ sample results can also be used to evaluate the origin of the concentrations. Comparison of indoor air sample concentrations to corresponding sub-slab soil vapor sample concentrations can also be used to estimate site-specific attenuation factors in-lieu of risk modeling. **Table 7** summarizes the PCE and TCE results and the analytical reports are included as **Appendix G**. **Figures 16** and **17** show the indoor air analytical results compared to the November 2018 RSL of 11 µg/m^3.

The following sub-sections summarize the PCE and TCE results per area sampled (HEG, 2014).

3.3.1 PCE

3.3.1.1 North of Indian School Road

Seven IAQ samples were collected from residences and analyzed using TO-14. The locations are shown on **Figures 16 and 17.** PCE concentrations ranged from <3.4 µg/m^3 to 11 µg/m^3 (sample 48-036). No residential samples had TO-14 detections of PCE above the RIARSL of 11 µg/m^3. Two confirmation samples collected at sample locations 48-036 and 48-039 were analyzed using TO-15. PCE was reported at concentrations of 3.5 and 2.6 µg/m^3, which are below RIARSL of 11 µg/m^3.

As indicated above, a comparison of IAQ sample results to associated sub-slab soil vapor sample results can be used to evaluate that soil vapor concentrations are protective of residential indoor air. Additionally, site-specific attenuation factors can be estimated by dividing the IAQ sample result by the soil vapor sample result. An assessment of the data is provided below.

IAQ Sample ID	IAQ PCE (µg/m^3)	Associated SG Sample ID	2012 SG PCE (µg/m^3)	Estimated Attenuation Factor
48-026	5.6	SG-03A	34,000	0.0002
48-036	11 (TO-14)	SG-04A	14,000	0.0008
480036	3.5 (TO-15)			0.0003
48-039	5.0 (TO-14)	SG-400-7	50,000	0.0001
48-039	2.6 (TO-15)			0.000052

Based on the above assessment, the maximum sub-slab soil vapor PCE concentrations are protective of residential indoor air in this area.

IAQ samples were not collected from businesses in Arcadia Towne Center. However, IAQ sample 48-026 is associated with sample SG-3A that was collected at Sandy's Cleaners and Arcadia Towne Center. Therefore, applying the results for 48-026A and SG-03A would indicate that the maximum sub-slab PCE soil vapor concentrations since the May-June 2012 soil vapor sampling event are protective of residences and commercial workers at Arcadia Towne Center and the adjacent residential neighborhood.

3.3.1.2 Neighborhood West of Arcadia High School

A total of six IAQ samples were collected from residences and analyzed using TO-14. The locations are shown on **Figures 16 and 17.** PCE concentrations ranged from <3.4 µg/m^3 (samples 48-015 and 48-035) to 6.6 µg/m^3 (sample 48-021). No residential samples had TO-14 detections of PCE above the RIARSL of 11 µg/m^3. As performed above, site-specific attenuation factors were estimated for associated IAQ and soil vapor samples.

IAQ Sample ID	IAQ PCE (µg/m^3)	Associated SG Sample ID	2012 SG PCE (µg/m^3)	Estimated Attenuation Factor
48-015	<3.4	SG-08A	5,300	0.0006
48-006	4.1	SG-05A	4,700	0.0009
48-019	5.3	48-SG-508	8,100	0.0007
48-021	6.6	48-SG-509	2,500	0.003

Comparing the above data, the PCE detected in IAQ sample 48-SG-509 does not correlate with the other samples. Applying the maximum attenuation factor of 0.0009 results in an attendant IAQ PCE concentration of 2.25 µg/m^3, which would have been below the LRL of 3.4 µg/m^3. Therefore, the PCE detected in IAQ sample 48-SG-509 possibly resulted from ambient sources. Based on the above assessment, the maximum sub-slab soil vapor PCE concentrations are protective of residential indoor air in this area.

3.3.1.3 Arcadia High School

A total of 30 classrooms in Arcadia High School were sampled by TO-14 in August 2013. Two indoor air canister confirmation samples were also collected and analyzed by USEPA Method TO-15. PCE concentrations ranged from <3.4 µg/m^3 (multiple samples) to 34 µg/m^3 (48-040ab). Schools are commonly regulated at the industrial indoor air SRL (IIASRL) since the occupants exposed for the longest periods, and hence at highest risk, are the faculty and other workers, not students. PCE values were not detected at concentrations above the industrial indoor air Regional Screening Level (IIARSL) for commercial buildings of 47 µg/m^3 (USEPA, 2018b) in either the TO-14 or TO-15 data. However, for the purposes of this RI Report, the PCE values were compared to the lower RIASRL.

PCE values exceeded the RIASRL of 11 µg/m^3 in five samples as shown in **Table 7** and on Figure 16. Confirmatory TO-15 samples collected at sample locations 48-040g (6.3 µg/m^3) and 48-040ab (12 µg/m^3) were reported with lower PCE concentrations than the corresponding TO-14 sample. Further assessment of this data is required to evaluate if the PCE concentrations above the residential RSL originated from the soil vapor. As previously discussed, sub-slab soil vapor samples were collected at Arcadia High School from May 31, 2012 to June 5, 2012. The following provides a comparison of the indoor air samples with elevated PCE concentrations to adjacent IAQ samples and corresponding soil vapor samples.

IAQ Sample ID	IAQ PCE (µg/m^3)	Adjacent IAQ Sample ID	IAQ PCE (µg/m^3)	Associated SG Sample ID	2012 SG PCE (µg/m^3)	Estimated Attenuation Factor[1]
48-040i	<3.4	48-040h,j	<3.4	48-SG-641	500	NC
48-040d	<3.4	48-040c,l	<3.4	48-SG-627	1,500	NC
48-040g	12 (TO-14)	48-040f	4.0	48-SG-640	<69	NC
	6.3 (TO-15)	48-040h,k	<3.4			
48-040ab	34 (TO-14)[2]	48-040ad	<3.4	48-SG-644	<69	NC
	12 (TO-15)[3]	48-040ac	<3.4			
	<3.4 (TO-14)[4]	48-040ae	<3.4			
48-040aa	18 (TO-14)[2]	48-040z[4]	<3.4	48-SG-644	<69	NC
	<3.4 (TO-14)[4]					
48-040q	13 (TO-14)[2]	48-040r[4]	<3.4	48-SG-629	530	NC
	<3.4 (TO-14)[4]	48-040p	<3.4			
48-040o	14 (TO-14)[2]	48-040p	<3.4	48-SG-629	530	NC
	<3.4 (TO-14)[4]					

1. Attenuation factor not calculated (NC)
2. Original TO-14 sample collected on 8/21/13
3. TO-15 sample collected on 8/27/13
4. TO-14 sample collected on 8/24/13

The five samples detected with PCE above the RIASRL of 11 µg/m^3 were collected on August 21, 2013. Confirmation samples collected at these locations on August 24, 2013 (**Table 7**) were reported with <3.4 µg/m^3 of PCE. IAQ samples collected from adjacent classrooms were also reported with <3.4 µg/m^3 of PCE. As demonstrated by IAQ samples 48-040i and 48-040d, PCE was reported with <3.4 µg/m^3 at attendant associated soil vapor concentrations of 500 µg/m^3 and 1,500 µg/m^3. IAQ samples 48-040ab and 48-040aa,

which were reported with the highest PCE concentrations, had an associated soil vapor sample concentration of <69 µg/m^3. Samples 48-040ab and 48-040aa were also located outside the estimated extent of the PCE groundwater plume (**Figure 16**). Based on this assessment, the PCE reported in the five samples above the RIARSL were the result of ambient air sources and not soil vapor.

3.3.2 TCE

Indoor air detections of TCE by the on-site TO-14 method were observed in the vast majority of samples. Values were predominantly from 2 µg/m^3 to 10 µg/m^3 and often exceeded the TCE indoor air residential RSL of 0.48 µg/m^3. However, the confirmation TO-15 samples had consistently lower TCE levels, below the screening level. The likely reason for this discrepancy is that the on-site TO-14 method could not differentiate between TCE, chloroform and bromodichloromethane. These latter two compounds are byproducts of water chlorination (USEPA, 2014a) and are present in any structure with chlorinated tap water. Hence, the TCE values from the on-site TO-14 analysis were biased high by up to 10 µg/m^3 due to the interferences from these compounds (HEG, 2014). The following compares IAQ sample TO-15 TCE results to associated soil vapor sample results.

IAQ Sample ID	IAQ TCE (µg/m^3)	Associated SG Sample ID	2012 SG TCE (µg/m^3)	Estimated Attenuation Factor[1]
48-026[2]	<1.8	SG-03A[3]	<55	NC
48-036[2]	<1.8	SG-04A[2]	<55	NC
48-040g[4]	<1.8	48-SG-640[4]	<55	NC

1. Attenuation factor not calculated (NC)
2. Sample collected from neighborhood north of Indian School Road and west of Sandy's Cleaners
3. Sample collected at Sandy's Cleaners
4. Sample collected at Arcadia High School

Based on the above assessment, there does not appear to be a TCE VI risk to indoor residential air at the 48 & IS site.

3.4 Groundwater Investigation

Well SMW-01 was installed in boring B-7 and well SMW-02 was installed to the east of Sandy's Cleaners. Groundwater samples were collected from the wells on April 21, May 22, July 7, and August 11, 1992. PCE was detected at a maximum concentration of 2,300 µg/L in the sample collected from SMW-01 on April 21, 1992 (**Table 8; Appendix B** - PCE versus time graph for SMW-01). PCE concentrations subsequently decreased to 220 µg/L in the August 11, 1992 sample. Samples collected from SMW-02 were reported with non-detectable concentrations of PCE.

Monitoring well SMW-03 with nested casings at 60 ft (SMW-03-60) and at 138 ft (SMW-03-138) was installed on May 9, 1994 in a landscaped area of Arcadia High School (**Figures 1** and **2**). As shown in **Table 8**, groundwater sampling of SMW-01, SMW-02, SMW-03-60, and SMW-03-138 was performed on December 15, 1994, March 26, 1996, March 13, 1997, May 8, 1997, November 20, 1997, and February 5, 1998. During this time period, PCE concentrations in samples collected from SMW-01 were detected with PCE above the AWQS of 5.0 µg/L. The maximum PCE concentration detected in samples collected from SMW-01 was 6,200 µg/L in the March 13, 1997 sample, which is the highest PCE concentration detected in a groundwater sample collected from the 48th & IS site monitoring well network (see **Table 8; Appendix B -** PCE versus time graph for SMW-01). Samples collected from SMW-02, SMW-03-60, and SMW-03-138

were reported with non-detectable concentrations of PCE (see **Table 8**; **Appendix B** - PCE versus time graph for SMW-03-60).

As discussed in Section 4.0, SRP commenced with an interim remedial action (IRA) at Sandy's Cleaners. In 2001, SRP installed two groundwater monitor wells east of Sandy's Cleaners (ECP-2 and ECP-3) and one groundwater extraction well west of Sandy's Cleaners (ECP-1) (**Table 1, Figures 1 and 2**). Boring logs for ECP-1 – ECP-3 are included in **Appendix A.**

Groundwater monitoring of SMW-01, SMW-02, SMW-03-60, SMW-03-138, and ECP-1 – ECP-3 in support of the ERA commenced in September 2001 (ECP-01 only) and was completed in June 2007 (**Tables 2** and **8**; **Appendix B -** Hydrographs/PCE Versus Time Graphs for SMW-01, SMW-03-60, and ECP-1). With the exception of the March and October 2006 events, the samples were collected and analyzed by SRP. The March and October 2006 samples were collected by SECOR (SECOR, 2006a and 2007). Available laboratory analytical reports for the sampling events are included in **Appendix H**.

During this monitoring period, only samples collected from monitoring wells SMW-01 and ECP-1 were reported with PCE concentrations above 5.0 µg/L. The maximum PCE concentration detected in a sample from SMW-01 was 1,200 µg/L in the March 6, 2002 sample. The PCE concentration had decreased to 4.9 µg/L in the October 25, 2006 sample (SMW-01-30'). The maximum PCE concentration detected in a sample from ECP-01 was 1,600 µg/L in the March 6, 2002 sample. The PCE concentration in the February 15, 2006 pre-SVE sample was 1,200 µg/L. PCE concentrations in samples collected from SMW-02, SMW-03-138, ECP-02, and ECP-03 were non-detect and below 5.0 µg/L.

PCE was also non-detect in samples collected from SMW-03-60 through the March 6, 2006 sampling event. PCE was detected at a concentration of 2.3 µg/L in the sample collected on October 25, 2006. This was the first detection of PCE in a sample collected from SMW-03-60, which started a period of elevated PCE concentrations detected through April 2012. Well SM-03-60 is located within the ambient groundwater flow pathway from the Sandy's Cleaners source location. PCE concentrations in samples collected from ranged from 6.7 µg/L on October 16, 2007 to a maximum of 1,400 µg/L on October 19, 2011, which is attributed to downgradient migration of dissolved PCE from the Sandy's Cleaners source location. This presents the problem of why PCE was not detected in samples collected from SMW-03-60 from 1994 until October 2006. This is due to the flow pathway from the Sandy's Cleaners source area to SRP well 17.9E-7.5N likely being located south of SMW-03-60 prior to 1994. As the ambient gradient was restored, PCE concentrations in samples collected from SMW-03-60 began increasing.

Between December 2007 and October 2018, 13 groundwater monitoring wells were installed to characterize the aerial and vertical extents of the groundwater impact at the 48th & IS site (SMW-04, SMW-05, SMW-06, SMW-07, SMW-08, SMW-11, SMW-12, SMW-16B, BMW-12B, BMW-05A, BMW-05B, BMW-06A, and BMW-06B). Boring logs/well completion diagrams are included in **Appendix A**; groundwater analytical results are summarized in **Table 8**; PCE concentration versus time graphs for wells ECP-01, SMW-01, SMW-03-60, and SMW-07 are provided in **Appendix B**; and available analytical reports are included in **Appendix H** (SECOR, 2008, Stantec 2008a, Stantec, 2008b, Stantec, 2012g, Stantec, 2012h, H+A, 2014, H+A, 2015a, H+A, 2015b, H+A, 2015c, H+A, 2015d, H+A, 2016a, H+A, 2016b, H+A, 2016c, Wood, 2018, Wood 2019a, and Wood 2019b).

During May 2017 and December 2017, borings BMW-15D and SMW-14B were drilled, respectively (**Figures 1 and 2**). Vertical profile samples collected during drilling had concentrations of PCE that were less than the AWQS of 5.0 µg/L (**Figure 3**; **Table 9**). Therefore, ADEQ decided to abandon the borings (H+A, 2017 and

H+A, 2018). Vertical profile samples were also collected during drilling of SMW-16B (H+A, 2018) and BMW-12B (Wood, 2018). The results are shown on **Figures 2 and 3** and are summarized in **Table 9**.

During December 2018, a site-wide groundwater monitoring event was performed. The maximum PCE concentration reported was 31 µg/L in a sample collected from SMW-03-060. Samples collected from sentinel well BMW-12B are reported with PCE below 5.0 µg/L, ranging from 3.4-3.9 µg/L (Wood, 2019a and 2019b). Analytical reports for the December 2018 groundwater sampling event are included in **Appendix H.** The electronic groundwater data in EXCEL format is included on a CD attached as **Appendix I.**

4.0 EARLY RESPONSE ACTION/INTERIM REMEDIAL ACTION

In 2000, ADEQ and SRP entered into a Governmental Services Contract in which ADEQ funded SRP to conduct an IRA at Sandy's Cleaners. As an IRA, SRP designed and installed an SVE system to remove soil vapor contamination from the subsurface. As part of the IRA agreement, SRP installed two groundwater monitor wells east of the Sandy's Cleaners facility and one groundwater extraction well west of the Sandy's Cleaners facility (ECP-1 through ECP-3) in 2001 (**Table 1**). Boring logs for ECP-1 – ECP-3 are included in **Appendix A**.

4.1 SRP Extraction and Treatment System

An SVE pilot test was performed on ECP-1 and SMW-01 in March 2004. Short-term SVE pilot testing at well ECP-1 found that the fine-grained soils at the site can produce flows of 4-6 cubic ft per minute from a single well under 40-55 inches of vacuum. Vapors withdrawn from the well contained approximately 5,000 mg/m^3 of PCE. The radius of influence appeared to be at least 16 ft. Based on the results of this testing, SVE appeared to be an effective way to remove PCE from the subsurface and minimize additional groundwater contamination. The estimated PCE extraction rate was 3 lbs per day (Mogollon Environmental Services, LLC, 2004) (**Appendix J** - analytical reports).

In 2004, SRP installed two SVE wells (SVE #1 and SVE #2) west of the Sandy's Cleaners facility (**Figure 21**). (SRP, 2006a). The SVE system was issued a non-title V Air Quality Permit from Maricopa County. The system consisted of a 1.5 horsepower Rotron vacuum blower with extracted vapors treated using granular activated carbon contained in 50-gallons drums. Vapors were extracted from SVE #1, SVE #2, and ECP-1. A pilot test conducted in February 2006 indicated an initial estimated extraction rate of 40 lbs per day. The maximum PCE concentration in soil vapor was 25,000 µg/L or 25,000,000 µg/m^3 from SVE #1 (SRP, 2006b). Full operation of the SVE system commenced in April 2006.

The SVE system operated from April 2006 until December 2011, over which time 319 lbs of PCE were removed from the subsurface. PCE was detected at a concentration of 1.2 parts per million vapor volume (ppmv), which converts to 8,140 µg/m^3, in the December 2011 sample collected from SVE #1 (SRP, 2012). SRP decommissioned their SVE system in April 2012 pending design and construction of an enhanced system (Stantec, 2012a).

4.2 Modified SVE System

In 2011 and 2012, ADEQ conducted soil gas sampling at and in the vicinity of Sandy's Cleaners to enhance the SRP SVE system to remove remaining residual PCE vapors from the vadose zone. In January 2012, ADEQ installed two SVE (SSVE-1 and SSVE-2) and six SVE observation wells (SG-13 through SG-18) adjacent to the Sandy's Cleaners facility in preparation for the modification of SRP's SVE system (**Figure 9**) (Stantec, 2012b).

An SVE pilot test was performed in February 2012. The results from the test suggested that SVE would still be an effective treatment technology for the 48th & IS site (Stantec, 2012a).

In March 2012, ADEQ installed five additional SVE wells (SSVE-3 through SSVE-8) as shown on **Figure 9**. (Stantec, 2018c). Boring logs and well completion diagrams are included in **Appendix A**.

PCE concentrations in groundwater samples collected from source area wells SMW-01 and ECP-01 decreased during SVE system operation and did not exceed 5.0 µg/L from 2013 through the December 2018 sampling event. Therefore, ADEQ decided to not continue ERA SVE system operation at Sandy's Cleaners.

5.0 RISK EVALUATION

The predominant site COC from source operations is PCE. TCE is a COPC because it was detected in soil vapor and indoor air samples. When present in groundwater or soil vapor, PCE and TCE can emit vapor and move through voids in the soil into buildings, potentially through cracks in the building foundation or slab. The vapors may accumulate in homes and other occupied buildings to levels that may cause health effects. This movement of VOCs into buildings is called vapor intrusion. Due to the nature and location of the release in relation to commercial/industrial and residential areas, potential health hazards from the VI pathway were evaluated and are discussed further below.

5.1 PCE Hazards

5.1.1 Human Health

According to the *Problem Formulation of the Risk Evaluation for Perchloroethylene (Ethene, 1,1,2,2-Tetrachloro), CASRN: 127*-18-*4* (USEPA, 2018c), and based on reasonably available information to USEPA, these are the potential human health hazards associated with PCE exposure:

- Non-cancer hazards: the central nervous system (neurotoxicity), kidney toxicity, liver toxicity, reproductive/developmental toxicity, and irritation.
- Genotoxicity and cancer hazards: likely to be carcinogenic in humans by all routes of exposure. Associated with several cancer types, including non-Hodgkin's lymphoma, multiple myeloma and bladder cancer, with more limited evidence for esophageal, kidney, lung, cervical and breast cancer.

5.1.2 Ecological Health

USEPA calculated acute and chronic toxicity PCE concentrations of concern to aquatic and terrestrial species from a review of existing literature. According to the "Ecological Hazard Characterization of PCE" (Table 2-9, USEPA, 2018c), which presents a summary of USEPA's calculations, PCE can impact some species' mortality, growth, biomass/abundance, and reproduction.

5.2 TCE Hazards

5.2.1 Human Health

According to the *Problem Formulation of the Risk Evaluation for Trichloroethylene, CASRN: 79-01-6* (USEPA, 2018d), and based on reasonably available information to USEPA, these are the potential human hazards associated with TCE exposure:

- Non-cancer hazards: acute toxicity, liver toxicity, kidney toxicity, reproductive/developmental toxicity, neurotoxicity, immunotoxicity, and sensitization.
- Genotoxicity and cancer hazards: carcinogenic to humans by all routes of exposure and calculated quantitative estimates of risk from oral and inhalation exposures. Studies in humans have shown convincing evidence of a causal association between TCE exposure in humans and kidney cancer as well as human evidence of TCE carcinogenicity in the liver and lymphoid tissues. TCE is considered to have genotoxic carcinogenic, non-genotoxic carcinogenic, and teratogenic mechanisms.

5.2.2 Ecological Health

USEPA calculated acute and chronic toxicity TCE concentrations of concern to aquatic species, terrestrial species, and microorganisms from a review of existing literature. According to the "Ecological Hazard Characterization of TCE" (Table 2-8, USEPA, 2018d), which presents a summary of USEPA's calculations, TCE can impact some species' mortality, growth, deformities, abundance and reproduction. In microorganisms, TCE can impact respiration and growth.

5.3 Applicable Regulatory Standards and Screening Criteria

The following section describes the applicable regulatory standards for site COCs in soil, soil vapor, indoor air, and groundwater.

5.3.1 Soil Remediation Standards

A discussion of soil remediation levels is presented herein to explain historical investigation results in relation to applicable criteria. The soil remediation standards conservatively selected by ADEQ for the 48th & IS site are based on the potential for future residential use, meaning those uses of remediated property where natural persons are reasonably expected to be in frequent, repeated contact with soil (A.R.S. §49-15l). In addition, ADEQ has selected a cumulative excess lifetime cancer risk of 1 x 10^{-6} (10^{-6} risk) level for site soil remediation standards, which are defined as concentrations of site COCs remaining in the soil after remediation that would result in a 10^{-6} risk and a hazard index no greater than 1.0, based on residential exposure assumptions. Although Sandy's Cleaners and Arcadia Towne Center are zoned commercial/industrial, there are residential parcels and properties within the larger boundary and estimated PCE plume boundary (**Figure 2**). Remediation to a residential 10^{-6} risk level was selected to provide the most conservative protection to potential future occupants of the site.

The pre-determined RSRLs for carcinogenic compounds with a 10^{-6} risk level are listed in Appendix A of A.A.C., Title 18, Chapter 7, Article 205 (A.A.C. R18-7-205). For 48th & IS site COC and COPC, they are as follows:

- PCE RSRL = 0.51 mg/kg; and
- TCE RSRL = 3.0 mg/kg.

Tabulated historical soil results for PCE are included in **Table 3**. PCE and TCE were reported well below RSRLs in the 1992 and 1996 samples collected at Sandy's Cleaners. The 2.4 mg/kg of PCE reported for 2012 soil sample SMW-07-25 exceeded the RSRL of 0.51 mg/kg. With the exception of the 2.4 mg/kg of PCE collected in the 2012 soil sample SMW-07-25, PCE and TCE were below the RSRLs in the soil samples. It should be noted that PCE was not detected in the samples collected at SMW-07 at shallower and deeper depths than soil sample SMW-07-25.

The Arizona Minimum Groundwater Protection Levels (GPLs) (soil cleanup levels protective of groundwater quality) were also used to evaluate groundwater data collected from the 48th & IS site. The minimum GPLs for PCE and TCE are 1.3 and 0.61 mg/kg, respectively (ADEQ, 2008). With the exception of the 2.4 mg/kg of PCE collected in the 2012 soil sample SMW-07-25, PCE and TCE were below the minimum GPLs in the soil samples (**Table 3**).

5.3.2 Soil Vapor Levels

Soil vapor investigations were performed at the 48th & IS site to evaluate the following:

- The potential for soil vapors to act as a continuing source of groundwater impact; and
- To evaluate the potential for soil vapors to impact indoor air.

PCE and TCE were the two VOCs evaluated.

5.3.2.1 Vapor Intrusion

In order to identify the constituents that may pose a VI risk to workers at Arcadia Towne Center (includes Sandy's Cleaners), residents to the west of southwest of Sandy's Cleaners, and workers/students at Arcadia High School, the maximum detected concentrations for soil gas were compared to the USEPA residential screening criteria assuming a Hazard Index [HI] of 1 and Target Cancer Risk [TCR] 1E-06. For soil gas, concentrations of volatiles were compared to USEPA VISLs for sub-slab and exterior soil gas that were calculated using the USEPA VISL calculator (USEPA, 2018a) using default exposure parameters for residential exposure (USEPA, 2014b). The use of residential screening levels is a conservative approach for workers at Arcadia Towne Center and workers/students at Arcadia High School because residential receptors are assumed to be exposed for 24 hours per day, 350 days a year for 26 years. Adult employees are not present 24 hours a day and are on-site less than 350 days per year and 26 years. However, for the purposes of this RI, the concentrations were initially compared to the residential VISLs as follows:

- PCE residential VISL = 367 ug/m^3; and
- TCE residential VISL = 16 ug/m^3.

The residential VISLs are also protective of workers/students. The residential VISLs were determined by dividing the USEPA RIARSL of 11 µg/m^3 for PCE and 0.48 µg/m^3 for TCE by a default attenuation factor of 0.03. The VISLs are considered screening levels and are only compared to soil vapor samples collected less than 10 ft bgs. The attenuation factor is typically less than 0.03 and can be determined using IAQ sampling (**see Section 3.3**) or a model such as the J-E Model (Johnson, P.C., and Ettinger, R.A., 1991).

5.3.2.1.1 Residential Areas

The residential areas are identified as the area north of Indian School Road and west of Arcadia Towne Center and the area west of Arcadia High School. Comprehensive soil gas sampling was performed in these areas during 2012 and 2013. A total of 62 sub-slab soil vapor samples were collected, including SG-09A through SG-12A (**Table 4, Figures 14 and 15**).

PCE concentrations ranged from <20 µg/m^3 (multiple samples) to 50,000 µg/m^3 (SG-400-7'). PCE exceeded the VISL of 367 µg/m^3 in 22 of the 62 samples collected during 2012 and 2013. However, IAQ samples were collected from 14 residences in 2013. As shown in **Table 7** and on **Figures 16 and 17**, PCE concentrations

did not exceed the RSL of 11 µg/m^3 in the IAQ samples. The maximum PCE concentration detected in an IAQ sample was 11 µg/m^3 in sample 48-036, which is located near SG-04A. The June 4, 2012 PCE concentration reported for SG-04A was 14,000 µg/m^3. Based on this, the sub-slab attenuation factor is 0.0008. IAQ samples collected at 48-039 and 48-041 were reported with 5.0 and 4.1 µg/m^3 of PCE, respectively. These samples were collected near SG-400-7′, which was reported with the maximum PCE concentration of 50,000 µg/m^3, and SG-04A. The attenuation factor at SG-400-7′ is 0.0001 and at SG-04A is 0.0003. Using the TO-15 result for IAQ sample 48-039 (2.6 µg/m^3) results in an attenuation factor of 0.000052. Therefore, the attenuation factors range from 0.000052 to 0.0008 at the location of the maximum PCE soil vapor concentrations. Based on the data, the maximum PCE concentration of 50,000 ug/m^3 is protective of residential use.

TCE concentrations ranged from <2.14 µg/m^3 (SG-10A) to 84 µg/m^3 (A-23). TCE exceeded the VISL of 16 µg/m^3 in two of the 62 samples. The on-site TO-14 method does not differentiate between TCE, chloroform and BDCME. According to Blayne Hartman, PhD, the TCE values from the on-site TO-14 analysis are possibly biased high due to interferences from chloroform and BDCME. These compounds are likely associated with drinking water chemicals, potentially released to the subsurface as part of landscape irrigation activities, and not associated with the past and current dry-cleaning operations (HEG, 2014). As discussed in Section 3.3, IAQ samples confirmed that the TCE detected in the soil vapor does not represent a threat to indoor air.

5.3.2.1.2 Arcadia Towne Center

IAQ sampling has not been performed at Arcadia Towne Center. Therefore, the most recent sub-slab soil vapor data were compared to the VISLs. There are nine sub-slab SVMWs located at Arcadia Towne Center identified as SG-01A, SG-02A, SG-03A, SG-13A, SG-14A, SG-15A, SG-16A, SG-17A, and SG-18A. Sub-slab soil vapor samples are also collected from SSVE-01, SSVE-02, SSVE-03, SSVE-04, SSVE-05, SSVE-06, and SSVE-07, for an additional seven samples. Six TVMBs were sampled along the northern side of the property (A-10 to A-13) north of the Safeway building and along the eastern side of the property near North 48th Street (A-16 and A-17) in 2013. SG-01A through SG-03A and SG-15A through SG-18A were last sampled in June 2012. The other points were last sampled in November 2015.

PCE concentrations ranged from <20 ug/m^3 (A-11, A-12, A-16, and A-17) to 34,000 ug/m^3 (SG-03A on June 5, 2012). PCE exceeded the VISL of 367 ug/m^3 in 12 of the 22 sub-slab samples. However, as discussed in Section 3.3.1, IAQ samples 48-026, 48-027, 48-039, and 48-041, which were detected with PCE below the RIARSL below 11 µg/m^3, indicate that the maximum soil gas concentration of 34,000 µg/m^3 in SVMW SG-03A is protective of residential use at Arcadia Towne Center, which is also protective of commercial worker use.

TCE concentrations ranged from <2.14 ug/m^3 (SSVE-05-8′, SSVE-06-8′, and SSVE-07-8′) to 1,160 ug/m^3 (SG-14A). TCE exceeded the VISL of 16 ug/m^3 in five of the 22 sub-slab samples. However, as discussed in Section 3.3, based on IAQ samples collected in the area, the maximum TCE concentrations detected in the soil vapor samples are protective of residential use, which is also protective of commercial worker use.

5.3.2.2 Groundwater

The ADEQ GPL spreadsheet was used to calculate vadose zone soil vapor concentrations at the water table that are in equilibrium with the groundwater concentration (ADEQ, 2008). The soil vapor concentrations corresponding to the AWQSs of 5.0 µg/L for PCE and TCE are 3,770 and 2,110 µg/m^3, respectively, based on a sandy loam soil. The deep soil vapor sample results were used to evaluate the threat to groundwater. Depth-to-water measured at Sandy's Cleaners on November 30, 2018 was approximately 39 ft bgs. As

shown in **Table 5**, PCE concentrations exceeding 3,770 µg/m^3 were reported in one of the nine samples collected at 15 ft bgs, 28,000 µg/m^3 in sample SG-03C. Therefore, in the unlikely event groundwater rises to a depth of 15 ft bgs, groundwater would become impacted with PCE above 5.0 µg/L. As with VI where indoor air samples are used to confirm the VI risk from soil vapor concentrations, groundwater analytical data is used to confirm if elevated soil vapor concentrations represent a continuing source to groundwater. PCE has not been detected in Sandy's Cleaners well ECP-01 since October 2013. Therefore, residual soil vapor in the vicinity of ECP-01 is not impacting groundwater. However, SMW-07 is located near SG-03C. Groundwater samples collected from SMW-07 on August 28, 2016 and December 4, 2018 were reported with 10 and 7.6 µg/L of PCE, respectively, which are slightly above the AWQS of 5.0 µg/L. Based on the low concentrations of PCE in the groundwater samples collected from SMW-07, the residual PCE soil vapor at SG-03C does not appear to be a continuing source of the PCE recently detected in SMW-07 and in downgradient well SMW-03-60. This is possibly residual dissolved phase PCE. This conclusion will be confirmed by future groundwater sampling.

TCE has not been detected in groundwater above 5.0 µg/L since October 2011 (5.5 µg/L in sample SMW-03-60 [**Table 8**]). Therefore, the residual TCE soil vapor concentrations are protective of groundwater.

5.3.3 Indoor Air Screening Levels

Due to the elevated soil vapor concentrations discussed in Sections 3.2 and 5.3.2.1, ADEQ performed an IAQ sampling event in 2013 to evaluate the quality of indoor air in residences overlying the PCE groundwater plume and at Arcadia High School. The maximum detected concentrations for indoor air were compared to the USEPA residential screening criteria assuming an HI of 1 and TCR 1E-06. For indoor air, concentrations of volatiles were compared to the USEPA regional IARSLs for air exposure (USEPA, 2018b). IARSLs were used to evaluate the data. However, the use of RIARSLs for Arcadia High School is a conservative approach because residential receptors are assumed to be exposed for 24 hours per day, 350 days a year for 26 years. At Arcadia High School, school age children and adult employees are not present 24 hours a day and are on-site less than 350 days per year and 26 years. Therefore, industrial air IARSLs (IIASRLs) are often used to evaluate schools.

The State of Arizona utilizes USEPA IARSLs as the applicable indoor air screening values per the following:

- USEPA IIARSLs (USEPA, 2018b)
  - PCE = 47 ug/m^3
  - TCE = 3.0 ug/m^3
- USEPA RIARSLs (USEPA, 2018b)
  - PCE = 11 ug/m^3
  - TCE = 0.48 ug/m^3.

It should be noted that schools are commonly regulated using the IIARSLs since the occupants exposed for the longest periods, and hence at highest risk, are the faculty and other workers, not students. Residences are regulated using the RIARSLs. However, if concentrations are below the RIARSLs, then the concentrations are protective of commercial/industrial use. Therefore, the data was compared to the RIARSLs.

5.3.3.1 PCE

The following subsections summarize the results of the PCE IAQ sampling.

5.3.3.1.1 Residential Areas

The residential areas are identified as the area north of Indian School Road and west of Arcadia Towne Center/Sandy's Cleaners; and, the neighborhood located west of Arcadia High School. As discussed in Sections 3.3.1 and 3.3.2, a total of 13 IAQ samples were collected from these areas. No residences had TO-14 or TO-15 detections of PCE above the RIARSL of 11 µg/m^3. As discussed in Section 3.3.1, IAQ samples 48-026, 48-027, 48-039, and 48-041 collected west of Sandy's Cleaners can also be used to evaluate the VI risk to workers at Arcadia Towne Center. Therefore, PCE in the subsurface does not appear to pose a VI risk to residents and commercial workers at the 48 & IS site.

5.3.3.1.2 Arcadia High School

As discussed in Section 3.3.3, a total of 30 classrooms in Arcadia High School were sampled by TO-14 in August 2013. Two indoor air canister confirmation samples were also collected and analyzed by USEPA Method TO-15. PCE values were not detected at concentrations above the IIARSL for commercial buildings of 47 µg/m^3 in either the TO-14 or TO-15 data. Five of the 30 samples were reported with PCE above the RIASRL of 11 µg/m^3. As discussed in Section 3.3, the PCE concentrations above the RIASRL of 11 µg/m^3 did not originate from the subsurface soil vapor. Therefore, PCE in the subsurface does not appear to pose a VI risk to students and workers at Arcadia High School.

5.3.3.2 TCE

Indoor air detections of TCE by the on-site method were observed in the vast majority of samples. Values predominantly ranged from 2 µg/m^3 to 10 µg/m^3 which exceeded the TCE indoor air residential RSL of 0.48 µg/m^3. However, the off-site confirmation TO-15 samples had consistently lower TCE levels, below the screening level. The likely reason for this discrepancy is that the on-site TO-14 method could not differentiate between TCE, chloroform and bromodichloromethane. These latter two compounds are byproducts of water chlorination (USEPA, 2014a) and are present in any structure with chlorinated tap-water. Hence, the TCE values from the on-site TO-14 analysis were biased high by up to 10 µg/m^3 due to the interferences from these compounds (HEG, 2014). As discussed in Section 3.3, TCE in the soil vapor does not appear to pose a VI risk to faculty, students, workers, or residents at the 48th & IS site.

5.3.4 Groundwater Standards

AWQS are State of Arizona maximum levels for COCs that apply to groundwater in aquifers designated for drinking water use. The following AWQS are applicable:

- PCE = 5 µg/L;
- TCE = 5 µg/L; and
- "cis-1,2- dichloroethene (cis-1,2-DCE) = 70 µg/L.

PCE has been detected above 5.0 µg/L in multiple groundwater samples that occurred between 1992 and 2018 and is considered the COC in groundwater. TCE and c-1,2-DCE have also been historically detected above their respective AWQSs (**Table 8**). TCE was detected above the AWQS of 5.0 µg/L in only two samples collected from the 48th & IS wells since 1992; sample SMW-01 collected on April 21, 1992 (6.0 µg/L) and sample SMW-03-60-59.5' on October 19, 2011 (5.5 µg/L). TCE has not been detected in a 48th & IS site groundwater sample since April 21, 2012 (3.1 µg/L in sample SMW-03-60-59.5'). C-1,2-DCE was detected above the AWQS in only five samples collected from well SMW-03-60 on October 22, 2013 and May 19,

2014, ranging from 74 µg/L to 120 µg/L. C-1,2-DCE has not been detected in a 48th & IS site groundwater sample since May 4, 2015 (11 µg/L in sample SMW-03-60-59.6').

5.4 Potential Receptors

Prior to performing the exposure pathway evaluation, potential receptors to 48th & IS site COC were identified. The boundary (**Figure 2**) includes an area encompassing residential and commercial/industrial settings. Potential receptors are identified as current and future residential individuals, commercial/industrial workers, and construction workers occupying areas within the boundary.

Residential individuals include children and adults occupying residential locations within the boundary. A residential location is typically one where someone is present for an average of more than eight hours a day. It includes, but is not limited to, schools; dwellings; residences; correctional facilities; any other human activity areas of repeated, frequent use and/or chronic duration; and locations that typically house sensitive populations such as grade schools, hospitals, childcare centers, and nursing homes. As previously discussed, the PCE and TCE in the subsurface do not appear to pose a risk to residents at the 48th & IS site.

Commercial/industrial workers include adults working at the businesses within the Arcadia Towne Center, which includes Sandy's Cleaners. As previously discussed, the PCE and TCE in the subsurface do not appear to pose a risk to residential use at Arcadia Towne Center, which also is protective of commercial/industrial use.

Construction workers include adults who are performing construction work for a substantial period (e.g., months to years), resulting in sub-chronic exposures for only that period equal to the duration of the project.

One category of sensitive receptors, schools, is located near the estimated PCE groundwater plume boundary. This is Arcadia High School and Tutor Time Daycare Center. As shown on **Figure 2**, the estimated southern extent of the PCE groundwater plume boundary crosses the landscaped northwest corner of the Arcadia High School property, where well SMW-03-60 is located. However, the school buildings and majority of the school property are located to the south and outside the plume boundary. The groundwater plume is situated to the south of Tutor Time Daycare Center. As previously discussed, soil vapor and IAQ sampling indicates that the PCE and TCE in the subsurface do not appear to pose a risk to sensitive receptors.

5.5 Ecological Risk Evaluation

As defined, an ecological receptor is "a specific ecological community, population, or individual organism, protected by federal or state laws and regulations, or a local population that provides an important natural or economic resource, function, and value" (A.A.C. R18-7-201). Wildlife or vegetation that is present in the study area is likely non-native to the area, is habituated to human presence, or has been maintained in a horticultural setting. Areas and land use within the boundary (**Figure 2**) do not contain suitable habitat for the five federally listed species. Due to the presence of COCs at depth, the urban character of the site, and lack of ecological receptors within the boundary, an evaluation of ecological receptors is not warranted.

5.6 Risk Evaluation

An exposure or migration pathway is the route by which the potential hazard (identified COCs) migrates from the source (soil vapor, soil, surface water, or groundwater) to a receptor. Pathways can include:

- Inhalation of impacted vapors;

- Dermal contact with impacted soil, groundwater, or surface water; or
- Ingestion of impacted soil, groundwater, or surface water.

An exposure pathway is complete when all four of these components are present: 1) a source and mechanism of chemical release; 2) a retention or transport medium (pathway); 3) an exposure point (i.e., a setting where potential human contact with the chemical-affected medium or media occurs); and 4) a route of exposure at the exposure point (e.g., ingestion, dermal, inhalation).

The land use at the Arcadia Towne Center is commercial/industrial, and at the broader site is commercial/industrial, residential, and public open space. This exposure pathway evaluation, therefore, assesses potential pathways by which long-term commercial workers, short-term construction workers, visitors to the site and residents may be exposed to the 48th & IS site COC, PCE. This section evaluates whether the pathways are currently complete and if so, assesses the potential risk to receptors based on the concentrations of site COCs.

The Exposure Pathway Model for the Site is provided as **Figure 19.** The exposure pathway for residential individuals, commercial/industrial workers, and construction workers was determined to be incomplete.

5.6.1 Conceptual Site Model

The impacts present at the 48th & IS site are known to be the direct result of releases of dry cleaning solvents, primarily PCE, at the Former One-Hour Martinizing and current Sandy's Cleaners. **Figures 20** and **21** depict pre- and post-SVE conceptual site models for 48th & IS site, respectively. These figures are intended to convey how the impacts originated beneath the dry cleaning facilities, traveled through the vadose zone, and ultimately how the resultant groundwater plume has migrated to its current observed extent.

Figures 20 and **21** suggest vadose zone impacts beneath the source of the COC releases. These are currently depicted in the conceptual site model; however, as shown on **Figure 21**, these impacts have been successfully remediated by SVE implementation as an ERA. The ERA activities are detailed in **Section 4.0** of this report.

Based on the assessment work completed, PCE from the dry cleaning facilities, primarily in the vapor-phase, traveled vertically until encountering groundwater at a depth of approximately 15-20 ft bgs. Once in contact with groundwater, the vapor-phase PCE dissolved into the groundwater and migrated in a southwesterly direction under the pumping influence of SRP well 17.9E-7.5N (**Figure 1**), reaching the western edge of the 48th & IS site (approximately 3,500 ft). As indicated by PCE not being present in SMW-03-60 until 2007, the PCE plume was initially located south of the location of SMW-03 along a line that connects SMW-01 and SRP Well 17.9E-7.5N. As shown in **Figure 2**, the PCE plume is relatively thin and, with distance, becomes deeper under the water table and is at a steeper gradient than the water table. SRP Well 17.9E-7.5N was taken off-line in 1990 and has only been operated periodically for maintenance and to collect water samples. The source of the PCE impact was removed by the ERA SVE system that was operated from 2006-2011, resulting in PCE concentrations being below 5.0 µg/L in groundwater samples collected from source area wells SMW-01 and ECP-01 since 2010 and 2013, respectively. As shown in **Table 8** and **Appendix B**, PCE concentrations in SMW-03-60 increased above 5.0 µg/L in 2007 and increased to a maximum concentration of 1,400 µg/L by October 2011. This is due to the PCE plume shifting north and returning to the natural, non-pumping flow gradient for the area. Due to removal of the source and natural attenuation, PCE concentrations gradually declined in SMW-03-60 to non-detect by October 2013. The recent slight rebound

of PCE concentrations in samples collected from SMW-03-60 is possibly due to migration of residual dissolved PCE from upgradient of SMW-03-60. This also explains the recent increases in PCE concentrations observed in SMW-07 and BMW-05B. The PCE plume is currently depicted on **Figures 2** and **5** as separate from the 40th & OSB PCE plume.

6.0 CURRENT AND FUTURE LAND AND WATER USE

This RI includes the collection of information regarding current and reasonably foreseeable uses of land and/or waters of the state that have been or could be impacted by the release of site COCs, and projected time-frames for future changes in those uses. Reasonably foreseeable future land uses are those that are likely to occur at the site. Reasonably foreseeable future water uses are those that are likely to occur within 100 years unless a longer period is shown to be reasonable based on site-specific circumstances.

ADEQ prepared a standardized questionnaire requesting specific information regarding property, on-site wells, water use, and waste streams, and mailed to COP and SRP. Responses were received from COP and SRP. Additional information was obtained from publicly available COP, SRP, and ADWR databases and/or documents. A combined Land and Water Use Report for the 48th & IS and 40th & OSB sites is included in **Appendix K** (Wood, 2019c).

Evaluation of land and water uses is being considered as part of the RI Report and will be reflected in the Proposed Remedial Objectives (RO) Report (see Section 7.3).

6.1 Current Land Use

The 48th & IS site is located in the COP Camelback East Village (CEV). Current zoning districts within the 48th & IS site are identified below and are shown on **Figure 4** in **Appendix K**.

48th & Indian School Site

Zoning District	Description	Percent
C-1	Commercial – Neighborhood Retail	4.16
C-2	Commercial – Intermediate Commercial	1.31
C-O	Commercial Office – Restricted Commercial (CO prior to 1986)	6.06
PAD-9	Planned Area Development	21.37
R-4	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 29 to 30.45 or 34.8 with bonus)	1.09
R-5	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 43.5 to 45.68 or 52.2 with bonus)	7.66
R-O	Residential Office – Restricted Commercial	0.25
R1-10	Single Family Residence (Density range of 3 to 3.5 or 4.5 with bonus)	11.44
R1-6	Single Family Residence (Density range of 5 to 5.5 or 6.5 with bonus)	46.67

The COP identified the following land uses in the vicinity of the 48th & IS site; commercial, retail, office, multi-family, single family, parking, and school (Arcadia High School).

6.2 Future Land Use

The CEV Planning Coordinator and CEV Planning Committee meet regularly to accept and review requests for zoning changes within the CEV. The COP response to their questionnaire indicated there are no current

foreseeable plans to alter current zoning districts in the Site vicinity. Property owners can file to change the zoning designation of their property. Requests for zoning changes must go through a public hearing and be approved by the City Council prior to finalization.

6.3 Current Water Use

The 48th & IS site lies within the Phoenix AMA (**Appendix K** – Figure 5) (ADWR, 2014). The Phoenix AMA was created by the Arizona Groundwater Management Code passed in 1980 and covers approximately 5,646 square miles in central Arizona. All groundwater withdrawn from any AMA must occur under a groundwater right or permit, unless groundwater is being withdrawn from an exempt well. An exempt well is a well with a maximum pumping capacity of 35 gallons per minute (gpm). Exempt wells may be used to withdraw groundwater only for non-irrigation purposes and are generally used for domestic purposes. All exempt wells must be registered with the ADWR. Exempt well owners are not required to report their annual pumpage volumes to ADWR. Non-exempt wells have a pumping capacity greater than 35 gpm and are associated with one of the following types of rights or permits: Grandfathered rights, service area rights, and withdrawal permits. Non-exempt well owners must report their annual pumpage volumes to ADWR.

6.3.1 Non-Exempt Wells

According to ADWR records, there are eight non-exempt withdrawal wells located within 1-mile of the 48th & IS site of which seven are owned and operated by SRP (**Table 4; Appendix K** – Figure 6) and one is owned by Maricopa County. According to ADWR records, the well owned by Maricopa County was used for de-watering purposes. The COP and SRP have service area rights within the area of the 48th & IS site; however, only SRP is currently pumping groundwater in the area.

6.3.1.1 SRP

As a water supplier, SRP delivers nearly a million acre-feet of water to the Phoenix area each year. In normal runoff years, most of the water is supplied from surface water on the Salt and Verde Watersheds. However, in more dry years, more groundwater must be pumped to supplement the surface water supply. During extended periods of low run off, groundwater can account for almost one-third of the total SRP water supply.

Typically, groundwater comprises approximately 15% of the total water supplied by SRP to municipal treatment plants. The groundwater contribution varies seasonally with the highest contribution occurring March through August.

SRP operates and maintains seven irrigation wells within one mile of the PCE plume boundary of the 48th & IS site. The most recent PCE concentrations detected in these wells is as follows:

SRP Well Number	ADWR 55 Registration Number	Approximate distance from Sites	Intersection (Local Area)	Most Recent PCE Concentration (µg/L)
17.9E-7.5N	55-617857	0.51 miles southwest of 48th & IS site	40th/Osborn	1.6 (2016)
18E-7N	55-617849	0.93 miles southwest of 48th & IS site	40th/Thomas	ND
18E-8.8N	55-617825	0.93 miles to the northwest of 48th & IS site	40th/Coolidge	ND

SRP Well Number	ADWR 55 Registration Number	Approximate distance from Sites	Intersection (Local Area)	Most Recent PCE Concentration (µg/L)
18.5E-7N	55-607712	0.73 miles south of 48th & IS site	43rd/Thomas	ND
18.6E-7.6N	55-202398	0.32 miles southeast of 48th & IS site	44th/Osborn	ND
19E-7.6N	55-608433	0.3 miles southeast of 48th & IS site	48th/Whitton	ND
19E-8.1N	55-607748	0.11 miles east of 48th & IS site	48th/Indian School	ND

Notes:

1. Distance is presented as shortest distance to plume boundary presented in **Appendix K** - Figure 1.
2. Bolded value indicates concentration detected above the Arizona Department of Environmental Quality Aquifer Water Quality Standard of 5.0 µg/L.
3. Data obtained from SRP via questionnaire (**Appendix K -** Attachment A) and SRP questionnaire provided in the 24h Street and Grand Canal Site Land and Water Use Study (H+A, 2018).
4. ND – not detected above the laboratory reporting limit.
5. µg/L – microgram per liter.
6. PCE - tetrachloroethene

As indicated above, no SRP wells near the 48th & IS site had recent PCE concentrations above the AWQS of 5.0 µg/L. However, samples collected from SRP well 17.9E-7.5N has been reported with PCE concentrations in excess of the AWQS of 5.0 µg/L at a maximum concentration of 210 µg/L in 1998 (**Appendix K** - Section 1.5). Groundwater pumpage at these wells has been intermittent in the recent past, but the wells can be activated at any time.

6.3.1.2 City of Phoenix

The COP relies on four primary water supply sources: SRP, the Central Arizona Project (CAP) canal, groundwater pumped from COP wells, and reclaimed water. As indicated in the COP questionnaire response (**Appendix K** - Attachment A), no active groundwater pumping by the COP occurs in or near the 48th & IS site.

6.3.2 Exempt Wells

ADWR records indicate that there are three exempt withdrawal wells located within one mile of the 48th & IS site. Each of these wells are permitted by ADWR for domestic irrigation use (**Table 4**; **Appendix K** – Figure 6). Exempt wells refer to domestic wells with a capacity of less than 35 gpm and this withdrawal is not a grandfathered right according to A.R.S. § 45-454. According to ADWR records, these wells are currently not being pumped.

6.4 Future Water Use

6.4.1 Salt River Project

Although recent use of the irrigation wells in and adjacent to the Site has been intermittent, SRP has no plans to eliminate any of these wells from their system. Based on demand analysis, SRP has indicated it will continue to need the wells in the area to remain operational, especially during dry years.

SRP anticipates all its properties in the vicinity of ECP WQARF Area will remain in use over the next 100 years. Additionally, SRP anticipates that these wells will transition from irrigation to municipal service

(potable supply) within the next 100 years. According to the questionnaire response, SRP does not plan on installing any new wells at the 48th & IS site; however, this could change pending COP water needs.

6.4.2 City of Phoenix

There are several factors which may impact the available COP water supply including:

- Cyclical drought;
- Increasing demands in the Upper Colorado River Basin States (Utah, Colorado, Wyoming, and New Mexico) affecting Arizona's supply of Colorado River water;
- The availability of water supplies from the Arizona Water Banking Authority to the CAP to offset shortages;
- Climate variability impacts on long-term flows, reservoir storage and deliveries by SRP and CAP;
- The probability of low reservoir conditions occurring in both watersheds simultaneously;
- State legal, institutional, or policy changes impacting surface water availability;
- The availability and volume of groundwater supplies without aquifer replenishment; and
- Impacts of increased groundwater pumping in the SRP watershed on river flow and reservoir storage.

If Colorado River flow should decline, the allotment of CAP water for the COP and surface water supplies from SRP may be reduced if reservoir levels drop substantially and groundwater pumping cannot compensate for the lack of surface water availability. As a buffer to potential surface water supply reductions, the COP has been recharging to underground storage or banking unused CAP allotments for future use (**Appendix K** - Figure 8). However, high increases in consumption coupled with severe reductions in surface water supplies could deplete these reserves by 2020 (**Appendix K** - Figure 9).

Since local groundwater is an alternate water source for COP, planning is ongoing for the expansion of well capacity within the service area or the development of new service area wells (**Appendix K** - Attachment A). If the volume of water supplied by SRP and/or CAP is reduced, the COP may supplement water supplies with groundwater pumped from new production wells located in the vicinity of the site.

7.0 CONCLUSIONS

The 48th & IS site has historically contained dry cleaning facilities, service stations, and printing shops, with some of the dry cleaners operating since 1962. In 1989, ADEQ performed soil gas sampling at several facilities within the ECP study area, including facilities within the 48th & IS site. After investigations, the source area of the PCE was determined to be dry cleaning facilities that operated at the northwest corner of 48th Street and Indian School Road. The facilities were identified as One Hour Martinizing (1966-1987) and Sandy's Cleaners (1987-present). The current address of Sandy's Cleaners is 4730 East Indian School Road.

7.1 Vadose Zone

Historical site characterization associated with the preliminary investigations, ERA, and RI have demonstrated that the vadose zone was impacted by vapor-phase PCE at the site of Sandy's Cleaners. However, the vadose zone is considered to be fully characterized. Soil vapor monitoring conducted through

2015 using a network of dedicated SVMWs, TSVBs, and SVE wells have provided requisite delineation of the PCE vadose zone impacts. The investigations have defined both the lateral and vertical extent of the impacts, with no vadose zone characterization data gaps noted. The PCE that impacted the groundwater migrated primarily in the vapor-phase through the vadose zone, impacting the shallow groundwater. The PCE plume then migrated downgradient under the influence of downgradient pumping wells, becoming deeper with distance from the source. Based on the non-detectable PCE concentrations in post-SVE groundwater samples collected from source area wells SMW-01, ECP-01, and SMW-04, the nearly six years of SVE remediation effectively decreased soil vapor concentrations to levels that no longer represent a continuing source of groundwater contamination. The residual VOC concentrations in soil vapor at the site do not appear to pose a risk to residents or commercial workers at the site.

7.2 Groundwater

PCE, TCE, c-1,2-DCE, and chloroform are the only VOCs that have been detected in groundwater samples collected from the 48th & IS site wells. As shown in **Table 8**, PCE has been consistently detected above the AWQS in groundwater samples collected from monitoring wells and soil borings at the 48th & IS site. Therefore, PCE is identified as a COC in the groundwater. PCE was detected at a maximum concentration of 6,200 µg/L in the March 13, 1997 sample collected from source area well SMW-01 (PCE concentration versus time graph in **Appendix B**). Due to ERA SVE and natural attenuation, PCE has not been detected (detection limit below AWQS) in samples collected from SMW-01 since April 12, 2011. As of the December 2018 groundwater sampling event, the maximum PCE concentration reported was 31 µg/L in sample SMW-03-60-42′. As shown in **Table 8** and the PCE concentration versus time graph in **Appendix B**, PCE concentrations have decreased in samples from SMW-03-60 from a maximum of 1,400 µg/L on October 19, 2011. Based on the results of the December 2018 groundwater monitoring event, the furthest downgradient sample detected with PCE above 5.0 µg/L is sample BMW-05B-111.5′ (7.1 µg/L). Samples collected from downgradient sentinel well BMW-12B were reported with PCE concentration below 5.0 µg/L, ranging from 3.0 µg/L to 3.5 µg/L. Therefore, the extent of PCE has been defined to the AWQS (5.0 µg/L) at the 48th & IS site. The December 2018 extents of the 48th & IS site PCE plume are shown on **Figures 2** and **5**.

The data indicates that the 48th & IS PCE plume likely migrated under the pumping influence of SRP Well 17.9E-7.5N. As indicated by the detection of PCE above 5.0 µg/L in the December 2015 sample collected from well BMW-05B (7.1 µg/L at 111.7 ft bgs), it is expected that the extent of the 48th & IS groundwater PCE plume may continue to migrate and possibly merge with the 40th & OSB PCE plume. However, as this occurs, PCE concentrations in upgradient wells SMW-07 and SMW-03-60 should decrease. Plume expansion may also be accelerated in future years if SRP and COP further develop their groundwater extraction well network and pumping capacities in the region.

TCE and c-1,2-DCE have also been historically detected above their respective AWQSs of 5.0 and 70 µg/L (**Table 4**). TCE was detected above the AWQS of 5.0 µg/L in only two samples collected from the 48th & IS wells since 1992; sample SMW-01 collected on April 21, 1992 (6.0 µg/L) and sample SMW-03-60-59.5′ on October 19, 2011 (5.5 µg/L). TCE has not been detected in a 48th & IS site groundwater sample since April 21, 2012 (3.1 µg/L in sample SMW-03-60-59.5′). C-1,2-DCE was detected above the AWQS in only five samples collected from well SMW-03-60 on October 22, 2013 and May 19, 2014, ranging from 74 µg/L to 120 µg/L. C-1,2-DCE has not been detected in a 48th & IS site groundwater sample since May 4, 2015 (11 µg/L in sample SMW-03-60-59.6′). The minimal presence of dissolved TCE and c-1,2-DCE in groundwater samples indicate that PCE degradation by natural reductive dechlorination is not a factor at the 48th & IS site. Therefore, TCE and c-1,2-DCE have been remediated below AWQSs.

7.3 Final RI Document

This Final RI Report includes two documents that were related to the public comment period for the draft version of the report. The Responsiveness Summary Report that discusses the public comments received is included in Appendix L. The Final Remedial Objectives (RO) Report is presented in Appendix M.

8.0 DATA GAPS

Based on review of the available data, there are no identified data gaps. The extents of the soil vapor and groundwater PCE plumes have been defined to regulatory and/or screening levels. Future sampling of BMW-12B will be used to monitor the migration of PCE into the 40th & OSB site (**Figure 1**).

9.0 LIMITATIONS

This RI was performed according to an agreed upon scope of work and does not represent an exhaustive investigation of all potential environmental impacts at the 48th & IS. The findings of this report, to the best of our knowledge, are valid as of the date the work was performed. However, changes in the conditions of a site can occur with the passage of time, whether due to natural processes or the works of man on the 48th & IS site or adjacent properties. In addition, changes in applicable or appropriate regulations and standards may occur, whether they result from legislation, from the broadening of knowledge, or from other reasons. The work was performed using the degree of care and skill ordinarily exercised under similar circumstances by environmental consultants practicing in this or similar localities. No other warranty or guarantee, expressed or implied, is made as to the findings, opinions, conclusions, and recommendations included in this report.

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TABLES

TABLE 1
WELL CONSTRUCTION DATA
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

ECP SUB AREA	WELL ID	ADWR REGISTRATION NUMBER	DATE COMPLETED	DRILLING METHOD	BORING DIAMETER (INCHES)	BORING DEPTH (FEET BGS)	CASING MATERIAL/ DIAMETER/ SLOT SIZE (INCHES)	PERFORATED INTERNAL (FEET BGS)	SAND PACK INTERVAL (FEET BGS)	FILTER PACK MATERIAL	BENTONITE SEAL (FEET BGS)	TOP OF CASING ELEVATION (1) (FEET ASML)	GROUND SURFACE ELEVATION (1) (FEET ASML)	LOCATION COORDINATES (2)	
														LATITUDE (DEG)	LONGITUDE (DEG)
48	SRP19E-8.1N	617857	6/1/1971	Cable Tool	18	300	Steel / 18 /Louver	82 - 261	NR	NR	NR	NR	NR		
48	ECP-01	587191	8/2/2001	Dual Tube Rotary	11	71.0	PVC / 6 / 0.020	10 - 70	10 - 71	#10-20 Sand	NR	1241.28	1241.53	33.4953	-111.9802
48	ECP-02	587192	7/19/2001	Sonic	8.625	125.0	PVC / 4 / 0.010	85 - 120	80 - 125	#10-20 Sand	NR	1244.49	1244.74	33.7287	-111.9793
48	ECP-03	587193	7/19/2001	Sonic	8.625	55.0	PVC / 4 / 0.010	10 - 50	10 - 55	#10-20 Sand	NR	1244.35	1244.95	33.4954	-111.9793
48	SMW-01	533298	4/1/1992	Hollow Stem Auger	6.25	55.0	PVC / 4 / 0.010	15 - 55	14 - 55	#10-20 Sand	8 - 14	1241.21	1241.82	33.4953	-111.9802
48	SMW-02	535795	7/31/1992	Hollow Stem Auger	6.25	55.0	PVC / 4 / 0.020	15 - 55	13 - 55	#10-20 Sand	10 - 13	1248.61	1248.88	33.4961	-111.9782
48	SMW-03-060*	543424	5/9/1994	Hollow Stem Auger	8.25	140.0	PVC / 2 / 0.020	13 - 60	11 - 65	#10-20 Sand	9 - 11	1236.71	1237.47	33.6779	-111.9822
48	SMW-03-138*	543424	5/9/1994	Hollow Stem Auger	8.25	140.0	PVC / 2 / 0.020	100 - 140	92 - 140	#10-20 Sand	65 - 92	1236.66	1237.47	33.6779	-111.9822
48	SMW-04	907363	12/11/2007	Sonic	8.625	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	8/12 Sand	15 - 17	1238.40	1238.72	33.4950	-111.9809
48	SMW-05	908628	3/18/2008	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	18 - 60	8-12 Sand	15 -18	1239.50	1239.76	33.4953	-111.9809
48	SMW-06	914016	4/10/2012	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	8 - 12 Sand	15 - 17	1227.84	1228.12	33.4932	-111.9831
48	SMW-07	913979	1/12/2012	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	#10-20 Sand	15 -17	1240.43	1240.75	33.4950	-111.9802
48	SMW-08	913980	1/13/2012	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	#10-20 Sand	15 - 17	1243.65	1244.02	33.4956	-111.9801
48	BMW-05A	916202	1/9/2014	Sonic	8.625 6.0	66.0 67.0	PVC / 4 / 0.020	29.6 - 64.6	26.3 - 66.0	#10-20 Sand	23.0 - 26.3	1212.81	1213.29	33.4925	-111.9895
48	BMW-05B	916203	1/10/2014	Sonic	8.625 6.0	115.0 116.0	PVC / 4 / 0.020	75.1 - 115.1	68.8 - 115.5	#10-20 Sand	63.2 - 68.8	1212.87	1213.41	33.4925	-111.9895
48	BMW-06A	916204	1/9/2014	Sonic	8.625 6.0	61.0 62.5	PVC / 4 / 0.020	30.3 - 60.3	27.0 - 60.5	#10-20 Sand	23.0 - 27.0	1214.27	1214.73	33.4908	-111.9865
48	BMW-06B	916205	1/10/2014	Sonic	8.625	120	PVC / 4 / 0.020	75.4 - 110.4	72.0 - 111.0	#10-20 Sand	68.0 - 72.0 111.0 - 115.0	1214.50	1215.09	33.4908	-111.9865
48	SMW-11	918939	5/19/2016	Sonic	8.625	165.00	PVC / 4 / 0.020	50.2 - 70.2	48 - 71	#10-20 Sand	42.8 - 48	1221.38	1221.99	33.4929	-111.9856
48	SMW-12	919290	5/27/2016	Sonic	8.625	180.00	PVC / 4 / 0.020	144.9 - 164.9	143 - 166	#10-20 Sand	133.5 - 143	1212.19	1212.70	33.4915	-111.9886
48	SMW-16B	921439	3/16/2018	Sonic	8.25 6.125	214.0 216.0	PVC / 4 / 0.020	90.7 - 130.7	87.8 - 131.2	#10-20 Sand	80.2 - 87.8	1240.24	1240.67	33.4950	-111.9802
48	BMW-12B	922019	10/26/2018	Sonic	9.0	185.0	PVC / 4 / 0.020	120.0 - 170.0	118.0 - 172.0	#10-20 Sand	116.0 - 118.0	1209.13	1209.54	33.4746	-111.9904

NOTES:

* wells installed within the same borehole
(1) NAVD88
(2) GRID, NAD83, Arizona Central 202
48 East Cental Phoenix Water Quality Assurance Revolving Fund Site - 48th Street and Indian School Road Site
ADWR Arizona Department of Water Resources
FEET BGS feet below ground surface
FEET AMSL feet above mean sea level
NR Not Reported
Sonic Rotosonic drilling method
SRP Salt River Project

Table 2
Historic Groundwater Elevations
Remedial Investigation Report
48th and Indian School WQARF Site

Well I.D	ADEQ Number	ADWR Number	Date	Measuring Point Elevation (ft. AMSL)	Depth to Groundwater (ft.)	Groundwater Elevation (ft. AMSL)	Change Since Previous (ft.)[1]	Comments
ECP-01	69398	55-587191	3/6/2002	1241.28	22.87	1218.41	--	
			9/27/2007	1241.28	30.62	1210.66	7.75	
			2/12/2013	1241.28	34.42	1206.86	-11.55	
			9/30/2013	1241.28	36.74	1204.54	-2.32	
			5/3/2014	1241.28	35.46	1205.82	1.28	
			11/19/2014	1241.28	33.98	1207.30	1.48	
			3/2/2015	1241.28	34.76	1206.52	-0.78	
			4/29/2015	1241.28	35.64	1205.64	-0.88	
			9/29/2015	1241.28	35.99	1205.29	-0.35	
			8/28/2016	1241.28	37.07	1204.21	-1.43	
			11/30/2018	1241.28	39.70	1201.58	-2.63	MP elevation re-surveyed
ECP-02	66601	55-587192	3/6/2002	1244.49	22.50	1221.99	--	
			03/16/06	1244.49	28.95	1215.54	6.45	
			10/25/06	1244.49	28.21	1216.28	-0.74	
			02/27/07	1244.49	29.23	1215.26	1.02	
			06/22/07	1244.49	31.58	1212.91	2.35	
			09/26/07	1244.49	30.30	1214.19	-1.28	
			04/09/08	1244.49	30.20	1214.29	-0.10	
			10/01/08	1244.49	29.25	1215.24	-0.95	
			06/15/10	1244.49	31.49	1213.00	2.24	
			05/17/11	1244.49	32.22	1212.27	0.73	
			10/19/11	1244.49	32.44	1212.05	0.22	
			04/18/12	1244.49	33.62	1210.87	1.18	
			1/15/2013	1244.49	34.61	1209.88	0.99	
			9/30/2013	1244.49	39.06	1205.43	4.45	
			5/3/2014	1244.49	35.98	1208.51	-3.08	
			11/19/2014	1244.49	34.49	1210.00	-1.49	
			3/2/2015	1244.49	35.03	1209.46	0.54	
			4/29/2015	1244.49	36.12	1208.37	1.09	
			9/29/2015	1244.49	36.56	1207.93	0.44	
			8/28/2016	1244.49	37.63	1206.86	1.51	
			11/30/2018	1244.49	40.30	1204.19	2.67	MP elevation re-surveyed
ECP-03	66604	55-587193	3/6/2002	1244.35	23.29	1221.06	--	
			03/16/06	1244.35	28.84	1215.51	5.55	
			10/25/06	1244.35	28.08	1216.27	-0.76	
			02/27/07	1244.35	29.11	1215.24	1.03	
			06/22/07	1244.35	31.45	1212.90	2.34	
			09/26/07	1244.35	30.16	1214.19	-1.29	
			04/09/08	1244.35	30.07	1214.28	-0.09	
			10/01/08	1244.35	29.12	1215.23	-0.95	
			06/15/10	1244.35	31.33	1213.02	2.21	
			05/17/11	1244.35	32.11	1212.24	0.78	
			10/19/11	1244.35	32.31	1212.04	0.20	
			04/18/12	1244.35	33.49	1210.86	1.18	
			1/15/2013	1244.35	34.54	1209.81	1.05	
			9/30/2013	1244.35	39.14	1205.21	4.60	
			5/3/2014	1244.35	35.85	1208.50	-3.29	
			11/19/2014	1244.35	34.36	1209.99	-1.49	
			3/2/2015	1244.35	35.17	1209.18	0.81	
			4/29/2015	1244.35	36.03	1208.32	0.86	
			9/29/2015	1244.35	36.43	1207.92	0.40	
			8/28/2016	1244.35	37.49	1206.86	1.46	
			11/30/2018	1244.35	40.16	1204.19	2.67	MP elevation re-surveyed
SMW-01	46686	55-533298	04/21/92	1241.21	20.31	1220.90	--	
			05/22/92	1241.21	20.13	1221.08	-0.18	
			07/02/92	1241.21	20.09	1221.12	-0.04	
			08/11/92	1241.21	19.46	1221.75	-0.63	
			01/19/94	1241.21	17.89	1223.32	-1.57	
			12/15/94	1241.21	18.69	1222.52	0.80	
			03/28/96	1241.21	19.88	1221.33	1.19	
			02/20/97	1241.21	19.80	1221.41	-0.08	
			03/10/97	1241.21	20.31	1220.90	0.51	
			04/14/97	1241.21	20.13	1221.08	-0.18	
			05/08/97	1241.21	20.14	1221.07	0.01	
			11/20/97	1241.21	18.61	1222.60	-1.53	
			12/17/97	1241.21	18.80	1222.41	0.19	
			01/07/98	1241.21	18.77	1222.44	-0.03	
			02/05/98	1241.21	19.47	1221.74	0.70	
			03/02/98	1241.21	19.02	1222.19	-0.45	
			03/06/02	1241.21	22.95	1218.26	3.93	
			03/01/06	1241.21	28.39	1212.82	9.37	

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SMW-01	46686	55-533298	10/25/06	1241.21	27.88	1213.33	-0.51	
			02/27/07	1241.21	28.84	1212.37	0.96	
			06/22/07	1241.21	NM	NM	--	
			09/26/07	1241.21	30.03	1211.18	--	
			04/10/08	1241.21	29.71	1211.50	-0.32	
			10/01/08	1241.21	28.91	1212.30	-0.80	
			06/16/10	1241.21	31.13	1210.08	2.22	
			06/02/11	1241.21	31.81	1209.40	0.68	
			10/20/11	1241.21	32.06	1209.15	0.25	
			04/18/12	1241.21	33.22	1207.99	1.16	
			1/15/2013	1241.21	33.94	1207.27	0.72	
			9/30/2013	1241.21	36.25	1204.96	2.31	
			5/3/2014	1241.21	35.54	1205.67	-0.71	
			11/19/2014	1241.21	34.04	1207.17	-1.50	
			3/2/2015	1241.21	34.82	1206.39	0.78	
			4/29/2015	1241.21	35.71	1205.50	0.89	
			9/29/2015	1241.21	36.06	1205.15	0.35	
			8/28/2016	1241.21	37.16	1204.05	1.45	
			11/30/2018	1241.21	NM	NM	NM	MP elevation re-surveyed.
SMW-02	46687	55-535795	08/10/92	1248.61	19.86	1228.75	--	
			01/18/94	1248.61	18.25	1230.36	-1.61	
			02/03/94	1248.61	19.00	1229.61	0.75	
			12/13/94	1248.61	18.86	1229.75	-0.14	
			03/19/96	1248.61	20.07	1228.54	1.21	
			02/20/97	1248.61	20.23	1228.38	0.16	
			03/10/97	1248.61	21.10	1227.51	0.87	
			04/14/97	1248.61	20.58	1228.03	-0.52	
			05/05/97	1248.61	20.29	1228.32	-0.29	
			11/17/97	1248.61	18.31	1230.30	-1.98	
			12/17/97	1248.61	18.59	1230.02	0.28	
			01/07/98	1248.61	18.50	1230.11	-0.09	
			02/02/98	1248.61	19.67	1228.94	1.17	
			03/02/98	1248.61	19.20	1229.41	-0.47	
			03/06/02	1248.61	22.70	1225.91	3.50	
			03/14/06	1248.61	28.31	1220.30	9.11	
			10/25/06	1248.61	27.84	1220.77	-0.47	
			02/27/07	1248.61	29.89	1218.72	2.05	
			06/22/07	1248.61	NM	NM	--	
			09/26/07	1248.61	29.60	1219.01	--	
			04/09/08	1248.61	29.58	1219.03	-0.02	
			10/01/08	1248.61	28.55	1220.06	-1.03	
			06/16/10	1248.61	31.93	1216.68	3.38	
			05/17/11	1248.61	31.59	1217.02	-0.34	
			10/19/11	1248.61	31.73	1216.88	0.14	
			04/18/12	1248.61	33.03	1215.58	1.30	
			1/15/2013	1248.61	34.67	1213.94	1.64	
			9/30/2013	1248.61	44.89	1203.72	10.22	
			5/3/2014	1248.61	35.52	1213.09	-9.37	
			11/19/2014	1248.61	34.14	1214.47	-1.38	
SMW-02	46687	55-535795	3/2/2015	1248.61	34.99	1213.62	0.85	
			4/29/2015	1248.61	35.82	1212.79	0.83	
			9/29/2015	1248.61	36.28	1212.33	0.46	
			8/28/2016	1248.61	37.35	1211.26	1.53	
			11/30/2018	1248.61	39.93	1208.68	-2.58	MP elevation re-surveyed
SMW-03-060	46749	55-543424	05/19/94	1236.66	18.61	1218.05	--	
			12/12/94	1236.66	17.80	1218.86	-0.81	
			03/19/96	1236.66	18.47	1218.19	0.67	
			02/20/97	1236.66	18.63	1218.03	0.16	
			03/10/97	1236.66	18.65	1218.01	0.02	
			04/14/97	1236.66	18.92	1217.74	0.27	
			05/05/97	1236.66	18.91	1217.75	-0.01	
			11/18/97	1236.66	17.93	1218.73	-0.98	
			12/17/97	1236.66	18.00	1218.66	0.07	
			01/07/98	1236.66	17.97	1218.69	-0.03	
			02/02/98	1236.66	18.31	1218.35	0.34	
			03/02/98	1236.66	17.95	1218.71	-0.36	
			03/16/06	1236.66	28.16	1208.50	10.21	
			10/25/06	1236.66	27.35	1209.31	-0.81	
			02/27/07	1236.66	28.22	1208.44	0.87	
			06/22/07	1236.66	NM	NM	--	

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SMW-03-060	46749	55-543424	09/26/07	1236.66	32.79	1203.87	--	
			04/09/08	1236.66	32.55	1204.11	-0.24	
			10/01/08	1236.66	31.64	1205.02	-0.91	
			01/19/09	1236.66	31.66	1205.00	0.02	
			06/15/10	1236.66	33.62	1203.04	1.96	
			11/16/10	1236.66	33.02	1203.64	-0.60	
			05/17/11	1236.66	34.39	1202.27	1.37	
			10/19/11	1236.66	34.70	1201.96	0.31	
			04/18/12	1236.66	35.63	1201.03	0.93	
			1/15/2013	1236.66	36.01	1200.65	0.38	
			9/30/2013	1236.66	37.61	1199.05	1.60	
			5/3/2014	1236.66	37.9	1198.76	0.29	
			11/19/2014	1236.66	36.4	1200.26	-1.50	
			3/2/2015	1236.66	37.16	1199.50	0.76	
			4/29/2015	1236.66	38.1	1198.56	0.94	
			9/29/2015	1236.66	38.34	1198.32	0.24	
			8/28/2016	1236.66	39.38	1197.28	1.28	
			12/3/2018	1236.66	41.95	1194.71	-2.57	MP elevation re-surveyed
SMW-03-138	46748	55-543424	05/19/94	1236.71	18.68	1218.03	--	
			12/12/94	1236.71	17.85	1218.86	-0.83	
			03/18/96	1236.71	18.58	1218.13	0.73	
			02/20/97	1236.71	18.61	1218.10	0.03	
			03/10/97	1236.71	18.63	1218.08	0.02	
			04/14/97	1236.71	18.98	1217.73	0.35	
			05/05/97	1236.71	18.96	1217.75	-0.02	
			11/18/97	1236.71	17.86	1218.85	-1.10	
			12/17/97	1236.71	18.04	1218.67	0.18	
			01/07/98	1236.71	18.00	1218.71	-0.04	
			02/02/98	1236.71	18.36	1218.35	0.36	
			03/02/98	1236.71	17.94	1218.77	-0.42	
			03/16/06	1236.71	28.08	1208.63	10.14	
			10/25/06	1236.71	27.32	1209.39	-0.76	
			02/27/07	1236.71	28.25	1208.46	0.93	
			06/22/07	1236.71	NM	NM	--	
			09/26/07	1236.71	32.83	1203.88	--	
			04/09/08	1236.71	32.69	1204.02	-0.14	
			10/01/08	1236.71	31.82	1204.89	-0.87	
			01/19/09	1236.71	31.79	1204.92	-0.03	
			06/15/10	1236.71	33.75	1202.96	1.96	
SMW-03-138	46748	55-543424	11/16/10	1236.71	33.16	1203.55	-0.59	
			05/17/11	1236.71	34.53	1202.18	1.37	
			10/19/11	1236.71	34.84	1201.87	0.31	
			04/18/12	1236.71	35.78	1200.93	0.94	
			1/15/2013	1236.71	36.14	1200.57	0.36	
			9/30/2013	1236.71	37.77	1198.94	1.63	
			5/3/2014	1236.71	38.03	1198.68	0.26	
			11/19/2014	1236.71	36.53	1200.18	-1.50	
			3/2/2015	1236.71	37.3	1199.41	0.77	
			4/29/2015	1236.71	38.25	1198.46	0.95	
			9/29/2015	1236.71	38.5	1198.21	0.25	
			8/28/2016	1236.71	39.50	1197.21	1.25	
			12/3/2018	1236.71	42.06	1194.65	-2.56	MP elevation re-surveyed
SMW-04	71392	55-907363	04/09/08	1238.40	29.48	1208.92	--	
			10/01/08	1238.40	28.51	1209.89	-0.97	
			06/15/10	1238.40	30.57	1207.83	2.06	
			05/17/11	1238.40	31.38	1207.02	0.81	
			10/19/11	1238.40	31.66	1206.74	0.28	
			04/18/12	1238.40	32.74	1205.66	1.08	
			1/15/2013	1238.40	33.25	1205.15	0.51	
			9/30/2013	1238.40	35.4	1203.00	2.15	
			5/3/2014	1238.40	35.01	1203.39	-0.39	
			11/19/2014	1238.40	33.51	1204.89	-1.50	
			3/2/2015	1238.40	34.3	1204.10	0.79	
			4/29/2015	1238.40	35.22	1203.18	0.92	
			9/29/2015	1238.40	35.5	1202.90	0.28	
			8/28/2016	1238.40	36.54	1201.86	1.32	
			11/30/2018	1238.40	39.18	1199.22	-2.64	MP elevation re-surveyed

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SMW-05	71393	55-908628	04/09/08	1239.49	30.02	1209.47	--	
			10/01/08	1239.49	29.05	1210.44	-0.97	
			06/15/10	1239.49	31.15	1208.34	2.10	
			05/17/11	1239.49	31.92	1207.57	0.77	
			10/19/11	1239.49	32.17	1207.32	0.25	
			04/18/12	1239.49	32.26	1207.23	0.09	
			1/15/2013	1239.49	33.82	1205.67	1.56	
			9/30/2013	1239.49	36.05	1203.44	2.23	
			5/3/2014	1239.49	35.62	1203.87	-0.43	
			11/19/2014	1239.49	34.12	1205.37	-1.50	
			3/2/2015	1239.49	34.91	1204.58	0.79	
			4/29/2015	1239.49	35.8	1203.69	0.89	
			9/29/2015	1239.49	36.1	1203.39	0.30	
			8/28/2016	1239.49	37.12	1202.37	1.32	
			11/30/2018	1239.49	39.85	1199.64	-2.73	MP elevation re-surveyed
SMW-06	78143	55-914016	04/18/12	1227.84	31.64	1196.20	--	
			1/15/2013	1227.84	31.77	1196.07	0.13	
			9/30/2013	1227.84	NM	NM	--	
			5/3/2014	1227.84	33.69	1194.15	--	
			11/19/2014	1227.84	32.03	1195.81	-1.66	
			3/2/2015	1227.84	32.96	1194.88	0.93	
			4/29/2015	1227.84	33.89	1193.95	0.93	
			8/28/2016	1227.84	35.10	1192.74	1.21	
			11/30/2018	1227.84	NM	NM	NM	MP elevation re-surveyed.
SMW-07	78144	55-913979	02/08/12	1240.43	33.08	1207.35	--	
			04/18/12	1240.43	32.72	1207.71	-0.36	
			1/30/2013	1240.43	33.33	1207.10	0.61	
			10/3/2013	1240.43	36.4	1204.03	3.07	
			5/3/2014	1240.43	35.04	1205.39	-1.36	
			11/19/2014	1240.43	33.49	1206.94	-1.55	
			3/2/2015	1240.43	34.3	1206.13	0.81	
			4/29/2015	1240.43	35.2	1205.23	0.90	
SMW-07	78144	55-913979	9/29/2015	1240.43	35.52	1204.91	0.32	
			8/28/2016	1240.43	36.61	1203.82	1.41	
			11/30/2018	1240.43	39.20	1201.23	-2.59	MP elevation re-surveyed
SMW-08	78145	55-913980	02/08/12	1243.65	35.11	1208.54	--	
			04/18/12	1243.65	34.62	1209.03	-0.49	
			1/15/2013	1243.65	35.44	1208.21	0.82	
			9/30/2013	1243.65	38.55	1205.10	3.11	
			5/3/2014	1243.65	37	1206.65	-1.55	
			11/19/2014	1243.65	35.52	1208.13	-1.48	
			3/2/2015	1243.65	36.03	1207.62	0.51	
			4/29/2015	1243.65	37.19	1206.46	1.16	
			5/29/2015	1243.65	37.54	1206.11	0.35	
			8/28/2016	1243.65	38.64	1205.01	1.45	
			11/30/2018	1243.65	41.22	1202.43	-2.58	MP elevation re-surveyed
SMW-11	81221	55-918939	8/28/2016	1221.38	36.42	1184.96	--	
			11/30/2018	1221.38	38.80	1182.58	-2.38	MP elevation re-surveyed
SMW-12	81222	55-919290	8/28/2016	1212.19	36.50	1175.69	--	
			11/30/2018	1212.19	38.77	1173.42	-2.27	MP elevation re-surveyed
SMW-16B	81658	55-921439	12/1/2018	1240.24	39.10	1201.14	--	First water level
BMW-05A	79629	55-916202	2/27/2014	1212.81	37.2	1175.61	--	
			5/3/2014	1212.81	37.53	1175.28	0.33	
			11/21/2014	1212.81	36.22	1176.59	-1.31	
			3/2/2015	1212.81	37.61	1175.20	1.39	
			4/29/2015	1212.81	38.04	1174.77	0.43	
			8/24/2016	1212.81	38.76	1174.05	0.72	
			11/30/2018	1212.81	41.05	1171.76	-2.29	MP elevation re-surveyed
BMW-05B	79630	55-916203	2/27/2014	1212.87	37.22	1175.65	--	
			5/3/2014	1212.87	37.54	1175.33	0.32	
			11/21/2014	1212.87	36.24	1176.63	-1.30	
			3/2/2015	1212.87	37.63	1175.24	1.39	
			4/29/2015	1212.87	38.07	1174.80	0.44	
			8/24/2016	1212.87	38.75	1174.12	0.68	
			11/30/2018	1212.87	41.04	1171.83	-2.29	MP elevation re-surveyed

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Well I.D	ADEQ Number	ADWR Number	Date	Measuring Point Elevation (ft. AMSL)	Depth to Groundwater (ft.)	Groundwater Elevation (ft. AMSL)	Change Since Previous (ft.)[1]	Comments
BMW-06A	79641	55-916204	2/27/2014	1214.27	32.55	1181.72	--	
			5/3/2014	1214.27	32.98	1181.29	0.43	
			11/21/2014	1214.27	30.99	1183.28	-1.99	
			3/2/2015	1214.27	32.53	1181.74	1.54	
			4/29/2015	1214.27	33.03	1181.24	0.50	
			8/24/2016	1214.27	33.88	1180.39	0.85	
			11/30/2018	1214.27	35.99	1178.28	-2.11	MP elevation re-surveyed
BMW-06B	79642	55-916205	2/27/2014	1214.50	32.61	1181.89	--	
			5/3/2014	1214.50	33.03	1181.47	0.42	
			11/21/2014	1214.50	31.07	1183.43	-1.96	
			3/2/2015	1214.50	32.61	1181.89	1.54	
			4/29/2015	1214.50	33.13	1181.37	0.52	
			8/24/2016	1214.50	33.94	1180.56	0.81	
			11/30/2018	1214.50	36.09	1178.41	-2.15	MP elevation re-surveyed
BMW-12B	81659	55-922024	12/1/2018	1209.13	39.85	1169.28	--	First water level

Notes:

1. Change since previous based on groundwater elevation.

NM - not measured. Water level measurement was attempted, but was determined to be incorrect due to roots in well.

TABLE 3.
SUMMARY OF SOIL SAMPLING RESULTS
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Borehole Number	Sample Depth (feet bgs)[1]	PCE (mg/kg)[2]	TCE (mg/kg)	TCA (mg/kg)
	RSRL[3]	**0.51**	**3.0**	**1,200**
	Minimum GPL[4]	**0.8**	**7.6**	**940**
1992 Soil Samples				
B1	5	0.033	<0.020(3)	0.119
	15	0.17	<0.020	<0.020
B2	5	0.038	<0.020	<0.020
	10	0.033	<0.020	<0.020
B3	5	<0.020	<0.020	<0.020
	10	<0.020	<0.020	<0.020
B4	5	0.024	<0.020	0.036
	9	<0.020	<0.020	<0.020
B5	5	0.051	<0.020	<0.020
	15	0.046	<0.020	<0.020
B6	6	0.15	<0.020	<0.020
B7	7	<0.020	0.088	<0.020
	10	<0.020	0.021	<0.020
	15	<0.020	<0.020	0.026
	20	0.04	<0.020	<0.020
B8	5	<0.020	<0.020	0.036
	15	<0.020	<0.020	<0.020
1996 Soil Samples				
DP-1	7	0.0075	<0.001	<0.001
	17	0.042	<0.001	<0.001
DP-2	7	0.0011	<0.001	<0.001
	17	0.20	0.001	<0.001
DP-3	12	0.0099	<0.001	<0.001
DP-4	7	0.0072	<0.001	<0.001
	7	0.012	<0.001	<0.001
DP-5	17	0.045	<0.001	<0.001
DP-6	12	0.058	<0.001	<0.001
DP-7	7	0.05	<0.001	<0.001
DP-8	17	<0.001	<0.001	<0.001
DP-9	7	0.021	<0.001	<0.001
DP-10	7	0.0023	<0.001	<0.001

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Borehole Number	Sample Depth (feet bgs)[1]	PCE (mg/kg)[2]	TCE (mg/kg)	TCA (mg/kg)
	RSRL[3]	**0.51**	**3.0**	**1,200**
	Minimum GPL[4]	**0.8**	**7.6**	**940**
2012 Soil Samples				
SMW-7	5	<0.001	<0.001	<0.001
	10	<0.001	<0.001	<0.001
	15	<0.001	<0.001	<0.001
	20	<0.001	<0.001	<0.001
	25	**2.4**	<0.001	<0.001
	30	<0.001	<0.001	<0.001
SMW-8	5	<0.001	<0.001	<0.001
	10	<0.0011	<0.0011	<0.0011
	15	<0.0014	<0.0014	<0.0014
	20	<0.0012	<0.0012	<0.0012
	25	<0.001	<0.001	<0.001
	30	<0.0013	<0.0013	<0.0013
SSVE-1	5	<0.0012	<0.0012	<0.0012
	10	<0.0013	<0.0013	<0.0013
	15	<0.0012	<0.0012	<0.0012
	20	<0.0012	<0.0012	<0.0012
	25	<0.001	<0.001	<0.001
	30	<0.002	<0.002	<0.002
	35	<0.001	<0.001	<0.001
	40	<0.001	<0.001	<0.001
SG-18	5	<0.001	<0.001	<0.001
	10	<0.0012	<0.0012	<0.0012
	15	<0.0016	<0.0017	<0.0018
SSVE-2	5	<0.0012	<0.0012	<0.0012
	10	<0.0012	<0.0012	<0.0012
	15	<0.0012	<0.0012	<0.0012
	20	<0.001	<0.001	<0.001
	25	<0.0012	<0.0012	<0.0012
	30	<0.0012	<0.0012	<0.0012
	35	<0.001	<0.001	<0.001
SG-13	5	<0.0012	<0.0012	<0.0012
	10	<0.0013	<0.0013	<0.0013
	15	<0.0013	<0.0013	<0.0013
SG-14	5	<0.0012	<0.0012	<0.0012
	10	<0.0014	<0.0014	<0.0014
	15	<0.0013	<0.0013	<0.0013

TABLE 3.
SUMMARY OF SOIL SAMPLING RESULTS
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Borehole Number	Sample Depth (feet bgs)[1]	PCE (mg/kg)[2]	TCE (mg/kg)	TCA (mg/kg)
	RSRL[3]	**0.51**	**3.0**	**1,200**
	Minimum GPL[4]	**0.8**	**7.6**	**940**
SG-15	5	<0.0012	<0.0012	<0.0012
	10	<0.0012	<0.0012	<0.0012
	15	<0.0012	<0.0012	<0.0012
SG-16	5	<0.0012	<0.0012	<0.0012
	10	<0.0013	<0.0013	<0.0013
	15	<0.0012	<0.0012	<0.0012
SG-17	5	<0.0011	<0.0011	<0.0011
	10	<0.0012	<0.0012	<0.0012
	15	<0.0012	<0.0012	<0.0012

1. ft bgs - feet below ground surface
2. Results reported in milligrams per kilogram (mg/kg).

3. Residential Soil Remediation Level (RSRL). **Bold** indicates compound exceeds RSRL.

3. Groundwater Protection Level (RSRL). ***Bold*** indicates compound exceedsGPL.

TABLE 4
SUMMARY OF 1996 AND 2011-2015 SUB-SLAB SOIL VAPOR RESULTS (5-8 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene (µg/m^3)	Trichloroethene (µg/m^3)
Vapor Intrusion Screening Level (VISL)				**367**	**16**
1996 Event					
DP-1-5	5	May 1996	8010	**990000**	**6100**
DP-2-5	5	May 1996	8010	**700000**	<5000
DP-3-5	5	May 1996	8010	**270000**	**2000**
DP-4-5	5	May 1996	8010	**1200000**	<25000
DP-5-5	5	May 1996	8010	**5400000**	<25000
DP-5-5D	5	May 1996	8010	**4200000**	<25000
DP-6-5	5	May 1996	8010	**3200000**	<25000
DP-7-5	5	May 1996	8010	**2300000**	<25000
DP-8-5	5	May 1996	8010	<1000	<1000
DP-9-5	5	May 1996	8010	**2700000**	<25000
DP-10-5	5	May 1996	8010	**2300000**	<25000
2011, 2012, and 2015 Events					
SG-01A	5	10/12/2011	TO-15	16	<2.3
SG-01A	5	2/8/2012	TO-15	24	<2.0
SG-01A	5	2/29/2012	TO-15	32	<1.9
SG-01A	5	6/5/2012	TO-14 PID ECD	270	<55
SG-02A	5	10/12/2011	TO-15	**3800**	<22
SG-02A	5	2/8/2012	TO-15	**2900**	<16
SG-02A	5	2/29/2012	TO-15	**1600**	<2.3
SG-02A	5	6/5/2012	TO-14 PID ECD	*3400*	<55
SG-02A	5	6/5/2012	8260SV	*2800*	<500
SG-03A	5	10/12/2011	TO-15	**40000**	<220
SG-03A	5	2/8/2012	TO-15	**32000**	<210
SG-03A	5	2/29/2012	TO-15	**17000**	<100
SG-03A	5	6/5/2012	TO-14 PID ECD	*34000*	<55
SG-04A	5	10/12/2011	TO-15	**7000**	**34**
SG-04A	5	6/4/2012	TO-14 PID ECD	*14000*	<55
SG-05A	5	10/12/2011	TO-15	**1700**	<11
SG-05A	5	6/4/2012	TO-14 PID ECD	*3500*	<55
SG-06A	5	10/13/2011	TO-15	**410**	<2.3
SG-06A	4	6/4/2012	TO-14 PID ECD	*1000*	<55
SG-07A	5	10/13/2011	TO-15	**1900**	10
SG-07A	5	6/4/2012	TO-14 PID ECD	*2600*	<55
SG-08A	5	10/13/2011	TO-15	220	<2.2
SG-08A	5	6/1/2012	TO-14 PID ECD	*540*	<55
SG-09A	5	10/13/2011	TO-15	*850*	<5.8
SG-09A	5	6/1/2012	TO-14 PID ECD	*2000*	<55
SG-09A	5	10/9/2013	TO-14 PID ECD	*1600*	<100

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REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene (µg/m^3)	Trichloroethene (µg/m^3)
SG-09A	5	10/9/2013	TO-15	*2400*	5.9
SG-09A	5	4/30/2015	TO-14 PID ECD	*490*	<20
SG-09A	5	11/5/2015	TO-15	58.9	<2.14
SG-10A	5	10/13/2011	TO-15	51	<2.3
SG-10A (DUP)	5	10/13/2011	TO-15	52	<2.1
SG-10A	5	6/1/2012	TO-14 PID ECD	<69	<55
SG-10A	5	10/9/2013	TO-14 PID ECD	*520*	<100
SG-10A	5	11/5/2013	TO-15	58.9	<2.14
SG-10A	5	4/30/2015	TO-14 PID ECD	210	<20
SG-11A	5	10/13/2011	TO-15	300	<2.2
SG-11A (DUP)	5	10/13/2011	TO-15	350	<2.2
SG-11A	5	6/1/2012	TO-14 PID ECD	*540*	<55
SG-11A	5	10/9/2013	TO-14 PID ECD	*530*	<55
SG-11A	5	4/30/2015	TO-14 PID ECD	*430*	<20
SG-11A	5	11/5/2015	TO-15	230	<2.14
SG-12A	5	10/13/2011	TO-15	*410*	<2.4
SG-12A (DUP)	5	10/13/2011	TO-15	*420*	<2.4
SG-12A	5	6/1/2012	TO-14 PID ECD	*820*	<55
SG-12A	5	10/3/2013	TO-14 PID ECD	*910*	<55
SG-12A	5	4/30/2015	TO-14 PID ECD	*560*	<20
SG-12A	5	11/5/2015	TO-15	356	<2.14
SG-13A	5	2/8/2012	TO-15	**420**	<2.1
SG-13A	5	2/29/2012	TO-15	**2400**	<15
SG-13A	5	6/7/2012	TO-14 PID ECD	*11000*	<110
SG-13A	5	10/10/2013	TO-14 PID ECD	*20000*	*420*
SG-13A	5	4/29/2015	TO-14 PID ECD	*10000*	*220*
SG-13A	5	11/4/2015	TO-15	*13000*	*364*
SG-14A	5	2/8/2012	TO-15	**4200**	<8.9
SG-14A	5	2/29/2012	TO-15	**3400**	<27
SG-14A	5	6/8/2012	TO-14 PID ECD	*14000*	*1000*
SG-14A	5	6/8/2012	8260SV	*10000*	*640*
SG-14A	5	10/10/2013	TO-14 PID ECD	*30000*	*4900*
SG-14A	5	4/29/2015	TO-14 PID ECD	*12000*	*710*
SG-14A	5	11/4/2015	TO-15	*19400*	*1160*
SG-15A	5	2/8/2012	TO-15	290	<1.9
SG-15A (DUP)	5	2/8/2012	TO-15	350	<2.2
SG-15A	5	2/29/2012	TO-15	350	<2.0
SG-15A	5	6/8/2012	TO-14 PID ECD	*5500*	<270
SG-16A	5	2/8/2012	TO-15	300	<2.4
SG-16A	5	2/29/2012	TO-15	180	<2.0

TABLE 4
SUMMARY OF 1996 AND 2011-2015 SUB-SLAB SOIL VAPOR RESULTS (5-8 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene (µg/m^3)	Trichloroethene (µg/m^3)
SG-16A	5	6/8/2012	TO-14 PID ECD	*1700*	<110
SG-17A	5	2/8/2012	TO-15	**500**	<2.3
SG-17A	5	2/29/2012	TO-15	330	<2.4
SG-17A	5	6/7/2012	TO-14 PID ECD	*1500*	<55
SG-17A	5	6/7/2012	8260SV	*1300*	<500
SG-18A	5	2/8/2012	TO-15	96	<2.1
SG-18A	5	2/29/2012	TO-15	61	<2.0
SG-18A (DUP)	5	2/29/2012	TO-15	61	<2.0
SG-18A	5	6/7/2012	TO-14 PID ECD	160	<55
SSVE-01	8	11/4/2015	TO-15	*1950*	8.1
SSVE-02	8	11/4/2015	TO-15	*3480*	*173*
SSVE-03	8	11/4/2015	TO-15	*14700*	*73.4*
SSVE-04	8	11/4/2015	TO-15	*9780*	*360*
SSVE-05	8	11/4/2015	TO-15	269	<2.14
SSVE-06	8	11/4/2015	TO-15	64.7	<2.14
SSVE-07	8	11/4/2015	TO-15	21.3	<2.14
May30-June 5, 2012 Temporary Soil Vapor Borings					
SG-400	7	5/30/2012	TO-14 PID ECD	*50000*	*60*
SG-401	7	5/30/2012	TO-14 PID ECD	*760*	<55
SG-402	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-403	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-405	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-406	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-407	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-408	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-409	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-410	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-500	7	5/30/2012	TO-14 PID ECD	*1200*	<55
SG-501	7	5/30/2012	TO-14 PID ECD	*640*	<55
SG-502	7	5/30/2012	TO-14 PID ECD	<69	<55
SG-503	7	5/31/2012	TO-14 PID ECD	<69	<55
SG-505	7	5/31/2012	TO-14 PID ECD	280	<55
SG-505	7	5/31/2012	TO-14 PID ECD	300	<55
SG-506	7	5/31/2012	TO-14 PID ECD	*3700*	<55
SG-507	7	5/31/2012	TO-14 PID ECD	*5500*	<55
SG-508	7	5/31/2012	TO-14 PID ECD	*5300*	<55
SG-509	7	5/31/2012	TO-14 PID ECD	*2100*	<55
SG-510	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-511	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-512	7	6/1/2012	TO-14 PID ECD	<69	<55

TABLE 4
SUMMARY OF 1996 AND 2011-2015 SUB-SLAB SOIL VAPOR RESULTS (5-8 feet bgs)
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48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
SG-513	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-514	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-600	7	5/31/2012	TO-14 PID ECD	*980*	<55
SG-601	7	5/31/2012	TO-14 PID ECD	*1300*	<55
SG-602	7	5/31/2012	TO-14 PID ECD	*2600*	<55
SG-603	7	5/31/2012	TO-14 PID ECD	*790*	<55
SG-604	7	5/31/2012	TO-14 PID ECD	*760*	<55
SG-605	7	5/31/2012	TO-14 PID ECD	*2600*	<55
SG-606	7	5/31/2012	TO-14 PID ECD	*3500*	<55
SG-607	7	5/31/2012	TO-14 PID ECD	*2500*	<55
SG-608	7	5/31/2012	TO-14 PID ECD	*700*	<55
SG-609	7	5/31/2012	TO-14 PID ECD	*3600*	<55
SG-610	7	5/31/2012	TO-14 PID ECD	350	<55
SG-611	7	5/31/2012	TO-14 PID ECD	140	<55
SG-612	7	5/31/2012	TO-14 PID ECD	*4300*	<55
SG-613	7	5/31/2012	TO-14 PID ECD	*1800*	<55
SG-614	7	5/31/2012	TO-14 PID ECD	*960*	<55
SG-615	7	5/31/2012	TO-14 PID ECD	*680*	<55
SG-616	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-617	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-618	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-619	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-620	7	6/1/2012	TO-14 PID ECD	<69	<55
SG-621	7	6/1/2012	TO-14 PID ECD	90	<55
SG-622	7	6/1/2012	TO-14 PID ECD	*2000*	<55
SG-623	7	6/1/2012	TO-14 PID ECD	*380*	<55
SG-624	8	6/4/2012	TO-14 PID ECD	<69	<55
SG-624	8	6/4/2012	TO-14 PID ECD	<69	<55
SG-626	8	6/4/2012	TO-14 PID ECD	*1500*	<55
SG-627	8	6/4/2012	TO-14 PID ECD	*1400*	<55
SG-629	8	6/4/2012	TO-14 PID ECD	*520*	<55
SG-630	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-631	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-632	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-633	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-634	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-635	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-635	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-636	7	6/4/2012	TO-14 PID ECD	<69	<55
SG-637	7	6/4/2012	TO-14 PID ECD	<69	<55

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REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
SG-638	7	6/5/2012	TO-14 PID ECD	<69	<55
SG-639	7	6/5/2012	TO-14 PID ECD	<69	<55
SG-640	7	6/5/2012	TO-14 PID ECD	<69	<55
SG-641	7	6/5/2012	TO-14 PID ECD	*500*	<55
SG-644	7	6/5/2012	TO-14 PID ECD	<69	<55
SG-645	7	6/5/2012	TO-14 PID ECD	<69	<55
2013 Event					
A-01	5	8/21/2013	TO-14 PID ECD	350	<20
A-02	5	8/21/2013	TO-14 PID ECD	*450*	**22**
A-03	5	8/21/2013	TO-14 PID ECD	*750*	<20
A-04	5	8/21/2013	TO-14 PID ECD	140	<20
A-05	5	8/21/2013	TO-14 PID ECD	170	<20
A-06	5	8/23/2013	TO-14 PID ECD	130	<20
A-07	5	8/23/2013	TO-14 PID ECD	62	<20
A-08	5	8/23/2013	TO-14 PID ECD	32	<20
A-09	5	8/23/2013	TO-14 PID ECD	120	<20
A-10	5	8/23/2013	TO-14 PID ECD	20	<20
A-11	5	8/23/2013	TO-14 PID ECD	<20	<20
A-12	5	8/23/2013	TO-14 PID ECD	<20	<20
A-13	5	8/23/2013	TO-14 PID ECD	26	<20
A-16	5	8/23/2013	TO-14 PID ECD	<20	<20
A-17	5	8/23/2013	TO-14 PID ECD	<20	<20
A-19	5	8/23/2013	TO-14 PID ECD	26	<20
A-20	5	8/23/2013	TO-14 PID ECD	<20	<20
A-21	5	8/23/2013	TO-14 PID ECD	<20	<20
A-22	5	8/24/2013	TO-14 PID ECD	20	<20
A-23	5	8/24/2013	TO-14 PID ECD	<20	*84*
A-24	5	8/24/2013	TO-14 PID ECD	<20	<20
A-25	5	8/27/2013	TO-14 PID ECD	<20	<20
A-26	5	8/27/2013	TO-14 PID ECD	<20	<20
A-27	5	8/27/2013	TO-14 PID ECD	<20	<20
A-28	5	8/27/2013	TO-14 PID ECD	24	<20
A-29	5	8/27/2013	TO-14 PID ECD	<20	<20
A-30	5	8/27/2013	TO-14 PID ECD	<20	<20

TABLE 4
SUMMARY OF 1996 AND 2011-2015 SUB-SLAB SOIL VAPOR RESULTS (5-8 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
A-31	5	8/27/2013	TO-14 PID ECD	<20	<20
A-44	5	8/27/2013	TO-14 PID ECD	90	<20
A-45	5	8/27/2013	TO-14 PID ECD	43	<20
A-46	5	8/27/2013	TO-14 PID ECD	25	<20

Notes:

BOLD indicates concentration exceeds VISL

Italic indicates sample exceeds VISL; however, indoor air sampling demonstrates concentration is protective of indoor residential air

$\mu g/m^3$	micrograms per cubic meter
<	analyte not detected above the listed laboratory reporting limit
bgs	below ground surface
DUP	Duplicate sample
NS	Not samples
TO	Toxic Organics

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene (µg/m^3)	Trichloroethene (µg/m^3)
1996 Event					
DP-1-10	10	May 1996	8010	540000	<5000
DP-1-15	15	May 1996	8010	1600000	<10000
DP-2-10	10	May 1996	8010	540000	<10000
DP-2-16	16	May 1996	8010	400000	<5000
DP-3-10	10	May 1996	8010	260000	<5000
DP-3-15	15	May 1996	8010	820000	<10000
DP-4-10	10	May 1996	8010	2100000	<25000
DP-4-15	15	May 1996	8010	11000	<1000
DP-4-15D	15	May 1996	8010	13000	<1000
DP-5-10	10	May 1996	8010	1600000	<1000
DP-5-15	15	May 1996	8010	1700000	11000
DP-6-10	10	May 1996	8010	3600000	<25000
DP-6-10D	10	May 1996	8010	3000000	<25000
DP-6-15	15	May 1996	8010	5600000	<25000
DP-7-10	10	May 1996	8010	340000	3800
DP-7-15	15	May 1996	8010	2000000	<25000
DP-8-10	10	May 1996	8010	<1000	<1000
DP-8-15	15	May 1996	8010	<1000	<1000
DP-9-10	10	May 1996	8010	1100000	<10000
DP-9-10D	10	May 1996	8010	880000	<10000
DP-9-15	15	May 1996	8010	3100000	<25000
DP-10-10	10	May 1996	8010	1100000	<10000
DP-10-15	15	May 1996	8010	1500000	<25000
2011, 2012, and 2015 Events					
SG-01B	10	10/12/2011	TO-15	140	<2.1
SG-01B	10	2/8/2012	TO-15	120	<2.1
SG-01B	10	2/29/2012	TO-15	100	<1.9
SG-01B	10	6/5/2012	TO-14 PID ECD	510	<55
SG-01C	15	10/12/2011	TO-15	390	<2.3
SG-01C	15	2/8/2012	TO-15	320	<2.0
SG-01C	15	2/29/2012	TO-15	310	<1.9
SG-01C	15	6/5/2012	TO-14 PID ECD	1000	<55
SG-01C	15	10/10/2013	TO-14 PID ECD	2100	320
SG-01C	15	4/29/2015	TO-14 PID ECD	980	<20
SG-01C	15	11/5/2015	TO-15	2960	10.3
SG-01C (DUP)	15	11/5/2015	TO-15	2700	10.1
SG-02B	10	10/12/2011	TO-15	4200	<25
SG-02B	10	2/8/2012	TO-15	3600	<33
SG-02B	10	2/29/2012	TO-15	1600	<2.2

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
SG-02B	10	6/5/2012	TO-14 PID ECD	2800	<55
SG-02B	10	6/5/2012	8260SV	2500	<500
SG-02C	15	10/12/2011	TO-15	4100	<25
SG-02C	15	2/8/2012	TO-15	5100	<37
SG-02C	15	2/29/2012	TO-15	1900	<2.4
SG-02C	15	6/5/2012	TO-14 PID ECD	4500	<55
SG-02C	15	10/10/2013	TO-14 PID ECD	4700	<55
SG-02C	15	4/29/2015	TO-14 PID ECD	2000	25
SG-02C	15	4/29/2015	TO-15	1900	35
SG-02C	15	11/4/2015	TO-15	3640	28.6
SG-03B	10	10/12/2011	TO-15	50000	<300
SG-03B	10	2/8/2012	TO-15	44000	<280
SG-03B	10	2/29/2012	TO-15	24000	<140
SG-03B	10	6/5/2012	TO-14 PID ECD	64000	<55
SG-03C	15	10/12/2011	TO-15	59000	<330
SG-03C	15	2/8/2012	TO-15	61000	<400
SG-03C	15	2/29/2012	TO-15	37000	<230
SG-03C	15	6/5/2012	TO-14 PID ECD	98000	<55
SG-03C	15	10/10/2013	TO-14 PID ECD	81000	460
SG-03C (DUP)	15	10/10/2013	TO-14 PID ECD	83000	<100
SG-03C	15	4/29/2015	TO-14 PID ECD	19000	170
SG-03C(DUP)	15	4/30/2015	TO-15	57200	<269
SG-03C	15	11/4/2015	TO-15	28000	178
SG-04B	10	10/12/2011	TO-15	9300	45
SG-04B	10	6/5/2012	TO-14 PID ECD	19000	<55
SG-04B	10	10/10/2013	TO-14 PID ECD	15000	<900
SG-04B	10	10/10/2013	TO-15	22000	<55
SG-04B	10	4/30/2015	TO-14 PID ECD	2500	82
SG-04B	10	11/5/2015	TO-15	6600	45.5
SG-04C	15	10/12/2011	TO-15	11000	<62
SG-04C	15	6/5/2012	TO-14 PID ECD	20000	<55
SG-05B	10	10/12/2011	TO-15	3300	<22
SG-05B	10	6/5/2012	TO-14 PID ECD	4700	<55
SG-05B	10	10/9/2013	TO-14 PID ECD	3300	<55
SG-05B (DUP)	10	10/9/2013	TO-14 PID ECD	3000	<55
SG-05B	10	4/30/2015	TO-14 PID ECD	920	<20
SG-05B	10	11/5/2015	TO-15	2480	6
SG-05C	15	10/12/2011	TO-15	NS	NS
SG-06B	10	10/13/2011	TO-15	900	<5.8
SG-06B	10	6/5/2012	TO-14 PID ECD	1100	<55

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
SG-06C	15	10/13/2011	TO-15	1400	<8.6
SG-06C	15	6/5/2012	TO-14 PID ECD	1600	<55
SG-06C	15	10/9/2013	TO-14 PID ECD	1100	<100
SG-06C	15	10/9/2013	TO-15	2400	6.0
SG-06C	15	4/30/2015	TO-14 PID ECD	240	<20
SG-06C	15	11/5/2015	TO-15	644	<2.14
SG-07B	10	10/13/2011	TO-15	2600	19
SG-07B	10	6/5/2012	TO-14 PID ECD	2900	<55
SG-07C	15	10/13/2011	TO-15	3500	28
SG-07C	15	6/5/2012	TO-15	3400	<55
SG-07C	15	10/9/2013	TO-14 PID ECD	2300	<100
SG-07C	15	4/30/2015	TO-14 PID ECD	290	<20
SG-07C	15	11/5/2015	TO-15	1180	8.3
SG-07C (DUP)	15	11/5/2015	TO-15	1140	7.6
SG-08B	10	10/13/2011	TO-15	420	<2.1
SG-08B	10	6/1/2012	TO-14 PID ECD	870	<55
SG-08B	10	10/9/2013	TO-14 PID ECD	1400	<100
SG-08B	10	4/30/2015	TO-14 PID ECD	310	<20
SG-08B	10	11/5/2015	TO-15	674	2.9
SG-08C	15	10/13/2011	TO-15	610	<3.5
SG-08C	15	6/1/2012	TO-14 PID ECD	720	<55
SG-08C	15	6/1/2012	8260SV	<500	<500
SG-13B	10	2/8/2012	TO-15	210	<2.0
SG-13B	10	2/29/2012	TO-15	450	<2.6
SG-13B	10	6/7/2012	TO-14 PID ECD	3000	<110
SG-13B	10	6/7/2012	8260SV	1800	<500
SG-13C	15	2/8/2012	TO-15	730	<2.1
SG-13C	15	2/29/2012	TO-15	220	<1.8
SG-13C	15	6/7/2012	TO-14 PID ECD	8400	<110
SG-14B	10	2/8/2012	TO-15	4400	<19
SG-14B	10	2/29/2012	TO-15	3400	<26
SG-14B	10	6/8/2012	TO-14 PID ECD	12000	<270
SG-14C	15	2/8/2012	TO-15	4500	<9.0
SG-14C	15	2/29/2012	TO-15	3700	<12
SG-14C	15	6/8/2012	TO-14 PID ECD	9700	<270
SG-15B	10	2/8/2012	TO-15	180	<1.9
SG-15B (DUP)	10	2/8/2012	TO-15	200	<2.2
SG-15B	10	2/29/2012	TO-15	300	<2.2
SG-15B	10	6/8/2012	TO-14 PID ECD	2300	<110
SG-15B	10	6/8/2012	8260SV	1800	<500

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
SG-15C	15	2/8/2012	TO-15	440	<2.1
SG-15C (DUP)	15	2/8/2012	TO-15	470	2.5
SG-15C	15	2/29/2012	TO-15	620	<2.1
SG-15C	15	6/8/2012	TO-14 PID ECD	5800	<110
SG-15C	15	10/10/2013	TO-14 PID ECD	8600	260
SG-15C	15	4/29/2015	TO-14 PID ECD	3100	<100
SG-15C	15	11/4/2015	TO-15	1880	47.8
SG-16B	10	2/8/2012	TO-15	290	<2.6
SG-16B	10	2/29/2012	TO-15	220	<2.0
SG-16B	10	6/8/2012	TO-14 PID ECD	920	<55
SG-16C	15	2/8/2012	TO-15	320	<3.2
SG-16C	15	2/29/2012	TO-15	600	<2.0
SG-16C	15	6/8/2012	TO-14 PID ECD	3700	<55
SG-16C	15	10/10/2013	TO-14 PID ECD	6600	<300
SG-16C	15	4/29/2015	TO-14 PID ECD	2500	93
SG-16C	15	4/29/2015	TO-15	2400	60
SG-16C	15	11/4/2015	TO-15	6030	75.9
SG-17B	10	2/8/2012	TO-15	400	<2.3
SG-17B	10	2/29/2012	TO-15	560	<2.0
SG-17B	10	6/7/2012	TO-14 PID ECD	1600	<55
SG-17C	15	2/8/2012	TO-15	1700	<11
SG-17C	15	2/29/2012	TO-15	930	<2.0
SG-17C	15	6/7/2012	TO-14 PID ECD	1800	<55
SG-17C	15	10/10/2013	TO-14 PID ECD	1500	400
SG-17C	15	4/29/2015	TO-14 PID ECD	170	<20
SG-17C	15	11/5/2015	TO-15	1030	8.70
SG-18B	10	2/8/2012	TO-15	180	<2.1
SG-18B	10	2/29/2012	TO-15	120	<2.0
SG-18B (DUP)	10	2/29/2012	TO-15	120	<2.0
SG-18B	10	6/7/2012	TO-14 PID ECD	230	<55
SG-18C	15	2/8/2012	TO-15	490	<2.2
SG-18C	15	2/29/2012	TO-15	340	<2.1
SG-18C	15	6/7/2012	TO-14 PID ECD	410	<55
SG-18C	15	6/7/2012	8260SV	1200	<500
SG-18C	15	10/10/2013	TO-14 PID ECD	580	200
SG-18C	15	4/29/2015	TO-14 PID ECD	160	<20
SG-18C	15	11/4/2015	TO-15	552	4.6
SVE-01	25	10/10/2013	TO-14 PID ECD	52000	2300
SVE-01	25	4/29/2015	TO-14 PID ECD	11000	2400
SVE-01 (DUP)	25	4/29/2015	TO-15	28100	1490

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
SVE-01	10	11/4/2015	TO-15	23700	1210
SVE-02	25	10/10/2013	TO-14 PID ECD	31000	<10000
SVE-02	25	4/29/2015	TO-14 PID ECD	7300	1100
SVE-02	10	11/4/2015	TO-15	8550	328
SSVE-01	18	10/10/2013	TO-14 PID ECD	3100	210
SSVE-01	18	4/29/2015	TO-14 PID ECD	1300	<20
SSVE-01	18	4/29/2015	TO-15	1400	23
SSVE-02	18	10/10/2013	TO-14 PID ECD	32000	<900
SSVE-02	18	4/29/2015	TO-14 PID ECD	18000	180
SSVE-02(DUP)	18	4/30/2015	TO-15	47800	<134
SSVE-03	18	10/10/2013	TO-14 PID ECD	14000	<900
SSVE-03	18	4/29/2015	TO-14 PID ECD	4000	65
SSVE-04	18	10/10/2013	TO-14 PID ECD	8500	360
SSVE-04	18	4/29/2015	TO-14 PID ECD	3900	300
SSVE-05	18	10/10/2013	TO-14 PID ECD	420	<100
SSVE-05	18	10/10/2013	TO-15	320	<5.5
SSVE-05	18	4/30/2015	TO-14 PID ECD	250	<20
SSVE-06	18	10/10/2013	TO-14 PID ECD	110	<100
SSVE-06	18	4/29/2015	TO-14 PID ECD	150	<20
SSVE-07	18	10/10/2013	TO-14 PID ECD	<100	<100
SSVE-07 (DUP)	18	10/10/2013	TO-14 PID ECD	<100	<100
SSVE-07	18	4/29/2015	TO-14 PID ECD	210	<20
May30-June 5, 2012 Temporary Soil Vapor Borings					
SG-400	15	5/30/2012	TO-14 PID ECD	57000	98
SG-401	15	5/30/2012	TO-14 PID ECD	2400	<55
SG-402	15	5/30/2012	TO-14 PID ECD	490	<55
SG-403	15	5/30/2012	TO-14 PID ECD	<69	<55
SG-405	15	5/30/2012	TO-14 PID ECD	<69	<55
SG-406	15	5/30/2012	TO-14 PID ECD	<69	<55
SG-407	15	5/30/2012	TO-14 PID ECD	<69	<55
SG-408	15	5/30/2012	TO-14 PID ECD	<69	<55
SG-409	15	5/30/2012	TO-14 PID ECD	<69	<55
SG-410	15	5/30/2012	TO-14 PID ECD	<69	<55
SG-500	15	5/30/2012	TO-14 PID ECD	1700	<55
SG-501	15	5/30/2012	TO-14 PID ECD	1000	<55
SG-502	15	5/30/2012	TO-14 PID ECD	72	<55
SG-503	15	5/31/2012	TO-14 PID ECD	<69	<55
SG-505	15	5/31/2012	TO-14 PID ECD	720	<55
SG-506	15	5/31/2012	TO-14 PID ECD	2500	<55
SG-507	15	5/31/2012	TO-14 PID ECD	5900	<55

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
SG-508	15	5/31/2012	TO-14 PID ECD	8100	<55
SG-509	15	5/31/2012	TO-14 PID ECD	2500	<55
SG-510	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-511	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-512	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-513	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-514	15	6/1/2012	TO-14 PID ECD	330	<55
SG-600	15	5/31/2012	TO-14 PID ECD	920	<55
SG-601	15	5/31/2012	TO-14 PID ECD	1700	<55
SG-602	15	5/31/2012	TO-14 PID ECD	3400	<55
SG-603	15	5/31/2012	TO-14 PID ECD	650	<55
SG-604	15	5/31/2012	TO-14 PID ECD	540	<55
SG-605	15	5/31/2012	TO-14 PID ECD	2500	<55
SG-606	15	5/31/2012	TO-14 PID ECD	1200	<55
SG-608	15	5/31/2012	TO-14 PID ECD	2000	<55
SG-608	15	5/31/2012	TO-14 PID ECD	1700	<55
SG-609	15	5/31/2012	TO-14 PID ECD	4300	<55
SG-610	15	5/31/2012	TO-14 PID ECD	690	<55
SG-611	15	5/31/2012	TO-14 PID ECD	240	<55
SG-612	15	5/31/2012	TO-14 PID ECD	2300	<55
SG-612	15	5/31/2012	TO-14 PID ECD	2400	<55
SG-613	15	5/31/2012	TO-14 PID ECD	2500	<55
SG-614	15	5/31/2012	TO-14 PID ECD	120	<55
SG-615	15	5/31/2012	TO-14 PID ECD	140	<55
SG-617	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-617	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-618	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-619	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-620	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-621	15	6/1/2012	TO-14 PID ECD	950	<55
SG-622	15	6/1/2012	TO-14 PID ECD	2500	<55
SG-623	15	6/1/2012	TO-14 PID ECD	<69	<55
SG-625	10	6/4/2012	TO-14 PID ECD	670	<55
SG-628	10	6/4/2012	TO-14 PID ECD	530	<55
SG-630	15	6/4/2012	TO-14 PID ECD	<69	<55
SG-631	15	6/4/2012	TO-14 PID ECD	<69	<55
SG-632	15	6/4/2012	TO-14 PID ECD	<69	<55
SG-633	15	6/4/2012	TO-14 PID ECD	<69	<55
SG-634	15	6/4/2012	TO-14 PID ECD	<69	<55

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene (µg/m^3)	Trichloroethene (µg/m^3)
2013 Event					
A-01	15	8/21/2013	TO-14 PID ECD	690	75
A-02	15	8/21/2013	TO-14 PID ECD	250	25
A-03	15	8/21/2013	TO-14 PID ECD	830	20
A-04	15	8/21/2013	TO-14 PID ECD	130	<20
A-05	15	8/21/2013	TO-14 PID ECD	150	<20
A-05	15 FD	8/21/2013	TO-14 PID ECD	150	<20
A-05	15	8/21/2013	TO-15 VOC	140	<5.5
A-06	15	8/23/2013	TO-14 PID ECD	150	<20
A-07	15	8/23/2013	TO-14 PID ECD	99	23
A-08	15	8/23/2013	TO-15 VOC	11	<5.5
A-08	15	8/23/2013	TO-14 PID ECD	30	<20
A-09	15	8/23/2013	TO-14 PID ECD	72	<20
A-10	15	8/23/2013	TO-14 PID ECD	<20	<20
A-11	15	8/23/2013	TO-14 PID ECD	<20	<20
A-12	15	8/23/2013	TO-14 PID ECD	<20	<20
A-13	15	8/23/2013	TO-14 PID ECD	<20	<20
A-13	15 FD	8/23/2013	TO-14 PID ECD	<20	<20
A-16	15 FD	8/23/2013	TO-15 VOC	14	<5.5
A-16	15	8/23/2013	TO-14 PID ECD	<20	27
A-16	15 FD	8/23/2013	TO-14 PID ECD	<20	41
A-17	15	8/23/2013	TO-14 PID ECD	<20	<20
A-19	15	8/23/2013	TO-14 PID ECD	30	<20
A-20	15	8/23/2013	TO-14 PID ECD	<20	<20
A-21	15	8/23/2013	TO-14 PID ECD	<20	<20
A-22	15	8/24/2013	TO-14 PID ECD	<20	<20
A-23	15	8/24/2013	TO-14 PID ECD	<20	310
A-24	15	8/24/2013	TO-14 PID ECD	<20	<20
A-25	15	8/27/2013	TO-14 PID ECD	<20	<20
A-26	15	8/27/2013	TO-14 PID ECD	<20	<20
A-27	15	8/27/2013	TO-14 PID ECD	<20	<20
A-27	15 FD	8/27/2013	TO-14 PID ECD	<20	<20
A-28	15	8/27/2013	TO-14 PID ECD	41	<20
A-29	15	8/27/2013	TO-14 PID ECD	<20	<20
A-30	15	8/27/2013	TO-14 PID ECD	<20	<20

TABLE 5
SUMMARY OF 1996 and 2011-2015 DEEP SOIL VAPOR RESULTS (10-25 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene ($\mu g/m^3$)	Trichloroethene ($\mu g/m^3$)
A-31	15	8/27/2013	TO-14 PID ECD	<20	<20
A-44	15	8/27/2013	TO-14 PID ECD	270	<20
A-45	15	8/27/2013	TO-14 PID ECD	130	<20
A-46	15	8/27/2013	TO-14 PID ECD	43	<20
A-46	15 FD	8/27/2013	TO-14 PID ECD	43	<20

Notes:

$\mu g/m^3$	micrograms per cubic meter
<	analyte not detected above the listed laboratory reporting limit
bgs	below ground surface
DUP	Duplicate sample
NS	Not samples
TO	Toxic Organics

TABLE 6
SUMMARY OF PASSIVE SOIL GAS SAMPLE RESULTS (1-1.5 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene (ng)	Trichloroethene (ng)
1	1-1.5	2/11/2009	8260C	<25	<25
2	1-1.5	2/11/2009	8260C	**199**	<25
3	1-1.5	2/11/2009	8260C	**508**	<25
4	1-1.5	2/11/2009	8260C	**470**	<25
5	1-1.5	2/11/2009	8260C	**1294**	<25
6	1-1.5	2/11/2009	8260C	**1576**	<25
7	1-1.5	2/11/2009	8260C	**550**	<25
8	1-1.5	2/11/2009	8260C	<25	<25
9	1-1.5	2/11/2009	8260C	**32**	<25
10	1-1.5	2/11/2009	8260C	<25	<25
11	1-1.5	2/11/2009	8260C	<25	<25
12	1-1.5	2/11/2009	8260C	<25	<25
13	1-1.5	2/11/2009	8260C	<25	<25
14	1-1.5	2/11/2009	8260C	<25	<25
PSG-1	1-1.5	3/29/2011	8260C	**800**	**45**
PSG-2	1-1.5	3/29/2011	8260C	**3512**	**635**
PSG-3	1-1.5	3/29/2011	8260C	**1388**	**29**
PSG-4	1-1.5	3/29/2011	8260C	**36**	<25
PSG-5	1-1.5	3/29/2011	8260C	**481**	<25
PSG-6	1-1.5	3/29/2011	8260C	**143**	**40**
PSG-7	1-1.5	3/29/2011	8260C	**89**	<25
PSG-8	1-1.5	3/29/2011	8260C	**60**	<25
PSG-9	1-1.5	3/29/2011	8260C	<25	<25
PSG-10	1-1.5	2/28/2011	8260C	<25	<25
PSG-11	1-1.5	2/28/2011	8260C	<25	<25
PSG-12	1-1.5	2/28/2011	8260C	<25	<25
PSG-13	1-1.5	2/28/2011	8260C	**209**	**31**
PSG-14	1-1.5	2/28/2011	8260C	**445**	**61**
PSG-15	1-1.5	2/28/2011	8260C	**538**	**77**
PSG-16	1-1.5	2/28/2011	8260C	**186**	<25
PSG-17	1-1.5	2/28/2011	8260C	<25	<25
PSG-18	1-1.5	2/28/2011	8260C	**59**	<25
PSG-19	1-1.5	2/28/2011	8260C	**565**	**33**
PSG-20	1-1.5	2/28/2011	8260C	**956**	**56**
PSG-21	1-1.5	3/14/2011	8260C	**811**	**67**
PSG-22	1-1.5	2/28/2011	8260C	**292**	<25
PSG-23	1-1.5	2/28/2011	8260C	<25	<25
PSG-24	1-1.5	2/28/2011	8260C	**669**	**131**
PSG-25	1-1.5	2/28/2011	8260C	**548**	**50**
PSG-26	1-1.5	2/28/2011	8260C	**948**	**162**

TABLE 6
SUMMARY OF PASSIVE SOIL GAS SAMPLE RESULTS (1-1.5 feet bgs)
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Sample Location	Sample Depth (feet bgs)	Sample Date	Method of Analysis	Tetrachloroethene (ng)	Trichloroethene (ng)
PSG-27	1-1.5	2/28/2011	8260C	**638**	<25
PSG-28	1-1.5	2/28/2011	8260C	**352**	**37**
PSG-28-D	1-1.5	2/28/2011	8260C	**129**	<25
PSG-29	1-1.5	2/28/2011	8260C	**116**	<25
PSG-30	1-1.5	2/28/2011	8260C	<25	<25
PSG-31	1-1.5	2/28/2011	8260C	**29**	<25
PSG-32	1-1.5	2/28/2011	8260C	**1850**	**144**
PSG-33	1-1.5	2/28/2011	8260C	**1009**	**46**
PSG-34	1-1.5	2/28/2011	8260C	**44**	<25
PSG-35	1-1.5	2/28/2011	8260C	<25	<25
PSG-36	1-1.5	2/28/2011	8260C	<25	<25
PSG-37	1-1.5	2/28/2011	8260C	<25	<25
PSG-38	1-1.5	2/28/2011	8260C	<25	<25
PSG-39	1-1.5	2/28/2011	8260C	<25	<25
Trip Blank	N/A	2/11/2009	8260C	<25	<25
Trip 1	N/A	2/28/2011	8260C	<25	<25
Trip-3	N/A	3/29/2011	8260C	<25	<25

Notes:
Results reported in nanograms (ng). BOLD indicates analyte was detected

TABLE 7.
Indoor Air Data Summary - August 2013 Event
Remedial Investigation Report
48th Street and Indian School Road WQARF Site

Building ID	Sample Matrix	Sample Purpose	Sample Date	Analytical Method	Parameter	Result	Units
Neighborhood Samples							
48-006	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-006	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	4.1	µg/m3
48-015	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-015	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-017	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	3.7	µg/m3
48-017	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	3.6	µg/m3
48-019	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	17	µg/m3
48-019	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	5.3	µg/m3
48-021	AIR	REG	28-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	6.6	µg/m3
48-021	AIR	REG	28-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	3.2	µg/m3
48-026	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	4.9	µg/m3
48-026	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	5.6	µg/m3
48-027	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	6.5	µg/m3
48-027	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	3.9	µg/m3
48-029	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	4.5	µg/m3
48-029	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	4	µg/m3
48-035	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-035	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	5.4	µg/m3
48-036	AIR	REG	29-08-2013	EPA TO-15	Trichloroethene	<1.8	µg/m3
48-036	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-036	AIR	REG	29-08-2013	EPA TO-15	Tetrachloroethene	3.5	µg/m3
48-036	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	11	µg/m3
48-038	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-038	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	9	µg/m3
48-039	AIR	REG	30-08-2013	EPA TO-15	Trichloroethene	<1.8	µg/m3
48-039	AIR	FD	29-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	3	µg/m3
48-039	AIR	FD	29-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	5.1	µg/m3
48-039	AIR	REG	29-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	2.8	µg/m3
48-039	AIR	REG	29-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	5	µg/m3
48-039	AIR	REG	30-08-2013	EPA TO-15	Tetrachloroethene	2.6	µg/m3
48-041	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	11	µg/m3
48-041	AIR	REG	26-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	4.1	µg/m3

TABLE 7.
Indoor Air Data Summary - August 2013 Event
Remedial Investigation Report
48th Street and Indian School Road WQARF Site

Building ID	Sample Matrix	Sample Purpose	Sample Date	Analytical Method	Parameter	Result	Units
Arcadia High School Samples							
48-040a	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040a	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040b	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040b	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040c	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040c	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040d	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040d	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040e	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040e	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040f	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040f	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	4	µg/m3
48-040g	AIR	REG	27-08-2013	EPA TO-15	Trichloroethene	<1.8	µg/m3
48-040g	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040g	AIR	REG	27-08-2013	EPA TO-15	Tetrachloroethene	6.3	µg/m3
48-040g	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	**12**	µg/m3
48-040h	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040h	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040i	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040i	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040j	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040j	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040k	AIR	FD	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040k	AIR	FD	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040k	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040k	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040l	AIR	FD	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040l	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040l	AIR	FD	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	3.5	µg/m3
48-040l	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	3.3	µg/m3
48-040m	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040m	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040m	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3

TABLE 7.
Indoor Air Data Summary - August 2013 Event
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Building ID	Sample Matrix	Sample Purpose	Sample Date	Analytical Method	Parameter	Result	Units
48-040m	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040n	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040n	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040n	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040n	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	6.8	µg/m3
48-040o	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040o	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040o	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040o	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	**14**	µg/m3
48-040p	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040p	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040q	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040q	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040q	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040q	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	**13**	µg/m3
48-040r	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040r	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040r	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040r	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	6.1	µg/m3
48-040s	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040s	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	5.9	µg/m3
48-040t	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040t	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040u	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040u	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	7.6	µg/m3
48-040v	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040v	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040x	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040x	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	6.4	µg/m3
48-040y	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040y	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040y	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040y	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	9	µg/m3
48-040z	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3

TABLE 7.
Indoor Air Data Summary - August 2013 Event
Remedial Investigation Report
48th Street and Indian School Road WQARF Site

Building ID	Sample Matrix	Sample Purpose	Sample Date	Analytical Method	Parameter	Result	Units
48-040z	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040z	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040z	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	5.5	µg/m3
48-040aa	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040aa	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040aa	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040aa	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	**18**	µg/m3
48-040ab	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040ab	AIR	FD	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040ab	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040ab	AIR	REG	27-08-2013	EPA TO-15	Trichloroethene	7.3	µg/m3
48-040ab	AIR	REG	27-08-2013	EPA TO-15	Tetrachloroethene	**12**	µg/m3
48-040ab	AIR	REG	21-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	**34**	µg/m3
48-040ab	AIR	FD	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	3.6	µg/m3
48-040ab	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	3.6	µg/m3
48-040ac	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040ac	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040ad	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3
48-040ad	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040ae	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Trichloroethene	<2.7	µg/m3
48-040ae	AIR	REG	24-08-2013	TO-14 PID ECD Indoor air	Tetrachloroethene	<3.4	µg/m3

Notes:

BOLD- Bolded value indicates tetrachloroethene (PCE) concentration was detected above the Residential Indoor Air Screening Level for PCE (Approximately 11 µg/m3)

FD- Field Duplicate

µg/m3- micrograms per cubic meter

REG- Regular sample

TABLE 8
SUMMARY OF DETECTED VOC ANALYTICAL RESULTS
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
ECP-01	20	1241.28	1221.28	9/5/2001	1.4	<0.5	<0.5	<0.5
	25	1241.28	1216.28	9/5/2001	1.2	<0.5	<0.5	<0.5
	35	1241.28	1206.28	9/5/2001	1.2	<0.5	<0.5	<0.5
	45	1241.28	1196.28	9/5/2001	1.2	<0.5	<0.5	<0.5
	PRE-PURGE	1241.28	NA	3/6/2002	**1600**	**9.5**	2.6	2
	POST-PURGE	1241.28	NA	3/6/2002	**41**	<0.5	<0.5	<0.5
	NDS	1241.28	NA	2/15/2006	**1200**	4.7	2.3	1.5
	NDS	1241.28	NA	6/27/2007	**390**	1.9	2.0	0.6
	NDS	1241.28	NA	9/27/2007	**420**	2.4	2.7	1.1
	NDS	1241.28	NA	1/29/2008	**270**	1.1	1.1	0.8
	NDS	1241.28	NA	4/24/2008	**170**	0.7	0.7	< 0.5
	NDS	1241.28	NA	7/24/2008	**330**	1.5	1.3	0.6
	NDS	1241.28	NA	10/21/2008	**120**	0.74	0.61	0.52
	NDS	1241.28	NA	1/22/2009	**110**	< 0.5	< 0.5	< 0.5
	NDS	1241.28	NA	4/14/2009	**190**	0.80	0.50	< 0.5
	NDS	1241.28	NA	7/23/2009	**220**	0.70	0.70	< 0.5
	NDS	1241.28	NA	10/12/2009	**150**	< 0.5	< 0.5	< 0.5
	NDS	1241.28	NA	1/28/2010	**110**	0.60	< 0.5	0.70
	NDS	1241.28	NA	4/21/2010	**65**	< 0.5	< 0.5	< 0.5
	NDS	1241.28	NA	7/28/2010	**42**	< 0.5	< 0.5	< 0.5
	NDS	1241.28	NA	10/27/2010	**48**	< 0.5	< 0.5	< 0.5
	NDS	1241.28	NA	1/20/2011	**26**	< 0.5	< 0.5	< 0.5
	NDS	1241.28	NA	4/12/2011	**13**	< 0.5	< 0.5	0.60
	NDS	1241.28	NA	7/21/2011	**12**	< 0.5	< 0.5	< 0.5
	NDS	1241.28	NA	10/27/2011	**9**	< 2.0	< 2.0	< 5.0
	NDS	1241.28	NA	1/12/2012	**8**	< 0.5	< 0.5	< 0.5
	44.5	1241.28	1196.78	10/22/13	<2.0	<1.0	<1.0	<1.0
	54.3	1241.28	1186.98	10/22/13	<2.0	<1.0	<1.0	<1.0
	64.1	1241.28	1177.18	10/22/13	<2.0	<1.0	<1.0	<1.0
	38.2	1241.28	1203.08	5/19/14	<2.0	<1.0	1.8	<1.0
	38.2	1241.28	1203.08	12/15/14	<2.0	<1.0	2.6	<1.0
	43.8	1241.28	1197.48	12/15/14	<2.0	<1.0	2.1	<1.0
	38.2	1241.28	1203.08	3/17/15	<2.0	<1.0	1.7	<1.0
	43.8	1241.28	1197.48	3/17/15	<2.0	<1.0	1.5	<1.0
	38.2	1241.28	1203.08	5/14/15	<2.0	<1.0	1.4	<1.0
	43.8	1241.28	1197.48	5/14/15	<2.0	<1.0	1.2	<1.0
	38.2	1241.28	1203.08	10/27/15	1.6	<1.0	<1.0	<1.0
	43.8	1241.28	1197.48	10/27/15	1.1	<1.0	<1.0	<1.0
	38.2	1241.28	1203.08	8/28/2016	3.8	<1.0	<1.0	<1.0
	40	1241.28	1201.28	12/3/2018	4.8	<2.0	<2.0	<2.0
	43.8	1241.28	1197.48	8/28/2016	2.6	<1.0	<1.0	<1.0
	44	1241.28	1197.28	12/3/2018	2.3	<2.0	<2.0	<2.0
ECP-02	PRE-PURGE	1244.49	NA	3/6/2002	<0.5	<0.5	<0.5	<0.5
	POST-PURGE	1244.49	NA	3/6/2002	<0.5	<0.5	<0.5	<0.5
	87	1244.49	1157.49	03/16/06	< 1.0	< 1.0	< 1.0	NR
	118	1244.49	1126.49	03/16/06	< 1.0	< 1.0	< 1.0	NR
	NDS	1244.49	NA	02/15/06	< 0.5	< 0.5	<0.5	<0.5
	87	1244.49	1157.49	10/25/06	< 1.0	< 1.0	< 1.0	NA
	117	1244.49	1127.49	10/25/06	< 1.0	< 1.0	< 1.0	<5.0
	118	1244.49	1126.49	03/14/07	< 1.0	< 1.0	< 1.0	NA
	NDS	1244.49	NA	06/27/07	<0.5	<0.5	<0.5	<0.5
	NDS	1244.49	NA	09/27/07	<0.5	<0.5	<0.5	<0.5
	87.5	1244.49	1156.99	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	102	1244.49	1142.49	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	117.5	1244.49	1126.99	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	NDS	1244.49	NA	01/29/08	< 0.5	< 0.5	< 0.5	< 0.5
	87	1244.49	1157.49	04/24/08	< 1.0	< 1.0	< 1.0	NA
	116.5	1244.49	1127.99	04/24/08	< 1.0	< 1.0	< 1.0	NA
	87	1244.49	1157.49	10/08/08	< 1.0	< 1.0	< 1.0	NA

TABLE 8
SUMMARY OF DETECTED VOC ANALYTICAL RESULTS
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Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
ECP-02	116.5	1244.49	1127.99	10/08/08	< 1.0	< 1.0	< 1.0	NA
	NDS	1244.49	NA	10/21/08	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	01/22/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	04/14/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	07/23/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	10/12/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	01/28/10	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	04/21/10	< 0.5	< 0.5	< 0.5	< 0.5
	87	1244.49	1157.49	06/15/10	< 1.0	< 1.0	< 1.0	< 5.0
	116.5	1244.49	1127.99	06/15/10	< 1.0	< 1.0	< 1.0	< 5.0
	NDS	1244.49	NA	07/28/10	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	10/27/10	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	01/20/11	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.49	NA	04/12/11	< 0.5	< 0.5	< 0.5	< 0.5
	87	1244.49	1157.49	05/17/11	< 1.0	< 1.0	< 1.0	< 5.0
	116.5	1244.49	1127.99	05/17/11	< 1.0	< 1.0	< 1.0	< 5.0
	NDS	1244.49	NA	07/21/11	< 0.5	< 0.5	< 0.5	< 0.5
	87	1244.49	1157.49	10/19/11	< 1.0	< 1.0	< 1.0	< 5.0
	116.5	1244.49	1127.99	10/19/11	< 1.0	< 1.0	< 1.0	< 5.0
	NDS	1244.49	NA	10/27/11	< 2.0	< 2.0	< 2.0	< 5.0
	NDS	1244.49	NA	01/18/12	< 0.5	< 0.5	< 0.5	< 0.5
	87	1244.49	1157.49	04/18/12	< 1.0	< 1.0	< 1.0	< 5.0
	116.5	1244.49	1127.99	04/18/12	< 1.0	< 1.0	< 1.0	< 5.0
	88.1	1244.49	1156.39	10/22/13	<2.0	<1.0	<1.0	<1.0
	87.5	1244.49	1156.99	5/19/14	<2.0	<1.0	<1.0	<1.0
	87.5	1244.49	1156.99	12/15/14	<2.0	<1.0	<1.0	<1.0
	87.5	1244.49	1156.99	3/17/15	<2.0	<1.0	<1.0	<1.0
	87.5	1244.49	1156.99	5/14/15	<2.0	<1.0	<1.0	<1.0
	87.5	1244.49	1156.99	8/28/2016	<1.0	<1.0	<1.0	6.8
	88	1244.49	1156.49	12/3/2018	<2.0	<2.0	<2.0	<2.0
ECP-03	PRE-PURGE	1244.35	NA	3/6/2002	<0.5	<0.5	<0.5	<0.5
	POST-PURGE	1244.35	NA	3/6/2002	0.5	<0.5	<0.5	<0.5
	31	1244.35	1213.35	03/16/06	< 1.0	< 1.0	< 1.0	NA
	NDS	1244.35	NA	02/15/06	<0.5	<0.5	<0.5	<0.5
	30	1244.35	1214.35	10/25/06	< 1.0	< 1.0	< 1.0	<5.0
	31	1244.35	1213.35	03/14/07	< 1.0	< 1.0	< 1.0	NA
	NDS	1244.35	NA	06/27/07	<0.5	<0.5	<0.5	<0.5
	32.5	1244.35	1211.85	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	32.5	1244.35	1211.85	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	46.5	1244.35	1197.85	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	NDS	1244.35	NA	01/29/08	< 0.5	< 0.5	< 0.5	< 0.5
	32	1244.35	1212.35	04/24/08	< 1.0	< 1.0	< 1.0	NA
	46.5	1244.35	1197.85	04/24/08	< 1.0	< 1.0	< 1.0	NA
	32.5	1244.35	1211.85	10/08/08	< 1.0	< 1.0	< 1.0	NA
	46.5	1244.35	1197.85	10/08/08	< 1.0	< 1.0	< 1.0	NA
	NDS	1244.35	NA	10/21/08	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	01/22/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	04/14/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	07/23/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	10/12/09	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	01/28/10	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	04/21/10	< 0.5	< 0.5	< 0.5	< 0.5
	32.5	1244.35	1211.85	06/15/10	< 1.0	< 1.0	< 1.0	NA
	46.5	1244.35	1197.85	06/15/10	< 1.0	< 1.0	< 1.0	NA
	NDS	1244.35	NA	07/28/10	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	10/27/10	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	01/20/11	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1244.35	NA	04/12/11	< 0.5	< 0.5	< 0.5	< 0.5
	33.5	1244.35	1210.85	05/17/11	< 1.0	< 1.0	< 1.0	NA
	46.5	1244.35	1197.85	05/17/11	< 1.0	< 1.0	< 1.0	NA

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48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
ECP-03	NDS	1244.35	NA	07/21/11	< 0.5	< 0.5	< 0.5	< 0.5
	35.0	1244.35	1209.35	10/19/11	< 1.0	< 1.0	< 1.0	< 5.0
	46.5	1244.35	1197.85	10/19/11	< 1.0	< 1.0	< 1.0	< 5.0
	NDS	1244.35	NA	10/27/11	< 2.0	< 2.0	< 2.0	< 2.0
	NDS	1244.35	NA	01/18/12	< 0.5	< 0.5	< 0.5	< 0.5
	35.5	1244.35	1208.85	04/18/12	< 1.0	< 1.0	< 1.0	< 5.0
	46.5	1244.35	1197.85	04/18/12	< 1.0	< 1.0	< 1.0	< 5.0
	42.5	1244.35	1201.85	10/22/13	<2.0	<1.0	<1.0	<1.0
	37.9	1244.35	1206.45	5/19/14	<2.0	<1.0	<1.0	<1.0
	37.9	1244.35	1206.45	12/15/14	<2.0	<1.0	<1.0	<1.0
	37.9	1244.35	1206.45	3/17/15	<2.0	<1.0	<1.0	<1.0
	37.9	1244.35	1206.45	5/14/15	<2.0	<1.0	<1.0	<1.0
	37.9	1244.35	1206.45	8/28/2016	<1.0	<1.0	<1.0	<1.0
	40	1244.35	1204.35	12/3/2018	<2.0	<2.0	<2.0	<2.0
SMW-01	NDS	1241.21	NA	04/21/92	**2,300**	**6.0**	NA	NA
	NDS	1241.21	NA	05/22/92	**390**	< 2.0	NA	NA
	NDS	1241.21	NA	05/22/92	**390**	< 1.0	NA	NA
	NDS	1241.21	NA	07/02/92	**360**	< 1.0	NA	NA
	NDS	1241.21	NA	08/11/92	**220**	< 0.4	NA	NA
	NDS	1241.21	NA	12/15/94	**3,000**	< 50	NA	NA
	NDS	1241.21	NA	03/28/96	**4,000**	< 25	NA	NA
	NDS	1241.21	NA	03/13/97	**6,200**	< 250	NA	NA
	NDS	1241.21	NA	05/08/97	**4,300**	< 100	NA	NA
	NDS	1241.21	NA	11/20/97	**1,500**	< 10	NA	NA
	NDS	1241.21	NA	02/05/98	**4,500**	< 1	NA	NA
	PRE-PURGE	1241.21	NA	03/06/02	**1200**	4.9	1.9	5.1
	POST-PURGE	1241.21	NA	03/06/02	**270**	1.6	0.7	1.4
	NDS	1241.21	NA	02/15/06	**74**	<0.5	<0.5	<0.5
	30	1241.21	1211.21	03/14/06	**98**	< 1.5	< 1.0	NA
	53	1241.21	1188.21	03/14/06	**8.8**	< 1.0	< 1.0	NA
	30	1241.21	1211.21	10/25/06	4.0	< 1.0	< 1.0	<5.0
	30	1241.21	1211.21	10/25/06	4.9	< 1.0	< 1.0	<5.0
	53	1241.21	1188.21	10/25/06	< 1.0	< 1.0	< 1.0	<5.0
	31	1241.21	1210.21	03/14/07	**100**	< 1.0	< 1.0	NA
	54	1241.21	1187.21	03/14/07	**70**	< 1.0	< 1.0	NA
	NDS	1241.21	NA	06/27/07	**4.4**	<0.5	<0.5	<0.5
	NDS	1241.21	NA	09/26/07	1.7	<0.5	<0.5	<0.5
	32	1241.21	1209.21	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	51.5	1241.21	1189.71	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	NDS	1241.21	NA	01/29/08	**480**	2.8	1.4	0.9
	32	1241.21	1209.21	04/24/08	**78**	< 1.0	< 1.0	NA
	40	1241.21	1201.21	04/24/08	**60.0**	< 1.0	< 1.0	NA
	50	1241.21	1191.21	04/24/08	**54.0**	< 1.0	< 1.0	NA
	51.5	1241.21	1189.71	04/24/08	**72.0**	< 1.0	< 1.0	NA
	NDS	1241.21	NA	07/24/08	1.6	< 0.5	< 0.5	< 0.5
	NDS	1241.21	NA	08/06/08	1.8	< 0.5	< 0.5	< 0.5
	31	1241.21	1210.21	10/08/08	1.3	< 1.0	< 1.0	NA
	51.5	1241.21	1189.71	10/08/08	< 1.0	< 1.0	< 1.0	NA
	NDS	1241.21	NA	10/21/08	1.9	< 0.5	< 0.5	< 0.5
	NDS	1241.21	NA	01/22/09	**14**	0.7	8.5	< 0.5
	NDS	1241.21	NA	04/14/09	**12**	< 0.5	3.6	< 0.5
	NDS	1241.21	NA	07/23/09	0.7	< 0.5	< 0.5	< 0.5
	NDS	1241.21	NA	10/24/09	1.2	< 0.5	< 0.5	< 0.5
	NDS	1241.21	NA	01/28/10	4.1	< 0.5	< 0.6	0.6
	NDS	1241.21	NA	04/21/10	**11**	< 0.5	< 0.5	< 0.5
	31	1241.21	1210.21	06/16/10	< 1.0	< 1.0	< 1.0	NA
	51.5	1241.21	1189.71	06/16/10	< 1.0	< 1.0	< 1.0	NA
	NDS	1241.21	NA	07/28/10	< 0.5	< 0.5	< 0.5	< 0.5
	NDS	1241.21	NA	10/27/10	0.6	< 0.5	< 0.5	< 0.5
	NDS	1241.21	NA	01/20/11	1.4	< 0.5	< 0.5	< 0.5

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Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
SMW-01	NDS	1241.21	NA	04/12/11	1.3	< 0.5	< 0.5	0.9
	33	1241.21	1208.21	06/02/11	< 1.0	< 1.0	< 1.0	< 5.0
	51.5	1241.21	1189.71	06/02/11	< 1.0	< 1.0	< 1.0	< 5.0
	34	1241.21	1207.21	10/20/11	< 1.0	< 1.0	< 1.0	< 5.0
	51.5	1241.21	1189.71	10/20/11	< 1.0	< 1.0	< 1.0	< 5.0
	NDS	1241.21	NA	10/27/11	< 2.0	< 2.0	< 2.0	< 5.0
	NDS	1241.21	NA	01/18/12	0.7	< 0.5	< 0.5	< 0.5
	35.5	1241.21	1205.71	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	51.5	1241.21	1189.71	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	42.4	1241.21	1198.81	10/22/13	<2.0	<1.0	1.8	<1.0
	52.5	1241.21	1188.71	10/22/13	<2.0	<1.0	<1.0	<1.0
	37.5	1241.21	1203.71	5/19/14	<2.0	<1.0	1.9	<1.0
	42.5	1241.21	1198.71	5/19/14	<2.0	<1.0	1.6	<1.0
	37.5	1241.21	1203.71	12/15/14	<2.0	<1.0	2	<1.0
	52.5	1241.21	1188.71	12/15/14	<2.0	<1.0	1.9	<1.0
	37.5	1241.21	1203.71	3/17/15	<2.0	<1.0	2.4	<1.0
	52.5	1241.21	1188.71	3/17/15	<2.0	<1.0	<1.0	<1.0
	37.5	1241.21	1203.71	5/14/15	<2.0	<1.0	1.6	<1.0
	52.5	1241.21	1188.71	5/14/15	<2.0	<1.0	<1.0	<1.0
	38	1241.21	1203.21	10/27/2015	<1.0	<1.0	<1.0	<2.0
	38	1241.21	1203.21	12/3/2018	<2.0	<2.0	<2.0	<2.0
	52.5	1241.21	1188.71	8/28/2016	<1.0	<1.0	<1.0	<1.0
	53	1241.21	1188.21	12/3/2018	<2.0	<2.0	<2.0	<2.0
SMW-02	NDS	1248.61	NA	08/10/92	< 0.2	< 0.2	NA	NA
	NDS	1248.61	NA	12/13/94	< 0.5	< 0.5	NA	NA
	NDS	1248.61	NA	03/19/96	< 0.5	< 0.5	NA	NA
	NDS	1248.61	NA	03/10/97	< 0.5	< 0.5	NA	NA
	NDS	1248.61	NA	05/05/97	< 0.5	< 0.5	NA	NA
	NDS	1248.61	NA	11/17/97	< 0.5	< 0.5	NA	NA
	NDS	1248.61	NA	02/02/98	< 1.0	< 1.0	NA	NA
	PRE-PURGE	1248.61	NA	03/06/02	<0.5	<0.5	<0.5	<0.5
	POST-PURGE	1248.61	NA	03/06/02	<0.5	<0.5	<0.5	<0.5
	30	1248.61	1218.61	03/14/06	< 1.0	< 1.0	< 1.0	NA
	53	1248.61	1195.61	03/14/06	< 1.0	< 1.0	< 1.0	NA
	30	1248.61	1218.61	10/25/06	< 1.0	< 1.0	< 1.0	NA
	53	1248.61	1195.61	10/25/06	< 1.0	< 1.0	< 1.0	NA
	55	1248.61	1193.61	03/14/07	< 1.0	< 1.0	< 1.0	NA
	55	1248.61	1193.61	03/14/07	< 1.0	< 1.0	< 1.0	NA
	32	1248.61	1216.61	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	50.5	1248.61	1198.11	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	32	1248.61	1216.61	04/24/08	< 1.0	< 1.0	< 1.0	NA
	51.5	1248.61	1197.11	04/24/08	< 1.0	< 1.0	< 1.0	NA
	31	1248.61	1217.61	10/08/08	< 1.0	< 1.0	< 1.0	NA
	51.5	1248.61	1197.11	10/08/08	< 1.0	< 1.0	< 1.0	NA
	33	1248.61	1215.61	06/15/10	< 1.0	< 1.0	< 1.0	NA
	51.5	1248.61	1197.11	06/15/10	< 1.0	< 1.0	< 1.0	NA
	33	1248.61	1215.61	05/17/11	< 1.0	< 1.0	< 1.0	NA
	51.5	1248.61	1197.11	05/17/11	< 1.0	< 1.0	< 1.0	NA
	34	1248.61	1214.61	10/19/11	< 1.0	< 1.0	< 1.0	< 5.0
	51.5	1248.61	1197.11	10/19/11	< 1.0	< 1.0	< 1.0	< 5.0
	35	1248.61	1213.61	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	51.5	1248.61	1197.11	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	52.5	1248.61	1196.11	10/22/13	< 2.0	< 1.0	< 1.0	< 1.0
	38.1	1248.61	1210.51	5/19/14	< 2.0	< 1.0	< 1.0	< 1.0
	38.1	1248.61	1210.51	12/15/14	< 2.0	< 1.0	< 1.0	< 1.0
	38.1	1248.61	1210.51	3/17/15	< 2.0	< 1.0	< 1.0	< 1.0
	38.1	1248.61	1210.51	5/14/15	2.00	< 1.0	< 1.0	< 1.0
	38.1	1248.61	1210.51	8/28/2016	< 1.0	< 1.0	< 1.0	< 1.0
	40	1248.61	1208.61	12/3/2018	< 2.0	< 2.0	< 2.0	< 2.0

TABLE 8
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Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
SMW-03-60	NDS	1236.66	NA	05/19/94	< 0.5	< 0.5	NA	<5.0
	NDS	1236.66	NA	12/12/94	< 0.5	< 0.5	NA	<5.0
	NDS	1236.66	NA	03/19/96	< 0.5	< 0.5	NA	<5.0
	NDS	1236.66	NA	03/10/97	< 1.4	< 0.5	NA	<5.0
	NDS	1236.66	NA	05/05/97	< 3.3	< 0.5	NA	<5.0
	NDS	1236.66	NA	11/18/97	< 0.5	< 0.5	NA	<5.0
	NDS	1236.66	NA	02/02/98	< 1.7	< 1.0	NA	<5.0
	30	1236.66	1206.66	03/16/06	< 1.0	< 1.0	< 1.0	<5.0
	29	1236.66	1207.66	10/25/06	2.3	< 1.0	< 1.0	<5.0
	30	1236.66	1206.66	03/14/07	3.4	< 1.0	< 1.0	<5.0
	35	1236.66	1201.66	10/16/07	**6.7**	< 1.0	< 1.0	<5.0
	59.3	1236.66	1177.36	10/16/07	**6.4**	< 1.0	< 1.0	<5.0
	34.5	1236.66	1202.16	04/24/08	**11**	< 1.0	< 1.0	< 5.0
	59.5	1236.66	1177.16	04/24/08	**9.3**	< 1.0	< 1.0	< 5.0
	34	1236.66	1202.66	10/08/08	**22**	< 1.0	< 1.0	< 5.0
	59.5	1236.66	1177.16	10/08/08	**33**	< 1.0	< 1.0	< 5.0
	59.5	1236.66	1177.16	10/08/08	**32**	< 1.0	< 1.0	< 5.0
	34.5	1236.66	1202.16	06/15/10	**14**	< 1.0	< 1.0	< 5.0
	59.5	1236.66	1177.16	06/15/10	**370**	1.3	< 1.2	< 5.0
	59.5	1236.66	1177.16	06/15/10	**350**	1.3	< 1.0	< 5.0
	35	1236.66	1201.66	11/16/10	**83**	< 1.0	< 1.0	< 5.0
	59	1236.66	1177.66	11/16/10	**110**	< 5.0	< 5.0	< 5.0
	35.5	1236.66	1201.16	05/17/11	**15**	< 1.0	< 1.0	< 5.0
	59.5	1236.66	1177.16	05/17/11	**1,200**	< 20	< 20	< 5.0
	37	1236.66	1199.66	10/19/11	**250**	1.0	< 1.0	< 5.0
	37	1236.66	1199.66	10/19/11	**240**	1.1	< 1.0	< 5.0
	59.5	1236.66	1177.16	10/19/11	**1,400**	**5.5**	5.4	< 5.0
	38	1236.66	1198.66	04/20/12	**410**	1.0	< 1.0	< 5.0
	59.5	1236.66	1177.16	04/21/12	**1,100**	3.2	2.7	< 5.0
	59.5	1236.66	1177.16	04/21/12	**850**	3.1	2.7	< 5.0
	39.5	1236.66	1197.16	10/22/13	<2.0	<1.0	**95**	<1.0
	44.5	1236.66	1192.16	10/22/13	<2.0	<1.0	**84**	<1.0
	49.5	1236.66	1187.16	10/22/13	<2.0	<1.0	**74**	<1.0
	54.5	1236.66	1182.16	10/22/13	<2.0	<1.0	67	<1.0
	59.5	1236.66	1177.16	10/22/13	<2.0	<1.0	36	<1.0
	39.5	1236.66	1197.16	5/19/14	<2.0	<1.0	**120**	<1.0
	49.5	1236.66	1187.16	5/19/14	<2.0	<1.0	**90**	<1.0
	59.6	1236.66	1177.06	5/19/14	<2.0	<1.0	38	<1.0
	39.5	1236.66	1197.16	12/15/14	<2.0	<1.0	29	<1.0
	59.6	1236.66	1177.06	12/15/14	<2.0	<1.0	27	<1.0
	39.5	1236.66	1197.16	3/17/15	<2.0	<1.0	68	<1.0
	59.6	1236.66	1177.06	3/17/15	<2.0	<1.0	24	<1.0
	39.5	1236.66	1197.16	5/14/15	<2.0	<1.0	66	<1.0
	59.6	1236.66	1177.06	5/14/15	<2.0	<1.0	11	<1.0
	44.5	1236.66	1192.16	8/28/2016	**7.7**	<1.0	<1.0	<1.0
	42	1236.66	1194.66	12/3/2018	**31**	<2.0	<2.0	<2.0
SMW-03-138	NDS	1236.71	NA	05/19/94	< 0.5	1.0	NA	NA
	NDS	1236.71	NA	12/12/94	< 0.5	< 0.5	NA	NA
	NDS	1236.71	NA	03/18/96	**7.5**	< 0.5	NA	NA
	NDS	1236.71	NA	03/11/97	0.55	< 0.5	NA	NA
	NDS	1236.71	NA	05/05/97	< 0.50	< 0.5	NA	NA
	NDS	1236.71	NA	11/18/97	< 0.50	< 0.5	NA	NA
	NDS	1236.71	NA	02/02/98	< 1	< 1	NA	NA
	132	1236.71	1104.71	03/16/06	< 1.0	< 1.0	< 1.0	NA
	132	1236.71	1104.71	03/16/06	< 1.0	< 1.0	< 1.0	NA
	131	1236.71	1105.71	10/25/06	< 1.0	< 1.0	< 1.0	<5.0
	132	1236.71	1104.71	03/14/07	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	124	1236.71	1112.71	10/16/07	< 1.0	< 1.0	< 1.0	<5.0
	133.5	1236.71	1103.21	10/16/07	< 1.0	< 1.0	< 1.0	<5.0

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Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
SMW-03-138	115	1236.71	1121.71	04/24/08	< 1.0	< 1.0	< 1.0	NA
	139.5	1236.71	1097.21	04/24/08	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	10/08/08	< 1.0	< 1.0	< 1.0	NA
	130.5	1236.71	1106.21	10/08/08	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	06/15/10	< 1.0	< 1.0	< 1.0	NA
	139.5	1236.71	1097.21	06/15/10	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	11/16/10	< 1.0	< 1.0	< 1.0	NA
	139	1236.71	1097.71	11/16/10	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	05/17/11	< 1.0	< 1.0	< 1.0	NA
	139.5	1236.71	1097.21	05/17/11	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	10/19/11	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	10/19/11	< 1.0	< 1.0	< 1.0	NA
	139.5	1236.71	1097.21	10/19/11	< 1.0	< 1.0	< 1.0	NA
	115	1236.71	1121.71	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	136	1236.71	1100.71	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	102.1	1236.71	1134.61	10/22/13	<1.0	<1.0	<1.0	<1.0
	118.1	1236.71	1118.61	10/22/13	<2.0	<1.0	<1.0	<1.0
	102.0	1236.71	1134.71	5/19/14	<2.0	<1.0	<1.0	<1.0
	102.0	1236.71	1134.71	12/15/14	<2.0	<1.0	<1.0	<1.0
	102.0	1236.71	1134.71	3/17/15	<2.0	<1.0	<1.0	<1.0
	102.0	1236.71	1134.71	5/14/15	<2.0	<1.0	<1.0	<1.0
	102.0	1236.71	1134.71	8/28/2016	<1.0	<1.0	<1.0	<1.0
	102.0	1236.71	1134.71	8/28/2016 (D)	<1.0	<1.0	<1.0	<1.0
	102.0	1236.71	1134.71	12/3/2018	<2.0	<2.0	<2.0	<2.0
	102.0	1236.71	1134.71	12/3/2018 (D)	<2.0	<2.0	<2.0	<2.0
SMW-04	41.0	1238.4	1197.40	12/10/2007	1.5	<1.0	< 1.0	<5.0
	50.0	1238.4	1188.40	12/10/2007	7.1	<1.0	< 1.0	<5.0
	60.0	1238.4	1178.40	12/10/2007	<1.0	<1.0	< 1.0	<5.0
	31.0	1238.4	1207.40	1/31/2008	2.9	< 1.0	< 1.0	<5.0
	60.0	1238.4	1178.40	1/31/2008	2.4	< 1.0	< 1.0	< 5.0
	45.0	1238.4	1193.40	1/31/2008	2.2	< 1.0	< 1.0	< 5.0
	58.5	1238.4	1179.90	1/31/2008	2.2	< 1.0	< 1.0	< 5.0
	31.5	1238.4	1206.90	04/24/08	**5.0**	< 1.0	< 1.0	NA
	40	1238.4	1198.40	04/24/08	2.1	< 1.0	< 1.0	NA
	50	1238.4	1188.40	04/24/08	2.7	< 1.0	< 1.0	NA
	50	1238.4	1188.40	04/24/08	2.5	< 1.0	< 1.0	NA
	56.5	1238.4	1181.90	04/24/08	2.5	< 1.0	< 1.0	NA
	31	1238.4	1207.40	10/08/08	**6.3**	< 1.0	< 1.0	NA
	56.5	1238.4	1181.90	10/08/08	**5.7**	< 1.0	< 1.0	NA
	56.5	1238.4	1181.90	10/08/08	**5.7**	< 1.0	< 1.0	NA
	31	1238.4	1207.40	06/15/10	4.3	< 1.0	< 1.0	NA
	56.5	1238.4	1181.90	06/15/10	3.2	< 1.0	< 1.0	NA
	56.5	1238.4	1181.90	06/15/10	2.8	< 1.0	< 1.0	NA
	33	1238.4	1205.40	05/17/11	2.0	< 1.0	< 1.0	NA
	56.5	1238.4	1181.90	05/17/11	1.5	< 1.0	< 1.0	NA
	56.5	1238.4	1181.90	05/17/11	1.5	< 1.0	< 1.0	NA
	34	1238.4	1204.40	10/19/11	**6.9**	< 1.0	< 1.0	< 5.0
	56.5	1238.4	1181.90	10/19/11	2.3	< 1.0	< 1.0	< 5.0
	35	1238.4	1203.40	04/19/12	4.2	< 1.0	< 1.0	< 5.0
	56.5	1238.4	1181.90	04/19/12	1.1	< 1.0	< 1.0	< 5.0
	41.9	1238.4	1196.50	10/22/13	<2.0	<1.0	1.5	<1.0
	49.1	1238.4	1189.30	10/22/13	<2.0	<1.0	1.2	<1.0
	56.3	1238.4	1182.10	10/22/13	<2.0	<1.0	<1.0	<1.0
	36.8	1238.4	1201.60	5/19/14	<2.0	<1.0	1.7	<1.0
	41.9	1238.4	1196.50	5/19/14	<2.0	<1.0	1.4	<1.0
	36.8	1238.4	1201.60	12/15/14	<2.0	<1.0	6.2	<1.0
	52.2	1238.4	1186.20	12/15/14	<2.0	<1.0	6.3	<1.0
	36.8	1238.4	1201.60	3/17/15	<2.0	<1.0	1.1	<1.0
	52.2	1238.4	1186.20	3/17/15	<2.0	<1.0	<1.0	<1.0
	36.8	1238.4	1201.60	5/14/15	<2.0	<1.0	1.5	<1.0

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Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
SMW-04	52.2	1238.4	1186.20	5/14/15	<2.0	<1.0	<1.0	<1.0
	41.9	1238.4	1196.50	8/28/2016	1.6	<1.0	<1.0	<1.0
	40	1238.4	1198.40	12/3/2018	2.5	<2.0	<2.0	<2.0
	52.2	1238.4	1186.20	8/28/2016	1.9	<1.0	<1.0	<1.0
	52	1238.4	1186.40	12/3/2018	<2.0	<2.0	<2.0	<2.0
SMW-05	Post-develop	1238.4	NA	4/9/2008	< 1.0	< 1.0	< 1.0	< 5.0
	30.02	1239.49	1209.47	04/24/08	< 1.0	< 1.0	< 1.0	NA
	30.02	1239.49	1209.47	04/24/08	< 1.0	< 1.0	< 1.0	NA
	30.02	1239.49	1209.47	04/24/08	< 1.0	< 1.0	< 1.0	NA
	30.02	1239.49	1209.47	04/24/08	< 1.0	< 1.0	< 1.0	NA
	30.02	1239.49	1209.47	04/24/08	< 1.0	< 1.0	< 1.0	NA
	29.05	1239.49	1210.44	10/08/08	< 1.0	< 1.0	< 1.0	NA
	29.05	1239.49	1210.44	10/08/08	< 1.0	< 1.0	< 1.0	NA
	31.15	1239.49	1208.34	06/15/10	< 1.0	< 1.0	< 1.0	NA
	31.15	1239.49	1208.34	06/15/10	< 1.0	< 1.0	< 1.0	NA
	31.92	1239.49	1207.57	05/17/11	< 1.0	< 1.0	< 1.0	NA
	31.92	1239.49	1207.57	05/17/11	< 1.0	< 1.0	< 1.0	NA
	32.17	1239.49	1207.32	10/19/11	2.1	< 1.0	< 1.0	< 5.0
	32.17	1239.49	1207.32	10/19/11	2.0	< 1.0	< 1.0	< 5.0
	32.26	1239.49	1207.23	04/19/12	< 1.0	< 1.0	< 1.0 R5	< 5.0
	32.26	1239.49	1207.23	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	42.3	1239.49	1197.19	10/22/13	<2.0	<1.0	<1.0	<1.0
	37.3	1239.49	1202.19	5/19/14	<2.0	<1.0	<1.0	<1.0
	37.3	1239.49	1202.19	12/15/14	<2.0	<1.0	<1.0	<1.0
	37.3	1239.49	1202.19	3/17/15	<2.0	<1.0	<1.0	<1.0
	37.3	1239.49	1202.19	5/14/15	<2.0	<1.0	<1.0	<1.0
	42.3	1239.49	1197.19	8/28/2016	<1.0	<1.0	<1.0	<1.0
	40	1239.49	1199.49	12/3/2018	<2.0	<2.0	<2.0	<2.0
SMW-06	34	1227.84	1205.49	04/19/12	4.6	< 1.0	< 1.0	< 5.0
	59.5	1227.84	1179.99	04/19/12	2.8	< 1.0	< 1.0	< 5.0
	42.7	1227.84	1196.79	10/22/13	<1.0	<1.0	<1.0	<1.0
	54.5	1227.84	1173.34	10/22/13	<1.0	<1.0	<1.0	<1.0
	35.5	1227.84	1192.34	5/19/14	<1.0	<1.0	<1.0	<1.0
	35.5	1227.84	1192.34	12/15/14	<1.0	<1.0	2	<1.0
	35.5	1227.84	1192.34	3/17/15	<1.0	<1.0	1.7	<1.0
	35.5	1227.84	1192.34	5/14/2015	<1.0	<1.0	1.6	<1.0
	35.5	1227.84	1192.34	8/28/2016	<1.0	<1.0	<1.0	5.7
	38	1227.84	1189.84	12/3/2018	<2.0	<2.0	<2.0	<2.0
SMW-07	35	1240.43	1205.43	02/08/12	**6.8**	< 1.0	< 1.0	< 5.0
	56	1240.43	1184.43	02/08/12	< 1.0	< 1.0	< 1.0	< 5.0
	35	1240.43	1205.43	04/20/12	**14**	< 1.0	< 1.0	< 5.0
	59.5	1240.43	1180.93	04/20/12	< 1.0	< 1.0	< 1.0	< 5.0
	59.5	1240.43	1180.93	04/20/12	< 1.0	< 1.0	< 1.0	< 5.0
	42.1	1240.43	1198.33	10/22/13	<2.0	<1.0	4.3	<1.0
	49.7	1240.43	1190.73	10/22/13	<2.0	<1.0	2.5	<1.0
	57.1	1240.43	1183.33	10/22/13	<2.0	<1.0	2.1	<1.0
	37.0	1240.43	1203.43	5/19/14	<2.0	<1.0	7	<1.0
	42.1	1240.43	1198.33	5/19/14	<2.0	<1.0	4.1	<1.0
	37.0	1240.43	1203.43	12/15/14	<2.0	<1.0	7.2	<1.0
	47.6	1240.43	1192.83	12/15/14	<2.0	<1.0	2.3	<1.0
	58.2	1240.43	1182.23	12/15/14	<2.0	<1.0	1.2	<1.0
	37.0	1240.43	1203.43	3/17/15	<2.0	<1.0	3.4	<1.0
	47.6	1240.43	1192.83	3/17/15	<2.0	<1.0	1.7	<1.0
	58.2	1240.43	1182.23	3/17/15	<2.0	<1.0	1.8	<1.0
	37.0	1240.43	1203.43	5/14/15	<2.0	<1.0	5.3	<1.0
	47.6	1240.43	1192.83	5/14/15	<2.0	<1.0	2.2	<1.0
	58.2	1240.43	1182.23	5/14/15	<2.0	<1.0	1.7	<1.0
	37	1240.43	1203.43	8/28/2016	**10**	<1.0	<1.0	<1.0
	37	1240.43	1203.43	8/28/2016 (D)	**12**	<1.0	<1.0	<1.0
	40	1240.43	1200.43	12/4/2018	**7.6**	<2.0	<2.0	3.4

TABLE 8
SUMMARY OF DETECTED VOC ANALYTICAL RESULTS
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6] PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
SMW-07	48	1240.43	1192.43	10/27/2015	<1.0	<1.0	<1.0	<2.0
	48	1240.43	1192.43	12/4/2018	3.1	<2.0	<2.0	3.4
	58.2	1240.43	1182.23	8/28/2016	<1.0	<1.0	<1.0	2.2
	58	1240.43	1182.43	12/4/2018	<2.0	<2.0	<2.0	3.3
	58	1240.43	1182.43	12/4/2018 (D)	<2.0	<2.0	<2.0	3.1
SMW-08	37	1243.65	1206.65	02/08/12	< 1.0	< 1.0	< 1.0	< 5.0
	37	1243.65	1206.65	02/08/12	< 1.0	< 1.0	< 1.0	< 5.0
	56.0	1243.65	1187.65	02/08/12	< 1.0	< 1.0	< 1.0	< 5.0
	37	1243.65	1206.65	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	59.5	1243.65	1184.15	04/19/12	< 1.0	< 1.0	< 1.0	< 5.0
	45.5	1243.65	1198.15	10/22/13	<2.0	<1.0	<1.0	<1.0
	55.3	1243.65	1188.35	10/22/13	<2.0	<1.0	<1.0	<1.0
	39.4	1243.65	1204.25	5/19/14	<2.0	<1.0	<1.0	<1.0
	39.4	1243.65	1204.25	12/15/14	<2.0	<1.0	<1.0	<1.0
SMW-08	39.4	1243.65	1204.25	3/17/15	<2.0	<1.0	<1.0	<1.0
	39.4	1243.65	1204.25	5/14/15	<2.0	<1.0	<1.0	<1.0
	39.4	1243.65	1204.25	8/28/16	<1.0	<1.0	<1.0	<1.0
	42	1243.65	1201.65	12/3/18	<2.0	<2.0	<2.0	<2.0
SMW-11	52.3	1221.38	1169.08	8/28/16	<1.0	<1.0	<1.0	<1.0
	60	1221.38	1161.38	12/3/18	<2.0	<2.0	<2.0	<2.0
SMW-12	147	1212.19	1065.19	8/28/16	<1.0	<1.0	<1.0	<1.0
	155	1212.19	1057.19	12/3/18	<2.0	<2.0	<2.0	<2.0
SMW-16B	100	1240.24	1140.24	12/3/18	<2.0	<2.0	<2.0	5.7
	120	1240.24	1120.24	12/3/18	<2.0	<2.0	<2.0	5.4
BMW-05A	40.4	1212.81	1199.84	2/27/14	<2.0	<1.0	<1.0	<1.0
	45.7	1212.81	1167.11	2/27/14	<2.0	<1.0	<1.0	<1.0
	51.1	1212.81	1161.71	2/27/14	<2.0	<1.0	<1.0	<1.0
	56.4	1212.81	1156.41	2/27/14	<2.0	<1.0	<1.0	<1.0
	61.8	1212.81	1151.01	2/27/14	<2.0	<1.0	<1.0	<1.0
	40.4	1212.81	1172.41	5/20/14	<2.0	<1.0	<1.0	<1.0
	40.4	1212.81	1172.41	12/16/14	<2.0	<1.0	<1.0	<1.0
	40.4	1212.81	1172.41	3/18/15	<2.0	<1.0	<1.0	<1.0
	40.4	1212.81	1172.41	5/15/15	<2.0	<1.0	<1.0	<1.0
	40.4	1212.81	1172.41	10/27/15	<2.0	<1.0	<1.0	<1.0
	40.4	1212.81	1172.41	8/24/16	<1.0	<1.0	<1.0	<1.0
	42.0	1212.81	1170.81	12/4/18	<2.0	<2.0	<2.0	<2.0
BMW-05B	83.2	1212.87	1129.61	2/27/14	<2.0	<1.0	<1.0	<1.0
	77.5	1212.87	1135.37	2/27/14	<2.0	<1.0	<1.0	<1.0
	83.2	1212.87	1129.67	2/27/14	<2.0	<1.0	<1.0	<1.0
	88.9	1212.87	1123.97	2/27/14	<2.0	<1.0	<1.0	<1.0
	94.6	1212.87	1118.27	2/27/14	<2.0	<1.0	<1.0	<1.0
	100.3	1212.87	1112.57	2/27/14	<2.0	<1.0	<1.0	<1.0
	106.0	1212.87	1106.87	2/27/14	<2.0	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	2/27/14	<2.0	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	5/20/14	<2.0	<1.0	<1.0	<1.0
	77.5	1212.87	1135.37	5/20/14	<2.0	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	5/20/14	<2.0	<1.0	<1.0	<1.0
	77.5	1212.87	1135.37	12/16/14	<2.0	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	12/16/14	<2.0	<1.0	<1.0	<1.0
	77.5	1212.87	1135.37	3/18/15	2.5	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	3/18/15	2.8	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	5/15/15	<2.0	<1.0	<1.0	<1.0
	77.5	1212.87	1135.37	5/15/15	2	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	5/15/15	<2.0	<1.0	<1.0	<1.0
	77.5	1212.87	1135.37	10/27/15	<2.0	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	10/27/15	<2.0	<1.0	<1.0	<1.0
	111.7	1212.87	1101.17	8/24/16	<1.0	<1.0	<1.0	<1.0
	77.5	1212.87	1135.37	12/3/18	3.8	<2.0	<2.0	<2.0
	111.7	1212.87	1101.17	12/3/2018	**7.1**	<2.0	<2.0	<2.0

TABLE 8
SUMMARY OF DETECTED VOC ANALYTICAL RESULTS
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Well Name	Depth Sampled (ft BMP)[1]	MP Elevation (ft AMSL)[2]	Sample Elevation (ft AMSL)[3]	Sample Date	Results[4-6]			
					PCE	TCE	c-1,2-DCE	Chloroform
				Aquifer Water Quality Standard	5.0	5.0	70	100
BMW-6A	51.8	1214.27	1161.07	2/27/14	4.9	<1.0	<1.0	<1.0
	34.9	1214.27	1179.37	2/27/14	2.3	<1.0	<1.0	<1.0
	40.5	1214.27	1173.77	2/27/14	2.3	<1.0	<1.0	<1.0
	46.2	1214.27	1168.07	2/27/14	2.2	<1.0	<1.0	<1.0
	51.8	1214.27	1162.47	2/27/14	4.6	<1.0	<1.0	<1.0
	57.4	1214.27	1156.87	2/27/14	4.9	<1.0	<1.0	<1.0
	34.9	1214.27	1179.37	5/20/14	<2.0	<1.0	<1.0	<1.0
	34.9	1214.27	1179.37	12/16/14	<2.0	<1.0	<1.0	<1.0
	34.9	1214.27	1179.37	3/18/15	<2.0	<1.0	<1.0	<1.0
	34.9	1214.27	1179.37	5/15/15	<2.0	<1.0	<1.0	<1.0
	34.9	1214.27	1179.37	10/27/15	<2.0	<1.0	<1.0	<1.0
	34.9	1214.27	1179.37	8/24/16	<1.0	<1.0	<1.0	<1.0
	37.0	1214.27	1177.27	12/3/18	<2.0	<2.0	<2.0	<2.0
BMW-06B	77.9	1214.50	1136.37	2/27/14	2.3	<1.0	<1.0	<1.0
	83.8	1214.50	1130.70	2/27/14	2.3	<1.0	<1.0	<1.0
	89.6	1214.50	1124.90	2/27/14	2.5	<1.0	<1.0	<1.0
	95.4	1214.50	1119.10	2/27/14	<2.0	<1.0	<1.0	<1.0
	101.3	1214.50	1113.20	2/27/14	<2.0	<1.0	<1.0	<1.0
	107.1	1214.50	1107.40	2/27/14	<2.0	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	5/20/14	<2.0	<1.0	<1.0	<1.0
	107.1	1214.50	1107.40	5/20/14	<2.0	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	5/20/14	1.7	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	12/16/14	<2.0	<1.0	<1.0	<1.0
	107.1	1214.50	1107.40	12/16/14	<2.0	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	3/18/15	<2.0	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	3/18/15	<2.0	<1.0	<1.0	<1.0
	107.1	1214.50	1107.40	3/18/15	<2.0	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	5/15/15	<2.0	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	10/27/15	<2.0	<1.0	<1.0	<1.0
	107.1	1214.50	1107.40	5/15/15	<2.0	<1.0	<1.0	<1.0
	107.1	1214.50	1107.40	5/15/15	<2.0	<1.0	<1.0	<1.0
	77.9	1214.50	1136.60	8/24/16	<1.0	<1.0	<1.0	<1.0
	107.1	1214.50	1107.40	12/4/18	<2.0	<2.0	<2.0	<2.0
BMW-12B	125.0	1209.13	1089.50	12/3/18	3.9	<2.0	<2.0	<2.0
	145.0	1209.13	1064.13	12/3/18	3.4	<2.0	<2.0	<2.0
	165.0	1209.13	1044.13	12/3/18	3.5	<2.0	<2.0	<2.0

Notes:
1. Sample Depth - feet below measuring point (MP).
2. MP Elevation in feet above mean sea level (AMSL)
3. Sample elevation in feet AMSL
4. Volatile organic compound (VOC) concentrations reported in micrograms per liter (ug/L). c-1,2-DCE - cis-1,2-dichloroethene, PCE -tetrachloroethene, TCE - trichloroethene. **BOLD** indicates exceeds Aquifer Water Quality Standard (AWQS)
5. (D) denotes duplicate result
6. NDS = Not Depth Specific

TABLE 9
SUMMARY OF VERTICAL PROFILE GROUNDWATER VOC RESULTS
REMEDIAL INVESTIGATION REPORT, 48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Borehole Number	Sample Depth (feet bgs)[1]	MP Elevation (feet AMSL)[2]	Sample Elevation (feet AMSL)[3]	PCE µg/L[5]	TCE µg/L	cis-1,2-DCE µg/L
			AWQS[4]	**5.0**	**5.0**	**70.0**
BMW-15D	42	1212	1170	<0.25	<0.25	<0.25
	66	1212	1146	<0.25	<0.25	<0.25
	86	1212	1126	<0.25	<0.25	<0.25
	105	1212	1107	<0.25	<0.25	<0.25
	125	1212	1087	<0.25	<0.25	<0.25
	145	1212	1067	<0.25	<0.25	<0.25
	172	1212	1040	<0.25	<0.25	<0.25
	200	1212	1012	<0.25	<0.25	<0.25
SMW-14B	45	1207	1162	<0.25	<0.25	<0.25
	65	1207	1142	<0.25	<0.25	<0.25
	85	1207	1122	**7.36**	0.97	<0.25
	105	1207	1102	1.83	<0.25	<0.25
	135	1207	1072	2.66	<0.25	<0.25
	155	1207	1052	1.75	<0.25	<0.25
	175	1207	1032	<0.25	<0.25	<0.25
	195	1207	1012	<0.25	<0.25	<0.25
	214	1207	993	<0.25	<0.25	<0.25
	240	1207	967	0.74	<0.25	<0.25
	255	1207	952	<0.25	<0.25	<0.25

TABLE 9
SUMMARY OF VERTICAL PROFILE GROUNDWATER VOC RESULTS
REMEDIAL INVESTIGATION REPORT, 48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

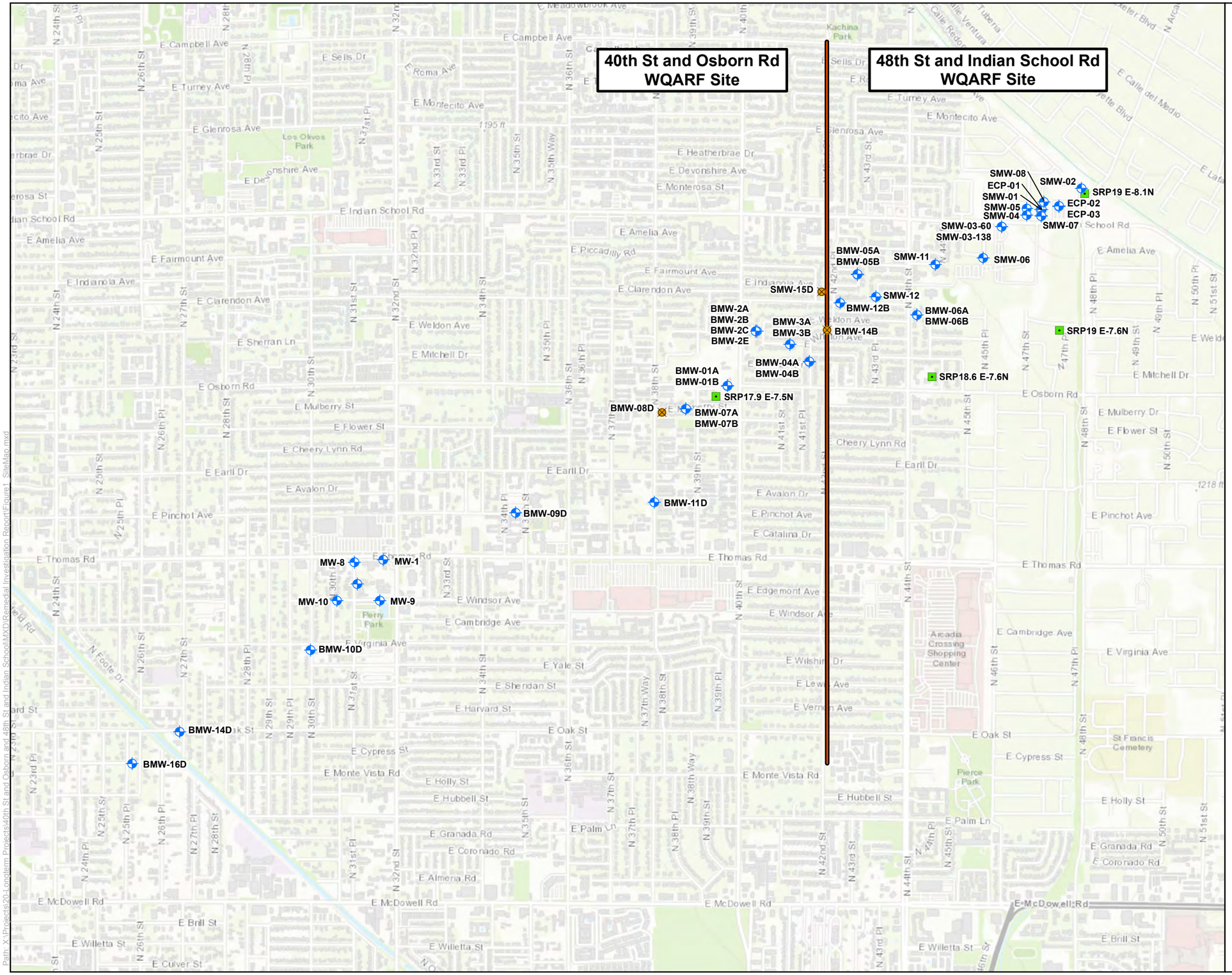
Borehole Number	Sample Depth (feet bgs)[1]	MP Elevation (feet AMSL)[2]	Sample Elevation (feet AMSL)[3]	PCE µg/L[5]	TCE µg/L	cis-1,2-DCE µg/L
			AWQS[4]	**5.0**	**5.0**	**70.0**
SMW-16B	40	1240.24	1200.24	**5.35**	<0.25	<0.25
	59	1240.24	1181.24	1.87	<0.25	<0.25
	79	1240.24	1161.24	<0.25	<0.25	<0.25
	105	1240.24	1135.24	1.23	<0.25	<0.25
	119	1240.24	1121.24	0.98	<0.25	<0.25
	140	1240.24	1100.24	<0.25	<0.25	<0.25
	160	1240.24	1080.24	<0.25	<0.25	<0.25
	180	1240.24	1060.24	0.98	<0.25	<0.25
	199	1240.24	1041.24	0.99	<0.25	<0.25

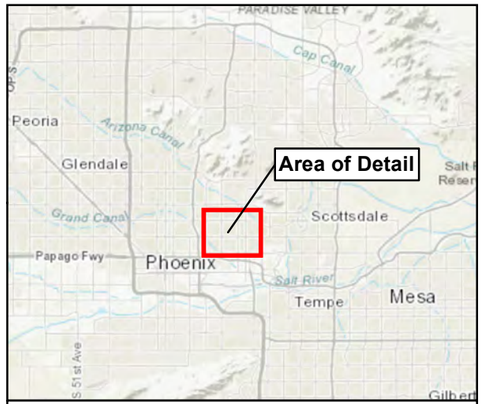
TABLE 9
SUMMARY OF VERTICAL PROFILE GROUNDWATER VOC RESULTS
REMEDIAL INVESTIGATION REPORT, 48TH STREET AND INDIAN SCHOOL ROAD WQARF SITE

Borehole Number	Sample Depth (feet bgs)[1]	MP Elevation (feet AMSL)[2]	Sample Elevation (feet AMSL)[3]	PCE µg/L[5]	TCE µg/L	cis-1,2-DCE µg/L
			AWQS[4]	**5.0**	**5.0**	**70.0**
BMW-12B	45	1209.13	1164.13	<0.25	<0.25	<0.25
	65	1209.13	1144.13	<0.25	<0.25	<0.25
	85	1209.13	1124.13	<0.25	<0.25	<0.25
	105	1209.13	1104.13	0.41	<0.25	<0.25
	125	1209.13	1084.13	3.1	0.64	<0.25
	145	1209.13	1064.13	0.55	<0.25	<0.25
	165	1209.13	1044.13	1.04	<0.25	<0.25
	185	1209.13	1024.13	1.19	<0.25	<0.25

1. Sample Depth - feet below measuring point (MP).
2. MP Elevation in feet above mean sea level (AMSL)
3. Sample elevation in feet AMSL
4. Aquifer Water Quality Standard (AWQS)
5. Volatile organic compound (VOC) concentrations reported in micrograms per liter (ug/L). C-1,2-DCE - cis-1,2-dichloroethene, PCE -tetrachloroethene, TCE - trichloroethene. **BOLD** indicates exceeds AWQS

FIGURES





Area of Detail

Legend

- Groundwater Monitor Well
- SRP Production Well
- Boring Location - Abandoned

Notes:

BMW-14D	Groundwater Monitoring Well Identification
SRP	Salt River Project
WQARF	Water Quality Assurance Revolving Fund

0 750 1,500 Feet

N

Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE 1 — **Site Vicinity Map**

Job No.	14-2019-2043
PM:	JC
Date:	9/27/2019
Scale:	1"= 1500'

wood.

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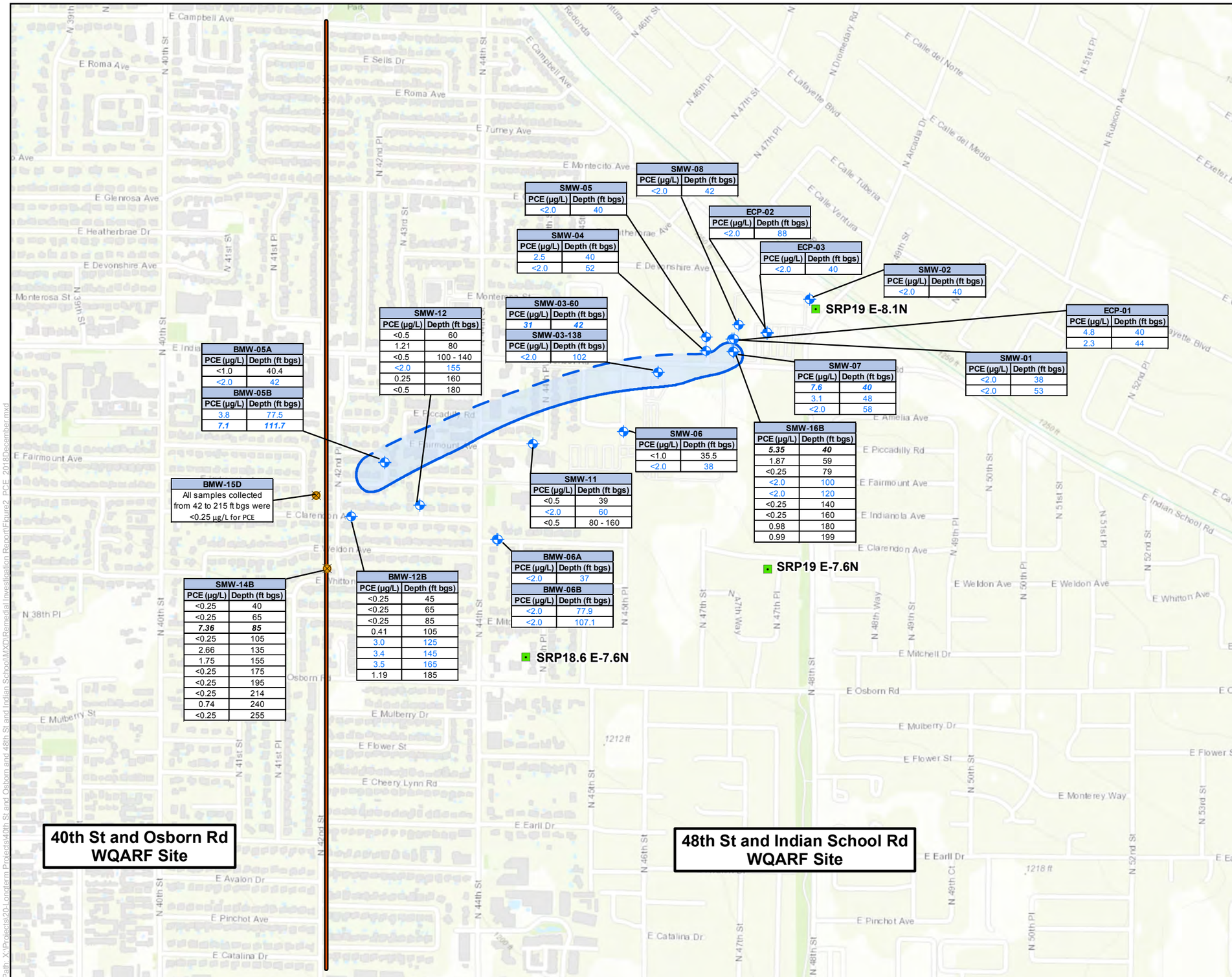
Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure1_SiteMap.mxd



Legend

- Groundwater Monitor Well
- SRP Production Well
- Boring Location - Abandoned
- Approximate Distribution of PCE Above 5 µg/L (Dashed Where Inferred)

Notes:

SMW-16B	Groundwater Monitoring Well Identification
1.87	Results that are black are from historic PCE sampling
<2.0	Results that are blue are from December 2018
5.35	Results that are ***bolded and italicized*** exceed the Aquifer Water Quality Standard of 5 µg/L
µg/L	Microgram per liter
ft	Feet
bgs	Below Ground Surface
PCE	Tetrachloroethene
WQARF	Water Quality Assurance Revolving Fund

0 400 800 Feet

N

Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE 2

December 2018 PCE Groundwater Distribution Map

Job No. 14-2019-2043
PM: JC
Date: 9/27/2019
Scale: 1"= 800'

wood.

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Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure2_PCE_2018December.mxd

0 75 150
Feet

Job No.	14-2019-2043
PM:	JC
Date:	9/27/2019
Scale:	1" = 150'

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Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

1-Hour Martinizing Location

FIGURE
3

wood.

Path: X:\Projects\20\Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure3_1Hour_Martinizing_Location.mxd

0 75 150
Feet

Job No.	14-2019-2043
PM:	JC
Date:	9/27/2019
Scale:	1" = 150'

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Phoenix, Arizona

Sandy's Magic Touch Cleaners Location

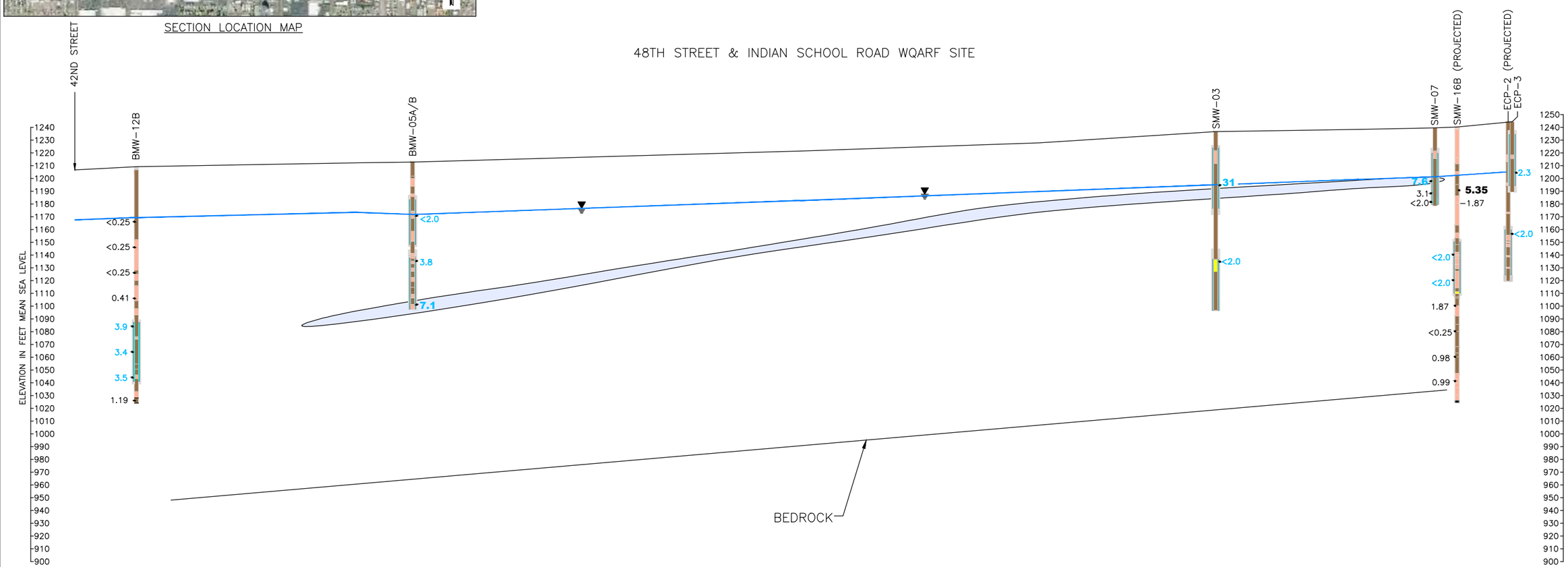
FIGURE
4

wood.

Path: X:\Projects\20\Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure4_Sandys_Magic_Touch_Cleaners_Location.mxd

SECTION LOCATION MAP

48TH STREET & INDIAN SCHOOL ROAD WQARF SITE

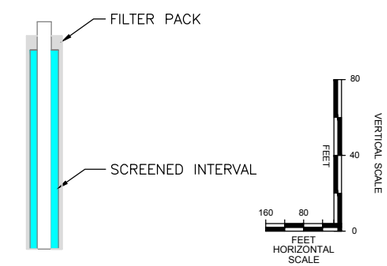


EXPLANATION

- BORING LOCATION
- GROUNDWATER WELL LOCATION
- DEPTH-DISCRETE GROUNDWATER SAMPLE (e.g. SIMULPROBE/HYDROPUNCH OR HYDROPUNCH SAMPLER)
- 3.6 — RECENT CONCENTRATION OF TETRACHLOROETHYLENE (PCE) DETECTED IN GROUNDWATER IN MICROGRAMS PER LITER (ug/l), DECEMBER 2015 TO AUGUST 2016, BOLD IF EXCEDES 5.0 ug/l
- 3.6 — RECENT CONCENTRATION OF TETRACHLOROETHYLENE (PCE) DETECTED IN GROUNDWATER IN MICROGRAMS PER LITER (ug/l), DECEMBER 2018, BOLD IF EXCEDES 5.0 ug/l
- ND — NON-DETECTION
- WATER LEVEL ELEVATION MEASURED IN NOVEMBER 2018
- — ? — ? — WHERE INFERRED

BOREHOLE LITHOLOGY

- NO RECOVERY/UNKNOWN OR BASED ON ADJACENT BOREHOLE
- FILL / ASPHALT
- SILTY OR CLAYEY SAND AND GRAVEL; AND SAND MIXTURES
- PREDOMINANTLY SAND OR GRAVEL
- PREDOMINANTLY SILT AND CLAY
- BEDROCK
- INDICATING PCE >5.0 ug/L



REVISIONS:

Environment & Infrastructure Solutions, Inc.
4600 E. WASHINGTON STREET, SUITE 600
PHOENIX, ARIZONA 85034
PHONE: 602-733-6000
FAX: 602-733-6100
wood.

Cross - Section
Remedial Investigation Report

PROJECT: 40th Street and Osborn and 48th Street and Indian School Road WQARF Sites Phoenix, Arizona

DESIGNED BY: JC
DRAWN BY: GWH
CHECKED BY: JC

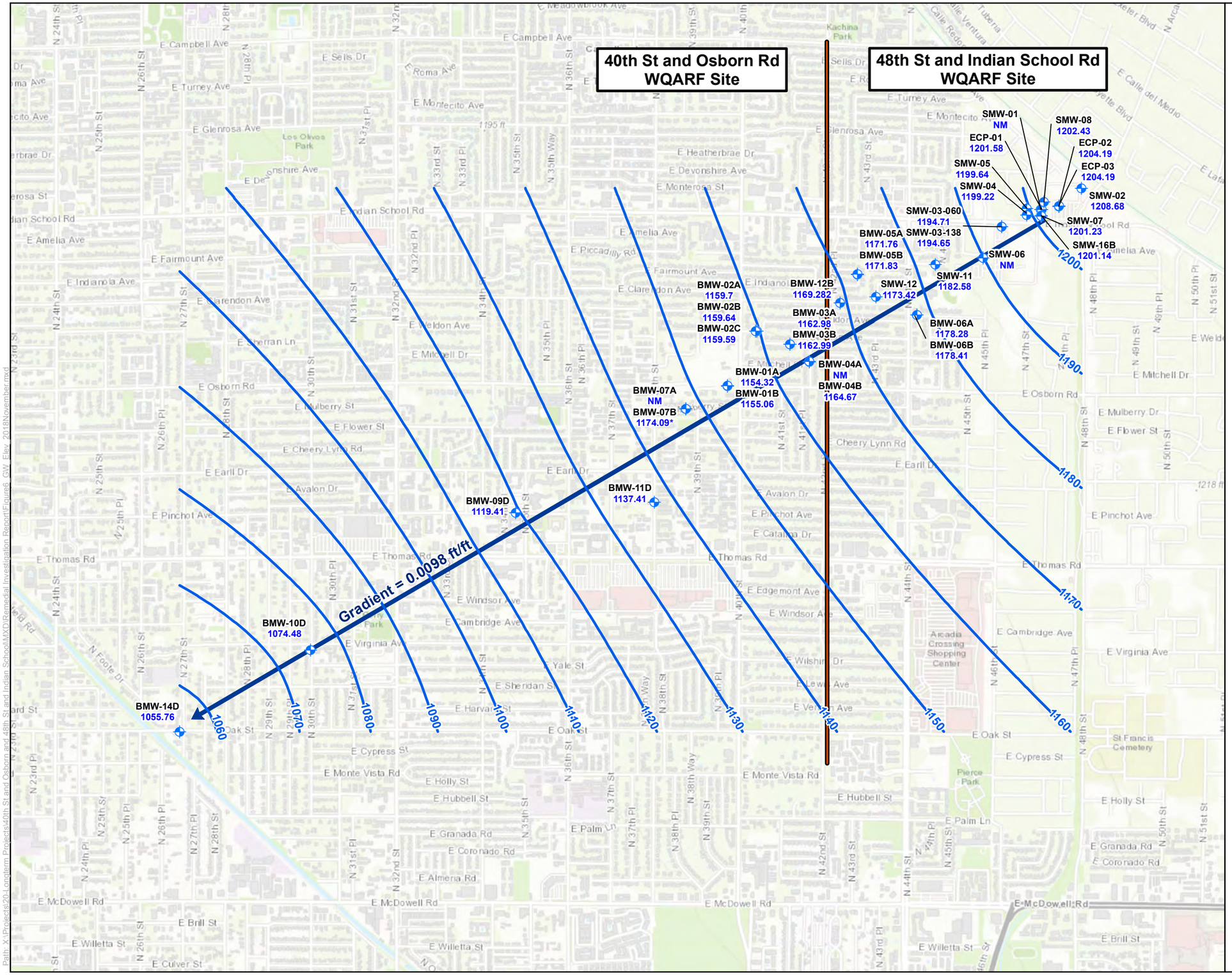
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

PROJECT NO. 14-2018-2039

DRAWING NAME 5

SHEET NO. 1

File: G:\Environmental-Development\2018 Projects\14-2018-2069 ECP FY19 48th St & Indian School Rd WQARF RI - TO #2\4.0 Project Deliverables\4.3 Drawings\182069_48th_St_Cross-section_Figure.dwg



Legend

- Groundwater Monitor Well
- Groundwater Elevation Contour (ft amsl)
- Groundwater Flow Direction

Notes:

BMW-14D 1055.76	Groundwater Monitoring Well Identification Groundwater Elevation (ft amsl)
*	Groundwater elevation value excluded from contouring due to anomalous reading due to weeds in the well
amsl	above mean sea level
ft	feet
NM	not measured
WQARF	Water Quality Assurance Revolving Fund

0 750 1,500
Feet

N

Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE 6

November 30, 2018 - Regional Groundwater Elevation Map

Job No.	14-2019-2043
PM:	JC
Date:	9/27/2019
Scale:	1"= 1500'

wood.

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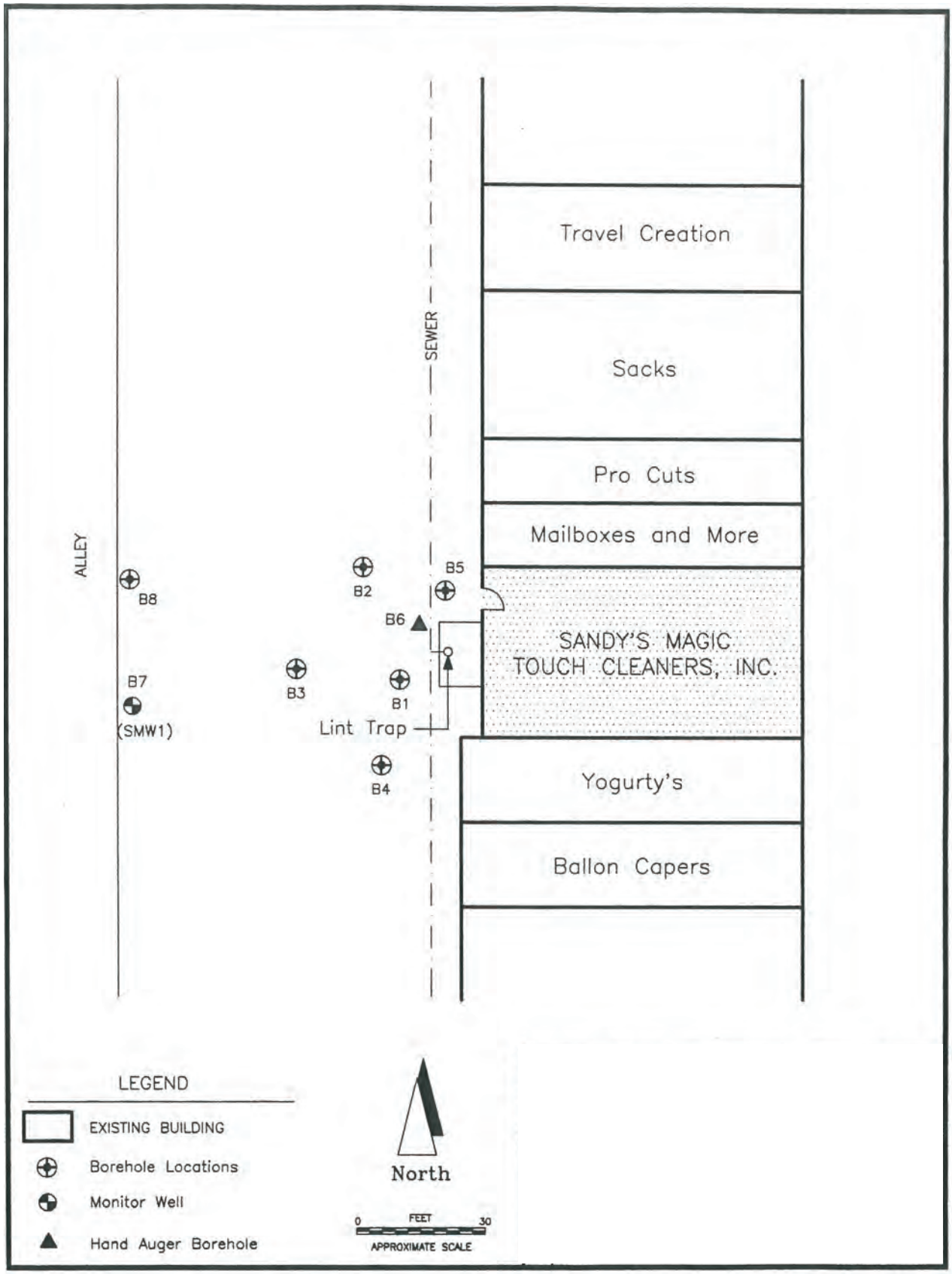
Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure6_GW_Elev_2018November.mxd



Job No. 14-2019-2043 PM: JC Date: 5/20/2019 Scale: As Shown	N	Remedial Investigation Report ECP 48th St & Indian School Rd WQARF Site Phoenix, Arizona	wood.
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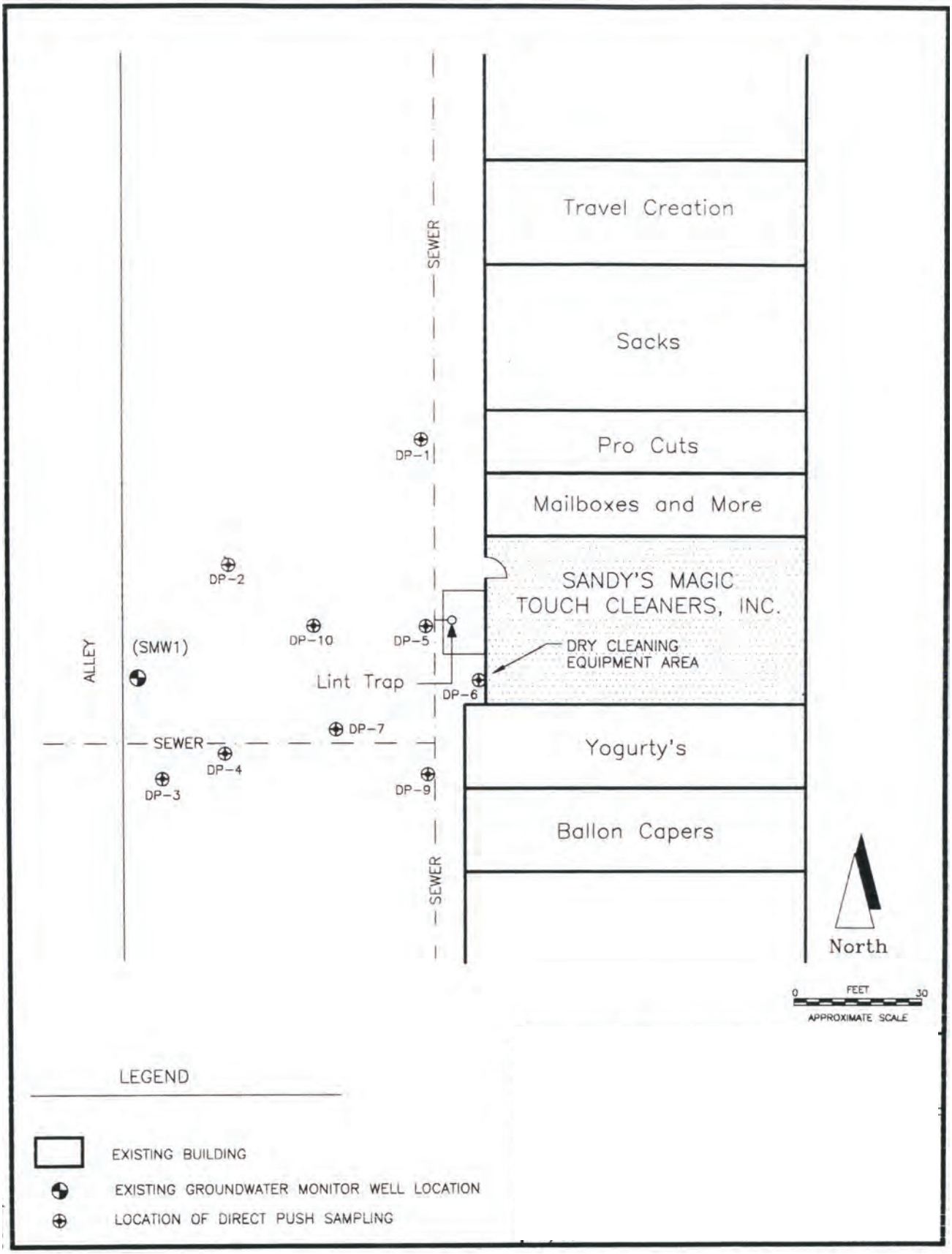
X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure7_1992SoilMap



Job No. 14-2019-2043 PM: JC Date: 5/20/2019 Scale: As Shown	N	Remedial Investigation Report ECP 48th St & Indian School Rd WQARF Site Phoenix, Arizona	wood.
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X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure8_1996SoilMap

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure9_SoilVaporSamplingLocations.mxd

Legend

Soil Vapor Monitoring Point

0 70 140 Feet

N

Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE 9 **Soil Vapor Sampling Locations**

Job No.	14-2019-2043
PM:	JC
Date:	9/27/2019
Scale:	1"= 140'

wood.

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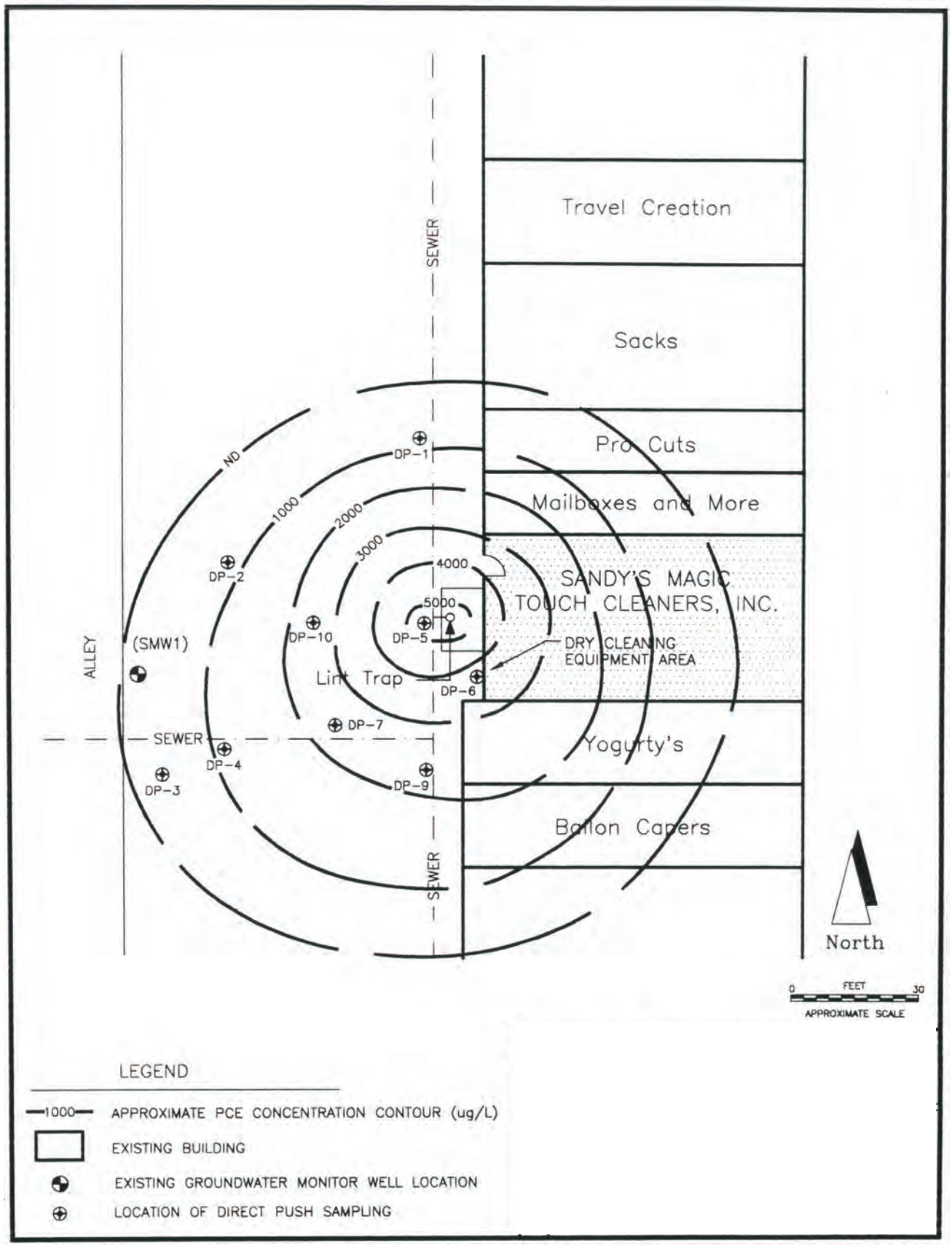

Job No. 14-2019-2043 PM: JC Date: 5/20/2019 Scale: As Shown	N	Remedial Investigation Report ECP 48th St & Indian School Rd WQARF Site Phoenix, Arizona	wood.
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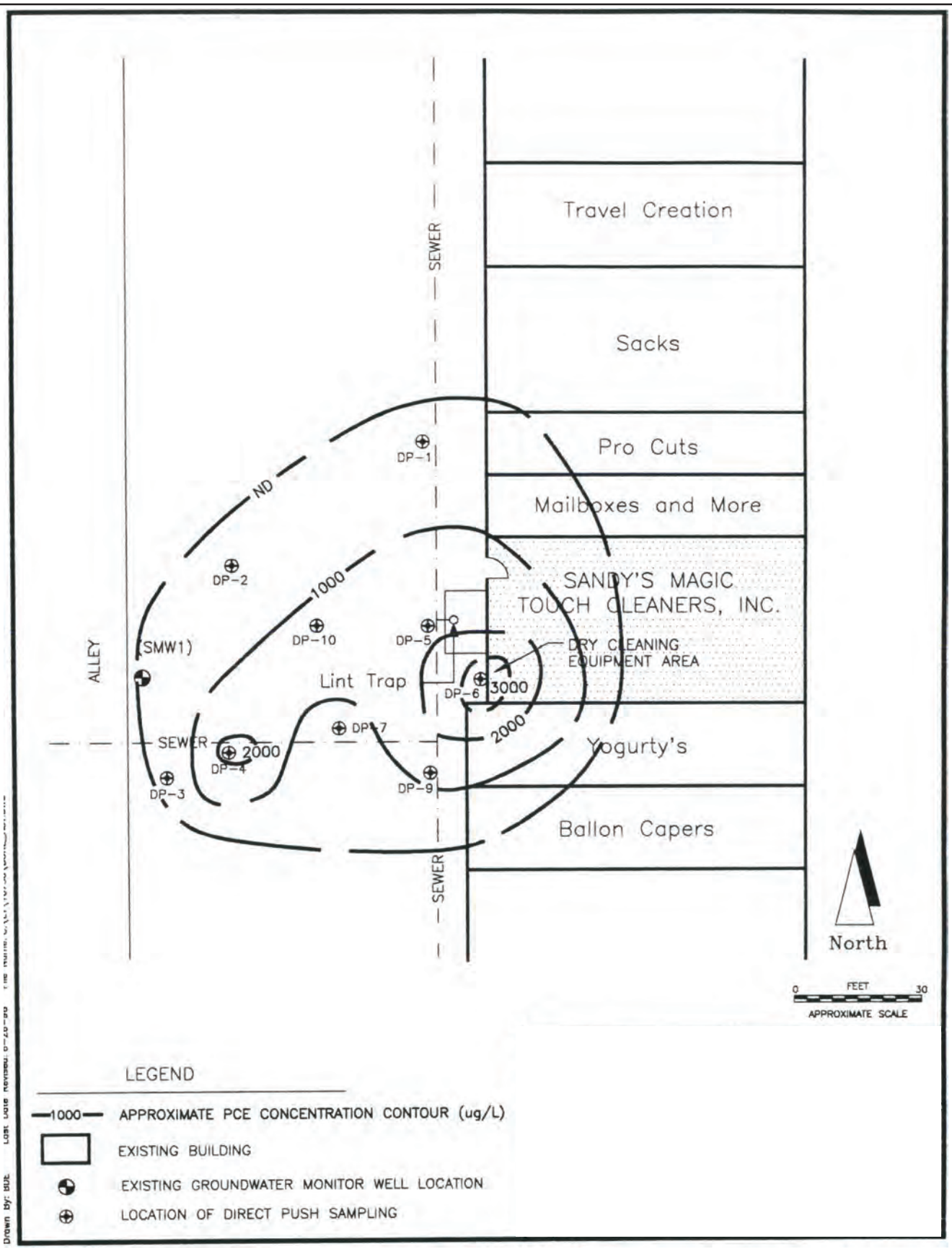
X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure10_PCEConcentrationContours_5ftBGS



Job No. 14-2019-2043 PM: JC Date: 5/20/2019 Scale: As Shown	N	Remedial Investigation Report ECP 48th St & Indian School Rd WQARF Site Phoenix, Arizona	wood.
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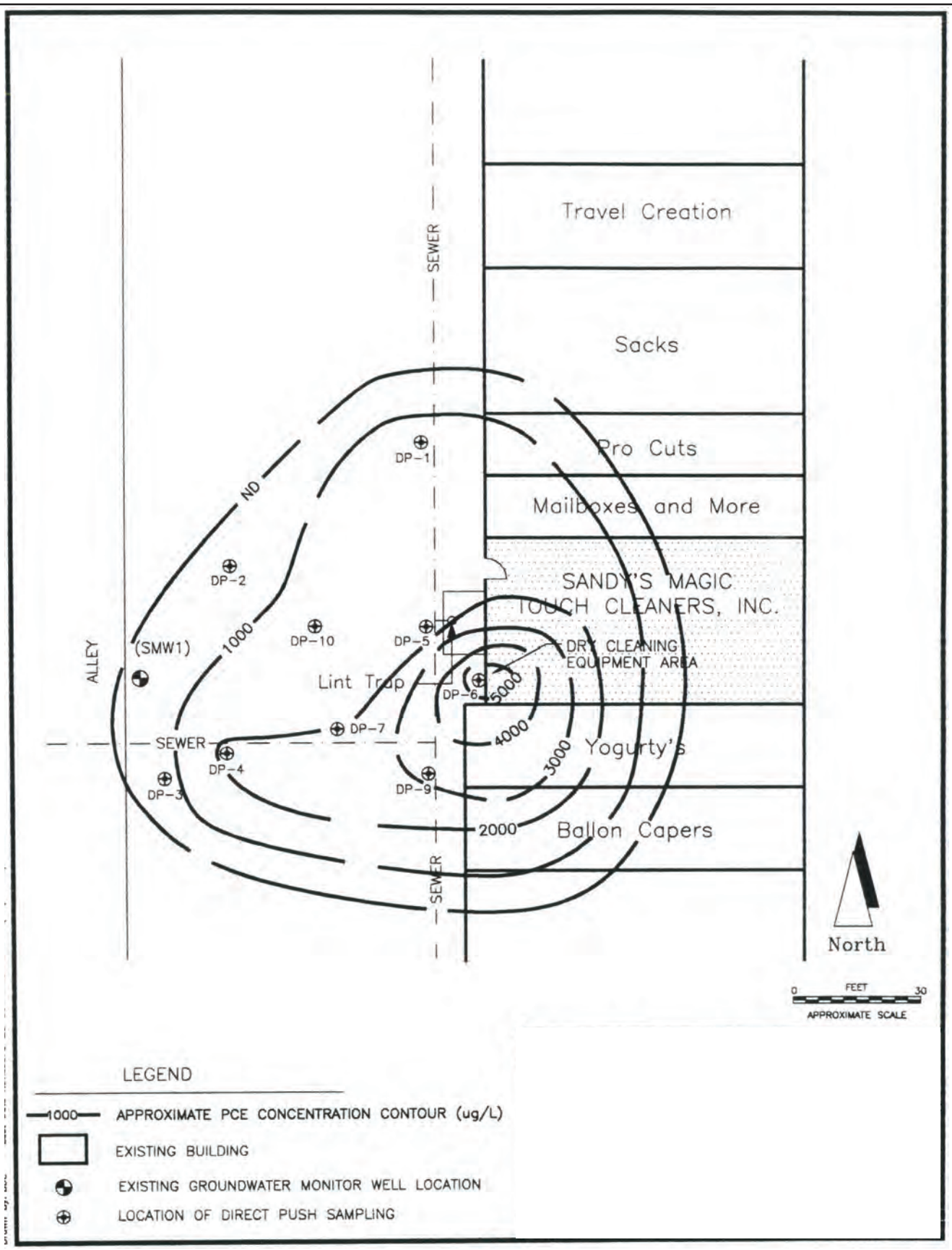
X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure11_PCEConcentrationContours_10ftBGS



Job No. 14-2019-2043 PM: JC Date: 5/20/2019 Scale: As Shown	N	Remedial Investigation Report ECP 48th St & Indian School Rd WQARF Site Phoenix, Arizona	wood.
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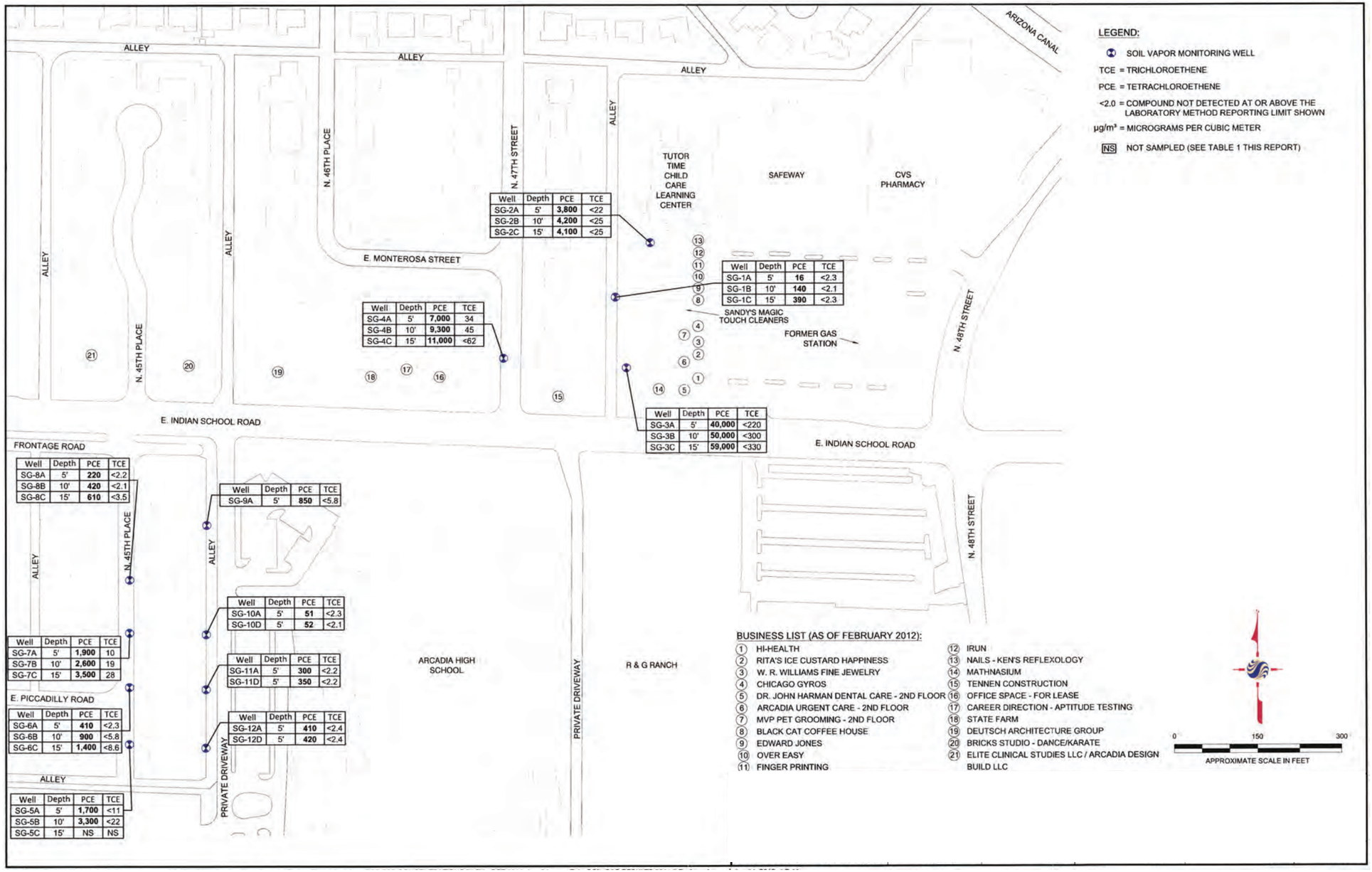
X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure12_PCEConcentrationContours_15ftBGS



Well	Depth	PCE	TCE
SG-2A	5'	3,800	<22
SG-2B	10'	4,200	<25
SG-2C	15'	4,100	<25

Well	Depth	PCE	TCE
SG-1A	5'	16	<2.3
SG-1B	10'	140	<2.1
SG-1C	15'	390	<2.3

Well	Depth	PCE	TCE
SG-4A	5'	7,000	34
SG-4B	10'	9,300	45
SG-4C	15'	11,000	<62

Well	Depth	PCE	TCE
SG-3A	5'	40,000	<220
SG-3B	10'	50,000	<300
SG-3C	15'	59,000	<330

Well	Depth	PCE	TCE
SG-8A	5'	220	<2.2
SG-8B	10'	420	<2.1
SG-8C	15'	610	<3.5

Well	Depth	PCE	TCE
SG-9A	5'	850	<5.8

Well	Depth	PCE	TCE
SG-10A	5'	51	<2.3
SG-10D	5'	52	<2.1

Well	Depth	PCE	TCE
SG-7A	5'	1,900	10
SG-7B	10'	2,600	19
SG-7C	15'	3,500	28

Well	Depth	PCE	TCE
SG-11A	5'	300	<2.2
SG-11D	5'	350	<2.2

Well	Depth	PCE	TCE
SG-6A	5'	410	<2.3
SG-6B	10'	900	<5.8
SG-6C	15'	1,400	<8.6

Well	Depth	PCE	TCE
SG-12A	5'	410	<2.4
SG-12D	5'	420	<2.4

Well	Depth	PCE	TCE
SG-5A	5'	1,700	<11
SG-5B	10'	3,300	<22
SG-5C	15'	NS	NS

Scale: At Shown
Source: Stantec

Job No.	14-2019-2043
PM:	JC
Date:	5/20/2019
Scale:	As Shown

N

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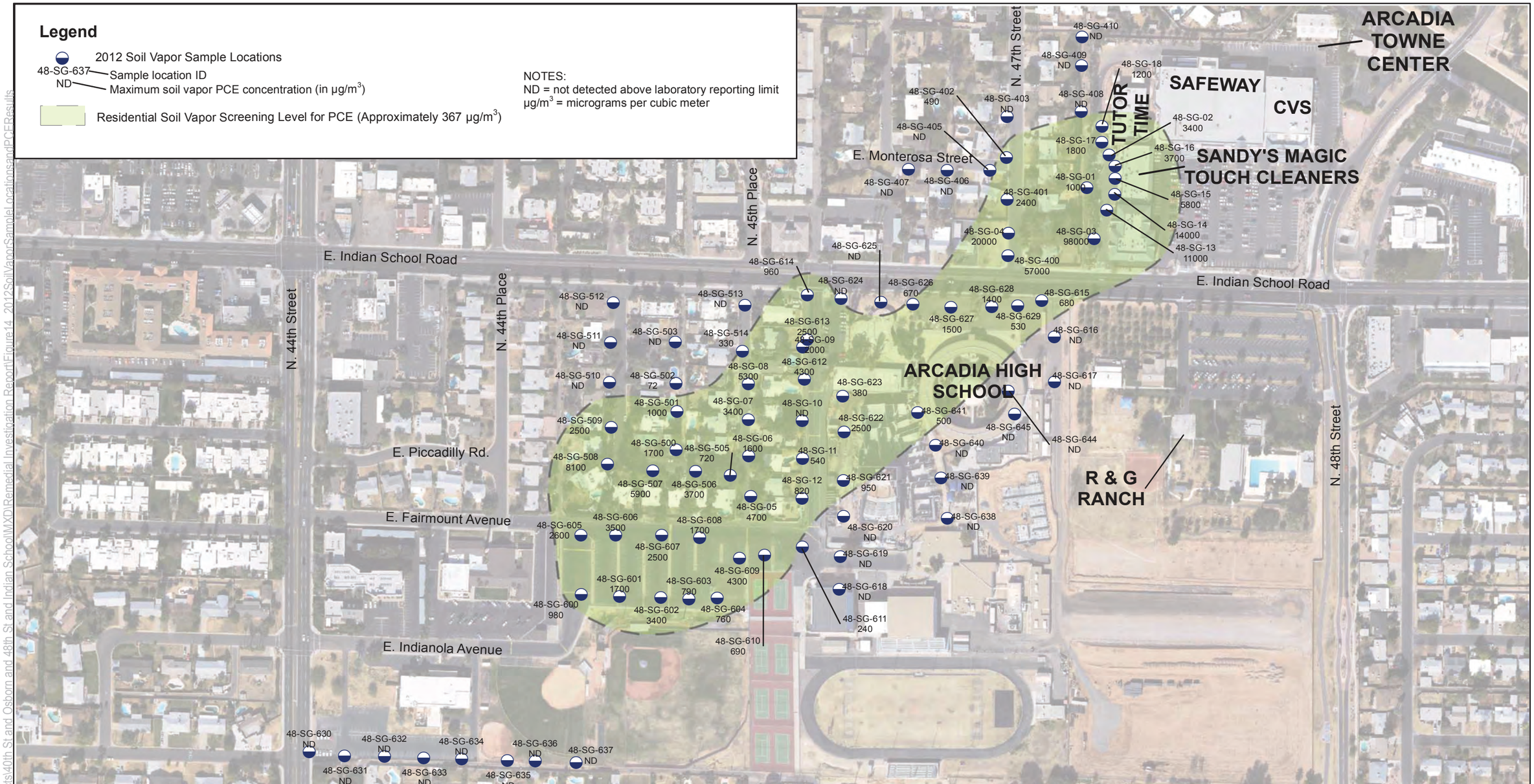
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

PCE and TCE Concentrations in Soil Vapor

FIGURE
13

wood.

X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure13_2011SoilGasMap



Scale: At Shown
Source: Stantec

Job No.	14-2019-2043
PM:	JC
Date:	5/23/2019
Scale:	At Shown

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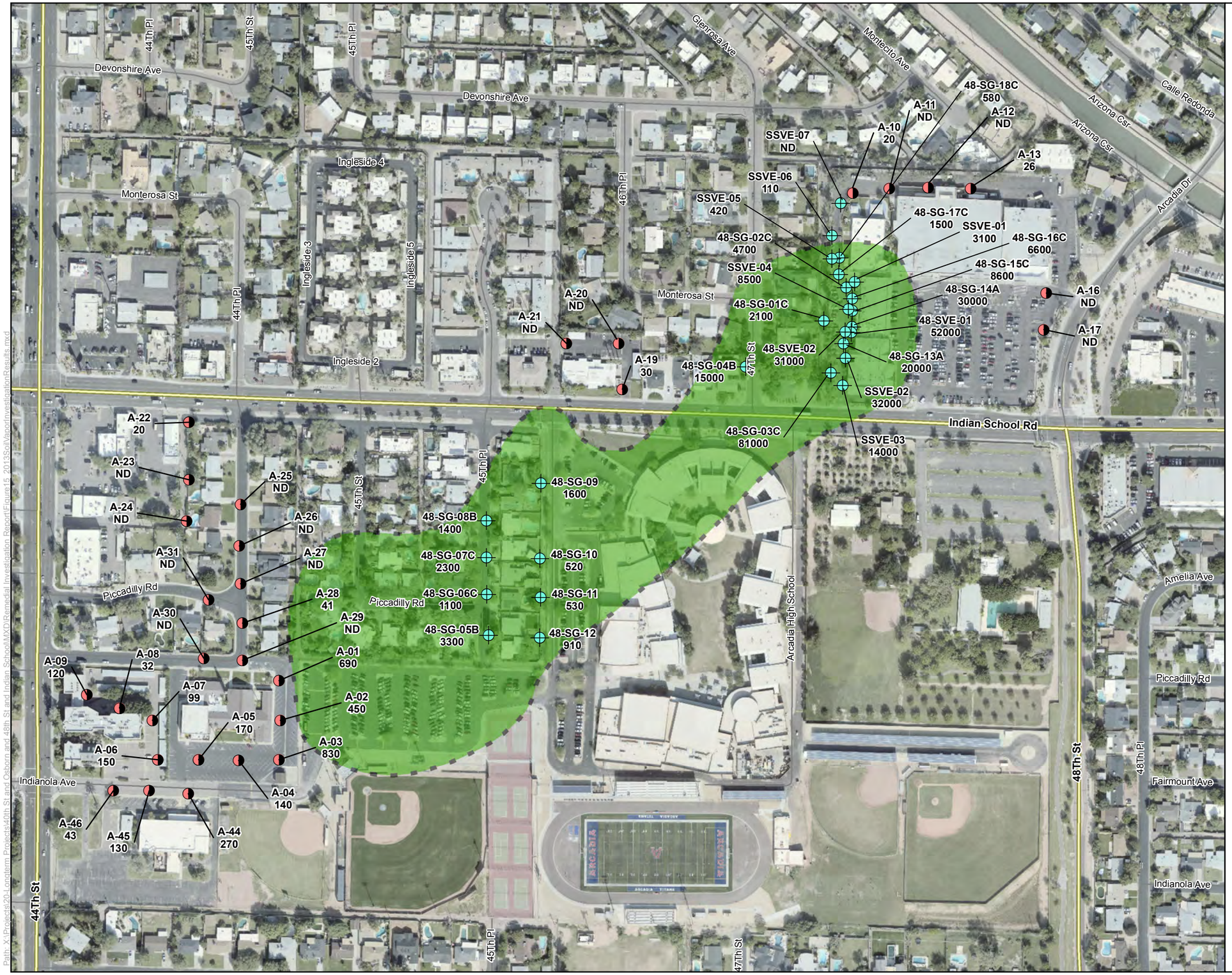
May - June 2012 Soil Vapor Sample Locations and PCE Results

FIGURE 14

wood.

X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure14_2012SoilVaporSampleLocationsandPCEResults



Legend

- August 2013 Soil Vapor Sample Locations
- October 2013 Soil Vapor Sample Locations
- Residential Soil Vapor Screening Level for PCE (Approximately 367 µg/m³)

Notes:

48-SG-13A	Sample ID
20000	Maximum Soil Vapor PCE Concentration (µg/m³)
µg/m³	Micrograms per cubic meter
ND	not detected
WQARF	Water Quality Assurance Revolving Fund

0 125 250 Feet

N

Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE 15

2013 Soil Vapor Investigation Results

Job No. 14-2019-2043
PM: JC
Date: 9/27/2019
Scale: 1"= 250'

wood.

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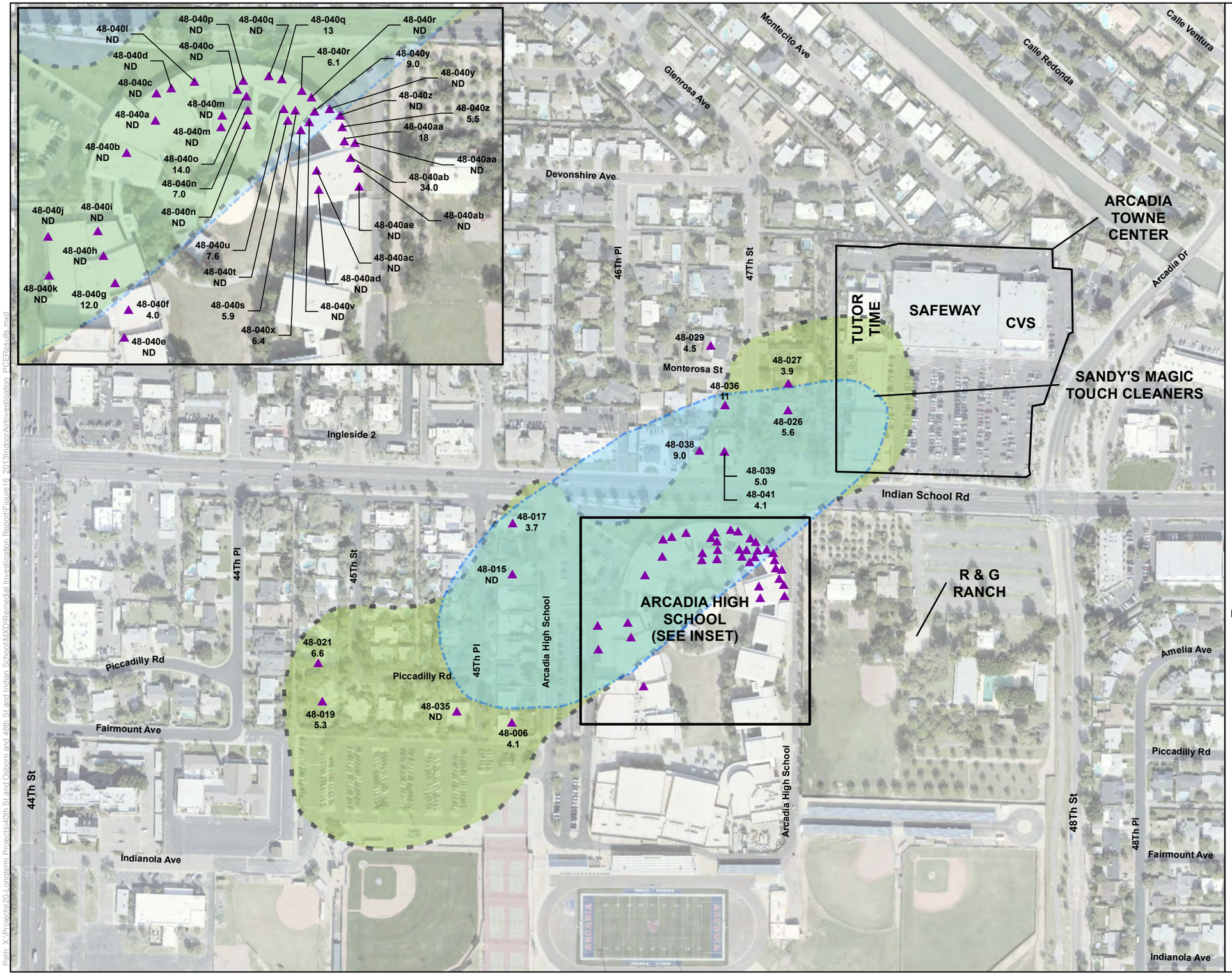
Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure15_2013SoilVaporInvestigationResults.mxd



Legend

- August 2013 Indoor Air Sample Locations
- Residential Soil Vapor Screening Level for PCE (Approximately 367 µg/m³)
- Estimated PCE Groundwater Plume (2013)

Notes:

48-040a	Sample ID
12.2	Maximum Soil Vapor PCE Concentration (µg/m³)
µg/m³	Micrograms per cubic meter
ND	not detected
WQARF	Water Quality Assurance Revolving Fund

Data Source: Hargis + Associates Inc.

0 125 250 Feet

N

Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE **16**

2013 Indoor Air Sample Locations and PCE Results

Job No.	14-2019-2043
PM:	JC
Date:	9/27/2019
Scale:	1"= 250'

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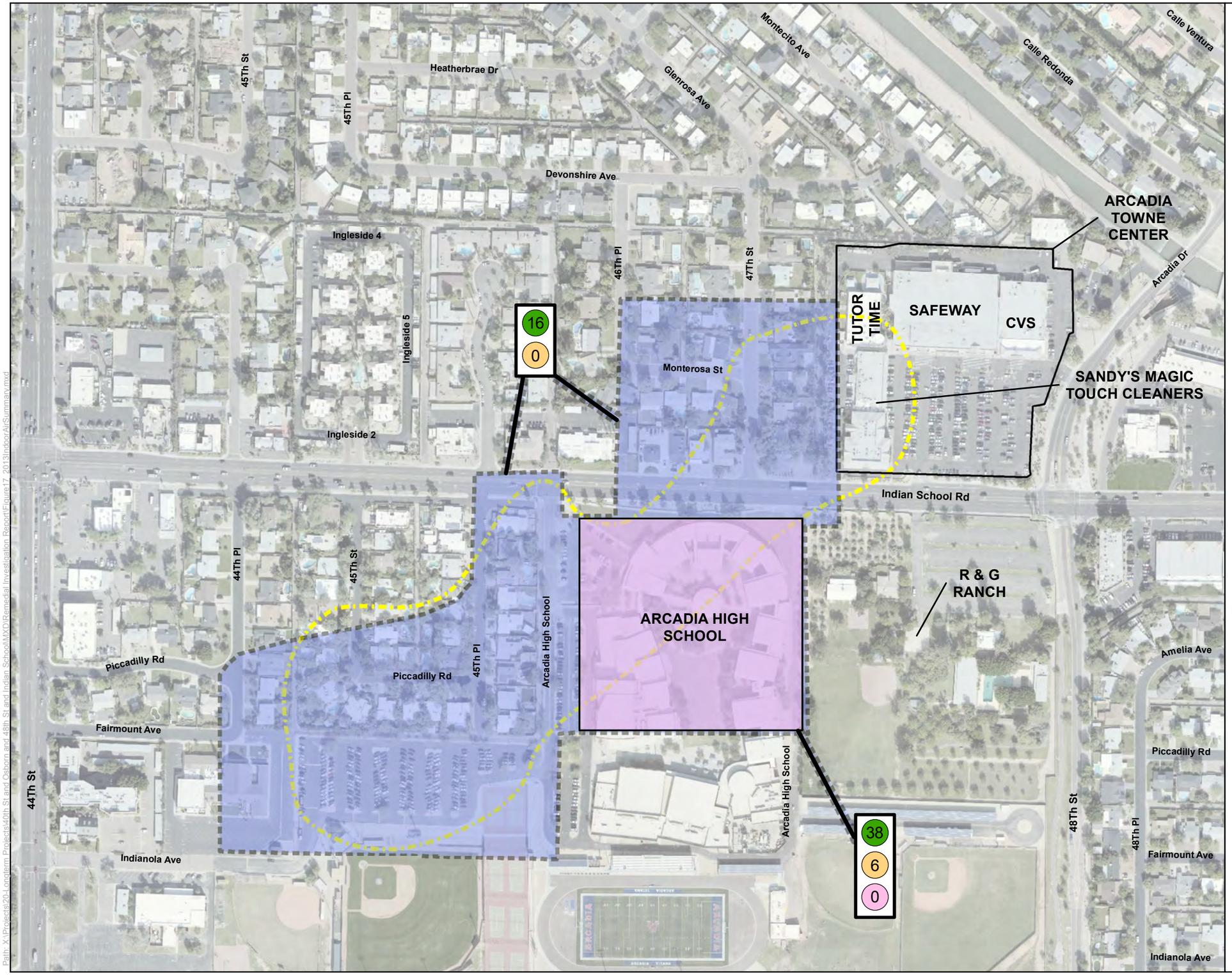
Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure16_2013IndoorAirInvestigation_PCEResults.mxd



Legend

- Area Identified for Indoor Air Evaluation
- Area of Arcadia Highschool Indoor Air Evaluation
- Residential Soil Vapor Screening Level for PCE (Approximately 367 µg/m³)

Residential Indoor Air Results for PCE

- 38 — ND to 11 µg/m³
- 6 — > 11 µg/m³
- 0 — > 67 µg/m³

Total number of samples (August and October 2013)

Notes:

µg/m³	Micrograms per cubic meter
ND	not detected
WQARF	Water Quality Assurance Revolving Fund

- Source area soil vapor data depicted is from 2012. Preliminary data from Oct. 2013 soil vapor monitoring indicates source area concentrations have changed
- 2018 Residential Indoor Air Screening level for PCE 11 µg/m³

Data Source: Hargis + Associates

0 125 250 Feet

N

Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE 17

2013 Indoor Air Summary - Tetrachloroethene

Job No.	14-2019-2043
PM:	JC
Date:	9/27/2019
Scale:	1"= 250'

wood.

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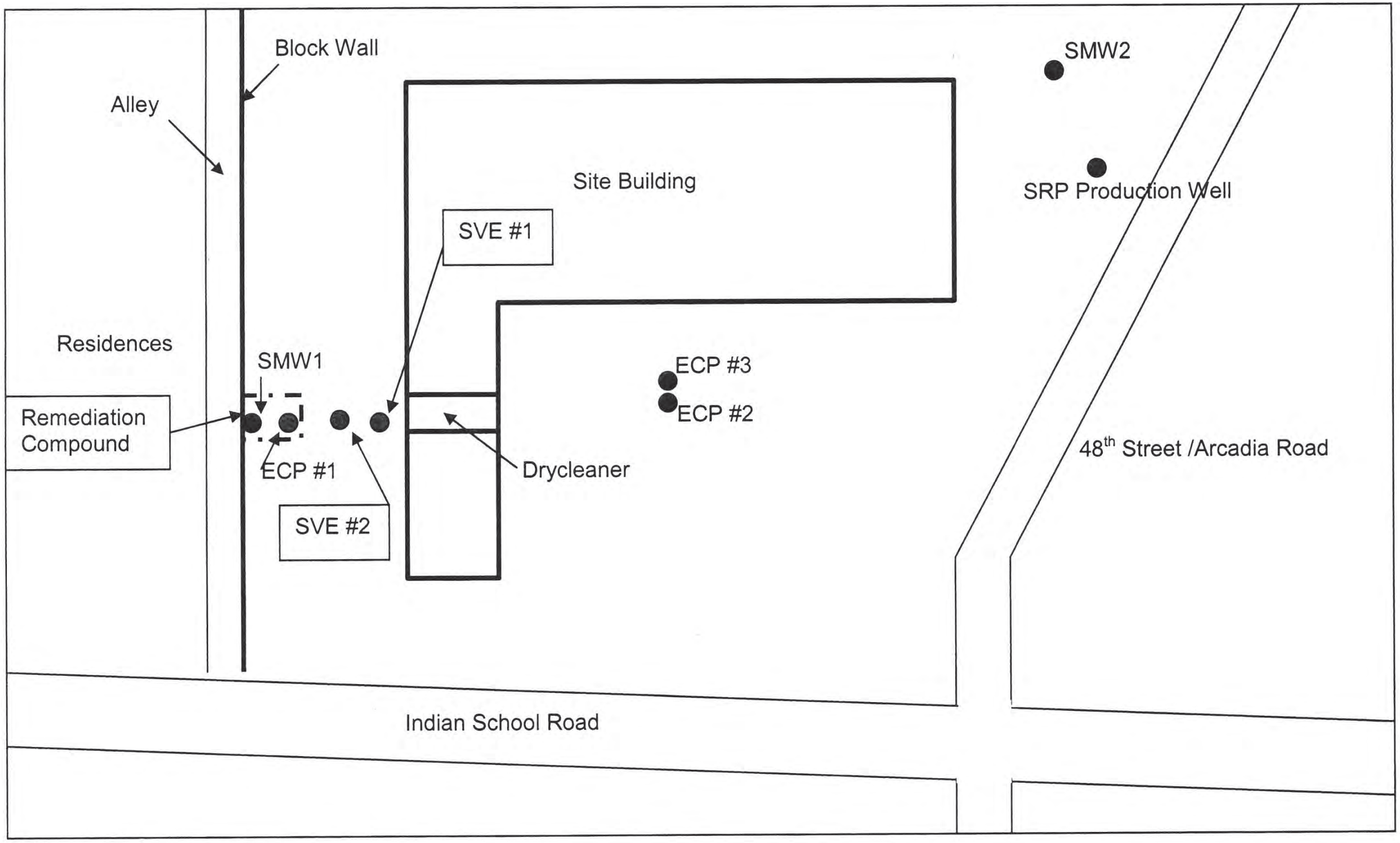
Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure17_2013IndoorAirSummary.mxd



Scale: At Shown
Source: Mogollon Environmental Services LLC

Job No.	14-2019-2043
PM:	JC
Date:	5/20/2018
Scale:	As Shown

N

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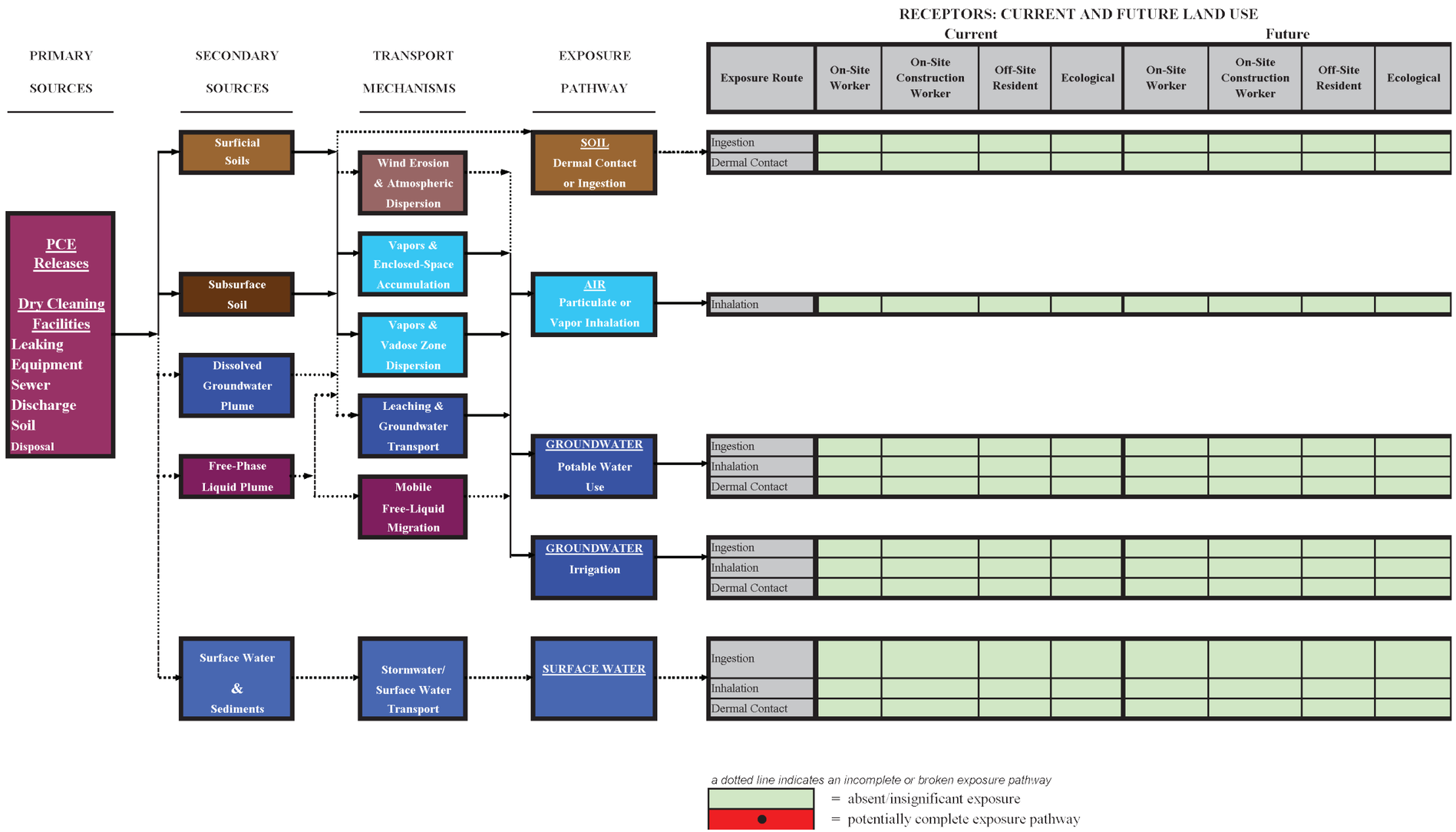
Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

Location of Environmental Remediation Facility

FIGURE
18

wood.

X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure18_SVESystemMap



2/25/2019
CSM-48IS

Scale: At Shown
Source: Stantec

Job No.	14-2019-2043
PM:	JC
Date:	5/20/2019
Scale:	As Shown

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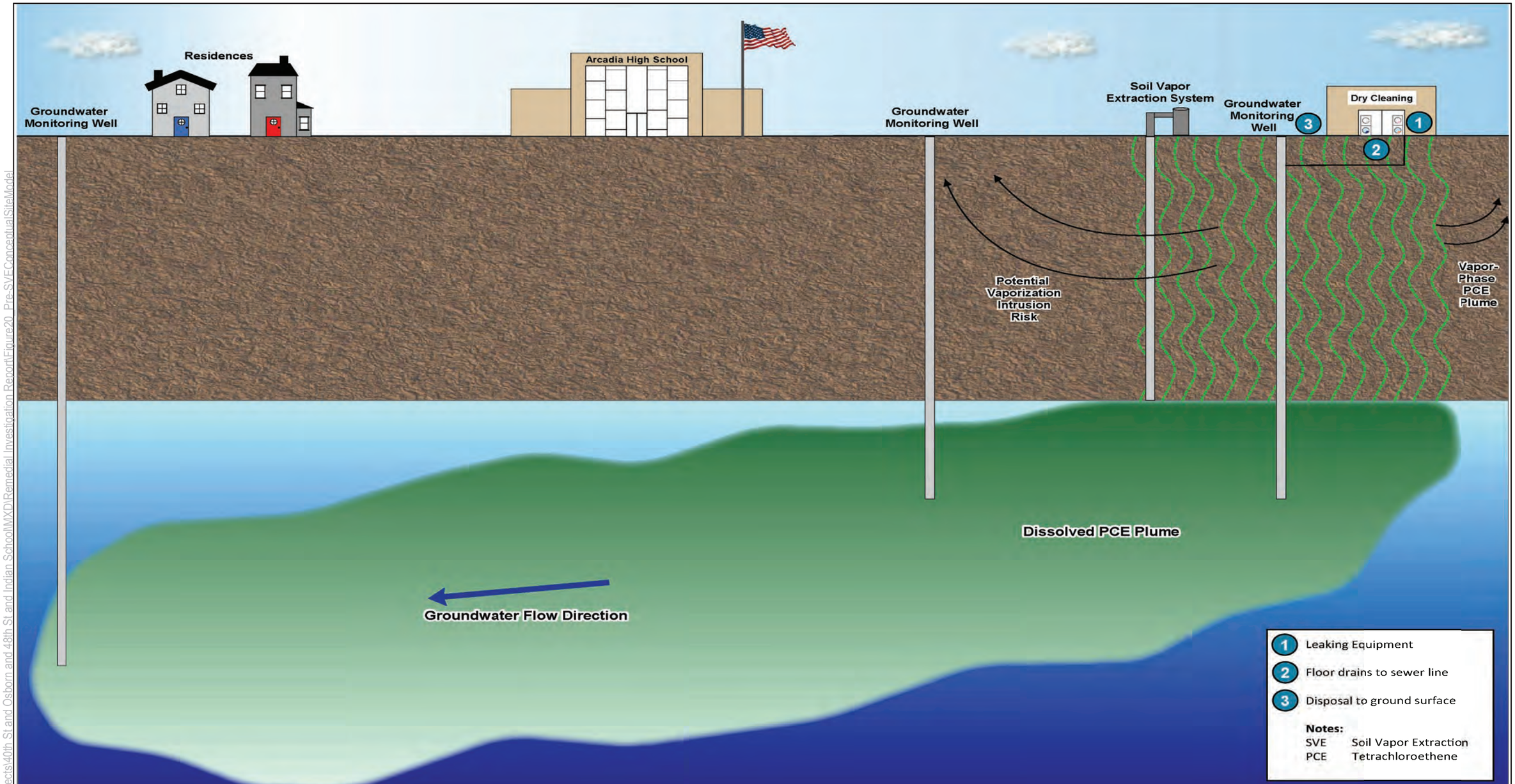
Remedial Investigation Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

Exposure Pathway Model

FIGURE
19

wood.

X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure19_ExposurePathwayModel



Scale: As Shown

Job No.	14-2019-2043
PM:	JC
Date:	5/20/2018
Scale:	As Shown

N

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Remedial Investigation Report
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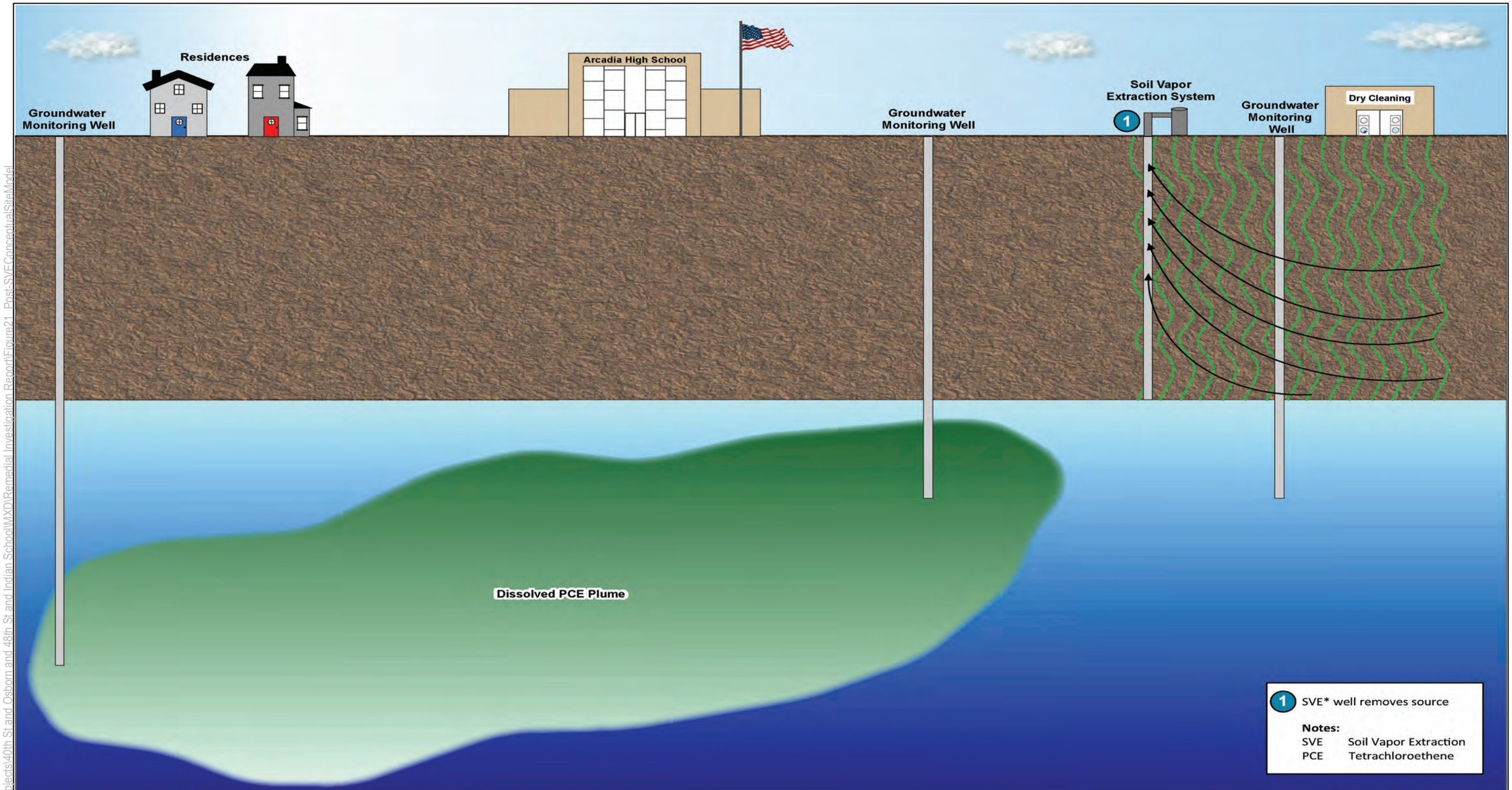
Phoenix, Arizona

Pre - SVE Conceptual Site Model

FIGURE
20

wood.

X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Remedial Investigation Report\Figure20_Pre-SVEConceptualSiteModel



Scale: As Shown

Job No.	14-2019-2043
PM:	JC
Date:	5/20/2019
Scale:	As Shown

N

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Remedial Investigation Report
ECP 48th St & Indian School Rd WQARD Site
Phoenix, Arizona

Post - SVE Conceptual Site Model

FIGURE
21

wood.

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APPENDIX A

Boring Logs and Well Completion Diagrams

SECOR INTERNATIONAL
Incorporated

[redacted] OF BORING BMW1

Client: ADEQ
Site: 40th Street & Osborn Road
Phoenix, Arizona

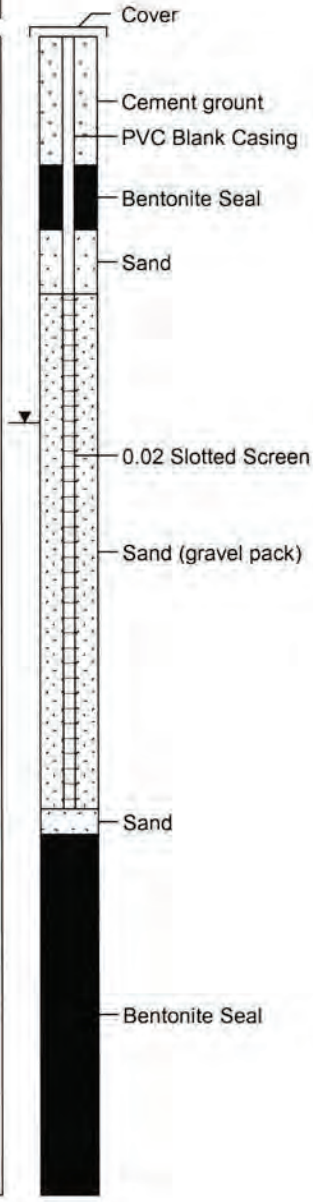
18OT.20402.08.0005

Date [redacted]
Hole [redacted]
Drilling Method : Hollow Stem Auger
Drill Rig : BK 81
Sampling Method : Split Spoon

Company Rep. : Theresa Jones
Total Depth : 90 feet
Drilling Firm : Yellow Jacket
ADWR Number : 55-598109

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID (ppm)	Sample Time	Blow Count
0	SILT, light brown, medium density, no odors or staining present.	ML				
10				24.0	9:25	10/24/40
20				9.0	9:32	12/28/30
30	SILT with 15-20% coarse grained sand and small gravel, dark brown, medium density. Groundwater encountered.			0.0	9:45	22/50-5
40				-	-	-
50				0.0	10:18	19/50-4
60				-	-	-
70	SILT with a trace of sand. Medium brown, damp, medium density, no odors or staining observed.			-	12:15	30-6
80				-	-	-
90	SILT with 15-20% coarse grained sand and small gravel. Medium brown, damp, no staining or odors observed. Boring terminated at 90 feet bgs.			-	-	50-6
100						

Well: BMW1
Elev.: Unavailable

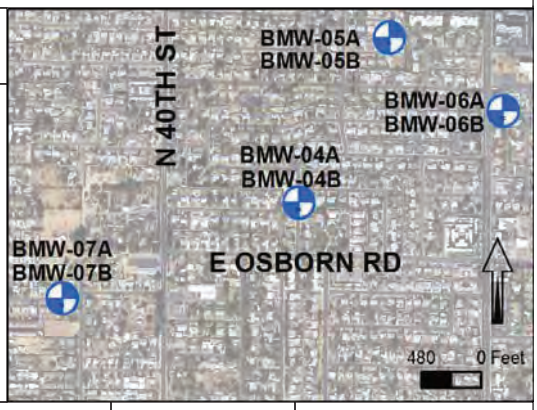


East Central Phoenix Phoenix, AZ

Lithologic and well construction log: BMW-05A

Northing (ft) 906726.20
Easting (ft) 677788.83
LS Elev. (ft) 1211.40
Ref. Pnt. Top of casing
Ref. Pnt. Elev. (ft) 1210.89
Total Depth bmp (ft) 115.0
Depth to Water (ft) 37.2
Date 1/10/14

Drill Method RotoSonic
Diameter of Casing 4"
Type of Casing PVC
Slot Size 0.020"
Filter #10-20 Sand
ADWR Reg. No. 55-916202



Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Lithologic Log	USCS	Lithologic Description	Well Construction	Comments
0				Asphalt		Flush mounted vault
				Compacted aggregate base course		
5			ML	SILT - Reddish brown (5YR5/4); 95% nonplastic fines; 5% fine to coarse subrounded to rounded sand. Dry, soft, strong reaction to HCL. Borehole air knifed to 7 feet, reported refusal in caliche.		8.625 inch diameter borehole. (0.0 - 66.0 feet bls)
	40.8/ 84.2					
10	31.3/ 91.2					4" ID Schedule 40 PVC Blank (0.50 - 29.6 feet bls)
			ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% nonplastic fines 15% fine to coarse, subrounded to rounded sand. Strong reaction to HCl, dry, soft.		
	56.3/ 103.8					
15	18.6/ 91.7		ML	SANDY SILT - Reddish brown (5YR5/4 to 5YR4/4); 70% nonplastic fines 25% fine to coarse, sub angular to subrounded sand; 5% fine subangular blocky gravel to ¾". Competent 13 to 14", loose 14 to 19', strong reaction to HCl, dry, very micaceous.		Cement (1.0 - 23.0 feet bls)
	29.9/ 88.5					
20	41.3/ 108.5			SILT - Reddish brown (5YR5/3); 90% nonplastic fines; 10% fine to medium sand; trace fine angular blocky gravel. Strong reaction to HCl, soft, manganese vugs at 24'		
	23.4/ 104.1		ML			
25	25.8/ 93.7					Bentonite Seal (23.0 - 26.3 feet bls)
	15.8/ 106.8		ML	SILT WITH GRAVEL - Dark reddish brown (5YR3/4); 70% nonplastic fines; 20% fine, trace coarse subrounded to rounded granitic gravel; 10% fine sand; Strong reaction to HCl.		
	30.2/ 115.8					

HARGIS + ASSOCIATES, INC

TEMP = Temperature Degrees Fahrenheit
PID = Photoionization detector
bmp = below measuring point

Lithologic and well construction log: BMW-05A

Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
30	13.0/ 99.5		ML	SILT - Reddish brown (5YR4/4); 95% nonplastic fines; 5% coarse sand; trace fine rounded gravel to ½". Moist, strong reaction to HCl, soft, firm at 30', contains manganese lined vugs.		
	19.7/ 105.0					
	34.2/ 123.9					
35	75.5/ 120.7					
	57.0/ 121.2					
40	44.4/ 102.3		ML	SANDY SILT - Reddish brown (5YR5/4); 65% non to low plastic fines; 25% medium to coarse subangular sand; 10% fine, trace coarse subangular gravel to 1½". Moist, no to weak reaction to HCl.		
	30.4/ 98.2					# 10-20 Sand (26.3 - 66.0 feet bls)
45	29.1/ 91.5		ML	SILT - Reddish brown (5YR4/4); 95% non to low plastic fines; 5% fine, trace coarse angular sand. Wet. At 51'; trace angular granitic gravel to 1".		
	41.1/ 90.8					
50	41.4/ 97.1					
	38.2/ 95.9					4" ID Schedule 40 PVC 0.020 inch Screen (29.6 - 64.6 feet bls)
55	25.1/ 88.5		ML	SANDY SILT - Reddish brown (5YR4/4); 65% non to low plastic fines; 25% medium to coarse angular to subrounded sand; 10% fine angular to subrounded gravel, trace coarse rounded gravel to 1¼". Soft, moist to locally wet.		
	30.2/ 89.9					
60	28.2/ 94.2					
	31.8/ 89.0		ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% low plastic fines; 15% fine to coarse blocky angular sand. Firm, wet, no to weak reaction to HCl.		
65	26.5/ 84.7					Flush threaded end cap
						6 inch diameter borehole (66.0 - 67.0 feet bls)
	30.7/ 92.8					Total depth = 67 feet bls

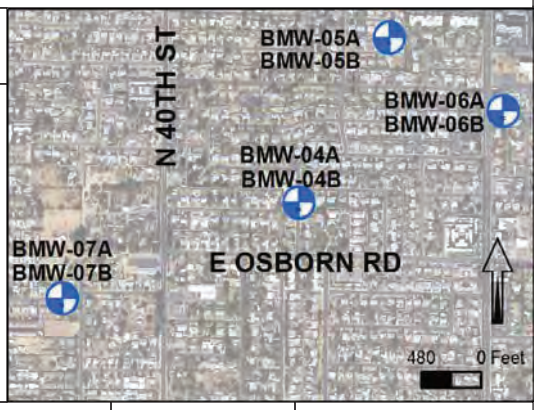
TEMP = Temperature Degrees Fahrenheit
PID = Photoionization detector
bmp = below measuring point

East Central Phoenix Phoenix, AZ

Lithologic and well construction log: BMW-05B

Northing (ft) 906732.31
Easting (ft) 677788.72
LS Elev. (ft) 1211.43
Ref. Pnt. Top of casing
Ref. Pnt. Elev. (ft) 1210.91
Total Depth bmp (ft) 115.0
Depth to Water (ft) 37.2
Date 1/08/14 - 1/09/14

Drill Method RotoSonic
Diameter of Casing 4"
Type of Casing PVC
Slot Size 0.020"
Filter #10-20 Sand
ADWR Reg. No. 55-916203



Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Lithologic Log	USCS	Lithologic Description	Well Construction	Comments
0				Asphalt		8.625 inch diameter borehole. (0.0 - 115 feet bls)
				Compacted aggregate base course		
5			ML	SILT - Reddish brown (5YR5/4); 95% nonplastic fines; 5% fine to coarse subrounded to rounded sand. Dry, soft, strong reaction to HCL. Borehole air knifed to 7 feet, reported refusal in caliche.		Cement (1.0 - 63.2 feet bls)
	40.8/ 84.2					
10	31.3/ 91.2					4" ID Schedule 40 PVC Blank (0.50 - 75.1 feet bls)
			ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% nonplastic fines 15% fine to coarse, subrounded to rounded sand. Strong reaction to HCl, dry, soft.		
	56.3/ 103.8					
15	18.6/ 91.7		ML	SANDY SILT - Reddish brown (5YR5/4 to 5YR4/4); 70% nonplastic fines 25% fine to coarse, sub angular to subrounded sand; 5% fine subangular blocky gravel to ¾". Competent 13 to 14', loose 14 to 19', strong reaction to HCl, dry, very micaceous.		
	29.9/ 88.5					
20	41.3/ 108.5			SILT - Reddish brown (5YR5/3); 90% nonplastic fines; 10% fine to medium sand; trace fine angular blocky gravel. Strong reaction to HCl, soft, manganese vugs at 24'		
	23.4/ 104.1		ML			
25	25.8/ 93.7					
	15.8/ 106.8		ML	SILT WITH GRAVEL - Dark reddish brown (5YR3/4); 70% nonplastic fines; 20% fine, trace coarse subrounded to rounded granitic gravel; 10% fine sand; Strong reaction to HCl.		

TEMP = Temperature Degrees Fahrenheit
PID = Photoionization detector
bmp = below measuring point

Lithologic and well construction log: BMW-05B

Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
30	30.2/ 115.8		ML	SILT - Reddish brown (5YR4/4); 95% nonplastic fines; 5% coarse sand; trace fine rounded gravel to ½". Moist, strong reaction to HCl, soft, firm at 30', contains manganese lined vugs.		
	13.0/ 99.5					
	19.7/ 105.0					
	34.2/ 123.9					
35	75.5/ 120.7					
	57.0/ 121.2					
40	44.4/ 102.3		ML	SANDY SILT - Reddish brown (5YR5/4); 65% non to low plastic fines; 25% medium to coarse subangular sand; 10% fine, trace coarse subangular gravel to 1½". Moist, no to weak reaction to HCl.		
	30.4/ 98.2					
45	29.1/ 91.5		ML	SILT - Reddish brown (5YR4/4); 95% non to low plastic fines; 5% fine, trace coarse angular sand. Wet. At 51'; trace angular granitic gravel to 1".		
	41.1/ 90.8					
50	41.4/ 97.1					
	38.2/ 95.9					
55	25.1/ 88.5		ML	SANDY SILT - Reddish brown (5YR4/4); 65% non to low plastic fines; 25% medium to coarse angular to subrounded sand; 10% fine angular to subrounded gravel, trace coarse rounded gravel to 1¼". Soft, moist to locally wet.		
	30.2/ 89.9					
60	28.2/ 94.2					
	31.8/ 89.0			SILT WITH SAND - Reddish brown (5YR4/4); 85% low plastic fines; 15% fine to coarse blocky angular sand; trace fine gravel. Firm, wet, no to weak reaction to HCl.		
65	26.5/ 84.7					

Lithologic and well construction log: BMW-05B

Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
65						
	30.7/ 92.8		ML			Bentonite Seal (63.2 - 68.8 feet bls)
70	25.1/ 91.5					
	23.8/ 84.9		SM	SILTY SAND - Reddish brown (5YR4/4); 55% fine to coarse subrounded to rounded sand; 45% nonplastic fines; trace fine angular granitic gravel. Non to weak reaction with HCL, soft.		
			ML			
75	26.9/ 85.2		SM/ML	SILT WITH SAND - Reddish brown (5YR4/4); 55% fine to coarse subrounded to rounded sand; 45% nonplastic fines; trace fine angular granitic gravel. Non to weak reaction with HCL, soft.		
			ML			
	14.5/ 81.8		SM	SILTY SAND / SANDY SILT - Reddish brown (5YR4/4); 50% fine to coarse subrounded to rounded sand; 50% nonplastic fines; trace fine gravel to ½". Wet, soft, no reaction to HCl		
80	19.5/ 87.9		ML	SILT WITH SAND - Reddish brown (5YR4/4); 50% fine to coarse subrounded to rounded sand; 50% nonplastic fines; trace fine gravel to ½". Wet, soft, no reaction to HCl.		
	21.6/ 81.6					
			SM	SILTY SAND - Reddish brown (5YR4/4); 55% fine to coarse subrounded to rounded sand; 45% nonplastic fines; trace fine angular granitic gravel to 2". Soft, wet, no reaction to HCl.		
85	10.3/ 83.4					
	21.5/ 80.9		ML	SILT - Reddish brown (5YR4/4); 95% non to low plastic fines; 5% fine sand. No reaction to HCl.		
90	21.7/ 92.6			SILTY SAND - Reddish brown (5YR4/6); 55% fine to coarse, subrounded to rounded sand; 40% nonplastic fines; 5% fine subrounded to rounded gravel to ¾". No reaction to HCl, wet, soft.		# 10-20 Sand (68.8- 116 feet bls)
			ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% low plastic fines; 15% fine to coarse angular to subangular sand. Wet, no reaction to HCl.		
	6.3/ 86.5					
95	20.4/ 81.1		ML	SANDY SILT- Reddish brown (5YR4/4); 80% low plastic fines; 15% fine to coarse angular to subrounded sand; 5% fine angular to subangular gravel. No reaction to HCl, firm.		
	22.1/ 92.4		ML	SILT - Reddish brown (5YR4/4); 95% non to low plastic fines; 5% fine to coarse sand. Moderate to strong reaction to HCl, contains caliche nodules.		
100	29.7/ 91.9		ML	SANDY SILT- Reddish brown (5YR4/4); 80% low plastic fines; 15% fine to coarse angular to subrounded sand; 5% fine to coarse angular to subangular gravel to 1½".		
				SILT -Same as above. Strong reaction to HCl at 101.5'.		

Lithologic and well construction log: BMW-05B

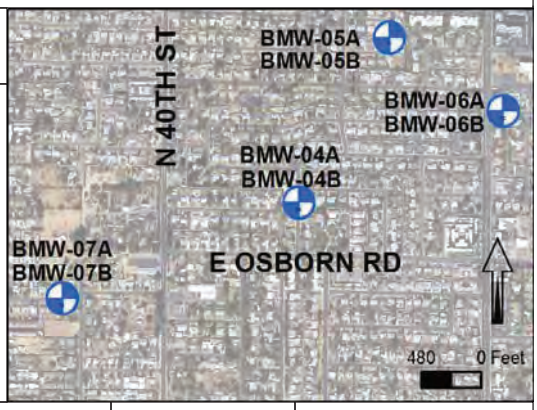
Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
	28.3/ 93.2		SM			
105	37.7/ 98.2		ML	SILTY SAND - Reddish brown (5YR4/6); 55% fine to coarse, subrounded to rounded sand; 45% nonplastic fines.		
				SANDY SILT- Reddish brown (5YR4/4); 70% nonplastic fines; 25% fine to coarse angular to subrounded sand; 5% fine angular gravel.		4" ID Schedule 40 PVC 0.020 inch Screen (75.1 - 115.1 feet bls)
	34.9/ 122.1		ML	SILT WITH SAND - Reddish brown (5YR4/4); 80% low plastic fines; 15% fine to coarse sand; 5% fine to coarse subangular granitic gravel. Countains rounded siltstone clasts to 1 3/4. No to weak reaction to HCl.		
110	31.8/ 109.9					
	23.4/ 106.1		ML	SANDY SILT- Reddish brown (5YR4/4); 70% nonplastic fines; 25% fine to coarse angular sand; 5% fine angular granitic gravel.		6 inch diameter borehole (115 - 116 feet bls)
115	19.1/ 99.8					Flush threaded end cap
						Total depth = 116 feet bls

East Central Phoenix Phoenix, AZ

Lithologic and well construction log: BMW-06A

Northing (ft) 906101.80
Easting (ft) 678711.22
LS Elev. (ft) 1212.94
Ref. Pnt. Top of casing
Ref. Pnt. Elev. (ft) 1212.45
Total Depth bmp (ft) 60.2
Depth to Water (ft) 32.5
Date 1/8/14 - 1/10/14

Drill Method RotoSonic
Diameter of Casing 4"
Type of Casing PVC
Slot Size 0.020"
Filter #10-20 Sand
ADWR Reg. No. 55-916204



Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Lithologic Log	USCS	Lithologic Description	Well Construction	Comments
0			ML	SANDY SILT - Brown (7.5YR 4/4); 60% nonplastic fines; 40% fine to coarse sand. No odor, dry. Pot holed 0 - 7 feet.		Flush mounted vault 8.625 inch diameter borehole. (0.0 - 61.0 feet bls)
5						
	0.3/ 78.4		ML	SANDY SILT - Light Brown (7.5YR 6/4); 65% nonplastic fines; 35% fine to coarse sand. No odor, dry. Small reactive caliche nodules throughout		4" ID Schedule 40 PVC Blank (0.50 - 30.3 feet bls)
10	0.2/ 82.6					
	0.3/ 82.6					
	0.1/ 88.7					
15	3.0/ 119.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 75% nonplastic fines; 25% fine to coarse sand. No odor, slightly moist. Reactive to HCl. Very compressed, forming chunks that are easily broken apart.		Cement (1.0 - 23.0 feet bls)
	7.8/ 112.5					
20	3.2/ 112.5					
	2.7/ 126.5					
	2.5/ 100.6		ML	SANDY SILT - Same As Above Moisture content increases at 24.5 feet to slight moisture. Water encountered at approximately 32.5 feet.		Bentonite Seal (23.0 - 27.0 feet bls)
25	8.8/ 138.9					

HARGIS + ASSOCIATES, INC

TEMP = Temperature Degrees Fahrenheit
PID = Photoionization detector
bmp = below measuring point

Lithologic and well construction log: BMW-06A

Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
30	6.5/ 129.6					
	1.5/ 123.8					
	3.7/ 105.6					
	2.9/ 100.2		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 85% nonplastic fines; 15% fine to coarse sand. No odor, very moist. Reactive to HCl. Sand grains are more angular than above.		
35	4.4/ 108.3		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 60% nonplastic fines; 40% fine to coarse angular to sub angular, multicolored sand (decomposed granite). No odor, very moist. Reactive to HCl. Sand content decreased to 10-15% at 42 feet. Fine grained sand (some larger <3mm grains still present).		
	0.9/ 96.8					
40	3.6/ 92.8				4" ID Schedule 40 PVC 0.020 inch Screen (30.3 - 60.3 feet bls)	
	5.8/ 123.1					
	9.4/ 91.6					
45	4.9/ 113.5					
	10.2/ 117.7		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 60% nonplastic fines; 40% fine to coarse angular to sub angular, multicolored sand (decomposed granite). No odor, very moist. Reactive to HCl.		
50	3.7/ 113.5				# 10-20 Sand (27.0 - 60.5 feet bls)	
	2.1/ 102.4					
	9.4/ 88.0					
55	3.2/ 124.0					
	1.8/ 104.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 80% nonplastic fines; 20% fine to coarse angular to sub angular, multicolored sand (decomposed granite). No odor, very moist. Reactive to HCl.		
60	3.5/ 105.3				Flush threaded end cap	
	4.4/ 102.9				Slough (60.5 - 62.5 feet bls)	
	1.2/ 102.2		ML	SILT - Strong Brown (7.5YR 5/6); 90% nonplastic fines; 10% fine multicolored sand. Soft, no odor, very moist.		Total depth = 62.5 feet bls

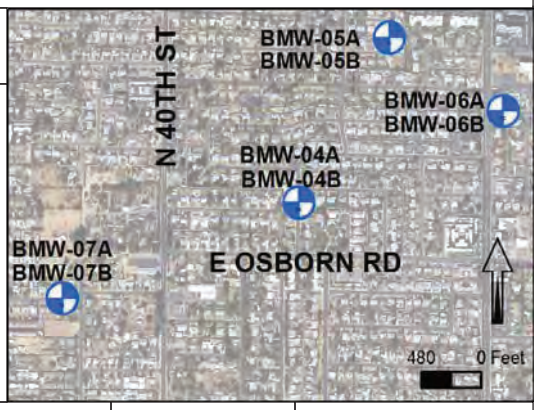
TEMP = Temperature Degrees Fahrenheit
PID = Photoionization detector
bmp = below measuring point

East Central Phoenix Phoenix, AZ

Lithologic and well construction log: BMW-06B

Northing (ft) 906102.15
Easting (ft) 678704.84
LS Elev. (ft) 1212.92
Ref. Pnt. 1212.48
Ref. Pnt. Elev. (ft) 1212.4
Total Depth bmp (ft) 110.8
Depth to Water (ft) 32.6
Date 1/8/14 - 1/10/14

Drill Method RotoSonic
Diameter of Casing 4"
Type of Casing PVC
Slot Size 0.020"
Filter #10-20 Sand
ADWR Reg. No. 55-916205



Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Lithologic Log	USCS	Lithologic Description	Well Construction	Comments
0			ML	SANDY SILT - Brown (7.5YR 4/4); 60% nonplastic fines; 40% fine to coarse sand. No odor, dry. Pot holed 0 - 7 feet.		Flush mounted vault
5						8.625 inch diameter borehole. (0.0 - 120.0 feet bls)
	0.3/ 78.4		ML	SANDY SILT - Light Brown (7.5YR 6/4); 65% nonplastic fines; 35% fine to coarse sand. No odor, dry. Small reactive caliche nodules throughout		
10	0.2/ 82.6					4" ID Schedule 40 PVC Blank (0.45 - 73.3 feet bls)
	0.3/ 82.6					
	0.1/ 88.7					
15	3.0/ 119.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 75% nonplastic fines; 25% fine to coarse sand. No odor, slightly moist. Reactive to HCl. Very compressed, forming chunks that are easily broken apart.		Cement (1.0 - 68.0 feet bls)
	7.8/ 112.5					
20	3.2/ 112.5					
	2.7/ 126.5					
	2.5/ 100.6		ML	SANDY SILT - Same As Above Moisture content increases at 24.5 feet to slight moisture. Water encountered at approximately 32.5 feet.		
25	8.8/ 138.9					

HARGIS + ASSOCIATES, INC

TEMP = Temperature Degrees Fahrenheit
PID = Photoionization detector
bmp = below measuring point

Lithologic and well construction log: BMW-06B

Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
	6.5/ 129.6					
30	1.5/ 123.8					
	3.7/ 105.6					
	2.9/ 100.2		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 85% nonplastic fines; 15% fine to coarse sand. No odor, very moist. Reactive to HCl. Sand grains are more angular than above.		
35	4.4/ 108.3		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 60% nonplastic fines; 40% fine to coarse angular to sub angular, multicolored sand (decomposed granite). No odor, very moist. Reactive to HCl. Sand content decreased to 10-15% at 42 feet. Fine grained sand (some larger <3mm grains still present).		
	0.9/ 96.8					
40	3.6/ 92.8					
	5.8/ 123.1					
	9.4/ 91.6					
45	4.9/ 113.5					
	10.2/ 117.7		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 60% nonplastic fines; 40% fine to coarse angular to sub angular, multicolored sand (decomposed granite). No odor, very moist. Reactive to HCl.		
50	3.7/ 113.5					
	2.1/ 102.4					
	9.4/ 88.0					
55	3.2/ 124.0					
	1.8/ 104.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 80% nonplastic fines; 20% fine to coarse angular to sub angular, multicolored sand (decomposed granite). No odor, very moist. Reactive to HCl.		
60	3.5/ 105.3					
	4.4/ 102.9		ML	SILT - Strong Brown (7.5YR 5/6); 90% nonplastic fines; 10% fine multicolored sand. Soft, no odor, very moist.		
	1.2/ 102.2					
65						

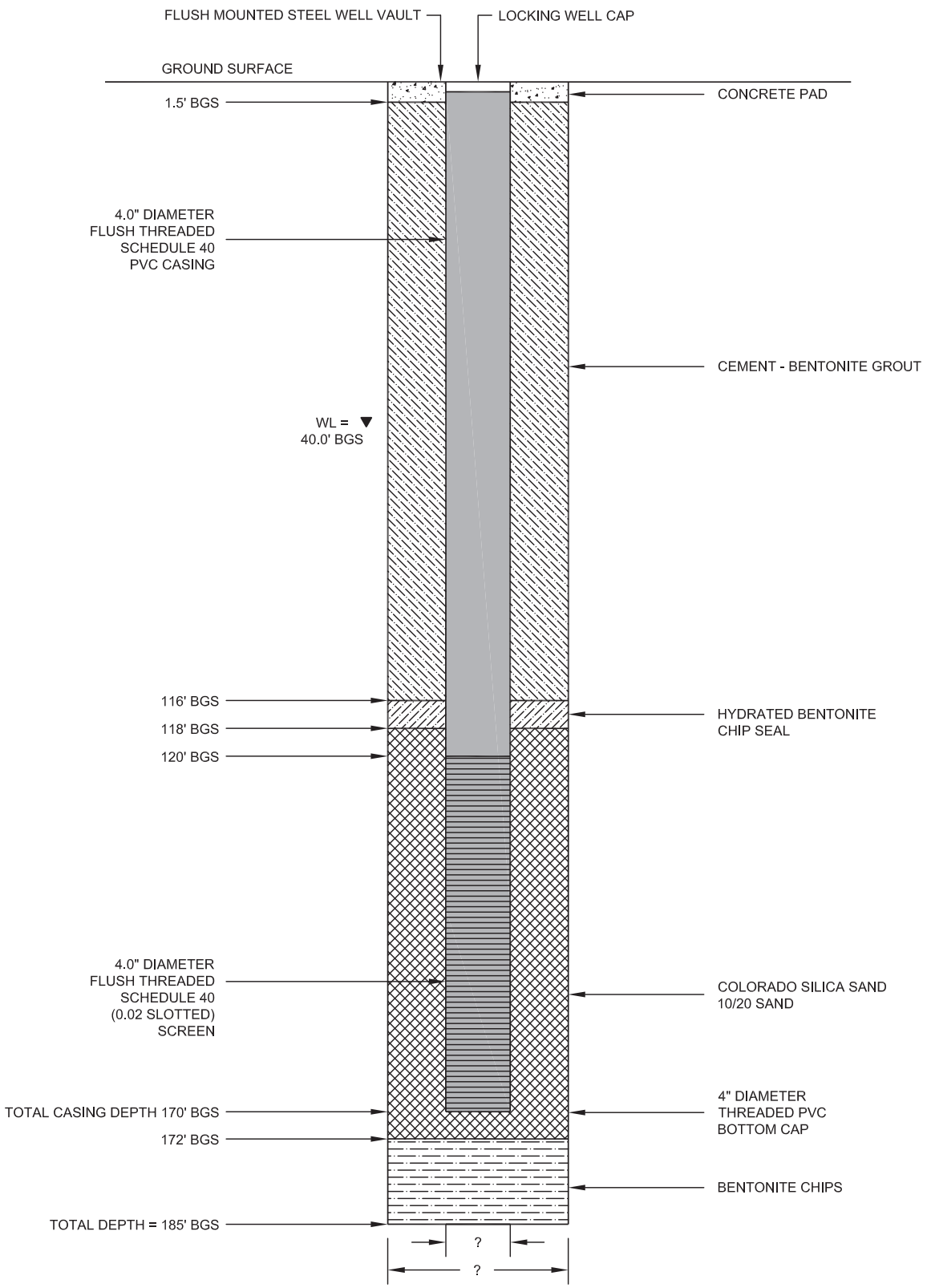
Lithologic and well construction log: BMW-06B

Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
65	0.8/ 94.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 65% nonplastic fines; 35% fine angular to sub angular, multicolored sand. Soft, no odor, very moist. Reactive to HCl. Sand content decreases to ~25% at 69 feet.		
	1.3/ 86.9					
70	0.4/ 84.9					Bentonite Seal (68.0 - 72.0 feet bls)
	0.0/ 126.3					
	0.0/ 128.1		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 60% nonplastic fines; 40% fine to coarse sub angular to sub rounded, multicolored sand; trace gravel (<25mm). Moderate hardness, no odor, slight moisture. Still reactive to HCl.		
75	0.1/ 119.8					
	0.0/ 115.3					
80	0.1/ 96.6		SM	SILTY SAND - 55% fine to coarse sub rounded to sub angular grained sand; 45% nonplastic fines.		
	0.0/ 128.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 55% nonplastic fines; 45% fine to coarse sub angular to sub rounded, multicolored sand. Moderate hardness, no odor, slightly moist.		
	0.1/ 128.8		SM	SILTY SAND - 60% fine sub rounded to sub angular grained sand; 40% nonplastic fines. Weak reaction to HCl.		
85	0.0/ 95.2		SM/ML	SILTY SAND/SANDY SILT - 50% fine sub rounded to sub angular grained sand; 50% nonplastic fines. Weak reaction to HCl.		
	0.0/ 91.6		SM	SILTY SAND - 55% fine sub rounded to sub angular grained sand; 45% nonplastic fines. Weak reaction to HCl. Vertical stringer of sand about 1 foot long.		
90	0.1/ 92.5					
	0.0/ 103.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 65% nonplastic fines; 35% fine to coarse sub angular to sub rounded, multicolored sand; trace clay. Very low plasticity, soft, no odor, moist. Sand content decreases to 25% at 97 feet.		# 10-20 Sand (72.0 - 111.0 feet bls)
	0.0/ 105.8					
95	0.0/ 116.6					
	0.0/ 101.8					
100	0.0/ 93.2					
	0.1/ 100.6					

TEMP = Temperature Degrees Fahrenheit
PID = Photoionization detector
bmp = below measuring point

Lithologic and well construction log: BMW-06B

Depth (Feet Below Land Surface)	PID/TEMP (ppm/degF)	Log Lithologic	USCS	Lithologic Description	Well Construction	Comments
	0.0/ 108.3		SM/ML	SILTY SAND/SANDY SILT - Strong Brown (7.5 YR 5/6) 50% fine sub rounded to sub angular grained sand; 50% nonplastic fines. No odor, moist.		
105	0.2/ 101.5		SM	SILTY SAND - Reddish Brown; 60% fine sub rounded to sub angular grained sand; 40% nonplastic fines; trace gravel. Moist.		4" ID Schedule 40 PVC 0.020 inch Screen (75.3 - 110.4 feet bls)
	0.3/ 103.5		ML	SANDY SILT - Strong Brown (7.5YR 5/6); 65% nonplastic fines; 35% fine to coarse sub angular to sub rounded, multicolored sand; trace clay. Very low plasticity, soft, no odor, moist.		
110	0.2/ 106.5					Flush threaded end cap
	0.0/ 113.2			SILT - Strong Brown (7.5YR 5/6); 90% nonplastic fines; 10% sand; trace gravel. Soft, moist, no odor. Moisture decreases to slightly moist at 112.5 feet.		
	0.0/ 127.2					Bentonite hole plug (111.0 - 115.0 feet bls)
115			ML			
	0.0/ 108.9					Slough (115.0 - 120.0 feet bls)
	0.0/ 111.6					
120	0.0/ 105.4					Total depth = 120 feet bls



JOB NO.	14-2018-2033
DESIGN:	JC
DRAWN:	GWH
DATE:	11/2018
SCALE:	NTS

BMW-12B
WELL COMPLETION DIAGRAM

EAST CENTRAL PHOENIX
WQARF SITE
PHOENIX, ARIZONA

FIGURE
A-1

wood.
Environmental & Infrastructure Solutions, Inc.
4600 East Washington Street, Suite 600
Phoenix, Arizona

Plotted By: gary.hunter Date: 15-Nov-18-10:45
File: G:\Environmental-Development\2018 Projects\14-2018-2033 FY 2019 40th St & Osborn WQARF TO#1\6.0 CAD Drawings\Boring Logs\182033 Figure-A-1.dwg

<) 8F3>4Ā :2 35 3TWQĀ6;*0ĀP*&((*ĀYZĀ2"& Ā5" ?) ĀQ[$5\

L"&% DĀMNG LJ O 1A+L

<) 8F3>4Ā 02 D3)5 A61+;A I1+; XX (: 435 A; 1+X1AI Ā*ĀA;1+H1AI

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?8)*, - ĀB>: 4'8, 5	LJ O 1A+L	!8--3 9Ā?A5	TB %>EĀU"@V(
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(3147ĀBĀ$: 43)Ā;4Ā- BE5	6;	À: 2 1+, - Ā6 347895	SE)&"= C @0

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<) 8F3>4Ā 02 D3)5 A61+;A I1+; XX (: 435 A; 1+X1AI Ā*ĀA;1+H1AI

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<) 8F3>4Ā 02 D3)5 A61+;A I1+; XX (: 435 A; 1+X1AI Ā*ĀA;1+H1AI

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?8)*, - ĀB>: 4'8, 5	LJ O 1A+L	!8--3 9Ā?A5	TB %>EĀU"@V(
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"84:+Ā 3147Ā;4Ā- BE5	AI -	( )*+;* - Ā/ 0*12 3, 45	P" %@
(3147Ā8Ā$: 43)Ā;4Ā- BE5	6;	À: 2 1+#, - Ā6 347895	SE)&"= C @0

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wood.

<) 8F3>4Ā :2 35 3TWQĀ6;*0ĀP*&((*ĀYZĀ2"& Ā5" ?) ĀQ[$5\

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<) 8F3>4Ā 02 D3)5 A61+;A I1+; XX (: 435 A; 1+X1AI Ā*ĀA;1+H1AI

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?8)*, - ĀB>: 4'8, 5	LJ O 1A+L	!8--3 9Ā?A5	TB %>EĀU"@V(
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<) 8F3>4Ā 02 D3)5 A61+;A I1+; XX (: 435 A; 1+X1AI Ā*ĀA;1+H1AI <:-3 H 8; I

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wood.

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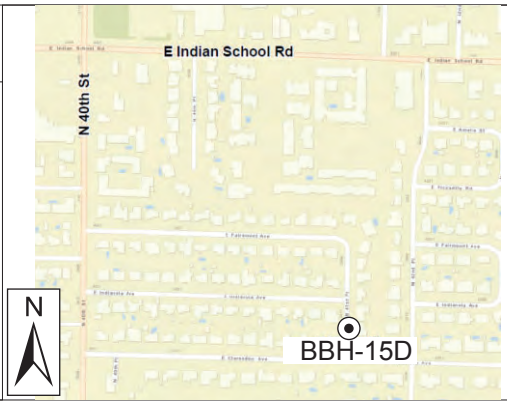
wood.

ECP - 48th Street and Indian School Road

Lithologic Log: **BBH-15D**

Northing (ft): 906450.10
Easting (ft): 677131.12
LS Elev. (ft): Approx. 1,120
Ref. Pnt.: Not Applicable (NA)
Ref. Pnt. Elev. (Ft): 1208
Total Depth bls (ft): 245
Depth to Water (ft): 41.8
Date: 5/23/17 - 5/30/17

Drill Method: Sonic
Diameter of Casing: NA
Type of Casing: NA
Slot Size: NA
Filter: NA
ADWR Reg. No. 55-920470
Note: PID = Photoionization detector
Temperature in degrees Fahrenheit



DEPTH (feet Below Land Surface)	PID/TEMP (ppmv/degF)	Lithologic Log	USCS	Lithologic Description
0				
			ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% nonplastic fines; 15% fine trace medium sand. Firm, moist, moderate reaction to HCl. Color change to Yellowish red (5YR4/6) at 5.5'. Borehole hand augered to 5.6 feet. Color change to Yellowish red (7.5YR7/6) at 8'.
	39.6/ 90.3			
10	55.2/ 89.9 62.2/ 89.7		SM	SILTY SAND - Reddish brown (5YR4/4); 60% fine to coarse subrounded sand; 40% nonplastic fines; 10% fine subangular to subrounded gravel to ¾". Loose, dry, moderate reaction to HCl.
	68.5/ 125.9		ML	SANDY SILT - Light reddish brown to reddish brown (5YR6/4 to 5YR5/4); 65% nonplastic fines; 30% fine to medium, less coarse subrounded sand; 5% fine subrounded granitic gravel to 3/8". Hard to 13', firm below, strong reaction to HCl, dry.
	55.3/ 111.9			SILT - Reddish brown (5YR5/4); 90% nonplastic fines; 10% fine sand. Strong reaction to HCl, hard, dry.
	90.2/ 103.4		ML	
	63.2/ 127.7			
20	45/ 108.6		ML	SANDY SILT - Reddish brown (5YR4/4); 65% nonplastic fines; 30% fine to coarse subrounded sand; 5% fine subrounded gravel to 5/8". Soft, moist, no reaction to HCl. At 21.5' - Contains gravel size sandstone clasts with black cement.
	59.3/ 123.2			
	59.7/ 102.7			SILT WITH SAND- Light reddish brown to reddish brown (5YR6/4 to 5YR4/4); 80% nonplastic fines; 15% fine, less medium, trace coarse subrounded sand; 5% fine subangular gravel to 3/8". Firm, strong reaction to HCl, contains pink (5YR8/3) stringers of caliche.
	31.9/ 105.8		ML	
	46.3/ 101.4			
30	44.1/ 110.8			

Logged by MFW; Checked by MFW

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

LITHOLOGIC LOG FOR BORING BBH-15D

Lithologic Log: **BBH-15D**

DEPTH (feet Below Land Surface)	PID/TEMP (ppmv/degF)	Lithologic Log	USCS	Lithologic Description
30	39.3/ 89.9 124.7/ 117.1		ML	SILT WITH SAND - Continued.
	39.3/ 89.9 76.9/ 137.8 66.2/ 91		ML	SANDY SILT - Reddish brown (5YR4/4); 70% nonplastic fines; 20% fine to coarse subrounded sand; 10% fine subangular to subrounded gravel to ½". Firm, wet at 39', moderate reaction to HCl.
40	51.5/ 111.5 22.6/ 88.6			Encounter groundwater at 41.8'.
	77.8/ 98.9 35.2/ 91.5 15.1/ 80.6		ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% nonplastic fines; 15% fine to medium, trace coarse subrounded sand. Wet, weak reaction to HCl, firm, abundant mica.
50	41.1/ 100.5 22.2/ 99.1 16.4/ 92.1 42.6/ 90.1		ML	SANDY SILT - Reddish brown (5YR4/4); 65% nonplastic fines; 30% fine to coarse subrounded sand; 5% fine subangular to subrounded gravel to ¼". Firm to 57.5', soft to 59.5, hard below, wet, weak HCl.
60	24.7/ 84.7		ML	SILT - Yellowish red (5YR4/6); 90% nonplastic fines; 10% fine, trace medium sand. Wet, moderate reaction to HCl, firm.
	48.3/ 100.7 20.3/ 98.9		ML	SILT WITH SAND - Yellowish red (5YR4/6); 80% nonplastic fines; 20% fine to medium, less coarse subrounded sand; trace fine angular gravel to 3/8". Firm to hard, wet, moderate reaction to HCl.
70				

Logged by MFW; Checked by MFW

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

LITHOLOGIC LOG FOR BORING BBH-15D

Lithologic Log: **BBH-15D**

DEPTH (feet Below Land Surface)	PID/TEMP (ppmv/degF)	Lithologic Log	USCS	Lithologic Description
70	10.8/ 92.1		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 55% nonplastic fines; 30% fine to coarse subrounded sand; 15% fine subangular to subrounded gravel. Wet, weak to moderate reaction to HCl, soft.
	8.3/ 85.6		ML	SILT - Yellowish red (5YR5/6); 90% nonplastic fines; 10% fine, trace medium sand. Wet, moderate to strong reaction to HCl.
	44.8/ 110.6		ML	SANDY SILT WITH GRAVEL - Same as above with trace coarse subrounded gravel to 1½". No to weak reaction to HCl, firm.
80	20.6/ 100.4		ML	SILT - Reddish brown (5YR4/4); 90% nonplastic fines; 10% fine, trace medium subrounded sand; trace fine subrounded gravel to 1/4". Wet, moderate to strong reaction to HCl, hard.
	74.3/ 92.6			
	12.3/ 85.8		ML	SANDY SILT WITH GRAVEL - Same as above with 60% nonplastic fines; 25% fine to coarse subrounded sand; 15% fine, trace coarse subangular to subrounded gravel to 1". Firm, weak reaction to HCL, wet.
	7.1/ 87.4			
	29.2/ 85.8		SM	SILTY SAND WITH GRAVEL - Reddish brown (5YR4/4); 40% fine to coarse subrounded to rounded sand; 40% nonplastic fines; 20% fine subrounded gravel to ½". Firm, wet, no reaction to HCL.
90	21.1/ 98.7		ML	SILT - Yellowish red (5YR4/6); 90% nonplastic fines; 10% fine to medium subrounded sand. Wet, firm, weak reaction to HCL.
	47/ 90.5			
	43.1/ 91.9		SM	SANDY SILT WITH GRAVEL - Same as above.
	104.6/ 122.3		ML	SILT - Reddish brown (5YR4/4); 95% nonplastic fines; 5% fine, trace medium sand; trace fine subangular gravel to 1/4". Moist, hard, moderate to strong reaction to HCl.
100	85.2/ 109			
	46.2/ 98		ML	SILT WITH SAND - Reddish brown (5YR5/4); 80% nonplastic fines; 20% fine trace medium subrounded sand; trace fine subrounded gravel to 5/8". Wet, soft, weak to moderate reaction to HCL.
	39/ 85.3			
	12/ 130.4		ML	GRAVELLY SILT WITH SAND - Reddish brown (5YR4/4); 55% nonplastic fines; 25% fine, less coarse subangular to subrounded gravel to 1½"; 20% fine to coarse subangular to subrounded sand. Hard, moist, strong reaction to HCl.
	37.8/ 137.8			
110				

Logged by MFW; Checked by MFW

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

LITHOLOGIC LOG FOR BORING BBH-15D

Lithologic Log: **BBH-15D**

DEPTH (feet Below Land Surface)	PID/TEMP (ppmv/degF)	Lithologic Log	USCS	Lithologic Description
110	49.4/ 117.4		ML	GRAVELLY SILT WITH SAND - Reddish brown (5YR4/4); 55% nonplastic fines; 25% fine, less coarse subangular to subrounded gravel to 1½"; 20% fine to coarse subangular to subrounded sand. Hard, moist, strong reaction to HCl.
	97.6/ 109.7		SM	SILTY SAND WITH GRAVEL - Dark reddish brown (5YR3/4); 40% fine to coarse subrounded to rounded sand; 35% nonplastic fines; 25% fine, less coarse subrounded gravel to 11/2". Loose, no reaction to HCl, wet.
	24.9/ 139.2		ML	GRAVELY SILT WITH SAND - Same as above with fine, less coarse angular to subangular gravel. Very hard 118 to 120'.
	50.6/ 133.3			
120	15.7/ 115.1			
	18.1/ 115.3		ML	SILT WITH SAND - Yellowish red (5YR4/6); 20% fine to coarse subangular to subrounded sand; 80% nonplastic fines; trace fine angular gravel to 3/8". Strong reaction to HCl, very hard, moist.
	22.9/ 114.2			
	19.6/ 93.3			
130	11.4/ 91.5		SM/ML	SILTY SAND/SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 50% nonplastic fines; 30% fine to coarse subangular to subrounded sand; 20% fine subangular to rounded gravel to 3/4". Soft, wet, no reaction to HCl.
	20.6/ 92.8			
	11.7/ 109.7		ML	SILT WITH SAND - Same as above.
	13.8/ 94.2		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR5/4); 55% nonplastic fines; 30% fine to coarse subangular to subrounded sand;15% fine to coarse subangular to subrounded gravel to 2½". No to weak reaction to HCl, soft, wet.
140	11.2/ 109.7			
	45.2/ 165.7		ML	SILT WITH SAND - Yellowish red (5YR4/6); 80% nonplastic fines; 20% fine to coarse subangular to subrounded sand; trace fine subangular gravel to ¼". Moist, very hard, moderate to strong reaction to Hcl.
	13.6/ 95.1		ML	SANDY SILT - Reddish brown (5YR4/4); 55% nonplastic fines; 35% fine to coarse subangular to subrounded sand; 10% fine angular to subangular gravel to ¾". Firm, no reaction to HCl, wet.
	25.2/ 130.2		SM	SILTY SAND WITH GRAVEL - Reddish brown (5YR4/4); 40% nonplastic fines; 35% fine to coarse subangular to subrounded sand; 25% fine, trace coarse angular to subrounded gravel to 1½". Firm, no reaction to HCl, wet.
150	10.5/ 97.5			

Logged by MFW; Checked by MFW

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

LITHOLOGIC LOG FOR BORING BBH-15D

Lithologic Log: **BBH-15D**

DEPTH (feet Below Land Surface)	PID/TEMP (ppmv/degF)	Lithologic Log	USCS	Lithologic Description
150				
	16.5/ 100.9		ML	GRAVELY SILT WITH SAND - Reddish brown (5YR4/4); 55% nonplastic fines; 30% fine, less coarse subangular gravel to 2"; 15% fine to coarse subangular sand.
			SM/ML	Wet, hard, no to locally strong reaction to HCl.
	12/ 88.1		ML	SILTY SAND/SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 50% nonplastic fines; 35% fine to coarse subrounded to rounded sand; 15% fine subangular gravel to ¾". No reaction to HCl, wet, firm.
	12.1/ 85.4			
	25.1/ 146.4		ML	SILTY SAND WITH GRAVEL - Reddish brown (5YR4/4); 45% fine to coarse subrounded to rounded sand; 35% nonplastic fines; 20% fine subrounded gravel to ¾". Wet, soft, no reaction to HCl.
160	9.8/ 94.6			GRAVELY SILT WITH SAND - Same as above. 2" subrounded gravel at 160'. Wet, no reaction to HCl, firm.
	12.8/ 90.1		SM	SANDY SILT WITH GRAVEL - Same as above. 3¼' subrounded cobble at 163'.
	7.2/ 107.2		ML	GRAVELLY SILT WITH SAND - Same as above.
	34.5/ 99.1		SM/ML	SILTY SAND/SANDY SILT WITH GRAVEL - Same as above.
170	30.8/ 106.8			GRAVELLY SILT WITH SAND - Brown (7.5YR4/3); Same as above.
	31.5/ 101.4		ML	
	53.7/ 140.5			
	20.2/ 107.4		SM	SILTY SAND - Brown (7.5 YR4/4); 80% fine to coarse subrounded to rounded sand; 20% nonplastic fines. Wet, loose, so reaction to HCl, contains abundant biotite and black sands.
	38/ 139.6			GRAVELLY SILT WITH SAND - Brown (7.5YR4/4); Same as above with subrounded cobbles to 5" at 182, 188, and 191'.
180	10.5/ 113.3			
	16.2/ 105.6		ML	
	10.8/ 125			
	15.4/ 131.8			
190	8.6/ 128.3			

Logged by MFW; Checked by MFW

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

LITHOLOGIC LOG FOR BORING BBH-15D

Lithologic Log: **BBH-15D**

DEPTH (feet Below Land Surface)	PID/TEMP (ppmv/degF)	Lithologic Log	USCS	Lithologic Description
190			ML	GRAVELLY SILT WITH SAND - Continued
	308/ 109.7		SM	SILTY SAND - Reddish brown (5YR4/4); 65% fine to coarse subangular to subrounded sand; 30% nonplastic fines; 5% fine subangular greavel to 3/8". Wet, firm, no reaction to HCl.
	16.8/ 150.8		ML	SANDY SILT WITH GRAVEL - Dark reddish brown (5YR3/4); 55% nonplastic fines; 25% fine to coarse subangular to subrounded sand; 25% fine, less coarse angular to subangular gravel; trace subrounded platy schist cobbles to 3½". Firm to locally hard, wet, no reaction to HCl.
200	13.2/ 95.5			
	83.8/ 105.4		SM	SILTY SAND WITH GRAVEL - Dark reddish brown (5YR3/4); 40% nonplastic fines; 35% fine to coarse subrounded to rounded sand; 25% fine, less coarse angular to subrounded gravel to 2½". Wet, firm, no reaction to HCl.
	46.3/ 100.2			
	58.9/ 94.1			
210	44.4/ 90.5			
	38.7/ 89			
	38/ 88.8			
	145.7/ 130.2		ML	SILT WITH SAND - Brown (7.5YR5/3); 85% non to low plastic fines; 15% fine sand. Hard, moist, becoming dry with depth, strong reaction to HCl. Contains abundant stringers of clayey silt and well cemented sands. Appears to be upper weathered portion of the Camelshead formation.
	54.8/ 131.7			
220	137.3/ 113.3			
	105.7/ 123			
	54.7/ 111.5			
	37.4/ 127.5			
	6.2/ 113.9			
230	16/ 142.7			

Logged by MFW; Checked by MFW

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

LITHOLOGIC LOG FOR BORING BBH-15D

Lithologic Log: **BBH-15D**

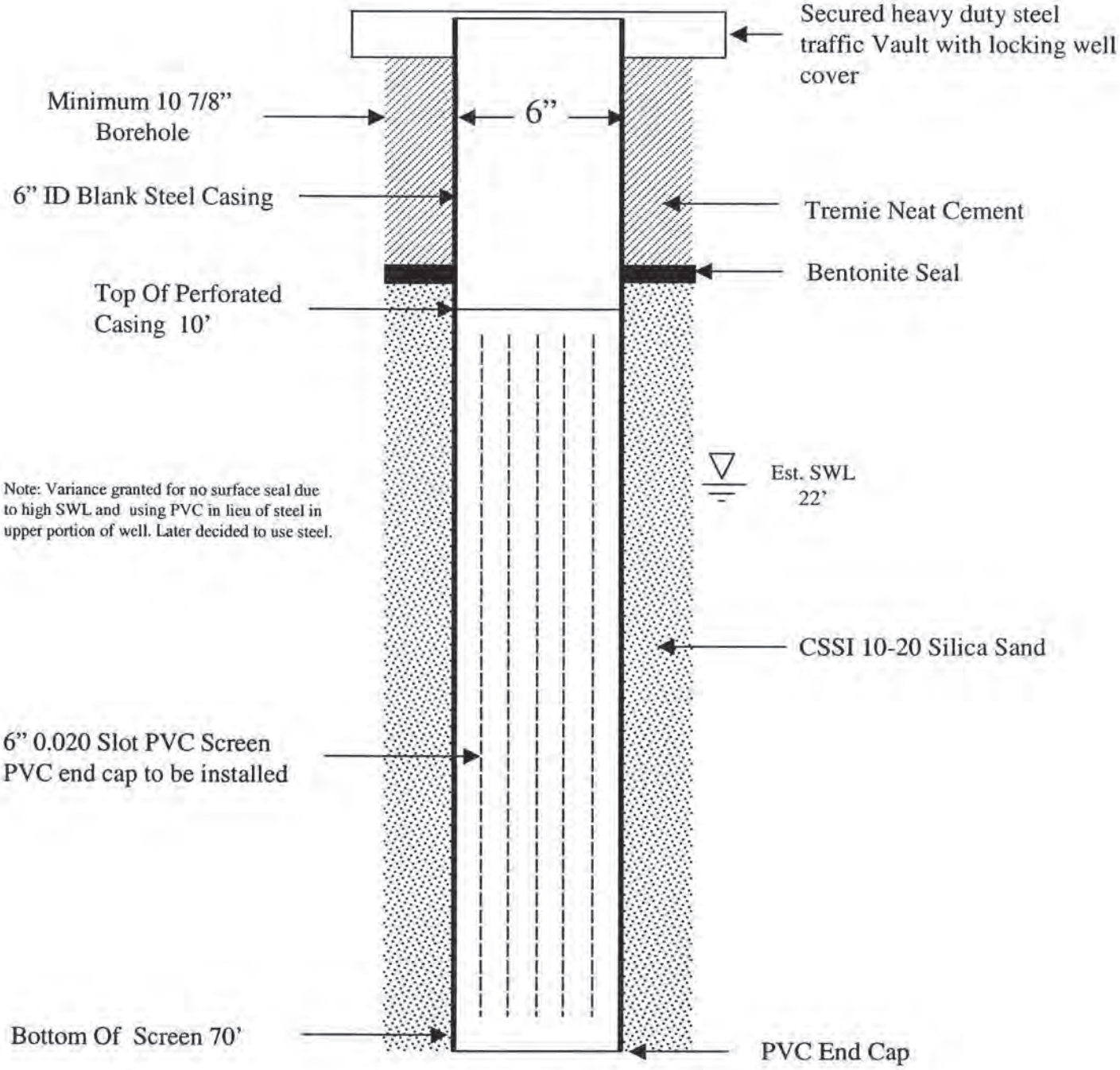
DEPTH (feet Below Land Surface)	PID/TEMP (ppmv/degF)	Lithologic Log	USCS	Lithologic Description
230	84.7/ 143.7		ML	SILT WITH SAND - Continued.
	23.3/ 85.4			
	17.3/ 82.2			At 239 feet; Becomes competent.
240	4.4/ 112.8			
	3.2/ 117.3			
	6.5/ 107.9			
250				TOTAL DEPTH OF BORING = 249 FEET BELOW LAND SURFACE
260				
270				

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

Logged by MFW; Checked by MFW

LITHOLOGIC LOG FOR BORING BBH-15D

Final Well Construction For
Shallow, 6" Diameter Recovery Well
ECP #1
55-587191



TD 71'
Drawing Not To Scale

Revised 08/06/2001

Depth	Time	USCS Symbols	Description ECP1 (55-587191)
1	1358		Lean clay with sand and some gravel (CL) fines more than 70%, well graded sands from 5-20%, fine-gravels from 5%-10%, coarse particles are sub-angular, finer gravel fractures when struck with a hammer, coarser gravel is hard, light brown, moist.
5	1400		
			Some cementation
10	1407		Very light brown, dry.
15	1408		
20	1414		
25	1415		Increasing moisture.
29			

Date: 8/1/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Layne - Air Percussion

Weather: Hot, humid

SRP Staff Present: Phyl Amadi, Bob Pane

Depth	Time	USCS Symbols	Description
30	1422		As above.
35	1423		Very moist.
40	1432		
45	1434		
50	1442		Increased coarse sand >20%.
55	1444		As above. Wet
59			

ECP1 (55-587191)

Date: 8/1/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Layne - Air Percussion

Weather: Hot, humid

SRP Staff Present: Phyl Amadi, Bob Pane

Depth	Time	USCS Symbols	Description ECP1 (55-587191)
60	1453		As at 45.
65	1456		
70	1504		
			Clayey Sand (SC) >60% well graded sand and fine to coarse gravel up to 3-inches. Gravel is sub-rounded, hard. Light brown, wet.
			End of Boring.
75			
80			
85			
89			

Date: 8/1/2001

Site: 48th and Indian School

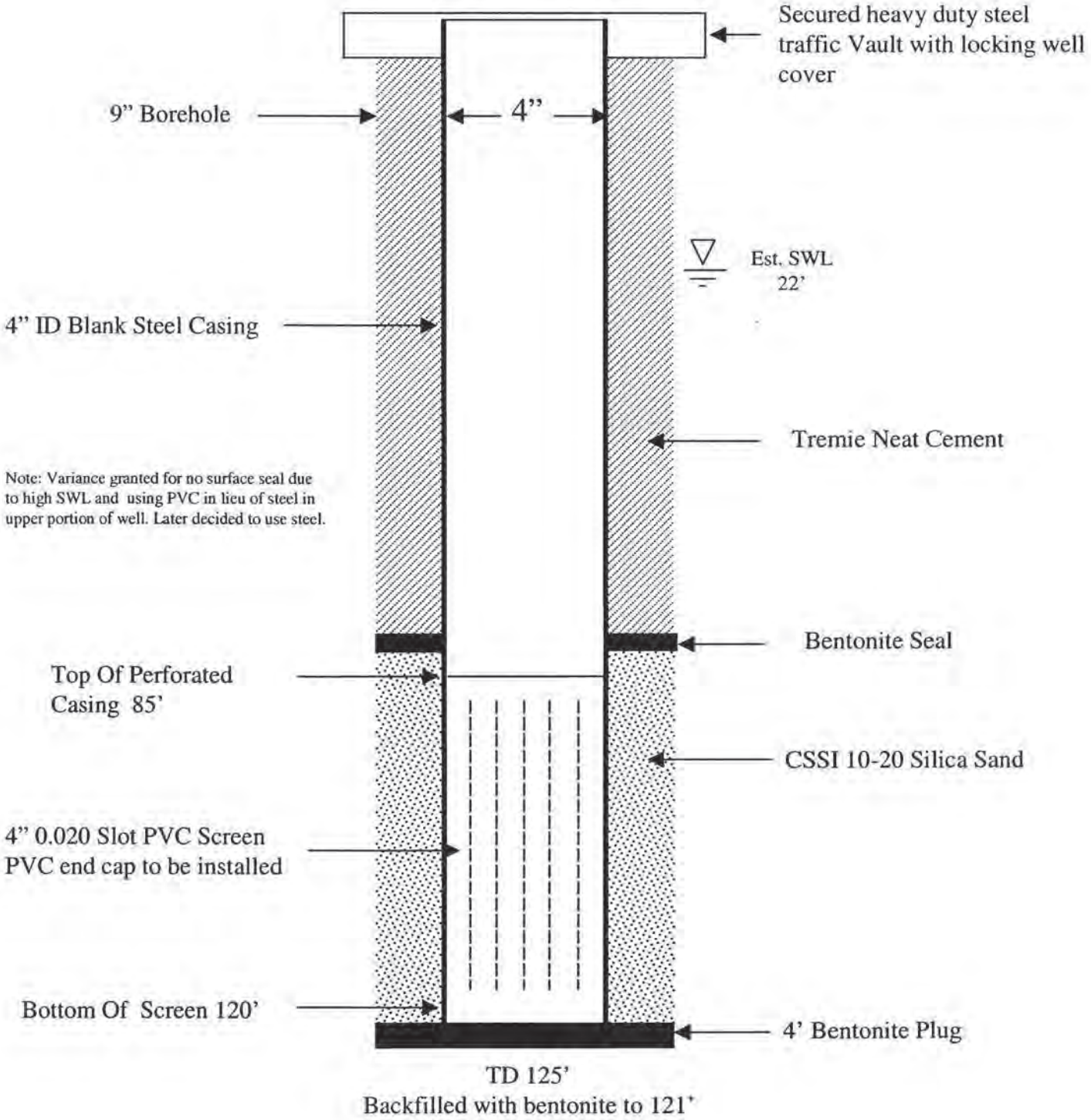
Staff: Jeff Trembly

Driller: Layne - Air Percussion

Weather: Hot, humid

SRP Staff Present: Phyl Amadi, Bob Pane

Final Well Construction For
Deep, 4" Diameter Monitor Well
ECP #2
55-587192



Revised 08/06/2001

Depth	Time	Bag Brk.	USCS Symbols	Description ECP2 (55-587192)
1				Sandy lean clay-Clayey sand mixture (CL/SC) fines varying from 40%-60%, well graded sands from 30-45%, fine-gravels from 5%-15%, coarse particles are sub-angular, finer gravel fractures when struck with a hammer, coarser gravel is hard, light brown, moist.
5	1942			
				As above with some CaCO3 cement, lighter in color.
10	1951			
	1955			
15				
				As at 5.
	2022			
20				
	2027			
25				Increasing moisture.
	2033			
				Silty sand (SM) Mostly fine sand with little medium and coarse sand, about 25% silt, <10 % clay, <10% fine-gravel, sub-angular, brown, wet.
29				

Date: 7/17/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Boart-Longyear - Sonic

Weather: Cloudy, monsoon, threat of rain
Night drilling

SRP Staff Present: Phyl Amadi, Bob Pane

Depth	Time	Bag Brk.	USCS Symbols	Description ECP2 (55-587192)
30	2040			As at 26.
				As at 5.
35	2053			
	2104			
40				
	2117			
45				
	2127			
50				Clayey Sand (SC) >60% well graded sand and fine-gravel, sub-angular, light brown, wet.
				As at 5.
55	2155			
	2212			
59				

Date: 7/17/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Boart-Longyear - Sonic

Weather: Cloudy, monsoon, threat of rain
Night drilling

SRP Staff Present: Phyl Amadi, Bob Pane

Depth	Time	Bag Brk.	USCS Symbols	Description
60				As at 5.
	2226			
65				
	2242			
70				
	2300			
				As at 50.
				As at 5.
75				
	2313			
80	2337			
85				
	2352			
89				

ECP2 (55-587192)

Date: 7/17/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Boart-Longyear - Sonic

Weather: Cloudy, monsoon, threat of rain
Night drilling

SRP Staff Present: Phyl Amadi, Bob Pane

Depth	Time	Bag Brk.	USCS Symbols	Description ECP2 (55-587192)
90				As at 50
	0017			(Date now 7/18/01)
				As at 5
95				As at 50, with 2"-3" cobbles.
	0037			As at 5
				As at 50.
				As at 5.
100				
	0056			Driller reports hard drilling below 100 feet.
105				
	0111			
				As at 50.
				As at 5.
110	0139			
	0158			
115				As at 50.
				As at 5.
	0231			With CaCO3 cement.
119				

Date: 7/18/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Boart-Longyear - Sonic

Weather: Cloudy, monsoon, threat of rain
Night drilling

SRP Staff Present: Phyl Amadi, Bob Pane

Depth	Time	Bag Brk.	USCS Symbols	Description ECP2 (55-587192)
120				As at 5.
	0256			
				With CaCO3 cement
125	0328			
				End of boring.
130				
135				
140				
145				
149				

Date: 7/18/2001

Site: 48th and Indian School

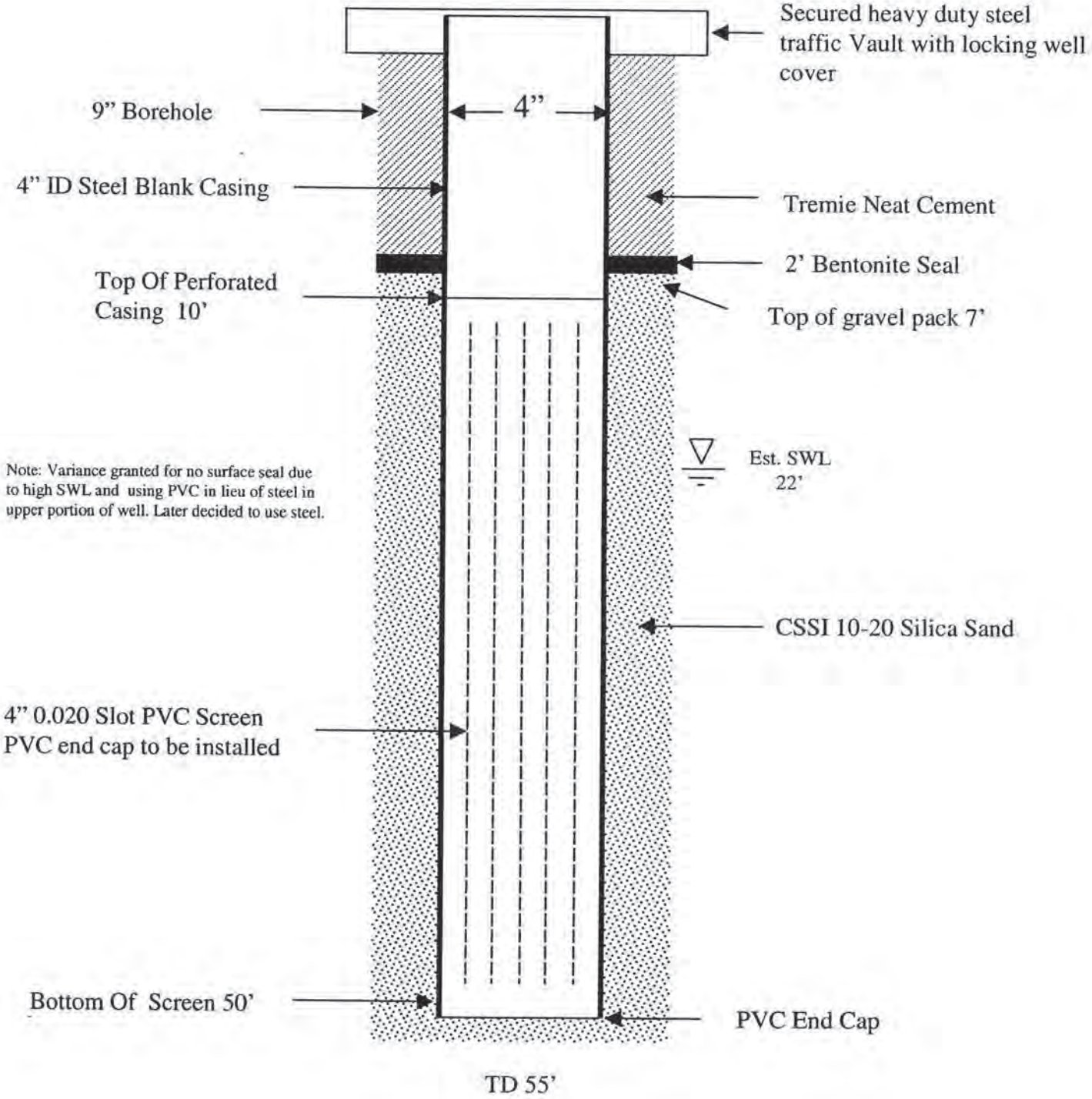
Staff: Jeff Trembly

Driller: Boart-Longyear - Sonic

Weather: Cloudy, monsoon, threat of rain
Night drilling

SRP Staff Present: Phyl Amadi, Bob Pane

Final Well Construction For
Shallow, 4" Diameter Monitor Well
ECP #3
55-587193



Revised 08/06/2001

Depth	Time	Bag Brk.	USCS Symbols	Description ECP3 (55-587193)
1				Sandy lean clay-Clayey sand mixture (CL/SC) fines varying from 40%-60%, well graded sands from 30-45%, fine-gravels from 5%-15%, coarse particles are sub-angular, finer gravel fractures when struck with a hammer, coarser gravel is hard, light brown, moist.
5	0150			
10				
15				
20				
25				
	0235			Silty sand (SM) Mostly fine sand with little medium and coarse sand, about 25% silt, <10 % clay, <10% fine-gravel, sub-angular, brown, wet.
29				

Date: 7/18-19/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Boart-Longyear - Sonic

Weather: Cloudy, monsoon, threat of rain
Night drilling

SRP Staff Present: Phyl Amadi, Bob Pane

Depth	Time	Bag Brk.	USCS Symbols	Description	ECP3	(55-587193)
30	0243			As at 5.		
35	0306					
40	0317					
45	0330					
50	0348					
55	0418			End of boring.		
59						

Date: 7/18-19/2001

Site: 48th and Indian School

Staff: Jeff Trembly

Driller: Boart-Longyear - Sonic

Weather: Cloudy, monsoon, threat of rain
Night drilling

SRP Staff Present: Phyl Amadi, Bob Pane

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-13**
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							Flush 12" vault, 3' concrete pad
		ML	Hand Auger to 5' bgs **SILT** ; ML; brown; non plastic; no odor; 95% silt, 5% sand							3,500 psi Fibermesh Concrete 1/4-inch teflon tubing Hydrated bentonite powder
		SM	**SILTY SAND** ; SM; brown; fine to coarse-grained; dry; well graded; 60% sand, 20% silt, 20% gravel							Dry granular bentonite 10-20 sand
5					0900 SG-13-5	1.5/1.5	15 14 24	0.0	5	Probe tip 1/4-inch teflon tubing Hydrated bentonite powder
										Dry granular bentonite 10-20 sand
10					0920 SG-13-10				10	Probe tip 1/4-inch teflon tubing Hydrated bentonite powder
		ML	**SILT WITH SAND AND GRAVEL** ; ML; brown tan; fine-grained; no odor; subangular; 60% silt, 20% sand, 20% gravel							Dry granular bentonite 10-20 sand
15					0940 SG-13-15				15	Probe tip
			Borehole terminated at 15.5 feet.							
20									20	

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-14**
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

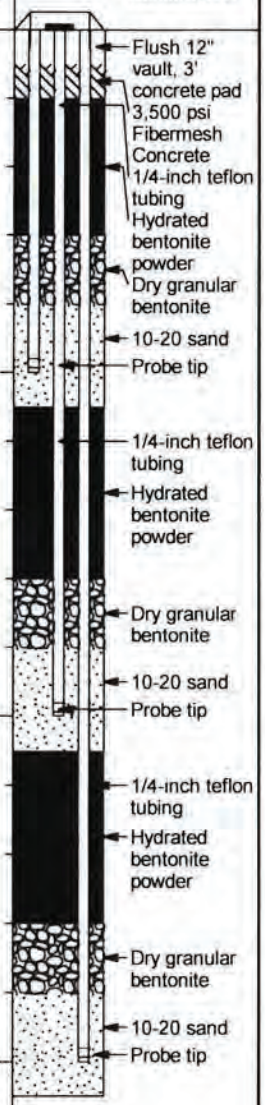
Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							Flush 12" vault, 3' concrete pad
		SW	Hand Auger to 5' bgs **SAND WITH GRAVEL** ; SW; brown; fine to coarse-grained; subangular; well graded; 60% sand, 35% gravel, 5% silt							3,500 psi Fibermesh Concrete 1/4-inch teflon tubing Hydrated bentonite powder Dry granular bentonite
5					1050 SG-14-5	1.5/1.5	8 10 14	0.0	5	10-20 sand Probe tip 1/4-inch teflon tubing Hydrated bentonite powder
10		SM	**SILTY SAND** ; SM; tan; fine to coarse-grained; stiff; dry; no odor; 50% sand, 15% gravel, 35% silt		1115 SG-14-10	1.5/1.5	14 16 16	0.0	10	Dry granular bentonite 10-20 sand Probe tip 1/4-inch teflon tubing Hydrated bentonite powder
15			Borehole terminated at 15.5 feet.		1130 SG-14-15	1.5/1.5	12 19 17	1.2	15	Dry granular bentonite 10-20 sand Probe tip
20									20	

GEO FORM 304 48THST_JAN2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 4/16/12

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: **SG-15** PAGE 1 OF 1
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Orth**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4.0** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)
			Asphalt 3"					
		ML	Hand Auger to 5' bgs **SILT WITH SAND** ; ML; brown; non plastic; dry; no odor; 80% silt, 20% sand					
5					1340 SG-15-5	1.5/1.5	5 6 10	0.0
10		SM	**SILTY SAND** ; SM; tan; stiff; dry; no odor; 50% sand, 40% silt, 10% gravel		1350 SG-15-10	1.5/1.5	9 9 10	0.0
15					1400 SG-15-15	1.5/1.5	9 9 10	0.0
			Borehole terminated at 15.5 feet.					
20								

Well Construction

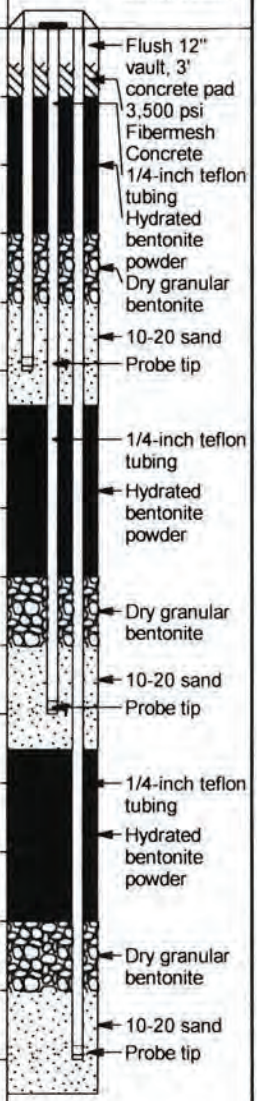


GEO FORM 304 48THST_JAN2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 4/18/12

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-16** Stantec
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3"						
		ML	Hand Auger to 5' bgs **SILT WITH SAND** ; ML; tan; medium stiff; dry; no odor; 85% silt, 15% coarse sand						
5					1450 SG-16-5	1.5/1.5	9 10 15	0.0	5
10					1520 SG-16-10	1.5/1.5	10 12 18	0.0	10
			Hard						
15					1545 SG-16-15	1.5/1.5	12 12 18	0.0	15
			Borehole terminated at 15.5 feet.						
20									20

Well Construction

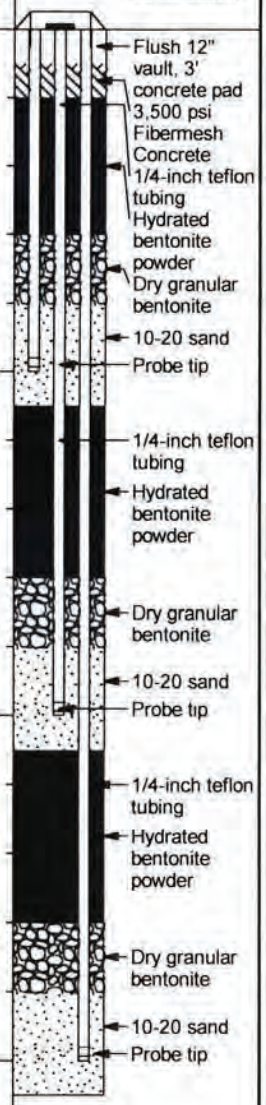


PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: **SG-17** PAGE 1 OF 1
DRILLING: STARTED **1/23/12** COMPLETED: **1/23/12** INSTALLATION: STARTED **1/23/12** COMPLETED: **1/23/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)
			Asphalt 3"					
		ML	Hand Auger to 5' bgs **SILT WITH SAND** ; ML; non plastic; dry; subangular; 85% silt, 15% coarse sand					
5					0950 SG-17-5	1.5/1.5	7 7 8	0.0
10		SM	**SILTY SAND WITH GRAVEL** ; SM; fine-grained; medium stiff; dry; 60% sand, 25% silt, 15% gravel		1005 SG-17-10	1.5/1.5	23 24 26	0.0
15					1020 SG-17-15	1.5/1.5	23 29 39	0.0
			Borehole terminated at 15.5 feet.					
20								

Depth (feet)

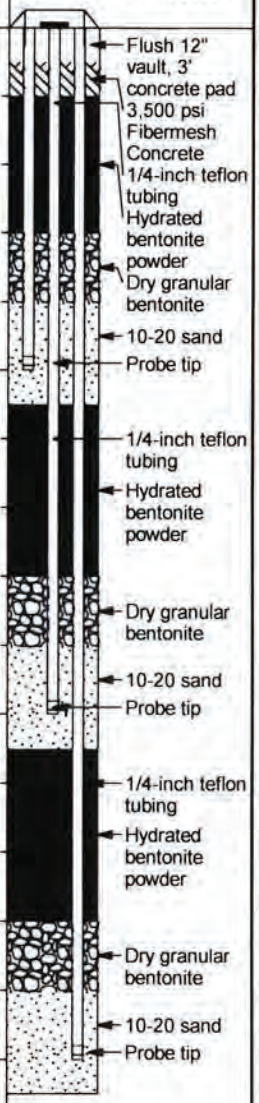
Well Construction



PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-18**
DRILLING: STARTED **1/18/12** COMPLETED: **1/19/11** INSTALLATION: STARTED **1/19/11** COMPLETED: **1/19/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hand Auger** SAMPLING EQUIPMENT: **Hand Impact Drive Sampler**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3"						
		SM	Hand Auger to 15.5' bgs due to access issue - no blow count available **SILTY SAND** ; SM; brown; fine to coarse-grained; dry; well graded; 65% sand, 35% silt						
5				☒	1120 SG-18-5	0.5/0.5	--	0.8	5
10			Light brown; hard; 80% sand, 20% silt	☒	1205 SG-18-10	0.5/0.5	--	0.0	10
15				☒	0855 SG-18-15 1/19/12	0.5/0.5	--	0.5	15
			Borehole terminated at 15.5 feet.						
20									20

Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-1**
DRILLING: STARTED **6/6/11** COMPLETED: **6/6/11** INSTALLATION: STARTED **6/6/11** COMPLETED: **6/6/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Gravel fill							Well vault set in concrete; 6-inch diameter plastic plate; Neat cement
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel							1/4-inch teflon tubing; hydrated bentonite powder; dry granular bentonite; 10-20 sand
5					1027 ---			0.0	5	1/4-inch stainless steel probe tip; 1/4-inch teflon tubing; hydrated bentonite powder; dry granular bentonite; 10-20 sand
10					1051 ---			0.0	10	1/4-inch stainless steel probe tip; 1/4-inch teflon tubing; hydrated bentonite powder; dry granular bentonite; 10-20 sand
15					1108 ---			2.2	15	1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-2**
DRILLING: STARTED **6/6/11** COMPLETED: **6/6/11** INSTALLATION: STARTED **6/6/11** COMPLETED: **6/6/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Newton** EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)
			Asphalt 3" thick Aggregate Base fill					
5		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel		1216			2.0
10					1228			3.4
15					1242			1.3
			Borehole terminated at 15.5 feet.					

Depth (feet): 5, 10, 15

Well Construction:

- Well vault set in concrete
- 6-inch diameter plastic plate
- Neat cement
- 1/4-inch teflon tubing
- hydrated bentonite powder
- dry granular bentonite
- 10-20 sand
- 1/4-inch stainless steel probe tip
- 1/4-inch teflon tubing
- hydrated bentonite powder
- dry granular bentonite
- 10-20 sand
- 1/4-inch stainless steel probe tip
- 1/4-inch teflon tubing
- hydrated bentonite powder
- dry granular bentonite
- 10-20 sand
- 1/4-inch stainless steel probe tip

PROJECT: **48th St & Indian School Rd - ECP WQARF Site**
LOCATION: **48th Street & Indian School Road**
PROJECT NUMBER: **185902048**

WELL / PROBEHOLE / BOREHOLE NO: **SG-3**
PAGE 1 OF 1

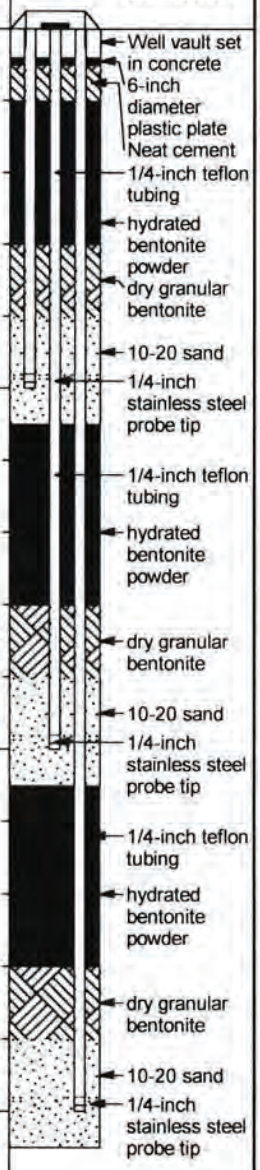
DRILLING: STARTED **6/7/11** COMPLETED: **6/7/11**
INSTALLATION: STARTED **6/7/11** COMPLETED: **6/7/11**
DRILLING COMPANY: **Geomechanics Southwest, Inc.**
DRILLING EQUIPMENT: **Skid-steer w/ auger extension**
DRILLING METHOD: **Conventional auger**
SAMPLING EQUIPMENT: **PID**

NORTHING (ft):
LATITUDE: **Not Surveyed**
GROUND ELEV (ft):
INITIAL DTW (ft): **Not Encountered**
STATIC DTW (ft): **Not Encountered**
WELL CASING DIAMETER (in): **1/4**
LOGGED BY: **M. Newton**

EASTING (ft):
LONGITUDE: **Not Surveyed**
TOC ELEV (ft):
BOREHOLE DEPTH (ft): **15.5**
WELL DEPTH (ft): **5/10/15**
BOREHOLE DIAMETER (in): **4**
CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3" thick						
			Aggregate Base fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel						
5					0732 ---			1.5	5
10					0746 ---			5.1	10
15					0758 ---			8.9	15
			Borehole terminated at 15.5 feet.						

Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-4**
DRILLING: STARTED **6/7/11** COMPLETED: **6/7/11** INSTALLATION: STARTED **6/7/11** COMPLETED: **6/7/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" thick							Well vault set in concrete
			Aggregate Base fill							6-inch diameter plastic plate
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel							Neat cement 1/4-inch teflon tubing hydrated bentonite powder dry granular bentonite 10-20 sand
5					1008			1.0	5	1/4-inch stainless steel probe tip 1/4-inch teflon tubing hydrated bentonite powder dry granular bentonite 10-20 sand
10					1030			11.3	10	1/4-inch stainless steel probe tip 1/4-inch teflon tubing hydrated bentonite powder dry granular bentonite 10-20 sand
15					1048			2.9	15	1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-5**
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" thick							Well vault set in concrete
			Aggregate Base fill							6-inch diameter plastic plate
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel							Neat cement
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
5					0810			0.7	5	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
10					0823			2.2	10	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
15					0831			1.5	15	1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-6**
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" thick							Well vault set in concrete
			Aggregate Base fill							6-inch diameter plastic plate
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel							Neat cement
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
5					0904			0.5	5	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
10					0919			0.0	10	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
15					0936			0.7	15	1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

GEO FORM 304 SG1-SG12.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 2/24/12

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-7**
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

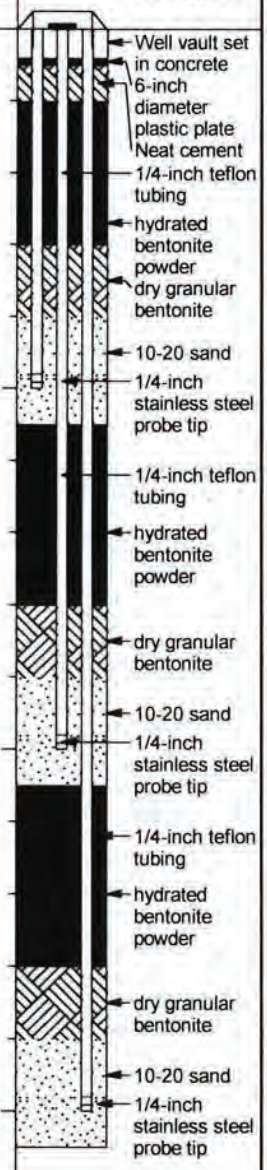
Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" thick							Well vault set in concrete
			Aggregate Base fill							6-inch diameter plastic plate
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel							Neat cement
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
5					1144 ---			1.1	5	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
10					1203 ---			9.7	10	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
15					1218 ---			22.0	15	1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

GEO FORM 304 SG1-SG12.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 2/24/12

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-8**
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)
			Asphalt 3" thick					
			Aggregate Base fill					
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel					
5					1242 ---			3.0
10					1258 ---			1.5
15					1310 ---			7.9
			Borehole terminated at 15.5 feet.					

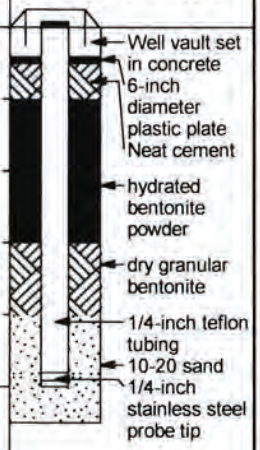
Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-9**
DRILLING: STARTED **6/9/11** COMPLETED: **6/9/11** INSTALLATION: STARTED **6/9/11** COMPLETED: **6/9/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Hand-auger** DRILLING METHOD: **Hand-auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **5.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5.0** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Gravel fill						
5		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine to coarse sand, 20% fine gravel		0840			140	5
			Note: Borehole terminated at 5.5 feet due to proximity to underground utilities and Permeable backfill Borehole terminated at 5.5 feet.						
10									10
15									15

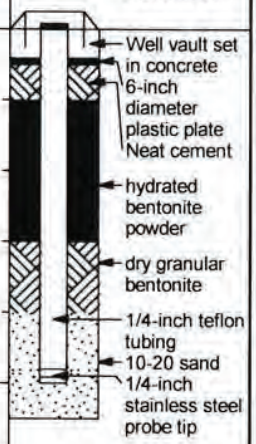
Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-10**
DRILLING: STARTED **6/9/11** COMPLETED: **6/9/11** INSTALLATION: STARTED **6/9/11** COMPLETED: **6/9/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Hand-auger** DRILLING METHOD: **Hand-auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **5.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5.0** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Gravel fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine to coarse sand, 20% fine gravel						
5					0943 ---			226	5
			Note: Borehole terminated at 5.5 feet due to proximity to underground utilities and Permeable backfill Borehole terminated at 5.5 feet.						
10									10
15									15

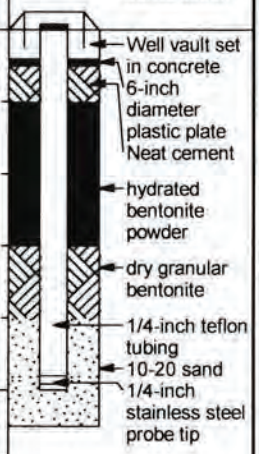
Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-12**
DRILLING: STARTED **6/9/11** COMPLETED: **6/9/11** INSTALLATION: STARTED **6/9/11** COMPLETED: **6/9/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Hand-auger** DRILLING METHOD: **Hand-auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **5.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5.0** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Gravel fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine to coarse sand, 20% fine gravel						
5					1148			0.9	5
			Note: Borehole terminated at 5.5 feet due to proximity to underground utilities and Permeable backfill Borehole terminated at 5.5 feet.						
10									10
15									15

Well Construction

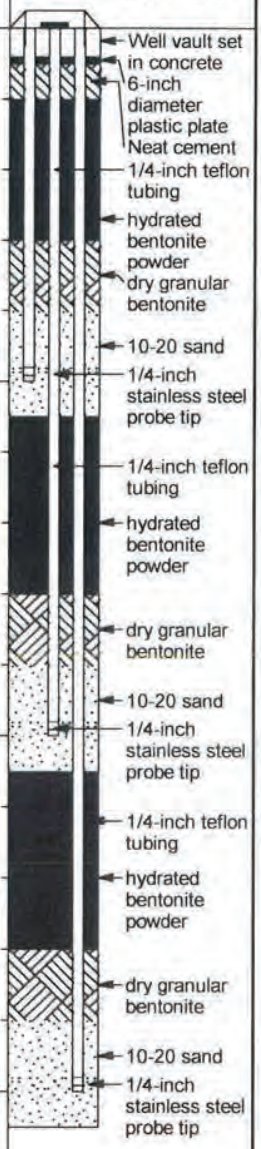


CTS 347752 R 1-36829 V: 06

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: **SG-1** PAGE 1 OF 1
DRILLING: STARTED **6/6/11** COMPLETED: **6/6/11** INSTALLATION: STARTED **6/6/11** COMPLETED: **6/6/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Newton**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Gravel fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel						
5					1027 ---			0.0	5
10					1051 ---			0.0	10
15					1108 ---			2.2	15
			Borehole terminated at 15.5 feet.						

Well Construction



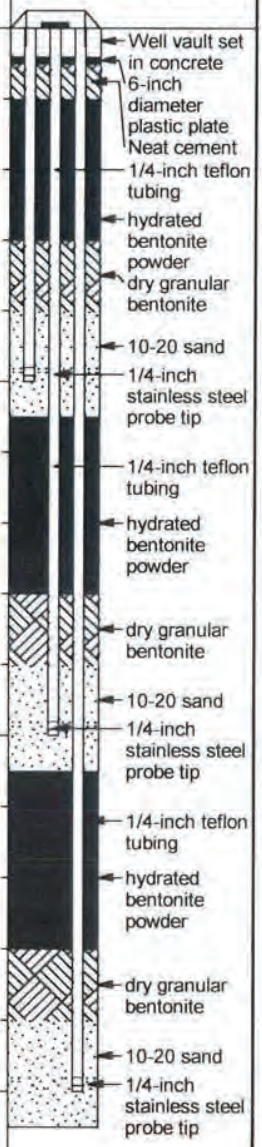
PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-2**
DRILLING: STARTED **6/6/11** COMPLETED: **6/6/11** INSTALLATION: STARTED **6/6/11** COMPLETED: **6/6/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" thick Aggregate Base fill							Well vault set in concrete 6-inch diameter plastic plate Neat cement 1/4-inch teflon tubing hydrated bentonite powder dry granular bentonite
5		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel		1216			2.0	5	10-20 sand 1/4-inch stainless steel probe tip 1/4-inch teflon tubing hydrated bentonite powder dry granular bentonite
10					1228			3.4	10	10-20 sand 1/4-inch stainless steel probe tip 1/4-inch teflon tubing hydrated bentonite powder dry granular bentonite
15					1242			1.3	15	10-20 sand 1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-3**
DRILLING: STARTED **6/7/11** COMPLETED: **6/7/11** INSTALLATION: STARTED **6/7/11** COMPLETED: **6/7/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Newton**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3" thick						
			Aggregate Base fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel						
5					0732 ---			1.5	5
10					0746 ---			5.1	10
15					0758 ---			8.9	15
			Borehole terminated at 15.5 feet.						

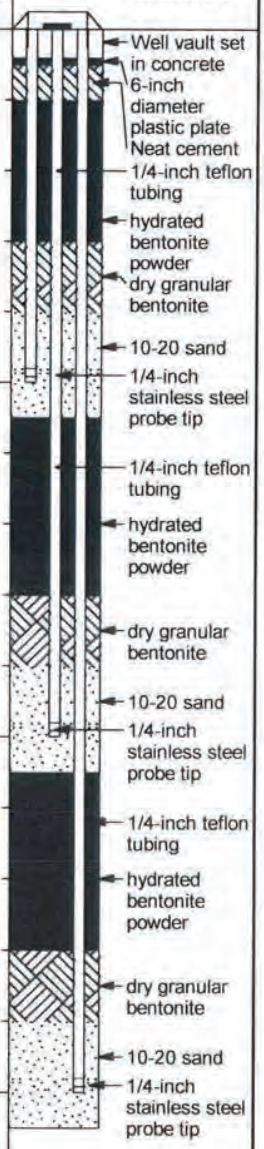
Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-4**
DRILLING: STARTED **6/7/11** COMPLETED: **6/7/11** INSTALLATION: STARTED **6/7/11** COMPLETED: **6/7/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3" thick						
			Aggregate Base fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine sand, 20% fine gravel						
5					1008			1.0	5
10					1030			11.3	10
15					1048			2.9	15
			Borehole terminated at 15.5 feet.						

Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: **SG-5** PAGE 1 OF 1
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Newton**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" thick							Well vault set in concrete
			Aggregate Base fill							6-inch diameter plastic plate
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel							Neat cement
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
5					0810			0.7	5	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
10					0823			2.2	10	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
15					0831			1.5	15	1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

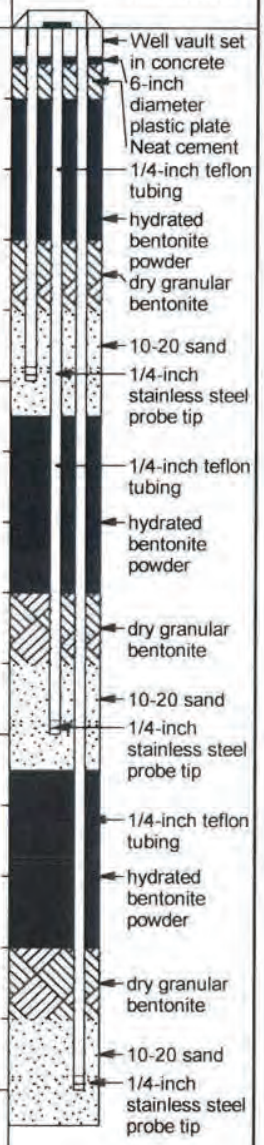
PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-6**
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" thick							Well vault set in concrete
			Aggregate Base fill							6-inch diameter plastic plate
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel							Neat cement
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
5					0904 ---			0.5	5	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
10					0919 ---			0.0	10	1/4-inch stainless steel probe tip
										1/4-inch teflon tubing
										hydrated bentonite powder
										dry granular bentonite
										10-20 sand
15					0936 ---			0.7	15	1/4-inch stainless steel probe tip
			Borehole terminated at 15.5 feet.							

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: **SG-7** PAGE 1 OF 1
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Newton**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3" thick						
			Aggregate Base fill						
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel						
5					1144			1.1	5
10					1203			9.7	10
15					1218			22.0	15
			Borehole terminated at 15.5 feet.						

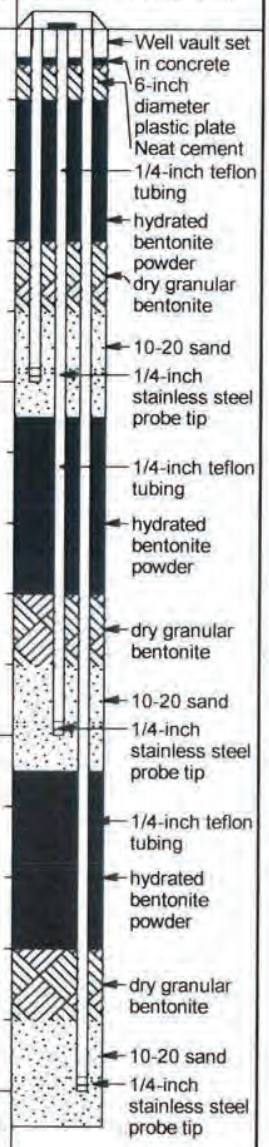
Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: **SG-8** PAGE 1 OF 1
DRILLING: STARTED **6/8/11** COMPLETED: **6/8/11** INSTALLATION: STARTED **6/8/11** COMPLETED: **6/8/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Skid-steer w/ auger extension** DRILLING METHOD: **Conventional auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Newton**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3" thick						
			Aggregate Base fill						
		CL	**SANDY CLAY WITH GRAVEL** ; CL; 7.5YR 4/6 brown; medium plasticity; soft; dry; no odor; no staining; approx. 50% clay, 30% fine to coarse sand, 20% fine gravel						
5					1242 ---			3.0	5
10					1258 ---			1.5	10
15					1310 ---			7.9	15
			Borehole terminated at 15.5 feet.						

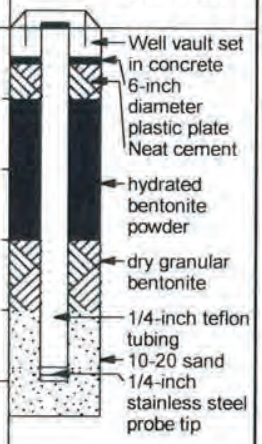
Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-9**
DRILLING: STARTED **6/9/11** COMPLETED: **6/9/11** INSTALLATION: STARTED **6/9/11** COMPLETED: **6/9/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Hand-auger** DRILLING METHOD: **Hand-auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **5.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5.0** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Gravel fill						
5		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine to coarse sand, 20% fine gravel		0840			140	5
			Note: Borehole terminated at 5.5 feet due to proximity to underground utilities and Permeable backfill Borehole terminated at 5.5 feet.						
10									10
15									15

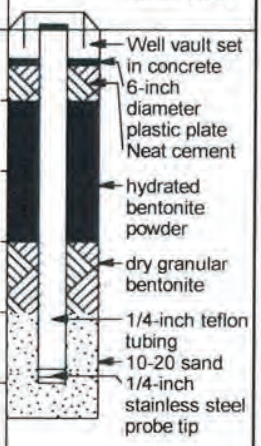
Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: **SG-10** PAGE 1 OF 1
DRILLING: STARTED **6/9/11** COMPLETED: **6/9/11** INSTALLATION: STARTED **6/9/11** COMPLETED: **6/9/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Hand-auger** DRILLING METHOD: **Hand-auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **5.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5.0** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

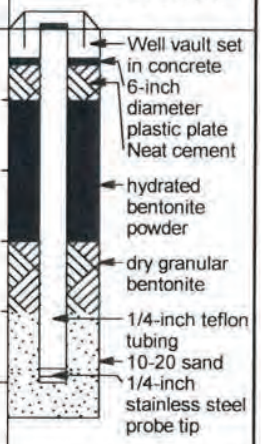
Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Gravel fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine to coarse sand, 20% fine gravel						
5					0943			226	5
			Note: Borehole terminated at 5.5 feet due to proximity to underground utilities and Permeable backfill Borehole terminated at 5.5 feet.						
10									10
15									15

Well Construction



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-11**
DRILLING: STARTED **6/9/11** COMPLETED: **6/9/11** INSTALLATION: STARTED **6/9/11** COMPLETED: **6/9/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Hand-auger** DRILLING METHOD: **Hand-auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **5.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5.0** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

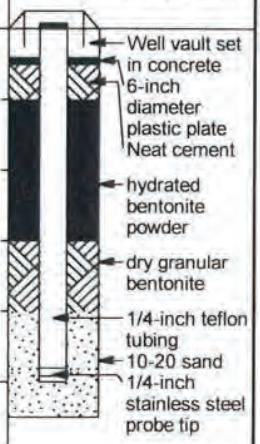
Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Gravel fill							Well vault set in concrete; 6-inch diameter plastic plate; Neat cement; hydrated bentonite powder; dry granular bentonite; 1/4-inch teflon tubing; 10-20 sand; 1/4-inch stainless steel probe tip
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine to coarse sand, 20% fine gravel							
5					1038 ---			3.1	5	
			Note: Borehole terminated at 5.5 feet due to proximity to underground utilities and Permeable backfill							
			Borehole terminated at 5.5 feet.							
10									10	
15									15	



PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th Street & Indian School Road** PROJECT NUMBER: **185902048**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-12**
DRILLING: STARTED **6/9/11** COMPLETED: **6/9/11** INSTALLATION: STARTED **6/9/11** COMPLETED: **6/9/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **Hand-auger** DRILLING METHOD: **Hand-auger** SAMPLING EQUIPMENT: **PID**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **5.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5.0** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Gravel fill						
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; approx. 50% silt, 30% fine to coarse sand, 20% fine gravel						
5					1148 ---			0.9	5
			Note: Borehole terminated at 5.5 feet due to proximity to underground utilities and Permeable backfill Borehole terminated at 5.5 feet.						
10									10
15									15

Well Construction



PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: **SG-13** PAGE 1 OF 1
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Orth**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4.0** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							Flush 12" vault, 3' concrete pad; 3,500 psi Fibermesh Concrete; 1/4-inch teflon tubing; Hydrated bentonite powder; Dry granular bentonite; 10-20 sand; Probe tip
		ML	Hand Auger to 5' bgs **SILT** ; ML; brown; non plastic; no odor; 95% silt, 5% sand							
		SM	**SILTY SAND** ; SM; brown; fine to coarse-grained; dry; well graded; 60% sand, 20% silt, 20% gravel							
5					0900 SG-13-5	1.5/1.5	15 14 24	0.0	5	1/4-inch teflon tubing; Hydrated bentonite powder; Dry granular bentonite; 10-20 sand; Probe tip
10					0920 SG-13-10				10	1/4-inch teflon tubing; Hydrated bentonite powder; Dry granular bentonite; 10-20 sand; Probe tip
		ML	**SILT WITH SAND AND GRAVEL** ; ML; brown tan; fine-grained; no odor; subangular; 60% silt, 20% sand, 20% gravel							
15			Borehole terminated at 15.5 feet.		0940 SG-13-15				15	
20									20	

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-14**
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **1/4** LOGGED BY: **M. Orth** EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **15.5** WELL DEPTH (ft): **5/10/15** BOREHOLE DIAMETER (in): **4.0** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)
			Asphalt 3"					
		SW	Hand Auger to 5' bgs **SAND WITH GRAVEL** ; SW; brown; fine to coarse-grained; subangular; well graded; 60% sand, 35% gravel, 5% silt					
5					1050 SG-14-5	1.5/1.5	8 10 14	0.0
10		SM	**SILTY SAND** ; SM; tan; fine to coarse-grained; stiff; dry; no odor; 50% sand, 15% gravel, 35% silt		1115 SG-14-10	1.5/1.5	14 16 16	0.0
15					1130 SG-14-15	1.5/1.5	12 19 17	1.2
			Borehole terminated at 15.5 feet.					
20								

Depth (feet): 5, 10, 15, 20

Well Construction:

- Flush 12" vault, 3' concrete pad
- 3,500 psi Fibermesh Concrete
- 1/4-inch teflon tubing
- Hydrated bentonite powder
- Dry granular bentonite
- 10-20 sand
- Probe tip
- 1/4-inch teflon tubing
- Hydrated bentonite powder
- Dry granular bentonite
- 10-20 sand
- Probe tip
- 1/4-inch teflon tubing
- Hydrated bentonite powder
- Dry granular bentonite
- 10-20 sand
- Probe tip

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: **SG-15** PAGE 1 OF 1
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							Flush 12" vault, 3' concrete pad; 3,500 psi Fibermesh Concrete; 1/4-inch teflon tubing; Hydrated bentonite powder; Dry granular bentonite; 10-20 sand; Probe tip
		ML	Hand Auger to 5' bgs **SILT WITH SAND** ; ML; brown; non plastic; dry; no odor; 80% silt, 20% sand							
5					1340 SG-15-5	1.5/1.5	5 6 10	0.0	5	1/4-inch teflon tubing; Hydrated bentonite powder; Dry granular bentonite; 10-20 sand; Probe tip
10		SM	**SILTY SAND** ; SM; tan; stiff; dry; no odor; 50% sand, 40% silt, 10% gravel		1350 SG-15-10	1.5/1.5	9 9 10	0.0	10	1/4-inch teflon tubing; Hydrated bentonite powder; Dry granular bentonite; 10-20 sand; Probe tip
15					1400 SG-15-15	1.5/1.5	9 9 10	0.0	15	
			Borehole terminated at 15.5 feet.							
20									20	

GEO FORM 304 48THST_JAN2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 4/18/12

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-16**
DRILLING: STARTED **1/20/12** COMPLETED: **1/20/12** INSTALLATION: STARTED **1/20/12** COMPLETED: **1/20/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							Flush 12" vault, 3' concrete pad 3,500 psi Fibermesh Concrete
		ML	Hand Auger to 5' bgs **SILT WITH SAND** ; ML; tan; medium stiff; dry; no odor; 85% silt, 15% coarse sand							1/4-inch teflon tubing Hydrated bentonite powder Dry granular bentonite
5					1450 SG-16-5	1.5/1.5	9 10 15	0.0	5	10-20 sand Probe tip 1/4-inch teflon tubing Hydrated bentonite powder
10					1520 SG-16-10	1.5/1.5	10 12 18	0.0	10	Dry granular bentonite 10-20 sand Probe tip 1/4-inch teflon tubing Hydrated bentonite powder
			Hard							Dry granular bentonite
15					1545 SG-16-15	1.5/1.5	12 12 18	0.0	15	10-20 sand Probe tip
			Borehole terminated at 15.5 feet.							
20									20	

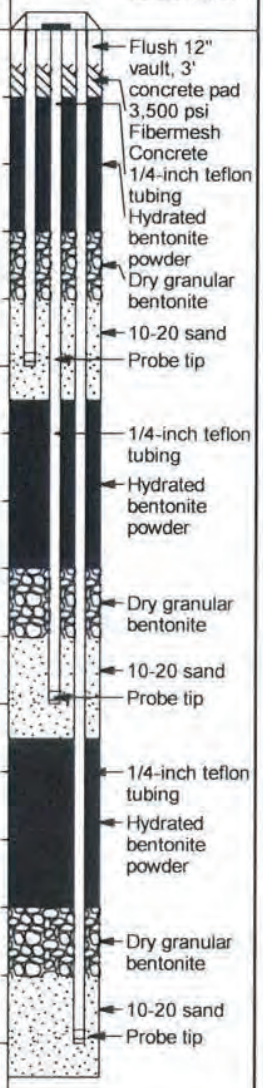
PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 1 **SG-17**
DRILLING: STARTED **1/23/12** COMPLETED: **1/23/12** INSTALLATION: STARTED **1/23/12** COMPLETED: **1/23/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Solid Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							Flush 12" vault, 3' concrete pad 3,500 psi Fibermesh Concrete
		ML	Hand Auger to 5' bgs **SILT WITH SAND** ; ML; non plastic; dry; subangular; 85% silt, 15% coarse sand							1/4-inch teflon tubing Hydrated bentonite powder Dry granular bentonite
5					0950 SG-17-5	1.5/1.5	7 7 8	0.0	5	10-20 sand Probe tip
										1/4-inch teflon tubing Hydrated bentonite powder Dry granular bentonite
10		SM	**SILTY SAND WITH GRAVEL** ; SM; fine-grained; medium stiff; dry; 60% sand, 25% silt, 15% gravel		1005 SG-17-10	1.5/1.5	23 24 26	0.0	10	10-20 sand Probe tip
										1/4-inch teflon tubing Hydrated bentonite powder Dry granular bentonite
15					1020 SG-17-15	1.5/1.5	23 29 39	0.0	15	10-20 sand Probe tip
			Borehole terminated at 15.5 feet.							
20									20	

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: **SG-18** PAGE 1 OF 1
DRILLING: STARTED **1/18/12** COMPLETED: **1/19/11** INSTALLATION: STARTED **1/19/11** COMPLETED: **1/19/11** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hand Auger** SAMPLING EQUIPMENT: **Hand Impact Drive Sampler**	NORTHING (ft): EASTING (ft): LATITUDE: **Not Surveyed** LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **15.5** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **5/10/15** WELL CASING DIAMETER (in): **1/4** BOREHOLE DIAMETER (in): **4.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3"						
		SM	Hand Auger to 15.5' bgs due to access issue - no blow count available **SILTY SAND** ; SM; brown; fine to coarse-grained; dry; well graded; 65% sand, 35% silt						
5				X	1120 SG-18-5	0.5/0.5	--	0.8	5
10			Light brown; hard; 80% sand, 20% silt	X	1205 SG-18-10	0.5/0.5	--	0.0	10
15				X	0855 SG-18-15 1/19/12	0.5/0.5	--	0.5	15
			Borehole terminated at 15.5 feet.						
20									20

Well Construction



The Earth Technology Corporation

WELL COMPLETION LOG

PROJECT NAME: East Central Phoenix/ Sandy's Magic Touch

WELL NUMBER: SMW1

PROJECT NUMBER: 90-0619-05

WELL LOCATION: 75 feet west if SW corner of Sandy's Magic Touch: A(2-4 19ddd

WELL REGISTRATION NUMBER: 55-533298

DEPTH TO WATER (FEET FTOC): 20

DRILLING CO.: Heber Mining and Exploration

DRILLER: Randy Wilder

RIG TYPE: CME HD75

DRILLING METHOD: Hollow Stem Auger

DRILLING FLUID: None

BOREHOLE DIAMETER (INCHES): 10-1/4

TOTAL DEPTH DRILLED (FEET): 55

CASING TYPE: 4-inch Schedule 40 PVC

CASING DIAMETER (INCHES O.D.): 4

SCREEN TYPE: Schedule 40 PVC

SLOT SIZE (INCHES): 0.010

SCREENED INTERVAL (FEET): 15 TO 55

CASING INTERVAL (FEET): 0 TO 15

FILTER PACK: Sand CSSI Silica Sand - 10/20

FILTER INTERVAL (FEET): 14 TO 55

TYPE OF SEAL: Bentonite pellets - 1/4"

SEALED INTERVAL (FEET): 11 TO 14

GROUT TYPE: Neat cement

PERCENT BENTONITE IN GROUT:

GROUT INTERVAL (FEET): 0 TO 11

GROUND ELEVATION: 1239.76 feet AMSL

TOP OF CASING ELEVATION: 1239.46 AMSL

COMMENTS:

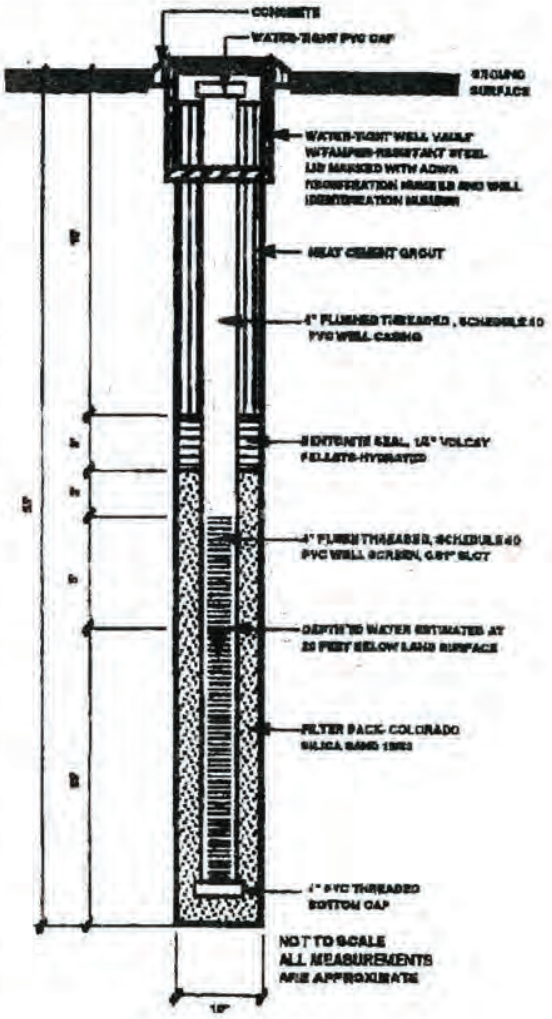
WELL NUMBER: SMW1

DRILLING & WELL COMPLETION PROGRESS:

	START	FINISH
DATE:	3/31/92	3/31/92

WELL SKETCH
(DEPTH IN FEET)

CONSTRUCTION GEOLOGIC



The Earth Technology Corporation

WELL COMPLETION LOG

PROJECT NAME: East Central Phoenix/ Sandy's Magic Touch

WELL NUMBER: SMW2

PROJECT NUMBER: 90-0619-05

WELL LOCATION: Northeast of Arcadia Shopping Center; A(2-4) 19ddd

WELL REGISTRATION NUMBER: 55-535795

DEPTH TO WATER (FEET FTOC): 20

DRILLING CO.: Heber Mining and Exploration

DRILLER: Randy Wilder

RIG TYPE: CME HD75

DRILLING METHOD: Hollow Stem Auger

DRILLING FLUID: None

BOREHOLE DIAMETER (INCHES): 10-1/4

TOTAL DEPTH DRILLED (FEET): 55

CASING TYPE: 4-inch Schedule 40 PVC

CASING DIAMETER (INCHES O.D.): 4

SCREEN TYPE: Schedule 40 PVC

SLOT SIZE (INCHES): 0.010

SCREENED INTERVAL (FEET): 15 TO 55

CASING INTERVAL (FEET): 0 TO 15

FILTER PACK: Sand CSSI Silica Sand - 10/20

FILTER INTERVAL (FEET): 13 TO 55

TYPE OF SEAL: Bentonite pellets - 1/4"

SEALED INTERVAL (FEET): 10 TO 13

GROUT TYPE: Neat Cement

PERCENT BENTONITE IN GROUT: Not Applicable

GROUT INTERVAL (FEET): 0 TO 10

GROUND ELEVATION: 1247.13 feet AMSL

TOP OF CASING ELEVATION: 1246.89 feet AMSL

COMMENTS:

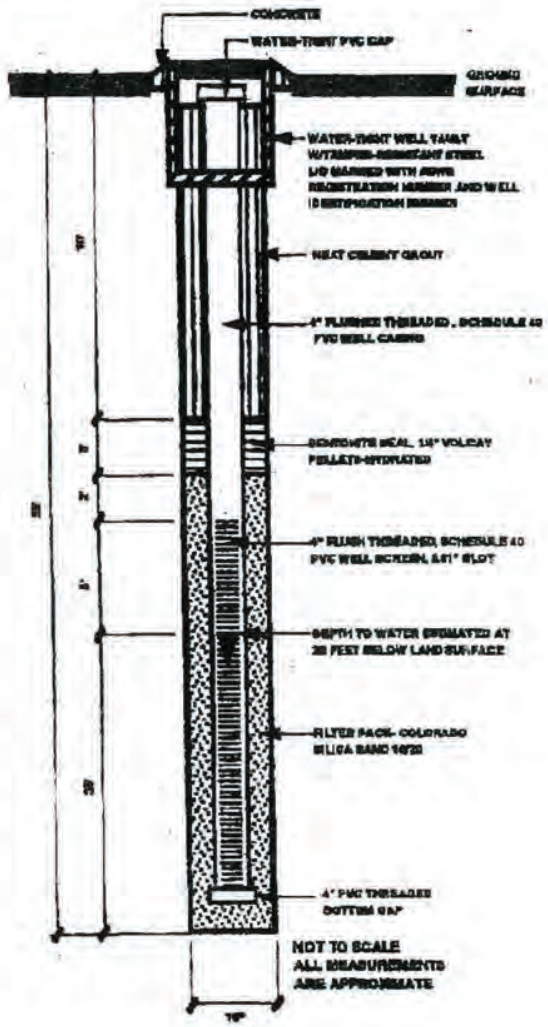
WELL NUMBER: SMW2

DRILLING & WELL COMPLETION PROGRESS:

	START	FINISH
DATE:	7/31/92	7/31/92

WELL SKETCH
(DEPTH IN FEET)

CONSTRUCTION GEOLOGIC



The Earth Technology Corporation

BOREHOLE LOG

Project Name: East Central Phoenix/Sandy's Magic Touch			
Project Number: 90-0619-05	Borehole Number: B7 (SMW1)		Sheet 1 of 2
Borehole Location: Northeast of Sandy's Magic Touch shopping center		Elevation and Datum: 1239.46	
Drilling Company: Heber Mining	Driller: Randy Wilder	Date Started: 3/31/92	Date Finished: 3/31/92
Drilling Equipment: CME HD-75		Total Depth (feet): 55.0	Depth to bedrock (feet): NE
Drilling Method: Hollow-Stem Auger		Borehole Diameter: 10 1/4" Outer Diameter	
Drilling Fluid: None		Depth to Water(feet): 23.0	First: NA / Compl: NA / 24 hrs: NA
Completion Information: Boring completed as monitoring well.		Logged By: G. Bender	Checked by: J. Waldner

Depth (feet)	Description	Lithology	OVA (ppm)	Samples: Number	Type	Blow Count	Drilling Time	Remarks
	0 - 3" Asphalt						0840	Begin drilling
	3" - 2.0' Sandy GRAVEL (GM) fill; brown, damp, loose, no odors	GM						Background = 5.0
	2.0' - 8.0' Sandy SILT (SM); some gravel, light reddish brown, no odors, slightly moist, loose	SM						
5			5.2	B7-5	U	12/24	0853	BZ = 5.5 Collected soil sample from 5.0 to 6.0 feet; 100% recovery
	7.0' Trace gravel							
	8.0' SILT (ML); some sand and trace gravel, light yellow brown, no odors, slightly moist, hard	ML						
10			4.8	B7-10	U	14/36	0859	BZ = 6.1 Collected soil sample from 10.0 to 11.0 feet; 100% recovery
	13.0' Increased gravel content, well rounded <1/2"							
15								
	15.0' Increase in consistency to very hard		4.8	B7-15	U	26/57	0910	BZ = 7.6 (Background is drifting) Collected soil sample from 15.0 to 16.0 feet; 100% recovery
	18.0' Decrease in gravel content and decrease in consistency to hard							
20			4.9	B7-20	U	8/10	0920	BZ = 7.6 Collected soil sample from 20.0 to 21.0 feet; 100% recovery
	22.0' Increase in moisture to wet	ML						
25	24.0' Groundwater encountered							
	25.0 Continue silt with trace gravel		6.5	B7-25		6/8	0930	BZ = 8.6
				B7-26	U	4/8	0934	Collected soil sample from 25.0 to 26.0 feet; 0% recovery Colected soil sample from 26.0 to 27.0 feet; 100% recovery
30	29.0' Slight increase in gravel content							

The Earth Technology Corporation

BOREHOLE LOG

Project Name: East Central Phoenix/Sandy's Magic Touch

Project Number: 90-0619-05 | Borehole Number: B7 (SMW1) | Sheet 2 of 2

Depth (feet)	Description	Lithology	OVA (ppm)	Samples: Number	Samples: Type	Samples: Blow Count	Samples: Drilling Time	Remarks
								More difficult driling at 32.0 feet
	32.0' Consistency change, more difficult drilling							
35								
	35.0' Clayey SILT (ML); trace gravel, poorly graded, light reddish brown, no odors, wet	ML	5.0	B7-35	U	10/18	0956	BZ = 11.0 (recalibrate OVA) Sample collected from 35.0 to 36.0 feet
	37.0' Possible layer of caliche							Very difficult drillin from 37.0 feet to 41.0 feet
40								
								Rain from 1015 to 1040 No breathing zone readings collected
45								
	45.0' Continue silt with trace clay, some gravel			B7-45	U	9/20	1043	Sample ecollected from 45.0 to 46.0 feet
50								
								BZ = 4.8
55								
	55.0' Boring terminated			B7-55	U	18/35	1120	
								BZ = 4.9 Sample collected from 55.0 to 56.0 feet
60								
								BG = 1.0
65								BZ = 1.0 in air BZ = 1.6 in auger
70								

Key: NE - Not encountered; NA - Not applicable; BG - Background concentrations in parts per million(ppm); U - Relatively undisturbed sample; BZ - Breathing zone concentrations in ppm

The Earth Technology Corporation

BOREHOLE LOG

Project Name: East Central Phoenix/Sandy's Magic Touch			
Project Number: 90-0619-05	Borehole Number: SMW2		Sheet 1 of 2
Borehole Location: Northeast of Sandy's Magic Touch shopping center		Elevation and Datum: 1246.89	
Drilling Company: Heber Mining	Driller: Randy Wilder	Date Started: 7/31/92	Date Finished: 7/31/92
Drilling Equipment: CME HD-75		Total Depth (feet): 55.0	Depth to bedrock (feet): NE
Drilling Method: Hollow-Stem Auger		Borehole Diameter: 10 1/4" Outer Diameter	
Drilling Fluid: None		Depth to Water(feet): 23.0	First: NA / Compl: NA / 24 hrs: NA
Completion Information: Boring completed as monitoring well.		Logged By: L. Pollitt	Checked by: J. Waldner

Depth (feet)	Description	Lithology	OVA (ppm)	Samples: Number	Samples: Type	Samples: Blow Count	Samples: Drilling Time	Remarks
	0 - 2" Asphalt						0630	Begin drilling
	2" - 21.0' Gravelly SILT (ML); light brown, moist, soft, abundant roots and organics, gravel < 1/4" and subrounded	ML						
5	2.0' Decrease in organic matter							
	3.0' Decrease in moisture to dry						0645	Background (BG) = 0.4 BZ = 0.4 in auger and air
	7.0' Very fine sand observed							
10								
							0650	BG = 0.4 BZ = 0.4 in auger and air
	11.0' Trace of caliche on gravel							
15	14.0' Increase in moisture to damp							
							0655	BG = 0.4 BZ = 0.4 in auger and air
	16.0' Color change to pale yellowish brown							
20	19.0' Increase in moisture to moist							
							0705	BG = 0.4 BZ = 0.4 in auger and air
	21.0' Clayey SILT (ML); some gravel, pale yellowish brown, moist, stiff, gravel < 1/4" and well rounded, clay in distinct gray bands	ML						
25	23.0' Moisture increase to wet							
	24.0' Inital groundwater encountered						0720	BG = 0.8 BZ = 0.8 in auger and air
30								

The Earth Technology Corporation

BOREHOLE LOG

Project Name: East Central Phoenix/Sandy's Magic Touch

Project Number: 90-0619-05 | Borehole Number: SMW2 | Sheet 2 of 2

Depth (feet)	Description	Lithology	OVA (ppm)	Samples: Number	Samples: Type	Samples: Blow Count	Samples: Drilling Time	Remarks
	30.0' Much harder drilling						0725	BG = 0.8 BZ = 0.8 in air BZ = 2.1 in auger
	32.0' SILT (ML); with gravel, light brown, wet hard, gravel subangular and <1/4"	ML						
35							0735	BG = 0.8 BZ = 0.8 in auger and air
	37.0' Only trace of gravel and <1/8"							
40							0750	BG = 0.8 BZ = 0.8 in air BZ = 1.8 in auger
45							0800	BG = 1.0 BZ = 1.0 in auger and air
50	50.0 Increased gravel content-subangular and < 1/2"						0815	BG = 1.0 BZ = 1.0 in air BZ = 1.6 in auger
55	55.0' Boring terminated						0825	
60								
65								
70								

Key: NE - Not encountered; NA - Not applicable; BG - Background concentrations in parts per million(ppm); U - Relatively undisturbed sample; BZ - Breathing zone concentrations in ppm

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

DEPARTMENT OF W.R.
MAY 20 1994
OPERATIONS DIV.

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: ADEQ
   Address: 3033 N. Central Ave. Phoenix, Az. 85012
   Street City State Zip
2. Driller Name: HEBER MINING & EXPLORATION Co.
   Address: 22010 N. 21st Ave. Phoenix, Az. 85027
   Street City State Zip
3. Location: 2 (N/S) Township, 4 (E/W) Range, 30 Section, NE 1/4 10-acre, NE 1/4 40-acre, NE 1/4 160-acre
4. Well Registration No. 55-543424 (Required)
5. Permit No. NA (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 140 ft.
7. Type of casing PVC
8. Diameter and length of casing 2 in. from 0 to 140, _____ in from _____ to _____.
9. Method of sealing at reduction points NA
10. Perforated from 13' to 60', from 100' to 140', from _____ to _____.
11. Size of cuts .020 Number of cuts per foot 125
12. If screen was installed: Length 87 ft. Diam 2 in. Type PVC
13. Method of construction drilled w/ 8¼ in. I.D. hollow stem auger
    (drilled, dug, driven, bored, jetted, etc)
14. Date started May 6 1994
    Month Day Year
15. Date completed May 9 1994
    Month Day Year
16. Depth to water 18.5' while drilling ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    Existing ground near well
18. If flowing well, state method of flow regulation: NA
19. Remarks: Set well to 140', Screened from 13' to 60' & 100'-140', filter pack 11'-65' & 92'-140', bentonite seal 9'-11' & 65-92', grouted from 9' to surface w/ Vault at surface

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
ENTERED MAY 23 1994
Registration No. 55-543424
File No. A(2-4) 30 aaa
Received _____ By _____
Entered _____ By _____

MICROFILMED

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	15'	Brown, dry to sl. moist Silty CLAY w/ cemented zones
15'	25'	Brown, moist, Clayey SILT & SAND
25'	50'	Lt. Brown, moist, very hard cemented SILT & CLAY
50'	100'	Brn. firm to hard, moist SILT w/ some Clay
100'	110'	Brn, wet, fine to coarse SAND
110'	140'	Reddish Brown, very hard, probably weathered CONGLOMERATE
		Bottom of Boring @ 140'
		Groundwater @ 18.5' while Drilling

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

T. Dan Ulsen #260

Driller Name: Heber Mining & Explor. Co.

22010 N. 21st Ave.

Street

Phoenix, AZ. 85027

City State Zip

Date: May 18, 1994

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

Sandy 1/2
MONITOR/PIEZOMETER WELL
FILING FEE $10.00

RECEIVED APR 14 1994 OPERATIONS DIV.

NC

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section § 45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Department on a prescribed form.

1. WELL LOCATION:

2 N/S | 4 E/W | 30
Township | Range | Section

10 Acre Subdivision

NE 1/4 NE 1/4 NE 1/4
10 ACRE 40 ACRE 160 ACRE

2. Position location of the well on the land:

Latitude 111 0 58 · 41 "

Longitude 33 0 29 · 38 "

3. County: Maricopa

4. **Owner of the land of wellsite:**
Scottsdale Public Schools
Name
9313 N 95th Way
Address
Scottsdale, AZ 85258
City State Zip

5. **Lessee of the land of wellsite:**
N/A
Name
Sc
Address
City State Zip

6. **Owner of well:**
Arizona Dept. of Environmenta Quality
Name
3033 N Central Avenue
Address
Phoenix, AZ 85012
City State Zip

7. Consulting Firm: The Earth Technology Corporation

Contact Person: Sharon Lagas

Phone: 894-8482

8. Purpose of well drilled pursuant to this notice

Monitor X

Piezometer

9. If for deepening or modifying, Well Registration Number

55- N/A

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. A(2-4) 30AAA

Filed 4-14-94 By

Input By

ENTERED APR 26 1994
DUPLICATE

Mailed 4-25-94 By

Registration 55- 543424

AMA/INA PL

W/S 07 S/B 04

10. Construction will start:
5 2 94
Month Day Year

11. Period well will remain in use 10 ~~Months~~/Years

12. For monitoring wells, is pump equipment to be installed?

Yes No X

(a) If yes, design pump capacity N/A

(b) What use will be made of the water N/A

13. Drilling firm:
Heber Mining & Exploration
Name
22010 N 21st Avenue
Address
Phoenix AZ 85027
City State Zip

DWR License No. 269

A-1 General Drilling
ROC Category

14. Will this proposed well pump Colorado River water? Yes No X
(See condition VI on reverse)

15. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material or petroleum storage areas and tanks?
Yes No X

SPECIAL REQUIREMENT

VARIANCE GRANTED

16. Proposed method of abandonment of well after project is completed: Well will be filled with cement grout per R12-15-816.

17 Is this well to monitor existing contamination? Potential contamination X. Please explain: Monitor well is being installed for the East Central Pheonix Water Quality Assurance Revolving Fund investigation being conducted by ADEQ.

GENERAL INSTRUCTIONS

1 Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and condi[illegible] this form [illegible]
3. Must be signed by land owner or lessee.
4. Section §45-596(D). provides that the Director [illegible] form has been submitted. If not, the person filing will be notified and the drilling, deepening, or mod[illegible] not proceed.

THIS WELL IS TO BE DRILLED PURSUANT TO ARS 48.203.B.1 OR 49-287.J

MICROFILMED

I state that Notice is filed in compliance with Section § 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

4-13-94
Date

Michele L. Robertson, Supv. Hydrologist, ADEQ
Signature of Land Owner or Lessee

18. If construction plans have been coordinated with Arizona Department of Environmental Qualtiy, who is the agency contact? Mrs. Layali Azar-Schuster and Mr. Moses Olade

If construction plans have been coordinated with Arizona Department of Water Resources, Hydrology/Water Quality Division, who is the division contact? N/A

19 WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Hollow Stem Auger

b) Borehole diameters: 12 inches from 0 feet to 150 feet.

_____ inches from _____ feet to _____ feet.

c) Casing materials (PVC, steel, hollow-stem auger, etc.)

material Sch. 40 PVC diameter 2 inches from 0 feet to 150 feet

material _____ diameter 2 inches from 0 feet to 60 feet

d) Method of sealing at reductions None - flush threaded.

e) Annular seal materials (cement, grout, etc.); method of placement (tremied, circulated)

material concrete grout method tremie from 0 feet to 17 feet

material bentonite Hole Plug method tremie from 17 feet to 19 feet

f) Filter packs (state material): 65 feet to 105 feet and

material Lone Star #3 Silica Sand from 19 feet to 65 feet

material 8-12 Silica Sand and Pre-Pac Well Screen w/ Lone Star #3 from 105 feet to 150 feet

g) Perforations or screen specifications:

type Sch. 40 PVC 0.020 from 20 feet to 60 feet

type Pre-Pac PVC 0.020 from 110 feet to 150 feet

h) Method of well development (bail, air lift, surge) Bail, surge, and pump

i) Will surface or conductor casing extend above grade: Yes ____ No X

20. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified. Attached figure presents monitor well design details.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one (1) year after the date of Notice.

III. A Well Driller Report, is required within 30 days of completion of drilling. A completion Report, is required to be filed with the Department within 30 days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total.

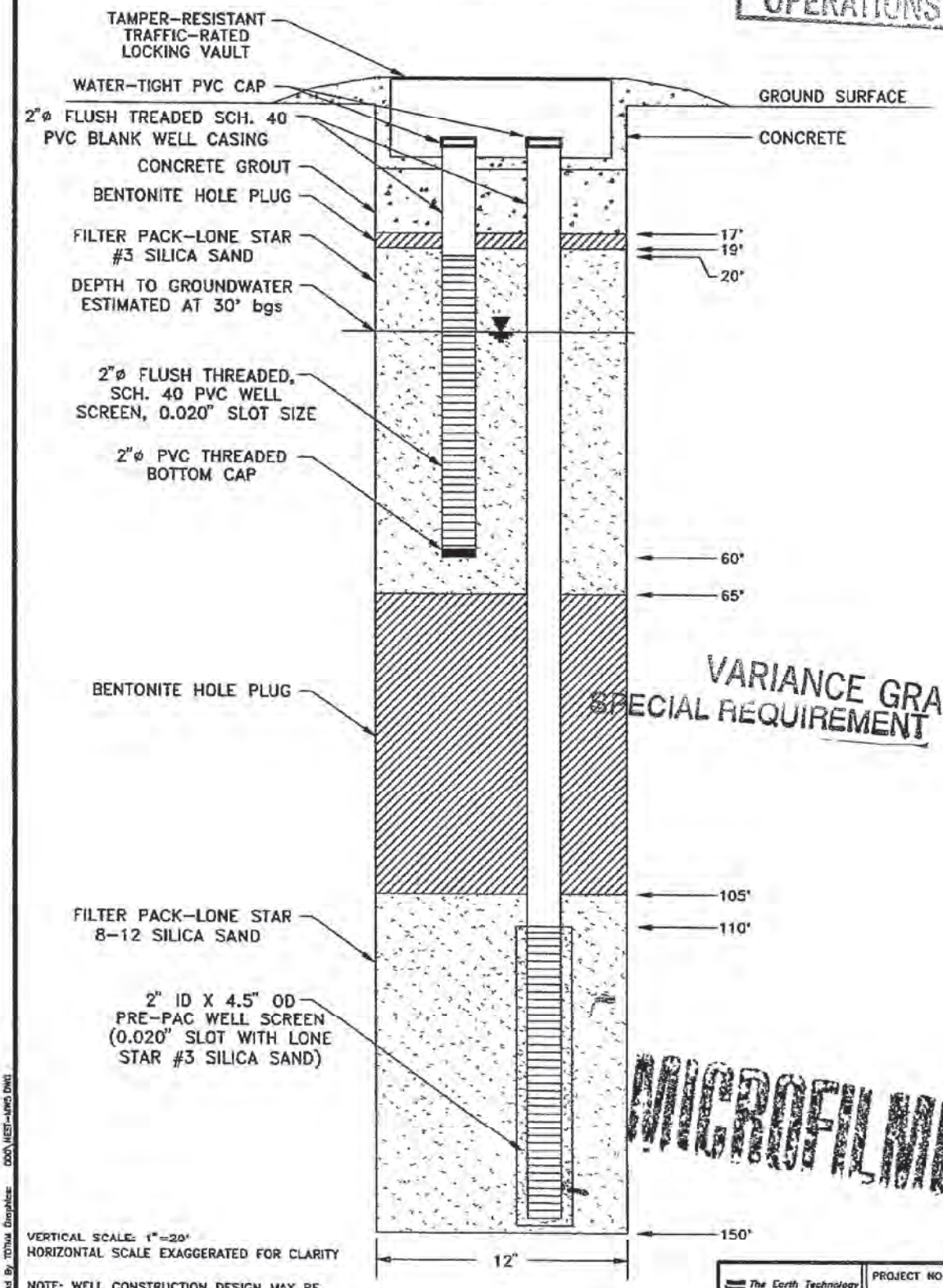
V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information will include well registration number."

VI. If the proposed well is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.

VII. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____

RECEIVED
APR 14 1994
OPERATIONS DIV.

MONITOR WELL DESIGN DETAIL
DUAL WELL COMPLETION



VARIANCE GRANTED
SPECIAL REQUIREMENT

MICROFILMED

VERTICAL SCALE: 1"=20'
HORIZONTAL SCALE EXAGGERATED FOR CLARITY

NOTE: WELL CONSTRUCTION DESIGN MAY BE MODIFIED BASED ON FIELD CONDITIONS

The Earth Technology Corporation

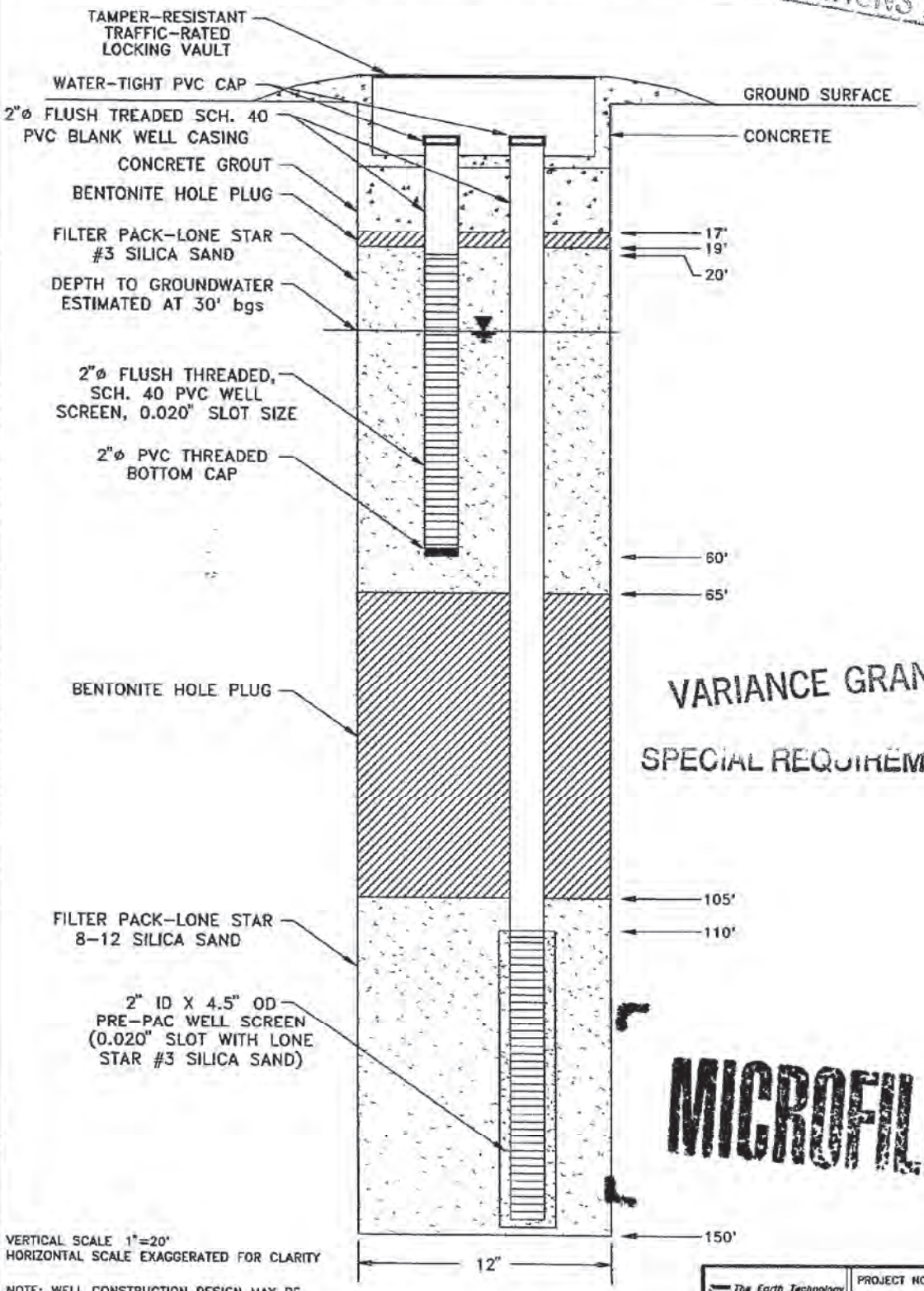
PROJECT NO 94-2934-01-04

4-94

Drafted By: TOhui Graphics C:\DWG\WEST-UWS.DWG

RECEIVED
APR 14 1994
OPERATIONS DIV.

MONITOR WELL DESIGN DETAIL
DUAL WELL COMPLETION



VARIANCE GRANTED

SPECIAL REQUIREMENT

MICROFILMED

VERTICAL SCALE 1"=20'
HORIZONTAL SCALE EXAGGERATED FOR CLARITY

NOTE: WELL CONSTRUCTION DESIGN MAY BE MODIFIED BASED ON FIELD CONDITIONS

The Earth Technology Corporation

PROJECT NO 94-2934-01-04

4-94

Drafted By TOMM Graphics: 000\NST-MW5.DWG

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

April 22, 1994

ADEQ
3033 N. CENTRAL AVE.
PHOENIX, AZ. 85012

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

RE: Registration No. 55-543423 THRU 55-543424

File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

For additional information, you may contact the Operations Division at (602) 542-1581.

Sincerely,

Ellen Kane

Ellen Kane
Groundwater Permit Specialist

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
Hydrology Division
15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1586
Fax (602) 542-3383

April 21, 1994

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Heber Mining & Exploration
22010 North 21st Avenue
Phoenix, Arizona 85027

Re: Variance for Three Monitor Wells
Registration Numbers 55-543423 through 55-543425

Dear Sir:

The Arizona Department of Water Resources received a request dated April 14, 1994 for construction variances for three monitor wells to be located in Maricopa County. The purpose of these wells will be to evaluate existing groundwater contamination.

The Arizona Department of Water Resources approves this request for the following variances:

- Thermoplastic inner casing (riser) with a watertight cap may be used in lieu of steel (R12-15-811.B.1.).
- The length of the surface seal may be reduced to 17 feet below ground surface (R12-15-811.B.1.).

The following *special requirements* are conditions for these variances (R12-15-821.):

- The wells shall be completed flush-to-ground with vandalproof, traffic-rated vaults per ASTM Standard Guide D5092, Section 8.9.2.3.
- The inner casing (riser) shall comply with ASTM Standard Guide D5092, Section 6.5.
- The wells shall be abandoned (decommissioned) per ASTM Standard Guide D5299, Section 7.3.8.

If you have any questions, please contact James Goff of my staff.

Sincerely,

Greg Wallace
Chief Hydrologist

cc: ADEQ, Michele Robertson

MICROFILMED

RECEIPT

№ 114

THE EARTH TECHNOLOGY CORP.
1501 W. FOUNTAINHEAD PKWY S350
TEMPE, AZ. 85282

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURC
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. A(2-3)24ddd 543425 THRU

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL WELLS	$10.00	$30.00
4/19/94/ek CK#11370		$30.00

CHECK NO _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

PS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

OPERATIONS DIVISION

15 South 15th Avenue
Phoenix, Arizona 85007-3223
Phone (602) 542-1581

DUPLICATE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO. 55-543424

AUTHORIZED DRILLER: HEBER MINING & EXPLORATION LICENSE NO. 269

NOTICE OF INTENTION TO DRILL A MONITOR WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

Owner of Well(s)
ADEQ 3033 N. CENTRAL AVE. PHOENIX AZ 85012

The well(s) is/are to be located in:

NE 1/4	NE 1/4	NE 1/4	Section 30	Township 2.0 NORTH	Range 4.0 EAST
10 acre	40 acre	160 acre			

NUMBER OF WELLS IN PROJECT: 1

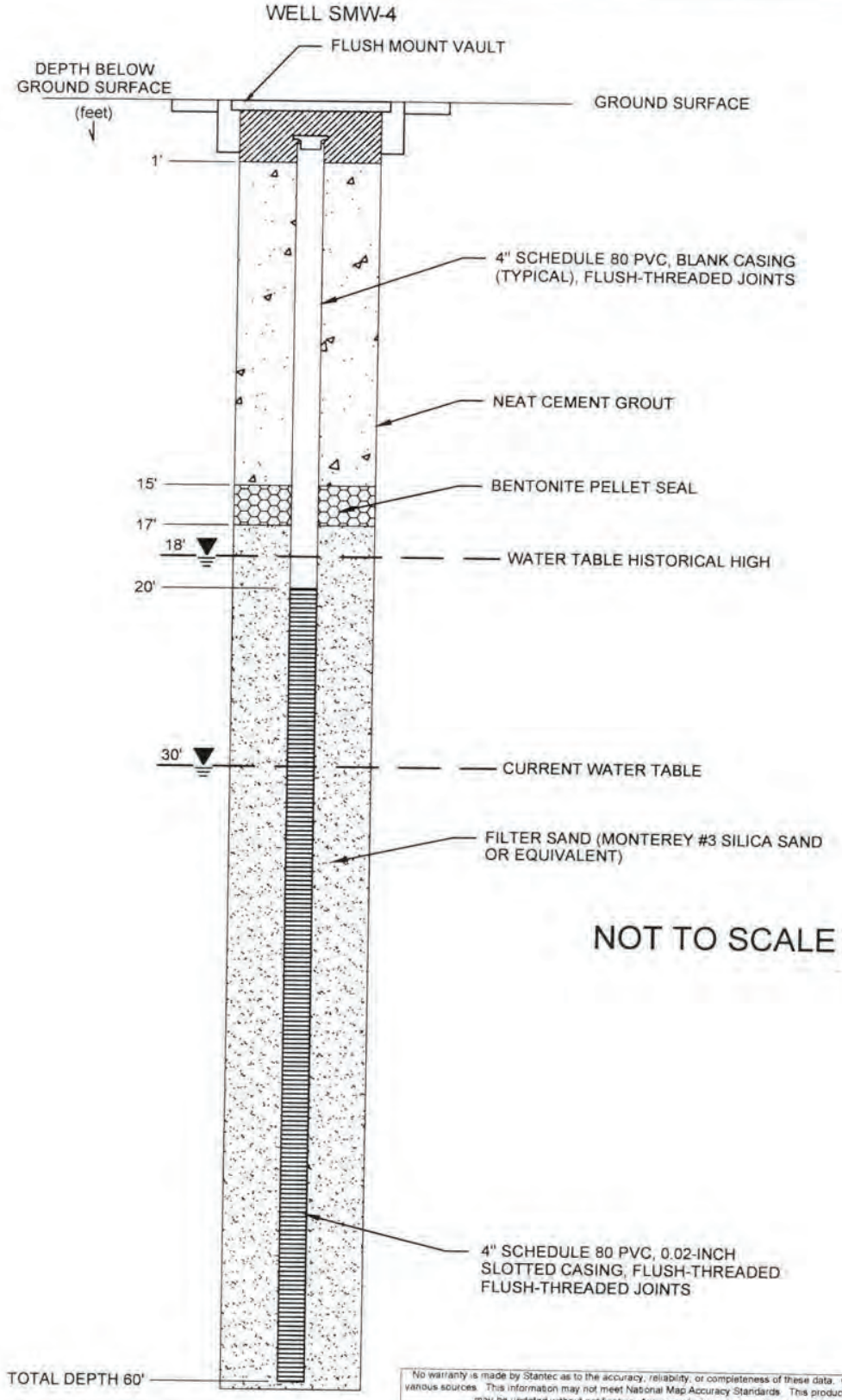
THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON APR 22ND, 1995

THE DRILLER SHALL FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

VARIANCE GRANTED

CHIEF, OPERATIONS DIVISION



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8211 S. 48th Street
Phoenix, AZ 85044
PHONE 602-438-2200 FAX 602-431-9562

FOR:
48TH STREET & INDIAN SCHOOL ROAD
WQARF SITE
PHOENIX, ARIZONA

GROUNDWATER MONITORING WELL SMW-4 AS BUILT CONSTRUCTION DIAGRAM

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
18OT.20420.08	KJG	RP	TAK	10/14/2008

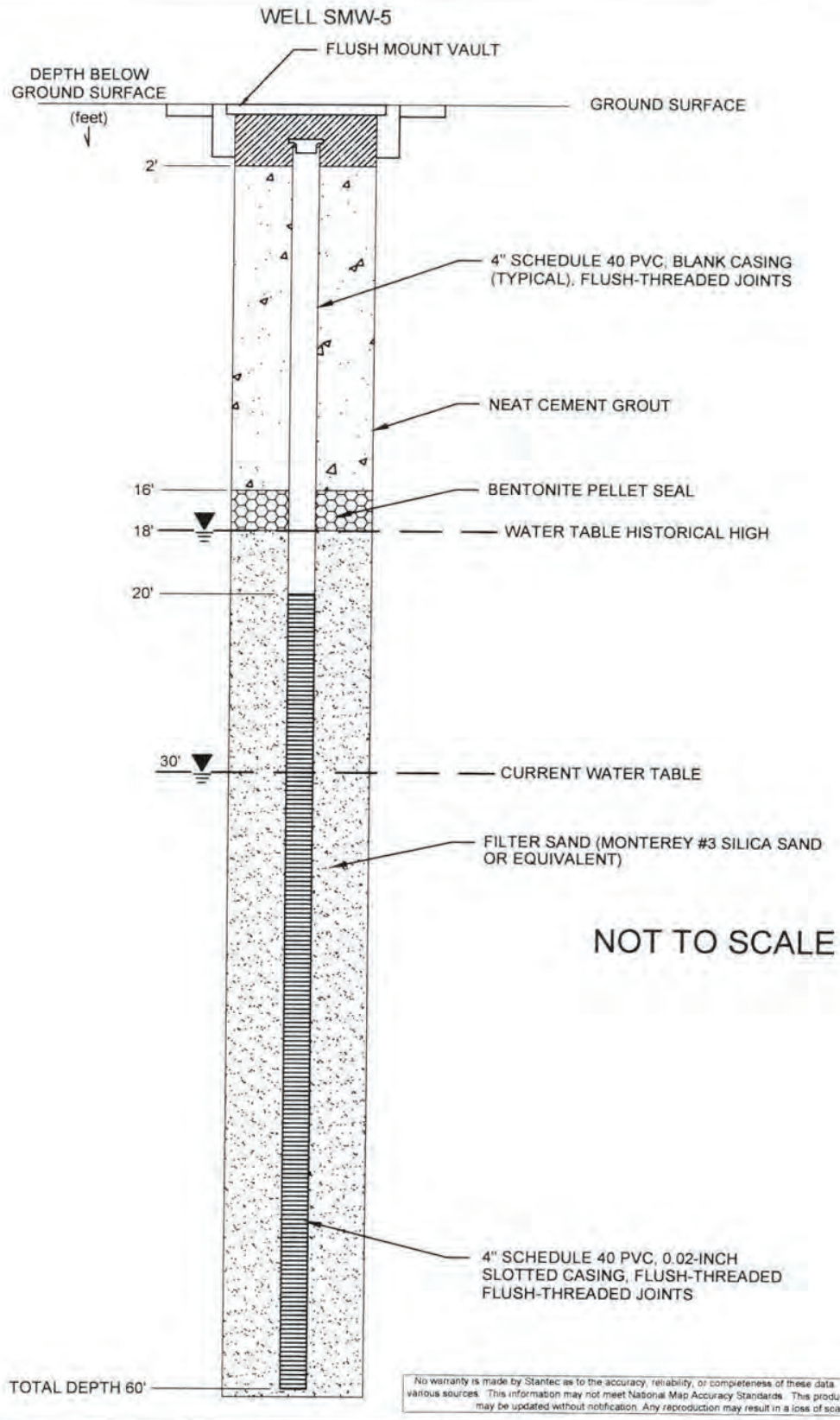
FILEPATH:I:\ASRAC\East Central Phoenix\48th St & Indian School (20420)\4.3 Maps\Proposed GWM_SMW4.dwg|kganning|Oct 14, 2008 at 9:37|Layout: Figure 6

PROJECT: 48th St and Indian School WQARF	WELL / PROBEHOLE / BOREHOLE NO:
LOCATION: 47th St and Indian School Phoenix, AZ	**SMW-4** PAGE 1 OF 2
PROJECT NUMBER: 18OT.20420.08	SECOR
DRILLING: STARTED 12/10/07 COMPLETED: 12/11/07	NORTHING (ft): EASTING (ft):
INSTALLATION: STARTED 12/11/07 COMPLETED: 12/11/07	LATITUDE: LONGITUDE:
DRILLING COMPANY: Boart Longyear	GROUND ELEV (ft): TOC ELEV (ft):
DRILLING EQUIPMENT: Sonic Rig 1521	INITIAL DTW (ft): 30 12/10/07 WELL DEPTH (ft): 60.0
DRILLING METHOD: Sonic 6x8 core	STATIC DTW (ft): NM 12/11/07 BOREHOLE DEPTH (ft): 61.0
SAMPLING EQUIPMENT: SimulProbe	WELL CASING DIAMETER (in): 4 BOREHOLE DIAMETER (in): 8
	LOGGED BY: K. McCormick CHECKED BY: C. Pollock

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SC	Approximately 5 inches asphalt and concrete base							Concrete
			CLAYEY SAND; SC; 7.5 YR 5/4 brown; fine to coarse-grained; dry; no odor; no staining; subangular; well graded; approximately 60% sand, 40% clay, trace gravel							
5			Air knifed to approximately 5 feet 10 inches						5	
										Neat cement
10					1104				10	4-inch Sch. 80 PVC blank casing
15					1120				15	Bentonite pellet seal
20					1132				20	
			7.5 YR 4/4 brown; moist; approximately 55% sand, 45% clay, trace gravel							
25					1147				25	
										8-12 Colorado Silica sand
30			Wet		1152				▽ 30	
										4-inch Sch. 80 PVC slotted casing (0.02-inch)
35					1201				35	

PROJECT: 48th St and Indian School WQARF LOCATION: 47th St and Indian School Phoenix, AZ PROJECT NUMBER: 18OT.20420.08	WELL / PROBEHOLE / BOREHOLE NO: **SMW-4** PAGE 2 OF 2 SECOR
DRILLING: STARTED 12/10/07 COMPLETED: 12/11/07 INSTALLATION: STARTED 12/11/07 COMPLETED: 12/11/07 DRILLING COMPANY: Boart Longyear DRILLING EQUIPMENT: Sonic Rig 1521 DRILLING METHOD: Sonic 6x8 core SAMPLING EQUIPMENT: SimulProbe	NORTHING (ft): EASTING (ft): LATITUDE: LONGITUDE: GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): 30 12/10/07 WELL DEPTH (ft): 60.0 STATIC DTW (ft): NM 12/11/07 BOREHOLE DEPTH (ft): 61.0 WELL CASING DIAMETER (in): 4 BOREHOLE DIAMETER (in): 8 LOGGED BY: K. McCormick CHECKED BY: C. Pollock

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SC	**CLAYEY SAND**; 7.5 YR 5/4 brown; fine to coarse-grained; medium dense; wet; no odor; no staining; subangular; well graded; approximately 60% sand, 40% clay, trace gravel		- SMW-4-40 No Recovery 1540 SMW4-41 - ---	1.0				
45					804 ---				45	
			Well graded; approximately 50% sand, 30% clay, 20% gravel; increase amount of coarse sand		818 --- 0930 SMW4-50 - ---	1.5			50	8-12 Colorado Silica sand 4-inch Sch. 80 PVC slotted casing (0.02-inch)
55					0953 ---				55	
					1012 --- 1140 SMW4-60	1.0				
60									60	
			Borehole continuously cored. Hole terminated at 61 feet.							
65									65	
70									70	
75									75	



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Stantec
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Phoenix, AZ 85044
PHONE: 602-438-2200 FAX: 602-431-9562

FOR:
48TH STREET & INDIAN SCHOOL ROAD
WQARF SITE
PHOENIX, ARIZONA

GROUNDWATER MONITORING
WELL SMW-5 AS BUILT
CONSTRUCTION DIAGRAM

FIGURE: 3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
18OT.20420.08	KJG	RP	TAK	10/14/2008

FILEPATH:I:\ASRAC\East Central Phoenix\48th St & Indian School (20420)\4.3 Maps\Proposed GWM_SMW5.dwg|kganning|Oct 14, 2008 at 9:36|Layout: Figure 3

PROJECT: 48th St and Indian School Road WQARF Site LOCATION: 47th St and Indian School Road Phoenix, AZ PROJECT NUMBER: 18OT.20420.08	WELL / PROBEHOLE / BOREHOLE NO: **SMW-5** PAGE 1 OF 2 SECOR
DRILLING: STARTED 3/18/08 COMPLETED: 3/18/08 INSTALLATION: STARTED 3/18/08 COMPLETED: 3/19/08 DRILLING COMPANY: Geomechanics Southwest, Inc. DRILLING EQUIPMENT: CME 75 DRILLING METHOD: Hollow-Stem Auger SAMPLING EQUIPMENT: SPT Sampler	NORTHING (ft): EASTING (ft): LATITUDE: LONGITUDE: GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): 30.0 3/18/09 WELL DEPTH (ft): 60.0 STATIC DTW (ft): 29.35 3/19/08 BOREHOLE DEPTH (ft): 61.0 WELL CASING DIAMETER (in): 4 BOREHOLE DIAMETER (in): 10 LOGGED BY: P. Padmore CHECKED BY: C. Pollock

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
0821		SC	Approximately 5 inches asphalt and concrete base **CLAYEY SAND**; SC; 7.5 YR 5/4 brown; fine to coarse-grained; medium dense; dry; no odor; no staining; subangular; well graded; Approximately 5% gravel, 60% sand, 35% clay							Ready mix concrete
0915 5			Moist; Becomes moist at 4 feet.	X		1.5	7 11 9		5	Neat cement
0921 10			Stiff; Approximately 10% gravel, 60% sand, 30% clay.	X		1.5	6 7 12		10	4" diameter schedule 40 PVC blank casing
0935 15				X		1.5	11 13 17		15	Bentonite seal
0947 20				X		1.5	8 10 6		20	8-12 Colorado Silica sand
0952 25		ML	**CLAYEY SILT WITH SAND**; ML; stiff; moist; Approximately trace gravel, 25% sand, 45% silt, 30% clay.	X		1.5	NR		25	
1010 30		CL	**SILTY CLAY WITH SAND**; CL; medium plasticity; very stiff; saturated; Approximately 10% gravel, 20% sand, 30% silt, 40% clay. Moist at 33 feet.	X		1.5	13 10 14		30	
1020 35			Saturated lens at 35 feet. Moist lens at 37 feet.	X		1.5	NR		35	

PROJECT: 48th St and Indian School Road WQARF Site LOCATION: 47th St and Indian School Road Phoenix, AZ PROJECT NUMBER: 18OT.20420.08	WELL / PROBEHOLE / BOREHOLE NO: **SMW-5** PAGE 2 OF 2 SECOR
DRILLING: STARTED 3/18/08 COMPLETED: 3/18/08 INSTALLATION: STARTED 3/18/08 COMPLETED: 3/19/08 DRILLING COMPANY: Geomechanics Southwest, Inc. DRILLING EQUIPMENT: CME 75 DRILLING METHOD: Hollow-Stem Auger SAMPLING EQUIPMENT: SPT Sampler	NORTHING (ft): EASTING (ft): LATITUDE: LONGITUDE: GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): 30.0 3/18/09 WELL DEPTH (ft): 60.0 STATIC DTW (ft): 29.35 3/19/08 BOREHOLE DEPTH (ft): 61.0 WELL CASING DIAMETER (in): 4 BOREHOLE DIAMETER (in): 10 LOGGED BY: P. Padmore CHECKED BY: C. Pollock

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
1032		SC	**CLAYEY SAND**; SC; very loose; saturated; Approximately 5% gravel, 60% sand, 35% clay.	X		1.5	10 4 6			
1046 45		SC	**CLAYEY SAND WITH GRAVEL**; SC; medium dense; moist; subrounded; Approximately 20% gravel, 40% sand, 40% clay. Very dense at 49 feet.	X		1.5	7 10 11		45	
1120 50		CL	**SANDY CLAY**; CL; medium plasticity; hard; moist; Approximately 10% subrounded gravel, 30% sand, 50% clay.	X		1.5	12 18 30		50	4" diameter schedule 40 PVC slotted casing, 0.020" slots
1139 55		CL	**SANDY CLAY WITH GRAVEL**; CL; medium plasticity; hard; moist; Approximately 25% gravel, 25% sand, 50% clay.	X		1.5	10 14 19		55	
1147 60									60	well cap
			Hole terminated at 61 feet. Blow counts not recorded for two sample intervals: 25-26.5 and 35-36.5 feet. Samples collected for lithologic description.							
65									65	
70									70	
75									75	

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th St & Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 3 **SMW-6**
DRILLING: STARTED **4/9/12** COMPLETED: **4/10/12** INSTALLATION: STARTED **4/10/12** COMPLETED: **4/10/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Continuous Core Barrel**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **26.50** STATIC DTW (ft): **31.61** WELL CASING DIAMETER (in): **4** LOGGED BY: **C. Melancon** EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **60.5** WELL DEPTH (ft): **60** BOREHOLE DIAMETER (in): **10** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt ~3"							3' Concrete pad Flush 12" Vault
		SM	**SILTY SAND WITH GRAVEL** ; SM; 7.5YR 4/2 brown; fine-grained; loose; dry; approx. 70% sand, 20% silt, 10% fine to medium gravel							
		ML	**CLAYEY SILT WITH SAND AND GRAVEL** ; ML; 7.5YR 4/6 strong brown; low plasticity; very stiff; dry; approx. 60% silt, 20% clay, 10% fine sand, 10% fine gravel							4" Sch. 40 Blank PVC
5			**SANDY SILT WITH GRAVEL** ; 7.5YR 5/4 brown; non plastic; very stiff; dry; approx. 70% silt, 20% fine sand, 10% fine to medium gravel					0.0	5	Neat Cement Grout
10			As Above; zones of caliche cementation					0.0	10	
			GRAVELLY SILT WITH SAND ; 7.5YR 5/4 brown; very stiff; dry; approx. 60% silt, 20% fine sand, 20% fine gravel **SANDY SILT WITH GRAVEL** ; 7.5YR 5/4 brown; non plastic; very stiff; dry; approx. 70% silt, 20% fine sand, 10% fine to medium gravel, caliche							
15								0.0	15	3/8" Bentonite Chips
			GRAVELLY SILT WITH SAND ; 7.5YR 5/4 brown; very stiff; dry; approx. 60% silt, 20% fine sand, 20% fine gravel, caliche **SANDY SILT WITH GRAVEL** ; 7.5YR 5/4 brown; non plastic; very stiff; dry; approx. 70% silt, 20% fine sand, 10% fine to medium gravel, caliche							10-20 Filter Sand
20								0.0	20	4" Sch. 40 0.020 Slotted

GEO FORM 304 48THST_MAR2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 6/29/12

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th St & Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 2 OF 3 **SMW-6**
DRILLING: STARTED **4/9/12** COMPLETED: **4/10/12** INSTALLATION: STARTED **4/10/12** COMPLETED: **4/10/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Continuous Core Barrel**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **26.50** STATIC DTW (ft): **31.61** WELL CASING DIAMETER (in): **4** LOGGED BY: **C. Melancon**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **60.5** WELL DEPTH (ft): **60** BOREHOLE DIAMETER (in): **10** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		ML								PVC Screen
		ML	**CLAYEY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; low plasticity; very stiff to hard; dry; approx. 70% silt, 20% clay, 10% fine gravel, caliche							
25			Moist					0.0	25	4" Sch. 40 0.020 Slotted PVC Screen
			Moist to wet; water encountered during drilling							
			GRAVELLY SILT WITH SAND ; 7.5YR 5/4 brown; very stiff; moist; approx. 60% silt, 20% fine sand, 20% fine gravel **CLAYEY SILT WITH GRAVEL** ; 7.5YR 5/4 brown; low plasticity; very stiff to hard; moist; approx. 70% silt, 20% clay, 10% fine gravel, caliche							
30								0.0	30	
			Partially cemented; subangular; blocky soil structure; rootholes abundant Static water level		1400 SMW-6,31'					
35								0.0	35	10-20 Filter Sand
			SANDY SILT ; 7.5YR 5/4 brown; stiff; moist; approx. 70% silt, 30% fine sand; partially cemented; blocky soil structure							
40								0.0	40	
					1415 SMW-6,42'					

GEO FORM 304 48THST_MAR2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 6/28/12

PROJECT: **48th St & Indian School Rd - ECP WQARF Site** LOCATION: **48th St & Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 3 OF 3 **SMW-6**
DRILLING: STARTED **4/9/12** COMPLETED: **4/10/12** INSTALLATION: STARTED **4/10/12** COMPLETED: **4/10/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Continuous Core Barrel**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **26.50** BOREHOLE DEPTH (ft): **60.5** STATIC DTW (ft): **31.61** WELL DEPTH (ft): **60** WELL CASING DIAMETER (in): **4** BOREHOLE DIAMETER (in): **10** LOGGED BY: **C. Melancon** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		ML ML	**SANDY SILT** ; ML; 7.5YR 5/4 brown; stiff; moist; approx. 70% silt, 30% fine sand; partially cemented; blocky soil structure							
45			Wet					0.0	45	
			CLAYEY SILT WITH GRAVEL ; 7.5YR 5/4 brown; medium plasticity; very stiff; moist; approx. 60% silt, 30% clay, 10% fine to medium gravel; caliche in fines							4" Sch. 40 0.020 Slotted PVC Screen
50								0.0	50	
55			**SANDY SILT WITH GRAVEL** ; 7.5YR 5/4 brown; non plastic; stiff; wet; approx. 60% silt, 25% fine sand, 15% fine to medium gravel		1505 SMW-6,56'			0.4	55	10-20 Filter Sand
			CLAYEY SILT WITH GRAVEL ; 7.5YR 5/4 brown; medium plasticity; very stiff; moist; approx. 60% silt, 30% clay, 10% fine to medium gravel; caliche in fines							
			SANDY SILT WITH GRAVEL ; 7.5YR 5/4 brown; non plastic; stiff; wet; approx. 60% silt, 25% fine sand, 15% fine to medium gravel							
60			Borehole terminated at 60.5 feet.						60	

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 3 **SMW-7**
DRILLING: STARTED **1/12/11** COMPLETED: **1/12/12** INSTALLATION: STARTED **1/12/12** COMPLETED: **1/13/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): **Not Surveyed** EASTING (ft): **Not Surveyed** LATITUDE: LONGITUDE: GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **45.0** BOREHOLE DEPTH (ft): **61** STATIC DTW (ft): **31.45** WELL DEPTH (ft): **60.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							3' Concrete pad Flush 12" Vault
			Hand Auger to 5' bgs Aggregate base fill							
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; non plastic; soft; dry; no odor; no staining; ~50% silt, 30% fine to coarse sand, 20% fine gravel							
					0930 SMW-7-5	1.5	8 12 10	0.0	5	Neat Cement Grout
					0937 SMW-7-10	1.0	29 50/4	1.1	10	
										4" Sch. 40 Blank PVC
					0945 SMW-7-15	1.5	16 25 25	0.0	15	
										3/8" Hydrated Bentonite Chips
		SM	**SILTY SAND WITH GRAVEL** ; SM; 7.5YR 5/4 brown; loose; dry; no odor; no staining; subangular; well graded; ~50% fine to coarse sand, 30% silt, 20% gravel							10-20 Filter Sand
					0953 SMW-7-20	1.5	6 10 11	0.3	20	4" Sch. 40 0.020 Slotted

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 2 OF 3 **SMW-7**
DRILLING: STARTED **1/12/11** COMPLETED: **1/12/12** INSTALLATION: STARTED **1/12/12** COMPLETED: **1/13/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **45.0** BOREHOLE DEPTH (ft): **61** STATIC DTW (ft): **31.45** WELL DEPTH (ft): **60.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SM SM	**SILTY SAND WITH GRAVEL** ; SM; 7.5YR 5/4 brown; loose; dry; no odor; no staining; subangular; well graded; ~50% fine to coarse sand, 30% silt, 20% gravel							PVC screen
25		CL	**GRAVELLY CLAY** ; CL; 7.5YR 5/4 brown; low plasticity; soft; moist; ~60% clay, 30% fine to medium gravel, 10% fine to medium sand		1006 SMW-7-25	1.5	5 3 8	23.2	25	10-20 Filter Sand
30			Hard		1017 SMW-7-30	1.5	18 39 43	3.4	30	
			Static depth to water							
35					1038 —			5.0	35	4" Sch. 40 0.020 Slotted PVC screen
40			Wet		1040 —			4.1	40	

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 3 OF 3 **SMW-7**
DRILLING: STARTED **1/12/11** COMPLETED: **1/12/12** INSTALLATION: STARTED **1/12/12** COMPLETED: **1/13/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **45.0** BOREHOLE DEPTH (ft): **61** STATIC DTW (ft): **31.45** WELL DEPTH (ft): **60.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		CL	**GRAVELLY CLAY** ; 7.5YR 5/4 brown; low plasticity; hard; wet							
45			Very hard; water encountered during drilling		1044			3.2	45	10-20 Filter Sand
50					1047			2.9	50	
			Soft; cuttings fully saturated							
55					1053			–	55	4" Sch. 40 0.020 Slotted PVC screen
60					1057			–	60	
			Borehole terminated at 61 feet.							

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 3 **SMW-8**
DRILLING: STARTED **1/13/12** COMPLETED: **1/13/12** INSTALLATION: STARTED **1/13/12** COMPLETED: **1/13/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **50.0** BOREHOLE DEPTH (ft): **60** STATIC DTW (ft): **34.54** WELL DEPTH (ft): **60.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3"							3' Concrete pad Flush 12" Vault
			Hand Augered to 5' bgs Aggregate base fill							
		ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; non plastic; soft; dry; no odor; no staining; ~50% silt, 30% sand, 20% gravel							
5					0856 SMW-8-5	1.5	6 5 5	0.0	5	Neat Cement Grout
10					0902 SMW-8-10	1.5	11 16 16	0.0	10	
										4" Sch. 40 Blank PVC
15					0909 SMW-8-15	1.5	13 12 21	0.0	15	3/8" Hydrated Bentonite Chips
										10-20 Filter Sand
20					0920 SMW-8-20	1.5	12 16 14	0.0	20	4" Sch. 40 0.020 Slotted

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 2 OF 3 **SMW-8**
DRILLING: STARTED **1/13/12** COMPLETED: **1/13/12** INSTALLATION: STARTED **1/13/12** COMPLETED: **1/13/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **50.0** BOREHOLE DEPTH (ft): **60** STATIC DTW (ft): **34.54** WELL DEPTH (ft): **60.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

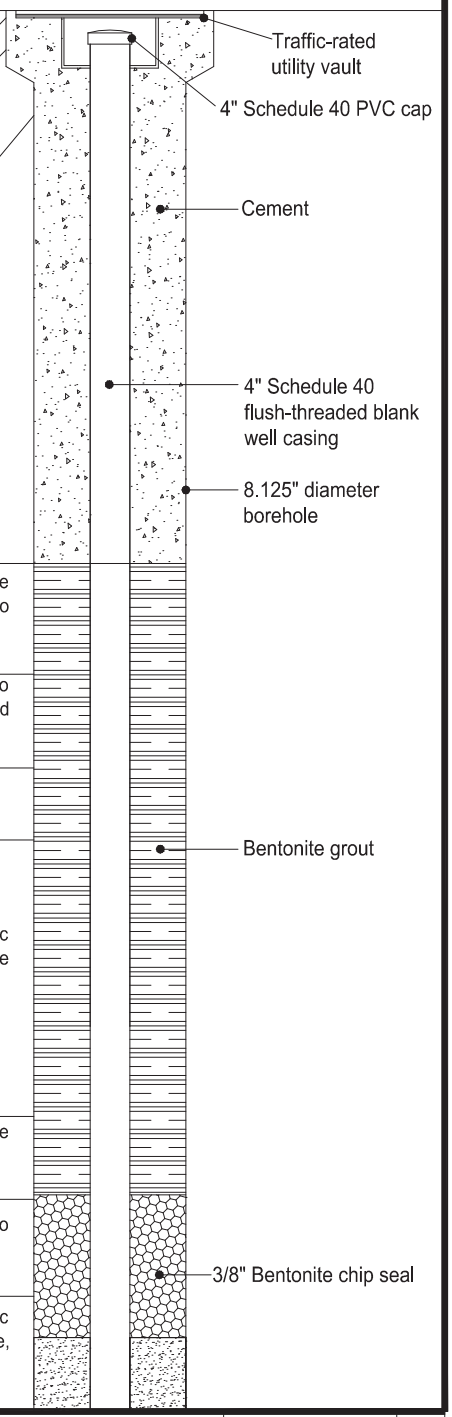
Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		ML ML	**SANDY SILT WITH GRAVEL** ; ML; 7.5YR 5/4 brown; non plastic; soft; dry; no odor; no staining; ~50% silt, 30% sand, 20% gravel							PVC screen
		SM	**SILTY SAND WITH GRAVEL** ; SM; 7.5YR 5/4 brown; medium dense; dry; no odor; no staining; subangular; well graded; ~50% fine to coarse sand, 30% silt, 20% fine gravel							
25					0932 SMW-8-25	1.5	6 9 13	3.2	25	
										10-20 Filter Sand
30					0945 SMW-8-30	1.5	12 14 16	0.0	30	
		CL	**SANDY CLAY** ; CL; 7.5YR 5/4 brown; low plasticity; soft; dry; no odor; no staining; ~60% clay, 30% fine to medium sand, 10% fine gravel							
			Static depth to water							
35					0949 —			1.2	35	
										4" Sch. 40 0.020 Slotted PVC screen
40		CL	**GRAVELLY CLAY** ; CL; hard; ~60% clay, 30% fine gravel, 10% fine to medium sand		0952 —			1.5	40	

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 3 OF 3 **SMW-8**
DRILLING: STARTED **1/13/12** COMPLETED: **1/13/12** INSTALLATION: STARTED **1/13/12** COMPLETED: **1/13/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Mod. Cal. Split Spoon Sampler**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **50.0** BOREHOLE DEPTH (ft): **60** STATIC DTW (ft): **34.54** WELL DEPTH (ft): **60.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Newton** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		CL	**GRAVELLY CLAY** ; hard; ~60% clay, 30% fine gravel, 10% fine to medium sand							
45					0955			2.0	45	10-20 Filter Sand
50			Water encountered during drilling Hard		0958			0.7	50	
55			Soft; very saturated cuttings		1005			--	55	4" Sch. 40 0.020 Slotted PVC screen
60			Borehole terminated at 60 feet.						60	

East Central Phoenix - Phoenix, AZ		Project Name: 48th St & Indian School Rd
Lithologic and well construction log: **SMW-11**		Project Number: 1193.02
Date installed: 5/18/16	Well casing: 4-inch diameter PVC	Northing: 906882.52
Total depth: 165 feet bgs	Slot size: 0.020-inch	Easting: 678996.98
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1221.43

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
0				ASPHALT		
				AGGREGATE BASE COURSE		
			ML	SANDY SILT - Reddish brown (5YR5/4); 70% nonplastic fines; 25% fine to coarse subrounded to rounded sand; 5% fine subangular gravel. Soft, moist, strong reactin to HCl. Borehole air knifed to 5.3 feet.		
5	6.2/96.2					
	2.2/94.2					
10	1.0/94.8		ML	SILT - Reddish brown (5YR5/4); 90% nonplastic fines; 10% fine to medium, trace coarse subrounded sand; trace fine angular. Soft with firm caliche horizons, moist, strong reaction to HCl.		
	0.5/86.1					
15	13.1/83.6					
	16.0/93.9					
20	15.0/99.3		ML	SILT WITH SAND - Reddish brown (5YR5/4); 80% nonplastic fines; 20% fine to coarse subangular to subrounded sand; Trace fine subangular gravel to ½". Soft, moist, strong reaction to HCl.		
	16.7/91.4					
25	37.2/94.6		ML	SANDY SILT - Reddish brown (5YR5/4); 65% nonplastic fines; 25% fine to coarse subangular to subrounded sand; 10% fine, trace coarse subrounded gravel to 1". Moderate to strong reaction to HCl, soft, moist.		
	16.9/87.4		ML	SILT WITH SAND - Same as above.		
30	13.2/88.3					
	24.9/105.9					
35	42.8/107.7		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 60% nonplastic fines; 25% fine to coarse subangular to subrounded sand; 15% fine subangular to subrounded gravel to 3/4". Soft, moderate to strong reaction to HCl, moist to 36', wet below. Encountered groundwater at 36.8'.		
	30.2/93.0					
40	37.0/93.3		ML	SILT WITH SAND - Reddish brown (5YR4/4); 80% nonplastic fines; 20% fine to coarse subangular to subrounded sand. Soft, wet, moderate to strong reaction to HCl.		
	40.2/109.5					
45	30.5/100.5		ML	SANDY SILT - Reddish brown (5YR4/4); 70% nonplastic fines; 30% fine to coarse subangular to subrounded sand; trace fine subangular gravel to 3/8". Moderate to strong reaction to HCl, wet, hard.		
	50.5/164.5		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 55% nonplastic fines; 25% fine to coarse angular to subrounded granitic sand; 20% fine, trace angular to subangular granitic gravel to 1". Hard to very hard, wet, weak to moderate HCl'.		
50	64.6/163.9					



6/16	RPT NO.1193.02	515-0266	A

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Hydrogeology/Engineering

SMW-11
LITHOLOGIC AND
WELL CONSTRUCTION LOG

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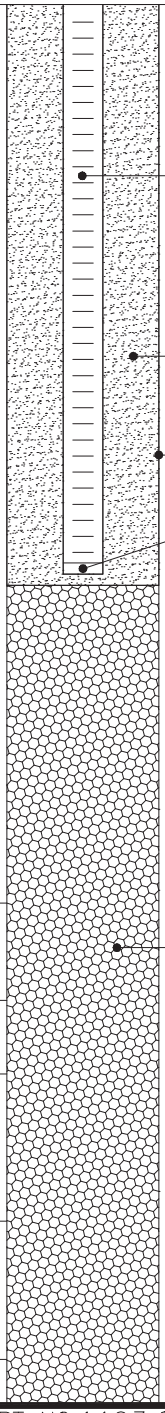
East Central Phoenix - Phoenix, AZ		Project Name: 48th St & Indian School Rd
Lithologic and well construction log: **SMW-11**		Project Number: 1193.02
Date installed: 5/18/16	Well casing: 4-inch diameter PVC	Northing: 906882.52
Total depth: 165 feet bgs	Slot size: 0.020-inch	Easting: 678996.98
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1221.43

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
50						
	25.4/152.9					
55	18.3/139.1					
	17.3/118.5					
60	8.0/103.1					
	59.3/131.7					
65	38.1/124.5					
	13.1/99.6		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 55% nonplastic fines; 25% fine to coarse angular to subrounded granitic sand; 20% fine, trace angular to subangular granitic gravel to 1". Hard to very hard, wet, weak to moderate HCl'.		
70	9.2/93.5					
	24.9/101.1					
75	14.1/107.4					
	8.7/105.6					
80	10.0/93.9					
	13.1/95.9		SM	SILTY SAND WITH GRAVEL - Reddish brown (5YR4/4); 45% nonplastic fines; 40% fine to coarse subrounded sand; 15% fine, trace coarse angular to subangular gravel to 1". Wet, firm, no reaction to HCl.		
85	8.1/90.3		ML	SANDY SILT - Yellowish red (5YR5/6); 65% nonplastic fines; 30% fine to coarse subangular to subrounded sand; 5% fine subangular gravel to ¼". Firm, wet, weak reaction to HCl.		
	45.2/101.6					
90	32.1/119.6		ML	SANDY SILT WITH GRAVEL - Same as above. Hematite stringers at 94'.		
	7.7/108.3					
95	3.6/87.2		ML	SANDY SILT - Reddish brown (5YR5/4); 70% nonplastic fines; 30% fine to coarse subrounded sand; trace fine subrounded gravel to ¼".		
	28.1/97.1					
100	19.1/91.2		ML			



6/16	RPT NO.1193.02	515-0266	A

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Hydrogeology/Engineering

SMW-11
LITHOLOGIC AND
WELL CONSTRUCTION LOG

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East Central Phoenix - Phoenix, AZ		Project Name: 48th St & Indian School Rd
Lithologic and well construction log: **SMW-11**		Project Number: 1193.02
Date installed: 5/18/16	Well casing: 4-inch diameter PVC	Northing: 906882.52
Total depth: 165 feet bgs	Slot size: 0.020-inch	Easting: 678996.98
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1221.43

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
100			ML	SILT WITH SAND - Yellowish red (5YR5/6); 75% nonplastic fines; 25% fine to coarse subrounded sand. Wet, moderate reaction to HCl, firm to hard.		
	15.8/126.8					
105	13.8/108.1		ML	SANDY SILT - Reddish brown (5YR5/4); 60% nonplastic fines; 35% fine to coarse subrounded sand; 5% fine subangular to subrounded gravel to 5/8". Wet, no reaction to HCl, firm to hard.		
	5.6/107.4					
110	9.1/90.1		SM	SILTY SAND - Reddish brown (5YR4/4); 50% fine to coarse subrounded sand; 40% nonplastic fines; 10% fine subrounded to rounded gravel to ¾". Loose, wet, no reaction to HCl.		3/8" Bentonite Chip Seal
	4.3/146.4		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR5/4); 60% nonplastic fines; 25% fine to coarse subangular to subrounded sand; 15% fine angular to subangular gravel to 1/2". Wet, weak reaction to HCl, firm to hard. Contains siltstone clasts with black manganese.		
115	6.6/179.6					
	36.4/172.4		ML	SANDY SILT - Reddish brown (5YR4/4); 65% nonplastic fines; 30% fine to coarse subrounded sand; 5% fine subangular to subrounded gravel to ½". Moist, wet at 119.5, hard, weak reaction to HCl becomes former with depth, grades to silt with sand.		8.125" diameter borehole
120	43.5/127.9					
	33.9/170.9		ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% nonplastic fines; 15% fine to coarse angular to subangular sand; trace fine angular gravel to ½". Moist, hard, moderate to strong reaction to HCl.		
125	8.0/101.1					
	20.5/156.5		ML	GRAVELY SILT WITH SAND - Yellowish red (5YR4/6); 55% nonplastic fines; 25% fine subangular to subrounded gravel to ¾"; 20% fine to coarse subrounded sand. Dry, very hard, strong reaction to HCl, very well cemented.		
130	9.6/151.3					
	8.0/120.2		ML	SILT - Yellowish red (5YR4/6); 90% nonplastic fines; 10% fine to medium sand; trace fine subrounded gravel to ½". Firm, moist, moderate reaction to HCl.		
135	3.6/113.0					
	8.3/114.9					
140	2.8/95.7		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 55% nonplastic fines; 30% fine to coarse angular to subrangular sand. Firm, moist, moderate reaction to HCl.		
	8.8/127.9					
145	10.0/139.6					
	11.2/140.1		SM	SILTY SAND WITH GRAVEL - Dark reddish brown (5YR3/4); 40% fine to coarse subangular to subrounded sand; 30% nonplastic fines; 30% fine subangular gravel to ¾". Soft, no reaction to HCl, wet.		
150	5.8/125.9					

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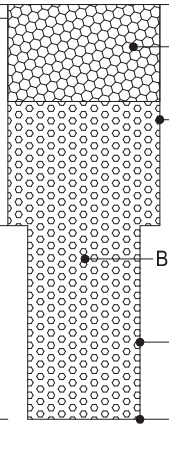
Hydrogeology/Engineering

SMW-11
LITHOLOGIC AND
WELL CONSTRUCTION LOG

East Central Phoenix - Phoenix, AZ		Project Name: 48th St & Indian School Rd
Lithologic and well construction log: **SMW-11**		Project Number: 1193.02
Date installed: 5/18/16	Well casing: 4-inch diameter PVC	Northing: 906882.52
Total depth: 165 feet bls	Slot size: 0.020-inch	Easting: 678996.98
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1221.43

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
150						
155	32.4/186.2		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR5/4); Same as above. Moderate to strong reaction to HCl, contains clasts of breccias.		
	20.9/156.9					
160	5.4/126.8					
	10.0/131.7		Tcu	UPPER CAMELSHEAD FORMATION - Reddish brown (2.5YR4/4) matrix with coarse gravel size clasts of granitic breccias. Hard, strong reaction to HCl, dry to 161.5, moist to 163.		
	3.6/98.7					
165				TOTAL DEPTH = 165 feet		



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6/16	RPT NO.1193.02	515-0266	A

SMW-11
LITHOLOGIC AND
WELL CONSTRUCTION LOG

East Central Phoenix - Phoenix, AZ

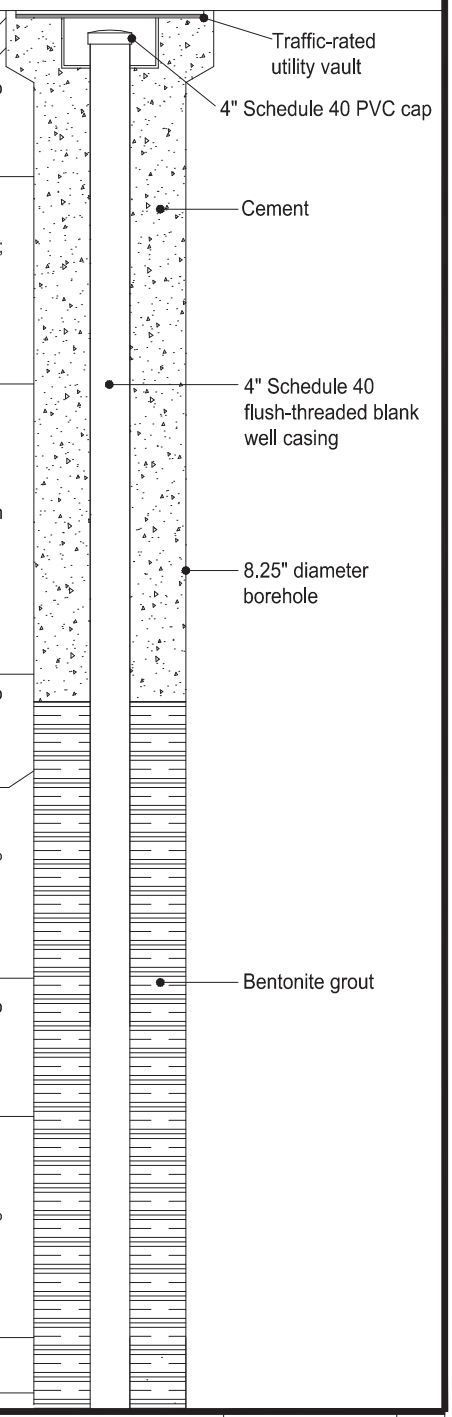
Project Name: 48th St & Indian School Rd

Lithologic and well construction log: **SMW-12**

Project Number: 1193.02

Date installed: 5/26/16	Well casing: 4-inch diameter PVC	Northing: 906382.87
Total depth: 180 feet bgs	Slot size: 0.020-inch	Easting: 678074.12
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1212.12

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
0				ASPHALT		
				AGGREGATE BASE COURSE		
5			ML	SANDY SILT - Yellowish red (5YR5/6); 65% nonplastic fines; 25% fine to coarse subrounded sand; 10% fine subangular gravel to ½". Soft, moist, strong reaction to HCl. Borehole hand augered to 5.1 feet.		
	4.0/84.7					
10	3.8/84.7		ML	SILT WITH SAND - Light reddish brown (5YR3/4); 80% nonplastic fines; 20% fine to coarse subrounded sand; trace fine subrounded gravel. Soft, moist, strong reaction to HCl to 12' weak reaction below.		
	5.2/85.2					
15	5.2/85.2					
	4.4/82.9		ML	SILT - Reddish brown (5YR4/4); 90% nonplastic fines; 10% fine to medium sand; Trace fine gravel. Soft, strong reaction to HCl.		
20	3.1/91.2					
	2.5/82.2					
25	2.5/90.5		ML	SANDY SILT - Reddish brown (5YR4/4); 70% nonplastic fines; 25% fine to coarse subrounded sand; 5% fine subrounded gravel to ½". Weak reaction to HCl, soft to firm, wet, potentially perched water.		
	4.1/99.8					
30	2.9/111.0		ML	SILT WITH SAND - Reddish brown (5YR4/4); 80% nonplastic fines; 20% fine to medium, trace coarse sand. Firm, moist, strong reaction to HCl to 29', moderate to 32', weak below.		
	3.2/96.2					
35	1.3/96.2					
	6.8/81.3		ML	SANDY SILT - Reddish brown (5YR4/4); 60% nonplastic fines; 30% fine to coarse sand; 10% fine subrounded gravel to ½". Soft, no to weak reaction to HCl, wet. Encounter groundwater at 36.3'.		
40	8.5/84.5					
	8.4/98.2					
45	3.2/90.1		ML	SILT WITH SAND - Reddish brown (5YR4/4); 80% nonplastic fines; 20% fine to coarse subangular to subrounded sand. Firm, wet, moderate to locally strong reaction to HCl.		
	3.5/87.2					
50	5.6/104.5		ML	SANDY SILT - Same as above.		



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6/16	RPT NO.1193.02	515-0266	A

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

SMW-12
LITHOLOGIC AND
WELL CONSTRUCTION LOG

East Central Phoenix - Phoenix, AZ

Project Name: 48th St & Indian School Rd

Lithologic and well construction log: **SMW-12**

Project Number: 1149.3a

Date installed: 5/26/16	Well casing: 4-inch diameter PVC	Northing: 906382.87
Total depth: 180 feet bgs	Slot size: 0.020-inch	Easting: 678074.12
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1212.12

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
50			SM	SILTY SAND - Reddish brown (5YR4/4); 55% medium to coarse subrounded to rounded sand; 40% nonplastic fines; 5% fine gravel. Hard to very hard, wet, weak to moderate HCl.		
			ML			
	2.9/91.4		SM	SANDY SILT - Same as above.		
			ML	SILTY SAND - Same as above. Hematite stringers at 94'.		
55	2.6/88.8			SANDY SILT - Same as above.		
			ML	SILT WITH SAND - Reddish brown (5YR4/4); 80% nonplastic fines; 20% fine to medium, trace coarse subrounded sand. Wet, no to weak reaction to HCl, soft, becomes firm with depth.	4" Schedule 40 flush-threaded blank well casing	
	2.5/94.6					
60	1.9/84.7		SM/ML	SILTY SAND/SANDY SILT - Reddish brown (5YR5/4); 50% nonplastic fines; 45% fine to coarse subrounded sand; 5% fine subrounded gravel to ¾". Wet, no to weak reaction to HCl, firm.		
	5.8/114.0					
65	4.7/116.9				8.25" diameter borehole	
	3.2/106.3		ML	SILT WITH SAND - Reddish brown (5YR4/4); 80% nonplastic fines; 20% fine to medium, less coarse subrounded sand; 5% fine subrounded gravel to ¾". Firm, moist, weak reaction to HCl.		
70	3.8/84.9					
	15.6/92.8		SM	SILTY SAND WITH GRAVEL - Reddish brown (5YR5/4); 45% fine to coarse subrounded to rounded sand; 40% nonplastic fines; 15% fine subrounded gravel. Wet, no reaction to HCl, loose. Contains siltstone clasts with black manganese.		
75	17.6/93.7		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 65% nonplastic fines; 20% fine to coarse subrounded to rounded sand; 15% fine subrounded gravel. Wet, firm to hard, weak reaction to HCl.		
	16.2/97.3					
			ML			
80	11.9/93.5		SM/ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% nonplastic fines; 15% fine to coarse subangular to subrounded sand. Wet, firm, weak reaction to HCl.		
	6.1/127.7		ML	SILTY SAND/SANDY SILT - Reddish brown (5YR4/4); 50% nonplastic fines; 40% fine to coarse subrounded to rounded sand; 10% fine subrounded to rounded gravel to ¾". Wet, no reaction to HCl, firm.	Bentonite grout	
85	13.9/125.4		ML	SILT WITH SAND - Same as above. Moderate to strong reaction to HCl. At 84' - 2¼" subangular gravel.		
	4.1/105.9					
90	2.8/96.0		ML	SANDY SILT - Reddish brown (5YR4/4); 65% nonplastic fines; 30% fine to coarse subrounded to rounded sand; 5% fine subrounded gravel to ½". Firm, wet, weak to moderate reaction to HCl.		
	7.8/125.1			GRAVELLY SILT - Reddish brown (5YR4/4); 70% nonplastic fines; 20% fine subangular to subrounded gravel to ½"; 10% fine to coarse sand.		
95	19.1/182.1			SILT - Yellowish red (5YR4/6); 90% nonplastic fines' 10% fine to medium sand. Moist, moderate reaction to HCl, firm. Moderate to strong reaction to HCl, contains clasts of breccias.		
	9.2/125.7		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 55% nonplastic fines; 30% fine to coarse subrounded sand; 15% fine subangular to subrounded gravelto 5/8". Wet, firm, moderate to strong reaction to HCl.		
100	14.8/115.1					

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6/16	RPT NO.1192.03	515-0266	A

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

SMW-12
LITHOLOGIC AND
WELL CONSTRUCTION LOG

East Central Phoenix - Phoenix, AZ

Project Name: 48th St & Indian School Rd

Lithologic and well construction log: **SMW-12**

Project Number: 1193.02

Date installed: 5/26/16	Well casing: 4-inch diameter PVC	Northing: 906382.87
Total depth: 180 feet bgs	Slot size: 0.020-inch	Easting: 678074.12
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1212.12

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
100			ML	SILT - Reddish brown (5YR4/4); 90% nonplastic fines; 10% fine to coarse subangular to subrounded sand; trace fine angular gravel to 3/8".		
	13.5/129.0		ML	SILT WITH GRAVEL - Reddish brown (5YR4/4); 75% nonplastic fines; 15% fine, trace coarse subangular to subrounded gravel to 1¼"; trace fine sand. Moderate to strong reaction to HCl, firm to hard, wet.		
105	4.1/119.6		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 65% nonplastic fines; 20% fine to coarse subrounded sand;15% fine, trace coarse subrounded gravel to 1". Weak to moderate reaction to HCl, firm, wet.		
	5.6/121.8		SM	SILTY SAND WITH GRAVEL - Dark reddish brown (5YR3/4); 45% fine to coarse subrounded sand; 40% nonplastic fines; 15% fine , trace coarse subrounded gravel to 1¼". No reaction to HCl, loose, wet, contains hard siltstone clasts.		Bentonite grout
110	2.7/97.1					
	12.5/114.8					
	15.8/140.9		ML	SANDY SILT - Reddish brown (5YR5/4); 75% nonplastic fines; 20% fine to coarse subangular to subrounded sand; 5% fine subangular gravel to 3/8".		
115	5.8/185.7					8.25" diameter borehole
	3.9/174.0					
120	18.1/114.6					
	2.8/191.1		ML	SILT WITH SAND - Reddish brown (5YR4/4); 85% nonplastic fines; 15% fine to coarse subangular to subrounded sand; trace fine subangular gravel to ¾". Strong reaction to HCl to 128', weak below, firm to locally very hard, dry to 124', wet below.		4" Schedule 40 flush-threaded blank well casing
	5.1/171.6					
125	7.5/178.3					
	27.8/126.3					
130	4.6/128.3		ML	SANDY SILT WITH GRAVEL - Reddish brown to dark reddish brown (5YR4/4 to 5YR3/4); 55% nonplastic fines; 30% fine to coarse subangular to subrounded sand;15% fine, trace coarse subangular to subrounded gravel to 2". No reaction to HCl, firm, wet.		
	6.1/121.8		SM	SILTY SAND WITH GRAVEL - Dark reddish brown (5YR3/4); 45% fine to coarse subrounded to rounded sand; 35% nonplastic fines; 15% fine subrounded to rounded gravel to ¾". Wet, loose, no reaction to HCl.		
135	0.0/123.2					
	1.6/103.1		ML	SANDY SILT - Reddish brown (5YR4/4); 65% nonplastic fines; 30% fine to coarse subrounded sand; 5% fine subangular to subrounded gravel to ¾". Firm to hard, no to weak reaction to HCl, wet, contains well cemented silts at 136' and 139'.		3/8" Bentonite chip seal
140	0.7/124.7					
	3.4/152.2		ML	SILT WITH SAND - Yellowish red (5YR4/6); 85% nonplastic fines; 15% fine to coarse subangular sand. Hard, weak to moderate reaction to HCl, moist.		
	1.8/161.7					#10-20 Colorado Silca sand filter pack
145	15.6/130.8		ML	SANDY SILT - Light reddish brown (5YR6/4); 65% nonplastic fines; 25% fine to coarse subangular to subrounded sand; 10% fine angular to subangular gravel to ¾". Wet, hard weak reaction to HCl.		
	26.8/175.6					4" ID Schedule 40 PVC 0.020 inch screen
			ML	SILT WITH SAND - Reddish brown (5YR5/4); same as above. Trace fine subangular gravel to ¾", strong reaction to HCl.		
150	29.1/146.8					

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6/16	RPT NO.1193.02	515-0266	A

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

SMW-12
LITHOLOGIC AND
WELL CONSTRUCTION LOG

East Central Phoenix - Phoenix, AZ

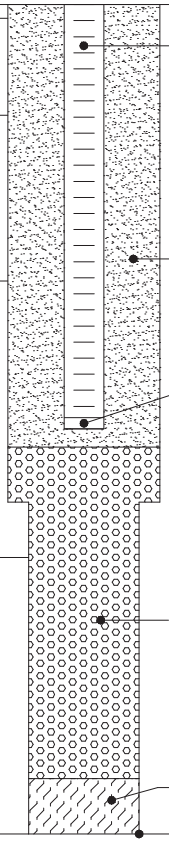
Project Name: 48th St & Indian School Rd

Lithologic and well construction log: **SMW-12**

Project Number: 1193.02

Date installed: 5/26/16	Well casing: 4-inch diameter PVC	Northing: 906382.87
Total depth: 180 feet bgs	Slot size: 0.020-inch	Easting: 678074.12
Drill method: Rotosonic	Filter: #10-20 Sand	Top of Casing Elevation: 1212.12

DEPTH (feet Below Land Surface)	PID/TEMP (ppm/degF)	LITHOLOGIC LOG	USCS	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION	COMMENTS
150	27.4/158.1		SM/ML	SILTY SAND/SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 50% nonplastic fines; 30% fine to coarse sand; 20% fine, less coarse subangular to subrounded gravel to 21/2". Wet, no reaction to HCl, firm.		
155	19.0/116.9		SM	SILTY SAND WITH GRAVEL - Reddish brown (2.5YR4/4); 40%fine to coarse subrounded to subrounded sand; 40% nonplastic fines; 20% fine less coarse subangular to rounded gravel to 2½". Wet, firm to 156, loose below, no reaction to HCl.		
	2.2/91.7					
160	1.6/97.7					
	53.5/179.9		ML	GRAVELLY SILT WITH SAND - Dark reddish brown (5YR3/4); 55% non to low plastic fines; 25% fine to coarse subangular gravel to 1½"; 20% fine to coarse subangular sand. Firm to hard, wet, weak reaction to HCl, well cemented breccia clasts at 161' and 164', dry, strong reaction to HCl.		
165	37.8/159.6					
	33.6/156.7					
170	45.4/145.4					
	25.7/192.0		ML	SANDY SILT WITH GRAVEL - Reddish brown (5YR4/4); 60% nonplastic fines; 25% fine to coarse subangular sand; 15% fine, trace coarse subangular to subrounded gravel to 1½". Very hard, dry to 174', wet below. Contains pinkish white (7.5YR8.5/3) caliche stringers at 178' and 180'.		
175	58.4/156.7					
	6.7/93.2					
180	10.5/99.1			TOTAL DEPTH = 180 feet		



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HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

6/16	RPT NO.1193.02	515-0266	A

SMW-12
LITHOLOGIC AND
WELL CONSTRUCTION LOG

MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL ABANDONEMENT DIAGRAM
0				--		ASPHALT	0
				--		AGGREGATE BASE COURSE	
			0.5			SILT – Reddish brown (5YR4/4); 95% nonplastic fines; 5% fine subrounded sand. Soft to locally firm, moist to 5', dry below, strong reaction to HCl, contains visible caliche. Color change to Light reddish brown (5YR6/4) at 5.5'. Color change to reddish brown (5YR5/4), sand up to 10% at 12'. 5% subangular gravel to 3/8" at 25.5'. Borehole air knifed to 5.6 feet.	Borehole Abandoned With Neat Cement
			0.8				
5							5
							8.125" Borehole
			1.6				
10			0.2				10
			0.0	ML			
15			4.1				15
			1.5				

MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
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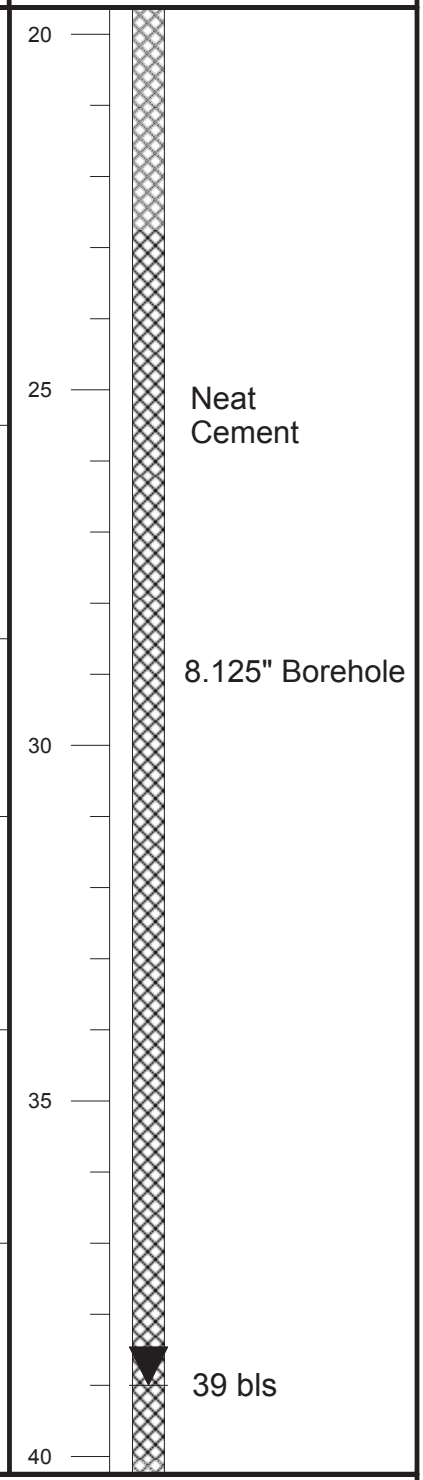
PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
20			0.6	ML		SILT cont.
			8.2			
25			15.9			
			10.1	ML		SILT WITH SAND – Dark reddish brown (5YR3/4); 85% nonplastic fines; 15%fine to medium, trace coarse subrounded sand. Wet, weak reaction to HCl.
30			20.1	ML		SILT – Reddish brown (5YR5/4 to 5YR4/4); 90% nonplastic fines; 10% fine, trace medium sand. Dry, strong reaction to HCl to 30', wet, weak reaction below.
			18.5	ML		SILT WITH SAND – Yellowish red (5YR4/6); 80% nonplastic fines; 15% fine to medium, trace coarse subangular to subrounded sand; 5% fine subangular to subrounded gravel to 3/8". Weak reaction to HCl, soft, moist.
35			11.8	ML		SANDY SILT – Reddish brown (5YR4/4); 65% nonplastic fines; 30% fine to coarse subangular to subrounded sand; 5% fine subangular gravel to 3/8".
			12.7			SILT WITH SAND – 85% nonplastic fines; 15% fine, less medium subrounded sand. Firm, weak to locally strong reaction to HCl at 38', moist.
40				ML		

WELL ABANDONEMENT DIAGRAM



MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
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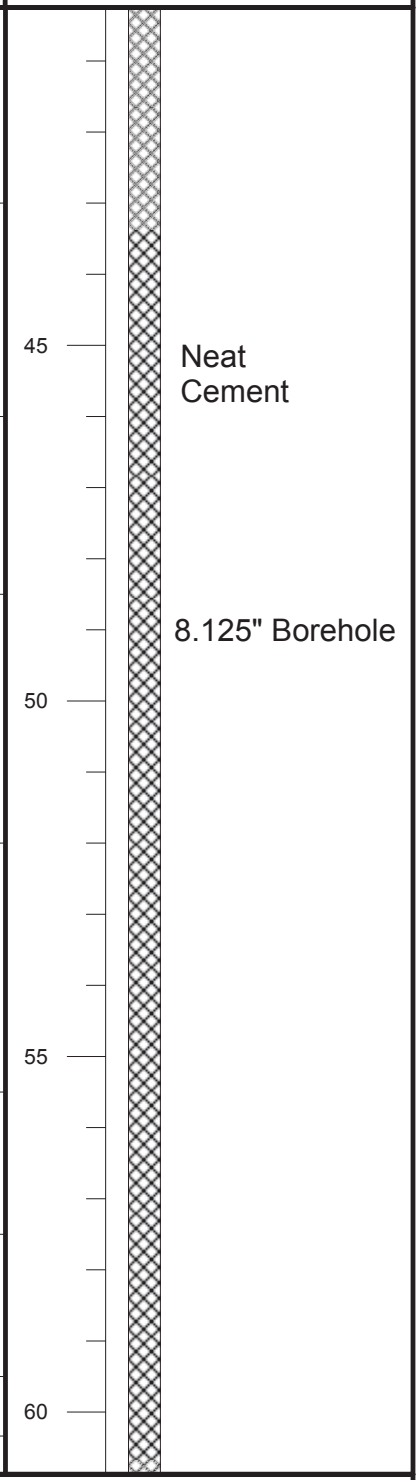
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
			8.8	ML		SILT WITH SAND cont.
			28.1	SM		SILTY SAND WITH GRAVEL – 45% fine to coarse subrounded sand; 40% nonplastic fines; 15% fine subrounded to rounded gravel to ¾". Loose, wet, weak reaction to HCl. Groundwater at 39.3' when borehole advanced to 55'.
45		<0.25	31.0			
			14.9	ML		SANDY SILT – Reddish brown (5YR5/4); 65% nonplastic fines; 35% fine to coarse subrounded sand. Moist, weak reaction to HCl, firm.
50			14.1	SM		SILTY SAND WITH GRAVEL – Reddish brown (5YR4/4); 45% nonplastic fines; 40% fine to coarse subrounded sand; 15% fine subangular to subrounded gravel to ½". Wet, firm, weak to moderate reaction to HCl.
			9.3	ML		SANDY SILT – Reddish brown (5YR4/4); 65% nonplastic fines; 35% fine to coarse sand. Firm, moist, weak reaction to HCl.
55			6.0	SM		SILTY SAND WITH GRAVEL – Same as above with 20% fine subrounded gravel to ¾". Loose, wet, no reaction to HCl.
			3.0	ML		SANDY SILT – Same as above.
60			1.7	SM		SILTY SAND WITH GRAVEL – Same as above with fine gravel to ½".
				ML		SANDY SILT – Same as above. Hard at

WELL ABANDONEMENT DIAGRAM



MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL ABANDONEMENT DIAGRAM
			5.7	ML		67'. 60% nonplastic fines; 40% fine to coarse sand; trace fine rounded gravel to ½ " at 68 to 70'. Silty sand stringer at 71.5'.	
65		<0.25	4.8				65 Neat Cement
			5.5				
70			10.2				70 8.125" Borehole
			13.2				
75			10.3	SM		SILTY SAND WITH GRAVEL – Reddish brown (5YR4/4); 50% fine to coarse subrounded to rounded sand; 30% nonplastic fines; 20% fine subangular to subrounded gravel to ½". Wet, no reaction to HCl, loose with firmer areas at 75-76', 77.5-79', and 80-82'.	75
			7.6				
80			4.8				80

MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

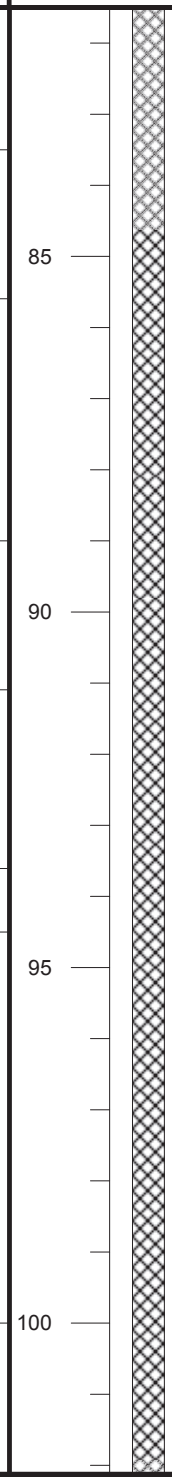
DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
			6.0	SM		SILTY SAND WITH GRAVEL cont.
85		7.36	3.5	ML		SILT WITH SAND – Dark reddish brown (5YR3/4); 80% nonplastic fines; 20% fine to coarse subrounded sand; trace fine subrounded gravel to ¼". Firm, no reaction to HCl, wet.
			15.5	ML		GRAVELLY SILT WITH SAND – Reddish brown (5YR4/4); 60% nonplastic fines; 25% fine subangular to subrounded gravel to ¾"; 15% fine to coarse subrounded sand. Firm to hard, wet, weak reaction to HCl.
90			13.3	SM		SILTY SAND – Reddish brown (5YR4/4); 55% fine to coarse subrounded to rounded sand; 35% nonplastic fines; 10% fine subrounded gravel to 3/8". Wet, loose, no reaction to HCl.
			12.4	ML		SANDY SILT WITH GRAVEL – Reddish brown (5YR4/4); 60% nonplastic fines; 25% fine to coarse subrounded sand; 15% fine subangular to subrounded gravel to 5/8". Hard, wet, weak to moderate reaction to HCl.
				SM		SILTY SAND – Same as above.
95			6.5	ML		SANDY SILT WITH GRAVEL – Reddish brown (5YR5/4); 55% nonplastic fines; 30% fine to coarse subrounded sand; 15% fine angular, trace coarse subrounded gravel to 1". Wet, moist at 98', hard, moderate to locally strong reaction to HCl.
100			36.5			
			28.3	SM		SILTY SAND WITH GRAVEL – Reddish brown (5YR4/4); 40% fine to coarse subrounded to rounded sand; 40% nonplastic fines; 20% fine, trace coarse subrounded to rounded gravel. Loose,

WELL ABANDONEMENT DIAGRAM



MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL ABANDONEMENT DIAGRAM
			18.9	SM		wet, no reaction to HCl in matrix, weak reaction on gravel.	
105		<0.25	7.6	ML		SANDY SILT WITH GRAVEL – Reddish brown (5YR5/4); 60% nonplastic fines; 25% fine to coarse subangular to subrounded sand; 15% fine subangular to subrounded gravel to 5/8". Hard, wet, weak reaction to HCl.	105
			4.5				Neat Cement
110			11.9	ML		SILT WITH SAND – Reddish brown (5YR4/4); 40% fine to coarse subrounded to rounded sand; 35% nonplastic fines; 25% fine, less coarse subrounded gravel to 11/2". Loose, no reaction to HCl, wet.	110
			11.1	SM		SILTY SAND – Dark reddish brown (5YR3/4); 55% fine to coarse subangular to subrounded sand: 45% nonplastic fines; trace fine angular gravel to 5/8". Loose to firm, no reaction to HCl, wet.	8.125" Borehole
115			15.3	ML		SILT WITH SAND – Reddish brown (5YR4/6); 80% nonplastic fines; 15% fine to coarse subangular to subrounded sand; 5% fine subrounded gravel to ½". Hard, no to moderate reaction to HCl to 115.5', strong reaction below, moist. Contains well cemented siltstones.	115
120			37.2				120
			44.1	SM		SILTY SAND – Reddish brown (5YR4/4); 55% fine to coarse subangular to subrounded sand; 40% nonplastic fines; 5% fine angular gravel to ½". Wet, firm, no reaction to HCl.	
				ML			

MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL ABANDONEMENT DIAGRAM
			10.9	ML		SILT WITH SAND – Light reddish brown (5YR6/4); 85% nonplastic fines; 15% fine to medium subangular to subrounded sand. Wet, moderate to strong reaction to HCl, hard, siltstone at 124.5'.	
125			14.2			GRAVELLY SILT WITH SAND – Reddish brown (5YR5/4); 60% nonplastic fines; 25% fine subangular gravel to ¾"; 15% fine to coarse subangular to subrounded sand. Firm to hard, moist, strong reaction to HCl to 127.5, wet, weak reaction below.	125
			45.7				Neat Cement
130			24.0	ML			130
							8.125" Borehole
			31.0				
135		2.66	39.2				135
			36.2			SILT WITH SAND – Reddish brown (5YR5/4 to 140', 5YR4/4 below); 85% nonplastic fines; 15% fine to medium, trace coarse subrounded to rounded sand.	
140			20.1	ML			140
			26.2				
			21.2				
				ML			

MONITOR WELL: SMW-14B

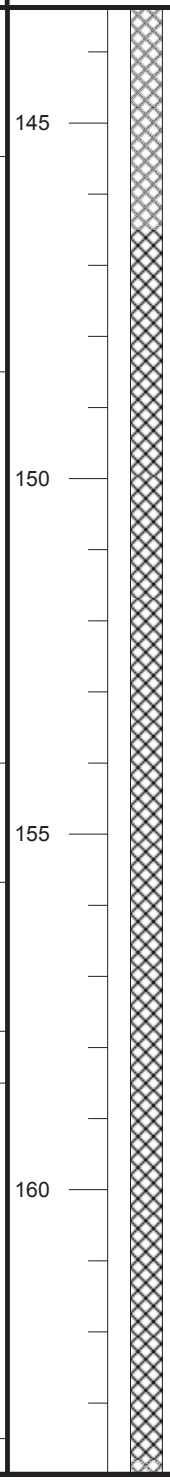
DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
				ML		SANDY SILT – Reddish brown (5YR4/4); 70% nonplastic fines; 25% fine to medium, less coarse sand; 5% fine angular gravel to ½". Soft, moist, strong reaction to HCl.
145			16.5			
				ML		SILT WITH SAND – Same as above.
			55.2			
				ML		GRAVELLY SILT WITH SAND – Reddish brown (5YR4/4); 60% nonplastic fines; 25% fine, less coarse subangular to subrounded gravel to 2"; 15% fine to coarse subangular to subrounded sand. Wet, firm, weak reaction to HCl, strange sweet earthy odor.
150			25.3			
			25.9			
				SM		SILTY SAND – Dark reddish brown (5YR3/4); 60% fine to coarse subrounded to rounded sand; 40% nonplastic fines. No reaction to HCl, wet, loose.
155	■	1.75	9.6			
				ML		SANDY SILT WITH GRAVEL – Dark reddish brown (5YR3/4); 55% nonplastic fines; 25% fine to coarse subangular to rounded sand; 20% fine, trace coarse subangular to rounded gravel to 2½".
			6.9	SM		SILTY SAND – Same as above.
				SM/ ML		SILTY SAND/SANDY SILT WITH GRAVEL – Dark reddish brown (5YR3/4); 50% non to low plastic fines; 30%fine to coarse angular to subrounded sand; 20%fine angular to subangular granitic gravel to ¾". Firm to hard, wet, no reaction to HCl, abundant biotite, clay streak.
160			21.0			
			36.5			
				SM		SILTY SAND – Dark reddish brown

WELL ABANDONEMENT DIAGRAM



MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL ABANDONEMENT DIAGRAM
165			70.9	SM		(2.5YR3/4); 65% fine to coarse angular to subrounded sand; 35% non to low plastic fines. Wet, firm to hard, locally strong reaction to HCl. Contains granitic sands in a clayey silt matrix.	165
			58.7				
170			80.4	SM/ ML		SILTY SAND/SANDY SILT WITH GRAVEL – Dark reddish brown (2.5YR3/4); 50% non to low plastic fines, 35% fine to coarse subangular to subrounded sand; 15% fine, trace coarse angular to subrounded gravel to 1½". Wet, hard, no reaction to HCl, drills hard.	170 — Neat Cement
			20.6				8.125" Borehole
175	■	<0.25	23.9				175
			87.4				
180			37.1	SM		SILTY SAND WITH GRAVEL – Dark reddish brown (2.5 YR3/4 to 2.5YR3/6); 45% fine to coarse subangular to subrounded sand; 40% nonplastic fines; 15% fine subangular to rounded gravel to ¾". Wet, firm, no reaction to HCl.	180
			18.0	GM			

MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

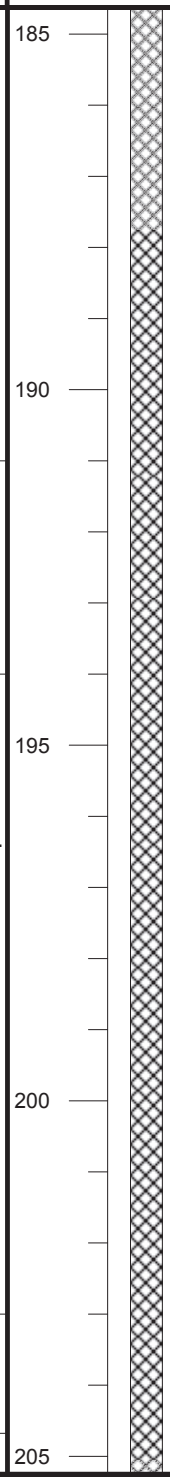
DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
185			32.6	GM		SILTY GRAVEL WITH SAND – Dark red (2.5YR3/6); 40% non to low plastic fines; 35% fine to coarse angular to rounded gravel; 20% fine to coarse subangular to subrounded sand; 5% subangular cobbles to 4½". Hard, wet, similar to above – granitic sands and gravels in a matrix of clayey silt.
			79.5			
190			29.2			
			12.3	ML		GRAVELLY SILT WITH SAND – Reddish brown (2.5YR4/4); 55% nonplastic fines; 25% fine subangular to subrounded gravel to ¾"; 20% fine to coarse subangular to subrounded sand. Wet, hard, no reaction to HCl.
			11.8			
195		<0.25	13.1	SM		SILTY SAND WITH GRAVEL – Reddish brown (2.5YR4/4); 40% fine to coarse subrounded to rounded sand; 35% nonplastic fines; 25% fine, trace coarse subangular to rounded gravel. Firm to 201', loose below, wet, no reaction to HCl.
			10.6			
200			8.8			
			5.4			
				ML/ CL		CLAYEY SILT – Yellowish red (5YR4/6) – 95% non to low plastic fines; 5% fine sand; trace fine gravel to ¼". Hard, wet, strong reaction to HCl.
			17.1	ML		SILT WITH SAND – Reddish brown
205						

WELL ABANDONEMENT DIAGRAM



MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL ABANDONEMENT DIAGRAM
			13.2	ML		(5YR4/4); 85% nonplastic fines; 15% fine to coarse subrounded to rounded sand. Soft, wet, weak reaction to HCl.	
			23.2	GM		SILTY GRAVEL WITH SAND – Dark brown (7.5YR3/4); 40% nonplastic fines; 35% fine, less coarse subrounded to rounded gravel to 2¾"; 25% fine to coarse sand.	
210			37.8				210
			20.4	SM		SILTY SAND WITH GRAVEL – Dark red (2.5YR3/6); 45% fine to coarse subangular to subrounded sand; 35% nonplastic fines; 20% fine, trace coarse subangular to subrounded gravel to 3". Firm to hard, wet, no reaction to HCl. SANDY SILT WITH GRAVEL cont.	Neat Cement
			29.2				8.125" Borehole
215		<0.25					215
			31.2	ML		SANDY SILT – Dark red (2.5YR3/6); 60% nonplastic fines; 40% fine to coarse subangular to subrounded sand; trace fine subangular gravel to 3/8". Firm to hard, wet, no reaction to HCl.	
			29.6				
220							220
			16.4	SM		SILTY SAND – Dark red (2.5YR3/6); 60% fine to coarse subangular to subrounded sand; 35% nonplastic fines; 5% fine angular to subrounded gravel to ½". Loose, wet, no reaction to HCl.	
			27.1				
225				ML		SANDY SILT WITH GRAVEL – Red (2.4YR4/6); 55% nonplastic fines; 30% fine to coarse subangular to subrounded sand; 15% fine subangular gravel to ½".	225

MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL ABANDONEMENT DIAGRAM
			35.9	ML		Hard, wet, no reaction to HCl.	
			37.1	GM		SILTY GRAVEL WITH SAND – Dark reddish brown (2.5YR3/4); 40% fine, less coarse subangular to subrounded gravel to 3"; 40% nonplastic fines; 20% fine to coarse subrounded sand. Firm, wet, no reaction to HCl.	
230			37.9			SANDY SILT WITH GRAVEL – Same as above.	230
			54.6	ML			Neat Cement
			16.4				
235			12.3				235 8.125" Borehole
			8.8	SM		SILTY SAND – Dark reddish brown (5YR3/4); 60% fine to coarse subangular to subrounded sand; 30% nonplastic fines; 10% fine, trace coarse gravel to 2". Firm, wet, no reaction to HCl.	
240		0.74		SM		SILTY SAND – Reddish brown (2.5YR4/4); 85% fine to coarse subrounded sand; 15% nonplastic fines; trace fine subrounded gravel to 1/4". Loose, wet, no reaction to HCl.	240
			7.3	SM		SILTY SAND – Same as above.	
245			12.8	ML		GRAVELLY SILT WITH SAND – Reddish brown (5YR4/4); 55% nonplastic fines, 30% fine, less coarse subrounded gravel	245

MONITOR WELL: SMW-14B

DATE DRILLED : *12/18/17 - 12/21/17*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *abandoned*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

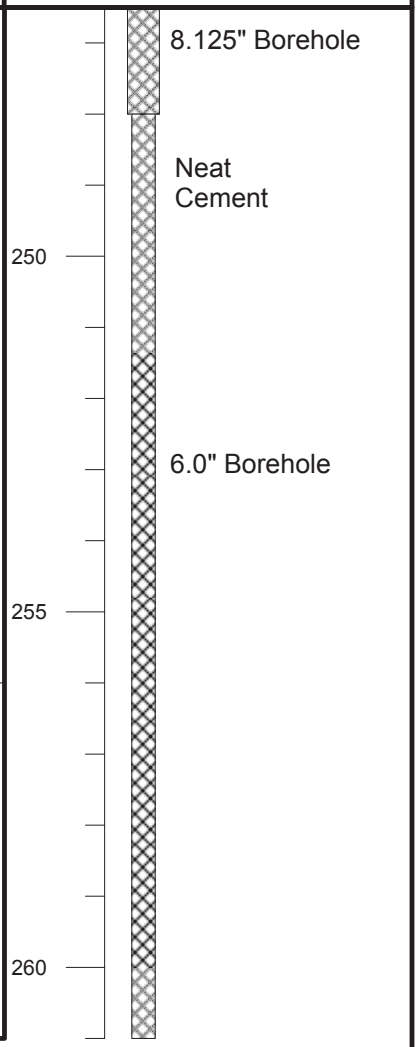
DATE ABANDONED: *12/22/2017*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.125 / 6.0*
TOTAL BOREHOLE DEPTH: *261 ft bls*
LAND SURFACE ELEV: *1210 U*
SCREEN INTERVAL: *ABANDONED*
DEPTH TO WATER: *39 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4212 E. Weldon Ave, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
			29.7	ML		to 3"; 15% subrounded sand. Firm, wet, becomes drier with depth, no reaction to HCl, low plastic fines from 253' to 256'.
250			24.8			
			22.4			
255		<0.25	61.7			
			25.6	--		Upper weathered bedrock (Camelshead Formation). Becomes competent and dry at 260'. Core barrel stuck in formation at 261'.
			61.9			
260			31.5			

WELL ABANDONEMENT DIAGRAM



MONITOR WELL: SMW-16B

DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

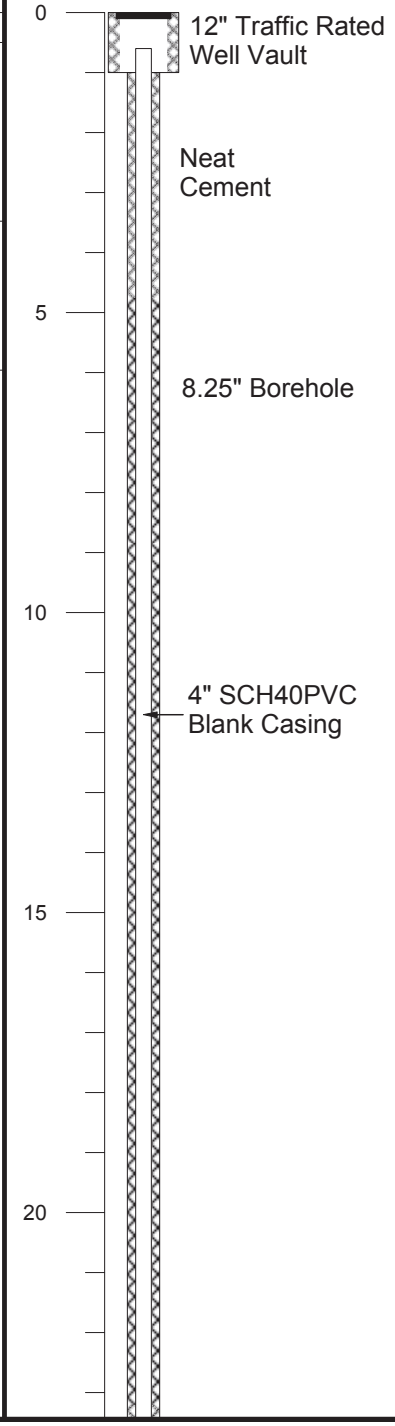
DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
0				--		ASPHALT
				GM		SILTY GRAVEL WITH SAND – Brown (7.5YR3/3); 40% fine, trace coarse angular to subangular granitic gravel to 1"; 30% nonplastic fines; 30% fine to coarse subangular sand. Hard, dry strong reaction to HCl, abundant biotite.
				SM		
			1.4			
5			2.1			SILTY SAND – Yellowish red (5YR4/6); 55% fine to coarse subrounded to rounded sand; 40% nonplastic fines; 5% fine rounded gravel to ¼". Soft, dry, strong reaction to HCl.
			2.0			SILTY SAND WITH GRAVEL – Reddish brown to light reddish brown (5YR4/4 to 5YR6/4); 45%fine to coarse subrounded sand; 35%nonplastic fines; 20% fine rounded gravel to ½". Firm, dry, strong reaction to HCl. Borehole hand augered to 5.0'. At 23' – color change to dark reddish brown (5YR4/4), moist. Contains horizons of well cemented pink to reddish brown (7.5YR7/3 to 5YR4/4) granitic breccias.
10			3.1			
			2.0	SM		
15			4.3			
			3.2			
			11.6			
20			7.7			
			1.9			

WELL CONSTRUCTION DIAGRAM



MONITOR WELL: SMW-16B

DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

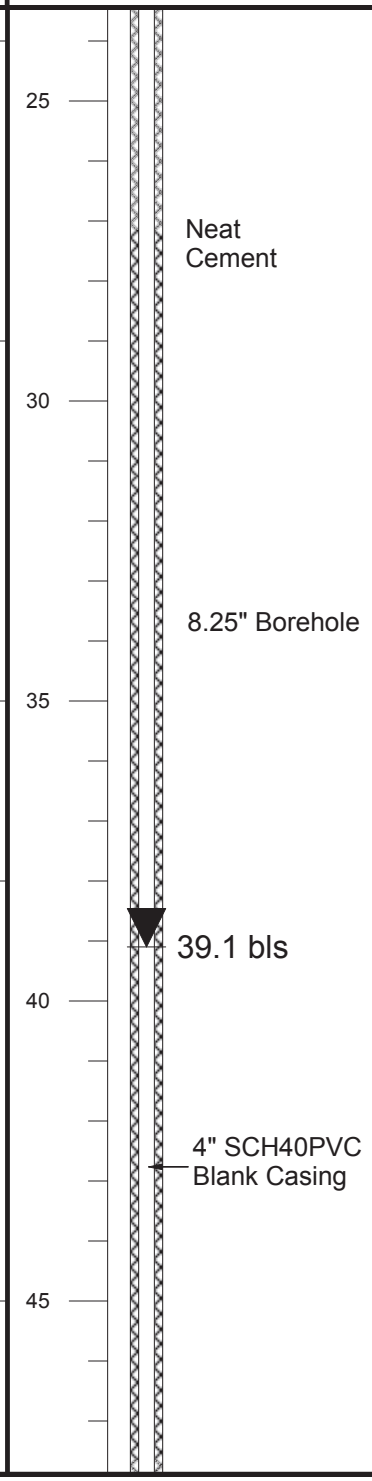
DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
				SM		SILTY SAND WITH GRAVEL cont.
25			6.9	SM		SILTY SAND – Reddish brown (5YR4/4); 55% fine, less medium, trace coarse rounded sand; 40% nonplastic fines; 5% fine rounded gravel to 3/8”. Soft, moist, strong reaction to HCl.
			14.7			
30			15.5	ML		SANDY SILT – Reddish brown (5YR4/4); 55% nonplastic fines; 40% fine to coarse subangular to subrounded sand; 5% fine angular gravel to 3/8”. Dry to 32’, moist below, strong reaction to HCl, hard. Contains clasts of well cemented breccias, visible caliche stringers.
			16.4			
35			14.7	SM		SILTY SAND – Reddish brown (5YR4/4); 50% fine to coarse angular to subangular sand; 40% nonplastic fines; 10% fine angular gravel to ¼”. Wet, loose, moderate to strong reaction to HCl.
			7.3			
40	■	5.35	24.1	ML		SANDY SILT WITH GRAVEL – Reddish brown (5YR5/4); 60% nonplastic fines; 25% coarse, less fine and medium angular to subrounded sand; 15% fine angular, trace coarse rounded gravel to ½”. Firm, moderate to strong reaction to HCl, wet, visible caliche stringers. Encounter groundwater at 39.1’ bls.
			10.0			
45			21.0	ML		SILT WITH SAND – Reddish brown (5YR4/4); 75% nonplastic fines; 20% fine to coarse angular to subangular granitic sand; 5% fine angular to rounded granitic gravel to ½”. Hard, wet, moderate to

WELL CONSTRUCTION DIAGRAM



MONITOR WELL: SMW-16B

DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL CONSTRUCTION DIAGRAM
			3.2	ML		strong reaction to HCl. Contains abundant biotite. Groundwater at 39.3' when borehole advanced to 55'.	
50			7.5				50
			6.6				4" SCH40PVC Blank Casing
			5.6	SM		SILTY SAND WITH GRAVEL – Reddish brown (2.5YR4/4); 55% fine to coarse angular to subrounded sand; 30% nonplastic fines; 15% fine angular to rounded gravel to ¾". Firm, strong reaction to HCl to 55.5', soft, no reaction to HCl to 57', firm, strong reaction to HCl below, wet.	
55			7.4				55
		1.87	3.3				
60			11.7	SM		SILTY SAND – Reddish brown (2.5YR4/4); Similar to above; 50% sand; 45% nonplastic fines; 5% rounded gravel to ½". Wet, firm, weak to locally strong reaction to HCl.	60 Neat Cement
			12.4				
65			9.0				65 8.25" Borehole
			3.7				
70			4.7				70

MONITOR WELL: SMW-16B

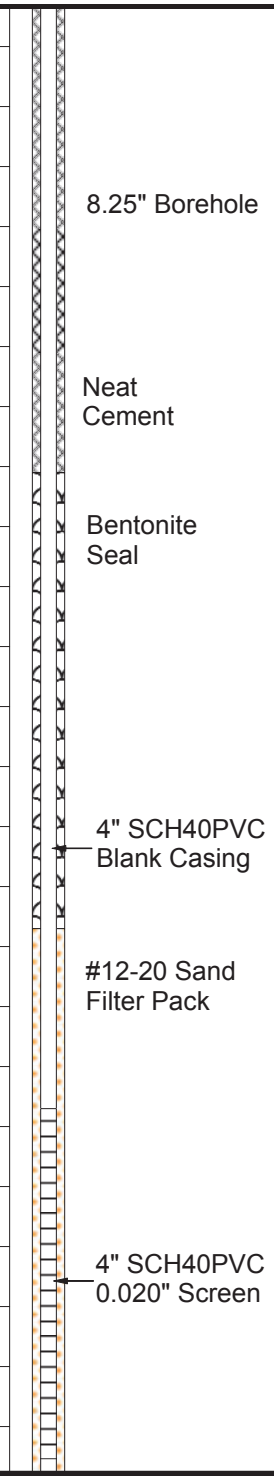
DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
				SM		SILTY SAND cont.
			6.1			
75						
			2.6			
				ML		SANDY SILT WITH GRAVEL – Reddish brown (2.5YR4/4); 55% nonplastic fines; 30% fine to coarse angular to subrounded sand; 15% fine angular gravel to ¾". Firm, wet, weak reaction to HCl.
		<0.25	3.9			
80						
			2.7			
			2.6			
			1.1			
				SM		SILTY SAND – Reddish brown (2.5YR4/4); 50% fine to coarse subangular sand; 40% nonplastic fines; 10% fine angular to subrounded gravel, trace coarse subrounded to 1½". Firm, wet, weak reaction to HCl.
85			1.1			
				ML		SANDY SILT WITH GRAVEL – Reddish brown 5YR4/4); 60% nonplastic fines; 25% fine to coarse subangular sand; 15% fine angular to subangular, trace coarse subangular gravel to 1 3/8". Wet, weak reaction to HCl, firm to 89', hard below.
90			1.7			
			3.2			
				ML		GRAVELLY SILT WITH SAND – Reddish brown (5YR4/4); 55% nonplastic fines; 25% fine angular granitic, trace coarse rounded gravel to 1½"; 20% fine to coarse angular to subangular granitic sand. Very hard, strong reaction to HCl, wet.
95			2.4			

WELL CONSTRUCTION DIAGRAM



MONITOR WELL: SMW-16B

DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL CONSTRUCTION DIAGRAM
			5.8	ML		GRAVELY SILT WITH SAND cont.	
		1.23	10.7	SM		SILTY SAND WITH GRAVEL – Reddish brown (2.5YR4/4); 45% fine to coarse subangular to subrounded sand; 35% nonplastic fines; 20% fine subrounded gravel to 5/8". Soft, wet, weak reaction to HCl.	
100				ML			100
			4.0	SM		SANDY SILT – Reddish brown (2.5YR4/4); 60% nonplastic fines; 35% fine to coarse angular to subrounded sand; 5% fine subrounded gravel to 5/8". Wet, moderate to strong reaction to HCl, hard.	#12-20 Sand Filter Pack
			4.2				
105			4.3	ML		SILTY SAND – Reddish brown (2.5YR4/4); 60% fine to coarse angular to subrounded sand; 30% nonplastic fines; 10% fine subangular to subrounded gravel to 5/8". Loose, no to weak reaction to HCl, wet.	105
			6.2			SILTY SAND – Same as above with 45% sand; 45% nonplastic fines; 10% subangular granitic gravel to 1½". Hard.	8.25" Borehole
			3.5	SM/ ML		SILTY SAND/SANDY SILT – Reddish brown (5YR4/4); 50% nonplastic fines; 45% fine to coarse angular to subrounded sand; 5% fine subrounded gravel to ½". Wet, firm, weak reaction to HCl.	
110							110
			4.9	ML		SANDY SILT – Yellowish red (5YR4/6); 60% nonplastic fines; 35% fine to coarse angular to subrounded sand; 5% fine angular gravel to 3/8". Firm, wet, moderate reaction to HCl.	
			9.5			SILTY SAND WITH GRAVEL – Reddish brown (5YR4/4); 45% fine to coarse subangular to subrounded sand; 40% nonplastic fines; 15% fine, trace coarse subangular gravel to 2". Firm, wet, no to weak reaction to HCl. Becomes finer with depth.	4" SCH40PVC 0.020" Screen
115			6.1				115
			2.8				
		0.98	4.3	SM			
120							120

MONITOR WELL: SMW-16B

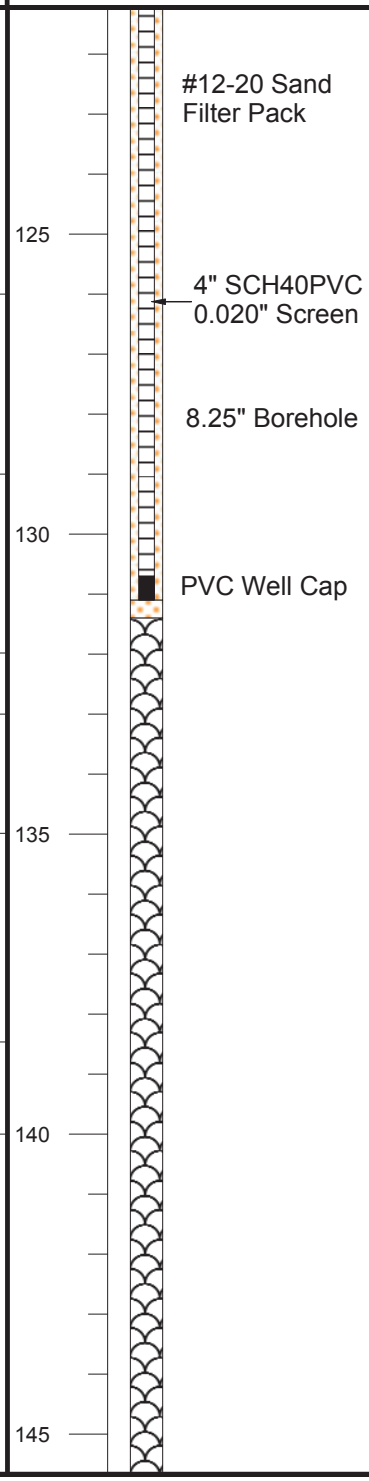
DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
			7.8	SM		SILTY SAND WITH GRAVEL cont.
			6.9			
125						
			9.3	ML		SANDY SILT – Reddish brown (5YR5/4 to 5YR4/4); 60% nonplastic fines; 35% fine to coarse subangular sand; 5% fine subangular, trace coarse rounded gravel to 1¼". Very hard, dry, strong reaction to HCl to 126.5', hard, moist below.
			4.2	SP-SM		POORLY GRADED SAND WITH SILT – Dark reddish brown (2.5YR3/4); 80% fine to coarse subrounded to rounded sand; 10% nonplastic fines; 10% fine rounded rounded gravel to ½". Loose, wet, no reaction to HCl.
130						
			15.9	ML		SANDY SILT – Same as above. Hard, wet, weak reaction to HCl.
			26.3	ML		SILT – Light reddish brown (5YR6/4); 90% nonplastic fines; 10% fine, less medium rounded sand. Hard, moist, strong reaction to HCl.
135			14.2	ML		SANDY SILT WITH GRAVEL – Reddish brown (5YR5/4); 60% nonplastic fines; 25% fine to coarse subangular to subrounded sand: 15% fine angular to subrounded gravel to 3/8". Hard, moist, strong reaction to HCl. Well cemented at 134, 135.5, and 136.5'.
			3.3	'- -		Lost core – SP in core barrel, potential slough.
140	■	<0.25	2.2			
			7.5	SM		SILTY SAND WITH GRAVEL – Reddish brown (5YR5/4); 45% fine to coarse rounded sand; 35% fine, less, coarse rounded gravel to 3/8"; 20% nonplastic fines. Hard, weak reaction to HCl at 143 1nd 145'. Wet, loose, no reaction to HCl in rest of unit.
145			3.7			

WELL CONSTRUCTION DIAGRAM



MONITOR WELL: SMW-16B

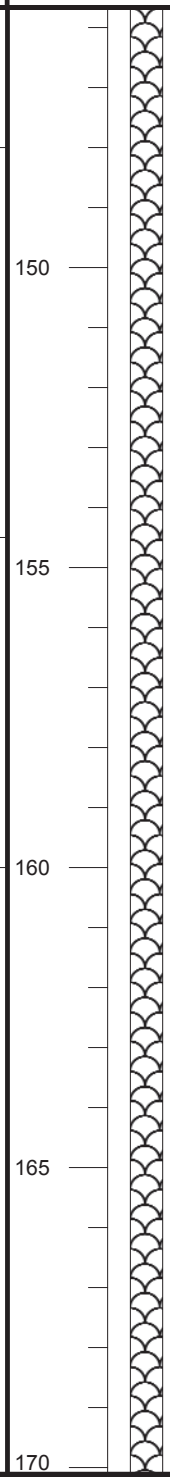
DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*
COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
			13.9	SM		SILTY SAND WITH GRAVEL cont.
150			17.1 15.4 33.6	ML		SANDY SILT – Light reddish brown (5YR6/4); 60% nonplastic fines; 35% fine to coarse angular to subangular sand; 5% fine angular gravel to ¼". Wet to 149', moist below, hard, moderate reaction to HCl, well cemented breccias at 150'.
155			19.4 6.8 6.0	ML		SANDY SILT – Dark reddish brown (5YR5/4); 70% non to low plastic fines; 20% fine to coarse angular to subangular sand; 10% fine angular gravel to 3/8". Hard, wet, strong reaction to HCl. Contains well lithified breccias clasts.
160		<0.25	10.5 13.2 14.9			SANDY CLAYEY SILT WITH GRAVEL – Dark reddish brown (2.5YR4/4); 55% low plastic fines; 25% fine to coarse angular to subrounded sand; 20% fine angular to subangular gravel to ½". Hard, dry to locally moist, strong reaction to HCl. Contains very hard breccias clasts in a matrix of clayey silt.
165			13.7 2.2	ML/ CL		
170						

WELL CONSTRUCTION DIAGRAM



8.25" Borehole

MONITOR WELL: SMW-16B

DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL	WELL CONSTRUCTION DIAGRAM
			13.1	ML/ CL		SANDY CLAYEY SILT WITH GRAVEL cont.	
			5.0	ML		SANDY SILT WITH GRAVEL – Dark reddish brown (2.5YR3/4); 60% nonplastic fines; 25% fine to coarse subangular to subrounded sand; 15% fine subangular to subrounded gravel to ¾", trace subrounded gravel to 2½". Wet, firm to hard, weak reaction to HCl.	Bentonite
175			5.7				175
			8.0	ML		SILT WITH SAND – Reddish brown (5YR5/4); 80% nonplastic fines; 20% fine to coarse subangular to subrounded sand; trace fine subangular gravel to ¾". Firm, wet, strong reaction to HCl.	#12-20 Sand Filter Pack
180		0.98	7.3	ML		SANDY SILT WITH GRAVEL – Dark reddish brown (5YR3/4); 55% nonplastic fines; 30% fine to coarse subrounded sand; 15% fine, less coarse subrounded gravel to 2½". Grey sand stringers at 182 and 189'. Wet, soft to locally firm, no to weak reaction to HCl.	180
			3.5				4" SCH40PVC 0.020" Screen
185			2.3				185
			3.6				
190			3.4				190
			3.9	SM		SILTY SAND WITH GRAVEL – Dark reddish brown (2.5YR3/4); 45% fine to coarse subrounded to rounded sand;	

MONITOR WELL: SMW-16B

DATE DRILLED : *3/12/18 - 3/14/18*
DRILLING COMPANY: *Cascade Drilling*
LOGGED BY: *M Wiese*
ADWR No.: *55-921439*
REVIEWED BY: *B. Waggle*
SAMPLING METHOD: *hydropunch*
PID: Minirae3000

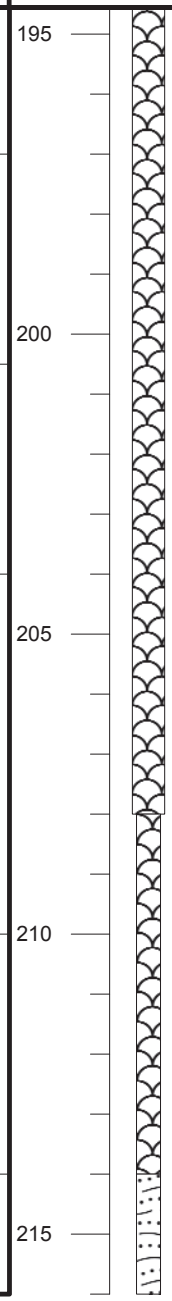
DATE COMPLETED: *3/16/2018*
DRILLING METHOD: *Sonic*
BOREHOLE DIA (inch).: *8.25 / 6.125*
TOTAL BOREHOLE DEPTH: *216 ft bls*
LAND SURFACE ELEV: *1242.07*
SCREEN INTERVAL: *90.7 - 130.7 ft bls*
DEPTH TO WATER: *39.1 ft bls*

PROJECT: *ECP 48th Indian School Rd*
PROJECT NUMBER: *1133*
LOCATION: *4730 E. Indian School Rd, Phoenix, AZ*

COMMENTS:
PCE = tetrachloroethene
ft bls = feet below land surface

DEPTH (feet)	SAMPLE	PCE Result (ug/L)	PID (ppm)	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION OF MATERIAL
195			2.9	SM		35% nonplastic fines; 20% fine, less coarse subrounded to rounded gravel to 2". No reaction to HCl, wet, loose. Grey sand stringer at 193'.
			1.1	SM		SILTY SAND – Reddish brown (2.5YR4/4); 55% fine to coarse subrounded to rounded sand; 40% nonplastic fines; 5% fine subrounded gravel to 3/8". Loose, wet, no reaction to HCl, gravel content increases with depth.
	■	0.99	1.9			
200			4.9	SM		SILTY SAND WITH GRAVEL – Same as above with gravels to 3" and trace of granitic cobbles to 4¼" at 201'. Firm, wet, no reaction to HCl.
			2.1			
205			1.6	SM		SILTY SAND – Dark reddish brown (2.5YR3/3); 50% fine to coarse subangular to subrounded sand; 40% non plastic fines; 10% fine angular to subrounded granitic gravel, trace coarse subrounded gravel to 2½". Firm, wet, no reaction to HCl, abundant biotite, light grey (10YR7/1) sand at 209'.
			2.0			
210			4.8	SM		SILTY SAND WITH GRAVEL – same as above with 60% sand; 20 % nonplastic fines; 20% fine, less coarse subrounded gravel to 11/2"
			3.5			
215			29.0 24.6	Tcu		UPPER CAMELSHEAD FORMATION – very hard well cemented breccia. Broke drill rod at 215'.

WELL CONSTRUCTION DIAGRAM

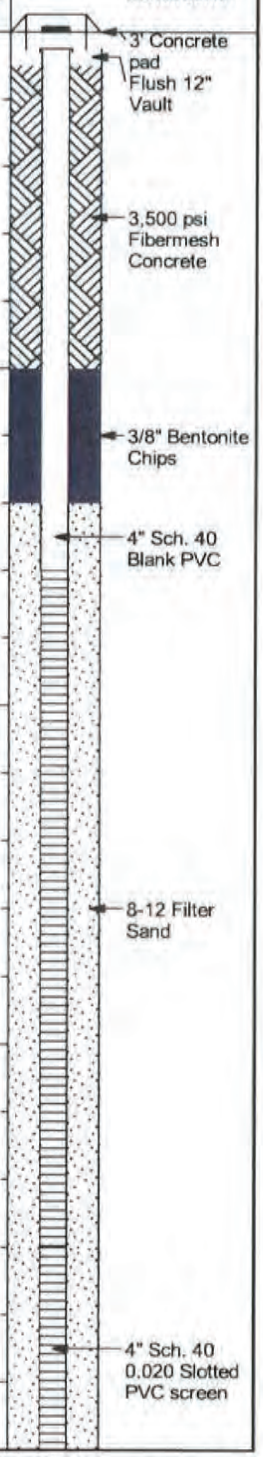


PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 2 **SSVE-1**
DRILLING: STARTED **1/17/12** COMPLETED: **1/17/12** INSTALLATION: STARTED **1/17/12** COMPLETED: **1/17/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Continuous Core Barrel**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **31.0** STATIC DTW (ft): **Not Measured** WELL CASING DIAMETER (in): **4.0** LOGGED BY: **M. Orth**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **40** WELL DEPTH (ft): **28.0** BOREHOLE DIAMETER (in): **10.0** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)
			Asphalt 3" Hand Auger to 5' bgs					
		ML	**SANDY SILT** ; ML; brown; non plastic; soft; dry; 70% silt, 30% sand					
5			Stiff; 50% silt, 30% sand, 10% gravel, 10% clay		0855 SSVE-1-5	1.5/1.5	8 11 14	0.0
			CALICHE ; light tan to white; hard					
		SM	**SILTY SAND** ; SM; brown; fine-grained; non plastic; dry; 60% sand, 40% silt			4/5	–	
10					0945 SSVE-1-10			0.0
						4/5	–	
15		SW	**SAND** ; SW; brown; fine to coarse-grained; loose; dry; no odor; well graded; 100% sand		1015 SSVE-1-15			0.0
		SM	**SILTY SAND** ; SM; brown to gray; fine-grained; hard; 60% sand, 30% silt, 10% gravel			4/5	–	
20		SW	**SAND** ; SW; brown; fine to coarse-grained; subangular; well graded; 100% sand		1045 SSVE-1-20			0.0

Depth (feet): 5, 10, 15, 20

Well Construction



GEO FORM 304 48THST_JAN2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 6/29/12

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 2 OF 2 **SSVE-1**
DRILLING: STARTED **1/17/12** COMPLETED: **1/17/12** INSTALLATION: STARTED **1/17/12** COMPLETED: **1/17/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Continuous Core Barrel**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **31.0** BOREHOLE DEPTH (ft): **40** STATIC DTW (ft): **Not Measured** WELL DEPTH (ft): **28.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SW	**SAND** ; SW; brown; fine to coarse-grained; subangular; well graded; 100% sand							
		SP	**SAND** ; SP; brown; fine-grained; hard; dry; no odor; 95% sand, 5% silt			4/5	–			8-12 Filter Sand
25		ML	**SILT** ; ML; brown; non plastic; hard; dry; 90% silt, 10% clay		1115 SSVE-1-25			2.8	25	4" Sch. 40 0.020 Slotted PVC screen
						3/5	–			
30		SW	**SAND WITH SILT** ; SW; fine-grained; well graded; 80% sand, 15% silt, 5% gravel		1150 SSVE-1-30			1.5	30	
			Water encountered during drilling						▽	
			Wet			4/5	–			Bentonite
			Moist		1220 SSVE-1-35			1.4		
35		SM	**SILTY SAND** ; SM; brown; fine to coarse-grained; wet; 60% sand, 20% silt, 20% clay						35	
						3/5	–			
40			Borehole terminated at 40 feet.		1320 SSVE-1-40			3.0	40	

GEO FORM 304 48THST_JAN2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 6/29/12

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 1 OF 2 **SSVE-2**
DRILLING: STARTED **1/19/12** COMPLETED: **1/19/12** INSTALLATION: STARTED **1/19/12** COMPLETED: **1/19/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Continuous Core Barrel**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **32.0** BOREHOLE DEPTH (ft): **35** STATIC DTW (ft): **Not Measured** WELL DEPTH (ft): **28.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt 3" Hand Auger to 5' bgs							3' Concrete pad Flush 12" Vault
		SW	**SAND WITH GRAVEL** ; SW; brown; fine to coarse-grained; subangular; well graded; 70% sand, 25% gravel. 5% silt							3,500 psi Fibermesh Concrete
5					SSVE-2-5	1.5/1.5	11 13 9	3.7	5	3/8" Bentonite Chips
						5/5	–			4" Sch. 40 Blank PVC
10		SM	**SILTY SAND** ; SM; tan; dry; subangular; well graded; 60% sand, 25% silt, 15% gravel		1145 SSVE-2-10			0.0	10	
						5/5	–			8-12 Filter Sand
15		ML	**SANDY SILT** ; ML; tan; fine to coarse-grained; non plastic; hard; dry; no odor; 70% silt, 25% sand		1208 SSVE-2-15			0.0	15	
			90% silt, 10% sand			3/5	–			
20		SM	**SILTY SAND** ; SM; tan; fine to coarse-grained; dry; no odor; well graded; 80% sand, 20% silt		1220 SSVE-2-20			9.7	20	4" Sch. 40 0.020 Slotted PVC screen

PROJECT: **48th St & Indian School Rd, ECP WQARF Site** LOCATION: **4730 East Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 2 OF 2 **SSVE-2**
DRILLING: STARTED **1/19/12** COMPLETED: **1/19/12** INSTALLATION: STARTED **1/19/12** COMPLETED: **1/19/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **Continuous Core Barrel**	NORTHING (ft): **Not Surveyed** EASTING (ft): **Not Surveyed** LATITUDE: LONGITUDE: GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **32.0** BOREHOLE DEPTH (ft): **35** STATIC DTW (ft): **Not Measured** WELL DEPTH (ft): **28.0** WELL CASING DIAMETER (in): **4.0** BOREHOLE DIAMETER (in): **10.0** LOGGED BY: **M. Orth** CHECKED BY: **T. Kalaghan**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SM	**SILTY SAND** ; SM; tan; fine to coarse-grained; dry; no odor; well graded; 80% sand, 20% silt							8-12 Filter Sand
						4/5	–			
25					1230 SSVE-2-25			0.0	25	
			Moist							4" Sch. 40 0.020 Slotted PVC screen
						4/5	–			
		ML	**SANDY SILT** ; ML; 60% silt, 40% sand							
30					1250 SSVE-2-30			0.0	30	
										Bentonite
			Wet (32'); water encountered during drilling						▽	
						5/5	–			
35					1315 SSVE-2-35			1.4	35	
			Borehole terminated at 35 feet.							
40									40	

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site** LOCATION: **48th St. & Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: **SSVE-3** PAGE 1 OF 2
DRILLING: STARTED **3/22/12** COMPLETED: **3/22/12** INSTALLATION: STARTED **3/22/12** COMPLETED: **3/22/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger - 8" Pilot** SAMPLING EQUIPMENT: **None**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **29** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **28.3** WELL CASING DIAMETER (in): **4** BOREHOLE DIAMETER (in): **10** LOGGED BY: **M. Mason** CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt ~2"							3' Concrete Pad 12" Flush Vault
		SW	**WELL-GRADED SAND WITH SILT AND GRAVEL** ; SW; (7.5YR 4/6) strong brown; dry; no odor; 30% fine, 10% medium; 30% coarse sand, 20% fine to coarse gravel, Max size ~1 1/4", subrounded to subangular; ~10% fines					0.3 ppm		4" Sch. 40 Blank PVC Cement Grout
5		SC	**CLAYEY SAND WITH GRAVEL** ; SC; (7.5YR 5/4) brown; dry; no odor; well graded; 15% fine, 5% medium, 30% coarse sand; 20% fine gravel, 5% coarse gravel to ~1", ~25% clayey fines					1.3 ppm	5	3/8" Bentonite Chips 8-12 Silica Sand
					0940					
10								0.9 ppm	10	
										4" Sch. 40 0.020 Slotted PVC screen
15			(7.5YR 5/4) brown; dry; no odor; well graded; 5% fine, 5% medium 25% coarse sand; 25% fine gravel, 5% coarse gravel; 35% clayey fines						15	
					0945			16.1 ppm		

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site**
LOCATION: **48th St. & Indian School Rd, Phoenix AZ**
PROJECT NUMBER: **212202361**

WELL / PROBEHOLE / BOREHOLE NO: **SSVE-3**

DRILLING: STARTED **3/22/12** COMPLETED: **3/22/12**
INSTALLATION: STARTED **3/22/12** COMPLETED: **3/22/12**
DRILLING COMPANY: **Geomechanics Southwest, Inc.**
DRILLING EQUIPMENT: **CME-75**
DRILLING METHOD: **Hollow Stem Auger - 8" Pilot**
SAMPLING EQUIPMENT: **None**

NORTHING (ft): LATITUDE: **Not Surveyed**
EASTING (ft): LONGITUDE: **Not Surveyed**
GROUND ELEV (ft):
TOC ELEV (ft):
INITIAL DTW (ft): **Not Encountered**
BOREHOLE DEPTH (ft): **29**
STATIC DTW (ft): **Not Encountered**
WELL DEPTH (ft): **28.3**
WELL CASING DIAMETER (in): **4**
BOREHOLE DIAMETER (in): **10**
LOGGED BY: **M. Mason**
CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		CL	**GRAVELLY CLAY WITH SAND** ; CL; (7.5YR 4/3) brown; low-medium plasticity; damp; no odor; 55% fines, 40% coarse sand to fine gravel, 5% fine to medium sand					6.2 ppm		8-12 Silica Sand
		CL	**SANDY CLAY** ; CL; (7.5YR 4/4) brown; low plasticity; moist; no odor; 70% fines, 5% fine, 5% medium, 15% coarse sand, 5% fine gravel		0950			30.2 ppm		4" Sch. 40 0.020 Slotted PVC screen
25					1115				25	
			Borehole terminated at 29 feet.							
30									30	
35									35	

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site**	WELL / PROBEHOLE / BOREHOLE NO:
LOCATION: **48th St. & Indian School Rd, Phoenix AZ**	PAGE 1 OF 2 **SSVE-4**
PROJECT NUMBER: **212202361**	
DRILLING: STARTED **3/28/12** COMPLETED: **3/28/12**	NORTHING (ft): LATITUDE: **Not Surveyed** / EASTING (ft): LONGITUDE: **Not Surveyed**
INSTALLATION: STARTED **3/28/12** COMPLETED: **3/28/12**	GROUND ELEV (ft): / TOC ELEV (ft):
DRILLING COMPANY: **Geomechanics Southwest, Inc.**	INITIAL DTW (ft): **Not Encountered** / BOREHOLE DEPTH (ft): **29.5**
DRILLING EQUIPMENT: **CME-75**	STATIC DTW (ft): **Not Encountered** / WELL DEPTH (ft): **28**
DRILLING METHOD: **Hollow Stem Auger**	WELL CASING DIAMETER (in): **4** / BOREHOLE DIAMETER (in): **10**
SAMPLING EQUIPMENT: **None**	LOGGED BY: **L. Braybrooks** / CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3/4"						
		SW	**WELL-GRADED SAND WITH SILT** ; SW; 5YR 4/4 reddish brown; fine to coarse-grained; medium dense; dry; no odor						
5		SM	**SILTY SAND** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; subangular; trace fine gravel		0743			7.0 ppm	5
10		SM	**SILTY SAND WITH GRAVEL** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; angular to subangular; fine-grained gravel		0748			15.2 ppm	10
15		SW	**WELL-GRADED SAND WITH SILT AND GRAVEL** ; SW; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; angular to subangular; fine-grained gravel		0750			15.9 ppm	15
			As Above; multicolored grains, quartz		0757			16.9 ppm	

Well Construction

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site**
LOCATION: **48th St. & Indian School Rd, Phoenix AZ**
PROJECT NUMBER: **212202361**

WELL / PROBEHOLE / BOREHOLE NO: **SSVE-4**

DRILLING: STARTED **3/28/12** COMPLETED: **3/28/12**
INSTALLATION: STARTED **3/28/12** COMPLETED: **3/28/12**
DRILLING COMPANY: **Geomechanics Southwest, Inc.**
DRILLING EQUIPMENT: **CME-75**
DRILLING METHOD: **Hollow Stem Auger**
SAMPLING EQUIPMENT: **None**

NORTHING (ft): LATITUDE: **Not Surveyed**
EASTING (ft): LONGITUDE: **Not Surveyed**
GROUND ELEV (ft):
TOC ELEV (ft):
INITIAL DTW (ft): **Not Encountered**
BOREHOLE DEPTH (ft): **29.5**
STATIC DTW (ft): **Not Encountered**
WELL DEPTH (ft): **28**
WELL CASING DIAMETER (in): **4**
BOREHOLE DIAMETER (in): **10**
LOGGED BY: **L. Braybrooks**
CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SW	**WELL-GRADED SAND WITH SILT AND GRAVEL** ; SW; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; angular to subangular; fine-grained gravel							8-12 Silica Sand
25		SM	**SILTY SAND** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; dense; dry; no odor; angular to subangular; trace fine-grained gravel		0802			15.1 ppm	25	4" Sch. 40 0.020 Slotted PVC screen
			As Above with Clay		0806			20.1 ppm		
30			Borehole terminated at 29.5 feet.						30	
35									35	

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site**	WELL / PROBEHOLE / BOREHOLE NO:
LOCATION: **48th St. & Indian School Rd, Phoenix AZ**	PAGE 1 OF 2 **SSVE-4**
PROJECT NUMBER: **212202361**	
DRILLING: STARTED **3/28/12** COMPLETED: **3/28/12**	NORTHING (ft): LATITUDE: **Not Surveyed** / EASTING (ft): LONGITUDE: **Not Surveyed**
INSTALLATION: STARTED **3/28/12** COMPLETED: **3/28/12**	GROUND ELEV (ft): / TOC ELEV (ft):
DRILLING COMPANY: **Geomechanics Southwest, Inc.**	INITIAL DTW (ft): **Not Encountered** / BOREHOLE DEPTH (ft): **29.5**
DRILLING EQUIPMENT: **CME-75**	STATIC DTW (ft): **Not Encountered** / WELL DEPTH (ft): **28**
DRILLING METHOD: **Hollow Stem Auger**	WELL CASING DIAMETER (in): **4** / BOREHOLE DIAMETER (in): **10**
SAMPLING EQUIPMENT: **None**	LOGGED BY: **L. Braybrooks** / CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 3/4"						
		SW	**WELL-GRADED SAND WITH SILT** ; SW; 5YR 4/4 reddish brown; fine to coarse-grained; medium dense; dry; no odor						
5		SM	**SILTY SAND** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; subangular; trace fine gravel		0743			7.0 ppm	5
10		SM	**SILTY SAND WITH GRAVEL** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; angular to subangular; fine-grained gravel		0748			15.2 ppm	10
15		SW	**WELL-GRADED SAND WITH SILT AND GRAVEL** ; SW; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; angular to subangular; fine-grained gravel		0750			15.9 ppm	15
			As Above; multicolored grains, quartz		0757			16.9 ppm	

Well Construction

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site**
LOCATION: **48th St. & Indian School Rd, Phoenix AZ**
PROJECT NUMBER: **212202361**

WELL / PROBEHOLE / BOREHOLE NO: **SSVE-4**

DRILLING: STARTED **3/28/12** COMPLETED: **3/28/12**
INSTALLATION: STARTED **3/28/12** COMPLETED: **3/28/12**
DRILLING COMPANY: **Geomechanics Southwest, Inc.**
DRILLING EQUIPMENT: **CME-75**
DRILLING METHOD: **Hollow Stem Auger**
SAMPLING EQUIPMENT: **None**

NORTHING (ft): LATITUDE: **Not Surveyed**
EASTING (ft): LONGITUDE: **Not Surveyed**
GROUND ELEV (ft):
TOC ELEV (ft):
INITIAL DTW (ft): **Not Encountered**
BOREHOLE DEPTH (ft): **29.5**
STATIC DTW (ft): **Not Encountered**
WELL DEPTH (ft): **28**
WELL CASING DIAMETER (in): **4**
BOREHOLE DIAMETER (in): **10**
LOGGED BY: **L. Braybrooks**
CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SW	**WELL-GRADED SAND WITH SILT AND GRAVEL** ; SW; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; angular to subangular; fine-grained gravel							8-12 Silica Sand
25		SM	**SILTY SAND** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; dense; dry; no odor; angular to subangular; trace fine-grained gravel		0802			15.1 ppm	25	4" Sch. 40 0.020 Slotted PVC screen
			As Above with Clay		0806			20.1 ppm		
30			Borehole terminated at 29.5 feet.						30	
35									35	

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site**
LOCATION: **48th St. & Indian School Rd, Phoenix AZ**
PROJECT NUMBER: **212202361**

WELL / PROBEHOLE / BOREHOLE NO: **SSVE-6**

DRILLING: STARTED **3/26/12** COMPLETED: **3/26/12**
INSTALLATION: STARTED **3/26/12** COMPLETED: **3/26/12**
DRILLING COMPANY: **Geomechanics Southwest, Inc.**
DRILLING EQUIPMENT: **CME-75**
DRILLING METHOD: **Hollow Stem Auger**
SAMPLING EQUIPMENT: **None**

NORTHING (ft): LATITUDE: **Not Surveyed**
EASTING (ft): LONGITUDE: **Not Surveyed**
GROUND ELEV (ft):
TOC ELEV (ft):
INITIAL DTW (ft): **Not Encountered**
BOREHOLE DEPTH (ft): **30**
STATIC DTW (ft): **Not Encountered**
WELL DEPTH (ft): **28**
WELL CASING DIAMETER (in): **4**
BOREHOLE DIAMETER (in): **10**
LOGGED BY: **L. Braybrooks**
CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			Asphalt 8"						
		SW	**WELL-GRADED SAND WITH SILT** ; SW; 5YR 4/4 reddish brown; fine to coarse-grained; medium dense; dry; no odor; subangular		0950				
5		SM	**SILTY SAND WITH GRAVEL** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; subangular; fine gravel		1048			5.5 ppm	5
10		GM	**SILTY GRAVEL WITH SAND** ; GM; 5YR 5/6 yellowish red; fine-grained; medium dense; dry; no odor; subangular; fine to coarse sand		1053			8.6 ppm	10
15					1055			7.9 ppm	15
		SM	**SILTY SAND** ; SM; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; subangular; little fine gravel		1058			9.8 ppm	

Well Construction

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site** LOCATION: **48th St. & Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: **SSVE-6** PAGE 2 OF 2
DRILLING: STARTED **3/26/12** COMPLETED: **3/26/12** INSTALLATION: STARTED **3/26/12** COMPLETED: **3/26/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **None**	NORTHING (ft): LATITUDE: **Not Surveyed** EASTING (ft): LONGITUDE: **Not Surveyed** GROUND ELEV (ft): TOC ELEV (ft): INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **30** STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft): **28** WELL CASING DIAMETER (in): **4** BOREHOLE DIAMETER (in): **10** LOGGED BY: **L. Braybrooks** CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		SM	**SILTY SAND** ; 5YR 5/6 yellowish red; fine to coarse-grained; medium dense; dry; no odor; subangular; little fine gravel							8-12 Silica Sand
25		SM	**SILTY SAND WITH GRAVEL** ; SM; 5YR 4/6 yellowish red; fine to coarse-grained; dense; moist; no odor; fine gravel; subangular/subrounded		1105			10.0 ppm	25	4" Sch. 40 0.020 Slotted PVC screen
		SC	**CLAYEY SAND** ; SC; 7.5YR 5/4 brown; fine to coarse-grained; dense; moist; no odor; subrounded; trace fine gravel							
30			Borehole terminated at 30 feet.		1112			16.9 ppm	30	
35									35	

PROJECT: **48th St & Inidian School Rd, ECP WQARF Site**	WELL / PROBEHOLE / BOREHOLE NO:
LOCATION: **48th St. & Indian School Rd, Phoenix AZ**	PAGE 1 OF 2 **SSVE-7**
PROJECT NUMBER: **212202361**	
DRILLING: STARTED **3/23/12** COMPLETED: **3/23/12**	NORTHING (ft): LATITUDE: **Not Surveyed** / EASTING (ft): LONGITUDE: **Not Surveyed**
INSTALLATION: STARTED **3/23/12** COMPLETED: **3/23/12**	GROUND ELEV (ft): / TOC ELEV (ft):
DRILLING COMPANY: **Geomechanics Southwest, Inc.**	INITIAL DTW (ft): **Not Encountered** / BOREHOLE DEPTH (ft): **29**
DRILLING EQUIPMENT: **CME-75**	STATIC DTW (ft): **Not Encountered** / WELL DEPTH (ft): **28**
DRILLING METHOD: **Hollow Stem Auger**	WELL CASING DIAMETER (in): **4** / BOREHOLE DIAMETER (in): **10**
SAMPLING EQUIPMENT: **None**	LOGGED BY: **M. Mason** / CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
			Asphalt ~3"							3' Concrete Pad; 12" Flush Vault
		SM	**SILTY SAND WITH CLAY AND GRAVEL** ; SM; 5YR 3/4 dark reddish brown; dry; no odor; 25% fine, 15% medium, 15% coarse sand; 5% fine gravel; 40% silty to clayey fines;		0715			0.1 ppm		4" Sch. 40 Blank PVC; Cement Grout
5		CL	**SANDY CLAY** ; CL; 7.5YR 6/4 light brown; low plasticity; dry; no odor; 80% clayey fines, 20% fine to coarse sand, fine gravel; Clay clasts appear to be moderately calcified & appear as coarse sand to fine gravel					2.2 ppm	5	3/8" Bentonite Chips; 8-12 Silica Sand
10		CL	**SANDY CLAY WITH SILT** ; CL; 7.5YR 6/4 light brown; no to low plasticity; dry; no odor; weak cementation; caliche; 60% fines, 10% fine gravel, 30% fine to coarse sand; gravel is subrounded to rounded					11.8 ppm	10	4" Sch. 40 0.020 Slotted PVC screen
15		SC	**CLAYEY SAND WITH SILT** ; SC; 7.5YR 5/4 brown; dry; no odor; 5% fine, 5% medium, 50% coarse sand; 20% fine gravel, 20% fines; Coarse sand & gravel grains are angular & appear as weathered granite (quartz clasts)					3.0 ppm	15	

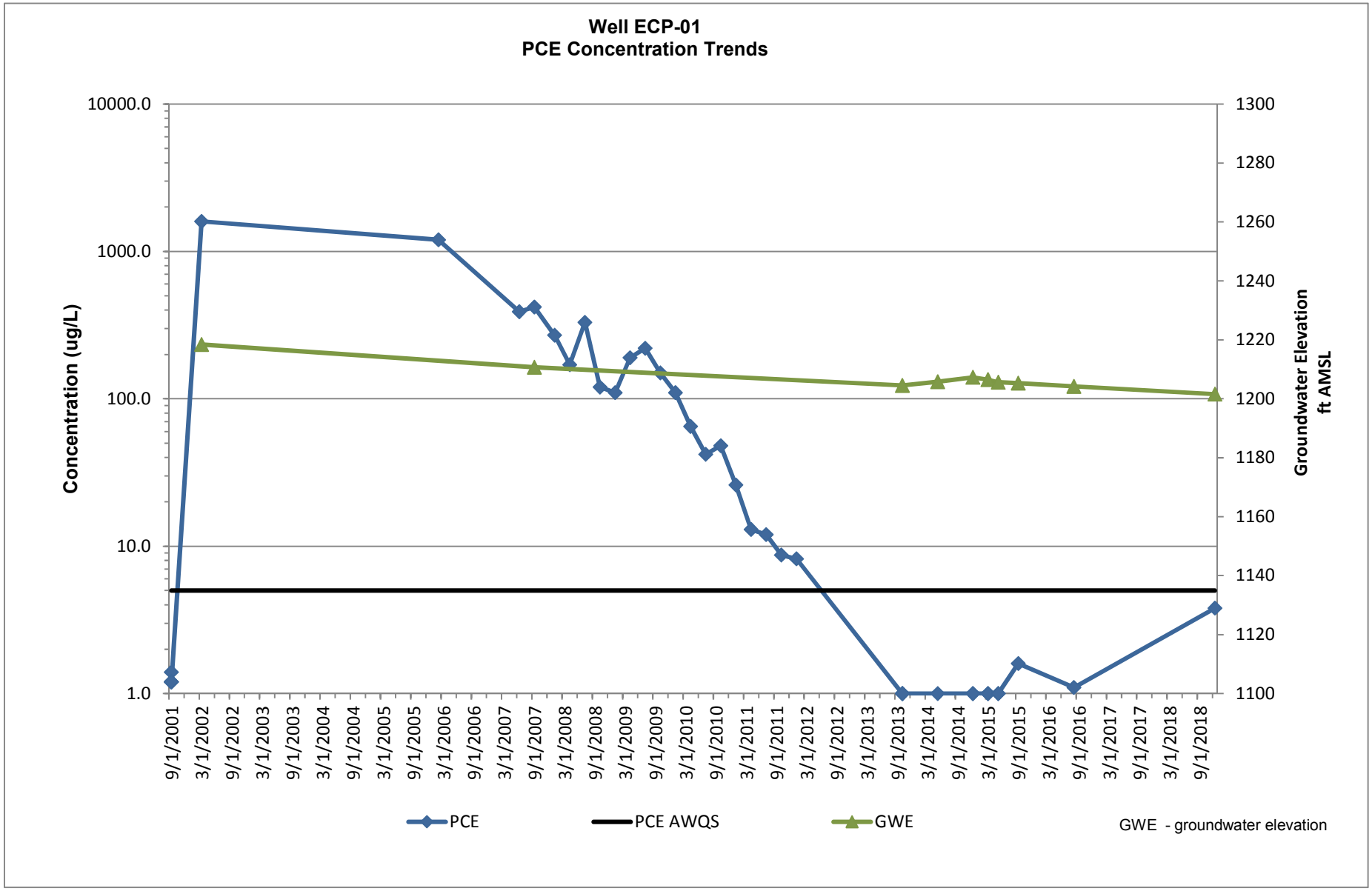
PROJECT: **48th St & Inidian School Rd, ECP WQARF Site** LOCATION: **48th St. & Indian School Rd, Phoenix AZ** PROJECT NUMBER: **212202361**	WELL / PROBEHOLE / BOREHOLE NO: PAGE 2 OF 2 **SSVE-7**
DRILLING: STARTED **3/23/12** COMPLETED: **3/23/12** INSTALLATION: STARTED **3/23/12** COMPLETED: **3/23/12** DRILLING COMPANY: **Geomechanics Southwest, Inc.** DRILLING EQUIPMENT: **CME-75** DRILLING METHOD: **Hollow Stem Auger** SAMPLING EQUIPMENT: **None**	NORTHING (ft): LATITUDE: **Not Surveyed** GROUND ELEV (ft): INITIAL DTW (ft): **Not Encountered** STATIC DTW (ft): **Not Encountered** WELL CASING DIAMETER (in): **4** LOGGED BY: **M. Mason**
	EASTING (ft): LONGITUDE: **Not Surveyed** TOC ELEV (ft): BOREHOLE DEPTH (ft): **29** WELL DEPTH (ft): **28** BOREHOLE DIAMETER (in): **10** CHECKED BY: **M. Newton**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
		CL	**SANDY CLAY WITH SILT** ; CL; 7.5YR 5/4 brown; no to low plasticity; damp; no odor; 5% fine, 5% medium, 15% coarse sand; 5% fine gravel, 70% clayey to silty fines; Moderate to strong calcification; calcified clasts appear as coarse sand to coarse gravel; Probable calcified clay lense (caliche)					4.1 ppm		8-12 Silica Sand
25		SC	**CLAYEY SAND WITH GRAVEL** ; SC; 7.5YR 4/4 brown; no to low plasticity; moist; no odor; 5% fine, 15% medium, 25% coarse sand; 25% fine gravel; 30% clayey fines; weak calcium cementation Sand & Gravel grains are angular & appear as weathered granite		0750			11.2 ppm	25	4" Sch. 40 0.020 Slotted PVC screen
			Borehole terminated at 29 feet.							
30									30	
35									35	

GEO FORM 304 SANDYS_MARCH2012.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 11/5/12

APPENDIX B

Hydrographs and PCE Concentration Versus Time Graphs


Well ECP-01
PCE Concentration Trends
Concentration (ug/L)
10000.0
1000.0
100.0
10.0
1.0
Groundwater Elevation ft AMSL
1300
1280
1260
1240
1220
1200
1180
1160
1140
1120
1100
9/1/2001
3/1/2002
9/1/2002
3/1/2003
9/1/2003
3/1/2004
9/1/2004
3/1/2005
9/1/2005
3/1/2006
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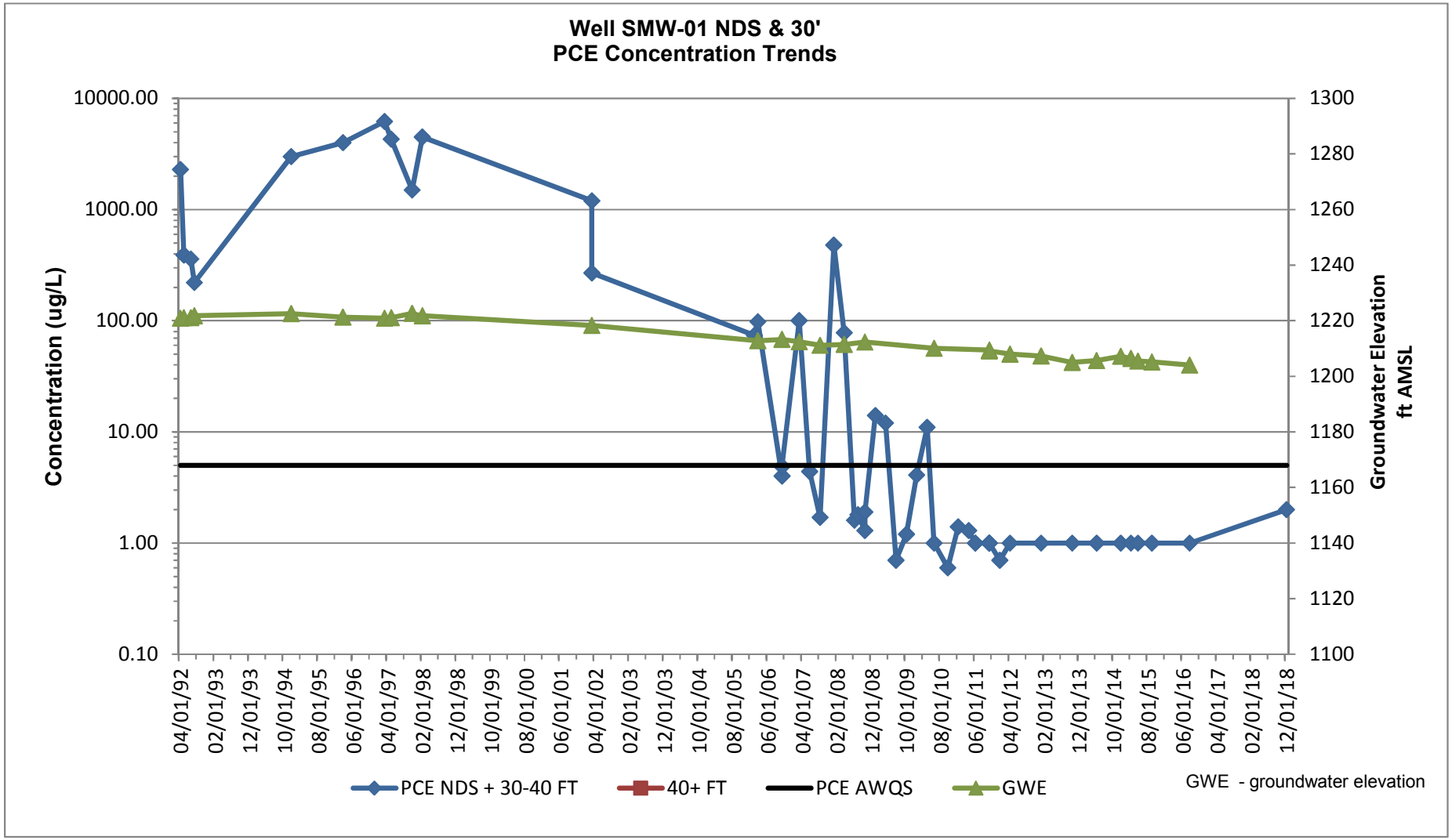
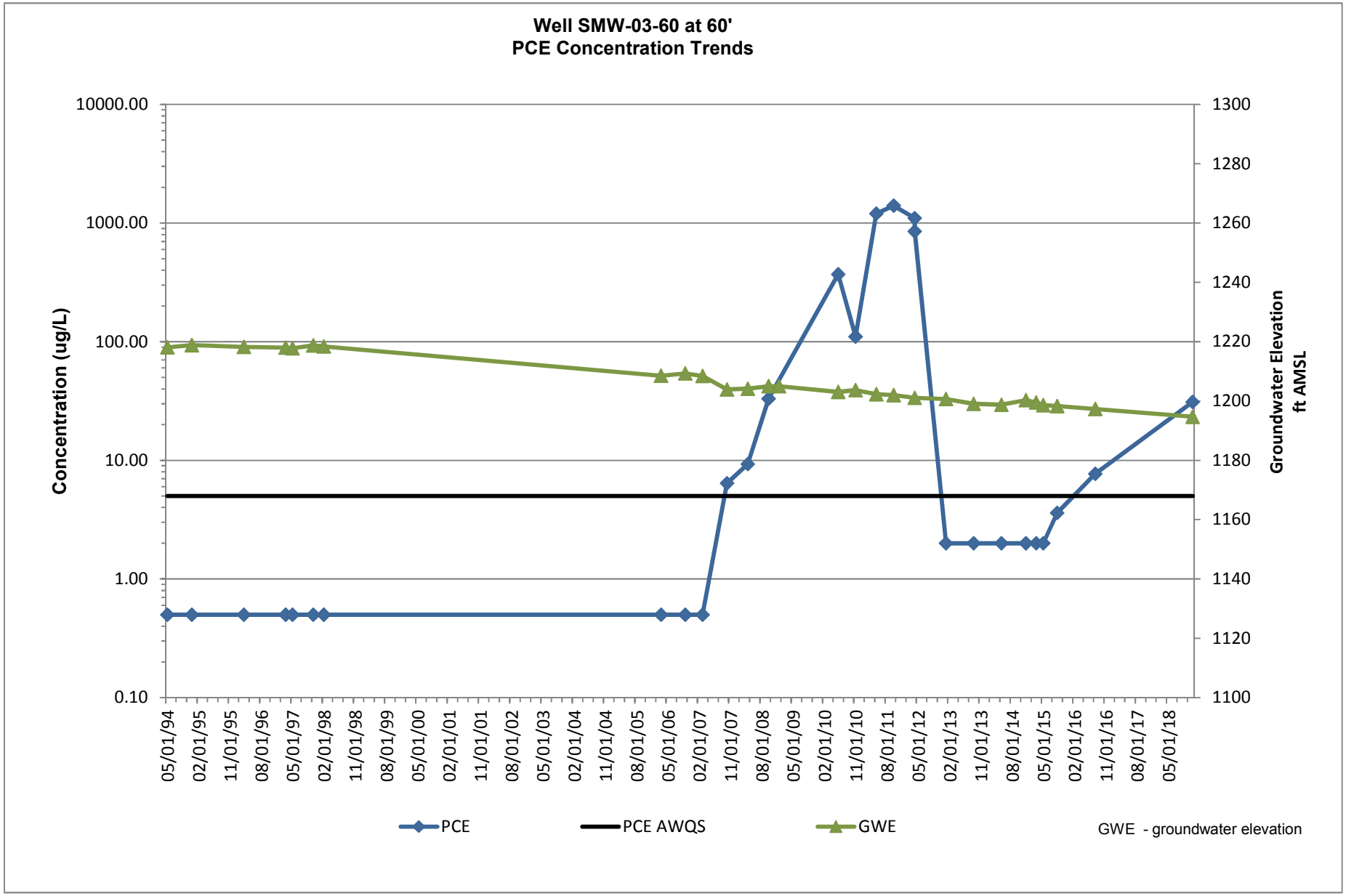
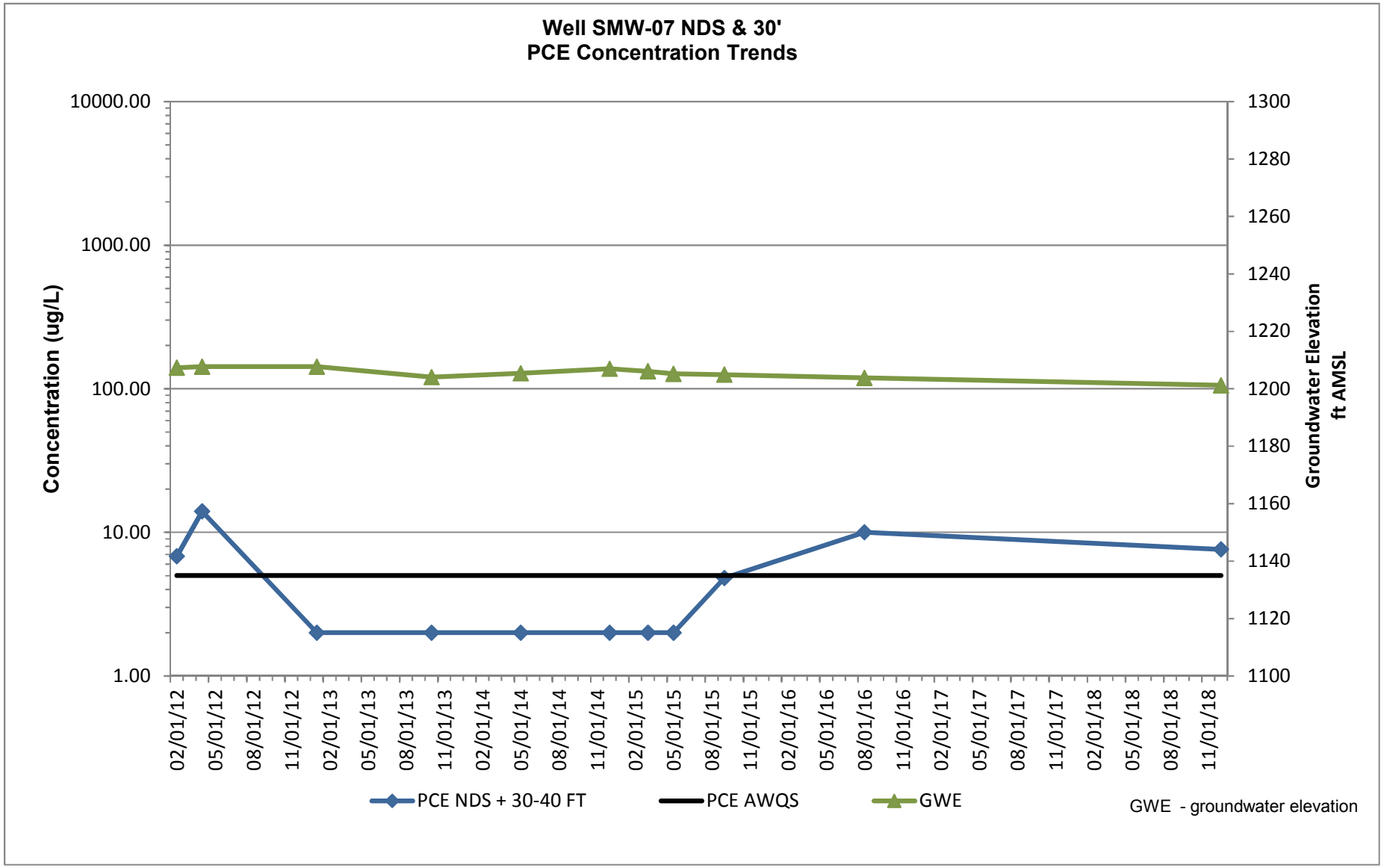
3/1/2014
9/1/2014
3/1/2015
9/1/2015
3/1/2016
9/1/2016
3/1/2017
9/1/2017
3/1/2018
9/1/2018
PCE
PCE AWQS
GWE
GWE - groundwater elevation


Well SMW-01 NDS & 30'
PCE Concentration Trends
Concentration (ug/L)
10000.00
1000.00
100.00
10.00
1.00
0.10
Groundwater Elevation ft AMSL
1300
1280
1260
1240
1220
1200
1180
1160
1140
1120
1100
04/01/92
02/01/93
12/01/93
10/01/94
08/01/95
06/01/96
04/01/97
02/01/98
12/01/98
10/01/99
08/01/00
06/01/01
04/01/02
02/01/03
12/01/03
10/01/04
08/01/05
06/01/06
04/01/07
02/01/08
12/01/08
10/01/09
08/01/10
06/01/11
04/01/12
02/01/13
12/01/13
10/01/14
08/01/15
06/01/16
04/01/17
02/01/18
12/01/18
PCE NDS + 30-40 FT
40+ FT
PCE AWQS
GWE
GWE - groundwater elevation


Well SMW-03-60 at 60'
PCE Concentration Trends
Concentration (ug/L)
10000.00
1000.00
100.00
10.00
1.00
0.10
Groundwater Elevation ft AMSL
1300
1280
1260
1240
1220
1200
1180
1160
1140
1120
1100
05/01/94
02/01/95
11/01/95
08/01/96
05/01/97
02/01/98
11/01/98
08/01/99
05/01/00
02/01/01
11/01/01
08/01/02
05/01/03
02/01/04
11/01/04
08/01/05
05/01/06
02/01/07
11/01/07
08/01/08
05/01/09
02/01/10
11/01/10
08/01/11
05/01/12
02/01/13
11/01/13
08/01/14
05/01/15
02/01/16
11/01/16
08/01/17
05/01/18
PCE
PCE AWQS
GWE
GWE - groundwater elevation


Well SMW-07 NDS & 30'
PCE Concentration Trends
Concentration (ug/L)
10000.00
1000.00
100.00
10.00
1.00
Groundwater Elevation ft AMSL
1300
1280
1260
1240
1220
1200
1180
1160
1140
1120
1100
02/01/12
05/01/12
08/01/12
11/01/12
02/01/13
05/01/13
08/01/13
11/01/13
02/01/14
05/01/14
08/01/14
11/01/14
02/01/15
05/01/15
08/01/15
11/01/15
02/01/16
05/01/16
08/01/16
11/01/16
02/01/17
05/01/17
08/01/17
11/01/17
02/01/18
05/01/18
08/01/18
11/01/18
PCE NDS + 30-40 FT
PCE AWQS
GWE
GWE - groundwater elevation

APPENDIX C

Soil Sampling Analytical Reports
(Included on CD)

APPENDIX D

1996 Soil Gas Summary Results

TABLE 1. SUMMARY OF 1996 SOIL VAPOR SAMPLING RESULTS FOR SANDY'S CLEANERS

(Page 1 of 2)

Borehole Number	Sample Number	Sample Depth (feet bgs) [1]	PCE (μg/l)[2]	TCE (μg/l)	DCE (μg/l)	TCA (μg/l)
DP-1	DP-1-5	5	990	6.1	16	1.0
	DP-1-10	10	540	<5[3]	58	<5
	DP-1-15	15	1,600	<10	<10	<10
DP-2	DP-2-5	5	700	<5	51	<5
	DP-2-10	10	540	<10	69	<10
	DP-2-16	16	400	<5	5.0	<5
DP-3	DP-3-5	5	270	2.0	13	<1
	DP-3-10	10	260	<5	71	<5
	DP-3-15	15	820	<10	86	<10
DP-4	DP-4-5	5	1,200	<25	<25	<25
	DP-4-10	10	2,100	<25	<25	<25
	DP-4-15	15	11	<1	<1	<1
	DP-4-15D [4]	15	13	<1	<1	<1
DP-5	DP-5-5	5	5,400	<25	<25	<25
	DP-5-5D	5D	4,200	<25	<25	<25
	DP-5-10	10	1,600	<10	<10	<10
	DP-5-15	15	1,700	11	<5	6.6
DP-6	DP-6-5	5	3,200	<25	<25	<25
	DP-6-10	10	3,600	<25	<25	<25
	DP-6-10D	10	3,000	<25	<25	<25
	DP-6-15	15	5,600	<25	<25	39
DP-7	DP-7-5	5	2,300	<25	<25	<25
	DP-7-10	10	340	3.8	<1	<1
	DP-7-15	15	2,000	<25	<25	<25

TABLE 1. SUMMARY OF 1996 SOIL VAPOR SAMPLING RESULTS FOR SANDY'S CLEANERS

(Page 2 of 2)

Borehole Number	Sample Number	Sample Depth (feet bgs) (1)	PCE (μg/l) (2)	TCE (μg/l)	DCE (μg/l)	TCA (μg/l)
DP-8	DP-8-5	5	<1	<1	2.7	<1
	DP-8-10	10	<1	<1	4.1	<1
	DP-8-15	15	<1	<1	1.2	<1
DP-9	DP-9-5	5	2,700	<25	<25	<25
	DP-9-10	10	1,100	<10	<10	<10
	DP-9-10D	10D	880	<10	<10	<10
	DP-9-15	15	3,100	<25	<25	<25
DP-10	DP-10-5	5	2,300	<25	<25	<25
	DP-10-10	10	1,100	<10	<10	<10
	DP-10-15	15	1,500	<25	<25	<25

Notes:
(1) bgs = below ground surface
(2) μg/l = Microgram per liter
(3) <5 = Not detected at laboratory reporting limit of 5 μg/L
(4) D = Duplicate sample.

APPENDIX E

PSG Survey Analytical Report

Stantec
8211 South 48th Street
Phoenix, AZ 85044
Attn: Mr. Chuck Graves

Passive Soil Gas Survey – Analytical Report
Date: April 25, 2011

Beacon Project No. 2393a

Project Reference:	48th Street and Indian School Road, Phoenix, AZ
Samplers Installed:	February 13, February 28, and March 11, 2011
Samplers Retrieved:	February 28, March 14, and March 29, 2011
Samples Received:	March 2, March 16, and March 30, 2011
Analyses Completed:	March 4, March 17, and March 31, 2011
Laboratory Data Issued:	March 9, March 22, and April 1, 2011

EPA Method 8260C (Modified)
All samples were successfully analyzed using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation to target a custom compound list following EPA Method 8260C. Laboratory results are reported in nanograms (ng) of specific compound per sample.

Laboratory QA/QC procedures included internal standards, surrogates, and blanks based on EPA Method 8260C. Analyses and reporting were done in accordance with BEACON's Quality Assurance Project Plan.

Reporting limits
The contract required quantification limit (CRQL) is 25 nanograms (ng) for individual compounds and 2,500 ng for Total Petroleum Hydrocarbons (TPH). **Table 1** provides survey results in nanograms per sampler by sample-point number and compound name. The quantification limits (<25 and <2,500 ng) represent a baseline above which results exceed laboratory-determined limits of precision and accuracy. Field sample measurements above the upper calibration standard are estimated; however, these values are reported without qualifiers because all reported measurements are relative to each other and are appropriate to meet the survey objectives of locating source areas and vapor intrusion pathways and defining the lateral extent of contamination.

Calibration Verification
The continuing calibration verification (CCV) values for the system check compounds were all within ±20% of the true values as defined by the initial five-point calibration and met the requirements specified in Beacon Environmental's Quality Assurance Project Plan.

Method Blanks/Trip Blanks
Laboratory method blanks are run with each sample batch to identify contamination present in the laboratory. If contamination is detected on a method blank, measurements of identical compounds in that sample batch are flagged in the laboratory report. The laboratory method blanks analyzed in connection with the present samples revealed no contamination.

The trip blank is a sampler prepared, transported, and analyzed with other samples but intentionally not exposed. Any target compounds identified on the trip blanks are reported in the laboratory data. The analyses of the trip blanks (labeled Trip-1 and Trip-3 in **Table 1**) reported none of the targeted compounds.

Passive Soil-Gas Survey Notes

When sample locations are covered with or near the edge of an artificial surface (*e.g.*, asphalt or concrete), the concentrations of compounds in soil gas are often significantly higher than the concentrations would be if the surfacing were not present. Thus, a reading taken below or near an impermeable surface is much higher than it would be in the absence of such a cap. Therefore, the sample location conditions should be evaluated when comparing results between locations.

Survey findings are exclusive to this project and when the spatial relationships are compared with results of other BEACON Surveys it is necessary to incorporate survey and site information from both investigations (*e.g.*, depth to sources, soil types, porosity, soil moisture, presence of impervious surfacing, sample collection times). BEACON recommends the guidelines stated in **Attachment 1** to establish a relationship between reported soil-gas measurements and actual subsurface contaminant concentrations, which will indicate those measurements representing significant subsurface contamination.

BEACON's passive soil-gas samplers are prepared with two sets of cartridges for subsequent duplicate or confirmatory sample analysis. At Stantec's request, duplicate analysis was performed for PSG-28; which was designated PSG-28-D. When comparing quantitative results, a duplicate correspondence should be considered when the relative percent difference (RPD) between the two samples is less than or equal to 100%. For the purpose of calculating correspondences, all non-detections should be assigned, as a baseline value, the CRQL for the specific contaminant. Based on these assumptions, a 100% correlation was found between the duplicate sample and its base sample.

Project Details

Samplers were deployed on February 13, 2011, and were retrieved on February 28, 2011. During sample retrieval on February 28, Stantec noted that samples PSG-1 through PSG-9 were unable to be retrieved and PSG-21 was installed incorrectly. A new sample was installed at location PSG-21 on February 28, 2011, and retrieved on March 14, 2011. New samples were installed at locations PSG-1 through PSG-9 on March 11, 2011, and were retrieved March 29, 2011. **Attachment 2** describes the field procedures used. Individual deployment and retrieval times will be found in the Field Deployment Report (**Attachment 3**).

Twenty-nine (29) field samples, one (1) duplicate, and one (1) trip blank were received by BEACON on March 2, 2011; one (1) field sample was received on March 16, 2011, and nine (9) field samples and one (1) trip blank were received on March 30, 2011. Adsorbent cartridges from the passive samplers were thermally desorbed, then analyzed using gas chromatography/mass spectrometry (GC/MS) equipment, in accordance with EPA Method 8260C (Modified), as described in **Attachment 4**. BEACON's laboratory analyzed each sample for the targeted compounds; analyses were completed on March 4, 2011, for samples received March 2; March 17, 2011, for the sample received March 16; and March 31, 2011, for samples received March 30. Following a laboratory review, results were provided to Stantec on March 9 and March 22, 2011, with a full data set provided April 1, 2011. The Chain-of-Custody form, which was shipped with the samples for this survey, is supplied as **Attachment 5**.

Sample locations are shown on **Figure 1**. The following table lists frequency of detections based on the number of field samples analyzed, the reporting limit, and the maximum value for each mapped compound. The table also includes the transformation and interpolation method for the compound distribution maps provided.

Figure No.	**2**	**3**	**4**	**5**
Compound	Trichloroethene	Tetrachloroethene	Total BTEX	TPH
Frequency	16	27	7	3
Reporting Limit (nanograms)	25	25	25	2,500
Max Value (nanograms)	635	3,512	728	9,076
Transformation Method	Log	Log	Log	Log
Interpolation Method	Kriging	Kriging	Kriging	Kriging

Attachments:

-1- Applying Results From Passive Soil-Gas Surveys
-2- Field Procedures
-3- Field Deployment Report
-4- Laboratory Procedures
-5- Chain-of-Custody Form

ALL DATA MEET REQUIREMENTS AS SPECIFIED IN THE BEACON ENVIRONMENTAL SERVICES, INC. QUALITY ASSURANCE PROJECT PLAN. RELEASE OF THE DATA CONTAINED IN THIS DATA PACKAGE HAS BEEN AUTHORIZED BY THE LABORATORY DIRECTOR OR HIS SIGNEE, AS VERIFIED BY THE FOLLOWING SIGNATURE:

Steven C. Thornley
Laboratory Director

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	PSG-1	PSG-2	PSG-3	PSG-4	PSG-5	PSG-6
Project Number:	2393	2393	2393	2393	2393	2393
Lab File ID:	A11033108	A11033109	A11033110	A11033111	A11033112	A11033113
Received Date:	3/30/2011	3/30/2011	3/30/2011	3/30/2011	3/30/2011	3/30/2011
Analysis Date:	3/31/2011	3/31/2011	3/31/2011	3/31/2011	3/31/2011	3/31/2011
Analysis Time:	11:42	12:04	12:27	12:50	13:13	13:35
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
Methylene Chloride	<25	<25	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	**164**	**126**	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**51**	<25	<25	<25	<25	<25
Trichloroethene	**45**	**635**	**29**	<25	<25	**40**
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**107**	**56**	<25	**37**	<25	**728**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**800**	**3,512**	**1,388**	**36**	**481**	**143**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	**81**	<25	<25	**42**	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**37**	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**71**	**26**	<25	**77**	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<2,500	**2,892**	<2,500	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	PSG-7	PSG-8	PSG-9	PSG-10	PSG-11	PSG-12
Project Number:	2393	2393	2393	2393	2393	2393
Lab File ID:	A11033114	A11033115	A11033116	A11030316	A11030317	A11030318
Received Date:	3/30/2011	3/30/2011	3/30/2011	3/2/2011	3/2/2011	3/2/2011
Analysis Date:	3/31/2011	3/31/2011	3/31/2011	3/3/2011	3/3/2011	3/3/2011
Analysis Time:	13:58	14:21	14:43	15:16	15:38	15:59
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
Methylene Chloride	<25	<25	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	**30**
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	**42**	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	**32**	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	**48**	**28**	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**89**	**60**	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	**33**	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	**27**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	**4,398**	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	PSG-13	PSG-14	PSG-15	PSG-16	PSG-17	PSG-18
Project Number:	2393	2393	2393	2393	2393	2393
Lab File ID:	A11030319	A11030320	A11030321	A11030322	A11030323	A11030324
Received Date:	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011
Analysis Date:	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011
Analysis Time:	16:19	16:40	17:01	17:22	17:44	18:05
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
Methylene Chloride	<25	<25	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl ether	**42**	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	**72**	<25	**71**	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**31**	**61**	**77**	<25	<25	<25
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**209**	**445**	**538**	**186**	<25	**59**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	**42**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	PSG-19	PSG-20	PSG-21	PSG-22	PSG-23	PSG-24
Project Number:	2393	2393	2393	2393	2393	2393
Lab File ID:	A11030325	A11030326	C11031652	A11030327	A11030328	A11030329
Received Date:	3/2/2011	3/2/2011	3/16/2011	3/2/2011	3/2/2011	3/2/2011
Analysis Date:	3/3/2011	3/3/2011	3/17/2011	3/3/2011	3/3/2011	3/3/2011
Analysis Time:	18:27	18:48	8:29	19:10	19:32	19:53
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
Methylene Chloride	<25	<25	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl ether	<25	<25	**56**	**33**	**44**	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**33**	**56**	**67**	<25	<25	**131**
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**565**	**956**	**811**	**292**	<25	**669**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	**35**
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	**111**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<2,500	<2,500	**4,072**	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	**5,004**	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	PSG-25	PSG-26	PSG-27	PSG-28	PSG-28-D	PSG-29
Project Number:	2393	2393	2393	2393	2393	2393
Lab File ID:	A11030330	A11030331	A11030332	A11030333	A11030334	A11030335
Received Date:	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011
Analysis Date:	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011
Analysis Time:	20:15	20:37	20:58	21:20	21:42	22:03
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
Methylene Chloride	<25	<25	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl ether	**29**	<25	<25	**50**	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	**28**	<25	**84**
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**50**	**162**	<25	**37**	<25	<25
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**548**	**948**	**638**	**352**	**129**	**116**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**27**	**33**	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	PSG-30	PSG-31	PSG-32	PSG-33	PSG-34	PSG-35
Project Number:	2393	2393	2393	2393	2393	2393
Lab File ID:	A11030336	A11030337	A11030338	A11030339	A11030340	A11030341
Received Date:	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011
Analysis Date:	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/4/2011
Analysis Time:	22:25	22:46	23:08	23:30	23:51	0:13
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
Methylene Chloride	<25	<25	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl ether	<25	**32**	**50**	<25	<25	**48**
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	**144**	**46**	<25	<25
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	**29**	**1,850**	**1,009**	**44**	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	PSG-36	PSG-37	PSG-38	PSG-39	mb110303a	mb110316c
Project Number:	2393	2393	2393	2393		
Lab File ID:	A11030342	A11030343	A11030344	A11030345	A11030303	C11031603
Received Date:	3/2/2011	3/2/2011	3/2/2011	3/2/2011		
Analysis Date:	3/4/2011	3/4/2011	3/4/2011	3/4/2011	3/3/2011	3/16/2011
Analysis Time:	0:34	0:56	1:17	1:39	10:34	12:59
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
Methylene Chloride	<25	<25	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl ether	<25	<25	**80**	**40**	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	**38**	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	<2,500	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	mb110331a	Trip 1	Trip-3
Project Number:	2393	2393	2393
Lab File ID:	A11033103	A11030315	A11033107
Received Date:		3/2/2011	3/30/2011
Analysis Date:	3/31/2011	3/3/2011	3/31/2011
Analysis Time:	9:45	14:54	11:19
Units:	ng	ng	ng
COMPOUNDS			
Vinyl Chloride	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25
Methylene Chloride	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25
Methyl-t-butyl ether	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25
Chloroform	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25
Benzene	<25	<25	<25
Trichloroethene	<25	<25	<25
1,4-Dioxane	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25
Toluene	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25
Tetrachloroethene	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25
Chlorobenzene	<25	<25	<25
Ethylbenzene	<25	<25	<25
p & m-Xylene	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25
o-Xylene	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25
Isopropylbenzene	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25
Naphthalene	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25
TPH C_5-C_9	<2,500	<2,500	<2,500
TPH C_{10}-C_{15}	<2,500	<2,500	<2,500

Results in nanograms (ng). J = Estimated value less than five (5) times the method detection limit. B = Detected in method blank.

LEGEND

▲ PSG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

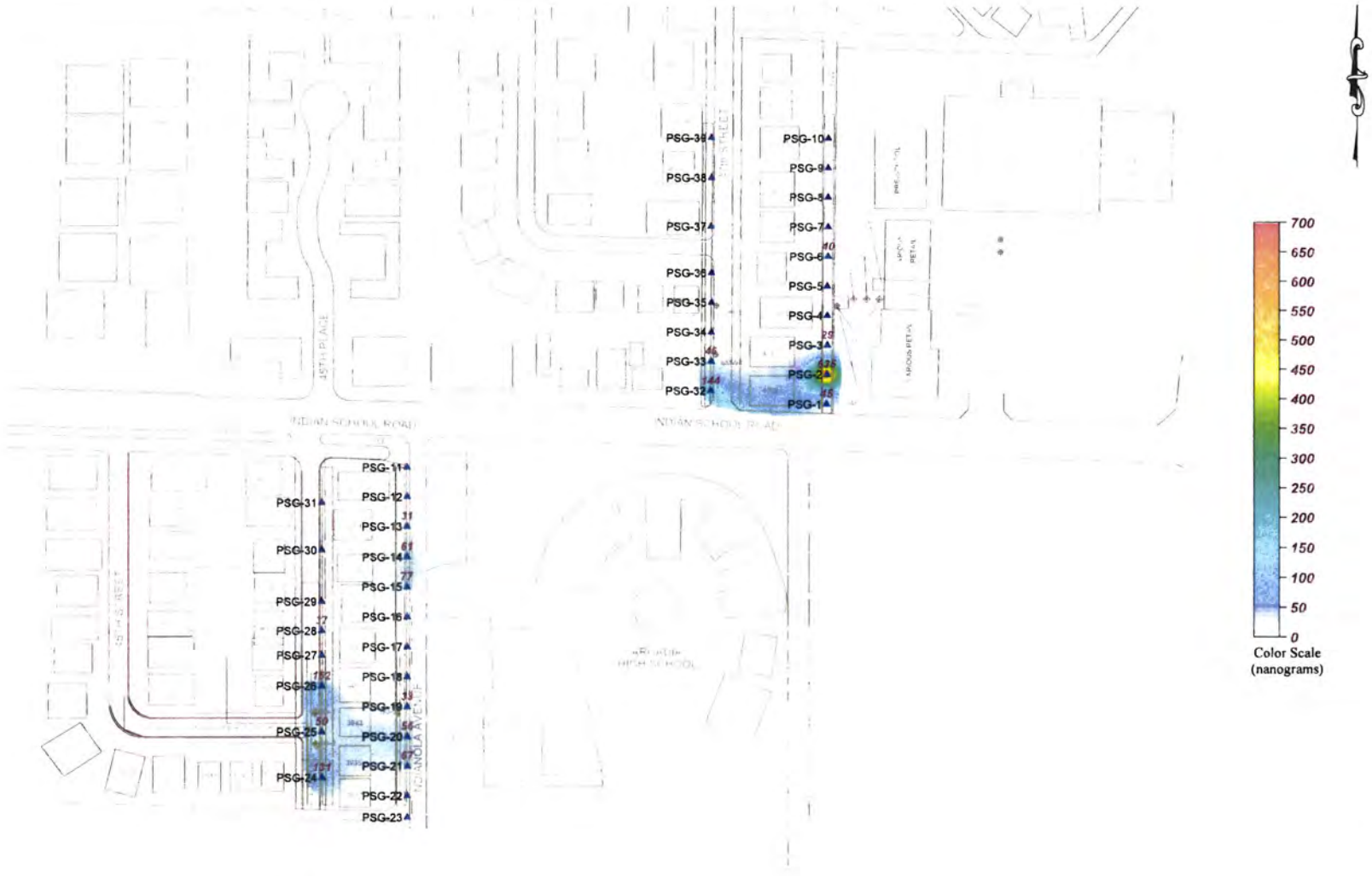
Scale in Feet

0 175 350

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Bel Air, MD, 800-878-5510
Beacon Project No. 2393A, April 2011

Figure 1
Passive Soil-Gas Survey
Sample Locations

48th Street and Indian School Road
Phoenix, AZ



LEGEND

1,000 NANOGRAMS/SAMPLER

▲ PSG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 175 350

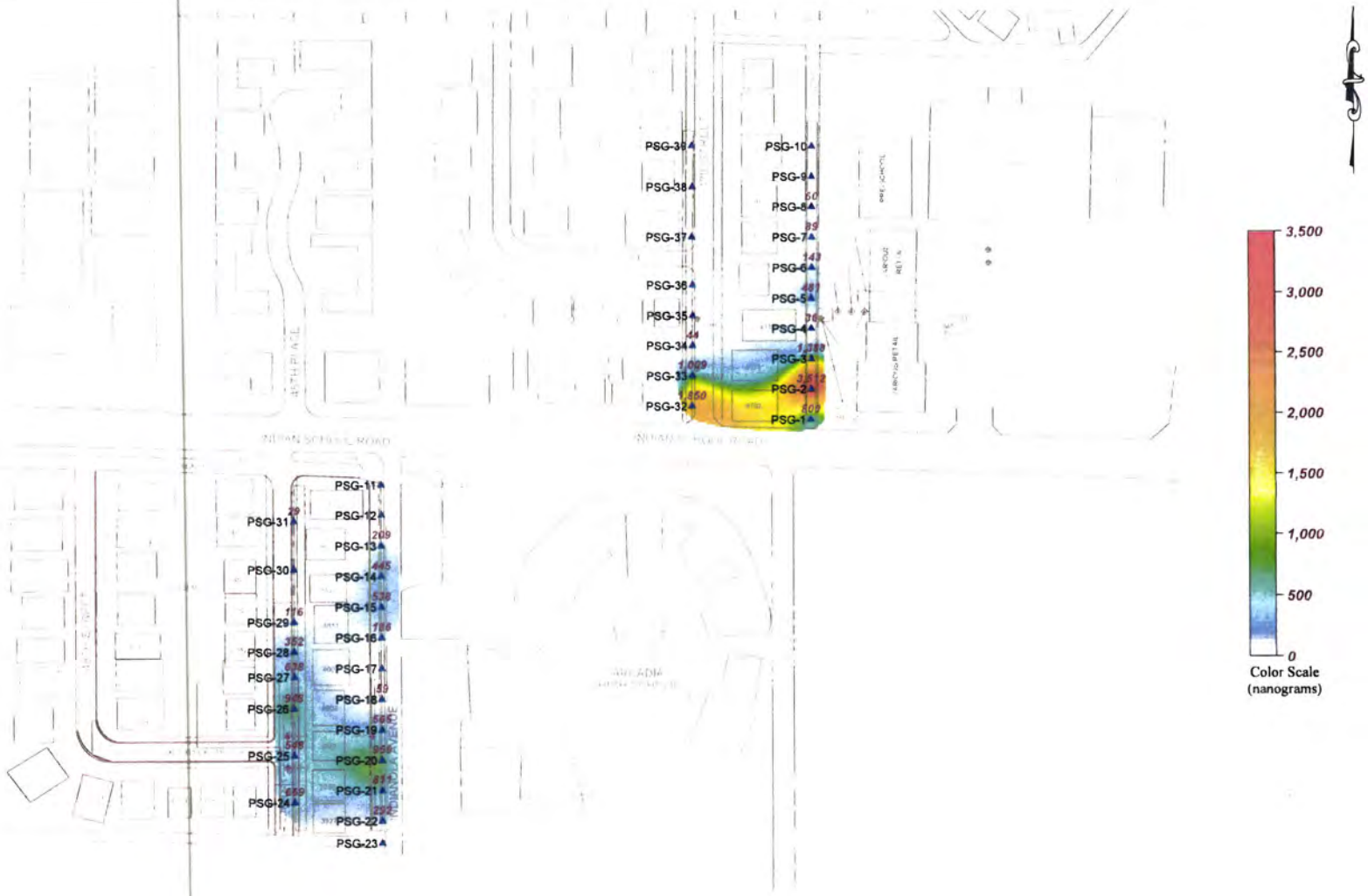
BEACON ENVIRONMENTAL SERVICES, INC.

323 Williams Street, Bel Air, MD, 800-878-5510

Beacon Project No. 2393A, April 2011

Figure 2
Passive Soil-Gas Survey
Trichloroethene

48th Street and Indian School Road
Phoenix, AZ



LEGEND

1,000 NANOGRAMS/SAMPLER

▲ PSG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 175 350

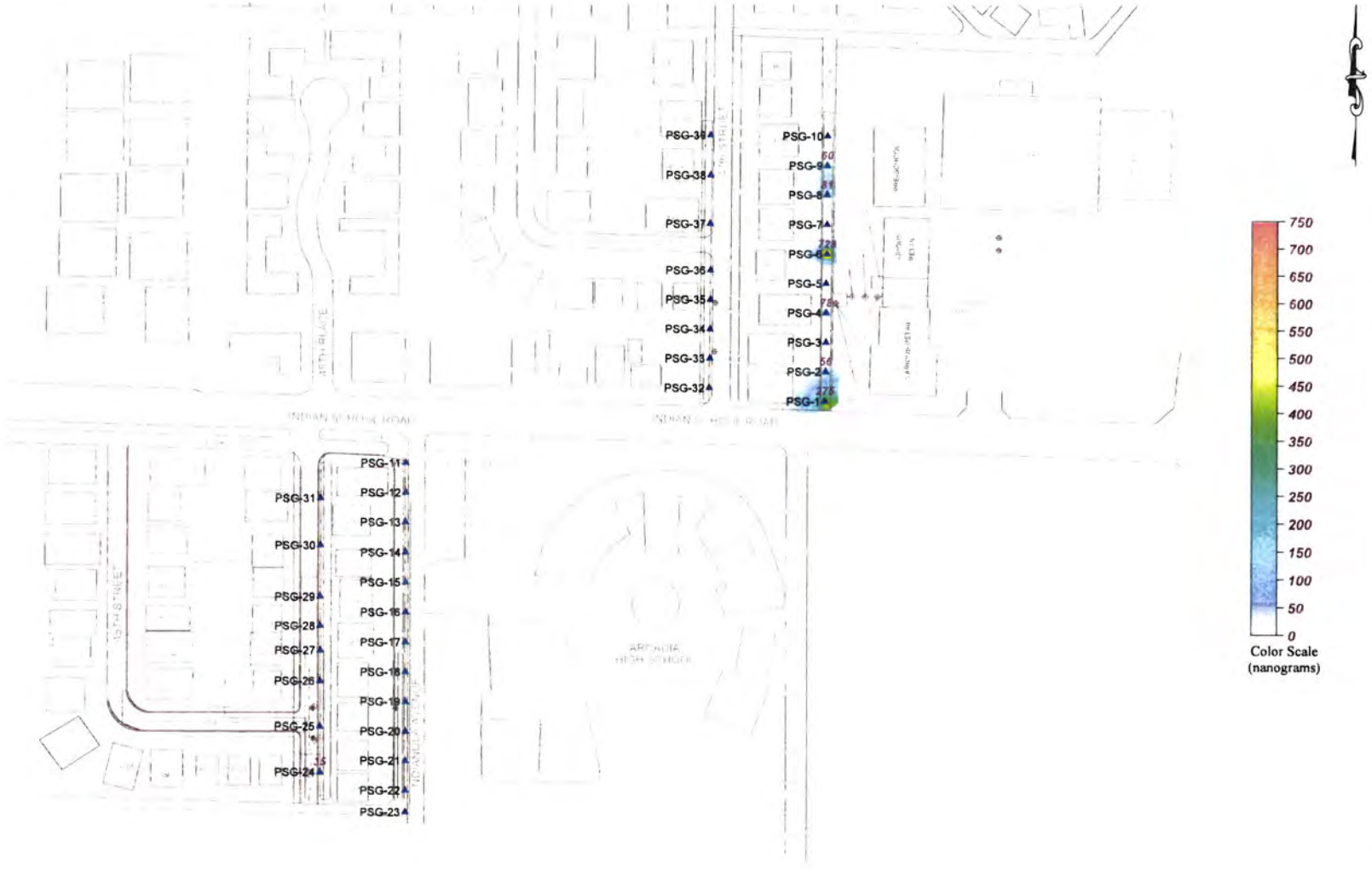
BEACON ENVIRONMENTAL SERVICES, INC.

323 Williams Street, Bel Air, MD, 800-878-5510

Beacon Project No. 2393A, April 2011

Figure 3
Passive Soil-Gas Survey
Tetrachloroethene

48th Street and Indian School Road
Phoenix, AZ



LEGEND

1,000 NANOGRAMS/SAMPLER

PSG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 175 350

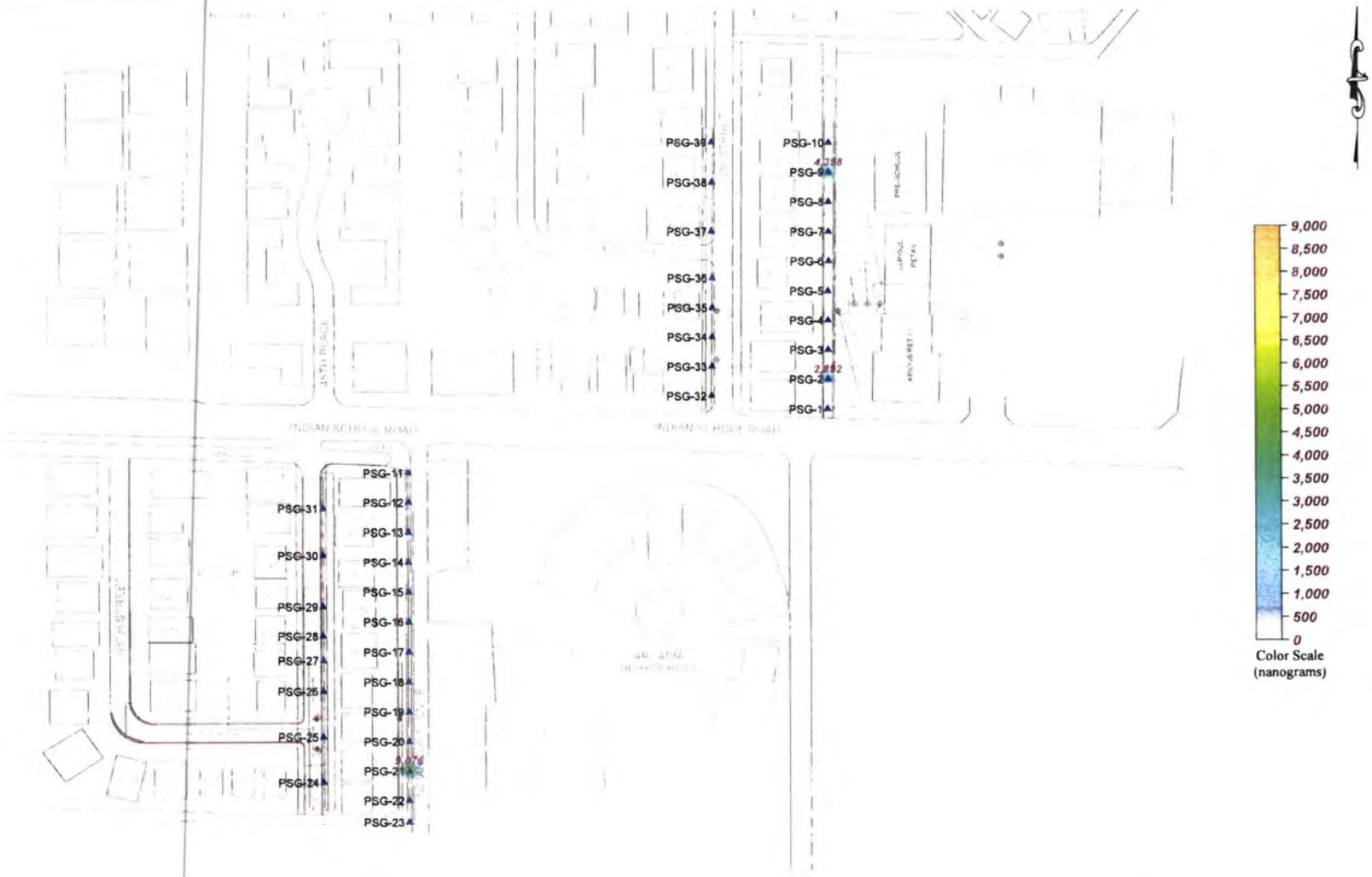
BEACON ENVIRONMENTAL SERVICES, INC.

323 Williams Street, Bel Air, MD, 800-878-5510

Beacon Project No. 2393A, April 2011

Figure 4
Passive Soil-Gas Survey
Total BTEX

48th Street and Indian School Road
Phoenix, AZ



LEGEND

1,000 NANOGRAMS/SAMPLER

▲ PSG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 175 350

BEACON ENVIRONMENTAL SERVICES, INC.

323 Williams Street, Bel Air, MD, 800-878-5510

Beacon Project No. 2393A, April 2011

Figure 5
Passive Soil-Gas Survey
Total Petroleum Hydrocarbons

48th Street and Indian School Road
Phoenix, AZ

Attachments

Attachment 1

APPLYING RESULTS FROM PASSIVE SOIL-GAS SURVEYS

The utility of soil-gas surveys is directly proportional to their accuracy in reflecting and representing changes in the subsurface concentrations of source compounds. Passive soil-gas survey results are the mass collected from the vapor-phase emanating from the source(s). The vapor-phase is merely a fractional trace of the source(s) and, as a matter of convenience, the units used in reporting detection values from passive soil-gas surveys are smaller than those employed for source-compound concentrations.

Whatever the relative concentrations of source and associated soil gas, best results are realized when the ratio of soil-gas measurements to actual subsurface concentrations remains as close to constant as the real world permits. It is the reliability and consistency of this ratio, not the particular units of mass (*e.g.*, nanograms) that determine usefulness. Thus, BEACON emphasizes the necessity of conducting — at minimum — follow-on intrusive sampling in areas that show relatively high soil-gas measurements to obtain corresponding concentrations of soil and groundwater contaminants. These correspondent values furnish the basis for approximating a relationship. For extrapolating passive soil gas results to vapor intrusion evaluations, we recommend a minimum of three passive soil gas locations be converted to a shallow vapor well then sampled using an active soil gas method. Once a relationship is established, it can be used in conjunction with the remaining soil-gas measurements to estimate subsurface contaminant concentrations across the survey field. (See www.beacon-usa.com/passivesoilgas.html, Publication 1: *Mass to Concentration Tie-In for PSG Surveys* and Publication 4: *Groundwater and PSG Correlation.*) It is important to keep in mind, however, that specific conditions at individual sample points, including soil porosity and permeability, depth to contamination, and perched ground water, can have an impact on soil-gas measurements at those locations.

When passive soil-gas surveys are utilized as described above, the data provide information that can yield substantial savings in drilling costs and in time. They furnish, among other things, a checklist of compounds expected at each survey location and help to determine how and where drilling budgets can most effectively be spent. Passive soil-gas surveys can also be used as a remediation or general site monitoring tool that can be implemented on a quarterly, semi-annual or annual basis.

Attachment 2

FIELD PROCEDURES FOR PASSIVE SOIL-GAS SURVEYS

The following field procedures are routinely used during a BEACON Passive Soil-Gas Survey. Modifications can be and are incorporated from time to time in response to individual project requirements. In all instances, BEACON adheres to EPA-approved Quality Assurance and Quality Control practices.

A. Field personnel carry a BESURE Sample Collection Kit™ and support equipment to the site and deploy the passive samplers in a prearranged survey pattern. A passive sampler consists of a borosilicate glass vial containing hydrophobic adsorbent cartridges with a length of wire attached to the vial for retrieval. Although samplers require only one person for emplacement and retrieval, the specific number of field personnel required depends upon the scope and schedule of the project. Each Sampler emplacement generally takes less than two minutes.

B. At each survey point a field technician clears vegetation as needed and, using a hammer drill with a 1"- to 1½"-diameter bit, creates a hole 12 to 14 inches deep. [Note: For locations covered with asphalt, concrete, or gravel surfacing, the field technician drills a 1"- to 1½"-diameter hole through the surfacing to the soils beneath]. The technician then, using a hammer drill with a ½" diameter bit, creates a hole three-feet deep. The hole is then sleeved with a 1"-diameter metal sleeve.

C. The technician then removes the solid plastic cap from a sampler and replaces it with a Sampling Cap (a plastic cap with a hole covered by screen meshing). The technician inserts the sampler, with the Sampling Cap end facing down, into the hole (**see attached figure**). The sampler is then covered with an aluminum foil plug and soils for uncapped locations or, for capped locations, an aluminum foil plug and a concrete patch. The sampler's location, time and date of emplacement, and other relevant information are recorded on the Field Deployment Form.

D. One or more trip blanks are included as part of the quality-control procedures.

E. Once all the samplers have been deployed, field personnel schedule sampler recovery and depart, taking all other equipment and materials with them.

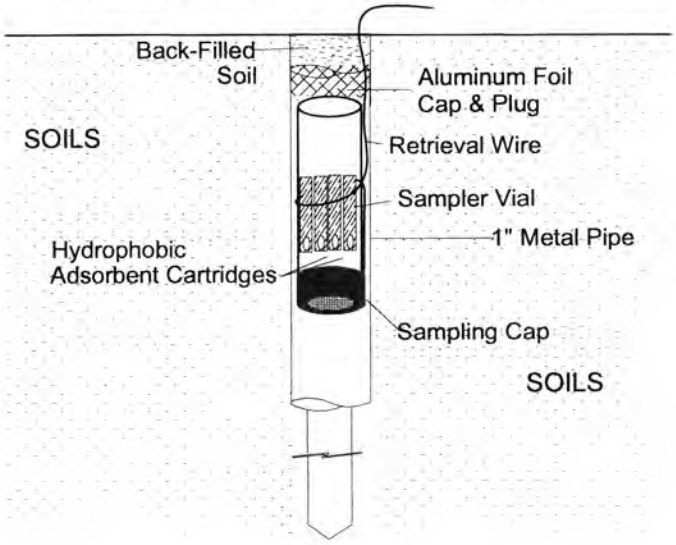
F. Field personnel retrieve the samplers at the end of the exposure period. At each location, a field technician withdraws the sampler from its hole, removes the retrieval wire, and wipes the outside of the vial clean using gauze cloth; following removal of the Sampling Cap, the threads of the vial are also cleaned. A solid plastic cap is screwed onto the vial and the sample location number is written on the label. The technician then records sample-point location, date, time, etc. on the Field Deployment Form.

G. Sampling holes are refilled with soil, sand, or other suitable material. If samplers have been installed through asphalt or concrete, the hole is filled to grade with a plug of cold patch or cement.

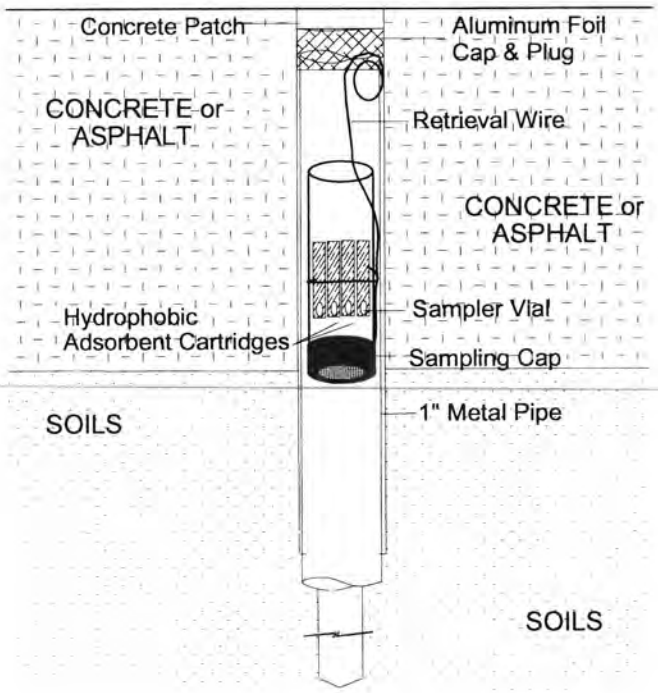
H. Following retrieval, field personnel ship or transport the passive samplers to BEACON's laboratory.

BEACON'S PASSIVE SOIL-GAS SAMPLER

DEPLOYMENT THROUGH SOILS



DEPLOYMENT THROUGH AN ASPHALT/CONCRETE CAP



Attachment 3

Field Deployment Report

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2393
Site Name:	48th Street and Indian School Road
Site Location:	Phoenix, AZ

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 874-5510

Client Information	
Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Collected By:	CHUCK Graves

FIELD SAMPLE ID	Date Emplaced / Time Emplaced	Date Retrieved / Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings)
	2/13/11	2/28/11		
PSG-1	1026	*NO sample	30	*NO sample ALLEY NORTH OF INDIAN SCHOOL ROAD
PSG-2	1035		30	*NO SAMPLE - Sampler stolen - could NOT Locate
PSG-3	1045		30	
PSG-4	1052		30	
PSG-5	1057		30	
PSG-6	1104		30	
PSG-7	1109		30	
PSG-8	1115		30	
PSG-9	1120		30	
PSG-10	1129	1300	30	OK - GOOD CONDITION

*samples PSG-1 through PSG-9 were stolen and could not be located.

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2393
Site Name:	48th Street and Indian School Road
Site Location:	Phoenix, AZ

BEACON ENVIRONMENTAL SERVICES, INC.

Client Information	
Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Collected By:	CHUCK GRAVES

FIELD SAMPLE ID	Date Emplaced 2/13/11 Time Emplaced	Date Retrieved 2/28/11 Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings)
PSG-11	1302	1427	30	ALLEY SOUTH OF INDIAN SCHOOL [illegible]
PSG-12	1310	1430	30	OF SCHOOL
PSG-13	1317	1436	30	
PSG-14	1323	1440	30	
PSG-15	1332	1445	30	
PSG-16	1337	1450	30	
PSG-17	1359	1453	30	
PSG-18	1405	1455	30	
PSG-19	1410	1457	30	
PSG-20	1416	1500	30	
PSG-21	1420	*11:30	30	— STORAGE CUP WAS ON - Pull in 14 more DAYS.
PSG-22	1429	1508	30	
PSG-23	1437	1510	30	

*Pulled on 3/14/2011

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2393
Site Name:	48th Street and Indian School Road
Site Location:	Phoenix, AZ

BEACON ENVIRONMENTAL SERVICES, INC
522 Williams Street, Suite D, Bel Air, MD 21014 [illegible]

Client Information	
Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Collected By:	CHUCK Graves

FIELD SAMPLE ID	Date Emplaced / Time Emplaced	Date Retrieved / Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings)	DIST FROM SOUTH COURSE (ROCK)
	2/13/11	2/28/11			
PSG-24	1521	1516	30	45TH PLACE SOUTH OF INDIAN SCHOOL	54'
PSG-25	1528	1518	30		131'
PSG-26	1533	1522	30		208'
PSG-27	1540	1525	30		260'
PSG-28	1545	1530	30	DUPLICATE INSTALLED (PSG-28 D)	301'
PSG-29	1559	1532	30		351'
PSG-30	1607	1538	30		436'
PSG-31	1626	1535	30	NO TUBE	514'

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2393
Site Name:	48th Street and Indian School Road
Site Location:	Phoenix, AZ

BEACON ENVIRONMENTAL SERVICES, INC.
523 Williams Street, Suite D, Del Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Collected By:	CHUCK Graves

FIELD SAMPLE ID	Date Emplaced 2/13/11 Time Emplaced	Date Retrieved 2/28/11 Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings)	~~PIT~~ DOWN STOP SIGN (17)
PSG-32	1717	1544	30	47TH ST. NORTH OF INDIAN SCHOOL	50
PSG-33	1722	1546	30		100
PSG-34	1734	1549	30		150
PSG-35	1739	1551	30		194
PSG-36	1745	1555	30	Sampler Was Damp	296
PSG-37	1753	1558	30		364
PSG-38	1759	1605	30		420
PSG-39	1806	1610	30		~~477~~ ≈500

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2306B
Site Name:	Indian School Road
Site Location:	Phoenix, AZ

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 576-5510

Client Information	
Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Collected By:	CHUCK Graves

FIELD SAMPLE ID	Date Emplaced 3/11/11 / Time Emplaced	Date Retrieved 3/29/11 / Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (*e.g.*, asphalt/concrete/gravel, description of sample location, PID/FID readings)
PSG-1	10:35	10:05	18"	In dirt Alleyway along block Fence
PSG-2	10:41	10:10		
PSG-3	10:56	10:15		
PSG-4	11:04	10:22		
PSG-5	11:11	10:27		
PSG-6	11:15	10:36		
PSG-7	11:19	10:44		
PSG-8	11:24	10:50		
PSG-9	11:35	11:15		

Attachment 4

LABORATORY PROCEDURES FOR PASSIVE SOIL-GAS SAMPLES

Following are laboratory procedures used with BEACON Passive Soil-Gas Surveys, a screening technology for expedited site investigation. After exposure, adsorbent cartridges from the passive samplers are analyzed using U.S. EPA Method 8260C as described in the Solid Waste Manual (SW-846), a capillary gas chromatographic/mass spectrometric method, modified to accommodate high temperature thermal desorption of the adsorbent cartridges and to meet the objecitves of reporting semi-quantitative data. This procedure is summarized as follows:

A. The adsorbent cartridges are loaded with internal standards and surrogates prior to loading the autosampler with the cartridges. The loaded cartridges are purged in a helium flow. Then the cartridges are thermally desorbed in a helium flow onto a focusing trap. Any analytes in the helium stream are adsorbed onto a focusing trap.

B. Following trap focusing, the trap is thermally desorbed onto either a DB-VRX 20 m, 0.18 mm ID, 1.00 micron filament thickness capillary column or Rxi-624Sil MS 20m, 0.18 mm ID, 1.00 micron filament thickness capillary column.

C. The GC/MS is scanned between 35 and 270 Atomic Mass Units (AMU) at 3.12 scans per second.

D. BFB tuning criteria and the initial five-point calibration procedures are those stated in method SW846-8260C. System performance and calibration check criteria are met prior to analysis of samples. A laboratory method blank is analyzed after the daily standard to determine that the system is contaminant-free.

E. The instrumentation used for these analyses includes:

- Agilent 6890-5973a Gas Chromatograph (with Rxi column)/Mass Spectrometer;
- Markes Unity thermal desorber;
- Markes UltrA autosampler; and
- Markes Mass Flow Controller Modules

- Agilent 7890-5975c Gas Chromatograph (with DB-VRX column)/Mass Spectrometer;
- Markes Unity2 thermal desorber;
- Markes UltrA2 autosampler; and
- Markes Mass Flow Controller Modules.

Attachment 5

Chain-of-Custody Form

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

BEACON ENVIRONMENTAL

Project Information

Beacon Project No.:	2393
Site Name:	48th Street and Indian School Road
Site Location:	Phoenix, AZ
Analytical Method:	EPA Method 8260C
Target Compounds:	Beacon Project Number 2393 Target Compound List

Client Information

Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Submitted By:	CHUCK GRAVES
Contact Phone No.:	602-707-4732

Field Sample ID	Lab Sample ID (for lab use only)		Comments (only necessary if problem or discrepancy)	Condition of sample or vial	Date	Time	Initial
PSG-10	2393	PSG-10		GOOD	2/28/11	1300	CMD
PSG-11	2393	PSG-11				1427	CMD
PSG-12	2393	PSG-12				1430	CMD
PSG-13	2393	PSG-13				1436	CMD
PSG-14	2393	PSG-14				1440	CMD
PSG-15	2393	PSG-15				1445	CMD
PSG-16	2393	PSG-16				1450	CMD
PSG-17	2393	PSG-17				1453	CMD
PSG-18	2393	PSG-18				1455	CMD
PSG-19	2393	PSG-19				1457	CMD
PSG-20	2393	PSG-20				1500	CMD
PSG-22	2393	PSG-22				1502	CMD
PSG-23	2393	PSG-23				1510	CMD
PSG-24	2393	PSG-24				1514	CMD
PSG-25	2393	PSG-25				1518	CMD
PSG-26	2393	PSG-26				1522	CMD
PSG-27	2393	PSG-27				1525	CMD
PSG-28	2393	PSG-28				1530	CMD
PSG-28D	2393	PSG-28D	Has own vial			1530	CMD
PSG-29	2393	PSG-29				1532	CMD

Shipment of Field Kit to Site — Custody Seal # 1036906

Relinquished by:	Date/Time	Courier	Intact? Y N Received by:	Date/Time
Ryan School	01-04-2011 1700 Hours	FedEx	Chuck Graves	1/5/2011 10:00

Shipment of Field Kit to Laboratory — Custody Seal #

Relinquished by:	Date/Time	Courier	Intact? Y N Received by:	Date/Time
Chuck Graves	3/1/2011 1600	FedEx	Kenny Ipencho	3/02/2011 1000 hours

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

BEACON ENVIRONMENTAL

Project Information

Beacon Project No.:	2393
Site Name:	48th Street and Indian School Road
Site Location:	Phoenix, AZ
Analytical Method:	EPA Method 8260C
Target Compounds:	Beacon Project Number 2393 Target Compound List

Client Information

Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Submitted By:	CHUCK GRAVES
Contact Phone No.:	602 707-4732

Comments
(only necessary if problem or discrepancy)

Field Sample ID	Lab Sample ID (for lab use only)	Condition of sample or vial	Date	Time	Initial
PSG-30	2393 PSG-30	(TCED)	2/25/11	1530	CMZ
PSG-31	2393 PSG-31			1535	CMZ
PSG-32	2393 PSG-32			1544	CMZ
PSG-33	2393 PSG-33			1546	CMZ
PSG-34	2393 PSG-34			1549	CMZ
PSG-35	2393 PSG-35			1551	CMZ
PSG-36	2393 PSG-36			1555	CMZ
PSG-37	2393 PSG-37			1559	CMZ
PSG-38	2393 PSG-38			1605	CMZ
PSG-39	2393 PSG-39			1610	CMZ
Trip Blank	2393 Trip Blank		—	—	CMZ

Shipment of Field Kit to Site — Custody Seal # 1036906 Intact? Y N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Ryan Scheid	01-04-2011 / 1700 Hours	FedEx	[illegible]	1/5/2011 10:00

Shipment of Field Kit to Laboratory — Custody Seal # Intact? Y N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
[illegible]	3/1/11 1600	FedEx	Kenny Ipencho	03/02/2011 1000 hours

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

BEACON ENVIRONMENTAL

Project Information		Client Information	
Beacon Project No.:	2393	Company Name:	Stantec
Site Name:	48th Street and Indian School Road	Office Location:	Phoenix, AZ
Site Location:	Phoenix, AZ	Samples Submitted By:	Chuck Graves
Analytical Method:	EPA Method 8260C	Contact Phone No.:	602 707-4732
Target Compounds:	Beacon Project Number 2393 Target Compound List		

Field Sample ID	Lab Sample ID (for lab use only)	Comments (only necessary if problem or discrepancy) Condition of sample or vial	Date	Time	Initial
PSG-21	2393 PSG-21	48th ST. Sampled not pulled with previous sample	3/14/2011	11:30	CMB

Shipment of Field Kit to Site — Custody Seal # 1036906 Intact? (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Ryan Schad	01-04-2011 / 1700 Hours	FedEx	[illegible]	1-5-2011 11:30

Shipment of Field Kit to Laboratory — Custody Seal # Intact? Y N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
[illegible]	3/15/2011 1600	FEDEX	Kenny Ifeacho	03-16-2011 / 1000 hrs

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

Project Information	
Beacon Project No.:	2393
Site Name:	48th Street and Indian School Road
Site Location:	Phoenix, AZ
Analytical Method:	EPA Method 8260C
Target Compounds:	Beacon Project Number 2393 Target Compound List

BEACON ENVIRONMENTAL SERVICES, INC.
525 Williams Street, Suite D, Bel Air, MD 21014 (800) 875-5510

Client Information	
Company Name:	Stantec
Office Location:	Phoenix, AZ
Samples Submitted By:	CHUCK Graves
Contact Phone No.:	602-707-4732

Field Sample ID	Lab Sample ID (for lab use only)	Comments (only necessary if problem or discrepancy) Condition of sample or vial	Date	Time	Initial
PSG-1	2393 PSG-1		3/29/11	1005	CMR
PSG-2	2393 PSG-2			1010	CMR
PSG-3	2393 PSG-3			1015	CMR
PSG-4	2393 PSG-4			1022	CMR
PSG-5	2393 PSG-5			1027	CMR
PSG-6	2393 PSG-6			1036	CMR
PSG-7	2393 PSG-7			1044	CMR
PSG-8	2393 PSG-8			1050	CMR
PSG-9	2393 PSG-9			1115	CMR
Trip Blank	2393 Trip-Blank			—	

Shipment of Field Kit to Site — Custody Seal # 1036906 Intact? Y N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Ryan Schell	01-04-2011 / 1700 Hours	FedEx	[illegible]	

Shipment of Field Kit to Laboratory — Custody Seal # 1036907 Intact? Y N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
[illegible]	3/29/11 1600	FedEx	Kenny Ipacho	03.30-2011 / 1200 hrs

TABLE 1
SUMMARY OF PASSIVE SOIL GAS MODULE RESULTS - SELECTED VOCs
48TH STREET AND INDIAN SCHOOL ROAD ECP WQARF SITE
PHOENIX, ARIZONA

Sample ID	Sample Date	Tetrachloroethene	Trichloroethene	Benzene	Toluene	Ethylbenzene	TPH (C5-C9)	TPH (C10-C15)	Chloroform	m- & p-Xylene	o-Xylene	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	n-Butylbenzene	Methyl tert-Butyl Ether
		Results reported in nanograms													
1	2/11/2009	<25	<25	<25	28	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
2	2/11/2009	199	<25	<25	123	<25	<2,500	<2,500	77	72	31	<25	<25	<25	<25
3	2/11/2009	508	<25	<25	125	<25	<2,500	<2,500	<25	41	<25	<25	<25	<25	<25
4	2/11/2009	470	<25	<25	220	<25	<2,500	<2,500	<25	38	30	<25	28	<25	<25
5	2/11/2009	1,294	<25	<25	<25	<25	<2,500	<2,500	98	<25	<25	<25	<25	<25	<25
6	2/11/2009	1,576	<25	<25	29	<25	<2,500	<2,500	55	<25	<25	<25	<25	<25	<25
7	2/11/2009	550	<25	<25	274	<25	<2,500	<2,500	317	56	38	<25	<25	<25	<25
8	2/11/2009	<25	<25	<25	546	<25	<2,500	<2,500	475	71	29	<25	<25	<25	<25
9 (1)	2/11/2009	32	<25	<25	97	<25	<2,500	<2,500	313	45	29	<25	<25	<25	<25
10	2/11/2009	<25	<25	<25	142	40	<2,500	<2,500	73	120	78	<25	45	29	<25
11	2/11/2009	<25	<25	<25	100	<25	<2,500	<2,500	239	48	31	<25	<25	<25	<25
12	2/11/2009	<25	<25	<25	341	39	<2,500	<2,500	40	114	69	<25	25	<25	<25
13	2/11/2009	<25	<25	<25	85	<25	<2,500	<2,500	64	63	35	<25	<25	<25	<25
14	2/11/2009	<25	<25	<25	242	<25	<2,500	<2,500	44	55	30	46	<25	<25	<25
PSG-1 (2)	3/29/2011	800	45	51	107	<25	<2,500	<2,500	<25	81	37	<25	71	<25	<25
PSG-2 (2)	3/29/2011	3,512	635	<25	56	<25	2,892	<2,500	164	<25	<25	<25	26	<25	<25
PSG-3 (2)	3/29/2011	1,388	29	<25	<25	<25	<2,500	<2,500	126	<25	<25	<25	<25	<25	<25
PSG-4 (2)	3/29/2011	36	<25	<25	37	<25	<2,500	<2,500	<25	42	<25	<25	77	<25	<25
PSG-5 (2)	3/29/2011	481	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-6 (2)	3/29/2011	143	40	<25	728	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-7 (2)	3/29/2011	89	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-8 (2)	3/29/2011	60	<25	<25	48	<25	<2,500	<2,500	<25	33	<25	<25	<25	<25	<25
PSG-9 (2)	3/29/2011	<25	<25	32	28	<25	<2,500	4,398	42	<25	<25	<25	<25	<25	<25
PSG-10	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-11	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	27	<25	<25
PSG-12	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	30
PSG-13	2/28/2011	209	31	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	42
PSG-14	2/28/2011	445	61	<25	<25	<25	<2,500	<2,500	72	<25	<25	<25	<25	<25	<25
PSG-15	2/28/2011	538	77	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-16	2/28/2011	186	<25	<25	<25	<25	<2,500	<2,500	71	<25	<25	<25	<25	<25	<25
PSG-17	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	42	<25	<25
PSG-18	2/28/2011	59	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-19	2/28/2011	565	33	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-20	2/28/2011	956	56	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-21 (3)	3/14/2011	811	67	<25	<25	<25	4,072	5,004	<25	<25	<25	<25	<25	<25	56
PSG-22	2/28/2011	292	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	33
PSG-23	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	44
PSG-24	2/28/2011	669	131	<25	<25	<25	<2,500	<2,500	<25	35	<25	<25	111	<25	<25
PSG-25	2/28/2011	548	50	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	27	<25	29
PSG-26	2/28/2011	948	162	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	33	<25	<25
PSG-27	2/28/2011	638	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-28	2/28/2011	352	37	<25	<25	<25	<2,500	<2,500	28	<25	<25	<25	<25	<25	50
PSG-28-D	2/28/2011	129	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25

TABLE 1
SUMMARY OF PASSIVE SOIL GAS MODULE RESULTS - SELECTED VOCs
48TH STREET AND INDIAN SCHOOL ROAD ECP WQARF SITE
PHOENIX, ARIZONA

Sample ID	Sample Date	Tetrachloroethene	Trichloroethene	Benzene	Toluene	Ethylbenzene	TPH (C5-C9)	TPH (C10-C15)	Chloroform	m- & p-Xylene	o-Xylene	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	n-Butylbenzene	Methyl tert-Butyl Ether
		Results reported in nanograms													
PSG-29	2/28/2011	**116**	<25	<25	<25	<25	<2,500	<2,500	**84**	<25	<25	<25	<25	<25	<25
PSG-30	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-31	2/28/2011	**29**	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	**32**
PSG-32	2/28/2011	**1,850**	**144**	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	**50**
PSG-33	2/28/2011	**1,009**	**46**	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-34	2/28/2011	**44**	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-35	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	**48**
PSG-36	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-37	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
PSG-38	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	**80**
PSG-39	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	**38**	<25	<25	<25	<25	<25	**40**
TRIP BLANKS															
Trip Blank	2/11/2009	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
Trip 1	2/28/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25
Trip-3	3/29/2011	<25	<25	<25	<25	<25	<2,500	<2,500	<25	<25	<25	<25	<25	<25	<25

Notes:
ECP = East Central Phoenix
WQARF = Water Quality Assurance Revolving Fund
(1) = Sample integrity was not maintained. Evidence of tampering of sample device was observed during collection.
(2) Samplers PSG-1 through PSG-9 were originally deployed on 2/13/2011 but were stolen from the installed locations. Replacement samplers were installed on 3/11/2011 and retrieved on 3/29/2011.
(3) Sampler PSG-21 appeared to be installed incorrectly, it was redeployed on February 28, 2011 and retrieved on March 14, 2011.
VOCs = volatile organic compounds
TPH = Total Petroleum Hydrocarbons
bold = compound detected above laboratory reporting limit

The laboratory data presented in this table was obtained directly from analytical reports submitted to Stantec by the analytical laboratory. The relevant analytical reports are provided as appendices to this report. Any data qualifiers presented in these tables are limited to those provided in the laboratory reports, and are not the result of a data verification or validation effort by Stantec.

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FOR:
EAST CENTRAL PHOENIX
32ND STREET &
INDIAN SCHOOL ROAD
WQARF SITE
PHOENIX, ARIZONA

PASSIVE SOIL GAS MODULE LOCATIONS

FIGURE: 5

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202351	CRJ	TAK	TAK	02/08/2012

FILEPATH:I:\ASRAC\East Central Phoenix\48th St & Indian School (20420)\4.4 Reports\Report Figures\FIGURE 5 -PASSIVE SOIL GAS MODULE LOCATIONS.dwg|cjames|Feb 08, 2012 at 15:52|Layout: FIGURE 5 - PSG MODULE LOCATIONS

APPENDIX F

Historical Soil Vapor Sampling Analytical Reports
(Included on CD)

APPENDIX G

Indoor Air Sampling Analytical Reports
(Included on CD)

APPENDIX H

Historical Groundwater Sampling Analytical Reports
(Included on CD)

APPENDIX I

Groundwater Analytical Data
(Included on CD)

APPENDIX J

SVE System Laboratory Analytical Reports
(Included on CD)

APPENDIX K

Land and Water Use Report

wood.

Land and Water Use Report
East Central Phoenix
48th Street & Indian School Road and 40th Street & Osborn Road
Water Quality Assurance Revolving Fund Sites
Phoenix, Arizona

Submitted to:

Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Submitted by:

Wood Environment & Infrastructure Solutions, Inc.
Phoenix, Arizona

February 1, 2019

Project No. 14-2018-2069

REGISTERED GEOLOGIST
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JAMES N.
CLARKE
Date Signed 2/1/19
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Expires 09/30/19

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ATTACHMENTS

Attachment A	Land and Water Use Study Questionnaires
Attachment B	ADWR Well Registration Records

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ACRONYMS AND ABBREVIATIONS

%	percent
40th & OSB Site	40th Street and Osborn Road WQARF Site
48th & IS Site	48th and Indian School Road WQARF Site
A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
af	acre-feet
af/yr	acre-feet/year
AMA	Active Management Area
A.R.S.	Arizona Revised Statutes
AWQS	Aquifer Water Quality Standard
bgs	below ground surface
CAP	Central Arizona Project
CEV	Camelback East Village
COC	Contaminant of concern
COP	City of Phoenix
DWS	Drinking Water Standard
Earth Tech	Earth Technology Corporation
ECP	East Central Phoenix
gpm	gallons per minute
H+A	Hargis + Associates, Inc.
HGL	HydroGeoLogic, Inc.
IRA	interim removal action
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mgd	million gallons per day
ng	nanograms
PCE	Tetrachloroethene, aka Perchloroethene
Plan	Water Resource Plan
PRP(s)	Potentially Responsible Party(ies)
RI	Remedial investigation
ROs	Remedial Objectives
Sites	40th & OSB and 48th & IS Sites
SRP	Salt River Project
SVE	soil vapor extraction
TCE	Trichloroethene
TDS	Total dissolved solids
µg/L	micrograms per liter
µg/m3	micrograms per cubic meter
USEPA	United States Environmental Protection Agency
Use Study	Land and Water Use Study
Wood	Wood Environment & Infrastructure Solutions, Inc.
WQARF	Water Quality Assurance Revolving Fund

EXECUTIVE SUMMARY

This Land and Water Use Study (Use Study) has been prepared for the East Central Phoenix (ECP) 48th Street and Indian School Road (48th & IS) and 40th Street and Osborn Road (40th & OSB) Arizona Department of Environmental Quality (ADEQ) Water Quality Assurance Revolving Fund (WQARF) Sites (the Sites). The Sites are two of six ECP WQARF sites, two of which have been recently delisted by the ADEQ. The boundaries of each site are established by the current extents of the contaminant plumes. However, the boundaries for the Use Study for each site are provided as follows:

- 48th & IS - Devonshire Avenue to the north, 48th Street on the east, Weldon Avenue on the south, and 42nd Street on the west; and
- 40th & OSB - Osborn Road on the north, 42nd Street on the east, Oak Street on the south, and 27th Street on the west.

Tetrachloroethene (PCE) is the lone contaminant of concern (COC) in the subsurface, currently soil vapor and groundwater. Figure 1 is a Site Map depicting the December 2018 PCE groundwater plumes for the Sites. The source of the contamination at the 48th & IS site have been previously identified as two dry cleaning facilities that operated at the northwest corner of 48th Street and Indian School from 1965 to present (Earth Technologies, Inc [Earth Tech, 1989] and HydroGeoLogic, Inc. [HGL], 2012). The source of contamination at the 40th & OSB site has not yet been identified; however, several upgradient potential sources, including past and existing dry-cleaning establishments have been identified (Earth Tech, 1989 and Hargis + Associates, 2015). These potential sources are located approximately 0.75 to one mile from the 40th & OSB site and are within the boundaries of the 48th & IS site. Data collected to date have not shown a definitive correlation linking these sources to observed 40th & OSB site concentrations of PCE in groundwater.

The land and water use study (Use Study) is required in accordance with Arizona Administrative Code (A.A.C.) R18-16-406(A)(3), which states that the remedial investigation (RI) shall identify current and reasonably foreseeable uses of land and waters of the State. As specified in A.A.C. R18-16-406(D), reasonably foreseeable uses of water are those likely to occur within the next 100 years.

To obtain consistent Use Study information from specified stakeholders, a standardized Use Study questionnaire was prepared and e-mailed by ADEQ and ADEQ's consultant Wood Environment & Infrastructure Solutions, Inc. (Wood) to the two municipalities and utilities in the area of the Sites, those being the City of Phoenix (COP) and the Salt River Project (SRP). Said questionnaires were completed and returned, and are provided herein as Attachment A. The questionnaires requested specific information in the following areas:

- Property information;
- On-site wells;
- Water use; and
- Waste streams.

Based on the Use Study questionnaires and the answers returned to ADEQ, very limited, if any, significant change to respondent properties would be expected to occur in the near future.

The Sites are located within the COP's existing property limits. Arizona State law requires each city to have a General Plan that establishes policy for the city's physical development (Arizona Revised Statutes [A.R.S.] 9-461.05). The COP General Plan includes goals, policies, and recommendations to guide land use and neighborhood development for the next 10 to 20 years and beyond. Thus, most of the discussion of land use centers on the COP General Plan, most recently updated in March 2015.

The COP is comprised of 15 "urban villages." The Sites are located in the Camelback East Village (CEV). CEV has two primary cores: the 24th Street and Camelback Road core and the 44th Street and Van Buren Street core. The primary land use within the CEV and the Site is single family residential followed by multiple family residential and commercial. The COP Water Services Department issued a water resources plan (Plan) in 2011 (COP, 2011). The plan includes water development and water use policies. Plans for specific groundwater development within the ECP Site are not addressed in the Plan.

Since 1985, groundwater use by the COP steadily declined due to the availability of Central Arizona Project (CAP) water, the development of SRP-based surface water supplies, and provisions in the State's Water Code (1919), updated by A.R.S. 9-461.05, which mandates groundwater use limitations. In effect, the Water Code and COP corresponding policy rely on groundwater as an essential supply to mitigate future water shortages. The COP currently meets over 95 percent (%) of its demand with various surface water sources. The COP also relies on groundwater to accommodate water system maintenance and as a back-up during temporary outages. The COP has the current capability of producing 28 million gallons per day (mgd) (15,000-20,000 acre-feet [af]) per year [af/yr]), and typically withdraws 6,000 to 9,000 af/yr. Sufficient wells currently exist to produce more than 28 mgd, though future rehabilitation and/or treatment may be needed to increase yields due to aquifer contamination, overall aging well conditions and/or screen clogging conditions.

In 2010, the Arizona Department of Water Resources (ADWR) approved the COP's application for a re-designation of Assured Water Supply. This re-designation reconfirmed the original approval by ADWR in 1998, and confirms the COP has sufficient water supplies to support existing customers and projected growth demands through the year 2025 and for at least 100 years. The COP concludes in their Water Resources Plan that sustainable water supplies exist for all growth currently anticipated through 2060 under normal supply (non-shortage) conditions (COP, 2011).

Degraded groundwater constitutes a vast reserve of water for use in meeting the COP's future water needs. The COP maintains several wells within or adjacent to various ADEQ WQARF sites for emergency use and future use in meeting service area water needs; these wells could be placed back in service with the addition of wellhead treatment systems or approved blending programs. Also, the COP holds "Special Pump Rights" with SRP, which are rights to groundwater well capacity developed by SRP. The COP does not have any wells within one mile of the Sites groundwater contaminant plumes.

SRP generally uses groundwater to supplement its surface water supply. Thus, annual use of groundwater fluctuates depending upon the availability of surface water. SRP currently has 12 groundwater supply wells within 1-mile of either the 48th & IS or the 40th & OSB sites. As the area becomes more urbanized, wells with suitable water quality may be shifted to municipal use. SRP indicated in their Land and Water Use Questionnaire response that all its properties within the vicinity of the Sites will remain in use over the next 100 years. Additionally, SRP anticipates its groundwater supply wells in the area of the Sites will transition from irrigation to municipal service (potable supply) in the reasonably foreseeable future.

1.0 INTRODUCTION

The Arizona Department of Environmental Quality (ADEQ) has prepared this Land and Water Use Report (Use Report) for the East Central Phoenix (ECP) 48th Street and Indian School Road (48th & IS) and 40th Street and Osborn Road (40th & OSB) Arizona Department of Environmental Quality (ADEQ) Water Quality Assurance Revolving Fund (WQARF) Sites (the Sites) to meet the requirements established under Arizona Administrative Code (A.A.C.) R18-16-406(D). The purpose of the report is to gather information regarding current and foreseeable uses of land or waters that have been or are threatened to be impacted by a contaminant release.

1.1 Process Overview

The process to complete the remedial investigation (RI) and select remedial objectives (ROs) begins with the completion of the Draft RI Report. Following the completion of the Draft RI Report, which includes the Use Report, a public meeting is held to discuss the reports and solicit input for the selection of ROs. The public will be given 60 days to comment on the Draft RI Report and 30 days to comment on the Proposed RO Report. Following the public meeting and comment period, ADEQ issues the Proposed RO Report. The ROs chosen for a site may be based on none, some, or all of the uses identified in the Use Report. If there is significant public interest or additional information has been discovered, an additional public meeting to discuss the ROs is held. The Final RO Report is then prepared and included in the Final RI Report.

1.2 Land and Water Use Report

The purpose of the Use Report is to gather information regarding current and "foreseeable" uses of land or waters that have been or are threatened to be impacted by a contaminant release, and to project time frames for future changes in those uses. Information gathered from discussions with property owners, water providers, municipalities, and well owners are to be included in the report.

In general, this Use Report identifies various current and potential future uses of land and water in the vicinity of the Site. However, the Use Report does not evaluate the uses, nor does it classify the use as "reasonably foreseeable." The evaluation of uses will take place during public comment periods, and public meetings and will be presented in the Proposed RO Report.

1.3 Background

The Sites are located in a mixed residential and commercial area of Phoenix, Arizona (Figure 1). Regulatory agency involvement at the Sites began in 1984 following the discovery of halogenated hydrocarbon solvents (halocarbons) in multiple Salt River Project (SRP) irrigation wells from 1983 to 1986 (Earth Technology Corporation [Earth Tech], 1992). This included SRP wells within what became known as the ECP Study Area. The ECP Study Area was bounded by Camelback Road to the north, McDowell Road to the south, 50th Street to the east and 20th Street to the west. SRP Well 17.9E-7.5N was found to have PCE with concentrations exceeding the ADEQ's Aquifer Water Quality Standard (AWQS) of 5 micrograms per liter (µg/L). SRP Well 17.9E-7.5N is located in the 3900 block of North 40th Street in a residential neighborhood of Phoenix, Arizona (Figure 1), which is within the current 40th & OSB site boundaries.

During 1989, soil gas surveys were conducted at multiple facilities throughout the ECP study area to determine if a release of contaminants to the subsurface had occurred. In October 1989, one soil vapor sample was collected adjacent to the Sandy's Cleaners facility located at the northwest corner of 48th Street and Indian School Road. The concentration of PCE detected in the soil vapor sample was 670 µg/L. Sandy's

Cleaners is located within the current 48th & IS site boundaries. Investigative histories for the Sites are summarized in the following subsections.

1.3.1 48th Street and Indian School Road

The following summarizes the investigation history for the 48th & IS Site (ADEQ, 2019a):

48th & Indian School Site History Summary

Date	Activity
1992	Eight soil borings were drilled west of the Sandy's Cleaners facility. The soil concentrations of PCE ranged from 0.024 milligrams per kilogram (mg/kg) to 0.440 mg/kg. A wastewater sample was collected from the facility's lint trap in which the PCE concentration was 150 µg/L. ADEQ also installed two groundwater monitor wells: one directly west of the Sandy's Cleaners facility (SMW-01) and one northwest of SRP's well 19.0E-8.1N (SMW-02). The initial groundwater sample collected from the well directly west of the Sandy's Cleaners facility had a PCE concentration of 2,300 µg/L.
1994	One groundwater monitor well was installed southwest of the Sandy's Cleaners facility on the Arcadia High School grounds (SMW-03). The initial groundwater samples collected from the well had shallow and deep PCE concentrations that were below the AWQS of 5.0 µg/L. During a routine groundwater monitoring event, the maximum reported PCE concentration throughout the site was 3,000 µg/L.
1996	Ten soil borings were drilled west of the Sandy's Cleaners facility. The soil concentrations of PCE ranged from 0.0011 to 0.2 mg/kg. Soil vapor samples that were also collected had a maximum PCE concentration of 5,600 µg/L in one boring at a depth of 15 feet bgs. During a routine groundwater monitoring event, the maximum PCE concentration throughout the site was 4,000 µg/L.
1997 - 1998	The Arizona Department of Health Services evaluated the data collected in 1996 and provided three health consultations that determined there was no risk to employees under current use scenarios. In May, ADEQ collected grab groundwater samples from five wells. The PCE concentrations in these wells ranged from less than the laboratory reporting limit up to >2,500 µg/L. During a routine groundwater monitoring event, the maximum reported PCE concentration throughout the site was 4,300 µg/L.
1999	In April, the site was placed on the WQARF Registry with a score of 27 out of a possible 120 (ADEQ, 1998).
2000	ADEQ and SRP entered into a Governmental Services Contract in which ADEQ funded SRP to conduct an interim remedial action (IRA) at the site. As an IRA, SRP would design and install a SVE system to remove soil vapor contamination from the subsurface.
2001	As part of the IRA agreement, SRP installed two groundwater monitor wells east of the Sandy's Cleaners facility and one groundwater extraction well west of the Sandy's Cleaners facility (ECP-1 through ECP-3).
2004	SRP installed two soil vapor extraction (SVE) wells west of the Sandy's Cleaners facility. A non-title V Air Quality Permit from Maricopa County for their SVE system received approval.

48th & Indian School Site History Summary

Date	Activity
2006	In February, SRP began operating their SVE system, which was installed west of the Sandy's Cleaners facility. By September, the SVE system had removed approximately 248 pounds of PCE from the vadose zone. During a routine groundwater monitoring event, the maximum PCE concentration throughout the site was 98 µg/L.
2007	In June, ADEQ sent out notices per A.R.S. §49-287.03 initiating the remedial investigation for the site. As of the end of September, approximately 295 pounds of PCE were removed from the vadose zone by SRP's SVE system. During a routine groundwater monitoring event, the maximum PCE concentration throughout the site was 100 µg/L.
2008	By the end of March, approximately 309 pounds of PCE had been removed from the vadose zone by SRP's SVE system. ADEQ installed two additional groundwater monitor wells within 47th Street, north of Indian School Road (SMW-04 and SMW-05). The initial groundwater samples collected from the wells had PCE concentrations that were equal to and below the AWQS of 5.0 µg/L. During a routine groundwater monitoring event, the maximum PCE concentration throughout the site was 33 µg/L.
2009	In January, ADEQ collected passive soil gas samples from approximately 14 sample locations along North 45th Place, south of Indian School Road. By July, the SRP's SVE system had removed approximately 310 pounds of PCE from the soil in the vadose zone. Routine groundwater monitoring was not conducted.
2010	SRP continued to operate their SVE system and as of June, approximately 314 pounds of PCE had been removed from the vadose zone soil. During a routine groundwater monitoring event, the maximum PCE concentration throughout the site was 370 µg/L.
2011	ADEQ continued to collect passive soil gas samples from an additional 39 locations placed adjacent to the Sandy's Cleaners facility and within North 45th Place, south of Indian School Road. The PCE mass observed in those samples ranged from less than 25 nanograms (ng) to 3,512 ng. Because of these PCE concentrations, ADEQ installed 12 permanent soil vapor monitoring wells adjacent to the passive soil gas sample locations. The initial soil vapor samples collected from these wells had PCE concentrations that ranged from 16 micrograms per meter cubic (µg/m3) to 59,000 µg/m3. SRP continued to operate their SVE system and as of December, approximately 319 pounds of PCE had been removed from the vadose zone soil. During a routine groundwater monitoring event, the maximum PCE concentration observed throughout the site was 1,400 µg/L.
2012	ADEQ installed seven SVE and six SVE observation wells adjacent to the Sandy's Cleaners facility in preparation for the modification of SRP's SVE system. ADEQ also conducted a SVE pilot test. The results from the test suggest that SVE would still be an effective treatment technology for the site. SRP decommissioned their SVE system in April in order for ADEQ to manage the construction, operation, and maintenance of a new SVE treatment system. ADEQ also installed three additional groundwater monitoring wells south to southwest of the Sandy's Cleaners facility (SMW-06, SMW-07, and SMW-08) and conducted sampling of the soil vapor

48th & Indian School Site History Summary

Date	Activity
	monitoring wells throughout the site. Cone Penetrometer Testing was also performed throughout the site to investigate current hydrogeologic conditions. A routine groundwater monitoring event was conducted in April.
2013	To delineate the soil vapor plume, ADEQ installed 56 temporary soil vapor wells along the northern and western parking area portions of the Arcadia Towne Center and along East Piccadilly Road, East Fairmont Avenue, East Indianola Avenue and East Clarendon Avenue (between North 43rd Place and North 44th Place). The soil vapor concentrations of PCE ranged from <11 µg/m3 to 830 µg/m3. ADEQ went door to door to collect indoor air samples from residents located above the soil vapor plume to check for vapor intrusion. Out of 40 homes, 14 participated and granted access for their indoor air to be sampled.
2014	Groundwater monitoring and soil gas monitoring activities are conducted throughout the site. In April 2012 the SVE system was dismantled by SRP in order for ADEQ to install a new system. Wells BMW-05A, BMW-05B, BMW-06A, and BMW-06B are installed as part of the investigation of the 40th & OSB site. Based on site investigation data in 2018, these wells are re-designated as 48th & IS site wells.
2015	Groundwater monitoring and soil gas monitoring activities are conducted throughout the site. The maximum PCE concentration throughout the site was 18 µg/L.
2016	During May, monitoring wells SMW-11 and SMW-12 are installed to further delineate the downgradient extent of the PCE groundwater plume. A site-wide groundwater sampling event is conducted in August 2016. The maximum PCE concentration observed throughout the site was 10 µg/L.
2017	During May, boring BMW-15D was drilled at 3807 N. 41st Street to link the 48th & IS site and the 40th & OSB site PCE groundwater plumes. Vertical profile samples collected during drilling had concentrations of PCE that were less than the AWQS of 5.0 µg/L. Therefore, ADEQ decided to abandon the boring. During December, boring SMW-14B was drilled at 4212 E. Weldon Avenue to link the 48th & IS site and the 40th & OSB site PCE groundwater plumes. Vertical profile samples collected during drilling do not provide conclusive evidence regarding the source of the 40th & the OSB site PCE groundwater plume. Therefore, ADEQ decided to abandon the boring.
2018	During March, ADEQ drilled and sampled boring SMW-16B at 4730 E. Indian School Road, which is completed as a monitoring well. During October, boring BMW-12B was drilled at 4215 E. Clarendon to confirm the groundwater PCE results of vertical profile samples collected from borings BMW-15D and SMW-14B. Sampling results collected from boring BMW-12B had PCE concentrations from less than the AWQS of 5.0 µg/L (maximum reported = 3.9 µg/L). Well BMW-12B was hereby identified as the downgradient sentinel well

48th & Indian School Site History Summary

Date	Activity
	for the 48th & IS site and caused ADEQ to move the boundary between the Sites to 42nd Street. During December, a site-wide groundwater monitoring event was performed. The maximum PCE concentration throughout the site was 31 µg/L. Based on the data, ADEQ decided to proceed with drafting the RI Report for the 48th & IS site.

Table 1 provides well construction details for monitoring wells located within the 48th & IS site boundaries. Literature reviews and record searches were performed in 1988 and 2012 to identify potential sources. A 1988 study, which covered the ECP Study Area, identified Sandy's Magic Touch Cleaners as a potential PCE source (Earth Tech, 1989). SRP Well 17.9E-7.5N was installed in 1965 and One Hour Martinizing/Cleaners by George operated at 48th Street and Indian School from 1966 to 1989. Sandy's Magic Touch Cleaners has been in operation from 1989 to present. HydroGeoLogic, Inc. (HGL) was directed to identify potentially responsible parties (PRPs) that may have contributed to PCE groundwater contamination at the 48th & IS site. HGL submitted a draft baseline PRP search report to ADEQ on June 24, 2002 and revised the report to address ADEQ comments on August 16, 2002 (HGL, 2002a). In 2012, HGL updated the 2002 baseline PRP search (HGL, 2012). Based on the HGL reports (HGL, 2002a and HGL, 2012), One Hour Martinizing/Cleaners by George and Sandy's Magic Touch Cleaners has been identified as the source of the contamination discovered at the 48th & IS site.

1.3.2 40th Street and Osborn Road

The following summarizes the investigation history for the 40th & OSB Site (ADEQ, 2019b):

40th & OSB Site History Summary

Date	Activity
1983 - 2002	Groundwater samples were generally collected by SRP from SRP well 17.9E-7.5N, which is located west of the Osborn Road alignment and 40th Street. A sampling event, conducted in January 1998, yielded the highest historical (up to the date of this Use Report) concentration of PCE of 210 µg/L.
2000	In May, the site was placed on the WQARF Registry with a score of 30 out of a possible 120 (ADEQ, 2000). The original WQARF boundary was an approximate 400-foot area surrounding the well.
2003	ADEQ installed a groundwater monitoring well in the Osborn Road alignment between 39th Street and 40th Street (BMW-01A). The initial groundwater sample collected from SRP well 17.9E-7.5N had a PCE concentration that was less than the AWQS of 5.0 µg/L. During a routine groundwater monitoring event, PCE was detected in SRP well, 17.9E-7.5N at a concentration of 110 µg/L.
2005 - 2006	Routine groundwater monitoring was conducted at the site. PCE was detected in SRP well 17.9E-7.5N at concentrations ranging from 28 to 41 µg/L.
2007	In June, ADEQ sent out notices per A.R.S. §49-287.03 initiating the remedial investigation for the 40th & OSB site. During a routine groundwater monitoring event, PCE was detected in SRP well 17.9E-7.5N at a concentration of 24 µg/L. In December, ADEQ installed an additional groundwater well, located on 39th Street north of Indian School Road. The initial groundwater samples collected from the well had depth-specific PCE concentrations that ranged from less than the AWQS of 5.0

40th & OSB Site History Summary

Date	Activity
	µg/L to 310 µg/L. This well was eventually included in the ECP 40th Street and Indian School WQARF site.
2008	In the spring and winter, ADEQ installed three additional groundwater monitor wells (BMW-02A/B, BMW-03A/B, and BMW-01B): two (BMW-02A/B, BMW-03A/B) were located east of 40th Street along Weldon and Whitton Avenues, and one (BMW-01B) was located in the Osborn Road alignment between 39th Street and 40th Street. The initial depth-specific groundwater samples collected from these three wells had PCE concentrations ranged from less than the AWQS of 5.0 µg/L to 110 µg/L. During a routine groundwater monitoring event, PCE was detected in the SRP well at a concentration of 6.8 µg/L. The maximum PCE concentration observed throughout the site was 67 µg/L.
2013-2014	In FY 2014, a total of eight groundwater monitor wells were installed (BMW-04A, BMW-04B, BMW-05A, BMW-05B, BMW-06A, BMW-06B, BMW-07A, and BMW-07B) and a total of 99 groundwater samples were collected and analyzed for VOCs. As previously indicated, wells BMW-05A, BMW-05B, BMW-06A, and BMW-06B were re-designated in December 2018 as 48th & IS. A draft RI report was submitted on June 30, 2014.
2015	One groundwater monitor well (BMW-02C) was installed, and a total of 98 groundwater samples were collected and analyzed for VOCs. PCE concentrations in well BMW-02C ranged from <1.0 to 90 µg/L. A draft RI report and final Feasibility Study Work Plan was submitted on June 30, 2015. During December, boring BMW-02D was drilled to delineate the vertical extent of PCE in well BMW-02C. PCE concentrations detected in vertical profile samples in boring BMW-02D range from 5.9 µg/L at 240 feet below ground surface (bgs) to 190 µg/L at 160 feet bgs. However, a well was not installed at boring BMW-02D as ADEQ decided to abandon this boring.
2016	During January, boring BMW-08D was drilled at 3227 N. 38th Street to define the downgradient extent of the PCE groundwater plume. PCE was detected at a maximum concentration of 46.2 µg/L in vertical profile samples that were collected to a depth of 160 feet bgs. Based on these results, ADEQ decided to terminate the boring at 160 feet bgs and abandoned boring BMW-08D. During January, depth-specific groundwater samples were collected from SRP well 17.9N-7.5E. The samples had PCE concentrations that were less than the AWQS of 5.0 µg/L. A site-wide groundwater sampling event was conducted in August 2016. The maximum PCE concentration observed throughout the site was 62 µg/L.
2017	During May, boring BMW-15D is drilled at 3807 N. 41st Street to assess the potential connection of the 48th & IS site and the 40th & OSB site PCE groundwater plumes. Vertical profile samples collected from boring BMW-15D had PCE concentrations that were less than the AWQS of 5.0 µg/L. Therefore, ADEQ decided to abandon this boring. During December, boring SMW-14B is drilled at 4212 E. Weldon Avenue to link the 48th & IS site and the 40th & OSB site PCE groundwater plumes. Vertical profile samples collected during drilling do not provide conclusive evidence regarding the

40th & OSB Site History Summary

Date	Activity
	source of the 40th & OSB site PCE plume. Therefore, ADEQ decides to abandon the boring.
2018	During March and April, ADEQ drilled and installed wells BMW-09D, BMW-10D, and BMW-11D. Vertical profile samples collected during drilling had reported PCE concentrations greater than the AWQS of 5.0 µg/L in samples collected from BMW-09D and BMW-10D. Reported PCE concentrations in BMW-11D were less than the detection limit of 0.25 µg/L and the AWQS of 5.0 µg/L. During October, boring BMW-12B is drilled at 4215 E. Clarendon to confirm the results of vertical profile samples collected during drilling of borings BMW-15D and SMW-14B. Sampling results indicate PCE is below 5.0 µg/L, maximum 3.9 µg/L. Well BMW-12B is identified as the downgradient sentinel well for the 48th & IS site and the boundary between the Sites is moved to 42nd Street. During September, four wells identified as BMW-14D, BMW-16D, BMW-17D, and BMW-18D are permitted in COP right-of-way to delineate the downgradient extent of the PCE groundwater plume. During October, boring BMW-14D is drilled at the southwest corner of 27th Street and Oak Street. Vertical profile groundwater samples are reported with PCE below 5.0 µg/L. Compliance groundwater samples collected from BMW-09D and BMW-10D are reported with PCE concentrations below 5.0 µg/L. Therefore, ADEQ decides to install BMW-14D. ADEQ postpones wells BMW-16D, BMW-17D, and BMW-18D to a later date, if they are determined to be necessary. During December, a site-wide groundwater monitoring event was performed. The maximum PCE concentration throughout the site was 40 µg/L at BMW-02C. Based on the results, ADEQ decided to install a well next to abandoned boring BMW-02D (BMW-02E). Well BMW-02E is planned for drilling, installation and sampling in the Spring of 2019. Additional wells are being considered by ADEQ during FY 2020 to complete the draft RI. The draft RI Report for the 40th & OSB site is tentatively scheduled to be completed by June 30, 2020.

Table 2 provides well construction details for monitoring wells located within the 40th & OSB site boundaries. The source of the contamination at the 40th & OSB site has not been identified; however, several upgradient potential sources, including dry cleaning establishments, have been identified. These potential sources are from approximately 0.75 to one mile from the 40th & OSB site. Literature reviews and record searches were performed in 1988, 2002, and 2009 to identify potential sources. A 1988 study, which covered the ECP Study Area, identified Kachina Cleaners, The Cleaners of Phoenix, Inc. (The Cleaners), and Sandy's Magic Touch Cleaners as potential sources (Earth Technology Corporation [Earth Tech], 1989). Kachina Cleaners and was subsequently identified as the source of the 40th Street & Indian School Road WQARF site and The Cleaners was subsequently identified as the source of the and 38th Street and Indian School Road WQARF site. A 2002 industrial survey did not identify any potential source areas within a 1/4 mile of the 40th & OSB site (HGL 2002). A 2009 city directory survey was performed to identify potential sources up and cross-gradient of the Site and along Indian School Road, Osborn Road, 40th Street, and

44th Street (Hargis + Associates [H+A], 2014). Data collected to date have not shown a definitive correlation linking these sources to the observed 40th & OSB site contamination. However, ADEQ suspects that a source of the PCE detected in the groundwater at the 40th & OSB site is from the 48th & IS site. Additional investigation and data evaluations are currently being performed at the 40th & OSB site to help in determining the source(s).

1.4 Hydrogeology

The aquifer underlying the Sites is known as the Upper Alluvial Unit (UAU) Aquifer. The UAU extends to depths of approximately 400 feet bgs in the surrounding area (Brown and Pool, 1989). It consists of basin fill sediments of sand and gravel proximal to the Salt and Gila Rivers and at the basin margins. In areas distal to the basin margins, which include the Site, the UAU is silt and sand and is significantly less thick. At the Sites, the depth of the UAU ranges from 215 feet bgs at well SMW-16B to greater than 295 feet bgs at well BMW-10D, where bedrock was encountered. Typically, the UAU is considered an unconfined aquifer. Shallow groundwater beneath the Site and surrounding vicinity has historically flowed southwest and has a low gradient under non-pumping conditions.

1.5 General Groundwater Quality

Groundwater beneath the Site and the surrounding area generally contain concentrations of total dissolved solids (TDS) ranging from 500 milligrams per liter (mg/L) to slightly greater than 1,000 mg/L (Brown and Pool, 1989) (Thiros, S.A. et. al., 2010). The United States Environmental Protecting Agency (USEPA) has not set a Primary Drinking Water Standard (DWS) for TDS; however, there is a US Secondary DWS of 500 mg/L. Secondary DWSs are non-enforceable standards that may cause aesthetic effects in drinking water but are not known or suspected to cause acute or chronic harm to humans. The principal ions present within local groundwater include chloride, magnesium, sodium, and calcium (Reeter and Remick, 1986).

The most recent groundwater sampling event for the Sites was conducted in December 2018. As previously stated, PCE is the lone contaminant of concern (COC) that has been detected in groundwater samples collected from monitoring wells located at the Sites. The December 2018 PCE concentrations and extents of the PCE groundwater plumes for the Sites are shown on Figure 1. The maximum PCE concentration for the 48th & IS site is 31 µg/L at well SMW-03-60. The furthest downgradient well at the 48th & IS site reported with PCE above 5.0 µg/L is BMW-05B at a depth of 111.7 feet bgs (7.1 µg/L). The maximum PCE concentration for the 40th & OSB site is 40 µg/L at well BMW-02C at a depth of 118.5 feet bgs. The furthest downgradient well at the 40th & OSB site reported with PCE above 5.0 µg/L is BMW-14D at a depth of 245 feet bgs.

Trichloroethene (TCE) has also been detected in SRP well 17.9E-7.5N, located at the 40th & OSB Site, with a maximum concentration of 9.9 µg/L. This is above the ADEQ AWQS of 5.0 µg/L. Since 2015, TCE has not been detected in groundwater samples collected from the 48th & IS site wells. However, TCE was detected below 5.0 µg/L in samples collected from BMW-02B and BMW-02C in 2015 and 2016. TCE was not detected above the AWQS of 5.0 µg/L in the 2018 samples collected from the 40th & OSB site wells.

SRP provided the following PCE and TCE data for their wells located within and near the Sites.

SRP Well Number	ADWR 55 Registration Number	Intersection (Local Area)	Well Status	Maximum PCE Concentration (µg/L)	Most Recent PCE Concentration (µg/L)	Maximum TCE Concentration (µg/L)	Most Recent TCE Concentration (µg/L)
16.9E-6N	55-608380	30th/McDowell	Active	2.7 (2014)	0.8 (2018)	**10** (2014)	3.7 (2018)
16E-6.8N	55-607726	24th/Cambridge	Active	**12** (2005)	4.1 (2017)	**9.9** (2006)	ND (2017)
16E-8N	55-607715	24th/Indian School	Active	2.0 (1993)	ND	0.6 (1999)	ND
17.9E-7.5N	55-617857	40th/Osborn	Active	**210** (1998)	1.6 (2016)	**9.9** (1996)	ND (2016)
17E-8N	55-608431	32nd/Indian School	Active	**82** (1996)	0.6 (2017)	1.5	ND (2017)
17.1E-7.4N	55-607731	32nd/Osborn	Active	**5.8**	1.1 (2017)	ND	ND (2017)
18E-7N	55-617849	40th/Thomas	Active	ND	ND	ND	ND
18E-8.8N	55-617825	40th/Coolidge	Active	1.1	ND	ND	ND
18.5E-7N	55-607712	43rd/Thomas	Active	ND	ND	ND	ND
18.6E-7.6N	55-202398	44th/Osborn	Active	0.6	ND	ND	ND
19E-7.6N	55-608433	48th/Whitton	Active	ND	ND	ND	ND
19E-8.1N	55-607748	48th/Indian School	Active	ND	ND	ND	ND

Notes:

1. Bolded value indicates concentration detected above Aquifer Water Quality Standard.
2. Data obtained from SRP via questionnaire (See Attachment A) and SRP questionnaire provided in the 24h Street and Grand Canal Site Land and Water Use Study (H+A, 2018).
3. ND – not detected.
4. µg/L – microgram per liter.
5. PCE - tetrachloroethene
6. TCE - trichloroethene
7. Year sampled shown after concentration result in parenthesis; e.g., 2.7 (2014)

2.0 USE EVALUATION

The following sections outline current and foreseeable land and water uses for the Site and the surrounding area. Reasonably foreseeable uses for land are those uses of land likely to occur at the Site within a reasonable time period. Reasonably foreseeable uses of water are those likely to occur within 100 years unless a longer time period is shown to be reasonable based on site-specific circumstances [A.A.C. R18-16-406(D)].

2.1 Land and Water Use Questionnaires

In order to obtain consistent land and water use information from specified stakeholders, a standardized land and water use study questionnaire was prepared and e-mailed by ADEQ and ADEQ's consultant Wood Environment & Infrastructure Solutions, Inc. (Wood) to the two municipalities and utilities in the area of the Sites, those being the COP and the SRP. Questionnaires were completed and returned to ADEQ/Wood by COP and SRP (Attachment A).

The questionnaires requested specific information in the following areas:

- Property information;
- On-site wells;
- Water use; and
- Waste streams.

The information provided in the questionnaires was used in conjunction with the references identified in this section.

2.2 Land Use

The entire Site is located within the COP in Maricopa County. Arizona State law requires each city to have a General Plan that establishes policy for the city's physical development. The COP General Plan includes goals, policies, and recommendations to guide land use and neighborhood development for the next 10 to 20 years and beyond. Thus, most of the discussion of land use centers on the COP General Plan, most recently amended in March 2015 (COP, 2015).

The COP is comprised of 15 "urban villages" (Figure 2) (COP, 2015). The Site is located in the center of the Camelback East Village (CEV) (Figure 3) which covers an area of 36.3 square miles. CEV has two primary cores: 1) the 24th Street and Camelback Road core, comprised of office and retail shops, including movie theaters, major department stores, restaurants, and hotels; and 2) the 44th Street and Van Buren Street core area of airport and regional offices uses along with a Chinese cultural center. The area around 44th Street and Thomas Road is considered the secondary core of the village. This village offers a range of housing diversity and neighborhood types evenly split in the number of single family and multi-family residences. Areas such as the Arcadia neighborhood consist of large acre lots while higher density residential developments surround the more concentrated centers like the CEV primary core. A major portion of the housing stock was built between 1950 and 1970, but new construction of both single family and multi-family homes continues (COP, 2017a).

Additionally, the estimated 40th & OSB site plume extends to the Grand Canal near 27th Street and Oak Street (see Figure 1). Grand Canal is one of the historic canals created to deliver water to Phoenix. Grand

Canal is the oldest remaining pioneer canal on the north side of the Salt River. It was planned in 1877 and constructed in 1878 by the Grand Canal Company (SRP, 2017a). COP Street Transportation Department and COP Office of Arts and Culture is overseeing the Grand Canalscape Project which will create a nearly 12-mile continuous trail system along the Grand Canal from I-17 to the Phoenix/Tempe border (COP, 2017b).

There are five school districts represented in the entire CEV, three are located within or near the Sites: Scottsdale Unified School District, Phoenix Union School District, and Creighton School District. However, only Arcadia High School (Scottsdale Unified School District) is within the current boundary of the Sites, overlying a portion of the 48th & IS PCE groundwater plume.

Each village located within the COP has a Planning Coordinator and a Village Planning Committee who have input into planning decisions for that community and to the COP mayor and Planning Commission. Development in the area occurs consistent with zoning laws and must go through a site-planning review and permit process.

2.2.1 Current Site-Specific Land Use

Sandy's Cleaners, located at 4730 East Indian School Road in the Arcadia Towne Center, first began operations in 1966 as Cleaners by George/One Hour Martinizing. The current zoning designation for the Sandy's Cleaners property is C-1, Commercial – Neighborhood Retail (COP, 2017c). Details are provided in Figure 4 and Table 3.

2.2.2 Current Regional Land Use

2.2.2.1 48th Street and Indian School Road

Current zoning districts within the 48th & IS site are identified below and are shown on Figure 4. A more detailed description of COP zoning designations can be found in Table 3.

48th & Indian School Site

Zoning District	Description	Percent
C-1	Commercial – Neighborhood Retail	4.16
C-2	Commercial – Intermediate Commercial	1.31
C-O	Commercial Office – Restricted Commercial (CO prior to 1986)	6.06
PAD-9	Planned Area Development	21.37
R-4	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 29 to 30.45 or 34.8 w/bonus)	1.09
R-5	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 43.5 to 45.68 or 52.2 w/bonus)	7.66
R-O	Residential Office – Restricted Commercial	0.25
R1-10	Single Family Residence (density range of 3 to 3.5 or 4.5 w/bonus)	11.44
R1-6	Single Family Residence (Density range of 5 to 5.5 or 6.5 with bonus)	46.67

In their questionnaire (Attachment A), the COP identified the following land uses in the vicinity of the 48th & IS site; commercial, retail, office, multi-family, single family, parking, and school (Arcadia High School).

2.2.2.2 40th Street and Osborn Road

Current zoning districts within the 40th & OSB site are identified below and are shown on Figure 4. A more detailed description of COP zoning designations can be found in Table 3.

40th & OSB Site

Zoning District	Description	Percent
C-1	Commercial – Neighborhood Retail	3.00
C-2	Commercial – Intermediate Commercial	9.26
P-1	Passenger Automobile Parking, Limited (Surface parking)	0.22
PAD-13	Planned Area Development (No longer available for rezoning)	0.66
R1-6	Single Family Residence (Density range of 5 to 5.5 or 6.5 with bonus)	45.96
R-3	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 14.5 to 15.23 or 17.4 w/bonus)	18.26
R-3A	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 22 to 23.1 or 26.4 w/bonus)	0.28
R-4	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 29 to 30.45 or 34.8 w/bonus)	11.06
R-4A	Multi Family Residence	0.38
R-5	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 43.5 to 45.68 or 52.2 w/bonus)	10.92

In their questionnaire (Attachment A), the COP identified the following land uses in the vicinity of the 40th & OSB site; single family, schools, multi-family, trailer park, commercial-retail, office, park, and COP public pool.

2.2.3 Future Land Use

The CEV Planning Coordinator and CEV Planning Committee meet regularly to accept and review requests for zoning changes within the CEV. The COP response to their questionnaire indicated there are no current foreseeable plans to alter current zoning districts in the Site vicinity. Property owners can file to change the zoning designation of their property. Requests for zoning changes must go through a public hearing and be approved by the City Council prior to finalization.

2.3 Groundwater Use

The Sites lie within the Phoenix Active Management Area (AMA) (Figure 5) (ADWR, 2014a). The Phoenix AMA was created by the Arizona Groundwater Management Code passed in 1980 and covers approximately 5,646 square miles in central Arizona. All groundwater withdrawn from any AMA must occur under a groundwater right or permit, unless groundwater is being withdrawn from an exempt well. An exempt well is a well with a maximum pumping capacity of 35 gallons per minute (gpm). Exempt wells may be used to withdraw groundwater only for non-irrigation purposes and are generally used for domestic purposes. All exempt wells must be registered with the ADWR. Exempt well owners are not required to report their annual pumpage volumes to ADWR. Non-exempt wells have a pumping capacity greater than 35 gpm and are

associated with one of the following types of rights or permits: Grandfathered rights, service area rights, and withdrawal permits Non-exempt well owners must report their annual pumpage volumes to ADWR.

According to ADWR records, there are 15 non-exempt withdrawal wells located within 1-mile of the Sites; 13 owned and operated by SRP, one owned by COP, and one owned by Maricopa County Flood Control District (Table 4) (Figure 6) (ADWR, 2019). According to ADWR records, the COP owned well was used to fill the swimming pool at Perry Park. The well owned by Maricopa County was used for de-watering purposes. ADWR records indicate that there are five exempt withdrawal wells located within one-mile of the Sites; all five wells have an intended use for domestic irrigation (ADWR, 2019, and Attachment B). There are no grandfathered rights within the area of the Sites (ADWR, 2019). The COP and SRP have service area rights within the area of the Sites, however, only SRP is currently pumping groundwater from beneath the Sites.

Water levels in the UAU at the Sites have been monitored since April 1992. During the period of record for the Site monitor wells, the depth to water has ranged from approximately 20 feet bgs at 48th Street and Indian School in 1992, to approximately 80 feet bgs at 27th Street and Oak Street in 2018. Groundwater elevations measured in Site wells during November 2018 are depicted on Figure 7. The direction of groundwater flow historically has been to the southwest at a gradient of approximately 0.007 to 0.010 feet/foot. Vertical gradients between the shallow and deeper zones of the UAU monitored at the Site are generally negligible.

2.3.1 Municipality and Utility Groundwater Use

The COP and SRP pump groundwater are needed when surface water supplies cannot meet their customer needs. The following sections discuss the current and future groundwater uses of the COP and SRP.

2.3.1.1 Current City of Phoenix Needs

The COP relies on four primary water supply sources: SRP, Central Arizona Project (CAP), groundwater pumped from COP wells, and reclaimed water (COP, 2011). SRP supplies water from the Salt and Verde Rivers to eligible lands within the Phoenix service areas which are generally south of the Arizona Canal. The remainder of the service area is supplied primarily by Colorado River water delivered by the CAP. Groundwater wells and reclaimed water make up the remainder of the COP water supplies. During normal supply years, approximately 50% of the COP water supply comes from SRP; 44% is from CAP; and approximately 3% is from groundwater pumpage and 3% reclaimed water. When SRP and/or CAP water supplies are reduced, the COP supplements water supplies with groundwater pumped from COP wells (COP, 2011).

Because of groundwater quality degradation due to the presence of industrial solvents such as PCE and TCE, the COP has abandoned or discontinued use of 20 wells (COP, 2011). This has resulted in a loss of approximately 23 million gallons per day (mgd) of groundwater production.

The City of Phoenix total loss of well production due to elevated concentrations of organic and inorganic substances exceeds 90,000 acre-feet/year (af/yr), according to the Water Resources Plan (COP, 2011) as a result of the closure of more than 60 wells (60% of the total production capacity of all COP wells). Any of these wells, if returned to service in the future, will require cleanup of the contaminated aquifers or the installation and operation of expensive wellhead treatment systems. No COP wells exist within 1-mile of the Sites contaminant plumes (Figure 6).

2.3.1.2 Future City of Phoenix Needs

According to information provided by COP, since 2002 (a peak demand year), the total water demand declined by more than 16%, although the service population of COP increased by approximately 8% (COP, 2011). The decrease in overall per-capita total water demand has been attributed to the increased efficiency in water use which declined by 25% between 1996 and 2011. Contributing factors in the decrease include improved plumbing fixture standards, smaller residential lots, fewer new pools, increased installation of desert landscaping in both new and existing homes, increased customer "water awareness," and higher water rates.

Regional economic conditions are a large component of the future water demands, as well as the Phoenix General Plan for land development and recent trends in residential and commercial development. Growth projections for COP reflect annual growth rates of 1.0% (high), 0.8% (base level) and 0.6% (low) and are assumed to top out in the 2045-2055 period based on current COP boundaries. The low projection assumes that service area growth occurs at a slow pace and that existing customers continue to become more efficient without further incentives or regulation (moderate level). The high demand line reflects fast or high-density growth and no further efficiency improvements for existing and new customers. These rates are lower than those experienced during the 1990s and early 2000s; as of spring 2011, data indicate the actual growth rate for COP could be lower or stagnant for the next 5-10 years. The COP estimates that a "base level" consumption growth will develop at today's efficiency levels and that current customers will remain stable. Possible "moderate efficiency" consumption gains are estimated at a 10% consumption reduction for existing customers and 5% reduction for post-2010 development by 2035. "High efficiency" consumption gains are estimated at a 20% reduction in consumption for existing customers and a 10% reduction for post-2010 customers by gain by 2035. However, there are numerous factors associated with growth and consumption that cannot be fully predicted and the consequences of this possible leveling off or increasing of demand will continue to be addressed in the COP General Plan and Water Resource Plan.

Uncertainty also exists regarding water resources and the ability to meet current and future demands (COP, 2011). The following items may affect the available COP water supply:

- Cyclical drought;
- Increasing demands in the Upper Colorado River Basin States (Utah, Colorado, Wyoming and New Mexico) affecting Arizona's supply of Colorado River water;
- The availability of water supplies from the Arizona Water Banking Authority to the CAP to offset shortages;
- Climate variability impacts on long-term flows, reservoir storage and deliveries by SRP and CAP;
- The probability of low reservoir conditions occurring in both watersheds simultaneously;
- State legal, institutional, or policy changes impacting surface water availability;
- The availability and volume of groundwater supplies without aquifer replenishment; and
- Impacts of increased groundwater pumping in the SRP watershed on river flow and reservoir storage.

If Colorado River flow should decline, allotment of CAP water for the COP and surface water supplies from SRP may be reduced if reservoir levels drop substantially and groundwater pumping cannot compensate the lack of surface water availability. As a buffer to potential surface water supply reductions, the COP has been recharging to underground storage or banking unused CAP allotments for future use (Figure 8).

However, high increases in consumption coupled with severe reductions in surface water supplies could deplete these reserves by 2020 (COP, 2011) (Figure 9).

As part of their long-term deficit plan, COP developed a strategy to address a reasonable "worst case". These extreme conditions were modeled to represents deeper shortages than those observed in historic records. The "severe shortage" model scenario combined with the "high demand" scenario produces a maximum deficit of 165,000 af in the latter part of the 50-year planning horizon (COP, 2011).

Managing water use can be accomplished by continuing to increase efficiency of water distribution, curtailing demand, and monetary incentives, which can be addressed through infrastructure improvements, conservation programs, drought management plan, and water pricing strategies (COP, 2011). Alternate sources of water include expanded groundwater pumping, accessing water that has been stored for future use, importing water from the McMullen Valley farm, and purchasing water from other water providers (COP, 2011).

Besides obtaining additional surface water supplies, local groundwater is the most accessible alternate water source (COP, 2011). The COP has access to more than 3.5 million acre-feet (af) of groundwater in the Phoenix service area over a 100-year period. Currently, the COP can produce 28 mgd (15,000-20,000 af) per year, but only withdraws between 6,000 and 9,000 af/yr. Pumping capacity has been lost in the past two decades due to aquifer contamination and aging well conditions.

The most accessible alternate water source for COP is local groundwater; planning is ongoing for the expansion of well capacity within the service area (via well rehabilitation or the development of new service area wells). The COP plans to develop 15 additional wells at a cost of $233 million to yield approximately 70,000 af/yr; this increased yield would be allowable in any one year as long as the 100-year average usage does not exceed available groundwater and stored water credits (COP, 2011). Recent well development by the COP has occurred in northeast Phoenix area. However, as indicated in the COP questionnaire response, the COP currently has no plans to develop groundwater near or 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 the Site or within one mile of the Site plume.

2.3.1.3 Current Salt River Project Needs

As a water supplier, SRP delivers nearly a million acre-feet of water to the Phoenix area each year. In normal runoff years, most of the water is supplied from surface water on the Salt and Verde Watersheds. However, in more dry years, more groundwater must be pumped to supplement the surface water supply. During extended periods of low run off, groundwater can account for almost one-third of the total SRP water supply. Approximately 28 percent of the average annual municipal water demand in the Phoenix AMA, from 2001-2005, was supplied by groundwater (ADWR, 2014c).

Typically, groundwater comprises approximately 15% of the total water supplied by SRP to municipal treatment plants. The groundwater contribution varies seasonally with the highest contribution occurring March through August.

SRP operates and maintains nine (9) irrigation wells within one mile of the boundaries of the use study. An additional three wells are located within two miles. SRP reported the most recent PCE concentrations in the wells historically containing PCE these wells as follows:

SRP Well Number	ADWR 55 Registration Number	Approximate distance from Sites	Intersection (Local Area)	Most Recent PCE Concentration (µg/L)
16.9E-6N	55-608380	0.5 miles south of 40th & OSB site	30th/McDowell	0.8 (2018)
16E-6.8N	55-607726	0.7 miles west of 40th & OSB site	24th/Cambridge	4.1 (2017)
16E-8N	55-607715	1.3 miles northwest of 40th & OSB site	24th/Indian School	ND
17.9E-7.5N	55-617857	Within 40th & OSB site	40th/Osborn	1.6 (2016)
17E-8N	55-608431	1.5 miles northwest of 40th & OSB site	32nd/Indian School	0.6 (2017)
17.1E-7.4N	55-607731	0.5 miles south of 40th & OSB site	32nd/Osborn	1.1 (2017)
18E-7N	55-617849	0.7 miles southeast of 40th & OSB site	40th/Thomas	ND
18E-8.8N	55-617825	1.5 mile to the north of 40th & OSB site	40th/Coolidge	ND
18.5E-7N	55-607712	0.7 miles southeast of 40th & OSB site	43rd/Thomas	ND
18.6E-7.6N	55-202398	0.43 miles southeast of 40th & OSB site	44th/Osborn	ND
19E-7.6N	55-608433	0.3 miles southeast of 48th & IS site	48th/Whitton	ND
19E-8.1N	55-607748	0.11 miles east of 48th & IS site	48th/Indian School	ND

Notes:

1. Distance is presented as shortest distance to plume boundary presented in Figure 1.
2. Bolded value indicates concentration detected above the Arizona Department of Environmental Quality Aquifer Water Quality Standard of 5.0 µg/L.
3. Data obtained from SRP via questionnaire (see Attachment A) and SRP questionnaire provided in the 24h Street and Grand Canal Site Land and Water Use Study (H+A, 2018).
4. ND – not detected.
5. µg/L – microgram per liter.
6. PCE - tetrachloroethene

As indicated above, no SRP wells area of the Sites had PCE concentrations above the AWQS of 5.0 µg/L. Groundwater pumpage at these wells has been intermittent in the recent past, but the wells can be activated at any time.

2.3.1.4 Future Salt River Project Needs

Although recent use of the irrigation wells in and adjacent to the Site has been intermittent, SRP has no plans to eliminate any of these wells from their system. Based on demand analysis, SRP has indicated it will continue to need the wells in the area to remain operational, especially during dry years.

SRP anticipates all its properties in the vicinity of ECP WQARF Area will remain in use over the next 100 years. Additionally, SRP anticipates that its groundwater supply wells that are in the vicinity will transition from irrigation to municipal service (potable supply) within this time period.

Water shortage is an issue that can impact this Site and all of metropolitan Phoenix. As water quality issues compound the demand concerns already present with regard to anticipated climate change and already

stressed water supplies. Water quality is a significant issue, as discussed above SRP expects its groundwater supply wells in the Site area will transition to potable supply in the future. The importance of groundwater and the ability to utilize the aquifer in local and large-scale water management scenarios is critical to the future growth and wellbeing of the entire Phoenix metro-area. According to the questionnaire response, SRP does not plan on installing any new wells at the Sites; however, this could change pending COP water needs.

2.3.2 Private Groundwater Use

As discussed above, five exempt wells are located within 1-mile of the Sites; all five wells have an intended use for domestic irrigation (ADWR, 2019, and Attachment B). There is no documented private drinking use of groundwater within the Site (ADWR, 2019).

2.4 Surface Water Use

The nearest surface water bodies to the Sites are the Arizona Canal and the Grand Canal (see Figure 1). The Arizona Canal is located approximately 0.17 miles from the nearest point on the 48th & IS plume. The Grand Canal intersects the 40th & OSB plume at Oak Street. The area of the Sites is situated within an active flood irrigation district of SRP, which receives water from the Arizona and Grand Canals via SRP lateral canals (Salt River Valley Water Users' Association, 1980) (Figure 10). This water is used for residential irrigation. The laterals also receive water from SRP wells in the area. Future plans for the Grand Canal include a drinking water treatment plant that may be constructed at the end of the Grand Canal. The construction of the treatment plant would change the end use of the canal water requiring that water discharged to the canal meet stricter water quality criteria than what is currently required.

3.0 SUMMARY OF USES

The land and water uses described in Section 2.0 that are most likely to be relevant to the discussion of remedial objectives are presented below.

3.1 Land Use

The zoning pattern in the area has been long established and there are no foreseeable changes for the future. Land uses for this Site are expected to remain predominantly residential.

3.2 Groundwater Use

Current and future groundwater uses within the Site include the following:

- The COP anticipates the possible need for additional wells in and adjacent to the Site sometime in the future.
- The SRP owns 12 wells in and adjacent to the Sites and will continue to need the wells 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.

3.3 Surface Water Use

Currently, surface water uses within the Site are only for residential irrigation.

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TABLES

TABLE 1
WELL CONSTRUCTION DATA
EAST CENTRAL PHOENIX WATER QUALITY ASSURANCE REVOLVING FUND SITE 48TH STREET AND INDIAN SCHOOL ROAD SITE

ECP SUB AREA	WELL ID	ADWR REGISTRATION NUMBER	DATE COMPLETED	DRILLING METHOD	BORING DIAMETER (INCHES)	BORING DEPTH (FEET BGS)	CASING MATERIAL/ DIAMETER/ SLOT SIZE (INCHES)	PERFORATED INTERNAL (FEET BGS)	SAND PACK INTERVAL (FEET BGS)	FILTER PACK MATERIAL	BENTONITE SEAL (FEET BGS)	TOP OF CASING ELEVATION (1) (FEET ASML)	GROUND SURFACE ELEVATION (1) (FEET ASML)	LOCATION COORDINATES (2)	
														LATITUDE (DEG)	LONGITUDE (DEG)
48	SRP19E-8.1N	617857	6/1/1971	Cable Tool	18	300	Steel / 18 /Louver	82 - 261	NR	NR	NR	NR	NR		
48	ECP-01	587191	8/2/2001	Dual Tube Rotary	11	71.0	PVC / 6 / 0.020	10 - 70	10 - 71	#10-20 Sand	NR	1241.28	1241.53	33.4953	-111.9802
48	ECP-02	587192	7/19/2001	Sonic	8.625	125.0	PVC / 4 / 0.010	85 - 120	80 - 125	#10-20 Sand	NR	1244.49	1244.74	33.7287	-111.9793
48	ECP-03	587193	7/19/2001	Sonic	8.625	55.0	PVC / 4 / 0.010	10 - 50	10 - 55	#10-20 Sand	NR	1244.35	1244.95	33.4954	-111.9793
48	SMW-01	533298	4/1/1992	Hollow Stem Auger	6.25	55.0	PVC / 4 / 0.010	15 - 55	14 - 55	#10-20 Sand	8 - 14	1241.21	1241.82	33.4953	-111.9802
48	SMW-02	535795	7/31/1992	Hollow Stem Auger	6.25	55.0	PVC / 4 / 0.020	15 - 55	13 - 55	#10-20 Sand	10 - 13	1248.61	1248.88	33.4961	-111.9782
48	SMW-03-060*	543424	5/9/1994	Hollow Stem Auger	8.25	140.0	PVC / 2 / 0.020	13 - 60	11 - 65	#10-20 Sand	9 - 11	1236.71	1237.47	33.6779	-111.9822
48	SMW-03-138*	543424	5/9/1994	Hollow Stem Auger	8.25	140.0	PVC / 2 / 0.020	100 - 140	92 - 140	#10-20 Sand	65 - 92	1236.66	1237.47	33.6779	-111.9822
48	SMW-04	907363	12/11/2007	Sonic	8.625	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	8/12 Sand	15 - 17	1238.40	1238.72	33.4950	-111.9809
48	SMW-05	908628	3/18/2008	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	18 - 60	8-12 Sand	15 -18	1239.50	1239.76	33.4953	-111.9809
48	SMW-06	914016	4/10/2012	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	8 - 12 Sand	15 - 17	1227.84	1228.12	33.4932	-111.9831
48	SMW-07	913979	1/12/2012	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	#10-20 Sand	15 -17	1240.43	1240.75	33.4950	-111.9802
48	SMW-08	913980	1/13/2012	Hollow Stem Auger	10	60.0	PVC / 4 / 0.020	20 - 60	17 - 60	#10-20 Sand	15 - 17	1243.65	1244.02	33.4956	-111.9801
48	BMW-05A	916202	1/9/2014	Sonic	8.625 6.0	66.0 67.0	PVC / 4 / 0.020	29.6 - 64.6	26.3 - 66.0	#10-20 Sand	23.0 - 26.3	1212.81	1213.29	33.4925	-111.9895
48	BMW-05B	916203	1/10/2014	Sonic	8.625 6.0	115.0 116.0	PVC / 4 / 0.020	75.1 - 115.1	68.8 - 115.5	#10-20 Sand	63.2 - 68.8	1212.87	1213.41	33.4925	-111.9895
48	BMW-06A	916204	1/9/2014	Sonic	8.625 6.0	61.0 62.5	PVC / 4 / 0.020	30.3 - 60.3	27.0 - 60.5	#10-20 Sand	23.0 - 27.0	1214.27	1214.73	33.4908	-111.9865
48	BMW-06B	916205	1/10/2014	Sonic	8.625	120	PVC / 4 / 0.020	75.4 - 110.4	72.0 - 111.0	#10-20 Sand	68.0 - 72.0 111.0 - 115.0	1214.50	1215.09	33.4908	-111.9865
48	SMW-11	918939	5/19/2016	Sonic	8.625	165.00	PVC / 4 / 0.020	50.2 - 70.2	48 - 71	#10-20 Sand	42.8 - 48	1221.38	1221.99	33.4929	-111.9856
48	SMW-12	919290	5/27/2016	Sonic	8.625	180.00	PVC / 4 / 0.020	144.9 - 164.9	143 - 166	#10-20 Sand	133.5 - 143	1212.19	1212.70	33.4915	-111.9886
48	SMW-16B	921439	3/16/2018	Sonic	8.25 6.125	214.0 216.0	PVC / 4 / 0.020	90.7 - 130.7	87.8 - 131.2	#10-20 Sand	80.2 - 87.8	1240.24	1240.67	33.4950	-111.9802
48	BMW-12B	922019	10/26/2018	Sonic	9.0	185.0	PVC / 4 / 0.020	120.0 - 170.0	118.0 - 172.0	#10-20 Sand	116.0 - 118.0	1209.13	1209.54	33.4746	-111.9904

NOTES:

* wells installed within the same borehole
(1) NAVD88
(2) GRID, NAD83, Arizona Central 202
48 East Cental Phoenix Water Quality Assurance Revolving Fund Site - 48th Street and Indian School Road Site
ADWR Arizona Department of Water Resources
FEET BGS feet below ground surface
FEET AMSL feet above mean sea level
NR Not Reported
Sonic Rotosonic drilling method
SRP Salt River Project

TABLE 2
WELL CONSTRUCTION DATA
EAST CENTRAL PHOENIX WATER QUALITY ASSURANCE REVOLVING FUND SITE 40TH STREET AND OSBORN ROAD SITE

ECP SUB AREA	WELL ID	ADWR REGISTRATION NUMBER (55-)	DATE COMPLETED	DRILLING METHOD	BORING DIAMETER (INCHES)	BORING DEPTH (FEET BGBS)	CASING MATERIAL/ DIAMETER/ SLOT SIZE (INCHES)	PERFORATED INTERNAL (FEET BGS)	SAND PACK INTERVAL (FEET BGS)	FILTER PACK MATERIAL	BENTONITE SEAL (FEET BGS)	TOP OF CASING ELEVATION (1) (FEET ASML)	GROUND SURFACE ELEVATION (1) (FEET ASML)	LOCATION COORDINATES (2)	
														LATITUDE (DEG)	LONGITUDE (DEG)
40osb	SRP17.9E-7.5N	617857	5/1/1965	Cable Tool	NR	300	Steel / 18 / Perforated	100.0 - 300.0	48.0 - 300.0	Gravel	NR	NR	1193	NR	NR
40osb	BMW-01A	598109	6/2/2003	Hollow Stem Auger	10	91	PVC / 4 / 0.020	20 - 60	15 - 63	#10-20 Sand	11 - 15 63 - 91	1193.20	1194.38	33.4877	-111.9961
40osb	BMW-01B	909970	12/4/2008	Hollow Stem Auger	8	100	PVC / 2 / 0.020	70 - 100	65 - 100	#10-20 Sand	59 - 65	1193.59	1194.34	33.4878	-111.9961
40osb	BMW-02A*	908743	4/18/2008	Sonic	10	61	PVC / 2 / 0.020	20 - 60	15 - 61	8/12 Sand	10 - 15	1199.66	1200.06	33.4901	-111.9946
40osb	BMW-02B*	908743	4/18/2008	Sonic	10	100	PVC / 2 / 0.020	70 - 100	65 - 100	8/12 Sand	10 - 15 61 - 65	1197.98	1200.06	33.4901	-111.9946
40osb	BMW-02C	917659	3/18/2015	Sonic	8.25 7.125	139.8 140.6	PVC / 4 / 0.020	109.5 - 139.5	106.7 - 140.6	#10-20 Sand	101.6 - 106.7	1199.53	1199.99	33.4067	-111.9946
40osb	BMW-03A*	908744	5/16/2008	Hollow Stem Auger	10	60.5	PVC / 2 / 0.020	20 - 60	15 - 60.5	8/12 Sand	10 - 15	1201.09	1201.32	33.4895	-111.9929
40osb	BMW-03B*	908744	5/16/2008	Hollow Stem Auger	10	98.3	PVC / 2 / 0.020	70 - 100	65 - 101	8/12 Sand	10 - 15 61 - 65	1201.12	1201.32	33.4895	-111.9929
40osb	BMW-04B	916201	1/3/2014	Sonic	8.625 6.0	120.0 121.7	PVC / 4 / 0.020	78.8 - 118.8	75.4 - 121.7	#10-20 Sand	71.6 - 75.4	1200.32	1200.90	33.4888	-111.9920
40osb	BMW-04A	916200	1/4/2014	Sonic	8.625 6.0	70.0 71.1	PVC / 4 / 0.020	30.0 - 70.0	27.0 - 71.1	#10-20 Sand	23.5 - 27.0	1200.37	1200.86	33.4888	-111.9920
48	BMW-05A	916202	1/9/2014	Sonic	8.625 6.0	66.0 67.0	PVC / 4 / 0.020	29.6 - 64.6	26.3 - 66.0	#10-20 Sand	23.0 - 26.3	1212.81	1213.29	33.4925	-111.9895
48	BMW-05B	916203	1/10/2014	Sonic	8.625 6.0	115.0 116.0	PVC / 4 / 0.020	75.1 - 115.1	68.8 - 115.5	#10-20 Sand	63.2 - 68.8	1212.87	1213.41	33.4925	-111.9895
48	BMW-06A	916204	1/9/2014	Sonic	8.625 6.0	61.0 62.5	PVC / 4 / 0.020	30.3 - 60.3	27.0 - 60.5	#10-20 Sand	23.0 - 27.0	1214.27	1214.73	33.4908	-111.9865
48	BMW-06B	916205	1/10/2014	Sonic	8.625	120	PVC / 4 / 0.020	75.4 - 110.4	72.0 - 111.0	#10-20 Sand	68.0 - 72.0 111.0 - 115.0	1214.50	1215.09	33.4908	-111.9865
40osb	BMW-07A	916198	12/29/2013	Sonic	8.625 6.0	70.0 74.0	PVC / 4 / 0.020	29.6 - 69.6	26.0 - 70.0	#10-20 Sand	23.0 - 26.0	1189.22	1189.74	33.2034	-111.9982
40osb	BMW-07B	916199	12/28/2013	Sonic	8.625 6.0	115.0 116.0	PVC / 4 / 0.020	85.0 - 115.0	80.0 - 116.0	#10-20 Sand	70.0 - 80.0	1189.20	1189.72	33.4868	-111.9982
40osb	BMW-09D	921211	4/2/2018	Sonic	8.25 6.125	234.5 288.0	PVC / 4 / 0.020	180.7 - 230.7	176.5 - 234	#10-20 Sand	170.5 - 176.5	1170.44	1170.77	33.4823	-112.0069
40osb	BMW-10D	921212	4/25/2018	Sonic	8.25 6.125	233.0 293.0	PVC / 4 / 0.020	230.6 - 280.6	227.5 - 280.6	#10-20 Sand	221.5 - 227.5	1148.63	1149.67	33.4765	-112.0339
40osb	BMW-11D	921213	5/9/2018	Sonic	8.25 6.125	233.0 241.0	PVC / 4 / 0.020	151.0 - 211.0	148.0 - 214.0	#10-20 Sand	140.0 - 148.0	1180.11	1180.61	33.4828	-111.9998
48	BMW-12B	922019	10/26/2018	Sonic	9.0	185.0	PVC / 4 / 0.020	120.0 - 170.0	118.0 - 172.0	#10-20 Sand	116.0 - 118.0	1209.13	1209.54	33.4746	-111.9904
40osb	BMW-14D	922019	10/31/2018	Sonic	9.0	300.0	PVC / 4 / 0.020	225.0 - 275.0	223.0 - 277.0	#10-20 Sand	221.0 - 223.0	1135.93	1136.31	33.4730	-112.0239

NOTES:

* wells installed within the same borehole
(1) NAVD88
(2) GRID, NAD83, Arizona Central 202
40osb East Cental Phoenix Water Quality Assurance Revolving Fund Site - 40th Street and Osborn Road Site
48 East Cental Phoenix Water Quality Assurance Revolving Fund Site - 48th Street and Indian School Road Site
ADWR Arizona Department of Water Resources
FEET BGS feet below ground surface
FEET AMSL feet above mean sea level
NR Not Reported
Sonic Rotosonic drilling method
SRP Salt River Project

TABLE 3
City of Phoenix Zoning Districts with Brief Descriptions

Zoning District	Description
S-1	Ranch or Farm
S-2	Ranch or Farm Commercial
RE-43	One Family Residence (43,560 sq. ft. min.)(No longer available for rezoning)
RE-24	One Family Residence (24,000 sq. ft. min.)(No longer available for rezoning)
R1-14	One Family Residence (14,000 sq. ft. min.)(No longer available for rezoning)
RE-35	Single Family Residence (density range of 1.1 to 1.15 or 1.32 w/ bonus)
R1-18	Single Family Residence (density range of 1.95 to 2.05 or 2.34 w/bonus)
R1-10	Single Family Residence (density range of 3 to 3.5 or 4.5 w/bonus)
R1-8	Single Family Residence (density range of 4 to 4.5 or 5.5 w/bonus)
R1-6	Single Family Residence (density range of 5 to 5.5 or 6.5 w/bonus)
R-2	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 10 to 10.5 or 12 w/bonus)
R-3	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 14.5 to 15.23 or 17.4 w/bonus)
R-3A	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 22 to 23.1 or 26.4 w/bonus)
R-4	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 29 to 30.45 or 34.8 w/bonus)
R-5	Multiple Family Residence (Detached SF 5 to 6.5 or 12 w/bonus) (Attached 43.5 to 45.68 or 52.2 w/bonus)
R-4A	Multiple Family Residence (Dependent on lot area and unit type)
R-O	Residential Office – Restricted Commercial
C-O	Commercial Office – Restricted Commercial (C-O prior to 1986)
C-O/G-O	Commercial Office – General Office Option (Minimum 1 gross acre)
C-O/M-O	Commercial Office – Major Office Option (Minimum 5 gross acres)
C-1	Commercial – Neighborhood Retail
C-2	Commercial – Intermediate Commercial
C-3	Commercial – General Commercial
CP/SU	Commerce Park – Single User Option
CP/RP	Commerce Park – Research Park Option
CP/BP	Commerce Park – Business Park Option
CP/GCP	Commerce Park – General Commerce Park Option
IP or Ind. Pk.	Industrial Park (See CP) (No longer available for rezoning)
A-1	Light Industrial
A-2	Industrial
RH	Resort
RI	Residential Infill (Combined w/underlying zoning)
HR	High-Rise and High Density (Combined w/underlying zoning)
HR1	High-Rise and High Density (Downtown Area) (Combined w/underlying zoning)
HRI	High-Rise Incentive – High-Rise and Mixed Use (Combined w/underlying zoning)
MR PAD	Mid-Rise (Combined w/underlying zoning)
PCD	Planned Community District (Combined w/underlying zoning or approved zoning)
PSC	Planned Shopping Center (No longer available for rezoning)
RSC	Regional Shopping Center (No longer available for rezoning)
P-1	Passenger Automobile Parking, Limited (Surface parking)
P-2	Parking (Surface parking and parking structures)
GC	Golf Course
UR	Urban Residential (May apply between 7th Ave. to 7th St. & Lincoln St. to Grand
DC	Downtown Core (Underlying zoning for Fillmore to Harrison & 7th St. to 3rd Ave.)
W	Warehouse Overlay (Combined w/underlying zoning) (Applies to specific area near
Warehouse Parking	(Combined w/underlying zoning)
Capitol Mall Overlay	(Combined w/underlying zoning) (Applies to specific area near the Capitol)
SP	Special Permit (Combined w/underlying zoning) (Allows a number of specific uses not
MUA	Mixed Use Agricultural (Should be designated as MUA on the General Plan)
HCRO	Historic Canal-Side Restaurant Overlay (Combined w/underlying zoning) (Applies to
Baseline Area Overlay	(Combined w/underlying zoning) (Applies between Central to 40th St. & Southern to
Arcadia Camelback Special Planning District	(Combined w/underlying zoning) (Applies along Camelback Rd. from 44th St. to the
Desert Character Overlay	(Combined w/underlying zoning) (Applies to North Land Use Plan area)
NBCC	North Black Canyon Overlay (Combined w/underlying zoning) (Specific guidelines for
RSIO	Rio Salado Interim Overlay (Combined w/underlying zoning) (Applies between I-17/I-
HP	Historic Preservation Overlay (Combined w/underlying zoning)
CCSIO	Central City South Interim Overlay (Combined w/underlying zoning) (Applies to
Four Corners Overlay	(Applies to specific area near 24th St. & Broadway Rd.)
SPVTABDO	South Phoenix Village and Target Area B Design Overlay (Applies to specific areas
PSC Overlay	Planned Shopping Center Overlay
SPD	Special Planning District (Combined w/underlying zoning) (Applies to specific
EBRO	East Buckeye Road Overlay District (Combined w/underlying zoning) (Applies to
DVAO	Deer Valley Airport Overlay District (Combined w/underlying zoning) (Applies to
ACOD	Arts, Culture and Small Business Overlay District (Combined w/underlying zoning)
HRO	Hatcher Road Overlay (Combined w/underlying zoning) (Applies to specific area on
Downtown Code	A code to implement the Downtown Phoenix Plan increased mix of land uses, and
PUD	Planned Unit Development Individually tailored standards to create a built
TOD-1	Interim Transit-Oriented District One, to encourage appropriate mixture/density of
TOD-2	Interim Transit-Oriented District Two, to encourage appropriate mixture/density of
SAUMSO	Seventh Avenue Urban Main Street Overlay District (Combined w/underlying zoning)
NCASPD	North Central Avenue SPD Overlay District (Combined w/underlying zoning) Provide
AIO	Airport Noise Impact Overlay District (Combined w/underlying zoning) (Applies to
FH	Flood Hazard and Erosion Management District (Combined w/underlying zoning)

Note: See Section 608 of the Zoning Ordinance to calculate bonus points for residential development.
Source: www.phoenix.gov/pdd/pz
Revised 7/3/13

TABLE 4
GROUNDWATER WITHDRAWAL WELLS WITHIN ONE MILE OF THE SITE
EAST CENTRAL PHOENIX 40TH STREET AND OSBORN ROAD SITE
REMEDIAL INVESTIGATION - LAND AND WATER USE SURVEY

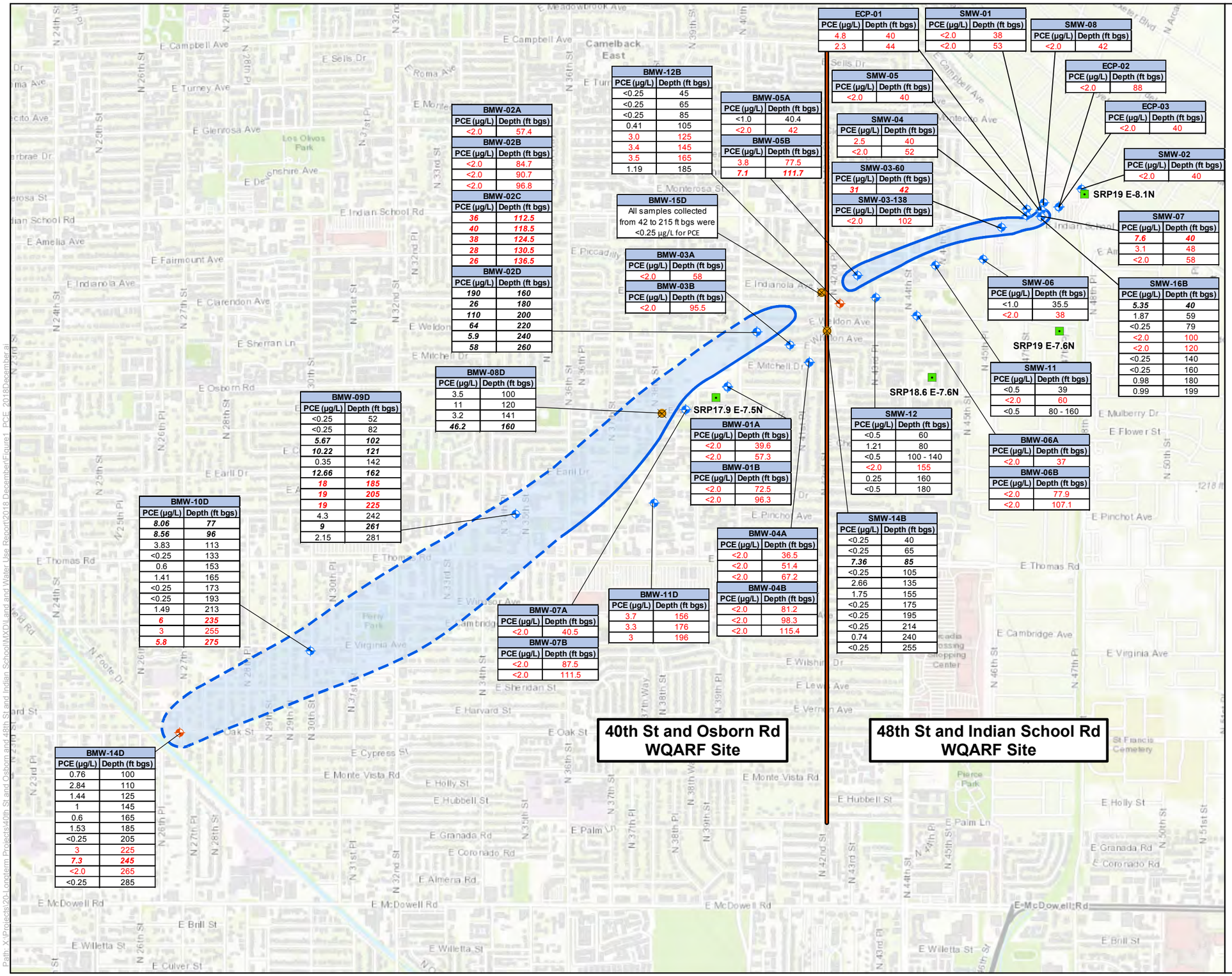
55-REGISTRY ID	GWSI SITE	CADASTRAL	OWNER NAME	SRP Well No.	WELL TYPE	WELL DEPTH (FT BGS)	CASING DEPTH (FT BGS)	CASING DIAMETER (IN)	APPLICATION DATE	INSTALLED DATE	WATER LEVEL (FT BGS)	PUMP RATE (GPM)	UTM-X (METERS)	UTM-Y (METERS)
202398	332918111590701	A02004030ACC	Salt River Project	18.6E-7.6N	Non-Exempt	207	207	21	3/15/2004	12/30/2004	27	0	408419.8	3705868
501994	NR	A0200403BCA	Peterson, D D	NA	Exempt	65	85	4	*2/3/1982	1/1/1981	19	0	407829.4	3706089
607672	332853112000801	A02003025DCC	Salt River Project	17.5E-7N	Non-Exempt	202	188	12	*5/18/1982	10/1/1923	89	563	406803.9	3705103
607712	332849111591201	A02004030CDD	Salt River Project	18.5-7N	Non-Exempt	172	172	12	*5/18/1982	9/20/1923	17	880	408205.2	3705070
607731	332915112004301	A02003025CBB	Salt River Project	17.1E-7.4N	Non-Exempt	400	400	18	*5/18/1982	4/21/1962	53	1196	406004.9	3705727
607748	332942111584101	A02004020CCC	Salt River Project	19E-8.1N	Non-Exempt	305	305	18	*5/18/1982	6/18/1971	17	808	409232.8	3706647
608431	332941112004301	A02003025BBB	Salt River Project	17E-8N	Non-Exempt	250	250	18	*5/11/1982	8/20/1964	52	1232	406012.9	3706543
608433	332926111584101	A02004030ADA	Salt River Project	19E-7.6N	Non-Exempt	150	150	12	*5/11/1982	3/8/1921	17	500	409018.8	3706050
617825	333026111594501	A02003024ADA	Salt River Project	18E-8.8N	Non-Exempt	417	417	16	*5/26/1982	1/1/1945	37	1457	407451.9	3707744
617849	332848111594201	A02003036AAA	Salt River Project	18E-7N	Non-Exempt	305	305	18	*5/26/1982	7/16/1971	22	954	407407.3	3704891
617857	332913111594601	A02003025DAA	Salt River Project	17.9E-7.5N	Non-Exempt	300	300	18	*5/26/1982	5/4/1965	24	1114	407421.7	3705699
634799	332858111593001	A02004030CCA	Abbey, D R	NA	Exempt	100	70	4	*5/26/1982	10/1/1979	23	10	407813.3	3705284
807925	NR	A02003024DBC	Thiher, L	NA	Exempt	0	0	0	*8/24/1999	Prior to 1980	0	0	406831.8	3707137
626525	332843112004501	A02003035AAD	PHOENIX, CITY OF,	NA	Non-Exempt	218	0	20	*6/11/1982	NR	59	750	405795.1	3704710
607726	332840112014301	A02003035BBB	SALT RIVER PROJECT,	16E-6.8N	Non-Exempt	620	620	20	*5/18/1982	NR	66	1560	404396.3	3704908
608380	332754112004601	A01003002AAA	SALT RIVER PROJECT,	16.9E-6N	Non-Exempt	250	219	19	*5/11/1982	8/22/1947	86	2000	405782.4	3703288
607715	332942112014701	A02003022DDD	SALT RIVER PROJECT,	16E-8N	Non-Exempt	246	246	12	5/18/1982*	9/1/1920	70	760	404215.8	3706716
638492	NR	A02003026ACC	SHERRILL,W P	NA	Exempt	120	120	8	*6/14/1982	6/15/1953	25	30	405206.9	3705924
809877	NR	A01003002ABB	THE SECRET GARDEN	NA	Exempt	NR	NR	20	8/18/2016	NR	NR	NR	405177.4	3703294
Dewatering permit November 20, 1995 - February 20, 1996														
552114	NR	A02004031BBB	Flood Control District, Maricopa County	NA	Non-Exempt	0	0	0	11/20/1995	NR	0	0	407607.1	3704886
Well never drilled														
623899	NR	A02004030CD0	B.O.L.S. 44 Partners	NA	Non-Exempt	0	0	0	6/14/1982	NR	0	0	408108.3	3705174
Abandoned September 1996														
807366	NR	A02004030DBC	Johns, R F	NA	Exempt	63	0	4	9/17/1996	NR	0	0	408411.5	3705466

NOTES:

Exempt -	A well having a pump with a maximum capacity of not more than 35 gpm which is used to withdraw groundwater pursuant to A.R.S. § 45-454 and A.R.S. § 45-402(8).
FT BGS -	Feet below ground surface
GPM -	Gallons per minute
GWSI -	Groudnater Site Inventory
IN -	Inches
NA -	Not Applicable
NR -	Not Reported
Non-exempt	A well drilled within an active Management Area drilled pursuant to a groundwater right authorized by A.R.S. Title 45, Chapter 2, Article 5, a service area right authorized by A.R.S. Title 45, Chapter 2, Article 6, or a groundwater withdrawal permit authorized by A.R.S. Title 45, Chapter 2, Article 7.

* Date well registered with Arizona Department of Water Resources

FIGURES



ECP-01	
PCE (µg/L)	Depth (ft bgs)
4.8	40
2.3	44

SMW-01	
PCE (µg/L)	Depth (ft bgs)
<2.0	38
<2.0	53

SMW-08	
PCE (µg/L)	Depth (ft bgs)
<2.0	42

ECP-02	
PCE (µg/L)	Depth (ft bgs)
<2.0	88

ECP-03	
PCE (µg/L)	Depth (ft bgs)
<2.0	40

SMW-02	
PCE (µg/L)	Depth (ft bgs)
<2.0	40

SMW-05	
PCE (µg/L)	Depth (ft bgs)
<2.0	40

SMW-04	
PCE (µg/L)	Depth (ft bgs)
2.5	40
<2.0	52

SMW-03-60	
PCE (µg/L)	Depth (ft bgs)
31	***42***

SMW-03-138	
PCE (µg/L)	Depth (ft bgs)
<2.0	102

BMW-12B	
PCE (µg/L)	Depth (ft bgs)
<0.25	45
<0.25	65
<0.25	85
0.41	105
3.0	125
3.4	145
3.5	165
1.19	185

BMW-05A	
PCE (µg/L)	Depth (ft bgs)
<1.0	40.4
<2.0	42

BMW-05B	
PCE (µg/L)	Depth (ft bgs)
3.8	77.5
7.1	***111.7***

BMW-02A	
PCE (µg/L)	Depth (ft bgs)
<2.0	57.4

BMW-02B	
PCE (µg/L)	Depth (ft bgs)
<2.0	84.7
<2.0	90.7
<2.0	96.8

BMW-02C	
PCE (µg/L)	Depth (ft bgs)
36	***112.5***
40	***118.5***
38	***124.5***
28	***130.5***
26	***136.5***

BMW-02D	
PCE (µg/L)	Depth (ft bgs)
190	***160***
26	***180***
110	***200***
64	***220***
5.9	***240***
58	***260***

BMW-15D
All samples collected from 42 to 215 ft bgs were <0.25 µg/L for PCE

BMW-03A	
PCE (µg/L)	Depth (ft bgs)
<2.0	58

BMW-03B	
PCE (µg/L)	Depth (ft bgs)
<2.0	95.5

SMW-07	
PCE (µg/L)	Depth (ft bgs)
7.6	***40***
3.1	48
<2.0	58

SMW-06	
PCE (µg/L)	Depth (ft bgs)
<1.0	35.5
<2.0	38

SMW-16B	
PCE (µg/L)	Depth (ft bgs)
5.35	***40***
1.87	59
<0.25	79
<2.0	100
<2.0	120
<0.25	140
<0.25	160
0.98	180
0.99	199

SMW-11	
PCE (µg/L)	Depth (ft bgs)
<0.5	39
<2.0	60
<0.5	80 - 160

BMW-08D	
PCE (µg/L)	Depth (ft bgs)
3.5	100
11	120
3.2	141
46.2	***160***

BMW-09D	
PCE (µg/L)	Depth (ft bgs)
<0.25	52
<0.25	82
5.67	***102***
10.22	***121***
0.35	142
12.66	***162***
18	***185***
19	***205***
19	***225***
4.3	242
9	***261***
2.15	281

BMW-01A	
PCE (µg/L)	Depth (ft bgs)
<2.0	39.6
<2.0	57.3

BMW-01B	
PCE (µg/L)	Depth (ft bgs)
<2.0	72.5
<2.0	96.3

SMW-12	
PCE (µg/L)	Depth (ft bgs)
<0.5	60
1.21	80
<0.5	100 - 140
<2.0	155
0.25	160
<0.5	180

BMW-06A	
PCE (µg/L)	Depth (ft bgs)
<2.0	37

BMW-06B	
PCE (µg/L)	Depth (ft bgs)
<2.0	77.9
<2.0	107.1

SMW-14B	
PCE (µg/L)	Depth (ft bgs)
<0.25	40
<0.25	65
7.36	***85***
<0.25	105
2.66	135
1.75	155
<0.25	175
<0.25	195
<0.25	214
0.74	240
<0.25	255

BMW-04A	
PCE (µg/L)	Depth (ft bgs)
<2.0	36.5
<2.0	51.4
<2.0	67.2

BMW-04B	
PCE (µg/L)	Depth (ft bgs)
<2.0	81.2
<2.0	98.3
<2.0	115.4

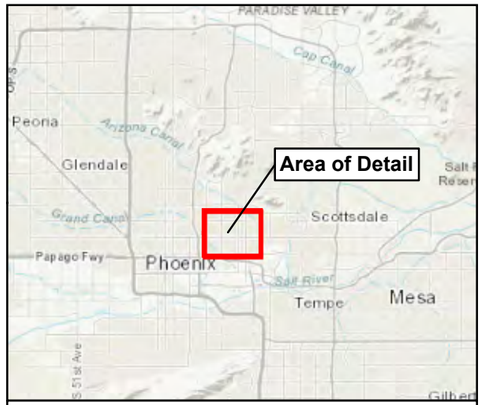
BMW-11D	
PCE (µg/L)	Depth (ft bgs)
3.7	156
3.3	176
3	196

BMW-07A	
PCE (µg/L)	Depth (ft bgs)
<2.0	40.5

BMW-07B	
PCE (µg/L)	Depth (ft bgs)
<2.0	87.5
<2.0	111.5

BMW-10D	
PCE (µg/L)	Depth (ft bgs)
8.06	***77***
8.56	***96***
3.83	113
<0.25	133
0.6	153
1.41	165
<0.25	173
<0.25	193
1.49	213
6	***235***
3	255
5.8	***275***

BMW-14D	
PCE (µg/L)	Depth (ft bgs)
0.76	100
2.84	110
1.44	125
1	145
0.6	165
1.53	185
<0.25	205
3	225
7.3	***245***
<2.0	265
<0.25	285



Area of Detail

Legend

- FY 2019 Groundwater Monitor Well
- Groundwater Monitor Well
- SRP Production Well
- Boring Location - Abandoned
- Approximate Distribution of PCE Above 5 µg/L

Notes:

BMW-14D	Groundwater Monitoring Well Identification
0.76	Results that are black are from historic PCE sampling
3	Results that are red are from December 2018
7.3	Results that are ***bolded and italicized*** equal or exceed the Aquifer Water Quality Standard of 5 µg/L
µg/L	microgram per liter
amsl	above mean sea level
ft bgs	feet below ground surface
PCE	tetrachloroethene
WQARF	Water Quality Assurance Revolving Fund

0 750 1,500 Feet

N

40th St and Osborn Rd &
48th St & Indian School Rd
WQARF Sites
Phoenix, Arizona

FIGURE 1

Site Map

Job No. 14-2018-2047
PM: JC
Date: 1/18/2019
Scale: 1"= 1500'

wood.

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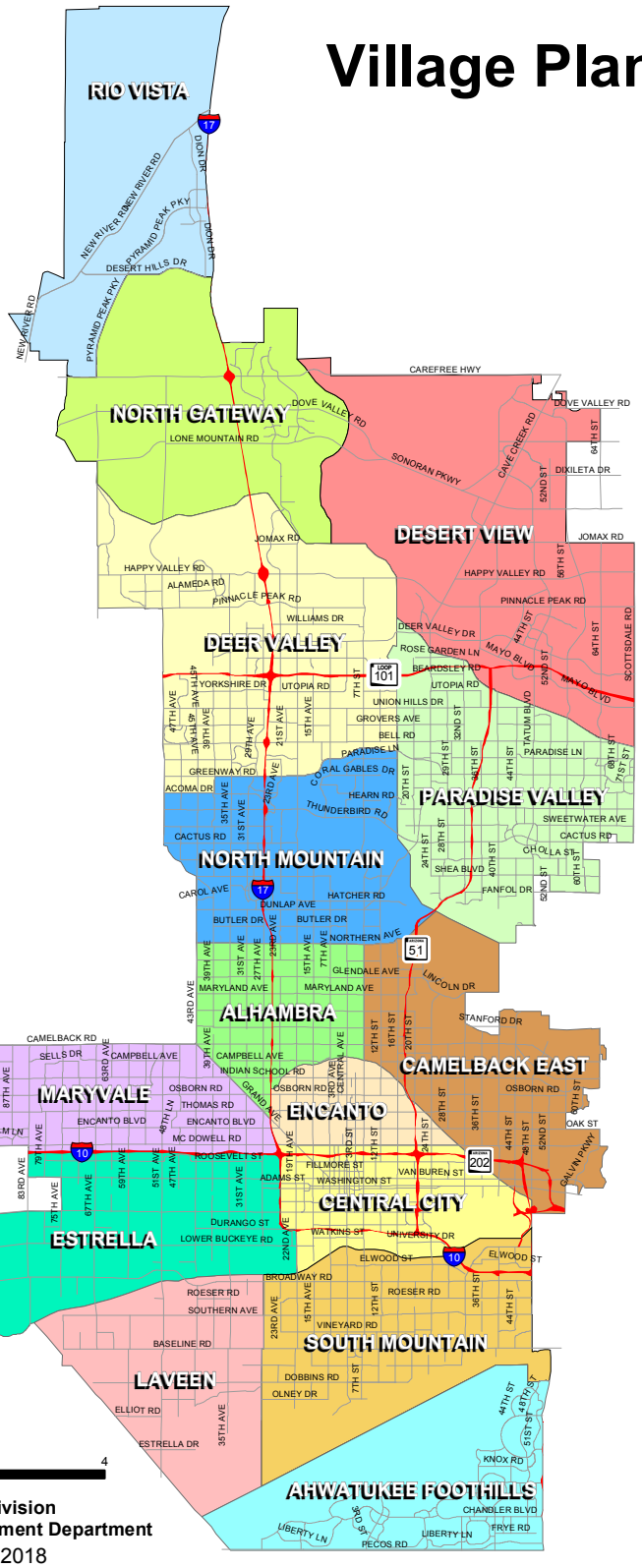
Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure1_PCE_2018December.ai

Village Planners



Ahwatukee Foothills
Cody White
(602) 534-5829

Alhambra
Cody White
(602) 534-5829

Camelback East
Maja Brkovic
(602) 261-8701

Central City
Elyse DiMartino
(602) 256-5648

Deer Valley
David Simmons
(602) 262-4072

Desert View
Kaelee Wilson
(602) 262-6949

Encanto
Maja Brkovic
(602) 261-8701

Estrella
Nick Klimek
(602) 534-7696

Laveen
Cody White
(602) 534-5829

Maryvale
David Simmons
(602) 262-4072

North Gateway
Kaelee Wilson
(602) 262-6949

North Mountain
Nick Klimek
(602) 534-7696

Paradise Valley
David Simmons
(602) 262-4072

Rio Vista
Kaelee Wilson
(602) 262-6949

South Mountain
Elyse DiMartino
(602) 256-5648

Planning Division
Planning and Development Department
November 2018

S:\Department Share\Information Systems\PL GIS\GIS_Team\Villages\vplanners.mxd
S:\Department Share\Information Systems\PL GIS\GIS_Team\Villages\vplanners.pdf

Source: City of Phoenix, Planning and Development

Job No.	14-2018-2069
PM:	JC
Date:	12/10/2018
Scale:	As Shown

N

40th St and Osborn Rd &
48th St and Indian School Rd
WQARF Sites, Phoenix, Arizona

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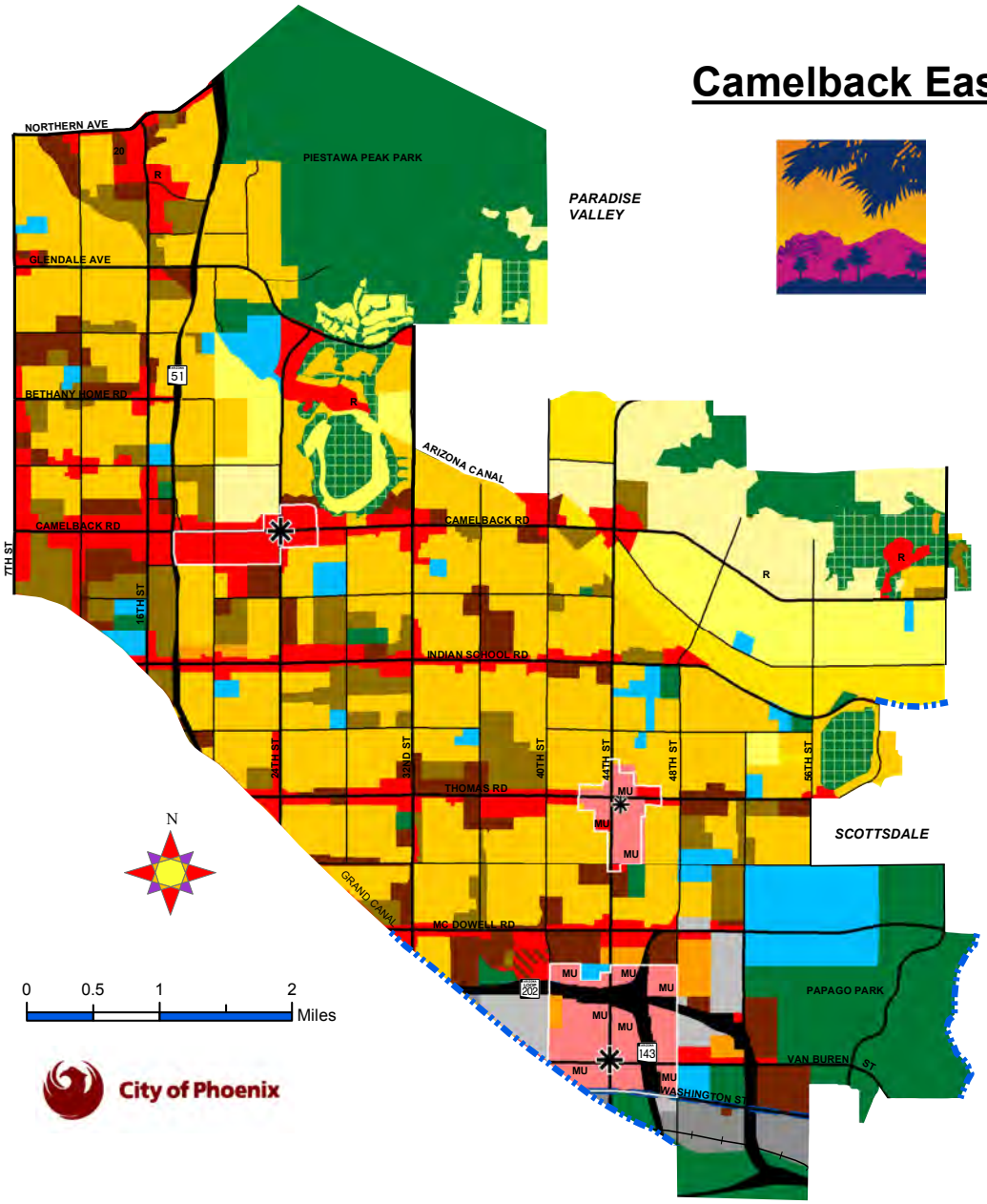
City of Phoenix
Village Planners Map

FIGURE
2

wood.

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure2_VillagePlannersMap.ai

Camelback East



City of Phoenix

1 Mixed Use is an integrated variation of uses which may include residential, service, and basic commercial, general office, entertainment, and cultural functions, with a compatible relationship. This category would allow any or all of these uses within an area so categorized to be further determined by more specific plans, which would consider General Plan goals, existing zoning and uses, and site consideration.

2 As appropriate, and when in the best interests of the City to protect and preserve mountains and washes as open space, densities adjacent to mountains or washes may be greater than the General Plan category depicted on this plan.

3 Readers of this map are cautioned to refer to the adopted General Plan text and maps in the full document and other Adopted refinements - Special Planning Districts, Redevelopment Plans or Specific Plans for further guidance.

4 "R" depicts location of resorts. Those with an underlying commercial designation have corresponding zoning that permits resort hotel use. All other depictions are for existing resorts that are nonconforming, general locations for future resort sites, or indicate resort district zoning.

5 For special formats of this publication, call Theresa Damiani, 602-262-6368 or 602-534-5500 TDD.

6 For questions concerning this publication call the Phoenix Planning Department, 602-262-6882

Note: Movement within large lot, traditional lot and higher density residential categories does not require a General Plan amendment.

General Plan Categories

- 0 to 1 du/acre - Large Lot
- 1 to 2 du/acre - Large Lot
- 2 to 3.5 du/acre - Traditional Lot
- 3.5 to 5 du/acre
- 5 to 10 du/acre
- 10 to 15 du/acre - Higher density attached townhouses,condos, or apartments
- 15+ du/acre - Higher density attached townhouses, condos, or apartments
- Parks/Open Space - Publicly Owned
- Parks/Open Space - Privately Owned
- MU Mixed Use (MU) (See NOTES # 1)
- Commercial
- Industrial
- Commerce/Business Park
- Public/Quasi-Public
- Transportation
- Major Streets
- Collector Streets
- Light Rail
- Canals
- Existing Railroad
- Primary Core
- Secondary Core
- R Resort (See NOTES # 4)

Source: City of Phoenix, Planning and Development

Job No.	14-2018-2069
PM:	JC
Date:	12/10/2018
Scale:	As Shown

N

40th St and Osborn Rd &
48th St and Indian School Rd
WQARF Sites, Phoenix, Arizona

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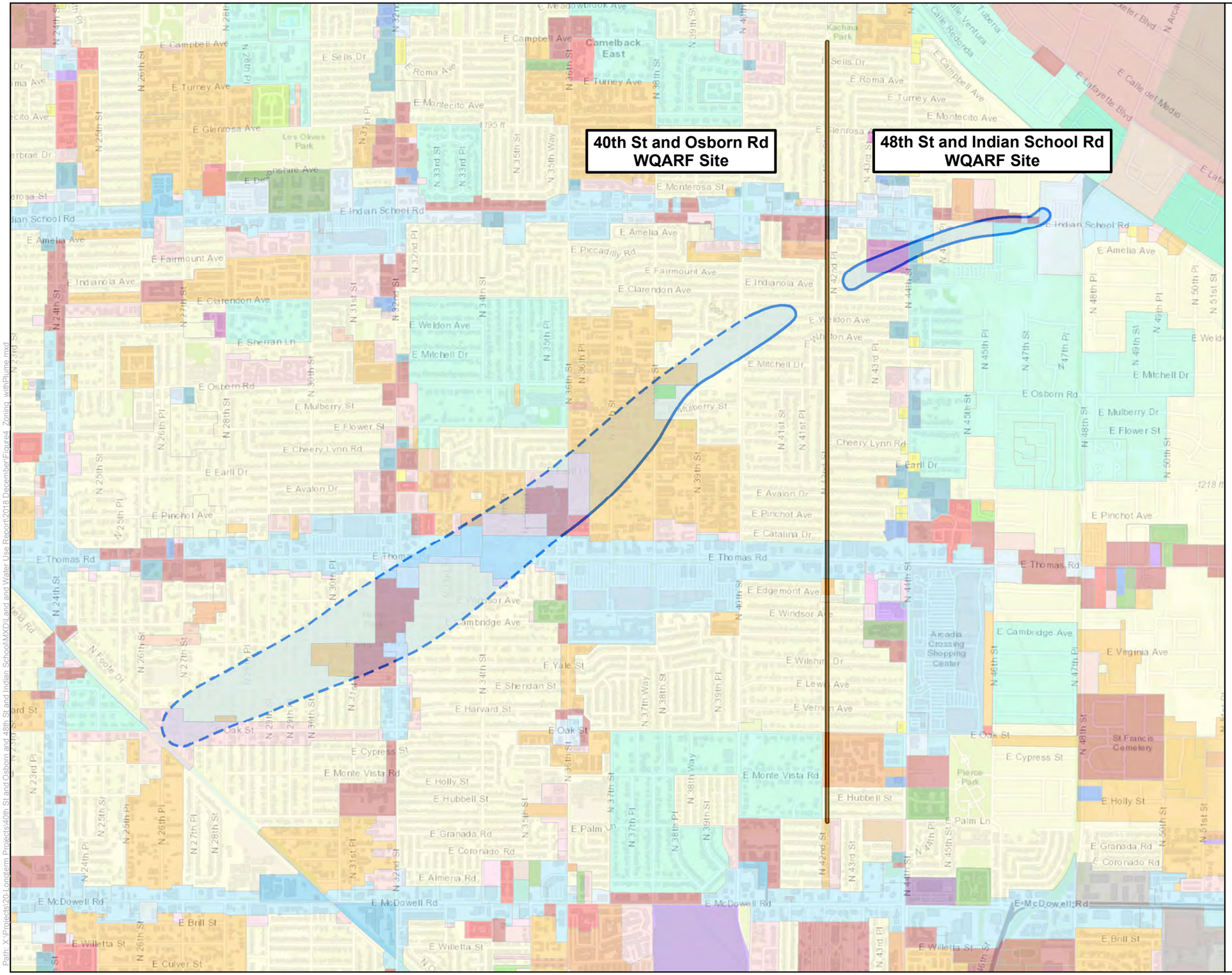
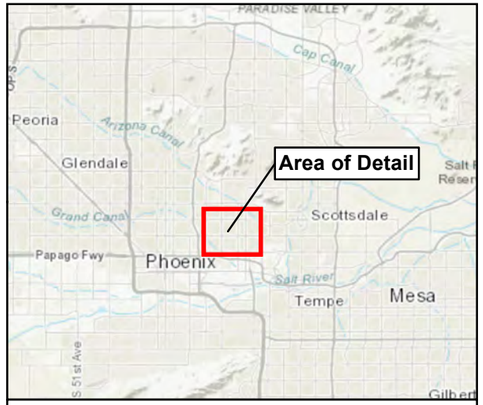
Camelback East General Plan Map

FIGURE 3

wood.

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure3_CamelbackEast_GeneralPlanMap.ai





Area of Detail

Legend

Approximate Distribution of PCE Above 5 µg/L (Dashed Where Inferred)

C-1	PAD-10	R-4
C-2	PAD-11	R-4A
C-3	PAD-13	R-5
C-O	PAD-14	R-O
C-O/G-O	PAD-15	R1-6
IND.PK.	PUD	R1-10
P-1	PSC	R1-14
P-2	R-2	R1-18
PAD-8	R-3	RE-24
PAD-9	R-3A	RE-35

Notes:

µg/L microgram per liter
PCE tetrachloroethene
WQARF Water Quality Assurance Revolving Fund

0 750 1,500 Feet

N

40th St and Osborn Rd &
48th St and Indian School Rd
WQARF Sites
Phoenix, Arizona

FIGURE 4 **Camelback East Zoning Map**

Job No. 14-2018-2047
PM: JC
Date: 1/30/2019
Scale: 1"= 1500'

wood.

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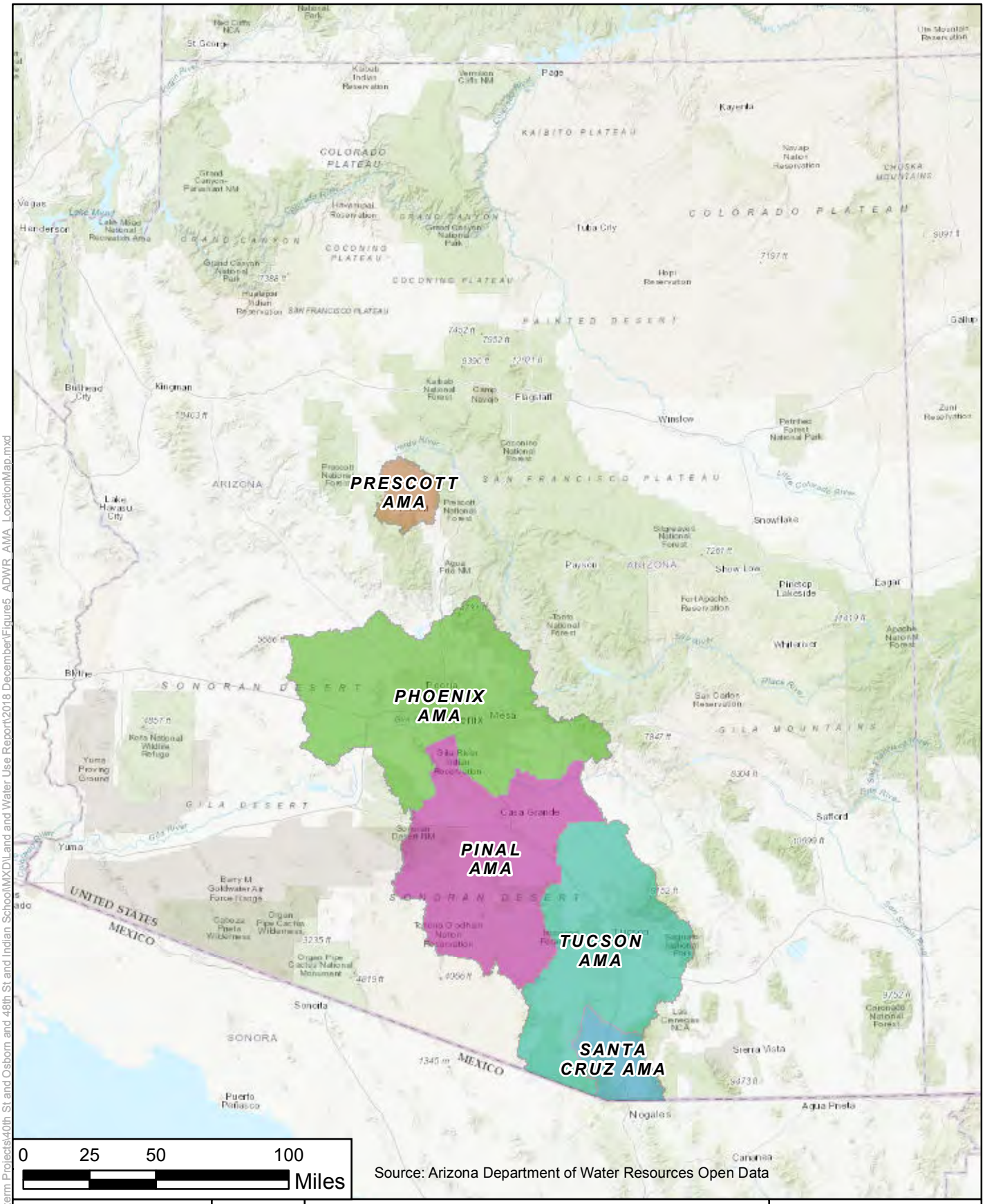


Job No.	14-2018-2069
PM:	JC
Date:	1/18/2019
Scale:	1 inch = 50 miles

N

40th St and Osborn Rd &
48th St and Indian School Rd
WQARF Sites, Phoenix, Arizona

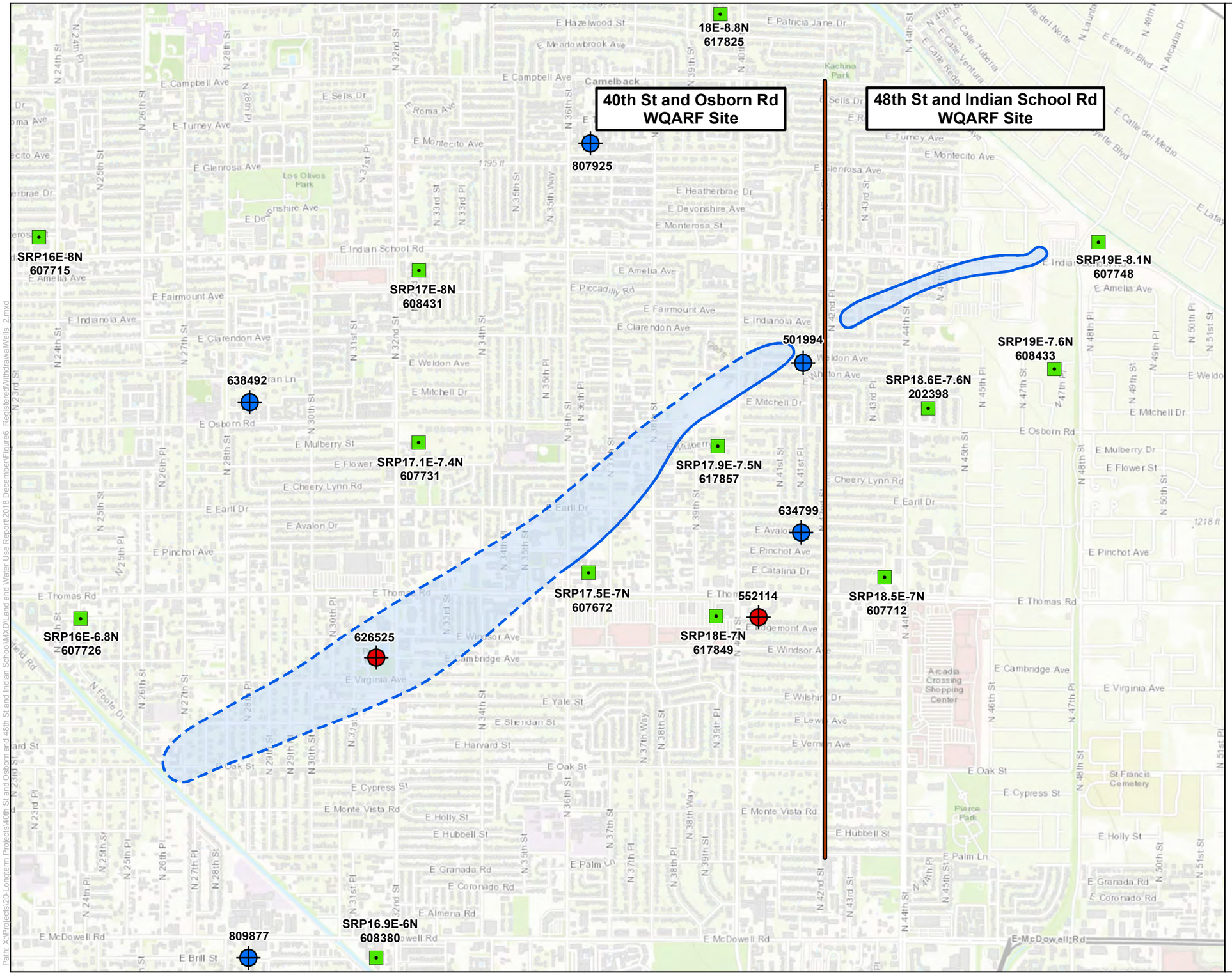
The map shown here has been created with all due and reasonable care and is strictly for use with Wood Environment & Infrastructure Solutions, Inc. Project Number 14-2018-2069. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood Environment & Infrastructure Solutions, Inc.assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

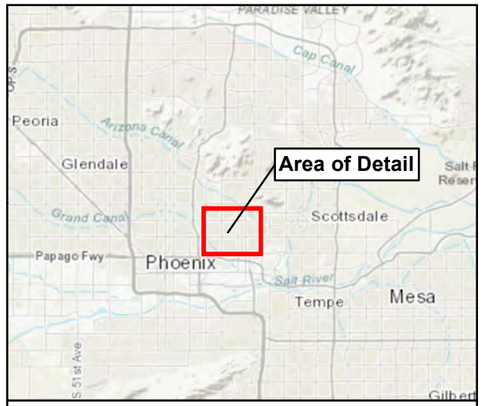
Arizona Department of Water Resources (ADWR)
Active Management Areas (AMA)

FIGURE
5

wood.

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure5_ADWR_AMA_LocationMap.mxd





Area of Detail

Legend

- Approximate Distribution of PCE Above 5 µg/L (Dashed Where Inferred)
- SRP Production Well Location
- Exempt Well Location
- Non-Exempt Well Location

Notes:

SRP	Salt River Project
WQARF	Water Quality Assurance Revolving Fund
Exempt	A groundwater well with maximum capacity of <35 gallons per minute
Non-Exempt	A groundwater well drilled within an Active Management Area under a groundwater right for withdrawl pursuant to ARS Title 45, Chapter 2, Article 5, 6, or 7.

0 750 1,500 Feet

N

40th St and Osborn Rd &
48th St and Indian School Rd
WQARF Sites
Phoenix, Arizona

FIGURE 6 **Registered Withdrawal Wells**

Job No.	14-2018-2047
PM:	JC
Date:	1/30/2019
Scale:	1"= 1500'

wood.

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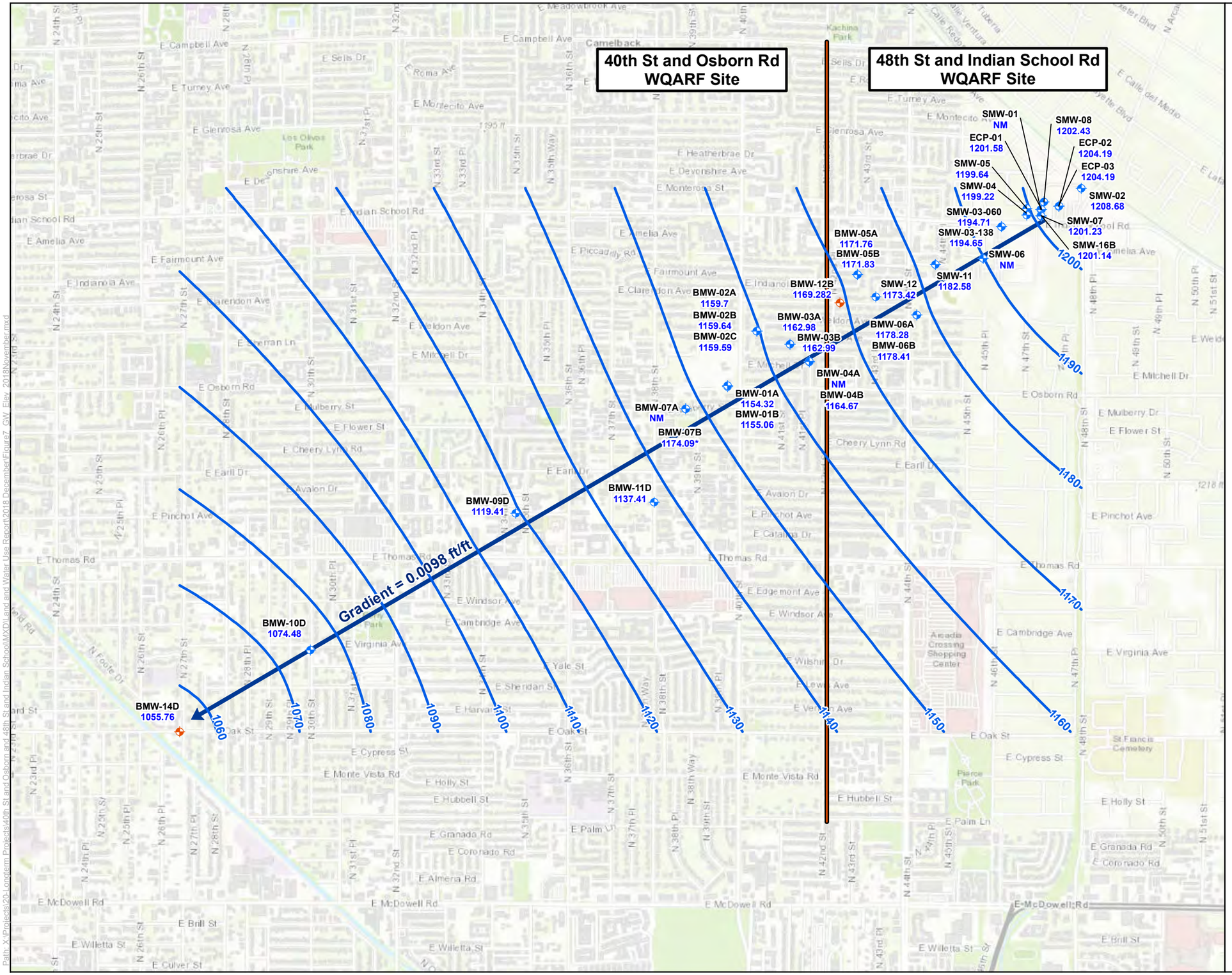
Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure6_RegisteredWithdrawalWells_2.mxd



Area of Detail

Legend

- FY 2019 Groundwater Monitor Well
- Groundwater Monitor Well
- Groundwater Elevation Contour (ft amsl)
- Groundwater Flow Direction

Notes:

BMW-14D 1055.76	Groundwater Monitoring Well Identification Groundwater Elevation (ft amsl)
*	Groundwater elevation value excluded from contouring due to anomalous reading due to weeds in the well
amsl	above mean sea level
ft	feet
NM	not measured
WQARF	Water Quality Assurance Revolving Fund

0 750 1,500
Feet

N

40th St and Osborn Rd &
48th St and Indian School Rd
WQARF Sites, Phoenix, Arizona

FIGURE 7

November 30, 2018
Groundwater Elevation Map

Job No.	14-2018-2069
PM:	JC
Date:	1/18/2019
Scale:	1"= 1500'

wood.

The map shown here has been created with all due and reasonable care and is strictly for use with Wood Environment & Infrastructure Solutions, Inc. Project Number 14-2018-2069. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood Environment & Infrastructure Solutions, Inc. assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure7_GW_Elev_2018November.mxd

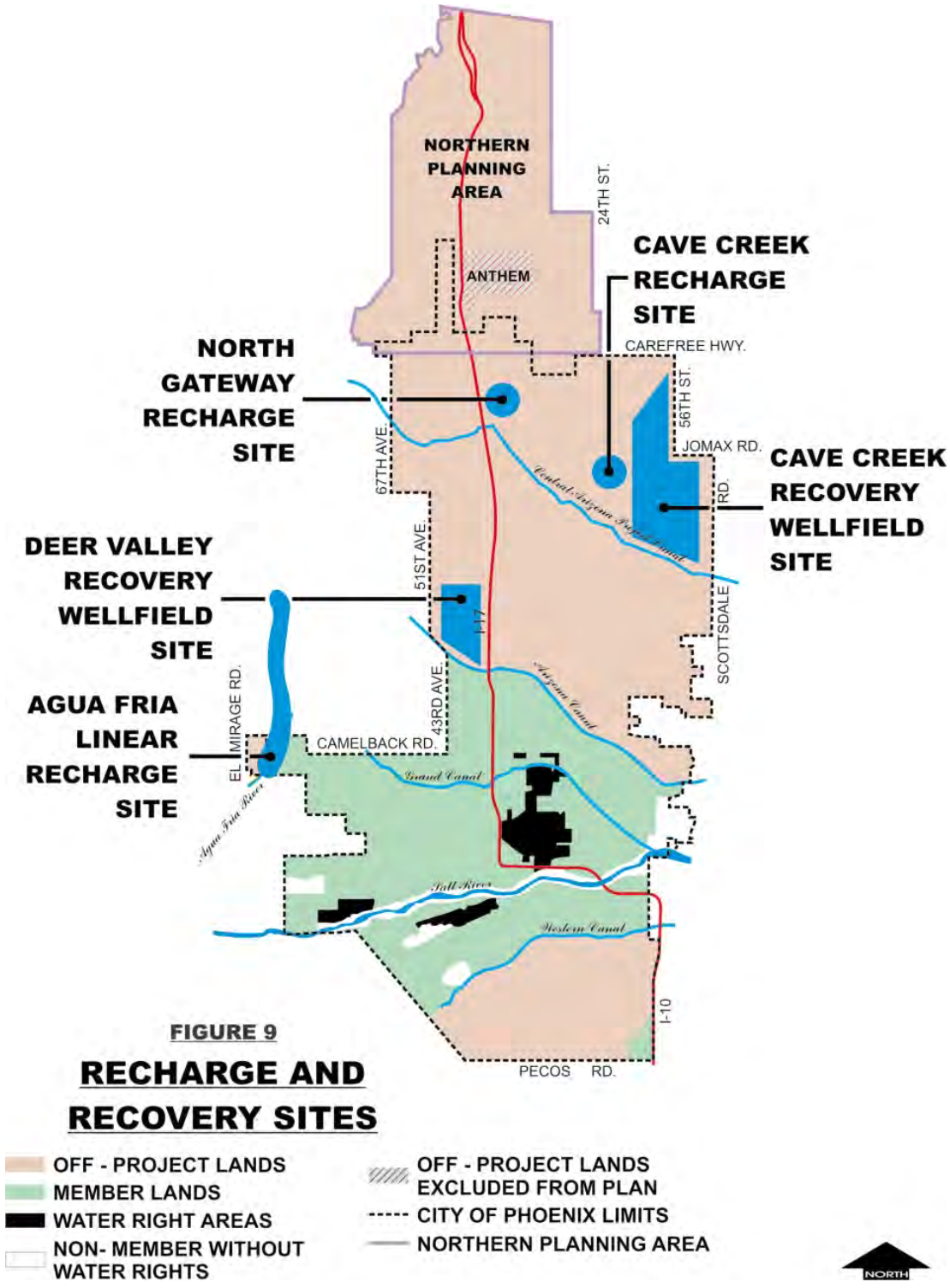


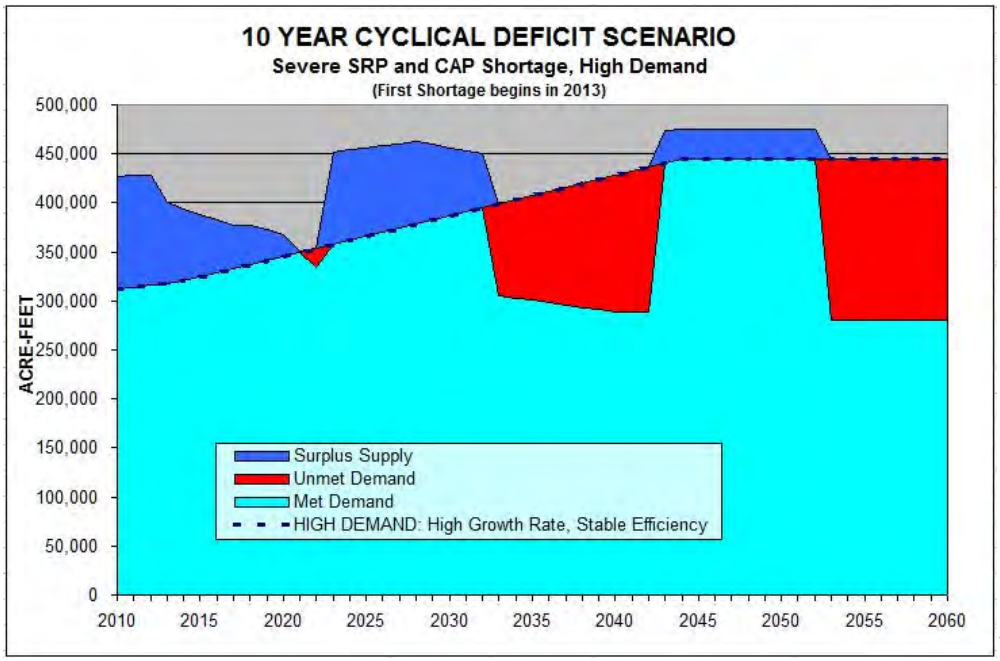
FIGURE 9

RECHARGE AND RECOVERY SITES

Source: City of Phoenix, Water Resources Element

Job No. 14-2018-2069 PM: JC Date: 12/10/2018 Scale: As Shown	N	40th St and Osborn Rd & 48th St and Indian School Rd WQARF Sites, Phoenix, Arizona	wood.
The map shown here has been created with all due and reasonable care and is strictly for use with Wood Environment & Infrastructure Solutions, Inc. Project Number 14-2018-2069. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood Environment & Infrastructure Solutions, Inc.assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.		**City of Phoenix** **Recharge and Recovery Sites**	FIGURE **8**

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure8_RechargeandrecoverySites.ai



[12]

Figure 4-11. Severe SRP and CAP shortage 10 year deficit scenario

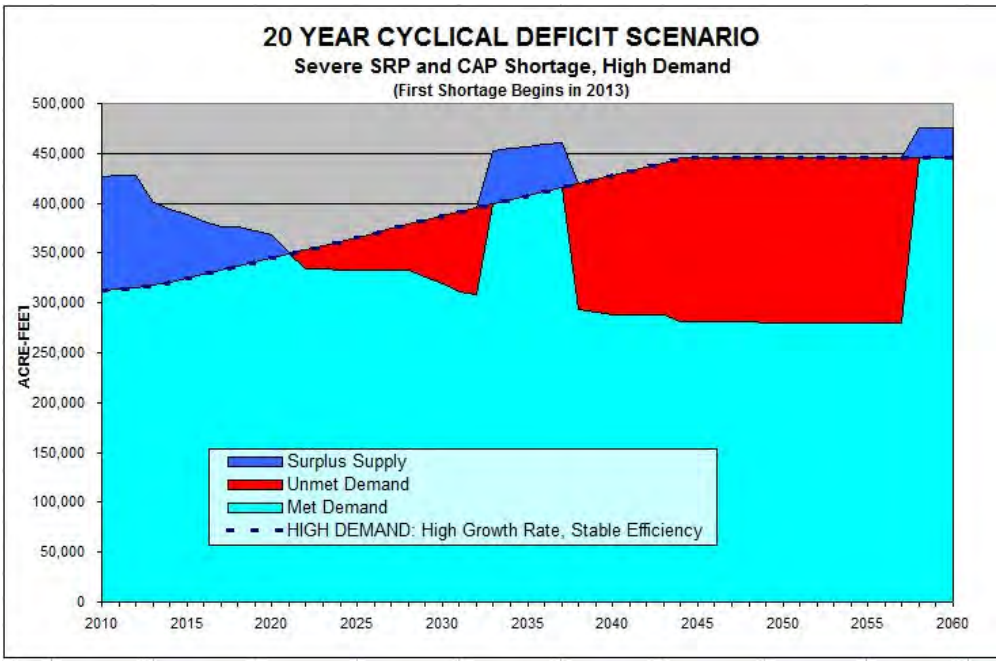


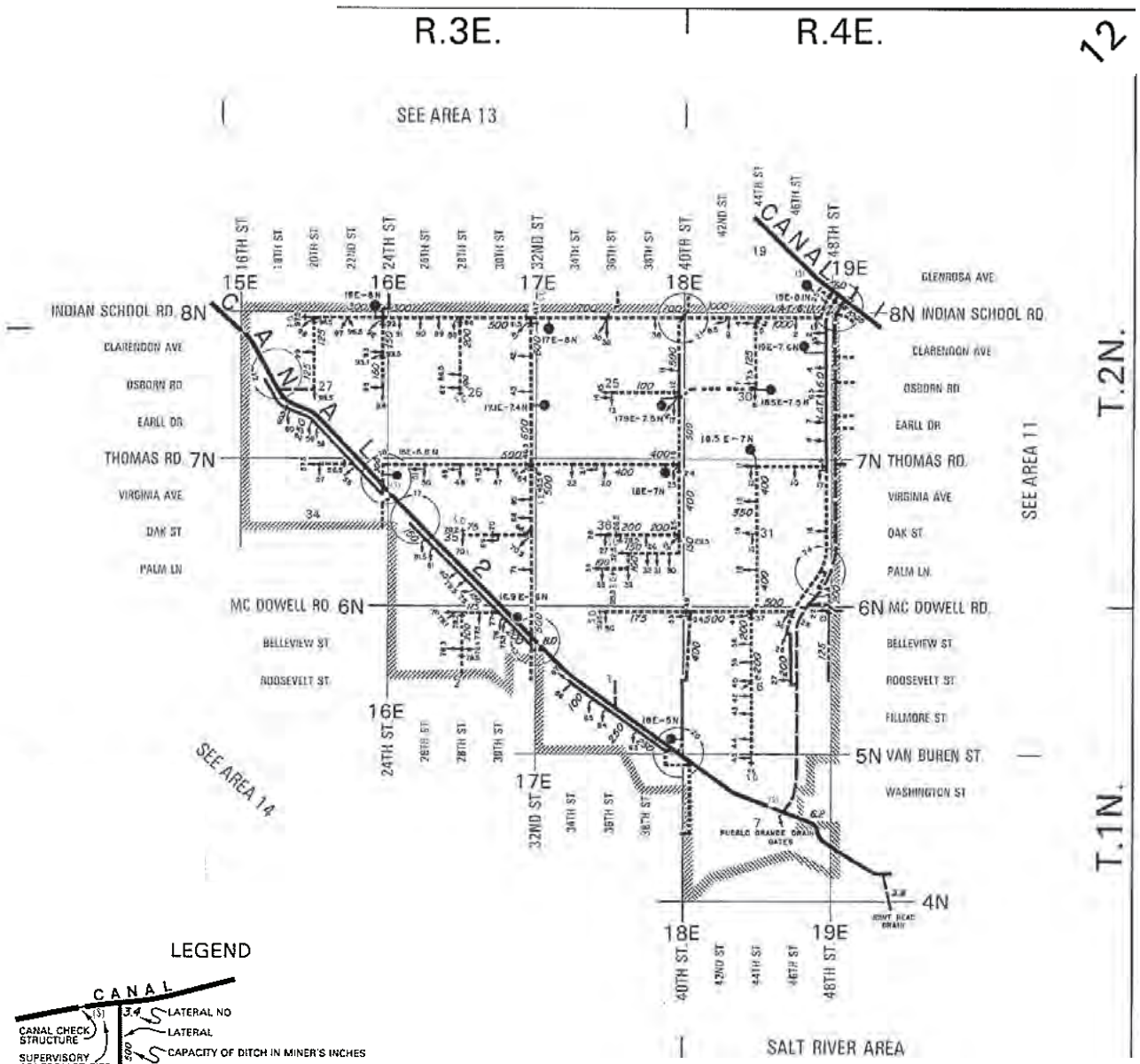
Figure 4-12. Severe SRP and CAP shortage 20 year deficit scenario

[12] First shortage to CAP occurs in 2010, but deficit to Phoenix would not materialize until 2020.

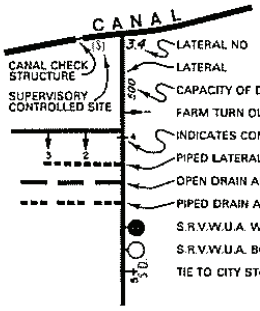
Source: City of Phoenix, 2011 Water Resource Plan

Job No. 14-2018-2069 PM: JC Date: 1/30/2019 Scale: N/A	N	40th St and Osborn Rd & 48th St and Indian School Rd WQARF Sites, Phoenix, Arizona	wood.
The map shown here has been created with all due and reasonable care and is strictly for use with Wood Environment & Infrastructure Solutions, Inc. Project Number 14-2018-2069. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood Environment & Infrastructure Solutions, Inc.assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.		**City of Phoenix** **Deficit Scenarios**	FIGURE **9**

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure9_DeficitScenarios.ai



LEGEND



AREA 12
PHOENIX IRRIGATION

SCALE
0 — 1 MI.

FEBRUARY 20, 1980

Source: Salt River Valley Water Users' Association, Zanjero Area Maps, 1980

Job No.	14-2018-2069
PM:	JC
Date:	12/10/2018
Scale:	As Shown

N

40th St and Osborn Rd &
48th St and Indian School Rd
WQARF Sites, Phoenix, Arizona

The map shown here has been created with all due and reasonable care and is strictly for use with Wood Environment & Infrastructure Solutions, Inc. Project Number 14-2018-2069. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood Environment & Infrastructure Solutions, Inc.assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

Salt River Project Canals

FIGURE **10**

wood.

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\Land and Water Use Report\2018 December\Figure10_SRPCanals.ai

ATTACHMENT A

LAND AND WATER USE STUDY QUESTIONNAIRES

LAND AND WATER USE STUDY QUESTIONNAIRE
FOR MUNICIPALITIES/COUNTIES/UTILITIES WITHIN THE
EAST CENTRAL PHOENIX (48TH STREET & INDIAN SCHOOL ROAD AND 40TH STREET AND OSBORN ROAD) WQARF REGISTRY SITES

Please answer all questions. Mark "NA" for questions that are not applicable. 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

Date Questionnaire was completed: 1/14/2019

Name of person completing Questionnaire: Julie Riemenschneider, Alexandra Richards, Keon Montgomery, and Maja Brkovic

Contact Name: Nancy Allen

Title: Environmental Programs Administrator

Division: Office of Environmental Programs

Address: 200 W. Washington St. / 14th Floor

Phoenix, AZ 85003

Phone Number: 602-256-5654

1. What is the current use of your municipality's/county's/utility's property within the limits of the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites? (Boundary of 48th Street & Indian School – Devonshire Avenue to the north, 48th Street on the east, Weldon Avenue on the south, and 42nd Street on the west; and boundary of 40th Street & Osborn Road - Osborn Road on the north, 42nd Street on the east, Oak Street on the south, and 27th Street on the west).

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

Commercial, retail, Office, multi-family, single-family, parking, school, churches

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

Single-family, schools, multi-family, trailer-park, commercial-retail, office, park and public pool (City of Phoenix facility)

2. Please list the municipality's/county's/utility's properties of concern/boundaries (neighborhood planning committees, zoning, canals, and wells) within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries.

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

Camelback East Village Planning Committee

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

Camelback East Village Planning Committee

3. What are the foreseeable plans for the municipality's/county's/utility's property within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries as far into the future as they are known and up to 100 years, if possible?

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

44th Street Corridor Residential Office Study:

https://www.phoenix.gov/villagessite/Documents/pdd_pz_pdf_00032.pdf

44th Street Corridor Specific Plan:

https://www.phoenix.gov/villagessite/Documents/pdd_pz_pdf_00033.pdf

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

44th Street Corridor Residential Office Study:

https://www.phoenix.gov/villagessite/Documents/pdd_pz_pdf_00032.pdf

44th Street Corridor Specific Plan:

https://www.phoenix.gov/villagessite/Documents/pdd_pz_pdf_00033.pdf

4. Does the municipality/county/utility have a published general plan for the property within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries?

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

Yes. The 2015 Phoenix General Plan is available online at: phoenix.gov/pdd/pz/phoenix-general-plan

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

Yes. The 2015 Phoenix General Plan is available online at: phoenix.gov/pdd/pz/phoenix-general-plan

5. Are parcel, zoning, or land maps available through the municipality/county/utility? Where are they located?

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

Yes. Parcel, zoning, and land use maps are available online at: phoenix.gov/pdd/pz/pzmaps

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

Yes. Parcel, zoning, and land use maps are available online at: phoenix.gov/pdd/pz/pzmaps

6. Please list any specific neighborhood concern the municipality/county/utility is aware of within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries? Please list future concerns (e.g.- freeway expansion, water use, water availability, etc.).

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

Ongoing neighborhood preservation, compatibility of new developments and canalscape.

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

Ongoing neighborhood preservation, compatibility of new developments and canalscape

7. Please list any future zoning plans or area plans for the municipality/county/utility within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries:

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

Canalscape

44th Street Corridor Specific Plan:

44th Street Corridor Residential Office Study:

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

Canalscape

44th Street Corridor Specific Plan:

44th Street Corridor Residential Office Study:

8. Please list any "special projects" projected or anticipated within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF site boundaries:

Devonshire Avenue to the north, Weldon to the south, 48th Street to the east and 42nd Street to the west:

Canalscape

Osborn Road to the North, Oak Street to the south, 42nd Street to the East and 27th Street to the west:

Canalscape, potential Bus-Rapid Transit (BRT) on Thomas Road

9. If any property is leased (the municipality/county/utility is the lessor), how long is the lease term?

1. Pine Tower Apartments – 2936 N. 36th St. - The units at this building are leased for one year at a time. When the leases renew they renew for a one year period

Single-Family:

1. 2321 N 28th St.- This home is vacant and listed on the market for sale
2. 3034 E. Yale St. - This is a multi-family property. The units at this building are leased for one year at a time. When the leases renew they renew for a one year period
3. 3038 E. Yale St. - This is a multi-family property. The units at this building are leased for one year at a time. When the leases renew they renew for a one year period
4. 2524 N. 31st St. - This is a multi-family property. The units at this building are leased for one year at a time. When the leases renew they renew for a one year period
5. 3333 E. Yale St.- This home is vacant and listed on the market for sale
6. 2314 N. 37th Way- This home is leased for one year at a time. When the lease renews it will renew for a one year period
7. 2510 N 39th Place- This home is leased for one year at a time. When the lease renews it will renew for a one year period

10. If the property is leased, are there plans to renew the lease and is so, for how long?

1. Pine Tower Apartments – 2936 N. 36th St. - The units at this building are leased for one year at a time. When the leases renew they renew for a one year period

Single-Family:

1. 2321 N 28th St. - This home is vacant and listed on the market for sale
2. 3034 E. Yale St. - This is a multi-family property. The units at this building are leased for one year at a time. When the leases renew they renew for a one year period
3. 3038 E. Yale St. - This is a multi-family property. The units at this building are leased for one year at a time. When the leases renew they renew for a one year period.
4. 2524 N. 31st St. - This is a multi-family property. The units at this building are leased for one year at a time. When the leases renew they renew for a one year period
5. 3333 E. Yale St. - This home is vacant and listed on the market for sale
6. 2314 N. 37th Way- This home is leased for one year at a time. When the lease renews it will renew for a one year period
7. 2510 N 39th Place- This home is leased for one year at a time. When the lease renews it will renew for a one year period

11. Please list any environmental spill of material or waste products that has occurred within the municipality/county/utility within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries in the past 5 years?

The Office of Environmental Programs (OEP) operates the emergency hotline spill response line for the City. The following spills were called into OEP, they occurred by unknown individuals on City of Phoenix property (Streets, alleys) and were discovered during routine trash collections by the City Public Works department.

6/1/15 4010 E Pinchot (alley): 5 - 1 gallon buckets of paint, 1 spilled – KES responded and cleaned up spill and properly disposed of it.

9/2/2014 3927 E Yale: contaminated oil debris – KES responded and cleaned up contaminated debris and properly disposed of it.

12/9/2013 2840 N. 32 place (alley): 12 -1 quarts of oil, small spill area on concrete – ERI responded and cleaned up spill and properly disposed of it.

6/2/2013 – 2416 N 37th Way (alley): oil spilled in alley way – a 5 gallon bucket of stained soil was removed for disposal by emergency response contractor.

12 Is the municipality/county/utility currently sampling groundwater wells within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites? If so, how often is the sampling conducted? Are analytical results being submitted to ADEQ for the groundwater database?

No groundwater sampling is being conducted by the City at this time.

13. Does your municipality/county/utility have an environmental manager or do you outsource environmental management to an environmental consulting firm? If so, please provide the following information:

Name: Nancy Allen

Contact: Office of Environmental Programs

Title: Environmental Programs Administrator

Address: 200 West Washington Street
Phoenix, AZ 850003

Phone: 602-256-5654

14. Please indicate anticipated groundwater development by the municipality/county/utility within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries.

Groundwater development could occur within 1 mile of the WQARF 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 2020 with deeper cuts predicted over time. Because of this possibility, the City views all water in our service boundary as a potential water supply source in the event that CAP allocations are curtailed during a drought declaration.

15. Are there any groundwater wells owned by the water provider that have been affected by the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites? If so, please list the ADWR well identification numbers. What is the current status of these wells (e.g.- shut down, still pumping)?

No City of Phoenix wells are known to have been affected as of the date of this questionnaire.

16. What is the future use (up to 100 years) for any wells that have been impacted by the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites?

City of Phoenix currently owns no wells in this immediate area.

However, Groundwater development could occur within 1 mile of the WQARF 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 2020 with deeper cuts predicted over time. Because of this possibility, the City views all water in our service boundary as a potential water supply source in the event that CAP allocations are curtailed during a drought declaration.

Thank you for your time. The Project Manager, Mel Bunkers, or a representative from ADEQ's consultant, Wood Environment & Infrastructure Solutions, Inc., may follow-up on answers provided.

LAND AND WATER USE STUDY QUESTIONNAIRE
FOR MUNICIPALITIES/COUNTIES/UTILITIES WITHIN THE
EAST CENTRAL PHOENIX (48TH STREET & INDIAN SCHOOL ROAD AND 40TH STREET AND OSBORN ROAD) WQARF REGISTRY SITES

Please answer all questions. Mark "NA" for questions that are not applicable. 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: January 10, 2019

Name of person completing Questionnaire: Karis Nelson

Contact Name: Karis Nelson

Title: Senior Environmental Scientist

Division: Environmental Compliance and Permitting

Address: PAB 359, P.O. Box 52025

Phoenix, AZ 85072

Phone Number: 602-236-2916

1. What is the current use of your municipality's/county's/utility's property within the limits of the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites? (Boundary of 48th Street & Indian School – Devonshire Avenue to the north, 48th Street on the east, Weldon Avenue on the south, and 42nd Street on the west; and boundary of 40th Street & Osborn Road - Osborn Road on the north, 42nd Street on the east, Oak Street on the south, and 27th Street on the west).

SRP owns and operates multiple groundwater supply wells and water conveyance structures (i.e. laterals and canals) in the subject areas. Power transmission and distribution lines are also located within the East Central Phoenix (ECP) boundaries.

2. Please list the municipality's/county's/utility's properties of concern/boundaries (neighborhood planning committees, zoning, canals, wells) within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries.

SRP groundwater production wells located within the ECP WQARF sites boundaries:

18E-7N (ADWR 55-617849)

17.9E-7.5N (ADWR 55-617857)

17.1E-7.4N (ADWR 55-607731)

SRP groundwater production wells that lie within a mile of the ECP WQARF sites:

19E-8.1N (ADWR 55-607748)

19E-7.6N (ADWR 55-608433)

18.6E-7.6N (ADWR 55-202398)

18.5E-7N (ADWR 55-607712)

18E-8.8N (ADWR 55-617825)

17E-8N (ADWR 55-608431)

16.9E-6N (ADWR 55-608380)

16E-8N (ADWR 55-607715)

16E-6.8N (ADWR 55-607726)

SRP conveyance structures that lie within a mile of the ECP WQARF sites:

Arizona Canal

Grand Canal

Various piped laterals (also located within the boundaries of the WQARF sites)

3. What are the foreseeable plans for the municipality's/county's/utility's property within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries as far into the future as they are known and up to 100 years, if possible?

SRP anticipates that all of the properties located within and near the subject areas, including the groundwater supply wells and the conveyance structures, will remain in use over the next 100 years (See Question #2). The wells are expected to transition from irrigation water supply to also include potable water supply.

Specifically, groundwater from the SRP supply wells in the vicinity of the WQARF sites could be included in the raw drinking water supply for the City of Goodyear (Goodyear), once the future Goodyear water treatment plant starts treating its raw water delivered by SRP. SRP entered into an Agreement with Goodyear in 2017 to wheel Goodyear's surface water supplies through the SRP water delivery system to the future Goodyear water treatment plant. Although the water delivered to Goodyear will primarily be Goodyear's surface water supplies (i.e., entitlement of Central Arizona Project water), from an operational perspective some of that water may physically comingle with water from the groundwater wells that discharge from around the sites.

NOTE: Please reference the SRP letter submitted to ADEQ on November 21, 2018, for more information (RE: Salt River Project Concerns Regarding Delisting of East Central Phoenix 38th Street and Indian School Road and East Central Phoenix 40th Street and Indian School Road WQARF Sites).

4. Does the municipality/county/utility have a published general plan for the property within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries?

SRP has no such plans.

5. Are parcel, zoning, or land maps available through the municipality/county/utility? Where are they located?

SRP is not subject to zoning ordinances and has no such maps.

6. Please list any specific neighborhood concern the municipality/county/utility is aware of within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries? Please list future concerns (e.g.- freeway expansion, water use, water availability, etc.).

The quantity and quality of groundwater in the Phoenix metro area is a significant issue. SRP has a specific concern regarding water quality impacts associated with the ECP WQARF sites. Our concern is heightened because of anticipated climate change and the additional stress expected to be applied to already stressed surface water supplies.

The importance of groundwater and the ability to utilize the aquifer in local and large-scale water management scenarios is critical to the future growth and wellbeing of the entire metro area. We cannot overstate the importance of effective cleanups of contaminants which threaten the use of groundwater and the aquifers that host it.

As noted in Question #3, SRP expects that the groundwater supply wells (listed in Question #2) will transition to a raw drinking water supply for Goodyear in the near future.

7. Please list any future zoning plans or area plans for the municipality/county/utility within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries:

SRP is not subject to zoning ordinances and has no such plans.

8. Please list any "special projects" projected or anticipated within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF site boundaries:

In the near future, SRP will transition groundwater supply wells from irrigation to municipal service (potable water supply). (See Question #3.)

Additionally, it may become necessary for SRP to construct additional groundwater supply wells in close proximity to the ECP WQARF sites.

9. If any property is leased (the municipality/county/utility is the lessor), how long is the lease term?

SRP has several license agreements in the area of 48th Street and Indian School Road. The agreements are land use authorizations that allow others to use United States lands. Expirations range from 3 to 15 years.

10. If the property is leased, are there plans to renew the lease and is so, for how long?

SRP will renew several of the license agreements. The agreement with the City of Phoenix will be renewed for a 20-year term. All others, if renewed, will not exceed 5 years in term.

11. Please list any environmental spill of material or waste products that has occurred within the municipality/county/utility within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries in the past 5 years?

None.

12. Is the municipality/county/utility currently sampling groundwater wells within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites? If so, how often is the sampling conducted? Are analytical results being submitted to ADEQ for the groundwater database?

SRP conducts routine groundwater sampling of its wells. Water quality records are submitted electronically to the ADEQ groundwater database. If necessary, water quality records can be requested from SRP if there are data gaps in the ADEQ database.

13. Does your municipality/county/utility have an environmental manager or do you outsource environmental management to an environmental consulting firm? If so, please provide the following information:

Name: Andrea Martinez

Title: Manager, Water Quality & Waste Management Services

Address: PAB 359, P. O. Box 52025

Phoenix, AZ 85072

Phone: 602-236-2618

14. Please indicate anticipated groundwater development by the municipality/county/utility within the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites boundaries.

See Question #3.

15. Are there any groundwater wells owned by the water provider that have been affected by the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites? If so, please list the ADWR well identification numbers. What is the current status of these wells (e.g.- shut down, still pumping)?

Below, is a brief analysis of TCE and PCE water quality results from SRP wells located near and within the ECP WQARF sites. The most recent TCE/PCE results from the 2012-2018 timeframe are reported.

> *17.9E-7.5N (ADWR 55-617857): Active well. TCE levels below the reporting limit. PCE levels at 1.6 µg/L in 2016.*
>
> *17.1E-7.4N (ADWR 55-607731): Active well. TCE levels below the reporting limit. PCE levels at 1.1 µg/L in 2017.*
>
> *17E-8N (ADWR 55-608431): Active well. TCE levels below the reporting limit. PCE levels at 0.6 µg/L in 2017.*

16.9E-6N (ADWR 55-608380): Active well. TCE levels at 3.7 µg/L in 2018. PCE levels at 0.8 µg/L in 2018.

16E-6.8N (ADWR 55-607726): Active well. TCE levels below the reporting limit. PCE levels at 4.1 µg/L in 2017.

19E-8.1N (ADWR 55-607748): Active well. TCE and PCE levels below the reporting limit.

19E-7.6N (ADWR 55-608433): Active well. TCE and PCE levels below the reporting limit.

18.6E-7.6N (ADWR 55-202398): Active well. TCE and PCE levels below the reporting limit.

18.5E-7N (ADWR 55-607712): Active well. TCE and PCE levels below the reporting limit.

18E-8.8N (ADWR 55-617825): Active well. TCE and PCE levels below the reporting limit.

18E-7N (ADWR 55-617849): Active well. TCE and PCE levels below the reporting limit.

16E-8N (ADWR 55-607715): Active well. TCE and PCE levels below the reporting limit.

16. What is the future use (up to 100 years) for any wells that have been impacted by the East Central Phoenix (48th Street & Indian School Road and 40th Street & Osborn Road) WQARF sites?

All of SRP's groundwater supply wells in the vicinity of the ECP WQARF sites are anticipated to remain in use over the next 100 years. In the near future, SRP will transition groundwater supply wells from irrigation to municipal service (potable water supply). (See Question #8.)

On average, SRP currently delivers approximately 800,000-acre feet to customers within its service area and to meet other obligations. In normal run off years, most of this is supplied from surface water coming from the Salt and Verde Rivers. However, in dry years, groundwater must be pumped to supplement the surface water supplies. SRP's water supply wells are a critical resource especially in drought conditions and it is very important to SRP that it have a reliable supply of water to meet customer and shareholder needs.

***

Thank you for your time. The Project Manager, Mel Bunkers, or a representative from ADEQ's consultant, Wood Environment & Infrastructure Solutions, Inc., may follow-up on answers provided.

ATTACHMENT B

ADWR WELL REGISTRATION RECORDS

✓JOB FILE

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street γ Phoenix, Arizona 85004
(602) 417-2405 γ (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

30

FILE NUMBER: A (2-4)acc
WELL REGISTRATION NUMBER: 55-202398
PERMIT NUMBER (IF ISSUED):

** PLEASE PRINT CLEARLY **

SECTION 1 REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Salt River Project

MAILING ADDRESS: PO Box 52025

CITY / STATE / ZIP CODE: Phoenix, AZ 85072

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY): Near 44th st. and Osborn Phx, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2N	4E	30	NE ¼	SW ¼	SW ¼

LATITUDE: 33 ° 29 ' 15.73 N

LONGITUDE: 111° 59 ' 12.51 W

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS: ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
127	8	41-A

COUNTY WHERE WELL IS LOCATED: Maricopa

SECTION 2 DRILLING AUTHORIZATION

Drilling Firm

NAME: Weber Group LC

DWR LICENSE NUMBER: 215

TELEPHONE NUMBER: 480-961-1141

FAX: 480-961-0290

IMAGED

SECTION 3 WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 6-27-04

DATE WELL CONSTRUCTION COMPLETED: 12-30-04

IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other:

Drill Method — CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☒ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other *(please specify)*:

Method of Well Development — CHECK ONE

- ☐ Airlift
- ☐ Bail
- ☒ Surge Block
- ☐ Surge Pump
- ☐ Other *(please specify)*:

Method of Sealing at Reduction Points — CHECK ONE

- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other *(please specify)*:

Water Level Information

STATIC WATER LEVEL: 27 Feet Below Land Surface

DATE MEASURED: 11-22-04

ENTERED SEP - 6 2005

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55-202398

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	38	36	0	38	28	X			.375	X						
			0	39	24 1/2	X			.312	X						
			39	137	24 1/2	X			.312				X			1"x3.5"
			+1	47	20 5/8	X			.312 HLSA	X						
			47	207	20 5/8	X			.312 HLSA			X			FUL FLO	.050

Installed Annular Material											
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	38			X								
20	205								TACNA		X	6x12
205	207		X						PLUG INSIDE AND OUT			

DEPTH OF BORING	DEPTH OF COMPLETED WELL
207 Feet Below Land Surface	205 Feet Below Land Surface

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 202398

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
0	5	TOP SOIL	
5	35	CALICHE	
35	50	WATER / SAND	X
50	53	RED CLAY	
53	70	SAND	
70	80	SAND AND PEA GRAVEL	
80	145	SAND / STREAKS OF CLAY	
145	160	COARSE SAND	
160	205	SOFT CONGLOMERATE	

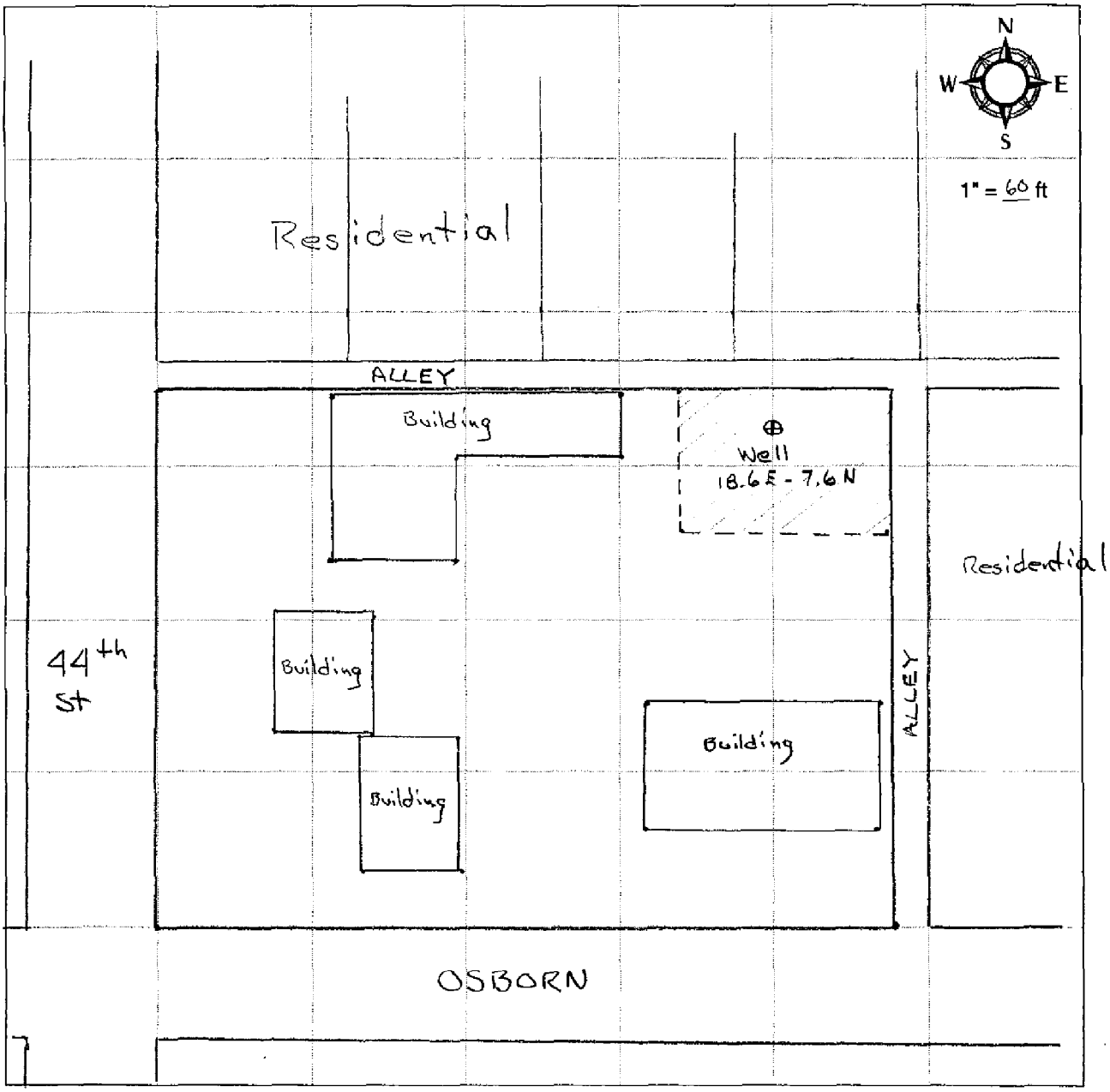
. Report and Well Log

WELL REGISTRATION NUMBER
55-202398

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
SALT RIVER PROJECT	127	8	41-A

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
WEBER GROUP LC		6/6/05

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT DIVISION

300 North Third Street
Phoenix, Arizona 85004

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-202398 **REPLACES: 55-607713**

AUTHORIZED DRILLER: WEBER GROUP, L.C. **LICENSE NO: 215**

A NOTICE OF INTENTION TO REPLACE AN EXISTING NON-EXEMPT WELL INSIDE THE PHOENIX ACTIVE MANAGEMENT AREA HAS BEEN GRANTED TO:

WELL OWNER: Salt River Project P.O. Box 52025 Phoenix, AZ 85072

The well(s) is/are to be located in the:

SW¼ of the SW¼ of the NE¼ Section 30 Township 2 North Range 4 East

No. of well(s) in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF MARCH, 2005.

WATER MANAGEMENT DIVISION

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Weber Group, L.C.

August 26, 2005

Barb Sims
ADWR
Information Management Unit

RE: Salt River Project 55-202398

Barb,
Thank you for you assistance in recognizing and solving the registration issue on this new SRP production well. I have made the appropriate changes to the well completion report. I am unable to offer any assistance on 55-607713 as Weber Group did not abandon that well. If you should have any further questions please don't hesitate to contact me.

Thank you,

Marty Weber

Cc Walker Milici

7

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AUG 26 2005
Information Management

Weber Group L.C.

CONTRACTORS

16825 S. Weber Dr. Chandler, AZ 85226
Phone 480-961-1141 Fax 480-961-0290

Fax Transmission

Date 8/26/05

To:		From:	
Attention	BARB SIMS	Name	MARTY
Company	ADWR	Dept	
RE	55-202398	Number of pages included	7
Fax Number	602 417 2421		

Memo

BARB,

Sorry it took so long for such an easy fix. This should be what you need. THANK YOU. MARTY

I will send copy in the mail.

If you do not receive all pages please contact above number.

IMAGED

Weber Group, L.C.

August 26, 2005

AUG 26 2005
Information Management

Barb Sims
ADWR
Information Management Unit

RE: Salt River Project 55-202398

Barb,
Thank you for you assistance in recognizing and solving the registration issue on this new SRP production well. I have made the appropriate changes to the well completion report. I am unable to offer any assistance on 55-607713 as Weber Group did not abandon that well. If you should have any further questions please don't hesitate to contact me.

Thank you,

Marty Weber

Cc Walker Milici

16825 South Weber Drive • Chandler, Arizona 85226-4112 • Office (480) 961-1141 • Fax (480) 961-0290 • KA #146267, KB-01 #146265, L-11 #146266

✓JOB FILE

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street γ Phoenix, Arizona 85004
(602) 417-2405 γ (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

A(2-4)30ACC

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

RECEIVED AUG 26 2005 Information Management

LIFE NUMBER: A (2-4)30acc
WELL REGISTRATION NUMBER: 55-202398
PERMIT NUMBER (IF ISSUED):

** PLEASE PRINT CLEARLY **

SECTION 1 REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Salt River Project

MAILING ADDRESS: PO Box 52025

CITY / STATE / ZIP CODE: Phoenix, AZ 85072

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: | FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY): Near 44th st. and Osborn Phx, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2N	4E	30	NE ¼	SW ¼	SW ¼

LATITUDE			LONGITUDE		
33 °	29 '	15.73 N	111°	59 '	12.51 W

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS: ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
127	8	41-A

COUNTY WHERE WELL IS LOCATED: Maricopa

SECTION 2 DRILLING AUTHORIZATION

Drilling Firm

NAME: Weber Group LC

DWR LICENSE NUMBER: 215

TELEPHONE NUMBER: 480-961-1141 | FAX: 480-961-0290

SECTION 3 WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 6-27-04

DATE WELL CONSTRUCTION COMPLETED: 12-30-04

IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other:

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☒ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other *(please specify)*:

Method of Well Development

CHECK ONE

- ☐ Airlift
- ☐ Bail
- ☒ Surge Block
- ☐ Surge Pump
- ☐ Other *(please specify)*:

Method of Sealing of Reduction Points

CHECK ONE

- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other *(please specify)*:

Water Level Information

STATIC WATER LEVEL: 27 Feet Below Land Surface

DATE MEASURED: 11-22-04

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 -202398

SECTION 4 WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (CIRCLE)				PERFORATION TYPE (CIRCLE)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	38	36	0	38	28	X			.375	X						
			0	39	24 1/2	X			.312	X						
			39	137	24 1/2	X			.312				X			1"x3.5"
			+1	47	20 5/8	X			.312 HLSA	X						
			47	207	20 5/8	X			.312 HLSA			X			FUL FLO	.050

AUG 26 2005
Information Management

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	38			X								
20	205								TACNA		X	6x12
205	207		X						PLUG INSIDE AND OUT			

DEPTH OF BORING	DEPTH OF COMPLETED WELL
207 Feet Below Land Surface	205 Feet Below Land Surface

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 202398

SECTION 5 GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	Description: Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
0	5	TOP SOIL	
5	35	CALICHE	
35	50	WATER / SAND	X
50	53	RED CLAY	
53	70	SAND	
70	80	SAND AND PEA GRAVEL	
80	145	SAND / STREAKS OF CLAY	
145	160	COARSE SAND	
160	205	SOFT CONGLOMERATE	

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AUG 26
Information Management

Report and Well Log

WELL REGISTRATION NUMBER
55-202398

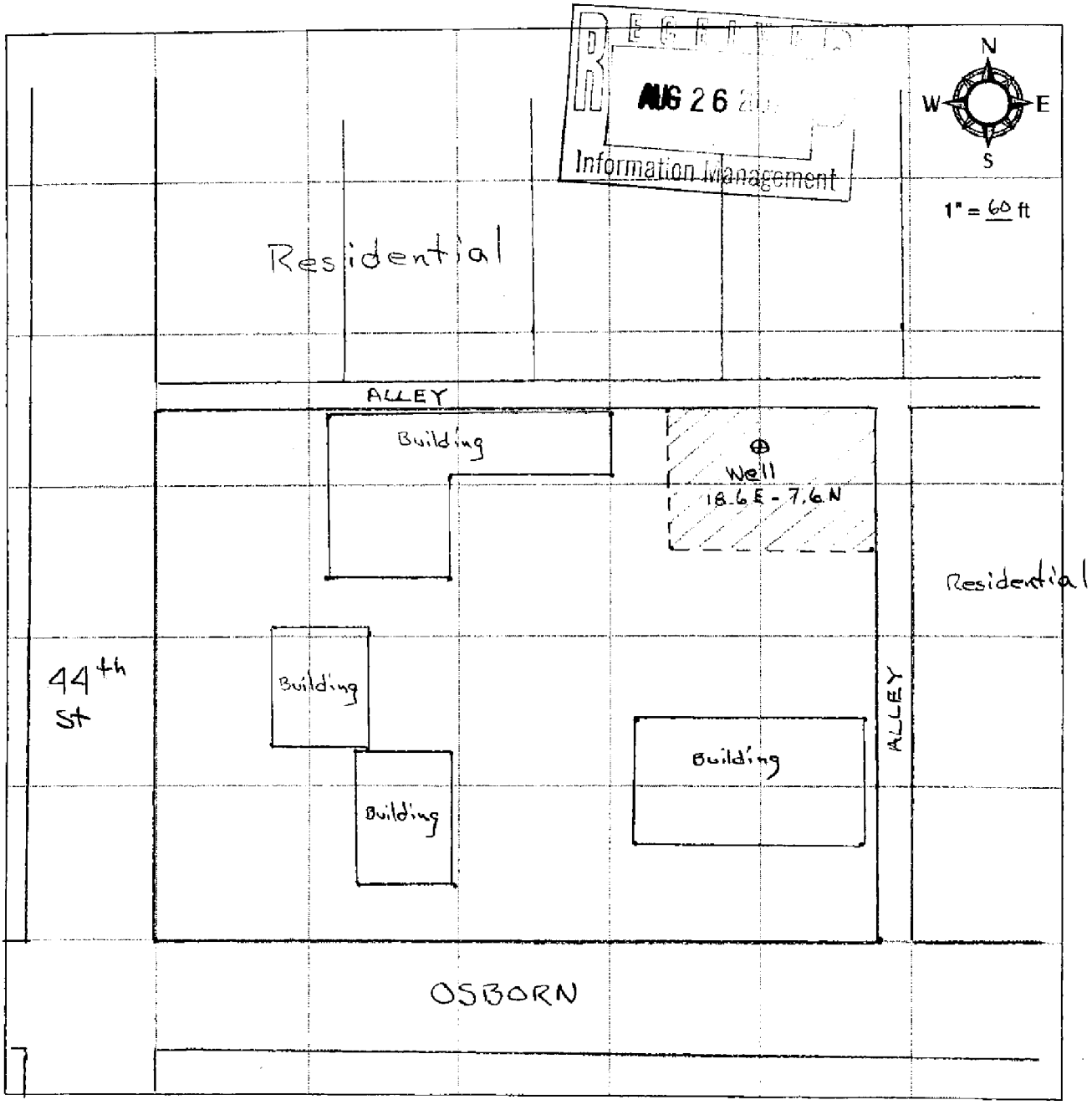
SECTION 6 WELL SITE PLAN

NAME OF WELL OWNER: SALT RIVER PROJECT

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
127	8	41-A

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
WEBER GROUP LC		6/6/05

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT DIVISION

500 North Third Street
Phoenix, Arizona 85004

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-202398 REPLACES: 55-607713

AUTHORIZED DRILLER: WEBER GROUP, L.C. LICENSE NO: 215

A NOTICE OF INTENTION TO REPLACE AN EXISTING NON-EXEMPT WELL INSIDE THE PHOENIX ACTIVE MANAGEMENT AREA HAS BEEN GRANTED TO:

WELL OWNER: Salt River Project P.O. Box 52025 Phoenix, AZ 85072

The well(s) is/are to be located in the:

SW¼ of the SW¼ of the NE¼ Section 30 Township 2 North Range 4 East

No. of well(s) in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF MARCH, 2005.

WATER MANAGEMENT DIVISION

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT DIVISION
500 North Third Street
Phoenix, Arizona 85004

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-202398 **REPLACES: 55-607713**

AUTHORIZED DRILLER: WEBER GROUP, L.C. **LICENSE NO: 215**

A NOTICE OF INTENTION TO REPLACE AN EXISTING NON-EXEMPT WELL INSIDE THE PHOENIX ACTIVE MANAGEMENT AREA HAS BEEN GRANTED TO:

WELL OWNER: Salt River Project P.O. Box 52025 Phoenix, AZ 85072

The well(s) is/are to be located in the:

SW¼ of the SW¼ of the NE¼ Section 30 Township 2 North Range 4 East

No. of well(s) in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF MARCH, 2005.

JSM

WATER MANAGEMENT DIVISION

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

IMAGED

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

RECEIVED APR 29 2004 Information Management

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

FILE NUMBER

WELL REGISTRATION NUMBER 55 - 202398

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SRP/16ST52

MAILING ADDRESS: P.O. Box 52025

CITY / STATE / ZIP CODE: Phoenix, AZ 85072-2025

CONTACT PERSON NAME AND TITLE: Walker Milici Geohydrologist

TELEPHONE NUMBER: 602-236-5363 FAX: 602-236-2987

Location of Well

WELL LOCATION ADDRESS (IF ANY): 18.5E-7.5N

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2N	4E	30	NE ¼	SW ¼	SW ¼

LATITUDE			LONGITUDE		
33° Degrees	29' Minutes	15.73"N Seconds	-111° Degrees	59' Minutes	12.51"W Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER portions of...

BOOK	MAP	PARCEL
127	8	41 A & B

COUNTY WHERE WELL IS LOCATED: Maricopa — Description attached

Type of Request (CHECK ONE)

- [X] Change of Well Drilling Contractor *(Fill out Section 2)*
- [ ] Change of Well Ownership *(Fill out Section 3)*
- [ ] Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

$10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Layne Christensen

DWR LICENSE NUMBER: 7

TELEPHONE NUMBER: 480-895-9404 FAX: 480-895-8699

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: The Weber Group

DWR LICENSE NUMBER: 215 ROC LICENSE CATEGORY: Exempt

TELEPHONE NUMBER: 480-961-1141 FAX: 480 961 0290

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

SRP — Delivering More Than Power™
PO BOX 52025
PHOENIX, AZ
85072-2025
(602) 236-5900

BANK ONE, ARIZONA, NA
COMMERCIAL BANKING
PHOENIX, ARIZONA

LIMIT $500 — 160665 — 91-2 / 1221

PURPOSE: ADWR Permit

IMPORTANT: IF PURCHASE IS FOR MATERIALS OUT CHECK BOX

ORIGINATING COST CENTER	CHARGE NUMBER	DTOC	RELATED NUMBER	CROSS-CHARGE RESPONSIBLE CC	AMOUNT
91321	[illegible]				
91321	RC1-03002-601	401			10.00
				TOTAL AMOUNT	10.00

DATE

VOID AFTER 60 DAYS FROM ISSUE OR 12/31/2008 WHICHEVER COMES FIRST

NOT VALID FOR MORE THAN $500.00

EMPLOYEE NUMBER: 07510

PAY TO THE ORDER OF: ADWR $ 10.00

THE AMOUNT OF: ten & 00/100 DOLLARS

EMPLOYEE NUMBER: 13223

EXPENSE AUTHORIZED BY: [redacted]

[redacted]

DATE 4-9/04

O FEE

ust be filed.

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

A(2-4)30 ACC

Request to Change Well Information

RECEIVED APR 29 2004 Information Management

- Review instructions prior to completing form in black or blue ink
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

FILE NUMBER

WELL REGISTRATION NUMBER 55 - 202398

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SRP/16ST52

MAILING ADDRESS: P.O. Box 52025

CITY / STATE / ZIP CODE: Phoenix, AZ 85072-2025

CONTACT PERSON NAME AND TITLE: Walker Milici Geohydrologist

TELEPHONE NUMBER: 602-236-5363 FAX: 602-236-2987

Location of Well

WELL LOCATION ADDRESS (IF ANY): 18.5E-7.5N

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2N	4E	30	NE ¼	SW ¼	SW ¼

LATITUDE			LONGITUDE		
33°	29'	15.73"N	-111°	59'	12.51"W
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER portions of...

BOOK	MAP	PARCEL
127	8	41A&B

COUNTY WHERE WELL IS LOCATED: Maricopa — Description attached

Type of Request (CHECK ONE)

- ☒ Change of Well Drilling Contractor *(Fill out Section 2)*
- ☐ Change of Well Ownership *(Fill out Section 3)*
- ☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

$10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Layne Christensen

DWR LICENSE NUMBER: 7

TELEPHONE NUMBER: 480-895-9404 FAX: 480-895-8699

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: The Weber Group

DWR LICENSE NUMBER: 215 ROC LICENSE CATEGORY: Exempt

TELEPHONE NUMBER: 480-961-1141 FAX: 480 961 0290

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

IMAGED

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Walker Milici Geohydrologist

SIGNATURE OF WELL OWNER: Walker Milici for SRP DATE: 4/29/04

PRELIMIARY LEGAL DESCRIPTIONS - PENDING SURVEY

Fee Purchase: Parcel 127-08-041A (KNIGHT)
The East 60 feet of the North 40 feet of Tract "A", CHESTLEY MANOR, according to Book 63 of Maps, Page 5, records of Maricopa County, Arizona. Said parcel contains 2,400 square feet, more or less.

Fee Purchase: Parcel 127-08-041B (Reyman)
The East 60 feet of the South 15 feet of the North 55 feet of Tract "A", CHESTLEY MANOR, according to Book 63 of Maps, Page 5, records of Maricopa County, Arizona. Said parcel contains 900 square feet, more or less.

RECEIVED
APR 29
GROUNDWATER MGT

Registry | Name Addr | Drilling Auth | Permits | Water/Site | PQU | Driller Log | Completion

Drilling Authorities

Registry ID	License #	Issue Date	Expiration Date
55-	215	05/04/2004	03/01/2005

Comments:

Driller Licenses

Company: WEBER GROUP, L.C.

Qualifying Party: SEE COMMENTS

☑ Active License

Address1: 1565 S. WEBER DRIVE

Address2:

City	State	Zip Code	Phone	ROC Licenses
CHANDLER	AZ	85228-41	480-961-1141	A-18 & KA

Comments:

BERNARD "BERNIE" LEE WEBER 00-04 ACTIVE
MARTY WEBER 2009-2003 ACTIVE
[illegible]

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458, PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED MAR - 2 2004 OFC OF WATER MGT

NOTICE OF INTENTION TO DEEPEN, REPLACE OR MODIFY AN EXISTING, NON-EXEMPT WELL AT APPROXIMATELY THE SAME LOCATION IN AN ACTIVE MANAGEMENT AREA

PLEASE READ GENERAL INSTRUCTIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.
Section § 45-597, Arizona Revised Statutes provides: In an Active Management Area, prior to deepening, replacing or modifying an existing well at approximately the same location, a person entitled to withdraw groundwater, shall file a Notice of Intention to Drill with the Department.

1. **WELL/LAND LOCATION:** 2 (N/S) 4 (E/W) 30
   Township Range Section
   SW ¼ SW ¼ NE ¼
   10 Acre 40 Acre 160 Acre
2. **POSITION LOCATION OF THE WELL:**
   Latitude 33 ° 29 ' 15.73" N
   Longitude 111 ° 59 ' 12.51" W
3. **COUNTY** Maricopa
4. **APPLICANT** [redacted] SRP
   Name
   16ST52/PO Box 52025
   Mailing Address
   Phoenix AZ 85072-2025
   City State Zip
   Telephone No. 602-236-5363
5. **OWNER OF THE LAND OF WELLSITE:** SRP
   Name
   16ST52/PO Box 52025
   Mailing Address
   Phoenix AZ 85072-2025
   City State Zip
   Telephone No. 602-236-5363
6. **THIS NOTICE IS FILED BY:**
   Check one: ☒ Owner ☐ Lessee
   same as above
   Name
   Mailing Address
   City State Zip
7. **DESCRIPTION OF THE PROPOSED WELL:**
   Diameter 20 Inches
   Depth 300 Feet
   Type of Casing steel
8. **ESTIMATE OF TOTAL ANNUAL PUMPAGE:**
   1050 Acre Feet per Year
9. **ESTIMATED AMOUNT OF GROUNDWATER WITHDRAWN FROM THE ORIGINAL WELL:**
   1050 Acre Feet per Year
10. **PRINCIPAL USE OF WATER** (be specific): Irrigation
11. **OTHER USES INTENDED** (be specific): None
12. **CONSTRUCTION WILL START:**
    5 2003
    Month Year

FOR DEPARTMENT USE ONLY
File No. A(2-4)30 ACC
Filed 3-2-2004 By DSK
Input 3-2-04 By DSK

DUPLICATE
Mailed 3-15-04 By DSK
Registration 55- 202398
AMA/INA PHOENIX

13. **CLAIM OF ENTITLEMENT TO WITHDRAW GROUNDWATER:**
    Certificate 58 _____
    Permit 59- _____
    Irrigation District 57- 002520
    Service Area 56- _____
    Recovery Well Permit _____
14. **ACTION REQUESTED:**
    ☐ Deepen ☒ Replace ☐ Modify
    For a replacement well give distance from original well 430 Feet
15. **EXISTING WELL REGISTRATION NO. 55-** 607713
16. **WILL THE WELL REPLACED BE ABANDONED?** ☒ Yes ☐ No
17. **DRILLING FIRM:**
    Layne Christensen
    Name
    12030 E. Riggs Rd
    Mailing Address
    Chandler AZ 85249
    City State Zip
    480 ~~602~~ 895-9404
    Telephone No.
    7
    DWR License Number
    Exempt
    ROC License Category
18. **Is the proposed well within 100 feet of a septic tank system, sewage area, landfill, hazardous waste facility or storage area of hazardous material or a petroleum storage area and tank?** ☐ Yes ☒ No

19. Attach a detailed construction diagram of the proposed well design. The diagram should provide verification of consistency with minimum construction requirements. Specifically, the diagram should include an indication of the perforated interval location(s) in relationship to the expected water level; the depth and thickness of the surface seal, and grouting material used; whether the surface or conductor casing will extend above grade; and vault details, if specified.

I state that this Notice is filed in compliance with Rules A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of my knowledge and belief, and that I understand the conditions set forth on the reverse side of this form.

Walker Milici Geohydrologist [signature] for SRP 3/1/04
Type or Print Name and Title / Signature [X] Land Owner [ ] Lessee of well site / Title / Date

DWR 55-41 Revised 5/03

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT DIVISION
500 North Third Street - Phoenix, Arizona 85004-3903
Telephone 602-417-2470
Fax 602-417-2422

MAR - 2 2004

NEW WELL CONSTRUCTION SUPPLEMENT (form DWR 55-90)

Well Registration Number 55- 202398
(FOR DEPARTMENT USE ONLY)

1. Well Location:

SW ¼ of the SW ¼ of the NE ¼, Sec. 30 Township 2N Range 4E.
10AC 40AC 160AC

2. Position Location of the Well:

Latitude 33 ° 29 ' 15.73" Longitude 111 ° 59 ' 12.51"

3. County Maricopa.

4. Date construction to start: 3/04.

5. Time period well will remain in use: 100 years.

6. Is pump equipment to be installed? Yes If so, design pump capacity: 750 GPM. (estimate)

7. Well construction plan:

a. Drilling method (mud rotary, hollow-stem auger, etc.) cable tool.

b. Borehole diameters 38" inches from 0 feet to 40 feet.
30" inches from 40 feet to 300 feet.

c. Casing materials steel blank & slotted casing.

d. Method of well development (bail, air lift, surge, etc.) swab & pump/surge

e. Will surface or conductor casing extend above grade? yes, approx. 1'.

8. Include a detailed construction diagram of the proposed well design. The diagram should verify consistency with minimum construction requirements specified in the Department's well construction rules found in Arizona Administrative Code (A.A.C.) R12-15-801 *et. seq.* Specifically, the diagram should include borehole diameters; casing materials and diameters; perforation intervals; the expected water level; depth and thickness of the surface seal; proposed grouting materials; and the length that the surface or conductor casing will extend above grade, or vault details, if specified.

9. Proposed materials and method of abandonment if well is to be abandoned after project is completed (Minimum requirements per A.A.C. R12-15-816):

Well will not be abandoned

10. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material, or petroleum storage area or tank? _____Yes __X__No

11. Is this well to monitor existing contamination? ____Yes __X__No

Potential contamination?_____Yes __X__No If yes, please provide explanation:_____

_____

_____

12. Will the proposed well be a replacement well in the same location (A.R.S. §§ 45-596 and 45-597, A.A.C. R12-15-840)? A replacement well is one located no more than 660 feet from the original well that it is replacing, and which is not expected to withdraw on an annual basis more groundwater than historical annual withdrawals from the original well. __X__Yes ____No

If yes then indicate the following:

(a) Record the registration number for the well that will be replaced: 55-607713

(b) Will the original well to be replaced be _____Capped, __X__ Abandoned _____Other.

If Other, please explain: _____.

13. Name of Consulting firm, if any :_____None_____

_____

Address City State Zip

Contact Person:_____Telephone Number_____

14. Drilling firm: Layne Christensen

DWR License Number: 7 ROC License Category: Exempt

15. Special construction standards, if any, required pursuant to A.A.C. R12-15-821: None

_____

_____

I (we), Walker Milici (print name) hereby swear that all information provided in this application is true and correct to the best of my/our knowledge and belief.

Walker Milici for SRP 3/1/04

Signature of Applicant Date

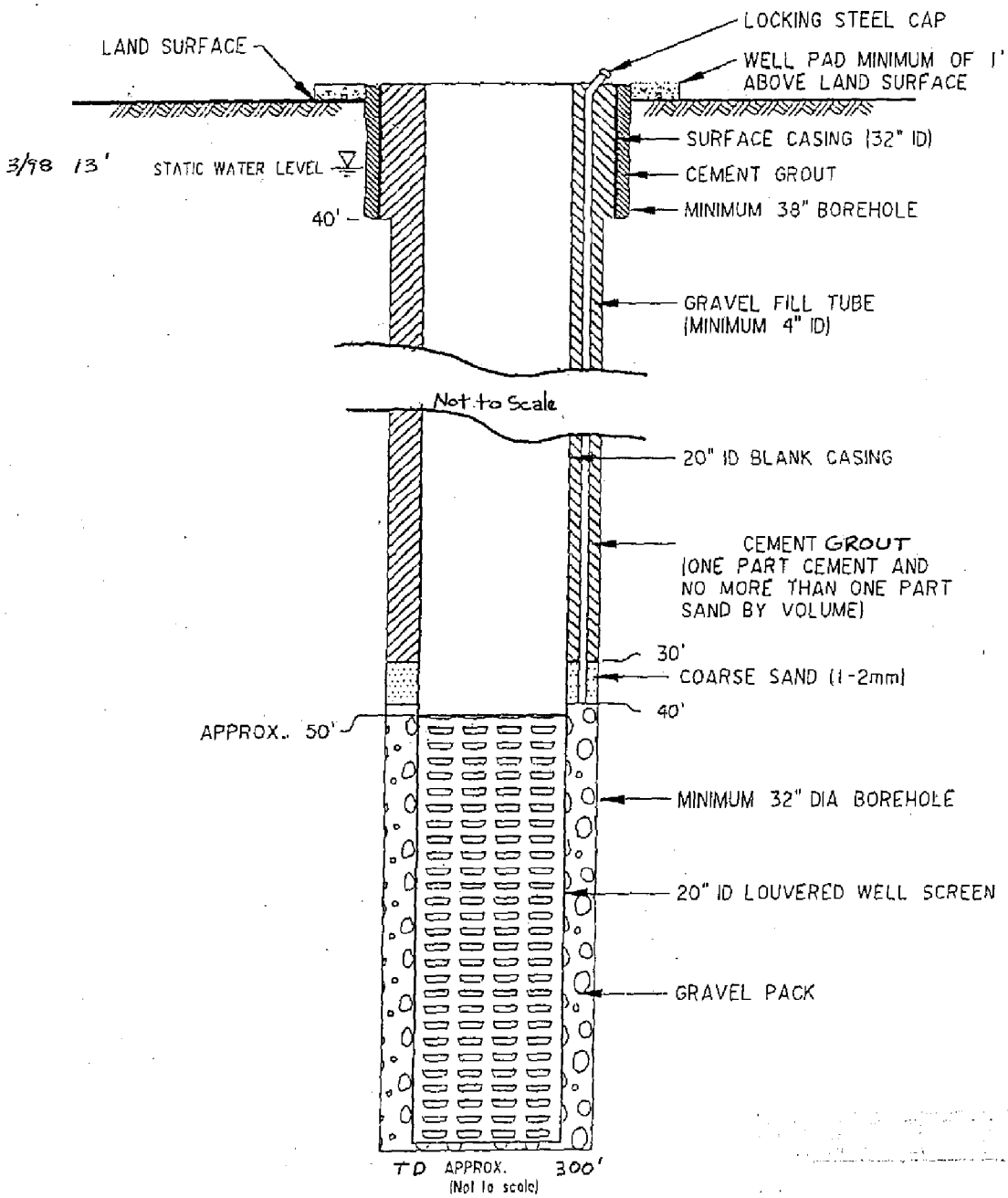
DWR-55-90 (Rev 9/02)

MAR - 2 2004

WELL No. 55-202398

SCHEMATIC DIAGRAM OF PROPOSED PRODUCTION WELL

SRP WELL 18.5E-7.5N



MAR - 2 2004

3/04

ARIZONA DEPARTMENT OF WATER RESOURCES
HYDROLOGY DIVISION - WQARF UNIT

MEMORANDUM

DATE: March 17, 2004

TO: Darlene Sumpter-King, Groundwater Management Support
Scott Miller, Phoenix AMA

THROUGH: Teri Davis, WQARF Unit

FROM: Andrew Scott, WQARF Unit

SUBJECT: **55-202398 – Salt River Project (SRP)**

APPLICATION: **NOI to Replace a Well (Old Well 55-607713)**

1. The area of groundwater withdrawal activities is located within in proximity to an area of known significant groundwater contamination known as the East Central Phoenix (ECP) Water Quality Assurance Revolving Fund (WQARF) site. The well site is located about ½ mile Southwest of the ECP 48th Street and Indian School Road site, about ½ mile Southeast of the ECP 40th Street and Indian School Road site, and about ½ mile East of the ECP 40th Street and Osborn Road site. According to Arizona Department of Environmental Quality (ADEQ) Groundwater Database, sample results from wells located within ¼ of a mile of the withdrawal activities indicate parameter concentrations that exceed Maximum Contaminant Level (MCL) standards for Fluoride (F), Trichloroethylene (TCE), Nitrate (NO_3). In addition, parameter concentrations also exceed Secondary Maximum Contaminant Level (MCL2) standards for Chloride, Total Dissolved Solids (TDS), and pH and Health Based Guidance Levels for Vanadium (V). These samples are taken from the old SRP at this location (55-607713), and the TCE exceedence was from a sample taken in 1986. Recent water quality sampling data were provided by SRP, which indicate that TCE was detected in 55-607713 up to 1990. Water samples from 1991 through 2003 were non-detect (BDL) or below the reporting limit (BRL) for TCE. See attached map and supporting information.

2. An NOI to replace 55-607713 was submitted on March 26, 2003. Hydrology/WQARF reviewed the NOI on April 10, 2003 and the drilling authority to replace 55-607713 was issued. The well was not drilled within the 1-year timeframe, so SRP submitted the same application to get a new authority. The original WQARF review found that the well was to be drilled in the Upper Alluvial Aquifer (UAU) and that bedrock (Red Unit?) is expected to be encountered at 300 feet below the land surface, at which point drilling would stop and the well would be completed above the rock.

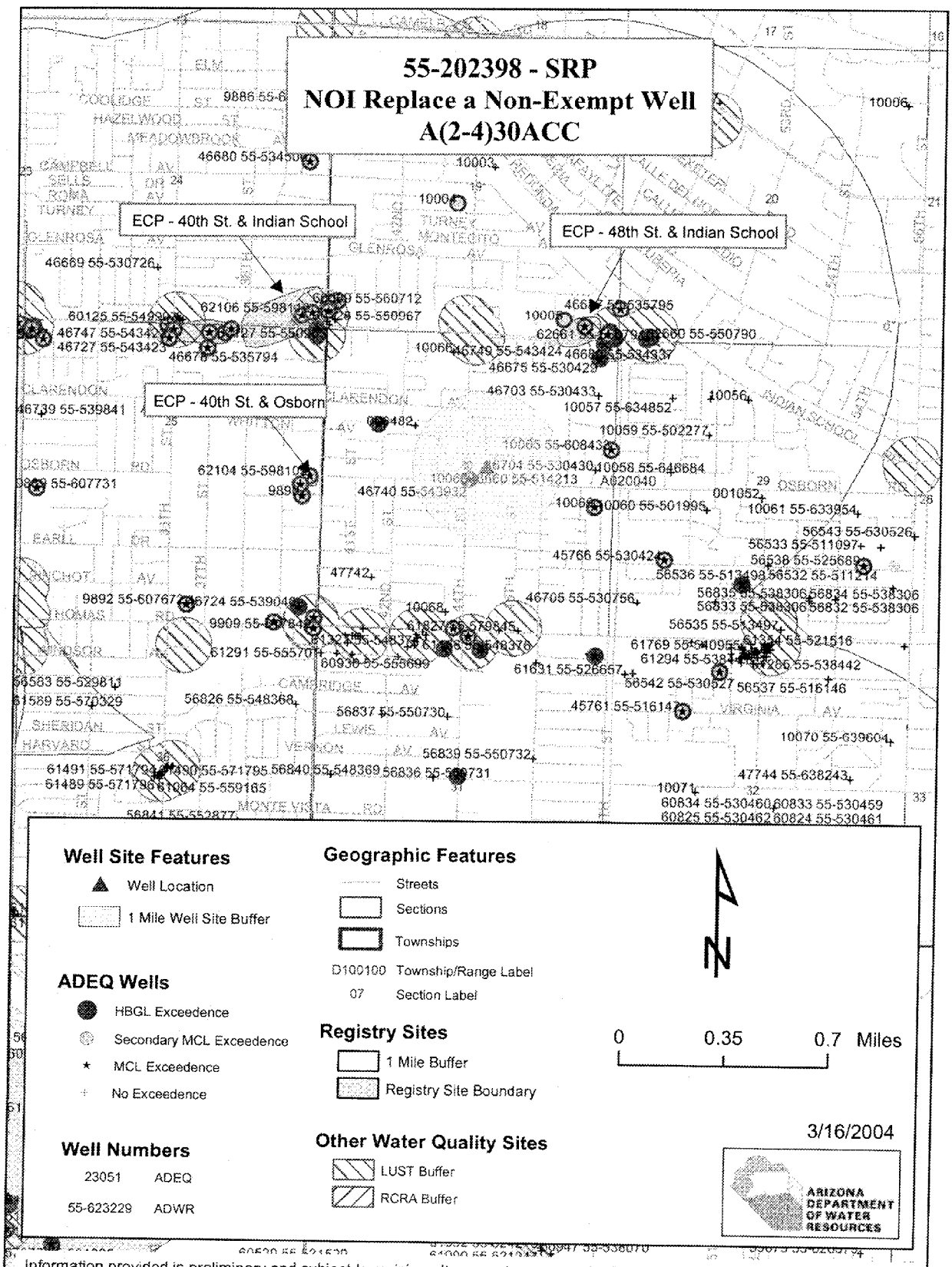
3. According to Walker Milici of SRP, the bedrock is expected to be found at a depth of **up** to 300 feet. SRP intends to produce primarily from the UAU and little or no production is expected from the bedrock if the well is even completed in rock.

4. Given the recent sampling data provided by SRP, the WQARF Unit has no objections to issuance of the drill card. However, given the history of contamination at the site, it is strongly recommended that the well be completed entirely within the UAU and that if the bedrock is encountered during drilling, the borehole should be backfilled with neat cement or bentonite grout to a depth that is at least 5 feet above the top of the bedrock.

5. References: Water Quality Information Maps Program (attached), the Groundwater Code (Arizona Revised Statutes, Title 45, Chapter 2), and the rules adopted thereunder.

6. If more information is needed, contact me at (602) 417-2448, ext. 7273. Thank you.

attachments: as stated



Information provided is preliminary and subject to revision. It may not represent the full extent of known water quality concerns.

55-202398 - SRP
NOI to Replace a Non-Exempt Well
A(2-4)30ACC

ADEQ Exceedences Within 1 Mile of Withdrawal Activities

2/16/2004

Rec	Results	Units	Detection Limits	Detection Limit Units	MCL	MCL Units	MCL2	MCL2 Units	Sample Date	Parameter Name	HBGL	HBGL Units	DEQ Well	Registry ID
1	371.85	mg/L		mg/L			250	mg/L	9/17/1985	CHLORIDE,TOTAL IN WATER			10064	55-607713
2	16.527	mg/L		mg/L	4	mg/L	2	mg/L	9/17/1985	FLUORIDE, TOTAL (AS F)	4	mg/L	10064	55-607713
3	3	ug/L	3	ug/L					7/16/1986	COBALT, DISSOLVED (AS CO)	0.7	ug/L	10064	55-607713
4	8	SU		SU			6.5	SU	7/16/1986	PH (STANDARD UNITS)			10064	55-607713
5	9.36	ug/L		ug/L	5	ug/L			7/16/1986	TRICHLOROETHYLENE, DISSOLVED			10064	55-607713
6	30	ug/L		ug/L					7/16/1986	VANADIUM, DISSOLVED (AS V)	7	ug/L	10064	55-607713
7	383.91	mg/L		mg/L			250	mg/L	10/14/1986	CHLORIDE,TOTAL IN WATER			10064	55-607713
8	67	mg/L		mg/L	45	mg/L			10/14/1986	NITRATE NITROGEN,TOTAL (AS NO3)			10064	55-607713
9	8	SU		SU			6.5	SU	7/16/1987	PH (STANDARD UNITS)			10064	55-607713
10	0.5	ug/L	0.5	ug/L					6/15/1988	METHYL CHLORIDE (CHLOROMETHANE), TOTAL WATER	0.19	ug/L	10064	55-607713
11	0.05	ug/L	0.05	ug/L					6/14/1989	ALDRIN IN WHOLE WATER SAMPLE	0.002	ug/L	10064	55-607713
12	0.1	ug/L	0.1	ug/L					6/14/1989	DIELDRIN IN WHOLE WATER SAMPLE	0.001	ug/L	10064	55-607713
13	0.5	ug/L	0.5	ug/L					6/14/1989	METHYL CHLORIDE (CHLOROMETHANE), TOTAL WATER	0.19	ug/L	10064	55-607713
14	0.5	ug/L	0.5	ug/L					6/14/1989	METHYL CHLORIDE (CHLOROMETHANE), TOTAL WATER	0.19	ug/L	10064	55-607713
15	0.5	ug/L	0.5	ug/L	0.08	ug/L			6/14/1989	PCB - 1016, TOTAL WATER			10064	55-607713
16	0.5	ug/L	0.5	ug/L	0.3	ug/L			6/14/1989	PCB - 1242 PCB SERIES WHOLE WATER SAMPLE			10064	55-607713
17	0.5	ug/L	0.5	ug/L	0.1	ug/L			6/14/1989	PCB - 1248 PCB SERIES WHOLE WATER SAMPLE			10064	55-607713
18	0.5	ug/L	0.5	ug/L	0.1	ug/L			6/14/1989	PCB - 1254 PCB SERIES WHOLE WATER SAMPLE			10064	55-607713
19	0.5	ug/L	0.5	ug/L	0.2	ug/L			6/14/1989	PCB - 1260 PCB SERIES WHOLE WATER SAMPLE			10064	55-607713
20	981	mg/L		mg/L			500	mg/L	10/18/1990	(TDS) RESIDUE,TOTAL FILTRABLE (DRIED AT 180C)			10064	55-607713

note: ug/L = micrograms per liter, equivalent to parts per billion (ppb)
mg/L = milligrams per liter, equivalent to parts per million (ppm)
SU = Standard Units

Rec	Results	Units	Detection Limits	Detection Limit Units	MCL	MCL Units	MCL2	MCL2 Units	Sample Date	Parameter Name	HBGL	HBGL Units	DEQ Well	Registry ID
21	5.7	mg/L		mg/L	4	mg/L	2	mg/L	10/18/1990	FLUORIDE, TOTAL (AS F)	4	mg/L	10064	55-607713
22	0.5	ug/L	0.5	ug/L					10/18/1990	METHYL CHLORIDE (CHLOROMETHANE), TOTAL WATER	0.19	ug/L	10064	55-607713

note: ug/L = micrograms per liter, equivalent to parts per billion (ppb)
mg/L = milligrams per liter, equivalent to parts per million (ppm)
SU = Standard Units

Analysis Results

3/17/200

3/17/04

Between: 01/01/1986 and 12/31/2004

		DBCP	TCE
18.5E-07.5 N	7/16/1986		9.36
	7/16/1987		4.8
	6/15/1988		3
	6/14/1989	BDL	2.4
	10/18/1990		0.9
	7/1/1991	BDL	BDL
	7/15/1992	BDL	BDL
	8/24/1993	BDL	BDL
	9/14/1994	BDL	BDL
	7/19/1995	BDL	BDL
	8/21/1996	BRL	BRL
	8/4/1998	BRL	BRL
	8/11/1999	BRL	BRL
	6/29/2000	BRL	BRL
	5/31/2001	BRL	BRL
	12/12/2002	BRL	BRL
	12/17/2003	BRL	BRL

RECEIVED
MAR 17 2004
WATER QUALITY SECTION

1 page

To: Andrew Scott

From: Walker Milici
SRP
602 236 5363

Phoenix AMA
Memorandum

To: Darlene Sumpter-King

From: Scott Miller

Date: March 15, 2004

Subject: Notice of Intent to Replace Well No. 55-607713 (Replacement Well No. 55-202398 – SRP)

I have reviewed the referenced application and it conforms to AMA policies and statutory requirements and with this memorandum recommend issuance of the permit.

3/8/4

From: Carol Norton
To: WRDts
Date: 3/8/04 9:56AM
Subject: 55-202398 SRP NOI to Replace

The Hydrology Division, Water Resources Section, is in receipt of the above referenced Notice of Intention to Replace a Well. The well being replaced is 55-607713. The diagram of the proposed replacement well meets the Minimum Construction Standards, will be within 660 feet of the original well and will not exceed historic pumpage. The Hydrology Division, Water Resources Section, supports issuance of this drill card.

CC: Modesto, Karen; WRjsm; Zachreson, Tana

ARIZONA DEPARTMENT OF WATER RESOURCES
Hydrology WQARF Unit
500 North Third Street, Phoenix, Arizona 85004
Telephone 602 417-2448
Fax 602 417-2425

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

March 17, 2004

COPY

SRP
Attn: Walker Milici
P.O. Box 52025
Phoenix, AZ 85172-2025

Re: Notice of Intent to Drill a Non-Exempt Well
Well Registry #55-202398 (SRP 18.5E-7.5N)
T2N, R4E, Section 30 ACC

Dear Mr. Milici,

The Department of Water Resources recently approved a Notice of Intent to drill a non-exempt well registered as 55-202398. This well is to be located adjacent to an area of contaminated groundwater known as the East Central Phoenix Water Quality Assurance Revolving Fund (WQARF) remedial site. Please be aware that groundwater produced from the proposed well may not meet applicable federal, state, county or local water quality standards.

According to Arizona Administrative Code R12-15-851, you are required to notify the Department at least two (2) business days in advance of commencement of well drilling activities for the above referenced well(s). You may submit this required notice to the Department by either letter or facsimile, and the Department must receive it at least two (2) business days prior to drilling. If notice is sent via facsimile, please mail the original document to the Department.

Mailing Address:
Arizona Department of Water Resources
Hydrology/WQARF
500 N. 3rd Street
Phoenix, AZ 85004

Facsimile Number:
(602) 417-2425

If you have any questions, please contact the Hydrology Division at 602-417-2448 or me at extension 7273.

Sincerely,

Andrew Scott
Hydrology/WQARF Unit

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT DIVISION
500 North Third Street, Phoenix, Arizona 85004
Telephone 602 417-2470
Fax 602 417-2422

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

March 15, 2004

Walker Milici, Geohydrologist
Salt River Project
P.O. Box 52025 – 16ST52
Phoenix, Arizona 85072-2025

RE: Notice of Intention to Replace an Existing Non-Exempt Well
Registration No. 55-202398; File No. A (2-4) 30 ACC

Dear Mr. Milici:

The Notice of Intention to Replace an Existing Non-Exempt Well in the Same Location within an Active Management Area for Salt River Project has been approved. A copy of the Notice is enclosed for your records. The on-site inspection has been completed and the drill card for the proposed well has been delivered to the driller you selected.

In the event that the location of the proposed well changes, you must notify the Department of Water Resources of the change in writing. A drill card with the correct proposed well location must be in possession of the driller before drilling may commence. If the proposed new well is to be more than 660 feet from the well that it is replacing, then you may be required to obtain a well permit.

Within 30 days of completion of the well, the well driller is required to furnish this Department with a complete and accurate log of the well. In addition, the well owner is required to submit the enclosed Completion Report within 30 days of installation of pump equipment.

Pursuant to the provisions of A.R.S. § 45-604, any person withdrawing groundwater from a well is required to use a water measuring device to record rates of withdrawal in order to provide or allow the computation of an annual volume of pumpage from the well. The total volume of pumpage from the well which is being replaced and the completed new well shall be reported on your Annual Water Withdrawal and Use Report for calendar year 2004.

The Department has issued the authorization to drill this well pursuant to A.R.S. 45-597 of the Groundwater Code. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate.

Please be aware that the withdrawals of the proposed well cannot exceed the historic pumpage of the original well you wish to replace. The historic pumpage of the original well is 1050 acre-feet per year. In addition, if the original well will be used in conjunction with the proposed replacement well, the withdrawals from both wells cannot exceed the historic pumpage of the original well.

If the historic pumpage is exceeded in any calendar year, the well will no longer qualify as a replacement well in the same location, and will instead fall into the category of "new well." This means that you will not be able to pump the well again until you first submit a well impact analysis and obtain a determination from the Department that the well will not cause unreasonably increasing damage to other land and water users.

Hydrology/WQARF strongly recommends that, given the history of contamination at the well site and in the area, the well be completed entirely within the Upper Alluvial Aquifer and that if the bedrock is encountered during drilling, the borehole should be backfilled with neat cement or bentonite grout to a depth that is at least 5 feet above the top of the bedrock.

Under A.R.S. § 45-593, the person to whom a well is registered must notify this Department of any changes in ownership, status or physical characteristics to keep the Well Registry records current and accurate. For such future use, a Request to Change Well Information form is also enclosed.

If you have any questions, please contact Scott Miller at 602-417-2465.

Sincerely,

Darlene Sumpter-King
Water Resource Specialist

Enclosure

cc: Layne Christensen Company
Scott Miller, Phoenix Active Management Area

Registry | Name Addr | Drilling Auth | Permits | Water/Site | POU | Driller Log | Completion

Drilling Authorities

Registry ID	License #	Issue Date	Expiration Date
55-	7 ...	03/15/2004	03/01/2005

Comments:

Driller Licenses

Company: LAYNE CHRISTENSEN COMPANY

Qualifying Party: SEE COMMENTS

☑ Active License

Address1: 12030 EAST RIGGS ROAD

Address2:

City	State	Zip Code	Phone	ROC Licenses
CHANDLER	AZ	85249-37	(480) 895-9404	C53 & A-4

Comments:

DON SAVAGE	1993-2003	ACTIVE
LARRY G HRALL	1993-2001	ACTIVE
[illegible]	[illegible]	[illegible]

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT DIVISION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-202398 **REPLACES: 55-607713**

AUTHORIZED DRILLER: LAYNE CHRISTENSEN COMPANY **LICENSE NO: 7**

A NOTICE OF INTENTION TO REPLACE AN EXISTING NON-EXEMPT WELL INSIDE THE PHOENIX ACTIVE MANAGEMENT AREA HAS BEEN GRANTED TO:

WELL OWNER: Salt River Project P.O. Box 52025 Phoenix, AZ 85072

The well(s) is/are to be located in the:

SW¼ of the SW¼ of the NE¼ Section 30 Township 2 North Range 4 East

No. of well(s) in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF MARCH, 2005.

WATER MANAGEMENT DIVISION

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

WELL AND WITHDRAWAL PERMIT
CHECK DEPOSIT REQUEST

Submitted by: Darlene Sumpter-King

Date: March 2, 2004

Applicant: Salt River Project

Check submitted by: same as applicant

Application No. 55-202398 (replaces 55-607713)

Code	Type of Fee:	Amount:	Check No.
55	Application for Well Permit		
55	Well Permit Fee		
59	Application for Permit to Withdraw		
59	Withdrawal Permit Fee		
59	Conveyance of Groundwater Withdrawal Application and/or Permit		
Gen Fund	Legal Noticing Fees		
55	Notice of Intent for Non-Exempt Wells	$150.00	157174

SRP
Delivering More Than Power™

PO BOX 52025
PHOENIX, AZ
85072-2025
(602) 236-5900

BANK ONE, ARIZONA, NA
COMMERCIAL BANKING
PHOENIX, ARIZONA

LIMIT $500 157174 91-2 / 1221

PURPOSE Drill Permit

IMPORTANT: IF PURCHASE IS FOR MATERIALS OUT OF STATE, CHECK BOX ☐

ORIGINATING COST CENTER	CHARGE NUMBER	DTOC	RELATED NUMBER	CROSS-CHARGE RESPONSIBLE CC	AMOUNT
91321	RCI-03002-701	410			150.00
				TOTAL AMOUNT	150.00

DATE MO 3 DAY 2 YEAR 04

VOID AFTER 60 DAYS FROM ISSUE OR 12/31/2006 WHICHEVER COMES FIRST

NOT VALID FOR MORE THAN $500.00

EMPLOYEE NUMBER 07510

PAY TO THE ORDER OF Arizona Department of Water Resourses $150.00

THE AMOUNT OF one hundred fifty & 00/100 DOLLARS

EMPLOYEE NUMBER 13223

EXPENSE AUTHORIZED BY [redacted]

[redacted]

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner DEAN D PETERSON
Name
4215 E WHITTON PHOENIX ARIZONA 85018
Address

2. Lessee or Operator _____
Name
_____
Address

3. Driller DEAN D. PETERSON
Name
4215 E WHITTON PHOENIX AZ 85018
Address

4. Location of well: 4215 E WHITTON

5. Permit No. _____
(if issued)

RECEIVED FEB 3 1982 DEP'T OF WATER RESOURCES

DESCRIPTION OF WELL

6. Total depth of hole 85 ft.
7. Type of Casing 4" PLASTIC PIPE (25') — Balance uncased
8. Diameter and length of casing 4 in. from 0 to 25, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from 0 to _____, from _____ to _____, from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.
14. Date started SEPT 15 1981
Month day year
15. Date completed OCT 10 1981
Month day year
16. Depth to water 19 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. FROM CONCRETE PUMP BASE
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-501994
Received _____ By _____
Entered 2-3-82 By _____
File No. A(2-4)30bca

(Well log to appear on Reverse side)

MICROFILMED

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Topsoil
4	8	Caliche
8	19	Clay
19	21	Sand (Fine)
21	30	Clay
30	31	Sand (Fine)
31	39	Clay
39	40	Sand (Fine)
40	65	Clay
65	67	Sandy Clay
67	75	Clay & Caliche
75	78	Caliche with rock (Very hard + fine)
78	85	Clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Dean D. Peterson
Name

4215 E Whitton
Address

Date 1/18/82 Phoenix Arizona 85018

2-73

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

Registration No. 55-501994
Owner of
Well Site Dean Peterson
File No. A(2.4)30 bca

COMPLETION REPORT

1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

RECEIVED FEB 3 1982 DEP'T OF WATER RESOURCES

LOCATION OF THE WELL

4215 E Whitton.

Date Well Completed OCT 1981 Depth of Well 85'

1. Well Test:
Test Pumping Capacity 10 to 12 (Gal. per min.) Date Well Tested NOV 1981

Method of Discharge Measurement Stop watch & 5 gal. can (weir, orifice, current meter, etc.)

Static Groundwater Level 19 ft. Drawdown approx 11 ft.

Total Pumping Lift approx 30 ft. Drawdown _____ lbs. (Flowing Well)

2. Equipment Installed:

Kind of Pump CONVERTIBLE JET PUMP Teel Model 3P648 (turbine, centrifugal, etc.)

Kind of Power Elect (Elec., Nat. Gas, Etc.) H.P. Rating of Motor ½ HP

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Dean D Peterson
Signature

4215 E Whitton
Address

1/18, 1982
Date

Phoenix Arizona 85018
City State Zip

MICROFILMED

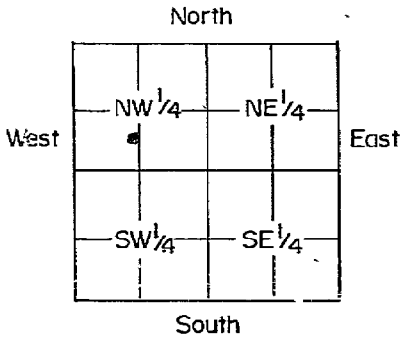
2-3-82 H

EXEMPT WELL
FILING FEE: $3.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:
1. Township 2 N
2. Range 4 E
3. Section 30
4. NE ¼ SW ¼ NW ¼
10 acre sub-division
5. County MARICOPA
6. Owner of Well:
DEAN D PETERSON
Name
4215 E WHITTON
Address
PHOENIX ARIZONA 85018
City State Zip
7. Owner of Land:
DEAN D. PETERSON
Name
4215 E WHITTON
Address
PHOENIX ARIZONA 85018
City State Zip

DESCRIPTION OF WELL:
8. Diameter 4"
Depth 65'
9. Type of Casing
Class 40 Plastic
10. Principal use of Water.
irrigating yard
11. Other uses Intended
8,000 sq ft
(If for non-commercial irrigation, state approximate area being cultivated.)
12. Construction will start about:
Month Year
Feb 07

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO A(2-4)30bca
FILED 2-3-82 BY
INPUT 2-3-82 BY
DUPLICATE MAILED BY
REGISTRATION NO 55-501994
AMA NON EXPANSION AREA Phoenix

PLACE OF USE:
13. Township 2 N
14. Range 4 E
15. Section 30
16. Legal description of land water is to be used on:
4215 E WHITTON
17. Design Pump Capacity
10 GPM
18. Action Requested:
Drill X
Deepen
Replace
19. This notice filed by:
Owner X
Lessee
Driller

RECEIVED FEB 3 1982 DEPT OF WATER RESOURCES

DEAN D PETERSON
Name
4215 E WHITTON
Address
PHOENIX ARIZONA 85018
City State Zip
20. Drillers Name:
SAME
Name
Address
City State Zip
Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 99 East Virginia, Suite 100, Phoenix, Arizona 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well.
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, Dean D Peterson, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller holds a contractors license pursuant to ARS 32-1151.

MICROFILMED

1/18/82
Date

Dean D Peterson
Signature of Person Filing

Dean D. Peterson
4215 East Whitton
Phoenix, Arizona 85018

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

4

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	501994
	THRU

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Notice of Intention To		3.00
					Drill an Exempt Well		
					Water Rights (GW)		
					File No: A(2-4)30 bca		
					Registration No: 55-501994		
					Check # 7160		

MICROFILMED

WAITER PAYMENT
GUESTS 1
CHK NO 7160
55-I 3.00
TAX 0.00
TOTL 3.00
GEN.CHEK 3.00

4232 A 13:02

2/3/82

TOTAL $ 3.00

mw

Run Date: 10/30/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 2.0 3.0 25 D C C

Well Reg.No 55 - 607672

AMA PHOENIX AMA

Registered Name SALT RIVER PROJECT,
PO BOX 1980

PHOENIX AZ 85001

File Type REGISTERED WELL
Application/Issue Date 05/18/1982

Owner OWNER
Driller No. 0
Driller Name
Driller Phone
County MARICOPA

Intended Capacity GPM 0.00

Well Type NON-EXEMPT
SubBasin WEST SALT RIVER VALLEY
Watershed SALT RIVER
Registered Water Uses IRRIGATION
Registered Well Uses CAPPED
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	202.00	**Case Diam**	12.00	**Tested Cap**	0.00
Pump Cap.	563.00	**Case Depth**	188.00	**CRT**	X
Draw Down	0.00	**Water Level**	89.00	**Log**	
		Acres Irrig	0.00	**Finish**	OTHER - BLACK STEEL - IRON - SEAMLESS

Contamination Site: YES - WITHIN 1 MILE OF A REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments Recovery Well No. 74-548930

55-607672

Current Action

9/29/2017 875 WELL CAPPED
Action Comment: sm

Action History

10/30/2017 820 NOTICE OF WELL CAPPING RECEIVED/ENTERED
Action Comment: sm

3/24/2009 775 WQARF UPLOAD OF WELL INVENTORY DATA
Action Comment: Old WQARF Code = NULL

8/16/2004 880 CHANGE IN REMEDIAL ACTION SITE CODE
Action Comment: Old WQARF Code = NULL

10/1/1923 755 WELL CONSTRUCTION COMPLETED
Action Comment:

17.5E-07.0N

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8527 • (602) 771-8690 fax
· www.azwater.gov ·

Notice of Well Capping

NO FEE

- Review instructions prior to completing form in black or blue ink.
- Within five (5) days after capping an open well, the owner of the well shall file this Notice.

RECEIVED
OCT 16 2017
ADWR

FILE NUMBER: A(2-3)25dcc
WELL REGISTRATION NUMBER: 55 - 607672

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Type

CHECK ONE

- ☐ Domestic
- ☐ Stock
- ☒ Irrigation
- ☐ Municipal
- ☐ Monitor / Piezometer
- ☐ Geotechnical
- ☐ Mineral Exploration
- ☐ Other (*please specify*):

Location of Well

WELL LOCATION ADDRESS (IF ANY): 2909 North 36th Street, Phoenix, AZ 85018

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2.0 N	3.0 E	25	SE ¼	SE ¼	SW ¼

LATITUDE			LONGITUDE		
32 ° Degrees	28 ' Minutes	50.11 "N Seconds	112 ° Degrees	0 ' Minutes	14.68 "W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☒ Google Earth ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK | MAP | PARCEL

COUNTY WHERE WELL IS LOCATED: MARICOPA

SECTION 2. OWNER AND FIRM INFORMATION

Well Owner		Person or Firm Installing the Cap	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	Salt River Project	FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	Salt River Project
MAILING ADDRESS	MS 16ST52, PO Box 52025	MAILING ADDRESS	MS 16ST52, PO Box 52025
CITY/STATE/ ZIP CODE	Phoenix, Arizona 85072	CITY/STATE/ ZIP CODE	Phoenix, Arizona 85072
CONTACT PERSON NAME AND TITLE	Adam Smith, Senior Geohydrologist	CONTACT PERSON NAME AND TITLE	Adam Smith, Sr.Geohydrologist
TELEPHONE NUMBER	(602) 236-5181	TELEPHONE NUMBER	(602) 236-5181
FAX	(602) 236-2987	FAX	(602) 236-2987

SECTION 3. CASING AND CAPPING INFORMATION

Surface Casing

OUTER DIAMETER (inches)	MATERIAL (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE
16.00	☒	☐	☐	

REMARKS

Capping

DATE WELL WAS CAPPED: 09/29/2017

TYPE OF CAP: Steel square inside well vault.

MANUFACTURER OF CAP, IF ANY: SRP Machine Shop Department

SECTION 4. OPTIONAL BY PROPERTY OWNER AND WELL OWNER ONLY

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 5. WELL OWNER AND PROPERTY OWNER SIGNATURE

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

SIGNATURE OF WELL OWNER: Adam Smith For SRP

DATE: 10/11/2017

17.5E-7N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 607672
FILE NO. A(2-3)25 dcc
FILED 5-18-82 (DATE) AT 11:02a (TIME)
INA
AMA Phoenix

ARIZONA DEPT. OF WATER RESOURCES
'82 MAY 18 A11:02

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02003025DCCGS1 (File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ SW ¼ SE ¼, Section 25, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 202 feet
b. Diameter of casing 12 inches
c. Depth of casing 188 feet
d. Type of casing 10 ga double wall stovepipe.
e. Maximum pump capacity 563 gallons per minute.
f. Depth to water 89 static (Jan. 1982) feet below land surface.
g. Date well completed October (Month) (Day) 1923. (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system.
Attach additional sheet if necessary.

9. DATE ~~MAY 17 1982~~ MAY 17 1982 SIGNATURE OF REGISTRANT Carl Sparks
SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

FORM W-2 10-45 JAHN-TYLER

55-607672

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REGISTRATION OF WELL

Registration of well existing as of Oct. 3, 1945 is hereby made and filed with the State Land Commissioner as required by Section 5, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session 1945.

1. Owner SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name
Phoenix, Arizona
Address

2. Lessee or Operator
Name
Address

3. Driller E. N. Brown Drilling Company
Name
Phoenix, Arizona
Address

4. Location of well: Twp. 2N Rge. 3E Section 25 SW ¼ SW ¼ SE ¼
17½E-7N
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 202 ft.

6. Type of casing stovepipe

7. Diameter and length of casing 12 in. from to , in. from to , in. from to

8. Method of sealing at reduction points

9. Perforated from 192 to 50 , from to , from to , from to

10. Size of cuts 3/4 x 4" holes Number cuts per foot 6 holes every 6 inches

11. If screen was installed: Length ft. Diam in. Type

12. Method of construction: drilled
drilled, dug, driven, bored, jetted, etc.

13. Date completed October, 1923 Deepened
Month Year Month Year

14. Depth to water when drilled 7-1/2 ft.
If flowing well, so state.

15. Present depth to water 20.0 ft. Date of measurement December 19, 1945
If flowing well, so state.

16. Describe point from which depth measurements were made, and give sea-level elevation if available pumphouse floor - 1,170.3

17. If flowing well, state method of flow regulation

DISCHARGE DATA

18. Well discharge 422 g.p.m.
gal. per min. or cu. ft. per sec. or miner's inches.

19. Method of discharge measurement weir
weir, orifice, current meter, etc.

20. Drawdown 81.80 ft.
51.80

21. Annual discharge in acre-feet, or number of hours pumped: 1944 561 a.f. or hrs. 1945 574 a.f. or hrs.

22. Purpose of use Irrigation

23. Place of use: Twp. Rge. Section Acres
(See 24) Legal subdivision
Twp. Rge. Section Acres
Legal subdivision

24. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.
SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name of Project

(A-2-3) 25

EQUIPMENT DATA

25. Kind of pump turbine
turbine, centrifugal, etc.

26. Kind of power electric
electric, natural gas, etc.

27. Horsepower rating of motor 20

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 2-1-46 by lj
Filed 2-5-46 by lj
File No. (A-2-3)25dcc
Cross-referenced (Name) by
Cross-referenced (Basin) by
Cross-referenced by

(See Other Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	5	Top soil
5	21	Caliche
21	30	Coarse sand
30	90	Clay
90	116	Caliche
116	140	Clay
140	170	Caliche
170	180	Cemented sand and gravel
180	182	Rock
182	202	Cemented gravel

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

By H. J. Lawson

H. J. LAWSON ~~Former Superintendent Engr.~~

General Superintendent and Chief Engineer

Phoenix, Arizona

Address

Date February 1, 1946

Qad	Town	Range	Sect	Q160	Q40	Q10	Reg No.	Registered Full Name & Address	Well Depth	Case Depth	Case Diameter	Water Level	Pump (GPM)	Most Recent Auth. Issued: Drill Lic No	Most Recent Auth. Issued: Issue Date	Org. Drill Date	Reg Wtr Use	Wtr-shed	Log	CRT*
\	2.0	3.0	25	D	C	C	55 - 607672	SALT RIVER PROJECT, PO BOX 1980 PHOENIX, AZ 85001	202	188	12	89	563	0		10/01/1923	AB	07		
Well Type: NON-EXEMPT			B/M/P:																	
\	2.0	3.0	25	D	C	D	55 - 582482	THOMAS HEATING & AIR CONDITIONING 3726 E THOMAS RD PHOENIX, AZ 85018	0	0	0	0	0	533	08/03/2000		T	07		
Cancelled: Y			B/M/P:																	
Well Type: MONITOR																				
\	2.0	3.0	25	D	C	D	55 - 582485	THOMAS HEATING & AIR CONDITIONING 3726 E THOMAS RD PHOENIX, AZ 85018	0	0	0	0	0	533	08/03/2000		T	07		
Cancelled: Y			B/M/P:																	
Well Type: MONITOR																				
A	2.0	3.0	25	D	C	D	55 - 585412	THOMAS HEATING & AIR CONDITIONING 3726 E THOMAS RD PHOENIX, AZ 85018	55	35	4	30	0	533	02/14/2001	02/27/2001	T	07	X	
Well Type: MONITOR			B/M/P:																	
A	2.0	3.0	25	D	C	D	55 - 585413	THOMAS HEATING & AIR CONDITIONING 3726 E THOMAS RD PHOENIX, AZ 85018	55	35	4	30	0	533	02/14/2001	02/26/2001	T	07	X	
Well Type: MONITOR			B/M/P:																	
A	2.0	3.0	25	D	C	D	55 - 582484	THOMAS HEATING & AIR CONDITIONING 3726 E THOMAS RD PHOENIX, AZ 85018	0	0	0	0	0	533	08/03/2000		T	07		
Cancelled: Y			B/M/P:																	
Well Type: MONITOR																				
A	2.0	3.0	25	D	C	D	55 - 582483	THOMAS HEATING & AIR CONDITIONING 3726 E THOMAS RD PHOENIX, AZ 85018	0	0	0	0	0	533	08/03/2000		T	07		
Cancelled: Y			B/M/P:																	
Well Type: MONITOR																				
A	2.0	3.0	25	D	D	C	55 - 540123	RISK, CELIA, 3632 E PASADINA PHOENIX, AZ 85018	65	30	2	27	0	319		08/10/1993	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	D	D	D	55 - 517412	US POSTAL SERVICE, 2502 E UNIVERSITY PHOENIX, AZ 85034	32	20	5	22	0	263		04/20/1987	T	07	X	N
Well Type: EXPLORATION			B/M/P:																	
A	2.0	3.0	25	D	D	D	55 - 517413	US POSTAL SERVICE, 2502 E UNIVERSITY PHOENIX, AZ 85034	31	20	5	18	0	263		04/20/1987	T	07	X	N
Well Type: EXPLORATION			B/M/P:																	
A	2.0	3.0	25	D	D	D	55 - 536141	SOUTHLAND CORP, 7167 S ALTON WAY ENGLEWOOD, CO 80112	42	20	4	23	0	533		08/18/1992	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	D	D	D	55 - 536142	SOUTHLAND CORP, 7167 S ALTON WAY ENGLEWOOD, CO 80112	0	0	0	0	0	533			M	07		N
Cancelled: Y			B/M/P:																	
Well Type: MONITOR OR PIEZOMETER																				

Salt River Project Agricultural Impr. &
Power District
P O Box 1980
Phoenix AZ 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55 -	607704
	THRU
55 -	607743

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing		
					Wells	10.00	400.00
					File # Various		
					Paid Check #060934		

WAITER PAYMENT
GUESTS 40
CHK NO 60934
40@ 10.00
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

~~# 8224 A 13:16~~

5-20-82

TOTAL $ 400.00

pb

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

MEASURING DEVICE MALFUNCTION REPORT FORM
PART1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612

Well Registration Number: 55607712

SRP Coordinate Location: 18.5E-07.0N

SRP Pump Number: 114

Measuring Device Type: Flow Meter

Malfunctioned on: 7/28/07

For the reason that: Upgrade to mag meter

Should be back in service: 7/28/07

Signed: _____

Date: 7-30-07

RECEIVED
OCT 12 2007
PHOENIX AMA

18.5E-7N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 607712
FILE NO. A(2-4)30cdd
FILED 5-18-82 (DATE) AT 10:15a (TIME)
INA —
AMA Phoenix

ARIZONA DEPT. OF WATER RESOURCES '82 MAY 18 A10:15

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02004030DCCGS1 (File Number) should be A02004030CDD 35- None (Control Number)

3. a. The well is located within the SE ¼ SE ¼ SW ¼, Section 30, of Township 2N N/S, Range 4E E/W, G & SRB & M, in the County of Maricopa.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 172 feet
b. Diameter of casing 12 inches
c. Depth of casing 172 feet
d. Type of casing 10 ga stovepipe with mills knife perforations
e. Maximum pump capacity 880 gallons per minute.
f. Depth to water 17 static (Jan. 1982) feet below land surface.
g. Date well completed September (Month) 20 (Day) 1923 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 17 1982 SIGNATURE OF REGISTRANT [signature]
SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project Agricultural Impr. &
Power District
P O Box 1980
Phoenix AZ 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55 -	607704
	THRU
55 -	607743

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing		
					Wells	10.00	400.00
					File # Various	WAITER PAYMENT	
						GUESTS 40	
						CHK NO 60934	
						40@ 10.00	
						55-I 400.00	
						TAX 0.00	
						TOTL 400.00	
						GEN.CHEK 400.00	
					Paid Check #060934		

5-20-82

TOTAL $ 400.00

8224 A 13:16

pb

16E-6.8N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

ARIZONA DEPT. OF WATER RESOURCES '82 MAY 18 AM 10 47

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 607726
FILE NO. A(2-3)35bbb
FILED 5-18-82 (DATE) AT 10:47 (TIME)
INA
AMA Phoenix

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02003035BBBGS1 (File Number) 35- None (Control Number)

3. a. The well is located within the NW ¼ NW ¼ NW ¼, Section 35, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 620 feet
b. Diameter of casing 20" 0-363', 18" 355-620' inches
c. Depth of casing 620 feet
d. Type of casing 8 ga stovepipe with mills knife perforations
e. Maximum pump capacity 1560 gallons per minute.
f. Depth to water 66 static (Jan. 1982) feet below land surface.
g. Date well completed September (Month) 5 (Day) 1957 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 17 1982 SIGNATURE OF REGISTRANT Carl Sparks

SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project Agricultural Impr. &
Power District
P O Box 1980
Phoenix AZ 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55 -	607704
	THRU
55 -	607743

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing		
					Wells	10.00	400.00
					File # Various		
					Paid Check #060934		

WAITER PAYMENT
QUESTS 40
CHK NO 60934
40@ 10.00
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

~~# 8224 A 13:16~~

5-20-82

TOTAL $ 400.00

pb

17.1E - 7.4N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 607731
FILE NO. A(2-3)25cbb
5-18-82 (DATE) AT 10:47a (TIME)
Phoenix

ARIZONA DEPT. OF WATER RESOURCES '82 MAY 18 AM 10:47

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02003025CBBGS2 (File Number) 35- None (Control Number)

3. a. The well is located within the NW ¼ NW ¼ SW ¼, Section 25, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 400 feet
b. Diameter of casing 18 inches
c. Depth of casing 400 feet
d. Type of casing 5/16 wall steel pipe--pre-perforated
e. Maximum pump capacity 1196 gallons per minute.
f. Depth to water 53 static (Jan. 1982) feet below land surface.
g. Date well completed April (Month) 21 (Day) 1962 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 17 1982 SIGNATURE OF REGISTRANT Carl E. Sparks

SALT RIVER PROJECT AGRICULTURAL
IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

55-607231

17E - 7½ N

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

IMPORTANT!

Please complete & return.

This report should be prepared by the driller in all detail and filed with the State Land Commissioner following completion of the well.

1. OWNER SALT RIVER VALLEY WATER USERS' ASSOCIATION (Name)
P. O. Box 1980, Phoenix, Arizona (Address)

2. Lessee or Operator ..... (Name)
..... (Address)

3. DRILLER Roscoe Moss Company (Name)
4360 Worth Street, Los Angeles, Calif. (Address)

4. Location of well: Twp. 2N Rge. 3E Section 25 NW ¼ NW ¼ SW ¼ (10-acre subdivision)

5. Intention to Drill File No. ..... Permit No. S-666

DESCRIPTION OF WELL

6. Total depth of hole 400 ft.

7. Type of casing Mild steel plate

8. Diameter and length of casing 28 in. from 0 to 72, 18 in. from 0 to 400, ... in. from ..... to .....

9. Method of sealing at reduction points .....

10. Perforated from 40 to 65 / 28" casing, from 150 to 400 / 18" casing, from ..... to ....., from ..... to .....

11. Size of cuts 1/4 x 2-1/2 Number of cuts per foot 19 per 5"

12. If screen was installed: Length ..... ft. Diam. ..... in. Type .....

13. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc.)

14. Date started March 13, 1962 (Month Day Year)

15. Date completed April 21, 1962 (Month Day Year)

16. Depth of water 40 ft. (If flowing well, so state.)

17. Describe point from which depth measurements were made, and give sea-level elevation if available
Ground Surface.

18. If flowing well, state method of flow regulation .....

19. REMARKS: .....

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 5-25-62 by K
Filed 5-31-62 by K
File No. (A-2-3)25 cbb

(Well Log to Appear on Reverse Side)

WD FORM G-301
REV. 4-27-52

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top soil
3	50	Clay and caliche
50	65	Sandy clay
65	165	Clay
165	245	Hard clay and caliche
245	400	Hard conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

ROSCOE MOSS COMPANY.

Driller [signature] Secretary

4360 Worth Street, Los Angeles, Calif.
Address

Date

RECEIVED MAY 25 1962 STATE LAND DEPT.

8713

S-683 (A-2-3)25 cbb

Application No. S-683 File No. (A-2-3)25 cbb Permit No. S-666

Filed March 20, 1962
(Applicant must not fill in the above blanks)

This application shall be submitted to the State Land Department, Water Division, Phoenix, Arizona, in accordance with the provisions of Article 7, Chapter 1, Title 45, Arizona Revised Statutes, and the rules and regulations of the State Land Department.

Applications must be accompanied by fees made payable to the STATE LAND DEPARTMENT as follows:

Application Fee ---- $ 3.00
Permit Fee --------- $ 5.00

APPLICATION FOR A PERMIT

( ) TO DRILL)
( ) TO DEEPEN) AN IRRIGATION WELL IN A CRITICAL AREA
(X) TO REPLACE) WITHIN THE STATE OF ARIZONA

I, We, SALT RIVER VALLEY WATER USERS' ASSOCIATION
(Owners Name)

of P. O. Box 1980, County of Maricopa
(Post Office Address)
State of Arizona, do hereby make application for a permit to

( ) Drill new well, ( ) Deepen or (X) Replace the following described well

in the Salt River Valley Critical Area.

1. Location and description of proposed well:

Twp. 2N Rge. 3E Sec. 25 ; NW ¼ NW ¼ SW ¼
(10 Ac. Subdiv.)

Depth 400 ft. Type of casing 5/16"-Plate pipe

Proposed Withdrawal 2000
(Ac.ft. per year)

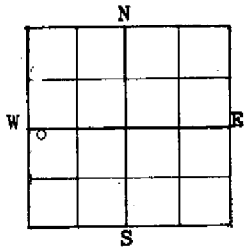
Name and Address of Driller:

Roscoe Moss Co.

Los Angeles, California

17E-7-1/2N Well #298

Location of Proposed Well



2. Location and description of existing well:

Twp. 2N Rge. 3E Sec. 26 ; NE ¼ NE ¼ NE ¼
(10 Ac. Subdiv.)

Depth 200 ft. Diameter 12 in.

Date drilled Oct., 1923

Driving Unit 20 HP electric motor H.P.

Rating of Motor

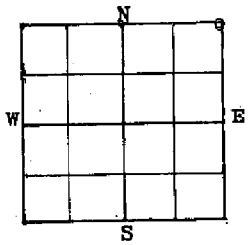
Discharge when Drilled 422 GPM
(g.p.m.)

Present Discharge 496 GPM
(g.p.m.)

Static Water Level 42.6 ft.
(below ground surface)

(Indicate location of well)

Location of Existing Well



Depth of Pump Setting submersible installation @ 139'

Pumping Lift 104.7 ft.

3. Reason new well required Supplement water supply.

4. Land to be irrigated: Lands within Association boundaries

Twp._____ Rge._____ Sec._____

(Legal Subdivision Description) (Acres)

Twp._____ Rge._____ Sec._____

(Legal Subdivision Description) (Acres)

5. Above described land is now irrigated as follows: Project Canals & wells

6. Record of cultivation and irrigation of land described herein:

All lands within Project under cultivation prior to 1948.

7. It is understood that the permit, if granted, will be in accordance with the Groundwater Code of 1948, and the Permittee will be bound by the provisions of such law, and the provisions of the permit issued herefor.

CERTIFICATE

8. I, We, SALT RIVER VALLEY WATER USERS' ASSOCIATION the applicant named in the above and foregoing application, do hereby certify under the penalty of perjury, that the information contained and statements therein made are, to the best of my knowledge and belief, true, correct, and complete.

DATED THIS March 15th day of March 1962

SALT RIVER VALLEY WATER USERS' ASSOCIATION
(Owner or his authorized agent)

P. O. Box 1980, Phoenix, Arizona
(Post Office address)

BY J. F. Griswold
J. F. Griswold, Secretary

RECEIVED MAR 20 1962 STATE LAND DEPT.

4673

WD Form No. GH303-1M/12-56
3-64

Application No. S-683 File No. (A-2-3)25 cbb Permit No. S-666

PERMIT

TO DRILL AN IRRIGATION WELL IN A CRITICAL AREA WITHIN THE STATE OF ARIZONA

SALT RIVER VALLEY WATER USERS' ASSOCIATION, PHOENIX, ARIZONA

STATE OF ARIZONA }
County of MARICOPA } ss.

This is to Certify that I have examined the above numbered application and do hereby approve the same and grant to the applicant a permit to DRILL the well described therein, subject to the following limitations and conditions:

1. Water shall be limited to use on lands described as follows:

Legal Subdivision	Acres
LANDS WITHIN ASSOCIATION BOUNDARIES.	
Total Acres	

( ) 2. No right is granted by this permit for the irrigation of lands which on September 1, 19 51, were not irrigated, or had not been cultivated within five years prior thereto.

(x) 3. The well for which permit is granted hereunder shall be completed and in operation within one year from the date hereof.

( ) 4. **Other Limitations:**

WITNESS my hand and seal of office this 22nd day of March, 19 62

Acting Deputy STATE LAND COMMISSIONER

S E A L

OBED M. LASSEN
STATE LAND COMMISSIONER
PHONE 271-4621

STATE LAND DEPARTMENT

STATE OF ARIZONA
STATE OFFICE BUILDING
PHOENIX 7, ARIZONA

March 22, 1962

Re: File No. ~~(A-2-3)25 abb~~
Application No. ~~S-683~~
Permit No. ~~S-666~~

SALT RIVER VALLEY WATER USERS' ASSOCIATION
c/o J. F. Griswold, Secretary
P. O. Box 1980
Phoenix, Arizona

Gentlemen:

Your application for a permit to drill a well in Twp. 2 North , Rge. 3 East ,

Section 25 , NW ¼ NW ¼ SW ¼ has been approved. Your permit is enclosed.

Also enclosed are a:

WELL DRILLING CARD, which should be in the hands of the driller before construction of the well is started;

REPORT OF WELL DRILLER form, which shall be filled in and sent to us within thirty days after completion of the well;

REPORT OF EQUIPMENT INSTALLED form, which shall be filled in and sent to us within thirty days after the installation of the pumping equipment.

In the event it is necessary to change the location of the proposed well you should obtain the written permission of the State Land Commissioner before proceeding with the drilling.

Very truly yours,

WATER DIVISION

By:
Donald LeMaster

Enclosure: G-301
G-304
G-306
cc: USGS, Tucson

Important

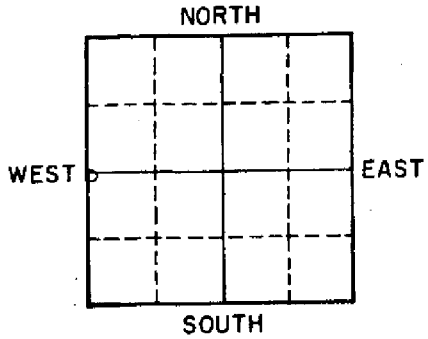
Please complete & return.

STATE LAND DEPARTMENT
Water Division
Phoenix 7, Arizona

17E-7½N #198

File No. (A-2-3)25 cbb

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

REPORT OF EQUIPMENT INSTALLED

OWNER Salt River Valley Water Users' Association

LOCATION OF WELL:

NW ¼ NW ¼ SW ¼, Sec. 25 Twp. 2N Rge. 3E

Date Well Completed: April, 1962 Depth 400

1. Well Test:

Discharge: 1196 (Gal. Per Min.) Date Well Tested: 8/1/62

Method of Discharge Measurement: Pitot (weir, orifice, current meter, etc.)

Static Water Level: 54.6 ft. Drawdown 65.1 ft.

Total Pumping Lift 119.77 ft.

2. Equipment Installed:

Kind of Pump: Turbine (turbine, centrifugal, etc.)

Kind of Power: Electric (Elec., Nat. Gas, Etc.) H. P. Rating of Motor 100

I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

J. F. Griswold

Signature J. F. Griswold, Secty.
SALT RIVERY VALLEY WATER USERS' ASSOCIATION
P. O. Box 1980, Phoenix 1, Arizona
Address

Date August 7, 1962.

WD Form G-306
10-57

RECEIVED
AUG 8 1962
STATE LAND
DEPT.

12477

ARIZONA DEPARTMENT OF WATER RESOURCES WELL REPORT

ıad	Town	Range	Sect	Q160	Q40	Q10	Reg No.	Registered Full Name & Address	Well Depth	Case Depth	Case Diameter	Water Level	Pump (GPM)	Most Recent Auth. Issued: Drill Lic No	Most Recent Auth. Issued: Issue Date	Org. Drill Date	Reg Wtr Use	Wtr-shed	Log	CRT
\	2.0	3.0	25	B	C	B	55 - 539841	SOUTHWEST GAS CORP, 9 S 43RD AVE PHOENIX, AZ 85009	252	252	6	0	0	392		10/05/1993	N	07	X	N
B/M/P:																				
/ell Type: EXPLORATION																				
\	2.0	3.0	25	C	B	B	55 - 607731	SALT RIVER PROJECT, PO BOX 1980 PHOENIX, AZ 85001	400	400	18	53	1,196	0		04/21/1962	AB	07		
B/M/P:																				
/ell Type: NON-EXEMPT																				
\	2.0	3.0	25	C	C	C	55 - 550237	CIRCLE K CORP, 3003 N CENTRAL AVE PHOENIX, AZ 85013	58	37	4	40	0	175		07/25/1995	M	07	X	N
B/M/P:																				
/ell Type: MONITOR OR PIEZOMETER																				
A	2.0	3.0	25	C	C	C	55 - 550241	CIRCLE K CORP, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
B/M/P:																				
/ell Type: MONITOR OR PIEZOMETER																				
A	2.0	3.0	25	C	C	C	55 - 554017	CIRCLE K STORES INC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
B/M/P:																				
/ell Type: MONITOR OR PIEZOMETER																				
A	2.0	3.0	25	C	C	C	55 - 554019	CIRCLE K STORES INC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
B/M/P:																				
/ell Type: MONITOR OR PIEZOMETER																				
A	2.0	3.0	25	C	C	C	55 - 554021	CIRCLE K STORES INC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
B/M/P:																				
Well Type: MONITOR OR PIEZOMETER																				
A	2.0	3.0	25	C	C	C	55 - 554023	CIRCLE K STORES INC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
B/M/P:																				
Well Type: MONITOR OR PIEZOMETER																				
A	2.0	3.0	25	C	C	C	55 - 585797	CONOCOPHILLIPS COMPANY P O BOX 52085 PHOENIX, AZ 85072	60	55	2	45	0	78	03/05/2001	04/10/2001	T	07	X	
B/M/P:																				
Well Type: MONITOR																				
A	2.0	3.0	25	C	C	C	55 - 578962	PROFESSIONAL MOBILE CLEANING ATTN SCOTT STEVENS 5501 E CALLE CAMELIA PHOENIX, AZ 85018	0	0	0	0	0	7	01/19/2000		T	07		
Cancelled: Y B/M/P:																				
Well Type: MONITOR																				
A	2.0	3.0	25	C	C	C	55 - 578961	PROFESSIONAL MOBILE CLEANING ATTN SCOTT STEVENS 5501 E CALLE CAMELIA PHOENIX, AZ 85018	0	0	0	0	0	7	01/19/2000		T	07		
Cancelled: Y B/M/P:																				
Well Type: MONITOR																				
A	2.0	3.0	25	C	C	C	55 - 578960	PROFESSIONAL MOBILE CLEANING ATTN SCOTT STEVENS 5501 E CALLE CAMELIA PHOENIX, AZ 85018	0	0	0	0	0	7	01/19/2000		T	07		
Cancelled: Y B/M/P:																				
Well Type: MONITOR																				

Salt River Project Agricultural Impr. &
Power District
P O Box 1980
Phoenix AZ 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55 -	607704
	THRU
55 -	607743

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing		
					Wells	10.00	400.00
					File # Various		
					Paid Check #060934		

WAITER PAYMENT
GUESTS 40
CHK NO 60934
40@ 10.00
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

~~# 8224 A 13:16~~

5-20-82

TOTAL $ 400.00

pb

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

MEASURING DEVICE MALFUNCTION REPORT FORM
PART1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612

Well Registration Number: 55607748

SRP Coordinate Location: 19.0E-08.1N

SRP Pump Number: 113

Measuring Device Type: Flow Meter

Malfunctioned on: 5/3/07

For the reason that: Low mA reading

Should be back in service: 5/~~8~~3/07

Signed: [illegible]

Date: 5-7-07

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

MEASURING DEVICE MALFUNCTION REPORT FORM
PART1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612 Well Registration Number: 55607748

SRP Coordinate Location: 19.0E-08.1N SRP Pump Number: 113

Measuring Device Type: Flow Meter Malfunctioned on: 4/26/2006

For the reason that: no signal

Steve Le Lamy 5/30/06

19E - 8.1N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55-607748
FILE NO. A(2-4)20 ccc
FILED 5-18-82 (DATE) AT 10:51a (TIME)
INA
AMA Phoenix

ARIZONA DEPT. OF WATER RESOURCES
'82 MAY 18 A10 51

REGISTRATION FEE (CHECK ONE)

EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL – $10.00 ☒

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35-_____ (Control Number)

3. a. The well is located within the SW ¼ SW ¼ SW ¼, Section 20, of Township 2N N/S, Range 4E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 305 feet
b. Diameter of casing 18 inches
c. Depth of casing 305 feet
d. Type of casing steel casing with louvered perforations
e. Maximum pump capacity 808 gallons per minute.
f. Depth to water 17 static (Jan. 1982) feet below land surface.
g. Date well completed June (Month) 18 (Day) 1971 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 17 1982 SIGNATURE OF REGISTRANT Carl Sparks
SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project Agricultural Impr. &
Power District
P O Box 1980
Phoenix AZ 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55 -	607704
	THRU
55 -	607743

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing		
					Wells	10.00	400.00
					File # Various		
					Paid Check #060934		

WAITER PAYMENT
GUESTS 40
CHK NO 60934
40@ 10.00
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

~~# 8224 A 13:16~~

5-20-82

TOTAL $ 400.00

pb

16.9E -6N

Arizona Department of Water Resources
Water Management Division
P.O. Box 36020, Phoenix, AZ 85067-6020
(602) 771-8627 • (602) 771-8690 fax
www.azwater.gov

Pump Installation Completion Report

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 608380

** PLEASE PRINT CLEARLY **

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Salt River Project

MAILING ADDRESS
P.O. Box 52025 - MS16ST52

CITY / STATE / ZIP CODE
Phoenix, AZ 85072-2025

CONTACT PERSON NAME AND TITLE
Jerry DePonty - Sr. Geohydrologist

TELEPHONE NUMBER: 602-236-5181
FAX: 602-236-2987

Location of Well

WELL LOCATION ADDRESS (IF ANY)
3121 E. McDowell Rd Phoenix, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
1N	3E	2	NE ¼	NE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
121	73	106A

COUNTY WHERE WELL IS LOCATED
Maricopa

DATE PUMP INSTALLED
12-10-12

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☐ Submersible
- ☒ Turbine
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
2000 Gallons Per Minute

Pitless Adaptor

CHECK ONE (*SEE INSTRUCTIONS FOR DEFINITION*)

Was a pitless adaptor installed? ☐ Yes ☒ No

IF YES, DEPTH BELOW GROUND LEVEL THE DEVICE WAS INSTALLED
Feet

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

HORSE POWER RATING OF MOTOR
200

Pump Test Data

DATE WELL TESTED
12-10-12

STATIC WATER LEVEL (A)
86 Feet Below Land Surface

PUMPING WATER LEVEL (B)
116 Feet Below Land Surface

DRAWDOWN [(B) – (A)]
30 Feet Below Land Surface

TEST PUMPING RATE
2185 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
6 Hours

TOTAL PUMPING LIFT
119 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☒ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*): SYM

DEC 20 2012

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER: Jerry DePonty for SRP
DATE: 12-19-12

Run Date: 11/20/2012

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 1.0 3.0 2 A A A

Well Reg.No 55 - 608380

AMA PHOENIX AMA

Registered Name SALT RIVER PROJECT,
PO BOX 1980
PHOENIX AZ 85001

File Type REGISTERED WELL
Application/Issue Date 05/11/1982

Owner OWNER
Driller No. 298
Driller Name SALT RIVER PROJECT dba S.R.P.
Driller Phone 602-236-5181
County MARICOPA
Parcel No. 121-73-106A
Intended Capacity GPM 0.00

Well Type NON-EXEMPT
SubBasin WEST SALT RIVER VALLEY
Watershed SALT RIVER
Registered Water Uses IRRIGATION
Registered Well Uses WATER PRODUCTION
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	250.00	**Case Diam**	19.00	**Tested Cap**	2,760.00
Pump Cap.	2,760.00	**Case Depth**	219.00	**CRT**	
Draw Down	0.00	**Water Level**	86.00	**Log**	X
		Acres Irrig	0.00	**Finish**	STEEL - PERFORATED OR SLOTTED CASING

Contamination Site: YES - WITHIN 1 MILE OF A WQARF SITE

Tribe: Not in a tribal zone

Comments Recovery Well Permit No. 74-548930

Current Action

10/1/2012 755 WELL CONSTRUCTION COMPLETED
Action Comment: bew

Action History

11/20/2012 750 WELL DRILLER REPORT AND WELL LOG RECEIVED
Action Comment: bew

7/31/2012 555 DRILLER & OWNER PACKETS MAILED
Action Comment: cp

7/23/2012 867 APP/NOI REVIEW BY HYDRO/WQARF COMPLETE
Action Comment: dgc

7/18/2012 165 NOI RECEIVED FOR MODIFYING A WELL
Action Comment: cp

7/18/2012 250 NOI SENT TO HYDROLOGY FOR REVIEW
Action Comment: cap

1/12/2005 775 WQARF UPLOAD OF WELL INVENTORY DATA
Action Comment: Old WQARF Code = NULL

8/16/2004 880 CHANGE IN REMEDIAL ACTION SITE CODE
Action Comment: Old WQARF Code = NULL

8/30/2002 878 UPDATE LOCATION DATA FROM WQARF
Action Comment: Changed by ADWR WQARF Group as part of the Conduit Well Project - Old Latitude: , Old Longitude: , New Latitude: 33 27 55.645, New Longitude: 112 0 55.995, Project Id: EWF-2936, Lat/Long Measurement Method: Autonomous (GPS) Positions, H_Datum: NAD 1983, V_Datum: , Elevation Ft: , Measurement Source: ADWR

8/22/1947 755 WELL CONSTRUCTION COMPLETED
Action Comment:

11-20-12
BW

Arizona Department of Water Resources
Information Management Unit
P.O. Box 33589 Phoenix, Arizona 85067-3589
(602) 771-8627 • (800) 352-8488
www.azwater.gov

Well Driller Report and Well Log

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

NOV 16 2012

FILE NUMBER: A (01-03) 2aaa
WELL REGISTRATION NUMBER: 55 - 608380
PERMIT NUMBER (IF ISSUED): n/a

SECTION 1 - DRILLING AUTHORIZATION

Drilling Firm — ARIZONA

Mail To:

NAME: SALT RIVER PROJECT dba S.R.P.	DWR LICENSE NUMBER: 298
ADDRESS: PO Box 52025, MS16ST52	TELEPHONE NUMBER: 602-236-5181
CITY / STATE / ZIP: PHOENIX, AZ 85072-2025	FAX: 602-236-2987

SECTION 2 - WELL OWNER AND LOCATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SALT RIVER PROJECT

MAILING ADDRESS: PO Box 52025, MS16ST52

CITY / STATE / ZIP CODE: PHOENIX, AZ 85072-2025

CONTACT PERSON NAME AND TITLE: JERSEY DEPONTY - Senior Geohydrologist

TELEPHONE NUMBER: 602-236-5181

FAX: 602-236-2987

WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.): 16.9E-6N

Liner and surface seal

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3121 E. McDowell Rd, Phoenix, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
1N	3E	2	A ¼	A ¼	A ¼

LATITUDE			LONGITUDE		
33° Degrees	27' Minutes	55.9" N Seconds	112° Degrees	0' Minutes	55.6" W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): [X] *GPS: Hand-Held [ ] *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 1140 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): [X] *GPS: Hand-Held [ ] *GPS: Survey-Grade

*GEOGRAPHIC COORDINATE DATUM (CHECK ONE): [X] NAD-83 [ ] Other (*please specify*):

COUNTY: Maricopa

ASSESSOR'S PARCEL ID NUMBER: BOOK 121 MAP 73 PARCEL 106A

SECTION 3 - WELL CONSTRUCTION

Drill Method — CHECK ALL THAT APPLY

- [ ] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [X] Other (*please specify*): Vactor Upper 20' excavated with vactor truck for surface seal

Method of Well Development — CHECK ALL THAT APPLY

- [ ] Airlift
- [ ] Bail
- [ ] Surge Block
- [ ] Surge Pump
- [X] Other (*please specify*): None Liner and surface seal only

Condition of Well — CHECK ONE

- [ ] Capped
- [X] Pump Installed (pending)

Method of Sealing at Reduction Points — CHECK ONE

- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (*please specify*):

Construction Dates

DATE WELL CONSTRUCTION STARTED: August 2012

DATE WELL CONSTRUCTION COMPLETED: October 2012

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY: [signature]

DATE: 11-14-12

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55-608380

SECTION 1. WELL CONSTRUCTION DETAILS (AS BUILT) (Attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
250 Feet Below Land Surface	219 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
86 Feet Below Land Surface	9-12-12		☒ Valve ☒ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	>28
20	250	20

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T): STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	89	18.625	X				X						
89	209	18.625	X								X		0.25
209	219	18.625	X				X						

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	GRAVEL	SIZE
0	20			X					Installed surface seal			
20	250	X							Liner install only; no annular materials			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 608380

SECTION 1. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	**Description** Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
		See original log. Well not deepened.	

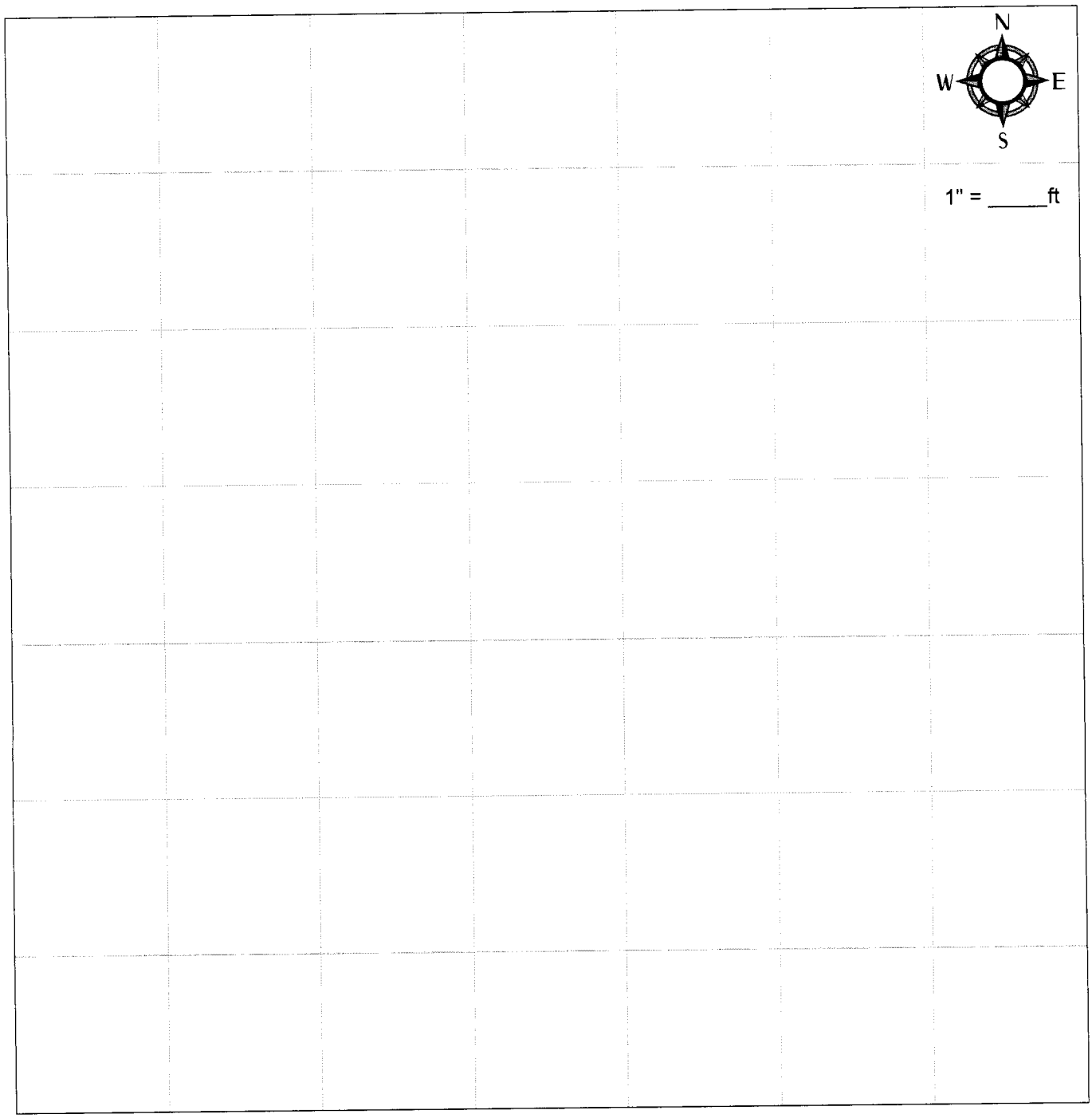
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 608380

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Salt River Project	121	73	106A

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



Run Date: 07/31/2012

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 1.0 3.0 2 A A A

Well Reg.No 55 - 608380

AMA PHOENIX AMA

Registered Name SALT RIVER PROJECT,
PO BOX 1980
PHOENIX AZ 85001

File Type REGISTERED WELL
Application/Issue Date 05/11/1982

Owner OWNER
Driller No. 0
Driller Name
Driller Phone
County MARICOPA
Intended Capacity GPM 0.00

Well Type NON-EXEMPT
SubBasin WEST SALT RIVER VALLEY
Watershed SALT RIVER
Registered Water Uses IRRIGATION
Registered Well Uses WATER PRODUCTION
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	250.00	**Case Diam**	20.00	**Tested Cap**	2,760.00
Pump Cap.	2,760.00	**Case Depth**	250.00	**CRT**	
Draw Down	0.00	**Water Level**	61.00	**Log**	
		Acres Irrig	0.00	**Finish**	STEEL - PERFORATED OR SLOTTED CASING

Contamination Site: YES - WITHIN 1 MILE OF A WQARF SITE

Tribe: Not in a tribal zone

Comments Recovery Well Permit No. 74-548930

Current Action

7/31/2012 555 DRILLER & OWNER PACKETS MAILED
Action Comment: cp

Action History

7/23/2012 867 APP/NOI REVIEW BY HYDRO/WQARF COMPLETE
Action Comment: dgc

7/18/2012 250 NOI SENT TO HYDROLOGY FOR REVIEW
Action Comment: cap

7/18/2012 165 NOI RECEIVED FOR MODIFYING A WELL
Action Comment: cp

1/12/2005 775 WQARF UPLOAD OF WELL INVENTORY DATA
Action Comment: Old WQARF Code = NULL

8/16/2004 880 CHANGE IN REMEDIAL ACTION SITE CODE
Action Comment: Old WQARF Code = NULL

8/30/2002 878 UPDATE LOCATION DATA FROM WQARF
Action Comment: Changed by ADWR WQARF Group as part of the Conduit Well Project - Old Latitude: , Old Longitude: , New Latitude: 33 27 55.645, New Longitude: 112 0 55.995, Project Id: EWF-2936, Lat/Long Measurement Method: Autonomous (GPS) Positions, H_Datum: NAD 1983, V_Datum: , Elevation Ft: , Measurement Source: ADWR

8/22/1947 755 WELL CONSTRUCTION COMPLETED
Action Comment:

JANICE K. BREWER
Governor

SANDRA A. FABRITZ-WHITNEY
Director

ARIZONA DEPARTMENT OF WATER RESOURCES

3550 North Central Avenue, Second Floor
PHOENIX, ARIZONA 85012-2105

(602) 771-8500

July 27, 2012

Salt River Project
PO Box 52025, MS16ST 52
Phoenix, AZ 85072-2025

RE: Notices of Intention to Modify an Existing Non-Exempt Well
Registration No. 55-608380 File No: A (01-03) 02AAA

Dear Rightholder:

The Notice of Intention to Modify an Existing Non-Exempt Well inside the Phoenix Active Management Area has been approved. A copy of the Notice is enclosed for your records. The drilling card for the modification of the above referenced well has been forwarded to your well driller.

Within 30 days of completion of the well, the well driller is required to furnish this Department with a complete and accurate log of the well. In addition, the well owner is required to submit the enclosed Completion Report within 30 days of installation of pump equipment.

Pursuant to the provisions of A.R.S. § 45-604, any person withdrawing groundwater from a well is required to use a water measuring device to record rates of withdrawal in order to provide or allow the computation of an annual volume of pumpage from the well. The total volume of pumpage from the well shall be reported on your Annual Water Withdrawal and Use Report for calendar year 200X. Subsequent annual reporting periods shall be from January 1 through December 31.

The Department has issued the authorization to modify this well pursuant to A.R.S. §§ 45-596 and 45-597 of the Groundwater Code. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate.

Under A.R.S. § 45-593, the person to whom a well is registered must notify this Department of any changes in ownership, status or physical characteristics to keep the Well Registry records

current and accurate. For future changes, a Request to Change Well Information form is available online at: www.azwater.gov.

If you have any questions regarding the NOI to Modify, please contact me in the Groundwater Permitting and Wells Section at 602-771-8614.

Sincerely,

Cynthia Pogue
Water Resources Specialist

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT DIVISION
3550 N. Central Avenue, Phoenix Arizona 85012

THIS AUTHORIZATION SHALL BE IN THE POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-608380

AUTHORIZED DRILLER: SALT RIVER PROJECT dba S.R.P. **LICENSE NO:** 298

A NOTICE OF INTENTION TO MODIFY AN EXISTING NON-EXEMPT WELL INSIDE THE PHOENIX ACTIVE MANAGEMENT AREA HAS BEEN GRANTED TO:

WELL OWNER: SALT RIVER PROJECT, PO BOX 52025, MS16ST52, PHOENIX, AZ 85072-2025

The well is located in the: NE ¼ of the NE ¼ of the NE ¼ of Section 2, Township 1 North Range 3 East

No. of well(s) in this project: one

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 26TH DAY OF JULY, 2013

WATER MANAGEMENT DIVISION

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

ARIZONA DEPARTMENT OF WATER RESOURCES
PERMITTING AND ADJUDICATION SUPPORT

MEMORANDUM

TO: Cindy Pogue, Groundwater Permitting and Wells
FROM: David Christiana, Permitting and Adjudication Support
DATE: July 23, 2012
SUBJECT: **Review of Notice of Intent to Modify an Existing Non-Exempt Well in an Active Management Area**
55-608380 A(1-3)2AAA
Salt River Project

I have reviewed the notice of intent to modify a non-exempt well in the Phoenix AMA for well construction. A well impact analysis or review of potential land subsidence and water quality issues are not required. The well is within the buffer zones of the Motorola 52nd Street CERCLA site and the East Central Phoenix WQARF sites. The applicant plans to install a liner and a 20-foot surface seal.

Well Construction

According to the well modification plan and associated diagrams, the 20-inch well was drilled to 250 feet. The liner will be perforated from 90 to 210 feet. The surface seal will be installed to 20 feet.

I support issuing a drill card to perform the proposed modifications to this well.

c: Scott Miller, Statewide AMA Director

Printed on recycled paper. Each ton of recycled paper saves 7,000 gallons of water.

David G. Christiana

From: David G. Christiana
Sent: Monday, July 23, 2012 2:52 PM
To: 'Tina LePage (tl1@azdeq.gov)'
Subject: NOI to Modify a well in M52/ECP buffers SRP 55-608380
Attachments: 55-608380_SiteMap.pdf; 55-608380_NOIM.pdf

Tina,

Attached is a NOI to modify an existing well by installing a liner and a 20 foot surface seal. The well is located in the buffer zones of the M52 CERCLA site and the East Central Phoenix WQARF site. A map is also attached. If you have any questions or concerns regarding this modification, please let me know by 7/30/12 or sooner.

Regards,
Dave Christiana

David Christiana, R.G.
ARIZONA DEPARTMENT OF WATER RESOURCES
Groundwater Permitting and Wells
3550 North Central Avenue
Phoenix, Arizona 85012
Direct Tel: 602-771-8548
Fax: 602-771-8690
Email: dgchristiana@azwater.gov
Please consider the environment before printing this e-mail

Run Date: 07/18/2012

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 1.0 3.0 2 A A A

Well Reg.No 55 - 608380

AMA PHOENIX AMA

Registered Name SALT RIVER PROJECT,
PO BOX 1980

PHOENIX AZ 85001

File Type REGISTERED WELL
Application/Issue Date 05/11/1982

Owner OWNER
Driller No. 0
Driller Name
Driller Phone
County MARICOPA

Intended Capacity GPM 0.00

Well Type NON-EXEMPT
SubBasin WEST SALT RIVER VALLEY
Watershed SALT RIVER
Registered Water Uses IRRIGATION
Registered Well Uses WATER PRODUCTION
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	250.00	**Case Diam**	20.00	**Tested Cap**	2,760.00
Pump Cap.	2,760.00	**Case Depth**	250.00	**CRT**	
Draw Down	0.00	**Water Level**	61.00	**Log**	
		Acres Irrig	0.00	**Finish**	STEEL - PERFORATED OR SLOTTED CASING

Contamination Site: YES - WITHIN 1 MILE OF A WQARF SITE

Tribe: Not in a tribal zone

Comments Recovery Well Permit No. 74-548930

Current Action

7/18/2012 250 NOI SENT TO HYDROLOGY FOR REVIEW
Action Comment: cap

Action History

7/18/2012 165 NOI RECEIVED FOR MODIFYING A WELL
Action Comment: cp

1/12/2005 775 WQARF UPLOAD OF WELL INVENTORY DATA
Action Comment: Old WQARF Code = NULL

8/16/2004 880 CHANGE IN REMEDIAL ACTION SITE CODE
Action Comment: Old WQARF Code = NULL

8/30/2002 878 UPDATE LOCATION DATA FROM WQARF
Action Comment: Changed by ADWR WQARF Group as part of the Conduit Well Project - Old Latitude: , Old Longitude: , New Latitude: 33 27 55.645, New Longitude: 112 0 55.995, Project Id: EWF-2936, Lat/Long Measurement Method: Autonomous (GPS) Positions, H_Datum: NAD 1983, V_Datum: , Elevation Ft: , Measurement Source: ADWR

8/22/1947 755 WELL CONSTRUCTION COMPLETED
Action Comment:

16.9E - 6N
(liner install and surface seal)

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT DIVISION
MAIL TO: P.O. BOX 36020, PHOENIX, ARIZONA 85067-6020
3550 North Central Avenue, Phoenix, Arizona 85012
Phone (602) 771-8500 Fax (602) 771-8690

JUL 18 2012

NOTICE OF INTENTION TO DEEPEN OR MODIFY AN EXISTING NON-EXEMPT WELL OR CONSTRUCT A REPLACEMENT NON-EXEMPT WELL AT APPROXIMATELY THE SAME LOCATION IN AN ACTIVE MANAGEMENT AREA

ADM. 8/2/12 CP

PLEASE READ GENERAL INSTRUCTIONS AND CONDITIONS BEFORE COMPLETING.
Section 45-597, Arizona Revised Statutes provides: In an Active Management Area, prior to deepening an existing well or constructing a replacement well at approximately the same location, a person must file a Notice of Intention to Drill. A person must also file a Notice of Intention to Drill prior to modifying a Non-Exempt Well Permit. Pursuant to A.R.S. § 45-596 and A.A.C. R12-15-104, the filing fee for a Notice of Intention to Drill a Non-Exempt Well is $150.00.

1. Applicant Salt River Project

Mailing Address P.O. Box 52025, MS16ST 52

Phoenix (City) AZ (State) 85072-2025 (Zip Code)

Telephone Number (602) 236-5181

E-mail Address: JerryDePonty@srpnet.com

1A. Public Water System ID #: _____

FOR DEPARTMENT USE ONLY
File No. A(1-3)2AAA
Registration 55- 608380
Date Filed 7-18-12
Input _____ By CP
AMA/INA PHX

2. This Notice is filed by (check all applicable):

☒ Land Owner ☒ Owner of Withdrawal Authority ☐ Lessee
☐ Consultant ☐ Other _____

Note: If Notice is not filed by the land owner, the applicant must submit signed documentation containing land owner's name, address, telephone number, and signature consenting to the deepening, replacing, or modifying of the well.

3. Action Requested: ☐ Deepen ☐ Replace ☒ Modify

4. Principal Use of Water: (please be specific): Irrigation

5. Other Uses Intended (please be specific): _____

6. Claim of Entitlement to Withdraw Water:

58- _____ Grandfathered Groundwater Right Certificate

OR 59- _____ Groundwater Withdrawal Permit

OR 57- 2520 Irrigation District

OR 56- _____ Service Area

OR 74- _____ Recovery Well Permit

7. Construction:

a. Drilling Firm: Name Salt River Project DWR License Number 298 ROC License Category _____

b. Deepening/Replacement/Modification Will Start: August (Month) 2012 (Year)

c. Estimated Time to Complete: 1 Months

d. **Attach a Well Construction Supplement, DWR form 55-90, and include a detailed construction diagram as indicated on the form.**

8. Original Well:

a. Location: NE ¼ (10 Acre) NE ¼ (40 Acre) NE ¼ (160 Acre) Section 2 Township 1N N/S Range 3E E/W

b. Position: Latitude 33 ° 27 ' 55.9 " N Longitude 112 ° 0 ' 55.7 " W

c. Position Datum: X NAD 83 ☐ NAD 27 ☐ Other: _____

d. County: Maricopa

e. Parcel Number: 121 - 73 - 106A

f. Registration Number: 55- 608380 (liner install and surface seal only; not a replacement)

g. Registered/Permitted Capacity (see instructions for details): NA Registered GPM OR NA Acre-Feet Per Year

9. Deepening/Modification/Replacement Well (as applicable):

a. Location: NE ¼ (10 Acre) NE ¼ (40 Acre) NE ¼ (160 Acre) Section 2 Township 1N N/S Range 3E E/W

b. Position: Latitude 33 ° 27 ' 55.9 "N Longitude 112 ° 0 ' 55.7 " W

c. Position Datum: X NAD 83 ☐ NAD 27 ☐ Other: _____

d. County: Maricopa

e. Parcel Number: 121 - 73 - 106A

f. Distance from Original Well: 0 Feet

g. Design Pump Capacity 2000 GPM

h. Estimated total annual pumpage: 3226 Acre-Feet Per Year

i. Diameter: 18 Inches (liner diameter)

j. Depth: 220 Feet

k. Type of Casing: HSLA steel

l. Has the well to be replaced been physically abandoned? ☐ Yes X No (liner install and surface seal only)

m. If no, will it be? ☐ Yes X No If Yes when: _____

I state that this Notice is filed in compliance with Rules A.A.C. R12-15-809 and is complete and correct to the best of my knowledge and belief, and that I understand the conditions set forth in the general instructions and specific instructions for this application.

Type or Print Name	Applicant's Signature	Title	Date
Jersy DeLonty	Jersy DeLonty for SRP	Senior Geohydrologist	7-17-12

Type or Print Name	Land Owner's Signature	Title	Date

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT DIVISION
3550 North Central Avenue, Phoenix, Arizona 85012
Phone (602) 771-8585 Fax (602) 771-8688

WELL CONSTRUCTION SUPPLEMENT (form DWR 55-90)

Well Registration Number 55- 608380

1. **Well Location:**

   NE ¼ of the NE ¼ of the NE ¼, Sec. 2, Township 1N Range 3E.
   (10AC) (40AC) (160AC)

2. **Position Location of the Well:**

   Latitude 33° 27' 55.9" Longitude 112° 0' 55.7"

   Datum: • NAD 83 • NAD 27 • Other: _____

3. County Maricopa.

4. Date construction to start: August 2012.

5. Time period well will remain in use: 50 years.

6. Is pump equipment to be installed? yes If so, design pump capacity: 2000 GPM.

7. Well construction plan:

   a. Drilling method (mud rotary, hollow-stem auger, etc.) vactor (surface seal).

   b. Borehole diameters > 30 inches from 0 feet to 20 feet.

   20 inches from 0 feet to 250 feet.

   c. Casing materials 18-inch steel liner from 0 to 220 feet.
   Cement grout seal between 20-inch casing and vactored borehole

   d. Method of well development (bail, air lift, surge, etc.) pump.

   e. Will surface or conductor casing extend above grade? yes (minimum 1 ft.).

8. Include a detailed construction diagram of the proposed well design. The diagram should verify consistency with minimum construction requirements specified in the Department's well construction rules found in Arizona Administrative Code (A.A.C.) R12-15-801 *et seq.* Specifically, the diagram should include borehole diameters; casing materials and diameters; perforation intervals; the expected water level; depth and thickness of the surface seal; proposed grouting materials; and the length that the surface or conductor casing will extend above grade, or vault details, if specified.

   Pursuant to Arizona Revised Statutes (A.R.S.) § 45-594.B, all well construction, replacement, deepening and abandonment operations shall comply with the rules adopted pursuant to this section. Therefore, any existing well that is deepened or modified must be brought into compliance with minimum well construction standards specified above, if not already in compliance.

9. Proposed materials and method of abandonment if well is to be abandoned after project is completed (Minimum requirements per A.A.C. R12-15-816):

   Not applicable

10. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material, or petroleum storage area or tank? _____Yes __X__No

11. Is this well to monitor existing contamination? ____Yes __X__No

Potential contamination?_____Yes __X__No If yes, please provide explanation:_____

_____

12. Name of Consulting firm, if any: ___None_____

_____

Address City State Zip

Contact Person:_____Telephone Number:_____

13. Drilling firm Salt River Project

DWR License Number: 298 ROC License Category: _____

14. Special construction standards, if any, required pursuant to A.A.C. R12-15-821:_____

None

I (we), Jersy DePonty (print name) hereby affirm that all information provided in this application is true and correct to the best of my/our knowledge and belief.

Signature of Applicant Jersy DePonty for SRP Date 7-17-12

P. O. Box 52025
Phoenix, AZ 85072-2025
(602) 236-5900

RECEIVED
JUL 18 2012
ARIZONA DEPARTMENT OF WATER RESOURCES

July 18, 2012

Ms. Stella Murillo
Manager - Groundwater Permitting and Wells Section
Arizona Department of Water Resources
3550 North Central Avenue
Phoenix, AZ 85012

RE: Request for Modification, SRP Well 16.9E-6N (55-608380)

Dear Ms. Murillo:

The Salt River Project (SRP) is planning to modify an existing water supply well located within their service area in the Phoenix Active Management Area (AMA). The well is referenced as SRP Well 16.9E-6N and the legal location is the NE¼ of the NE¼ of the NE¼ of Section 2 in Township 1 North, Range 3 East (also designated as A(1-3)2aaa). The proposed modifications consist of the installation of a 20-foot surface seal to comply with the Arizona Department of Water Resources (ADWR) Minimum Well Construction Standards (R12-15-811) and the installation of an 18-inch diameter steel liner.

The existing well consists of 20-inch diameter steel casing from land surface to 218 feet and 20-inch diameter open borehole from 218 to 250 feet with Mills knife perforations from 90 to 212 feet. The existing well pad will be removed and the well will be retrofitted with a 20-foot surface seal and new well pad utilizing a vactor truck. The new well pad will consist of a standard SRP pump pad, an inverted concrete pyramid 12 feet by 12 feet by 8 feet deep. SRP also intends to install an 18-inch diameter steel liner inside the original 20-inch diameter casing to protect the pump equipment and improve structural stability. The steel liner will be installed to a depth of 220 feet and include mill slot perforations from 90 to 210 feet to mimic the original screened interval. No modifications to the existing well casing will occur. A diagram illustrating the proposed modifications is attached.

ADWR Form 55-41 (Revised 3/12), Form 55-90 (Rev 9/07), and a construction diagram showing the proposed well modifications are attached along with a check for $150 for applicable fees. If there are any questions regarding this application or if additional information is required, please e-mail me at Jersy.DePonty@srpnet.com or contact Bob Pane at 602-236-2511.

Sincerely,

Jersy DePonty, R.G.
Senior Geohydrologist
SRP Groundwater Resources and Geohydrology Department

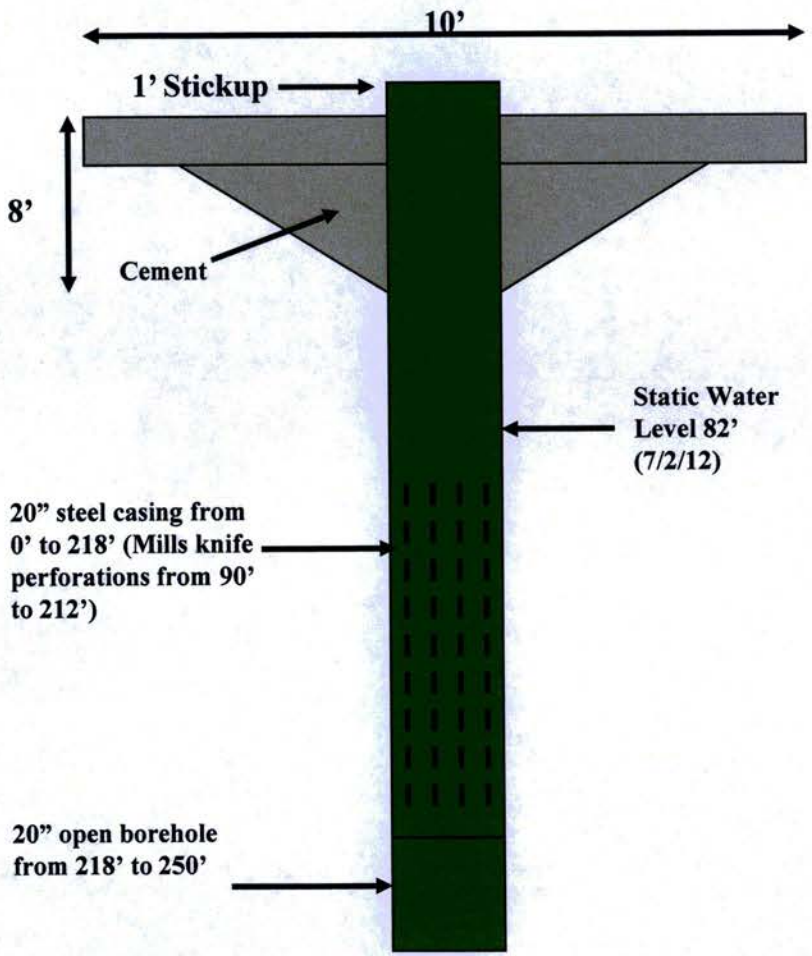
Attachments:

- Notice of Intention to Deepen or Modify an Existing Non-Exempt Well or Construct a Replacement Non-Exempt Well at Approximately the Same Location in an Active Management Area (DWR 55-41)
- Well Construction Supplement (DWR 55-90)
- Filing fee of $150

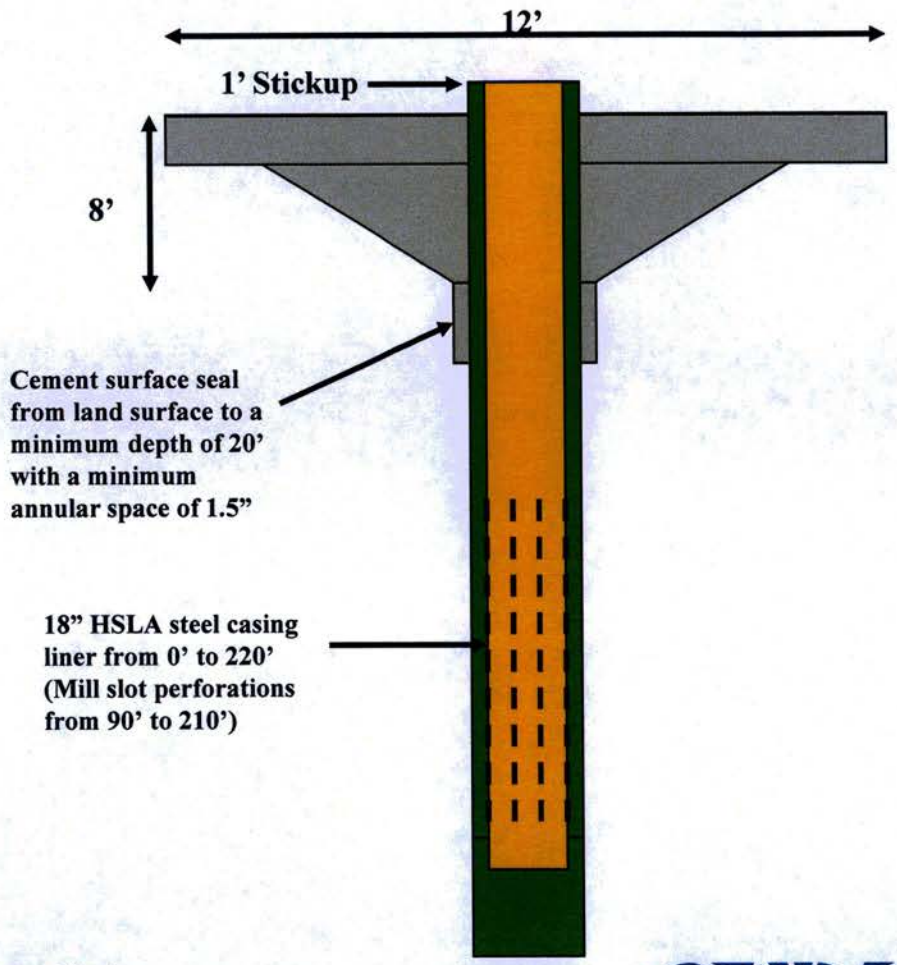
Proposed Liner and Surface Seal Modification to SRP Well 16.9E-6N

ADWR Registration Number: 55-608380 File #: A (1-3) 2 AAA

Existing Well Construction



Post-Modification Well Construction



Not to Scale

Printed: 7/18/2012 12:17:33 PM

Arizona Department of Water Resources

3550 N Central Ave.
Phoenix AZ 85012

Customer:
MARK FREEBURY
SALT RIVER PROJECT
P.O. BOX 52025
PHOENIX, AZ 85072-2025

Receipt #: 13-23852
Office: MAIN OFFICE
Receipt Date: 07/18/2012
Sale Type: IN_PERSON
Cashier: WRCAP

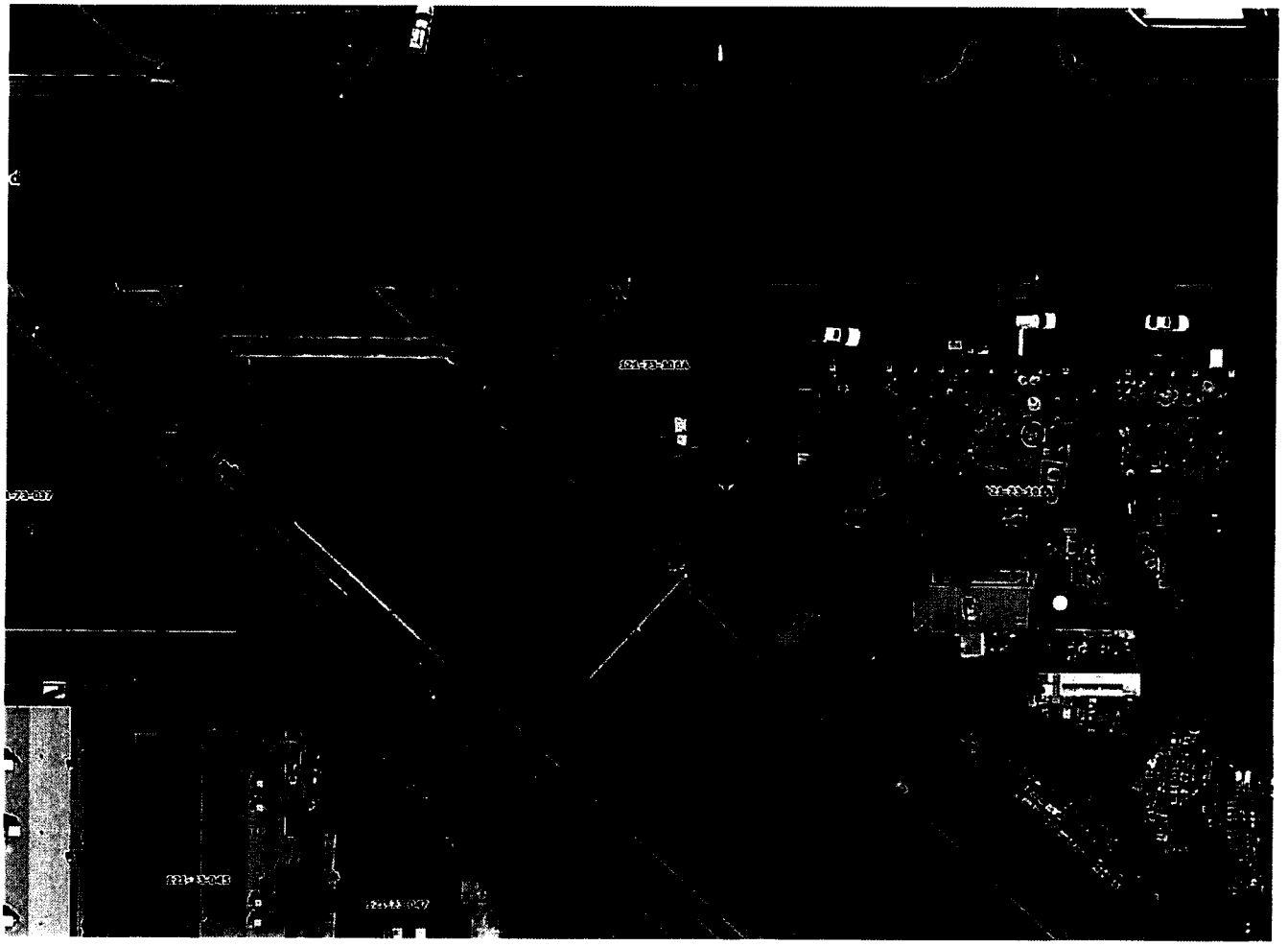
Item No.	Index	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
67488	15245	4439-TT	Notice of intention to drill a well other than a well described in subsection (A)(1)(h) of this Section	608380	1	150.00	150.00
						RECEIPT TOTAL:	**150.00**

Payment type: CHECK
Amount Paid: $150.00
Payment Received Date: 07/18/2012

Check # 155584

Notes: FROM TTA.

No refund without valid receipt



QUICK LINKS ... Home Contacts *Parcel Search: GO

Advanced Search Options *Market Overview *Residential Similar Property Search

No Parcel Number? Use Advanced Search Options.

*(A parcel number is needed to use these Features)

New Search Printer Friendly Version

View GIS Maps

Property Information

Parcel #: 121-73-106-A

MCR #:

Property Address: 3121 E MCDOWELL RD
PHOENIX 85008

Property Description: PT N2 NE4 NE4 BEG AT PT 741.43' W OF NE COR SEC TH S 133.57' TH S 47D 38' 43" E PARALLEL WITH S R/W LN APPROPRIATORS CANAL 190.90' TH S 93.47' TO CEN LN GRAND CANAL TH N 47D 38' 43" W ALONG SD CEN LN TO ITS INTERSEC WITH N LN SEC TH E 254.83' TO POB EX N 33' RD .16 AC

Section Township Range: 2 1N 3E

Associated Parcel:

Subdivision Name:

Lot #:

School Dist: CREIGHTON SCHOOL DISTRICT

Local Jurisdiction: PHOENIX

Tax District FAQs

Owner Information

View Tax Information

Owner: S R P A I & P D

In Care Of:

Mailing Address: PO BOX 1980
PHOENIX AZ 85001 USA

Deed #: No Official Document

Deed Date:

Sales Price: n/a

Sales Month/Year: n/a

Characteristics

Major Property Characteristics

Square Feet of Living Space:		**Improvement Quality Grade:**	
Lot Square Footage:	6,970	**Market Area/Neighborhood:**	22/009
Covered Parking:		**Unique Location Characteristics:**	*None*
Construction Year:		**Pool Square Footage:**	

Other Improvement Characteristics

Number of Patios:	**Bath Fixtures:**
Patio Type:	**Cooling:**
Exterior Walls:	**Heating:**
Roof Type:	**Physical Condition:**

Additional Component Information (for this parcel)

Valuation Characteristics Commercial Property Overview

New Search Helpful Information:

recorder glossary forms

Maricopa Home Legal Information Privacy/Security Policies

©2008 Maricopa County

Maricopa County Assessor || 301 W. Jefferson St. || Phoenix, AZ 85003
602-506-3406

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

MEASURING DEVICE MALFUNCTION REPORT FORM
PART1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612 Well Registration Number: 55608380

SRP Coordinate Location: 16.9E-06.0N SRP Pump Number: 048

Measuring Device Type: Flow Meter Malfunctioned on: 7/17/07

For the reason that: Recalibrate old meter

Should be back in service: 7/17/07

Signed: Zafer Cenk Date: 7-18-07

RECEIVED
OCT 12 2007
PHOENIX AMA

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

MEASURING DEVICE MALFUNCTION REPORT FORM
PART1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612

Well Registration Number: 55608380

SRP Coordinate Location: 16.9E-06.0N

SRP Pump Number: 048

Measuring Device Type: Flow Meter

Malfunctioned on: 12/18/06 -

For the reason that: Wrong prop size

Should be back in service: 12/18/06

Signed: Taylor Combs

Date: 12/21/06

16.9E -6N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

ARIZONA DEPT. OF WATER RESOURCES
'82 MAY 11 A3:27

FOR OFFICE USE ONLY
REGISTRATION NO. 55-608380
FILE NO. A(1-3)2aaa
FILED 5/11/82 (DATE) AT 3:27 (TIME)
INA —
AMA PHOENIX

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A01003002AAAGS1 (File Number) 35- None (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 2, of Township 1N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☐
Salt River Project Agricultural Improvement and Power District as agent for U.S. Govt.
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 250 feet
b. Diameter of casing 20 inches
c. Depth of casing 250 feet
d. Type of casing 8 ga stove pipe, mills knife perforations
e. Maximum pump capacity 2760 gallons per minute.
f. Depth to water 61 static (Jan. 1981) feet below land surface.
g. Date well completed August (Month) 22 (Day) 1947 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 11 1982 SIGNATURE OF REGISTRANT Carl E. Sparks

SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project Agricultural
Improvement and Power District
P O Box 1980
Phoenix, Arizona 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	608356
	THRU
55	608395

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	400.00
					Existing Wells		
					File No A(2-1)17 ddd		
					~~A(1-4)19 acc~~		
					A(2-1)28 aaa		
					~~A(2-1)15 cbb~~		
					A(2-1)9 ddd		
					~~Various~~		
					~~Check #059925~~		

WAITER PAYMENT
GUESTS 40
CHK NO 59925
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

8443 A 15:14

TOTAL $ 400.00

May 25, 1982

sg

17E-8N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55-608431
FILE NO. A(2-3)25bbb
FILED 5/11/82 (DATE) AT 3:22 (TIME)
INA ✓
AMA PHOENIX

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

ARIZONA DEPT. OF WATER RESOURCES '82 MAY 11 A3:22

1. Name of Registrant:
   Salt River Project Agricultural Improvement and Power District
   P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
   A02003025BBBGS1 (File Number) 35- None (Control Number)

3. a. The well is located within the NW ¼ NW ¼ NW ¼, Section 25, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
   Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☒
   _____
   (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 250 feet
   b. Diameter of casing 18 inches
   c. Depth of casing 250 feet
   d. Type of casing 5/16 ga steel pipe with punched slots
   e. Maximum pump capacity 1232 gallons per minute.
   f. Depth to water 52 static (Jan. 1982) feet below land surface.
   g. Date well completed August (Month) 20 (Day) 1964 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
   ____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
   ____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
   SRP Member lands through distribution system.
   Attach additional sheet if necessary.

9. DATE MAY 11 1982 SIGNATURE OF REGISTRANT Carl E. Sparks
   SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

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5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

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2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

55-608431

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

IMPORTANT
PLEASE COMPLETE & RETURN

This report should be prepared by the driller in all detail and filed with the State Land Commissioner following completion of the well.

1. OWNER SALT RIVER VALLEY WATER USERS' ASSOCIATION (Name)
P. O. BOX 1980 - PHOENIX, ARIZONA 85001 (Address)

2. Lessee or Operator Roscoe Moss Co. (Name)
5909 E. Lafayette Phoenix Ariz. (Address)

3. DRILLER James P. Lott (Name)
154 E. Santa Cruz Tempe Ariz. (Address)

4. Location of well: Twp. 2 North Rge. 3 East Section 25 NW ¼ NW ¼ NW ¼ (10-acre subdivision)

5. Intention to Drill File No. ..... Permit No. S-759

DESCRIPTION OF WELL

6. Total depth of hole 250 ft.

7. Type of casing 5/16 plate

8. Diameter and length of casing 18 in. from 0 to 250 in. from ..... to ....., ... in. from ..... to .....

9. Method of sealing at reduction points .....

10. Perforated from 150 to 250, from ..... to ....., from ..... to ....., from ..... to .....

11. Size of cuts ¼" openings X 3" Number of cuts per foot .....

12. If screen was installed: Length ..... ft. Diam. ..... in. Type .....

13. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc.)

14. Date started 7/23/64 (Month Day Year)

15. Date completed 8/10/64 (Month Day Year)

16. Depth of water 45' (If flowing well, so state.) ft.

17. Describe point from which depth measurements were made, and give sea-level elevation if available .....

18. If flowing well, state method of flow regulation .....

19. REMARKS: .....

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 8-18-64 by K
Filed 8-19-64 by K
File No. A(2-3)25 bbb

(Well Log to Appear on Reverse Side)

WD FORM G-301
REV. 4-27-53

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	7	sandy clay
7	30	Clabbin
30	125	sandy clay & gravel
125	315	Cemented sand & gravel
315	—	Fountain formation

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller James D. Lant
Name

154 E. Santa Cruz, Tempe Ariz.
Address

Date 8/11/64

RECEIVED AUG 13 1964 STATE LAND DEPT.
RECEIVED AUG 18 1964 STATE LAND DEPT.
55507
55737

X Dme S-776 A(2-3)25 bbb S-759

Application No. S-776 File No. A(2-3)25 bbb Permit No. S-759

6-24-64

Filed June 24, 1964

(Applicant must not fill in the above blanks)

This application shall be submitted to the State Land Department, Water Division, Phoenix, Arizona, in accordance with the provisions of Article 7, Chapter 1, Title 45, Arizona Revised Statutes, and the rules and regulations of the State Land Department.

Applications must be accompanied by fees made payable to the ~~STATE~~ LAND DEPARTMENT as follows:

Application Fee ------ $3.00
Permit Fee - - - - - - $5.00

OK 6-24-64 JCR

APPLICATION FOR A PERMIT

( ) TO DRILL)
( ) TO DEEPEN) AN IRRIGATION WELL IN A CRITICAL AREA
(X) TO REPLACE) WITHIN THE STATE OF ARIZONA

I (We), SALT RIVER VALLEY WATER USERS' ASSOCIATION
(Owners Name)

of P. O. Box 1980, Phoenix, County of Maricopa
(Post Office Address)

State of Arizona, do hereby make application for a permit to

( ) Drill new well, ( ) Deepen or (X) Replace the following described well in the

Salt River Valley Critical Area.

1. Location and description of proposed well:

Twp. 2N Rge. 3E Sec. 25 ; NW ¼ NW ¼ NW ¼ A(2-3)25 bbb
(10 Ac. Subdiv.)

Dept 300 ft. Type of casing 18" plate pipe

Proposed Withdrawal 1010
(Ac. ft. per year)

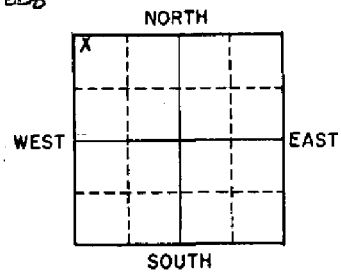
Name and Address of Driller:

Roscoe Moss Company

Los Angeles, California

Location of Proposed Well

17.0E-08.0N



(Indicate location of well)

2. Location and description of existing well:

Twp. 2N Rge. 3E Sec. 25 ; NW ¼ NW ¼ NW ¼
(10Ac. subdiv.)

Dept 205 ft. Diameter 12 in.

Date drilled November, 1920

Driving Unit Electric H. P.

Rating of Motor 10

Discharge when Drilled 427
(g. p. m.)

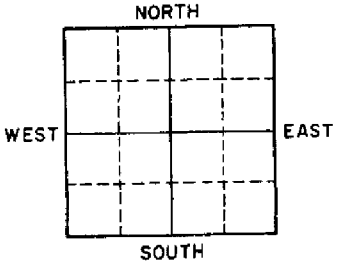
Present Discharge 337
(g. p. m.)

Static Water Level 50.1 ft.
(below ground surface)

Depth of Pump Setting 90'

Pumping Lift 65.1 ft.

17.0E-08.0N
Location of Existing Well



3. Reason new well required supplement water supply

4. Land to be irrigated: Land within Association boundaries.

Twp. _____ Rge. _____ Sec. _____

(Legal Subdivision Description) (Acres)

Twp. _____ Rge. _____ Sec. _____

(Legal Subdivision Description) (Acres)

5. Above described land is now irrigated as follows: Project canals & wells.

6. Record of cultivation and irrigation of land described herein:

All lands within Project under cultivation prior to 1948.

7. It is understood that the permit, if granted, will be in accordance with the Groundwater Code of 1948, and the Permittee will be bound by the provisions of such law, and the provisions of the permit issued herefor.

CERTIFICATE

8. I (We), SALT RIVER VALLEY WATER USERS' ASSOCIATION the applicant named in the above and foregoing application, do hereby certify under the penalty of perjury, that the information contained and statements therein made are to the best of my knowledge and belief true, correct and complete.

DATED THIS 19th day of June, 19 64.

Salt River Project
(Owner or his authorized agent)

P. O. Box 1980, Phoenix, Arizona 85001
(Post Office Address)

BY A. L. Monette
A. L. Monette, Secretary

RECEIVED JUN 24 1964 STATE LAND DEPT.

WD FORM No. G-303-1M/12-56

82392

JUL--2-64 132541 ● 049512 Ck 24.00

STATE OF ARIZONA
STATE LAND DEPARTMENT
STATE OFFICE BUILDING—PHOENIX, ARIZONA

OFFICE COPY

SECTION	TOWNSHIP	RANGE

KIND ENTRY	LEASE – REFERENCE NO.

ACCOUNT NO. GRANT	FUND	SUB	CARRYING CAPACITY OR STATIC WATER LEVEL	SEE OTHER SIDE FOR CODE DESCRIPTION: LAND CODE	CROP CODE	WATER CODE	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT

CERTIFICATE OF PURCHASE $ UNPAID BALANCE	BILLING PERIOD FROM MO. DAY YR.	TO MO. DAY YR.	DATE BILLED MO. DAY YR.	DATE DUE MO. DAY YR.	TOTAL ACRES	TOTAL AMOUNT $

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST — A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE - - - ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - ($)

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY — NUMBER OF DAYS DELINQUENT ( ) $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST	DISTRIBUTION
$	

TOTAL PENALTY AND INTEREST $

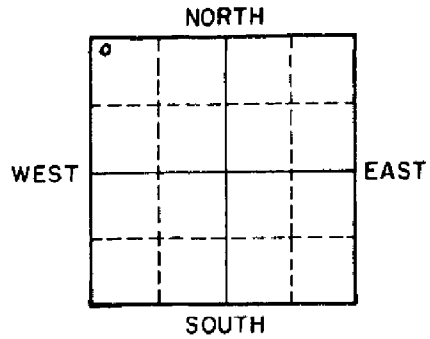
IMPORTANT

PLEASE COMPLETE & RETURN

17E-08.0N

STATE LAND DEPARTMENT
Water Division
Phoenix 7, Arizona

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

File No. A(2-3)25 bbb

REPORT OF EQUIPMENT INSTALLED

OWNER Salt River Valley Water Users' Association

LOCATION OF WELL:

NW 1/4 NW 1/4 NW 1/4, Sec. 25 Twp. 2N Rge. 3E

Date Well Completed: Sept. 1964 Depth 250'

1. Well Test:

Discharge: 1030 (Gal. Per Min.) Date Well Tested: 10/30/64

Method of Discharge Measurement: Pitot (weir, orifice, current meter, etc.)

Static Water Level: 51.0 ft. Drawdown 34.6 ft.

Total Pumping Lift 85.6 ft.

2. Equipment Installed:

Kind of Pump: Turbine (turbine, centrifugal, etc.)

Kind of Power: 75 Electric (Elec., Nat. Gas, Etc.) H. P. Rating of Motor 75 HP

I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

A L Monette

Signature A. L. Monette, Secretary

Date December 2, 1964, 19____.

P. O. Box 1980, Phoenix, Arizona 85001
Address

WD Form G-306
10-57

Rec'd 12-3-64

10755

RECEIVED
DEC 3 1964
STATE LAND
DEPT.

SALT RIVER PROJECT
P. O. BOX 1980
PHOENIX 1, ARIZONA

VICTOR I. CORBELL, PRESIDENT
FLOYD N. SMITH, VICE-PRESIDENT

A. L. MONETTE, SECRETARY
L. H. DWERLKOTTE, TREASURER

June 23, 1964

NEW CARD #36

State Land Department
Water Division
Phoenix, Arizona 85007

Attention: Mr. F. C. Ryan

Gentlemen:

Enclosed is our check for $24.00 for the filing and permit fees to cover applications for three wells, as specified on your Form No. G-303-IM-12-56.

Very truly yours,

SALT RIVER VALLEY
WATER USERS' ASSOCIATION

H. J. Roth
Assistant Secretary
Association

HJR:mb
Enclosure

RECEIVED
JUN 24 1964
STATE LAND
DEPT.

2848

Application No. S-776 File No. A(2-3)25 bbb Permit No. S-759

PERMIT

TO DRILL (Replace) AN IRRIGATION WELL IN A CRITICAL AREA WITHIN THE STATE OF ARIZONA

SALT RIVER VALLEY WATER USERS' ASSOCIATION - P. O. Box 1980 - Phoenix, Arizona

STATE OF ARIZONA }
County of MARICOPA } ss.

This is to Certify that I have examined the above numbered application and do hereby approve the same and grant to the applicant a permit to DRILL (Replace) the well described therein, subject to the following limitations and conditions:

1. Water shall be limited to use on lands described as follows:

Legal Subdivision	Acres
ON LANDS WITHIN THE ASSOCIATION'S BOUNDARIES	
Total Acres	

( ) 2. No right is granted by this permit for the irrigation of lands which on September 1, 1951, were not irrigated, or had not been cultivated within five years prior thereto.

(x) 3. The well for which permit is granted hereunder shall be completed and in operation within one year from the date hereof.

( ) 4. **Other Limitations:**

WITNESS my hand and seal of office this 24th day of June, 1964.

SEAL
Expires: 6-24-65

Louis C. Duncan
Deputy STATE LAND COMMISSIONER

OBED M. LASSEN
STATE LAND COMMISSIONER
PHONE 271-4621

STATE LAND DEPARTMENT

STATE OF ARIZONA
STATE OFFICE BUILDING
PHOENIX 7, ARIZONA

June 24, 1964

Re: File No. A(2-3)25 bbb
Application No. S-776
Permit No. S-759

Salt River Valley Water Users' Association
% H. J. Roth, Assistant Secretary
P. O. Box 1980
Phoenix, Arizona 85001

Gentlemen:

Your application for a permit to drill a well in Twp. 2 North , Rge. 3 East ,

Section 25 , NW ¼ NW ¼ NW ¼ has been approved. Your permit is enclosed.

Also enclosed are a:

WELL DRILLING CARD, which should be in the hands of the driller before construction of the well is started;

REPORT OF WELL DRILLER form, which shall be filled in and sent to us within thirty days after completion of the well;

REPORT OF EQUIPMENT INSTALLED form, which shall be filled in and sent to us within thirty days after the installation of the pumping equipment.

In the event it is necessary to change the location of the proposed well you should obtain the written permission of the State Land Commissioner before proceeding with the drilling.

Very truly yours,

WATER DIVISION

By:
F. C. Ryan, Supervisor
kh

Enclosure: G-301
G-304
G-306
cc: USGS, Tucson

FORM W-2 10-45 JAHN-TYLER

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REGISTRATION OF WELL

Registration of well existing as of Oct. 3, 1945 is hereby made and filed with the State Land Commissioner as required by Section 5, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session 1945.

1. Owner SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name
Phoenix, Arizona
Address

2. Lessee or Operator _____
Name
_____
Address

3. Driller E. N. BROWN DRILLING COMPANY
Name
Phoenix, Arizona
Address

4. Location of well: Twp. 2N (17E-8N) Rge. 3E Section 25 NW ¼ NW ¼ NW ¼
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 205 ft.

6. Type of casing stovepipe

7. Diameter and length of casing 12 in. from ____ to ____, ____ in. from ____ to ____, ____ in. from ____ to ____

8. Method of sealing at reduction points _____

9. Perforated from 40 to 150, from ____ to ____, from ____ to ____, from ____ to ____

10. Size of cuts 1/2 x 4" holes Number cuts per foot 8 holes per foot

11. If screen was installed: Length ____ ft. Diam ____ in. Type ____

12. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.

13. Date completed December 10, 1920 (Month, Year) Deepened ____ (Month, Year)

14. Depth to water when drilled ____ ft.
If flowing well, so state.

15. Present depth to water 21.0 ft. Date of measurement December 20, 1945
If flowing well, so state.

16. Describe point from which depth measurements were made, and give sea-level elevation if available pumphouse floor -- 1,186.5'

17. If flowing well, state method of flow regulation _____

DISCHARGE DATA

18. Well discharge 427 g.p.m.
gal. per min. or cu. ft. per sec. or miner's inches.

19. Method of discharge measurement weir
weir, orifice, current meter, etc.

20. Drawdown 85.88 ft.

21. Annual discharge in acre-feet, or number of hours pumped: 1944 599 a.f. or ____ hrs. 1945 623 a.f. or ____ hrs.

22. Purpose of use Irrigation

23. Place of use: Twp. ____ Rge. ____ Section ____ ____ Acres ____
(See 24) Legal subdivision
Twp. ____ Rge. ____ Section ____ ____ Acres ____
Legal subdivision

24. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.
SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name of Project

(A-2-3)25 bbb

EQUIPMENT DATA

25. Kind of pump turbine
turbine, centrifugal, etc.

26. Kind of power electric
electric, natural gas, etc.

27. Horsepower rating of motor 20

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 2-1-46 by lj
Filed 2-5-46 by lj
File No. (A-2-3)25 bbb
Cross-referenced (Name) ____ by ____
Cross-referenced (Basin) ____ by ____
Cross-referenced ____ by ____

(See Other Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	20	Clay
20	107	Gravel and clay
107	120	Hard and and clay
120	150	Gravel
150	205	Cemented Gravel and Mountain wash

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

By H. J. Lawson

H. J. LAWSON ~~[illegible]~~

General Superintendent and Chief Engineer
Phoenix, Arizona

Address

Date February 1, 1946

Quad	Town	Range	Sect	Q160	Q40	Q10	Reg No.	Registered Full Name & Address	Well Depth	Case Depth	Case Diameter	Water Level	Pump (GPM)	Most Recent Auth. Issued: Drill Lic No	Most Recent Auth. Issued: Issue Date	Org. Drill Date	Reg Wtr Use	Wtr-shed	Log	CRT
A	2.0	3.0	25	B	B	B	55 - 577234	TOSCO MARKETING COMPANY 1500 N PRIEST DRIVE TEMPE, AZ 85281	60	47	2	35	0	78	09/29/1999	11/20/1999	T	07	X	
Well Type: MONITOR			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 571530	TOSCO MARKETING COMPANY 1500 N PRIEST DRIVE TEMPE, AZ 85281	60	60	4	37	0	78	10/15/1999	12/09/1998	N	07	X	A
Cancelled: Y			B/M/P:	127-34-134B																
Well Type: MONITOR																				
A	2.0	3.0	25	B	B	B	55 - 571529	TOSCO MARKETING COMPANY 1500 N PRIEST DRIVE TEMPE, AZ 85281	60	60	4	37	0	269	12/28/1998	12/09/1998	T	07	X	
Well Type: MONITOR			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 560317	CONOCO PHILLIPS COMPANY 1230 W WASHINGTON ST STE 2 TEMPE, AZ 85281	0	0	0	0	0	269			M	07		N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 560316	CONOCO PHILLIPS COMPANY 1230 W WASHINGTON ST STE 2 TEMPE, AZ 85281	55	55	2	37	0	269		12/18/1996	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 560314	CONOCO PHILLIPS COMPANY 1230 W WASHINGTON ST STE 2 TEMPE, AZ 85281	55	55	2	37	0	269		12/18/1996	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 566223	CONOCO PHILLIPS COMPANY 1230 W WASHINGTON STE 212 TEMPE, AZ 85281	0	0	0	0	0	269	01/08/1998		M	07		
Cancelled: Y			B/M/P:																	
Well Type: MONITOR																				
A	2.0	3.0	25	B	B	B	55 - 566222	CONOCO PHILLIPS COMPANY 1230 W WASHINGTON STE 212 TEMPE, AZ 85281	0	0	0	0	0	269	01/08/1998		M	07		
Cancelled: Y			B/M/P:																	
Well Type: MONITOR																				
A	2.0	3.0	25	B	B	B	55 - 608431	SALT RIVER PROJECT, PO BOX 1980 PHOENIX, AZ 85001	250	250	18	52	1,232	0		08/20/1964	AB	07		
Well Type: NON-EXEMPT			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 560320	TOSCO CORPORATION PO BOX 52085 PHOENIX, AZ 85072	0	0	0	0	0	269			M	07		N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 560313	TOSCO CORPORATION PO BOX 52085 PHOENIX, AZ 85072	55	55	2	37	0	269		12/18/1996	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	B	B	B	55 - 548570	TOSCO CORPORATION PO BOX 52085 PHOENIX, AZ 85072	45	0	0	43	0	498		03/23/1995	N	07	X	N
Well Type: EXPLORATION			B/M/P:																	

Salt River Project Agricultural
Improvement & Power District
P O Box 1980
Phoenix, Arizona 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	608398
	THRU
55	608437

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	400.00
					Existing Wells		
					File No.:A(3-1)14 ddd		
					A(3-2)30 dad		
					A(3-2)30 ccc		
					A(3-2)30 baa		
					A(3-2)29 dda		
					Various		
					Check #059924		

WAITER PAYMENT
GUESTS 40
CHK NO 59924
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

9494 A 12:52

TOTAL $ 400.00

May 26, 1982
sg

55-608433

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

RECEIVED
JUL -5 2012
ARIZONA DEPARTMENT OF WATER RESOURCES

MEASURING DEVICE MALFUNCTION REPORT FORM
PART 1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612

Well Registration Number: 55608433

SRP Coordinate Location: 19.0E-07.6N

SRP Pump Number: 116

Measuring Device Type: Flow Meter

Malfunctioned on: 6/26/2012

For the reason that: No mA signal

Should be back in service: 6/26/2012

Signed: _____

Date: 6/26/12

FLOWMETER CHANGEOUT REPAIR DATA SHEET

LOCATION 19E-7.6W

YEAR 2012

CHARGE NUMBER: W13-08044-15

INSTALLED FLOWMETER:

Date Installed: 6/26/12
Manufacture: WS
Serial No.: 20010681-6
Size: 6"
Flowmeter install read: 192260

14158

Flowmeter to be installed in (SRP pipeline) or CITY pipeline

Type of flowmeter: (Saddle) Vertical or High Pressure or Mag Meter

REMOVED FLOWMETER:

Date Removed: 6/26/12
Manufacture: WS
Serial No.: 994500-6
Size: 6"
Flowmeter removed read: 078097
Groundwater Clearance Number: N/A

13836

Date Installed: 3/28/07

Reason for flowmeter removal:
No mA reading

REPAIR REPORT:

What was found?

Repairs required:

DATA ENTRY:

Flowmeter removed/installed by: TK Date: 6/26/12

Flowmeter repair by: Date:

Data entered by: Taylor Cox Date: 6/26/12

Sent to Water Accounting by Taylor Cox Date: 6/26/12

Flowmeter sht

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

MEASURING DEVICE MALFUNCTION REPORT FORM
PART1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612

Well Registration Number: 55608433

SRP Coordinate Location: 19.0E-07.6N

SRP Pump Number: 116

Measuring Device Type: Flow Meter

Malfunctioned on: 3/27/07

For the reason that: Water in lense

Should be back in service: 3/27/07

Signed: Taylor Combs

Date: 3-28-07

19E-7.6N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

ARIZONA DEPT OF WATER RESOURCES '82 MAY 11 A3:23

FOR OFFICE USE ONLY
REGISTRATION NO. 55-608433
FILE NO. A(2-4)30ada
FILED 5/11/82 (DATE) AT 3:23 (TIME)
INA —
AMA PHOENIX

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02004030A GSL (File Number) should be A02004030ACA 35- none (Control Number)

3. a. The well is located within the NE ¼ SE ¼ NE ¼, Section 30, of Township 2N N/S, Range 4E E/W, G & SRB & M, in the County of Maricopa.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☐
Salt River Valley Water Users' Association
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 150 feet
b. Diameter of casing 12 inches
c. Depth of casing 150 feet
d. Type of casing 12 ga stove pipe.
e. Maximum pump capacity 500 gallons per minute.
f. Depth to water 17 static (Jan. 1982) feet below land surface.
g. Date well completed March (Month) 8 (Day) 1921 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP Member lands through distribution sytem.
Attach additional sheet if necessary.

9. DATE MAY 11 1982 SIGNATURE OF REGISTRANT [signature]
SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project Agricultural
Improvement & Power District
P O Box 1980
Phoenix, Arizona 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	608398
	THRU
55	608437

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	400.00
					Existing Wells		
						WAITER PAYMENT	
						GUESTS 40	
						CHK NO 59924	
					File No.:A(3-1)14 ddd	55-I	400.00
					A(3-2)30 dad	TAX	0.00
					A(3-2)30 ccc	TOTL	400.00
					A(3-2)30 baa	GEN.CHEK	400.00
					A(3-2)29 dda		
					Various	# 8484 A	12:52
					Check #059924		

May 26, 1982
sg

TOTAL $ 400.00

18E-8.8N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 26 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 617825
FILE NO. A(2-3)24ada
FILED 5-26-82 (DATE) AT 10- (TIME)
INA phx
AMA

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

1. Name of Registrant:
   Salt River Project Agricultural Improvement and Power District
   P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
   _____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the NE ¼ SE ¼ NE ¼, Section 24, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
   Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
   _____
   (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 417 feet
   b. Diameter of casing 20" to 362', 16" to 417' inches
   c. Depth of casing 417 feet
   d. Type of casing steel pipe with mills knife perforations
   e. Maximum pump capacity 1457 gallons per minute.
   f. Depth to water 37 static (Jan. 1982) feet below land surface.
   g. Date well completed _____ (Month) _____ (Day) 1945 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
   ____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
   ____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
   SRP member lands through distribution system
   Attach additional sheet if necessary.

9. DATE MAY 25 1982 SIGNATURE OF REGISTRANT Carl E. Zahn
   SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project
P. O. Box 1980
Phoenix, AZ 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	617781
	THRU
55	617830

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing fees for fifty (50) registration of existing wells	10.00	500.00

File No.	File No.	File No.
A(13-25) 24 dbb	A(13-26) 7 dbd	A(13-27) 21 acc
A(13-27) 21 dbb	A(13-26) 18 cbb	A(13-27) 22 dbb
A(13-27) 17 cac	A(13-29) 5baa	A(1-1) 36aad
A(13-27) 9 bca	A(13-28) 3 ddb	A(2-1) 1daa
A(13-27) 17 dbb	A(13-26) 7ac	A(3-1) 36ddd
A(13-27) 15 bdc	A(13-26) 8 bcc	A(3-2) 18aac
A(13-29) 9 bdd	A(13-26) 18cad	A(3-2) 18aad
A(14-29) 33 bbb	A(13-26) 18aaa	D(1-6) 17 dcc
A(13-20) 3acc	A(13-26) 24 cad	A(3-2) 26dcb
A(13-29) 6pdd	A(14-29) 33 bbb	A(2-3) 17bbb
A(13-29) 10 bdd	A(13-28) 12 bdc	A(2-3) 24ada
A (13-27) 9cca	A(13-28) 11dbc	D(1-4) 9bdc
A(13-27) 22 dbb	A(13-29) 6aac	D(1-4) 10cad
A(13-26) 17 bdd	A(13-29) 5bba	D(1-4) 36bb
A(13-26) 8cbb	A(13-29) 3aba	A(2-4) 12bdd
A(13-29) 1ccc	A(13-27) 15bdd	A(1-4) 1aba

WRITER	PAYMENT
GUESTS	50
CHK NO	60942
50@	10.00
55-I	500.00
TAX	0.00
TOTL	500.00
GEN.CHEK	500.00

TOTAL $ # 1340 A 13:24- 500.00

CHECK NO. 060942

8-18-82 vf

18E-7N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 26 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 617849
FILE NO. A(2-3)36aaa
FILED 5-26-82 (DATE) AT 10 — (TIME)
INA Phx
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02003036AAAGS1 (File Number) 35- None (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 36, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☐
Salt River Valley Water Users' Association
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 305 feet
b. Diameter of casing 18 inches
c. Depth of casing 305 feet
d. Type of casing 3/8 wall steel pipe with louvered perforations
e. Maximum pump capacity 954 gallons per minute.
f. Depth to water 22 static (Jan. 1982) feet below land surface.
g. Date well completed July (Month) 16 (Day) 1971 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 25 1982 SIGNATURE OF REGISTRANT Carl E. Parker

SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project
P. O. Box 1980
Phoenix, Arizona 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	617831
	THRU
55	617870

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Forty (40) filing fees for registration of existing wells	$10.00	400.00

A(1-6) 21bcc
D(2-5) 4add
D(1-5) 22ccc
D(1-5) 3ccc
D(1-5) 9dbb
D(1-5) 19ccc
A(1-5) 19bdd
D(1-5)21 bdc
D(1-5) 29dbc
A(1-5) 33cdd
A(1-5)16ccd
A(1-5)17aaa
A(2-4)11dcc
A(2-4)11aad

A(1-5)35baa
D(1-5) 32cab
D(1-5) ccc
D(1-2)3cdd
D(2-3)36aaa
A(2-2)25bcd
D(1-3)6caa
D(1-4)3bbb
D(1-4)3cdd
D(1-4)10bdd
D(1-5)7add
D(1-4)24aaa
A(2-3)25daa
A(1-5)2cdd

D(1-5)8acc
D(1-4)11bcc
D(1-4)12acc
D(1-4)14ccc
D(1-4)22bcc
A(1-6) 32cca
A(1-6)7abb
D(1-6)7ddc
A(1-6)30aba
A(1-6)32bba
A(1-6)8ccd
A(1-6)17acc

WRITER PAYMENT
GUESTS 40
CHK NO 60941
40@ 10.00
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

TOTAL $ # 1628 A 13:50 400.00

Check No. 060941
8-25-82 vf

55-617857

Arizona Department of Water Resources
Operations Division
500 N. 3rd St.
Phoenix, AZ 85004-3903

DWR AR22 - Nov 84
Date Received: _____
Received By : _____
AMA : _____
Date Routed to AMA: _____

RECEIVED
JUL -5 2012
ARIZONA DEPARTMENT OF WATER RESOURCES

MEASURING DEVICE MALFUNCTION REPORT FORM
PART 1 - NOTIFICATION

INSTRUCTIONS

A.C.R.R. R12-15-905 Requires that a report must be made in writing to Department of Water Resources within (7) seven calendar days of Discovering that a water measuring device has malfunctioned, if the malfunction lasts 72 hours or longer.

Well Owner/Operator: SALT RIVER PROJECT

Address: P.O. Box 52025 Phoenix, AZ 85072-2025

Telephone Number: (602) 236-2612

Well Registration Number: 55617857

SRP Coordinate Location: 17.9E-07.5N

SRP Pump Number: 112

Measuring Device Type: Flow Meter

Malfunctioned on: 6/4/2012

For the reason that: New discharge pipe

Should be back in service: 6/4/2012

Signed: _____

Date: 6/22/12

FLOWMETER CHANGEOUT REPAIR DATA SHEET

LOCATION 17.9E - 7.5N

YEAR 2012

CHARGE NUMBER: W3- 05044-15

INSTALLED FLOWMETER:

Date Installed: 6-5-12
Manufacture: WS
Serial No.: 9032584 - 10"
Size: 10
Flowmeter install read: 176648

11378

Flowmeter to be installed in (SRP pipeline) or CITY pipeline

Type of flowmeter: (Saddle) Vertical or High Pressure or Mag Meter

REMOVED FLOWMETER:

Date Removed: 6-4-12
Manufacture: WS
Serial No.: 20021743
Size: 10"
Flowmeter removed read: 556
Date Installed: 5/21/03
Groundwater Clearance Number: _____

14224

Reason for flowmeter removal:
New discharge pipe, years of use.

REPAIR REPORT:

What was found? _____

Repairs required: _____

DATA ENTRY:

Flowmeter removed/installed by: TK Date: 6-4-12

Flowmeter repair by: _____ Date: _____

Data entered by: Jaylor Cas Date: 6-22-12

Sent to Water Accounting by Jaylor Cas Date: 6-22-12

Flowmeter sht

17.9E - 7.5N

RECEIVED MAY 26 1982 DEPT. OF WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 617857.1
FILE NO. A(2-3)25daa
FILED 5-26-82 (DATE) AT 10 (TIME)
INA Phx
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL – $10.00 ☒

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02003025DAAGS1 (File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NE ¼ SE ¼, Section 25, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 300 feet
b. Diameter of casing 18 inches
c. Depth of casing 300 feet
d. Type of casing 5/16 wall steel pipe.
e. Maximum pump capacity 1114 gallons per minute.
f. Depth to water 24 static (Jan. 1982) feet below land surface.
g. Date well completed May (Month) 4 (Day) 1965 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 25 1982 SIGNATURE OF REGISTRANT Carl E. Fisher
SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

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Salt River Project
P. O. Box 1980
Phoenix, Arizona 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	617831
	THRU
55	617870

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Forty (40) filing fees for registration of existing wells	$10.00	400.00
A(1-6)	21bcc			A(1-5)35baa	D(1-5)8acc		
D(2-5)	4add			D(1-5) 32cab	D(1-4)11bcc		
D(1-5)	22ccc			D(1-5) ccc	D(1-4)12acc		
D(1-5)	3ccc			D(1-2)3cdd	D(1-4)14ccc		
D(1-5)	9dbb			D(2-3)36aaa	D(1-4)22bcc		
D(1-5)	19ccc			A(2-2)25bcd	A(1-6) 32cca		
A(1-5)	19bdd			D(1-3)6caa	A(1-6)7abb		
D(1-5)	21 bdc			D(1-4)3bbb	D(1-6)7ddc		
D(1-5)	29dbc			D(1-4)3cdd	A(1-6)30aba		
A(1-5)	33cdd			D(1-4)10bdd	A(1-6)32bba		
A(1-5)	16ccd			D(1-5)7add	A(1-6)8ccd		
A(1-5)	17aaa			D(1-4)24aaa	A(1-6)17acc		
A(2-4)	11dcc			A(2-3)25daa			
A(2-4)	11aad			A(1-5)2cdd			

WAITER PAYMENT
GUESTS 40
CHK NO 60941
40@ 10.00
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

TOTAL $ # 1628 A 13:50 400.00

Check No. 060941
8-25-82 vf

55-617857

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

This report should be prepared by the driller in all detail and filed with the State Land Commissioner following completion of the well.

1. OWNER ROSCOE MOSSCOMPANY (SRVWUA)
Name
4360 Worth Street Los Angeles, Ca.
Address

2. Lessee or Operator
Name
Address

3. DRILLER J. O. EVANS
Name
Phoenix
Address

4. Location of well: Twp. 2N Rge. 3E Section 25 NE ¼ NE ¼ SE ¼
10-acre subdivision

5. Intention to Drill File No. ~~S-791~~ A(2-3)25 daa ~~Permit No.~~ appl. # S-791 2-16-65

DESCRIPTION OF WELL

6. Total depth of hole 300 ft.

7. Type of casing 5/16" plate pipe

8. Diameter and length of casing 18 in. from ..... to ....., ... in. from ..... to ....., ... in. from ..... to .....

9. Method of sealing at reduction points .....

10. Perforated from 100 to 300, from ..... to ....., from ..... to ....., from ..... to .....

11. Size of cuts 3/16 x 2-1/2 Number of cuts per foot 10 holes per 45 inches

12. If screen was installed: Length ..... ft. Diam. ..... in. Type .....

13. Method of construction Cable tool
drilled, dug, driven, bored, jetted, etc.

14. Date started March 30, 1965
Month Day Year

15. Date completed May 4, 1965
Month Day Year

16. Depth of water 30 ft.
If flowing well, so state.

17. Describe point from which depth measurements were made, and give sea-level elevation if available .....

18. If flowing well, state method of flow regulation .....

19. REMARKS: .....

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received ..... by .....
Filed ..... by .....
File No. A(2-3)25 daa

(Well Log to Appear on Reverse Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
)	@	
0	2	Top soil
2	40	Caliche
40	120	Clay and some gravel
120	203	Conglomerate
203	300	Hard conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller ROSCOE MOSS COMPANY
Name

4360 Worth Street
Address

Los Angeles, CA
Date 5/4/65

2-73

RECEIVED
MAY 28 1974
STATE LANDS DEPT.

STATE OF ARIZONA
STATE LAND DEPARTMENT
STATE OFFICE BUILDING — PHOENIX, ARIZONA

OFFICE COPY

SECTION	TOWNSHIP	RANGE

KIND ENTRY	LEASE – REFERENCE NO.

ACCOUNT NO. GRANT FUND	SUB	CARRYING CAPACITY OR STATIC WATER LEVEL	SEE OTHER SIDE FOR CODE DESCRIPTION: LAND CODE	CROP CODE	WATER CODE	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
						File			

CERTIFICATE OF PURCHASE UNPAID BALANCE $	BILLING PERIOD FROM MO.	DAY	YR.	TO MO.	DAY	YR.	DATE BILLED MO.	DAY	YR.	DATE DUE MO.	DAY	YR.	TOTAL ACRES	TOTAL AMOUNT $

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST — A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE - - - ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - ($)

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY — NUMBER OF DAYS DELINQUENT ( ) $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

TOTAL PENALTY AND INTEREST $

PENALTY AND INTEREST	DISTRIBUTION
	$

17.9E-7.5N

According to our records this report was furnished to your office in May, 1965 -- If you do not locate, please forms and we will furnish duplicates.

WATER RESOURCE OPERATIONS
R. Juetten, Supv.

Arizona
State Land Department

JACK WILLIAMS
GOVERNOR

1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 - 271-4634

ANDREW L. BETTWY
STATE LAND COMMISSIONER

May 6, 1974

Salt River Valley Water Users' Assoc.
P. O. Box 1980
Phoenix, AZ 85001

Re: Application for Permit to Drill for Well S-791
File # A(2-3)25 daa
Dated 2-16-65

Gentlemen:

The State Land Department, Water Rights Division is engaged in the processes of bringing its well files up to date.

Arizona Revised Statutes 45-306, 45-307, and 45-313 deal with Applications for Permit to Construct Irrigation Well, Filing of Log by Driller, Failure or Refusal to File Reports on Notices and Penalty.

Critical information included in these statutes requires that:

1. A well must be completed within one year of filing (in case of failure to complete a well within one year a new Application for Permit to Construct Irrigation Well may be filed);

2. Upon completion of drilling, a copy of the log, and other pertinent data shall be filed by the driller with the State Land Department; and

3. A person who fails or refuses to make any of these reports, give the notices required, or cooperate with the Department, is guilty of a misdemeanor and subject to a fine.

In the event the referenced well has been completed, please forward log, and other pertinent completion data to this Department within 30 days.

If no response is forthcoming, we will be compelled to assume that the well is not complete and the related file retired as cancelled.

Yours very truly,

Andrew L. Bettwy

NOTE: We usually receive the Report of Equipment Report covering the wells but not the Driller's report. That is the report we must have to complete your files.

5-73

Water Division

RECEIVED
MAY 28 1974
STATE LAND
DEPT.
2025

RECEIVED
MAY 10 1974
STATE LAND
DEPT.
715

JACK WILLIAMS
GOVERNOR

Arizona
State Land Department

1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 - 271-4634

ANDREW L. BETTWY
STATE LAND COMMISSIONER

May 6, 1974

Salt River Valley Water Users' Assoc.
P. O. Box 1980
Phoenix, AZ 85001

Re: Application for Permit to Drill for Well **S-791**
File # **A(2-3)25 daa**
Dated **2-16-65**

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Yours very truly,

Andrew L. Bettwy

5-73

OBED M. LASSEN
STATE LAND COMMISSIONER
PHONE 271-4621

STATE LAND DEPARTMENT

STATE OF ARIZONA
STATE OFFICE BUILDING
PHOENIX 7, ARIZONA

February 16, 1965

Salt River Valley Water Users' Association
P. O. Box 1980
Phoenix, Arizona 85001

Re: File No. A(2-3)25 daa
Application No. S-791
Permit No. S-774

Attention: Mr. A. L. Monette, Secretary

Gentlemen:

Your application for a permit to drill a well in Twp. 2 North, Rge. 3 East, Section 25, NE ¼ NE ¼ SE ¼ has been approved. Your permit is enclosed.

Also enclosed are a:

WELL DRILLING CARD, which should be in the hands of the driller before construction of the well is started;

REPORT OF WELL DRILLER form, which shall be filled in and sent to us within thirty days after completion of the well;

REPORT OF EQUIPMENT INSTALLED form, which shall be filled in and sent to us within thirty days after the installation of the pumping equipment.

In the event it is necessary to change the location of the proposed well you should obtain the written permission of the State Land Commissioner before proceeding with the drilling.

Very truly yours,

WATER DIVISION

By:
F. C. Ryan, Supervisor
kh

Enclosure: G-301
G-304
G-306
cc: USGS, Tucson

S-791 a(2-3)25 daa S-774

Application No. S-791 File No. A(2-3)25 daa Permit No. S-774

Filed 2-16-65

(Applicant must not fill in the above blanks)

This application shall be submitted to the State Land Department, Water Division, Phoenix, Arizona, in accordance with the provisions of Article 7, Chapter 1, Title 45, Arizona Revised Statutes, and the rules and regulations of the State Land Department.

Applications must be accompanied by fees made payable to the STATE LAND DEPARTMENT as follows:

Application Fee ------ $3.00
Permit Fee - - - - - - $5.00

OK JCR 2-16-65

APPLICATION FOR A PERMIT

( ) TO DRILL)
( ) TO DEEPEN)
(X) TO REPLACE)

AN IRRIGATION WELL IN A CRITICAL AREA WITHIN THE STATE OF ARIZONA

XI (We), SALT RIVER VALLEY WATER USERS' ASSOCIATION
(Owners Name)

of P. O. Box 1980 85001, County of Maricopa
(Post Office Address)

State of Arizona, do hereby make application for a permit to

( ) Drill new well, ( ) Deepen or (x) Replace the following described well in the

Salt River Valley Critical Area. a(2-3)25 daa

1. Location and description of proposed well:

Twp. 2N Rge. 3E Sec. 25 ; NE ¼ NE ¼ SE ¼ (10 Ac. Subdiv.) 9-1-51
a a d

Dept 300 ft. Type of casing Stovepipe

Proposed Withdrawal 1048 (Ac. ft. per year)

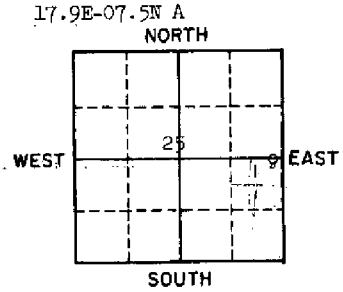
Name and Address of Driller:

Roscoe Moss Co.

Los Angeles, California

Location of Proposed Well

17.9E-07.5N A



(Indicate location of well)

2. Location and description of existing well:

Twp. 2N Rge. 3E Sec. 25 NE ¼ NE ¼ SE ¼ (10Ac. subdiv.)

Dept 165' ft. Diameter 12 in.

Date drilled 10/4/1920

Driving Unit 15 Electric H. P.

Rating of Motor 15

Discharge when Drilled 370 (g. p. m.)

Present Discharge 370 (g. p. m.)

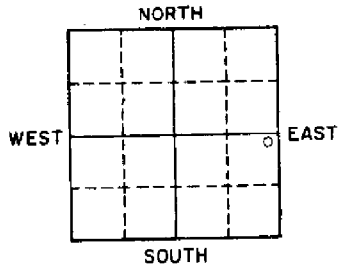
Static Water Level 40.5 ft. (below ground surface)

Depth of Pump Setting 110'

Pumping Lift 65.0 ft.

18.0E-07.5N A

Location of Existing Well



3. Reason new well required Supplement water supply.

4. Land to be irrigated: Land within Association boundaries.

Twp. _____ Rge. _____ Sec. _____

(Legal Subdivision Description) (Acres)

Twp. _____ Rge. _____ Sec. _____

(Legal Subdivision Description) (Acres)

5. Above described land is now irrigated as follows:

Project canals and wells.

6. Record of cultivation and irrigation of land described herein:

All lands within Project under cultivation prior 1948.

7. It is understood that the permit, if granted, will be in accordance with the Groundwater Code of 1948, and the Permittee will be bound by the provisions of such law, and the provisions of the permit issued herefor.

CERTIFICATE

8. I(We), Salt River Valley Water Users' Association the applicant named in the above and foregoing application, do hereby certify under the penalty of perjury, that the information contained and statements therein made are to the best of my knowledge and belief true, correct and complete.

DATED THIS 11th day of February, 19 65.

SALT RIVER VALLEY WATER USERS' ASSOCIATION
(Owner or his authorized agent)
P. O. Box 1980, Phoenix, Arizona 85001
(Post Office Address)

BY A L Monette
A. L. Monette, Secretary

RECEIVED FEB 16 1965 GWMC LWCO DEPT.

5200

WD FORM No. G-303-1M/12-56

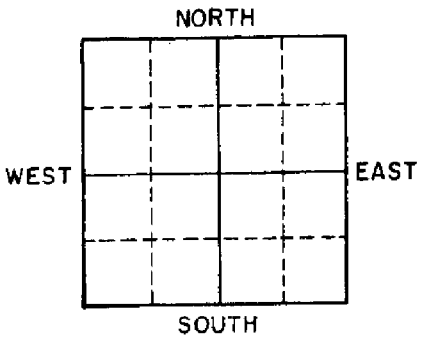
17.9E-07.5N A

IMPORTANT

PLEASE COMPLETE & RETURN TO THIS OFFICE

STATE LAND DEPARTMENT
Water Division
Phoenix 7, Arizona

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

File No. A(2-3)25 daa

REPORT OF EQUIPMENT INSTALLED

OWNER Salt River Valley Water Users' Association Phoenix, Arizona

LOCATION OF WELL:

NE ¼ NE ¼ SE ¼, Sec. 25 Twp. 2N Rge. 3E

Date Well Completed: May, 1965 Depth 300

1. Well Test:

Discharge: 1130 (Gal. Per Min.) Date Well Tested: 8/13/65

Method of Discharge Measurement: Pitot (weir, orifice, current meter, etc.)

Static Water Level: 29.3 ft. Drawdown 69.8 ft.

Total Pumping Lift 99.1 ft.

2. Equipment Installed:

Kind of Pump: Turbine (turbine, centrifugal, etc.)

Kind of Power: Electric (Elec., Nat. Gas, Etc.) H. P. Rating of Motor 40

I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

A. L. Monette

Signature A. L. Monette, Secty.

Date Sept. 9, 1965.

P. O. Box 1980, Phoenix, Arizona
Address

WD Form G-306
10-57

85975

RECEIVED
SEP 13 1965
STATE LAND
DEPT.

SALT RIVER PROJECT
P.O. BOX 1980
PHOENIX, ARIZONA 85001

VICTOR I. CORBELL, PRESIDENT
FLOYD N. SMITH, VICE-PRESIDENT

A. L. MONETTE, SECRETARY
K. J. KNAUER, TREASURER

February 15, 1965

Mr. F. C. Ryan
State Land Department
Water Division
Phoenix, Arizona 85007

Dear Mr. Ryan:

Enclosed is our check for $8.00 for the filing and permit fee to cover application to replace one of our irrigation wells in the NE NE SE, Section 25, T-2N, R-3E.

This in conformance with the attached Form No. G-303-1M-12-56.

Very truly yours,

SALT RIVER VALLEY
WATER USERS' ASSOCIATION

H. J. Roth
Assistant Secretary

HJR:mb
Enclosure

5200

RECEIVED
FEB 16 1965
STATE LAND
DEPT.

Application No. S-791 File No. A(2-3)25.daa Permit No. S-774

PERMIT

TO DRILL (Replace) AN IRRIGATION WELL IN A CRITICAL AREA WITHIN THE STATE OF ARIZONA

SALT RIVER VALLEY WATER USERS' ASSOCIATION - P. O. Box 1980 - Phoenix, Arizona

STATE OF ARIZONA }
County of MARICOPA } ss.

This is to Certify that I have examined the above numbered application and do hereby approve the same and grant to the applicant a permit to DRILL (Replace) the well described therein, subject to the following limitations and conditions:

1. Water shall be limited to use on lands described as follows:

Legal Subdivision	Acres
On all lands within the boundaries of the Salt River Project	
Total Acres	

( ) 2. No right is granted by this permit for the irrigation of lands which on September 1, 19 51, were not irrigated, or had not been cultivated within five years prior thereto.

(x) 3. The well for which permit is granted hereunder shall be completed and in operation within one year from the date hereof.

( ) 4. **Other Limitations:**

WITNESS my hand and seal of office this 16th day of February, 19 65

SEAL
Expires: 2-16-66

Deputy STATE LAND COMMISSIONER

FORM W-2 10-46 JAHN-TYLER

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REGISTRATION OF WELL

Registration of well existing as of Oct. 3, 1945 is hereby made and filed with the State Land Commissioner as required by Section 5, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session 1945.

1. Owner SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name
Phoenix, Arizona
Address

2. Lessee or Operator
Name
Address

3. Driller
Name
Address

4. Location of well: Twp. 2N (18E-7½N) Rge. 3E Section 25 NE ¼ NE ¼ SE ¼
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 165 ft.

6. Type of casing stovepipe

7. Diameter and length of casing 12 in. from to in. from to in. from to

8. Method of sealing at reduction points

9. Perforated from 40 to 144, from to, from to, from to

10. Size of cuts 1/2 x 4" holes Number cuts per foot 8 holes per foot

11. If screen was installed: Length ft. Diam in. Type

12. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.

13. Date completed Nov. 8, 1920 (Month, Year) Deepened (Month, Year)

14. Depth to water when drilled ft.
If flowing well, so state.

15. Present depth to water 13.4 ft. Date of measurement December 19, 1945
If flowing well, so state.

16. Describe point from which depth measurements were made, and give sea-level elevation if available pumphouse floor -- 1,194.4

17. If flowing well, state method of flow regulation

DISCHARGE DATA

18. Well discharge 370 g.p.m.
gal. per min. or cu. ft. per sec. or miner's inches.

19. Method of discharge measurement weir
weir, orifice, current meter, etc.

20. Drawdown 67.66 ft.

21. Annual discharge in acre-feet, or number of hours pumped: 1944 457 a.f. or hrs. 1945 512 a.f. or hrs.

22. Purpose of use irrigation

23. Place of use: Twp. Rge. Section Acres
(See 24) Legal subdivision
Twp. Rge. Section Acres
Legal subdivision

24. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.
SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name of Project

(A-2-3)25 daa

EQUIPMENT DATA

25. Kind of pump turbine
turbine, centrifugal, etc.

26. Kind of power electric
electric, natural gas, etc.

27. Horsepower rating of motor 15

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 2-1-46 by lj
Filed 2-5-46 by lj
File No. (A-2-3)25 daa
Cross-referenced (Name) by
Cross-referenced (Basin) by
Cross-referenced by

(See Other Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	8	Surface soil
8	90	Clay
90	132	Cemented sand and gravel
132	144	Sandy Clay
144	160	Sandstone
160	165	Clay

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

By H. J. Lawson
H. J. LAWSON ~~[illegible]~~
General Superintendent and Chief Engineer
Phoenix, Arizona

Address

Date February 1, 1946

TEAR OFF ON THIS LINE AND DEPOSIT ABOVE CHECK. CHECK ATTACHED IS SENT YOU IN FULL SETTLEMENT OF THE FOLLOWING ACCOUNT.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

CHECK NUMBER 4286

	GROSS AMOUNT	DISCOUNT	NET AMOUNT
FEES FOR ONE WELL DRILLING APPLICATIONS AND 2 PERMITS			8.00

PLEASE CASH WITHIN 60 DAYS

ad	Town	Range	Sect	Q160	Q40	Q10	Reg No.	Registered Full Name & Address	Well Depth	Case Depth	Case Diameter	Water Level	Pump (GPM)	Most Recent Auth. Issued: Drill Lic No	Most Recent Auth. Issued: Issue Date	Org. Drill Date	Reg Wtr Use	Wtr-shed	Log	CRT
	2.0	3.0	25	C	C	C	55 - 558214	CIRCLE K STORES 2857, 3003 N CENTRAL AVE PHOENIX, AZ 85013	53	33	4	37	0	175		07/11/1996	M	07	X	N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
	2.0	3.0	25	C	C	C	55 - 558213	CIRCLE K STORES 2857, 3003 N CENTRAL AVE PHOENIX, AZ 85013	53	33	4	37	0	175		07/10/1996	M	07	X	N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
	2.0	3.0	25	C	C	C	55 - 558212	CIRCLE K STORES 2857, 3003 N CENTRAL AVE PHOENIX, AZ 85013	53	23	4	37	0	175		07/11/1996	M	07	X	N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
	2.0	3.0	25	C	C	C	55 - 554024	CIRCLE K STORESINC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
	2.0	3.0	25	C	C	C	55 - 554022	CIRCLE K STORES INC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
	2.0	3.0	25	C	C	C	55 - 554020	CIRCLE K STORES INC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
	2.0	3.0	25	C	C	C	55 - 554018	CIRCLE K STORES INC, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
	2.0	3.0	25	C	C	C	55 - 550242	CIRCLE K CORP, 3003 N CENTRAL AVE PHOENIX, AZ 85013	0	0	0	0	0	175			M	07		N
ell Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	C	C	C	55 - 550240	CIRCLE K CORP, 3003 N CENTRAL AVE PHOENIX, AZ 85013	57	27	4	40	0	175		07/31/1995	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	C	C	C	55 - 550239	CIRCLE K CORP, 3003 N CENTRAL AVE PHOENIX, AZ 85013	59	29	4	40	0	175		07/28/1995	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	C	C	C	55 - 550238	CIRCLE K CORP, 3003 N CENTRAL AVE PHOENIX, AZ 85013	58	28	7	40	0	175		07/27/1995	M	07	X	N
Well Type: MONITOR OR PIEZOMETER			B/M/P:																	
A	2.0	3.0	25	D	A	A	55 - 617857	SALT RIVER PROJECT, PO BOX 1980 PHOENIX, AZ 85001	300	300	18	24	1,114	0		05/04/1965	A	07		
Well Type: NON-EXEMPT			B/M/P:																	

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 11 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 6 26525
FILE NO. A(2-3)35aad
FILED 6-11-82 (DATE) AT 9a (TIME)
INA
AMA PHOENIX

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
City of Phoenix, Arizona Parks, Recreation and Library Department (Perry Park)
125 E. Washington (Address) Phoenix (City) Arizona (State) 85004 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ NE ¼ NE ¼, Section 35, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address 2626 N. 32 ST.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Municipal - to fill swimming pool at Perry Park (2626 N. 32nd Street).

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 218 feet
b. Diameter of casing 20 inches
c. Depth of casing N/A feet
d. Type of casing N/A.
e. Maximum pump capacity 750 gallons per minute.
f. Depth to water 59 feet below land surface.
g. Date well completed N/A (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE _____ SIGNATURE OF REGISTRANT _____

City of Phoenix
Water & Sewers Dept
125 East Washington St
Phoenix AZ 85004

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55 -	626567
	THRU
55 -	626650

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	1,320.00
					Various file Numbers		
					Paid Check #90191 11-15-82 pb		

WRITER PAYMENT
GUESTS 132
CHK NO 90191
55-I 1320.00
TAX 0.00
TOTL 1320.00
GEN.CHEK 1320.00

4364 A 15:15

TOTAL $ 1,320.00

Run Date: 07/02/2014

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 2.0 4.0 30 C C A

Well Reg.No 55 - 634799

AMA PHOENIX AMA

Registered Name WILLIAM & ALYSON SAWKIW
4101 E. AVALON DRIVE
PHOENIX AZ 85018

File Type REGISTERED WELL
Application/Issue Date 05/26/1982

Owner OWNER
Driller No. 0
Driller Name
Driller Phone
County MARICOPA
Parcel No. 127-14-038
Intended Capacity GPM 0.00

Well Type EXEMPT
SubBasin WEST SALT RIVER VALLEY
Watershed SALT RIVER
Registered Water Uses DOMESTIC
Registered Well Uses WATER PRODUCTION
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	100.00	**Case Diam**	4.00	**Tested Cap**	10.00
Pump Cap.	10.00	**Case Depth**	70.00	**CRT**	
Draw Down	0.00	**Water Level**	23.00	**Log**	
		Acres Irrig	0.00	**Finish**	PLASTIC OR PVC

Contamination Site: YES - WITHIN 1 MILE OF A WQARF SITE

Tribe: Not in a tribal zone

Comments 4101 E. Avalon Drive, Phoenix 85018

Places Of Use

A 2 0 4 0 30 C C A

Current Action

7/2/2014 860 CHANGE OF WELL OWNERSHIP
Action Comment: gt

Action History

3/24/2009 775 WQARF UPLOAD OF WELL INVENTORY DATA
Action Comment: DS-Old WQARF Code = NULL
11/21/2007 860 CHANGE OF WELL OWNERSHIP
Action Comment: DS-Old WQARF Code = NULL
8/16/2004 880 CHANGE IN REMEDIAL ACTION SITE CODE
Action Comment: Old WQARF Code = NULL
10/1/1979 755 WELL CONSTRUCTION COMPLETED
Action Comment:

Arizona Department of Water Resources
Water Management Division
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8527 • www.azwater.gov

Request to Change Well Information

RECEIVED
JUL 01 2014
ARIZONA DEPARTMENT OF WATER RESOURCES

FILE NUMBER: AC2-4)30CCA
WELL REGISTRATION NUMBER: 55-634799

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.R.S. § 45-113 and A.A.C. R12-15-104

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: David R. Abbey
MAILING ADDRESS: 4101 E. Avalon Dr
CITY / STATE / ZIP CODE: Phoenix, Az 85018
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 651-245-4951
FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY): 4101 E Avalon Dr. Phoenix

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2N	4E	30	C ¼	C ¼	A ¼

LATITUDE Degrees	Minutes	Seconds	LONGITUDE Degrees	Minutes	Seconds
°	'	"N	°	'	"W

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	COUNTY WHERE WELL IS LOCATED
127	14	038	Maricopa

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)*
☑ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR

FEE $120 per Well

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:
DWR LICENSE NUMBER:
TELEPHONE NUMBER:
FAX:

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:
DWR LICENSE NUMBER:
ROC LICENSE CATEGORY:
TELEPHONE NUMBER:
FAX:

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP

FEE $30 per Well

Previous Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: David R. Abbey
MAILING ADDRESS: 4101 E. Avalon Dr.
CITY / STATE / ZIP CODE: Phoenix, Az. 85018
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 651-245-4951
FAX:

New Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: William and Alyson Sawkiw
MAILING ADDRESS: 4101 E. Avalon Dr
CITY / STATE / ZIP CODE: Phoenix Az 85018
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 480-206-8791
FAX:

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN:

SECTION 5. OPTIONAL BY PROPERTY OWNER AND WELL OWNER ONLY

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 6. WELL OWNER SIGNATURE

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Saw Kiw
SIGNATURE OF WELL OWNER:
DATE:

127-14-038

Parcel Type: Residential

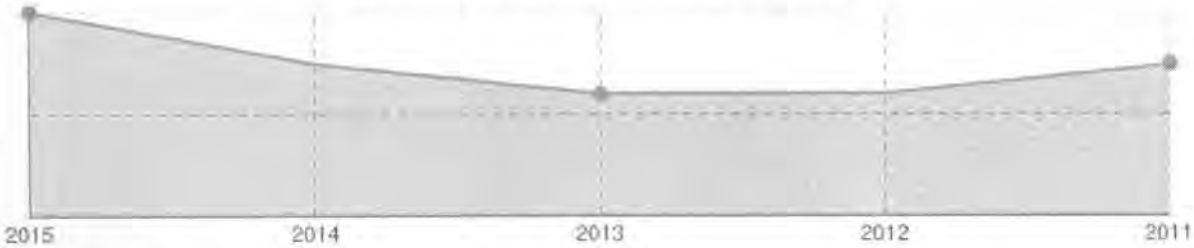
ABBEY DAVID R/MARY L

4101 E AVALON DR PHOENIX 85018

Property Information

MCR #:	5238
Address:	4101 E AVALON DR PHOENIX 85018
Latitude/Longitude:	33.48314293 | -111.99319186
Description:	RANCHO VENTURA TR 12
Lot Size (Sq Ft):	9753
Section, Township, Range:	30 2N 4E
Market Area/Neighborhood:	18/008
Subdivision:	RANCHO VENTURA TR 12
Lot #:	311
High School District:	SCOTTSDALE UNIFIED #48
Elementary School District:	SCOTTSDALE UNIFIED SCHOOL DISTRICT
Local Jurisdiction:	PHOENIX
Owner:	ABBEY DAVID R/MARY L
Mailing Address:	4101 E AVALON DR , PHOENIX, AZ 85018
Deed #:	071223801
Deed Date:	November 15, 2007
Sale Date:	October 01, 2007
Sale Price:	$290,000

Assessor full cash valuation over time



Valuation Data

Tax Year:	2015	2014	2013	2012	2011
Full Cash Value:	$252,000	$188,200	$151,300	$151,300	$186,600
Limited Property Value:	$174,752	$166,430	$151,300	$151,300	$186,600
Legal Class:	3	3	3	3	3
Description:	OWNER-OCCUPIED RESIDENTIAL	OWNER-OCCUPIED RESIDENTIAL	OWNER-OCCUPIED RESIDENTIAL	OWNER-OCCUPIED RESIDENTIAL	OWNER-OCCUPIED RESIDENTIAL
Assessment Ratio:	10%	10%	10%	10%	10%
Assessed FCV:	$25,200	$18,820	$15,130	$15,130	$18,660
Assessed LPV:	$17,475	$16,643	$15,130	$15,130	$18,660
Property Use Code:	0131	0131	0131	0131	0131
PU Description:	Single Family Residence	Single Family Residence	Single Family Residence	Single Family Residence	Single Family Residence
Tax Area Code:	481300	481300	481300	481300	481300

Printed: 7/2/2014 8:40:55 AM

Arizona Department of Water Resources

3550 N Central Ave.
Phoenix AZ 85012

Customer:

TITLE SECURITY AGENCY OF
ARIZONA
P.O. BOX 12038
TUCSON, AZ 85732

Receipt #: 15-34396
Office: MAIN OFFICE
Receipt Date: 07/02/2014
Sale Type: IN_PERSON
Cashier: WRAGT

Item No.	Index	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
81213	15239	4439-TT	Change of Ownership/Change of Well Information/Well Assignment	634799	1	30.00	30.00
						RECEIPT TOTAL:	**30.00**

Payment type: CHECK
Amount Paid: $30.00
Payment Received Date: 07/02/2014

Check # 273865

Notes:

Escrow No. 04046004 - 742 RG Check Date: 06/26/2014 Check No. 273865

DESCRIPTION	CODE	AMOUNT
well transfer fee		$30.00
	Check Total	$30.00

Seller/Buyer: Abbey/Sawkiw
Property Address: 4101 East Avalon Drive Phoenix, AZ 85018
Tax Parcel Id: 127-14-038 Memo:

No refund without valid receipt

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 33589 Phoenix, Arizona 85067-3589
(602) 771-8500 • (800) 352-8488
www.azwater.gov

Request to Change Well Information

RECEIVED
NOV 21 2007
INFO MGMT

FILE NUMBER: A(2-4)30CCA
WELL REGISTRATION NUMBER: 55-634799

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Reid W. Teeples

MAILING ADDRESS: 2065 N. DORAN

CITY / STATE / ZIP CODE: Mesa AZ 85203

CONTACT PERSON NAME AND TITLE: Reid W. Teeples

TELEPHONE NUMBER: 480-629-5312 FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY): 4101 E. Avalon Dr., Phoenix, AZ 85018

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2N	4E	30	SW ¼	SW ¼	NE ¼

LATITUDE Degrees	Minutes	Seconds N	LONGITUDE Degrees	Minutes	Seconds W
°	'	"	°	'	"

METHOD OF LATITUDE/LONGITUDE (CHECK ONE) ☐ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE) ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER			COUNTY WHERE WELL IS LOCATED
BOOK	MAP	PARCEL	
127	14	038	Maricopa

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)* XX Change of Well Ownership *(Fill out Section 3)* ☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Same as Section 1		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: David Ross Abbey & Mary Louise Abbey	
MAILING ADDRESS		MAILING ADDRESS: 4195 N. 42nd Street	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE: Phoenix, AZ. 85018	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE: Marilyn Zembsch	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER: 480/502-1106	FAX

DS

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER	DATE
REID W. TEEPLES	Reid W. Teeples	11/20/07

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 26 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 634799
FILE NO. A(2-4)30CCC
FILED 5-26-82 (DATE) AT 1PM (TIME)
INA
AMA PHOENIX

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL – $10.00 ☐

1. Name of Registrant:
Reid W. Teeples
4101 E. Avalon Drive (Address) Phoenix (City) AZ (State) 85018 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the NE ¼ SW ¼ SW ¼, Section 30, of Township 2N N/S, Range 4E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision Rancho Ventura #12, Lot No. 311, Address 4101 E. Avalon Drive, Phoenix, Arizona, 85018.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Watering lawn and garden only.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box XX
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet
b. Diameter of casing 4 inches
c. Depth of casing 70 feet
d. Type of casing PVC Schedule 40.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 23 feet below land surface.
g. Date well completed October (Month) _____ (Day) 1979 (Year).

8. The place(s) of use of water. If same as Item 3, check this box XX
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 5/25/82 SIGNATURE OF REGISTRANT Reid W. Teeples

Printed: 11/21/2007 11:49:16 AM

Store 0010
Sale Receipt #
11/21/2007
Page 1

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

LAND AMERICA LAWYERS

7450 E PINNACLE PEAK RD SUITE 254
SCOTTSDALE,AZ 85255
480-502-1106

Date: 11/21/2007
Cashier: WRPAB
Type: Mail

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 78	4439-12	CHANGE OF WELL OWNERSHIP	15238		1	10.00	10.00

1 Unit(s) Subtotal: 10.00

RECEIPT TOTAL: 10.00

Tendered: 10.00

Check #: 10.00 # 00096029

55-634799

We Appreciate Your Business!

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 26 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 634799
FILE NO. A(2-4)30CCa
FILED 5-26-82 (DATE) AT 1PM (TIME)
INA
AMA PHOENIX

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL – $10.00 ☐

1. Name of Registrant:
Reid W. Teeples
4101 E. Avalon Drive (Address) Phoenix (City) AZ (State) 85018 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the NE ¼ SW ¼ SW ¼, Section 30, of Township 2N N/S, Range 4E E/W, G & SRB & M, in the County of Maricopa.
b. If in a subdivision: Name of subdivision Rancho Ventura #12, Lot No. 311, Address 4101 E. Avalon Drive, Phoenix, Arizona, 85018.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Watering lawn and garden only.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box XX
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet
b. Diameter of casing 4 inches
c. Depth of casing 70 feet
d. Type of casing PVC Schedule 40.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 23 feet below land surface.
g. Date well completed October (Month) (Day) 1979 (Year).

8. The place(s) of use of water. If same as Item 3, check this box XX
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 5/25/82 SIGNATURE OF REGISTRANT _____

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☑
NON-EXEMPT WELL – $10.00 ☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 638492
FILE NO. A(2-3)26aca
FILED 6-14-82 (DATE) AT 5:00P (TIME)
INA
AMA PHOENIX

1. Name of Registrant: SherRill Walter Paul
(Address) Phoenix (City) Az. (State) 85016 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) Dr. Sherrill is dead and I cannot find (Control Number) any record of well

3. a. The well is located within the SW ¼ SW ¼ NE ¼, Section 26, of Township 2 N N/S, Range 3 E/W, G & SRB & M, in the County of MARICOPA.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Water for a cooling system.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
Sherrill Ruth B - First Interstate Trust Dept
(Address) Phoenix (City) Az. (State) 85016 (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 120 feet
b. Diameter of casing 8 inches
c. Depth of casing 120 feet
d. Type of casing 8 in Steel.
e. Maximum pump capacity 30 gallons gallons per minute.
f. Depth to water 25 ft. feet below land surface.
g. Date well completed June (Month) 15 (Day) 53 (Year) (approx.)

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____

Attach additional sheet if necessary.

9. DATE June 11 SIGNATURE OF REGISTRANT Ruth B. Sherrill

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458, PHOENIX, ARIZONA 85001-0458
For Information: Call Monica Ortiz at (602)417-2470

RECEIVED AUG 24 1999 GROUNDWATER MGT

REGISTRATION OF WELLS
READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT (Blue or Black Ink) OR TYPE: FILE IN DUPLICATE

PRIOR TO COMPLETING THIS SECTION, SEE GENERAL INSTRUCTION ON REVERSE SIDE OF FORM

FILING FEE FOR REGISTRATION: (check one)

EXEMPT WELL LATE REGISTRATION FEE $10.00____

NON-EXEMPT WELL REGISTRATION FEE $10.00
LATE FEE $10.00
TOTAL $20.00 X

FOR DEPARTMENT USE ONLY

REGISTRATION NO. 55- 867925
FILE No A(2-3)24 DBC
FILED 8-24-99 By gm
(Date)

INA____
AMA Phoenix
WS 07 SB 04

Gm W-XX

1. Name of Well Owner: LARRY THIHER Telephone: 602. 955. 4854
4315 N. 36TH ST PHX AZ 85018
Mailing Address City State Zip

2. File and/or Control Number under previous groundwater law:_____ Control Number: 35-_____
File No. Control No.

3. County Assessor's Parcel I.D. Information: Book: 170 Map: 26 Parcel: 023A

4. The well is located within the SW ¼ NW ¼ SE ¼, Section 24 Township 2 N N/S Range 3 E E/W
10 Acre 40 Acre 160 Acre
in the County of Maricopa **(The above description is required for processing, see 5. under "Information" on reverse side)**

5. Is the wellsite within 100 feet of a septic tank system, sewer, disposal area, landfill, hazardous materials or petroluem storage area & tanks?
Yes_____ No X.

6. The principal use(s) of water: Domestic [redacted] (Examples: irrigation, stockwater, domestic, municipal, industrial)

7. If for irrigation use, number of acres irrigated from well: 1/3 Acres

8. Owner of land on which well is located. If same as Item 1, please check ✓
Name Telephone No.
Mailing Address City State Zip

9. Well data:
a. Depth of well 34 feet b. Depth to water: 24 feet below land surface
c. Type of casing(s) installed: ✓ steel _____PVC _____other
d. Casing diameter(s): 4 inch to a depth of _____feet, _____ inch to a depth of _____feet
e. Maximum pump capacity: _____gallons per minute NO PUMP
f. **Date well completed:** BEFORE 1980 _____(required for processing see #7 under "Instructions" on reverse side)
(Month) (Day) (Year)

10. The place(s) of use of water. If same as Item 3, please check ✓.
_____¼ _____¼ _____¼, Section_____ Township_____ N/S Range_____E/W
10 Acre 40Acre 160 Acre

I STATE THAT THIS REGISTRATION IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

11. LARRY THIHER 12. [signature] 13. 8-24-99
TYPED OR PRINTED NAME **SIGNATURE OF WELL OWNER** **DATE**

DWR-55-65 (Rev 1/99)

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM
GENERAL INSTRUCTIONS

1. Pursuant to Arizona Revised Statute (A.R.S.) § 45-593(A), all known wells within the State of Arizona were to be registered with the Department of Water Resources no later than midnight, June 12, 1982. Accordingly, all wells that are discovered after that date must be registered with the Department. Use this form in lieu of a Notice of Intention to Drill form for all wells drilled after June 12, 1980.

2. An "existing well" must be registered with the Department. An "existing well" is a well which was drilled before June 12, 1980 and which is not abandoned or sealed or a well which was not completed on June 12, 1980 but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on June 12, 1980.

3. A well drilled after June 12, 1980 without first filing a Notice Of Intention to Drill pursuant to A.R.S. § 45-596 or obtaining a well permit pursuant to A.R.S. § 45-599 must also be registered with the Department.

4. Pursuant to A.R.S. § 45-593(D), "within thirty days after a change of ownership of real property, the new owner shall notify the Director in writing of the existence of any open well or wells on the property which the new landowner has discovered. Thereafter, the owner shall report the existence of any open well on the property within ten days after the owner discovers the well."

5. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater for a non-irrigation use, including the application of groudwater on less than two (2) acres of land to grow crops for sale or human consumption or for use as feed for livestock, range livestock or poultry. A "Non-Exempt Well" means a well that is not an "Exempt Well".

6. In accordance with A.A.C. R12-15-151(B)(4), a $10 registration fee and a $10 late fee is required for Non-Exempt wells. For Registration of exempt wells, only a $10 late fee is required. Check the appropriate well type on the front of this form, submit the fee, and mail to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North 3rd Street, Phoenix, Arizona.

INFORMATION FOR REGISTRATION QUESTIONS

1. This form must be filed in duplicate with original signatures on both copies.

2. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of the State.

3. If you own any type of well drilled on or after June 20, 1968, or an existing irrigation well drilled prior to June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2.

4. Provide the Assessor's I.D. Number. This information can be obtained from your recorded deed, or by contacting your county assessor's office.

5. Furnish complete well location to include the ¼ ¼ ¼ sections, Section Number, Township, and Range **(Required)**. If this required information is not known, you may contact the Mapping Division of the County Assessor's Office in which the property is located.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., **provide the appropriate title of person signing.**

7. Complete the section on Well Data (item 9) with the most accurate information available to you. If data for items (a) thru (f) is not available, write "unknown" in the appropriate blank. **For Item f, if the month and day are unknown, at least an approximate year the well was completed is required.**

8. Provide the legal description of where the water will be used.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2450
Fax (602) 417-2401

JANE DEE HULL
Governor

RITA P. PEARSON
Director

September 30, 1999

LARRY THIHER
4315 N 36TH STREET
PHOENIX AZ 85018

RE: Well Registration No. 55-807925 File (location) No. A(2-3) 24 DBC

Dear Well Owner:

Enclosed is a copy of the Well Registration form recently submitted to this Department. Your cancelled check can serve as your receipt. The Registration Number assigned is referenced above.

Also enclosed is a blank Change of Well Information form. This form should be used for any **future** changes to this well, as follows:

- Change of ownership of the well; (lower half of form)
- CHANGE OF ADDRESS
- Change in well data, such as pump capacity
- CORRECTION of legal description as to location of the well
- Change of well driller, PRIOR to drilling the well
- Amending information previously filed

Please contact this office if further assistance or information is required.

Sincerely,

Gloria Moss

Gloria Moss
Groundwater Management Support Section

Enclosures

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St., Suite 310
Phoenix, Arizona 85007-2952
602.771.8500
azwater.gov

August 31, 2016

Camey Brochu
The Secret Garden
2501 E. Baseline Rd.
Phoenix, AZ 85042

Re: Well Site Inspection Report

Dear Ms. Brochu:

The Arizona Department of Water Resources (Department) conducted a well site inspection for well registration No. 55-809877. The purpose of the inspection is to verify the following: (1) Minimum well construction standards as set forth in A.R.S. § 45-594 and Arizona Administrative Code R12-15-81; and (2) Obtain factual data, or access to records required to be kept under A.R.S. § 45-632

Pursuant to A.R.S § 41-1009, the Department is required to provide you with a copy of the site inspection report within 30 days after the inspection. A copy of the "Well Site Inspection Report" along with "Well Registry Report" is enclosed. A complete copy of the well file is available online at http://www.azwater.gov, or by contacting the Department.

Additionally, pursuant to A.R.S. § 45-593, the person to whom a well is registered must notify the Department of a change in ownership, physical characteristics or any other data about the well in order to keep the well registration records current and accurate. Forms may be obtained online at http://www.azwater.gov , or by contacting the Department.

Lastly, A.R.S § 45-600, requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment. Forms are available online at http://www.azwater.gov, or by contacting the Department.

If you have any questions or need further assistance, please contact the Groundwater Permitting and Wells Unit at (602) 771-8527.

Sincerely,

Jacob Nelson
Groundwater Permitting and Wells Unit

Enclosures: Well Site Inspection Report
Well Registry Report

Via email: Camey Brochu camille.brochu@creativehandscuisine.com

Cc: samurillo@azwater.gov

Run Date: 08/31/2016

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 1.0 3.0 2 A B B

Well Reg.No 55 - 809877

AMA PHOENIX AMA

Registered Name THE SECRET GARDEN
ATTN: CAMEY BROCHU
2501 E BASELINE ROAD
PHOENIX AZ 85042

File Type LATE REGISTRATION
Application/Issue Date 08/18/2016

Owner OWNER
Driller No. 0
Driller Name
Driller Phone
County MARICOPA
Parcel No. 301-26-469
Intended Capacity GPM 0.00

Well Type EXEMPT
SubBasin WEST SALT RIVER VALLEY
Watershed SALT RIVER
Registered Water Uses COMMERCIAL
Registered Well Uses WATER PRODUCTION
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	20.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: YES - WITHIN 1 MI OF A NPL SITE

Tribe: Not in a tribal zone

Comments

Current Action

8/18/2016 101 LATE REGISTRATION APPROVED
Action Comment: sm

Action History

8/31/2016 856 CHANGE OF BOOK/MAP/PARCEL DATA
Action Comment: OLD BOOK/MAP/PARCEL: 301 26 459 by user WRJRN

8/18/2016 100 LATE REGISTRATION RECEIVED
Action Comment: sm

Arizona Department of Water Resources
Groundwater Right/Facility Report

RIGHT #: 58-115056.0000 **STATUS DATE:** 7/7/1994

AMA: PHOENIX AMA **RIGHT/PERMIT/FACILITY TYPE:** IRRIGATION USE

LAND OWNERSHIP : PRIVATE OR COMPANY **FILE STATUS:** EXEMPT - SMALL

2016 ALLOTMENT: 16.89 **BMP Enrollee:** N **RETIRED ACRES:** 0.00

WATER DUTY ACRES: 4.10 **IRRIGATION ACRES** 4.66 **WATER DUTY** 0 **Mgt Plan** 0

IRRIGATION DISTRICT NAME: SALT RIVER PROJECT **MAWA:** 0

NAME & ADDRESS

PERKINS HERBERT D **TYPE:** OWNER

2501 E BASELINE RD

PHOENIX AZ 85040

PLACE OF USE

NE NW 02 T1.0S R3.0E

BOOK/MAP/PARCEL

*** NO DATA FOUND ***

WELL SERVING

*** NO DATA FOUND ***

RIGHT TO FACILITY RELATIONSHIPS

*** NO DATA FOUND ***

ARIZONA DEPARTMENT OF WATER RESOURCES
Groundwater Permitting and Wells Unit
1110 W. Washington
Phoenix, AZ 85007-2952

SITE INSPECTION REPORT

1. **ADWR Inspector:** This inspection is being conducted by an Arizona Department of Water Resources (ADWR) employee who must present photo identification upon entry of the inspected property and whose name and phone number are indicated below. The ADWR employee will be available to answer questions regarding this inspection.

2. **Purpose of Inspection:** The purpose of the inspection is to verify the following: (1) Minimum well construction standards as set forth in A.R.S. § 45-594 and Arizona Administrative Code R12-15-81; and (2) Obtain factual data, or access to records required to be kept under A.R.S. § 45-632.

Date: August 30, 2016 Well Registration Number: 55-809877

Name: Camey Brochu Parcel Number: 301-26-469

Mailing Address: _____

Cadastral Location 1S (Township) 3E (Range) 2 (Section) NE (160 ¼) NW (40 ¼) NW (10 ¼)

Latitude 33 (Degrees) 22 (Minutes) 36.10 (Seconds) **Longitude** -112 (Degrees) 1 (Minutes) 35.92 (Seconds)

Well Location:

Address: 2501 E. Baseline Road, Phoenix, AZ 85042
or
Major Cross Roads: _____

YES	NO	NA	
☒	☐	☐	Is the well a safe distance from potential contamination?
☒	☐	☐	Is there a pump on the well? _____HP pump size
☒	☐	☐	Is there evidence of a surface seal?
☐	☐	☒	Is the well capped?
☐	☐	☒	Is the well cap satisfactory?
☐	☒	☐	Is the well located within a vault (not easy to see) on contained within a fence (not easy to access)?
☒	☐	☐	The well casing extends 1 ft above ground / concrete slab?

PVC	Steel	Other	
☐	☒	☐	Casing Type?

20 Inches Case Diameter?

Note: _____

_____

_____

_____

Findings in this review reflect observed conditions as they existed on the day of the site inspection. No claim is made, express or implied, regarding the future success or failure of the system.

Pursuant to A.R.S § 41-1009 the Department is required to provide a copy of the inspection report within 30 days after the inspection.

Signature: The signature below is made by either the registered well of owner or an authorized representative who was on site during the site inspection.

Name (please print: Carey Brocke

Signature: C L Brocke Title: owner

☐ **Signature Unavailable:** Neither the registered well owner or an authorized representative was present during this site inspection.

Arizona Department of Water Resources

ADWR Employee: Jude Neher (Signature) Date: 8/30/16

Time: 9:36

☒ Photo identification presented
☒ Photos taken
☒ Aerial Photo or Plot Map Identifying well on parcel

Arizona Department of Water Resources
Groundwater Permitting and Wells
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8527 • (602) 771-8690 fax
• www.azwater.gov •

Late Registration of a Well

FEE $60.00

- Review instructions prior to completing form in black or blue ink.
- You must include with your application:
  - check or money order for the fee(s)
- Authority for fee: A.R.S. § 45-113 and A.A.C. R12-15-104

AMA / INA	B	SB
Phoenix	Phx	04
RECEIVED DATE: 8-18-16	WS: 07	
ISSUED DATE: 8-18-16	WQARF: —	CERCLA

FILE NUMBER: A(1-3)2ABB
WELL REGISTRATION NUMBER: 55 - 809877

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Type	Fee
CHECK ONE ☒ Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)	$60
☐ Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) (*See instructions.*)	$60

ORIGINAL WELL DRILLING FIRM (IF KNOWN):

ORIGINAL WELL DRILL DATE (ESTIMATE IF NOT KNOWN):

PROPERTY OWNER WHEN WELL WAS DRILLED (IF KNOWN):

Location of Well

WELL LOCATION ADDRESS (IF ANY) OR CROSS-STREETS: 2501 E Baseline Road

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2.0 S	3.0 E	2	NE ¼	NW ¼	NW ¼

LATITUDE Degrees	Minutes	Seconds	LONGITUDE Degrees	Minutes	Seconds
33°	22'	36.10"N	112°	1'	35.92"W

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☐ Google Earth ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL	# OF ACRES
301	26	469	4.42

PLACE OF USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
2.0 S	3.0 E	2	NE ¼	NW ¼	NW ¼

COUNTY WHERE WELL IS LOCATED: MARICOPA

SECTION 2. OWNER INFORMATION

Land Owner	Well Owner (*check this box if Land Owner and Well Owner are same*) ☒
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: The Secret Garden	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: The Secret Garden
MAILING ADDRESS: 2501 E Baseline Road	MAILING ADDRESS: 2501 E Baseline Road
CITY / STATE / ZIP CODE: Phoenix, AZ 85042	CITY / STATE / ZIP CODE: Phoenix, AZ 85042
CONTACT PERSON NAME AND TITLE: Camey Brochu	CONTACT PERSON NAME AND TITLE: Camey Brochu
TELEPHONE NUMBER: / FAX:	TELEPHONE NUMBER: / FAX:

SECTION 3.

Questions	Yes	No	If Yes:
1. Is the well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?	☐	☒	EXPLAIN
2. Is there another well name or identification number associated with this well? (e.g., Lot 39 Well, MW-1, Smith Well, etc.)	☐	☒	PLEASE STATE
3. If this well is an exempt well, is it the second exempt well on this parcel for the same use? MA	☐	☐	EXPLAIN

Late Registration of a Well

WELL REGISTRATION NUMBER
55 - 809877

SECTION 4. WATER/SITE INFORMATION

***Principal Use* of Water**	***Other Uses* of Water**	
CHECK ONE	CHECK ALL THAT APPLY	MAXIMUM PUMP CAPACITY _____ Gallons Per Minute
[X] Irrigation (# of acres 3.5)	[ ] Irrigation (# of acres _____)	TOTAL DEPTH OF WELL _____ Feet Below Land Surface
[X] Commercial	[X] Commercial	STATIC WATER LEVEL _____ Feet Below Land Surface
[ ] Domestic	[ ] Domestic	
[ ] Industrial	[ ] Industrial	
[ ] Drainage	[ ] Drainage	
[ ] Monitoring	[ ] Monitoring	
[ ] Municipal	[ ] Municipal	
[ ] Stock	[ ] Stock	
[ ] Dewatering	[ ] Dewatering	
[ ] Other (please specify):	[ ] Other (please specify):	

SECTION 5. EXISTING WELL CONSTRUCTION DESIGN (attach additional page if needed)

Borehole			Existing Casing (to the best of your knowledge)												
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (T)				PERFORATION TYPE (T)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
					20	X										

Existing Annular Material (to the best of your knowledge)

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE

SECTION 6. OPTIONAL BY PROPERTY OWNER AND WELL OWNER ONLY

[X] By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 7. WELL OWNER OR PROPERTY OWNER SIGNATURE

I state that this registration is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER OR LANDOWNER	DATE
Carney Brochu owner	C. Brochu	8-30-16

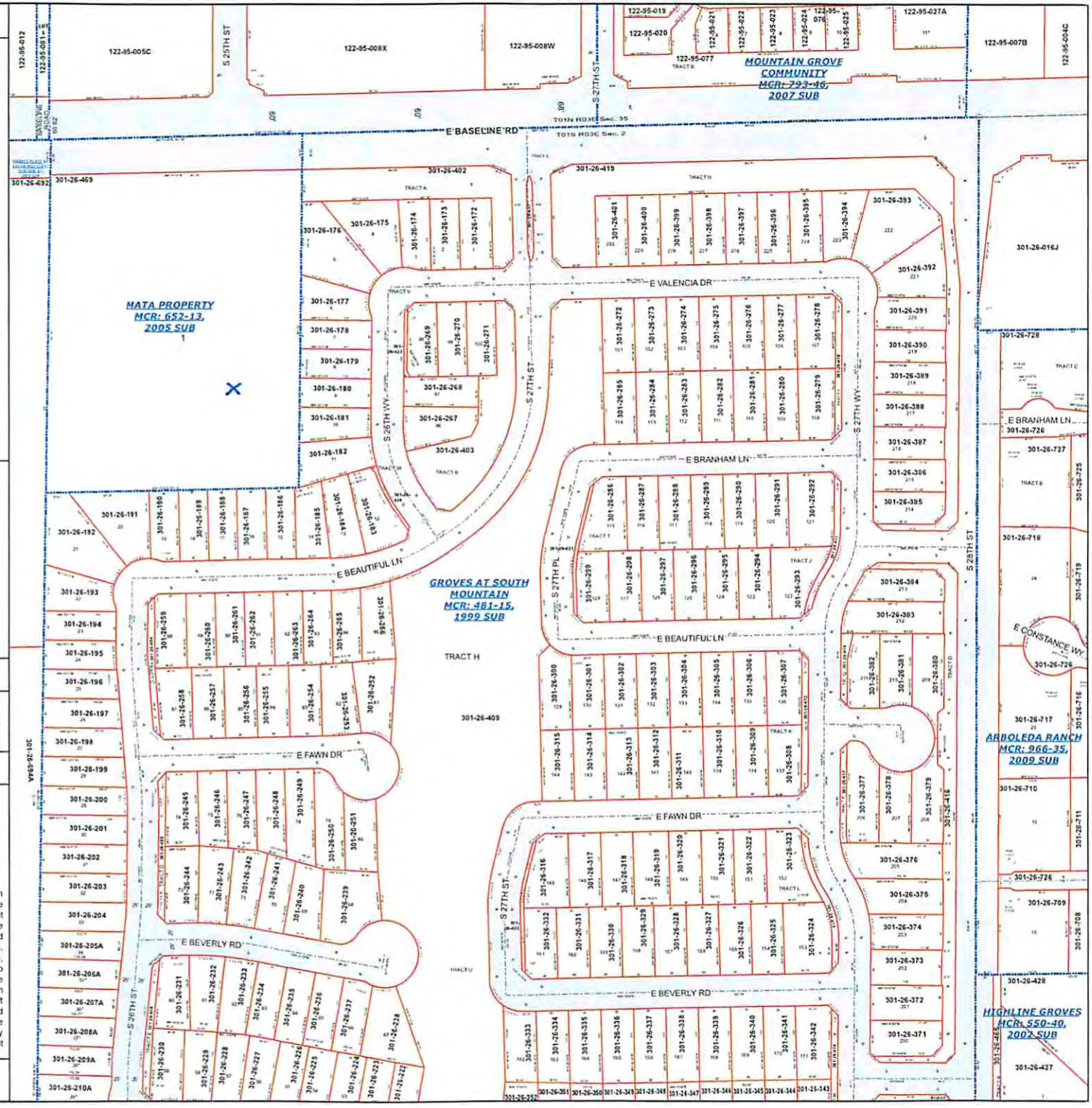
MARICOPA COUNTY

STATE OF ARIZONA

PT. SECTION 2 T01S R03E

860 - 02 - 02 - 01

Parcels updated within this map



MARICOPA COUNTY
ASSESSOR'S OFFICE
301 W. Jefferson Street
Phoenix, AZ 85003
Date: 12/14/2015
http://mcassessor.maricopa.gov/assessor/

LEGEND: Parcels, Subdivisions, Sections, Section Corners, Centerlines

Disclaimer - Indemnification

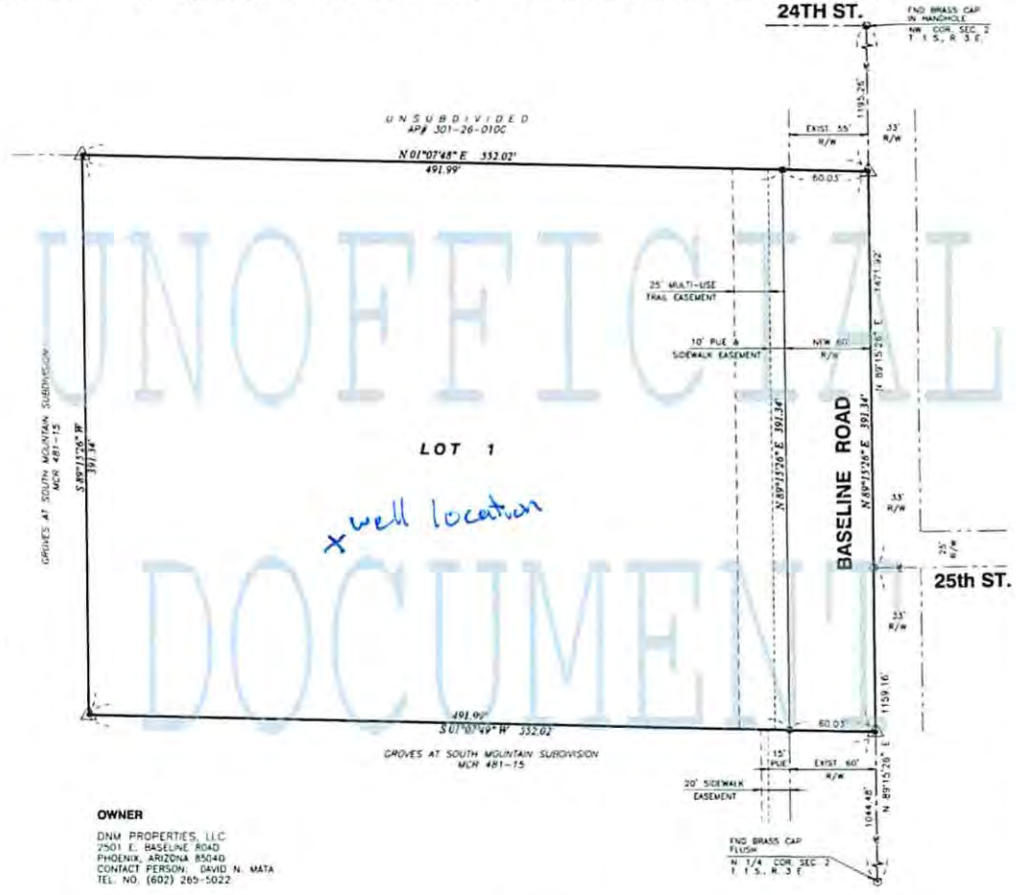
CAUTION! USERS SHOULD INDEPENDENTLY RESEARCH AND VERIFY INFORMATION WITHIN THIS DATASET OR MAP BEFORE RELYING ON IT.

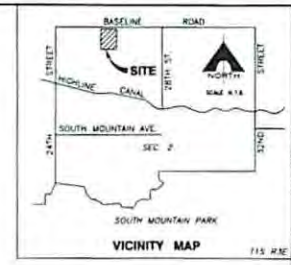
The Assessor's Office has compiled information within this dataset or map that it uses to identify, classify, and value real and personal property. Please contact the Assessor's Office at 602 506-3406 if you believe any information is incomplete, out-of date, or incorrect so that appropriate corrections can be addressed. Please note that a statutory process is also available to correct errors pursuant to Arizona Revised Statutes 42-16254.

The Assessor does not guarantee that any information contained within this dataset or map is accurate, complete or current. In many instances, the Assessor has gathered information from independent sources and made it available within this dataset or map, and the original information may have contained errors and omissions. Errors and omissions may have occurred in the process of gathering, interpreting, and reporting the information. Information within this dataset or map is not updated "real time." In addition, Users are cautioned that the process used within this dataset or map to illustrate the boundaries of adjacent parcels is not always consistent with the recorded documents for such parcels. The parcel boundaries depicted within this dataset or maps are for illustrative purposes only, and the exact relationship of adjacent parcels should be independently researched and verified. The information provided within this dataset or map is not the equivalent of a title report or a real estate survey. Users should independently research, investigate, and verify all information before relying on it or using it in the preparation of legal documents.

FINAL PLAT
"MATA PROPERTY"

A PORTION OF G.L.O. LOT 3 LOCATED IN A PORTION OF THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 1 SOUTH, RANGE 3 EAST OF THE G. & S.R.B. & M., MARICOPA COUNTY, ARIZONA





LEGEND

- SUBDIVISION CORNER – SET BRASS CAP FLUSH IN PAVEMENT AND 1/2" REBAR IN DIRT
- CENTER LINE
- PROPERTY LINE
- PROPERTY CORNER – 1/2" REBAR
- FND BRASS CAP FLUSH
- R/W RIGHT-OF-WAY
- PUE PUBLIC UTILITY EASEMENT

NOTES

1. STRUCTURES AND LANDSCAPING WITHIN A TRIANGLE MEASURED BACK 10' FROM THE PROPERTY LIND AND 20' ALONG THE PROPERTY LINE ON EACH SIDE OF THE DRIVEWAY ENTRANCES WILL BE MAINTAINED AT A MAXIMUM HEIGHT OF 3'
2. ALL NEW AND RELOCATED UTILITIES WILL BE PLACED UNDERGROUND.
3. THIS SUBDIVISION IS LOCATED WITHIN THE CITY OF PHOENIX WATER SERVICES AREA AND HAS BEEN DESIGNATED AS HAVING AN ASSURED WATER SUPPLY.
4. NO STRUCTURE OF ANY KIND BE CONSTRUCTED ON, OVER, OR PLACED WITHIN THE EASEMENTS EXCEPT PAVING NOR ANY PLANTING EXCEPT GRASS. IT SHALL BE FURTHER UNDERSTOOD THAT THE CITY OF PHOENIX SHALL NOT BE REQUIRED TO REPLACE ANY OBSTRUCTIONS OR PLANTING THAT MUST BE REMOVED DURING THE COURSE OF MAINTENANCE, CONSTRUCTION, OR RECONSTRUCTION OF CITY UTILITIES.

OWNER

DNM PROPERTIES, LLC
2501 E. BASELINE ROAD
PHOENIX, ARIZONA 85040
CONTACT PERSON: DAVID N. MATA
TEL. NO. (602) 265-5022

SURVEYOR

SHEARROW & SONS SURVEYING
P.O. BOX 47193
PHOENIX, ARIZONA 85068-7193
CONTACT PERSON: HENRY SHEARROW, R.L.S.
TEL. NO. (602) 943-8944
FAX NO. (602) 861-6212

CERTIFICATION

I, HENRY A. SHEARROW, HEREBY CERTIFY THAT I AM A REGISTERED LAND SURVEYOR IN THE STATE OF ARIZONA. THAT THIS MAP, CONSISTING OF ONE SHEET, CORRECTLY REPRESENTS A BOUNDARY SURVEY MADE UNDER MY SUPERVISION DURING THE MONTH OF JUNE, 2003, THAT THE SURVEY IS TRUE AND COMPLETE AS SHOWN, THAT ALL MONUMENTS SHOWN ACTUALLY EXIST AS SHOWN OR WILL BE SET, THAT THEIR POSITIONS ARE CORRECTLY SHOWN AND THAT SAID MONUMENTS ARE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

BY: _____ REGISTERED LAND SURVEYOR R.L.S. # 9087

DEDICATION

STATE OF ARIZONA } SS
COUNTY OF MARICOPA }

KNOW ALL MEN BY THESE PRESENTS:

THAT DNM PROPERTIES, LLC, AN ARIZONA CORPORATION, AS OWNER OF SAID REAL PROPERTY HAS SUBDIVIDED UNDER THE NAME OF "MATA PROPERTY", A PORTION OF G.L.O. LOT 3, LOCATED IN A PORTION OF THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 1 SOUTH, RANGE 3 EAST OF THE GILA AND SAFT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA, AS SHOWN AND PLATTED HEREON AND HEREBY PUBLISHES THIS PLAT AS AND FOR THE PLAT OF "MATA PROPERTY" AND HEREBY DECLARES THAT SAID PLAT SETS FORTH THE LOCATION AND GIVES THE DIMENSIONS OF THE LOT, STREET AND EASEMENTS CONSTITUTING SAME AND THAT EACH LOT AND STREET, SHALL BE KNOWN BY THE NUMBER OR NAME GIVEN TO EACH RESPECTIVELY ON SAID PLAT, AND THAT DNM PROPERTIES, LLC, AN ARIZONA CORPORATION, AS OWNER, HEREBY DEDICATE TO THE PUBLIC FOR USE AS SUCH THE STREET AND EASEMENTS, AS SHOWN ON SAID PLAT AND INCLUDED IN THE ABOVE DESCRIBED PREMISES.

IN WITNESS WHEREOF:
DAVID N. MATA, A GENERAL MANAGER HAS CAUSED HIS NAME TO BE SIGNED, THIS _____ DAY OF _____, 2003.

SIGNED DNM Mata

ACKNOWLEDGMENT

STATE OF ARIZONA } SS
COUNTY OF MARICOPA }

ON THIS 16th DAY OF June, 2003 BEFORE ME THE UNDERSIGNED NOTARY PUBLIC, PERSONALLY APPEARED DAVID AND NANCY MATA, WHO ACKNOWLEDGED THEMSELVES TO BE THE OWNERS AND ACKNOWLEDGED THAT THEY, AS OWNER EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSES THEREIN CONTAINED.
IN WITNESS WHEREOF: I HEREUNTO SET MY HAND AND OFFICIAL SEAL.
MY COMMISSION EXPIRES ON 12-11-2004

Claudia R. Carson
NOTARY PUBLIC
– Notary for David N. Mata only –

APPROVALS

APPROVED BY: _____ FOR DEVELOPMENT SERVICES DEPARTMENT 6/17/03 DATE

APPROVED BY THE COUNCIL OF THE CITY OF PHOENIX, ARIZONA THIS 2nd DAY OF July, 2003.

ATTEST: _____ CITY CLERK

FINAL PLAT OF "MATA PROPERTY"

A PORTION OF G.L.O. LOT 3, IN A PORTION OF THE NW1/4, SEC. 2, T1S, R3E, G. & S.R.B. & M., MARICOPA COUNTY, AZ

DNM PROPERTIES, LLC

DRAWN: CMS	SCALE	JOB NO.	DATE	SHEET
	1" = 40'	020605	06/03	1 OF 1

SHEARROW & SONS SURVEYING
P.O. Box 47193
Phoenix, Az 85068-7193
(602) 943-8944 Reg. 19087

BOOK 652 PAGE 13
OFFICIAL RECORDS OF MARICOPA COUNTY RECORDER HELEN PURCELL
2003-1299247

652-13

CCPR # 0301629
SDEV 0201894
PLAT # 030106
KIVA # 02-4527
Q.S. # 01-33
JUNE 13, 2003

REV	DATE	DESCRIPTION
A		
B		
C		

JOB 020605
DATE 06-14-02
DRAWN MFC
CHECKED RG

DESERT LAND ENGINEERING, INC.
3107 E. CAMELBACK AVE., SCOTTSDALE, ARIZONA 85257 TEL. (480) 429-1756

SDEV 0201894 KIVA # 02-4527 Q.S. # 01-33

PLAT # 030106 CCPR # 0301629

FINAL PLAT "MATA PROPERTY" A PORTION OF G.L.O. LOT 3, PORTION OF NW1/2, SEC. 2, T1S, R3E, G. & S.R.B. & M., MARICOPA COUNTY, AZ

SHEET 1 OF 1 SHEET(S)

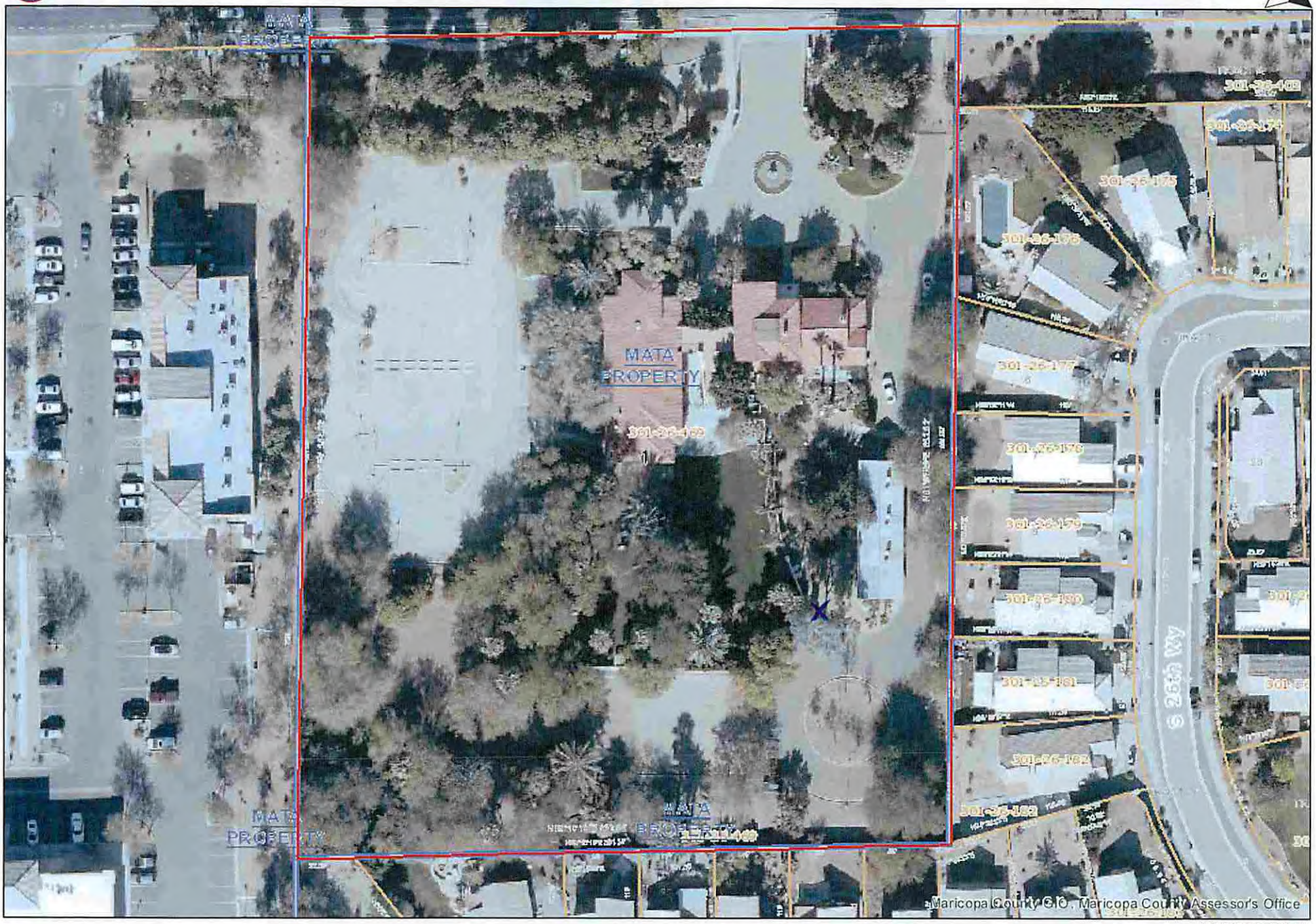
Mata Property

UNOFFICIAL DOCUMENT

JLE JOB NO. 020605

MATA-F_PLAT-16x18.DWG ON DSK 2002 FILES/06

Parcel 301-26-469



8/18/2016 2:35:46 PM

301-26-469 Commercial Parcel

This is a commercial parcel located at 2501 E BASELINE RD PHOENIX 85042. and the current owner is CDK VENTURES LLC. It is located in the Mata Property subdivision and MCR 65213. Its current year full cash value is $1,395,300.

Property Information

2501 E BASELINE RD PHOENIX 85042

MCR #	65213
Description:	MATA PROPERTY MCR 652-13
Lat/Long	33.37772260 | -112.02703055
Lot Size	192,432 sq ft.
Zoning	MUA
Lot #	1
High School District	PHOENIX UNION #210
Elementary School District	ROOSEVELT ELEMENTARY SCHOOL DISTRICT
Local Jurisdiction	PHOENIX
S/T/R	2 1S 3E
Market Area/Neighborhood	04/005
Subdivision (1 Parcel)	MATA PROPERTY

Owner Information

CDK VENTURES LLC

Mailing Address	1430 N ROBIN LN , MESA, AZ 85213
Deed Number	140473534
Last Deed Date	07/18/2014
Sale Date	n/a
Sale Price	n/a

Valuation Information

We provide valuation information for the past 5 years. For mobile display, we only show 1 year of valuation information. Should you need more data, please look at our data sales.

Tax Year	2017	2016	2015	2014	2013
Full Cash Value	$1,395,300	$1,399,500	$936,900	$1,032,700	$910,121
Limited Property Value	$1,032,932	$983,745	$936,900	$1,001,133	$910,121
Legal Class	1	1	1	1	1
Description	COMMERCIAL / OTHER R/P	COMMERCIAL / OTHER R/P	COMMERCIAL / OTHER R/P	COMMERCIAL / OTHER R/P	COMMERCIAL / OTHER R/P
Assessment Ratio	18%	18%	18.5%	19%	19.5%
Assessed FCV	n/a	n/a	n/a	$196,213	$177,474
Assessed LPV	$185,928	$177,074	$173,327	$190,215	$177,474
Property Use Code	1040	1040	1040	1040	1040
PU Description	Miscellaneous Commercial	Miscellaneous Commercial	Miscellaneous Commercial	Miscellaneous Commercial	Miscellaneous Commercial
Tax Area Code	661300	661300	661300	661300	661300
Valuation Source	Notice	Notice	Notice	SBOE	Notice

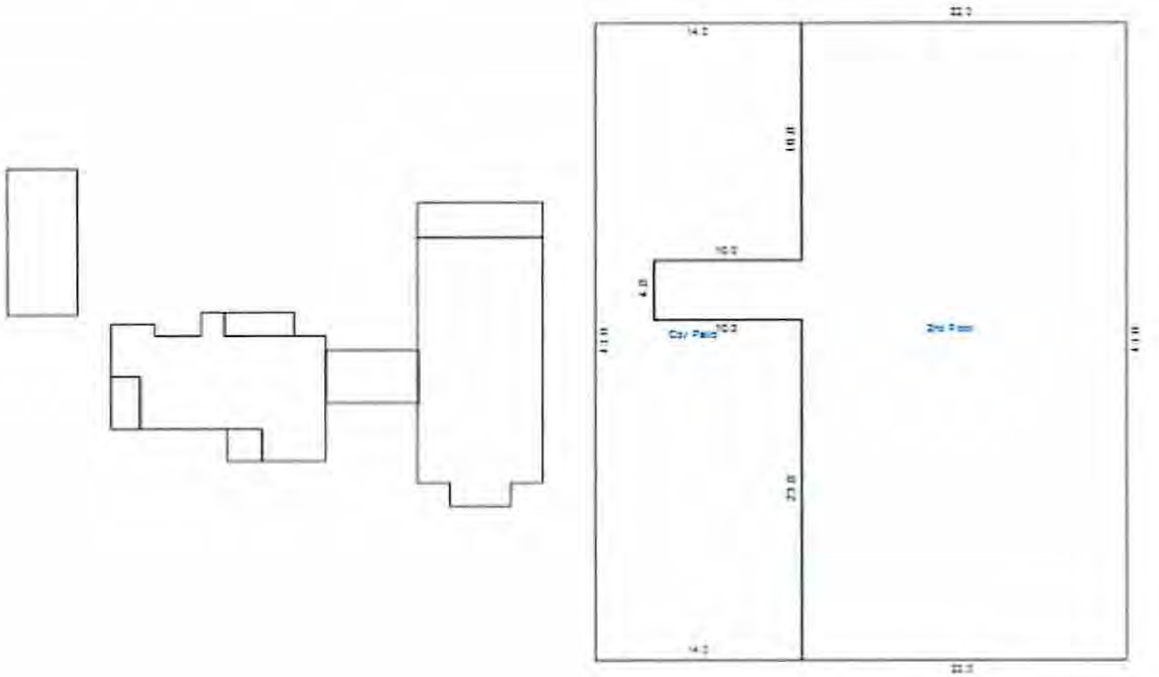
Additional Property Information

Additional commercial property data.

Description	Imp #	Model	Rank	CCI	Age	Sq Ft.
Single Family Residence (Residential)	000101	351	3	C	44	3,540
Clubhouse	000201	311	3.3	C	12	3,780
Commercial Yard Improvements	000301	353	2	D	12	1

Building Sketches

Sketches that illustrate the external dimensions of a property.



Similar Parcels

Parcels that are similar to this one (known as the reference parcel) are displayed below.

APN Address Sale Info FCV Size Livable Sq Ft Year Built Pool Foreclosed

No similar parcels found.

Printed: 8/18/2016 2:11:32 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:

THE SECRET GARDEN EVENT
CENTER LLC
2501 E BASELINE RD
PHOENIX, AZ 85042-7033

Receipt #: 16-40336
Office: MAIN OFFICE
Receipt Date: 07/08/2015
Sale Type: Mail
Cashier: WRSYM

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
90	WRFREV	4439-11	LATE REGISTRATION OF WELL - EXEMPT		1	60.00	60.00
					RECEIPT TOTAL:		**60.00**

Payment type: CHECK
Amount Paid: $60.00
Payment Received Date: 07/08/2015

Check #	1415

Notes:

No refund without valid receipt

Run Date: 03/26/2010

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location	A 2.0 3.0 22 D D D	**Well Reg.No** 55 - 607715	**AMA** PHOENIX AMA

Registered Name SALT RIVER PROJECT,
PO BOX 1980

PHOENIX AZ 85001

File Type REGISTERED WELL
Application/Issue Date 05/18/1982

Owner	OWNER	**Well Type**	NON-EXEMPT
Driller No.	0	**SubBasin**	WEST SALT RIVER VALLEY
Driller Name		**Watershed**	SALT RIVER
Driller Phone		**Registered Water Uses**	IRRIGATION
County	MARICOPA	**Registered Well Uses**	WATER PRODUCTION
		Discharge Method	NONE
Intended Capacity GPM	0.00	**Power**	NO POWER CODE LISTED

Well Depth	246.00	**Case Diam**	12.00	**Tested Cap**	760.00
Pump Cap.	760.00	**Case Depth**	246.00	**CRT**	
Draw Down	0.00	**Water Level**	70.00	**Log**	
		Acres Irrig	0.00	**Finish**	STEEL - PERFORATED OR SLOTTED CASING

Contamination Site: YES - WITHIN 1 MILE OF A WQARF SITE

Comments Recovery Well Permit No. 74-548930

Current Action

6/26/2008 775 WQARF UPLOAD OF WELL INVENTORY DATA
Action Comment: Old WQARF Code = NULL

Action History

11/4/2004 880 CHANGE IN CONTAMINATION SITE
Action Comment: Old WQARF Code = NULL
9/1/1920 755 WELL CONSTRUCTION COMPLETED
Action Comment:

FORM W-2 10-45 JAHN-TYLER

55-607715

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REGISTRATION OF WELL

Registration of well existing as of Oct. 3, 1945 is hereby made and filed with the State Land Commissioner as required by Section 5, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session 1945.

1. Owner SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name
Phoenix, Arizona
Address

2. Lessee or Operator
Name
Address

3. Driller E. N. Brown Drilling Company
Name
Phoenix, Arizona
Address

4. Location of well: Twp. 2N (16E-8N) Rge. 3E Section 22 SE ¼ SE ¼ SE ¼
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 246 ft.

6. Type of casing stovepipe

7. Diameter and length of casing 12 in. from ___ to ___, ___ in. from ___ to ___, ___ in. from ___ to ___

8. Method of sealing at reduction points

9. Perforated from 40 to 228, from ___ to ___, from ___ to ___, from ___ to ___

10. Size of cuts 1/2 x 4" holes Number cuts per foot 8 holes per foot

11. If screen was installed: Length ___ ft. Diam ___ in. Type

12. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.

13. Date completed September, 1920 (Month, Year) Deepened (Month, Year)

14. Depth to water when drilled ___ ft.
If flowing well, so state.

15. Present depth to water 29.5 ft. Date of measurement December 5, 1945
If flowing well, so state.

16. Describe point from which depth measurements were made, and give sea-level elevation if available pumphouse floor - 1,155.6'

17. If flowing well, state method of flow regulation

DISCHARGE DATA

18. Well discharge 606 g.p.m.
gal. per min. or cu. ft. per sec. or miner's inches.

19. Method of discharge measurement weir
weir, orifice, current meter, etc.

20. Drawdown 61.71 ft.

21. Annual discharge in acre-feet, or number of hours pumped: 1944 728 a.f. or ___ hrs. 1945 868 a.f. or ___ hrs.

22. Purpose of use irrigation

23. Place of use: (See 24) Twp. ___ Rge. ___ Section ___ Legal subdivision ___ Acres ___
Twp. ___ Rge. ___ Section ___ Legal subdivision ___ Acres ___

24. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.
SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name of Project

(A-2-3)22 ddd

EQUIPMENT DATA

25. Kind of pump turbine
turbine, centrifugal, etc.

26. Kind of power electric
electric, natural gas, etc.

27. Horsepower rating of motor 20

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 2-4-46 by lj
Filed 2-4-46 by lj
File No. (A-2-3)22 ddd
Cross-referenced (Name) ___ by ___
Cross-referenced (Basin) ___ by ___
Cross-referenced ___ by ___

(See Other Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	7	Surface soil
7	29	Caliche and clay
29	62	Sand and Gravel
62	128	Caliche
128	131	Gravel
131	145	Caliche
145	153	Gravel
153	171	Caliche
171	173	Sand
173	182	Gravel
182	212	Clay
212	234	Gravel
234	246	Cemented sand and gravel

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

BY H. J. Lawson

H. J. LAWSON ~~XXXXXXXXXXXXXXXX~~

GENERAL SUPERINTENDENT AND CHIEF ENGINEER

PHOENIX, ARIZONA

Address

Date FEBRUARY 1, 1946

I-10

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

This report should be prepared by the driller in all detail and filed with the State Land Commissioner following completion of the well.

1. OWNER ANAMAX MINING COMPANY (Twin Buttes)
Name
P.O. Box 127, Sahuarita, AZ 85629
Address

2. Lessee or Operator Same
Name
Address

3. DRILLER MORROW DRILLING CO.
Name
Box 4936, Odessa, Texas 79760
Address

4. Location of well: Twp. 18 Rge. 13 Section 4 NE ¼ NE ¼ SW ¼
10-acre subdivision

5. Intention to Drill File No. 35-40662 Permit No.

DESCRIPTION OF WELL

6. Total depth of hole 932 ft.

7. Type of casing Steel

8. Diameter and length of casing 30 in. from 0 to 50, 18 in. from 50 to 670, 18 in. from 771 to 931

9. Method of sealing at reduction points

10. Perforated from 589 to 670, from 771 to 932, from to, from to

11. Size of cuts 5/16 inch Number of cuts per foot 6 per ft.

12. If screen was installed: Length 101.5 ft. Diam. 18 in. Type Johnson

13. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.

14. Date started Nov. (Month) 21 (Day) 1976 (Year)

15. Date completed Nov. (Month) 27 (Day) 1976 (Year)

16. Depth of water ± 610 ft.
If flowing well, so state.

17. Describe point from which depth measurements were made, and give sea-level elevation if available 2562 ft.,
measured from top of casing

18. If flowing well, state method of flow regulation NA

19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received by

Filed by

File No. D(18-13)4 Caa

(Well Log to Appear on Reverse Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	43	fill
43	763	alluvium
763	932	qtz-feldspar porphyry

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

ANAMAX MINING COMPANY

~~Driller~~ By: [signature]
Name

Director of Land Management
Address

Date 12-28-76

2-73

RECEIVED DEC 30 1976 STATE LAND DEPT. 222

02-73

I-10

NOTICE OF INTENTION TO DRILL WELL

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

C-819
Anamax

By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE $3.00

LOCATION OF WELL

North

	NW¼	NE¼	
West			East
	x		
	SW¼	SE¼	

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 18S
2. Rge. 13E
3. Section 4
4. NE ¼ NE ¼ SW ¼
   10-acre subdivision
5. Owner of Well Site
   State of Arizona (Surface only)

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card.

40663

DESCRIPTION OF WELL

6. Diameter 26 in. depth 1000 ft.
7. Type of casing 18 in. OD Steel
8. Estimated depth to water 600 ft.
9. Proposed use Industrial
10. Drilling will start about Nov. 1976
    Month Year
11. Driller MORROW DRILLING CO.
    Name
    4302 E. Superior
    Phoenix, Arizona
    Address
    Driller's License No. 44205
    Class A-4
12. Water will be applied to use about Jan. 1977
    Month Year
20. This notice filed by:
    Check one { Owner ☐ / Lessee x☒ / Driller ☐ }

Name ANAMAX MINING COMPANY
Address P.O. Box 127 Sahuarita, AZ 85629
By [signature]

PLACE OF USE

13. Twp. 17S
14. Rge. 13E
15. Section Variable
16. _____
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation) _____
18. Owner Anamax Mining Company
    Name
    P.O. Box 127
    Sahuarita, AZ 85629
19. _____
    Address

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 10-20-76 By [illegible]
Filed _____ By _____
Duplicate
Mailed _____ By _____
File Number D(18-13)4 [illegible]
trust form 10/21/76

RECEIVED
OCT 20 1976
STATE LAND DEPT.
1556

62-73

I-10

NOTICE OF INTENTION TO DRILL WELL

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE $3.00

LOCATION OF WELL

North

West — NW¼ NE¼ — East

x

SW¼ SE¼

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 18S
2. Rge. 13E
3. Section 4
4. NE ¼ NE ¼ SW ¼
   10-acre subdivision
5. Owner of Well Site State of Arizona (Surface only)

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card.

40663

DESCRIPTION OF WELL

6. Diameter 26 in. depth 1000 ft.
7. Type of casing 18 in. OD Steel
8. Estimated depth to water 600 ft.
9. Proposed use Industrial
10. Drilling will start about Nov. 1976
    Month Year
11. Driller MORROW DRILLING CO.
    Name
    4302 E. Superior
    Phoenix, Arizona
    Address
    Driller's License No. 44205
    Class A-4
12. Water will be applied to use about Jan. 1977
    Month Year
20. This notice filed by:
    Check one { Owner ☐ Lessee xx☐ Driller ☐
    Name ANAMAX MINING COMPANY
    Address P.O. Box 127 Sahuarita, AZ 85629
    By [signature]

PLACE OF USE

13. Twp. 17S
14. Rge. 13E
15. Section Variable
16. _____
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation) _____
18. Owner Anamax Mining Company
    Name
19. P.O. Box 127
    Sahuarita, AZ 85629
    Address

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 10-20-76 By [signature]

Filed _____ By _____

Duplicate

Mailed _____ By _____

File Number D(18-13)4 cad

RECEIVED
OCT 20 1975
STATE LAND DEPT.
1552

John M. Little
Acting

April 13, 1979

Anamax Mining Company
Post Office Box 127
Sahuarita, Arizona 85629

Gentlemen:

This office is attempting to bring its records up to date. The following Information is in the State Land Department office:

Description of Improvements Placed Without Prior Approval	Notice of Intent	Report of Well Driller	Report of Equipment Installed
1 6 None	SWSENW	x	x
1 7 SWSENW	SWSENW	x	x
1 8 NWNESW	NWNESW	x	x
1 9 SWSENW	NWSENW	x	x
1 10 NWNESW	NENESW	x	x
1 11 NENESW	None	None	None
1 12 SESENW	NENWSW	None	None

Please note:

1. The description of 1 9, 1 10, and 1 12 do not agree.
2. 1 11, no Notice of Intent has been filed. No Report of Well Driller or Report of Equipment Installed has been received.
3. The Report of Well Driller and Report of Equipment Installed has not been received on 1 12.

Your attention to this matter would expedite the processing of your reports.

Yours very truly,

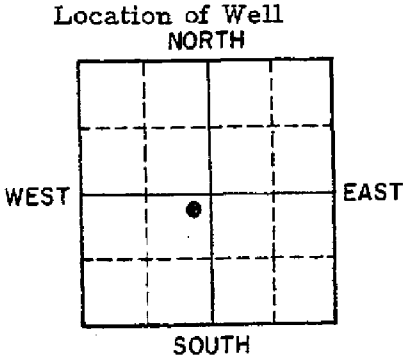
Brian Kirby
Water Rights Division

BK:sw

STATE LAND DEPARTMENT
Water Division
Phoenix, Arizona 85007

File No. Well I-10

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

REPORT OF EQUIPMENT INSTALLED

OWNER ANAMAX MINING COMPANY

LOCATION OF WELL:

NE ¼ NE ¼ SW ¼, Sec. 4 Twp. 18S Rge. 13E

Date Well Completed: 11-27-76 Depth 931 ft.

1. Well Test:

Discharge: 1300 (Gal. Per Min.) Date Well Tested: Feb. 23, 1977

Method of Discharge Measurement: Cumulating current meter (weir, orifice, current meter, etc.)

Static Water Level: 645 ft. Drawdown 41 ft.

Total Pumping Lift 786 ft.

2. Equipment Installed:

Kind of Pump: Vertical line-shaft turbine pump (turbine, centrifugal, etc.)

Kind of Power: Electric (Elec., Nat. Gas, Etc.) H.P. Rating of Motor 400

I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

ANAMAX MINING COMPANY

By: [signature]
Signature
Director of Land Management

Date 3-21-, 19 77.

P.O. Box 127, Sahuarita, Arizona 85629
Address

63-73

TO AVOID PAYMENT OF PENALTY AND INTEREST THIS PAYMENT MUST BE IN THE OFFICE OF THE STATE LAND DEPARTMENT ON OR BEFORE THE DUE DATE. DATE OF POSTAL STAMP NOT ACCEPTED AS DATE OF PAYMENT.

Anamax Mining Company
P. O. Box 127
Sahuarita, Arizona 85629

STATE OF ARIZONA
STATE LAND DEPARTMENT
1624 WEST ADAMS – 4th FLOOR – PHOENIX, ARIZONA 85007

OFFICE COPY

SECTION	TOWNSHIP	RANGE

07583

KIND ENTRY	LEASE-REFERENCE NO.
35	40663 00

	ACCOUNT NO. GRANT FUND	SUB	CARRYING CAPACITY	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
14	312	32		Filing fee for Notice of Intention to Drill Well			3 00
				Water Rights (GW)			
				File #D(18-13)4 caa			
				Check #026307			1 CK 2 CK M 3.00+
						5110 10 20 76	3.00+T

CERTIFICATE OF PURCHASE UNPAID BALANCE $	BILLING PERIOD FROM MO.	DAY	YR	TO MO.	DAY	YR	DATE BILLED MO.	DAY	YR.	DATE DUE MO.	DAY	YR.	TOTAL ACRES	TOTAL AMOUNT $
							10	20	76					3 00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST - A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($)

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY – NUMBER OF DAYS DELINQUENT ( ) $

TOTAL PENALTY AND INTEREST $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION			$

55-607715

FORM W-2 10-45 JAHN-TYLER

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REGISTRATION OF WELL

Registration of well existing as of Oct. 3, 1945 is hereby made and filed with the State Land Commissioner as required by Section 5, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session 1945.

1. Owner SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name
Phoenix, Arizona
Address

2. Lessee or Operator
Name
Address

3. Driller E. N. Brown Drilling Company
Name
Phoenix, Arizona
Address

4. Location of well: Twp. 2N Rge. 3E Section 22 SE ¼ SE ¼ SE ¼
16E-8N
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 246 ft.

6. Type of casing stovepipe

7. Diameter and length of casing 12 in. from ____ to ____, ____ in. from ____ to ____, ____ in. from ____ to ____

8. Method of sealing at reduction points

9. Perforated from 40 to 228, from ____ to ____, from ____ to ____, from ____ to ____

10. Size of cuts 1/2 x 4" holes Number cuts per foot 8 holes per foot

11. If screen was installed: Length ____ ft. Diam. ____ in. Type ____

12. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.

13. Date completed September, 1920 Deepened ____
Month Year Month Year

14. Depth to water when drilled ____ ft.
If flowing well, so state.

15. Present depth to water 29.5 ft. Date of measurement December 5, 1945
If flowing well, so state.

16. Describe point from which depth measurements were made, and give sea-level elevation if available pumphouse floor - 1,155.6'

17. If flowing well, state method of flow regulation

DISCHARGE DATA

18. Well discharge 606 g.p.m.
gal. per min. or cu. ft. per sec. or miner's inches.

19. Method of discharge measurement weir
weir, orifice, current meter, etc.

20. Drawdown 81.71 ft.

21. Annual discharge in acre-feet, or number of hours pumped: 1944 728 a.f. or ____ hrs. 1945 868 a.f. or ____ hrs.

22. Purpose of use irrigation

23. Place of use: Twp. ____ Rge. ____ Section ____ ____ Acres ____
(See 24) Legal subdivision
Twp. ____ Rge. ____ Section ____ ____ Acres ____
Legal subdivision

24. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.
SALT RIVER VALLEY WATER USERS' ASSOCIATION
Name of Project

(A-2-3) 22 ddd

EQUIPMENT DATA

25. Kind of pump turbine
turbine, centrifugal, etc.

26. Kind of power electric
electric, natural gas, etc.

27. Horsepower rating of motor 20

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 2-4-46 by LJ
Filed 2-4-46 by LJ
File No. (A-2-3)22 ddd
Cross-referenced (Name) ____ by ____
Cross-referenced (Basin) ____ by ____
Cross-referenced ____ by ____

(See Other Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	7	Surface soil
7	29	Caliche and clay
29	62	Sand and Gravel
62	128	Caliche
128	131	Gravel
131	145	Caliche
145	153	Gravel
153	171	Caliche
171	173	Sand
173	182	Gravel
182	212	Clay
212	234	Gravel
234	246	Cemented sand and gravel

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

SALT RIVER VALLEY WATER USERS' ASSOCIATION

BY H. J. Lawson

H. J. LAWSON

GENERAL SUPERINTENDENT AND CHIEF ENGINEER

PHOENIX, ARIZONA

Address

Date FEBRUARY 1, 1946

16E-8N

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

07

ARIZONA DEPT. OF WATER RESOURCES
'82 MAY 18 A10:15

FOR OFFICE USE ONLY
REGISTRATION NO. 55-607715
FILE NO. A(2-3)22 ddd
FILED 5-18-82 (DATE) AT 10:15a (TIME)
INA
AMA Phoenix

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

1. Name of Registrant:
Salt River Project Agricultural Improvement and Power District
P. O. Box 1980 (Address) Phoenix (City) Arizona (State) 85001 (Zip)

2. File and/or Control Number under previous groundwater law:
A02003022DDDGS1 (File Number) 35- None (Control Number)

3. a. The well is located within the SE ¼ SE ¼ SE ¼, Section 22, of Township 2N N/S, Range 3E E/W, G & SRB & M, in the County of Maricopa.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and non-irrigation uses by SRP.

5. If for irrigation use, number of acres irrigated from well SRP member lands

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 246 feet
b. Diameter of casing 12 inches
c. Depth of casing 246 feet
d. Type of casing 12 ga double stovepipe.
e. Maximum pump capacity 760 gallons per minute.
f. Depth to water 70 static (Jan. 1982) feet below land surface.
g. Date well completed September (Month) (Day) 1920 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
SRP member lands through distribution system
Attach additional sheet if necessary.

9. DATE MAY 17 1982 SIGNATURE OF REGISTRANT Carl Sparks

SALT RIVER PROJECT AGRICULTURAL
IMPROVEMENT AND POWER DISTRICT

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Salt River Project Agricultural Impr. &
Power District
P O Box 1980
Phoenix AZ 85001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55 -	607704
	THRU
55 -	607743

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing		
					Wells	10.00	400.00
					File # Various		
					Paid Check #060934		

WAITER PAYMENT
GUESTS 40
CHK NO 60934
40@ 10.00
55-I 400.00
TAX 0.00
TOTL 400.00
GEN.CHEK 400.00

~~# 8224 A 13:16~~

5-20-82

TOTAL $ 400.00

pb

APPENDIX L

Responsiveness Summary

RESPONSIVENESS SUMMARY

FINAL DRAFT
REMEDIAL INVESTIGATION REPORT

48TH STREET AND INDIAN SCHOOL ROAD
WQARF REGISTRY SITE
PHOENIX, ARIZONA

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

Prepared By:

Arizona Department of Environmental Quality
Remedial Projects Unit

September 26, 2019

RESPONSIVENESS SUMMARY

REMEDIAL INVESTIGATION REPORT
48th Street and Indian School Road WQARF Site
Phoenix, Arizona

INTRODUCTION

Pursuant to the requirements of Arizona Administrative Code (ACC) R-18-16406(H) the Arizona Department of Environmental Quality (ADEQ) has prepared this comprehensive responsiveness summary for comments received on the *Draft Remedial Investigation Report, East Central Phoenix, 48th Street and Indian School WQARF Site, Phoenix, Arizona* dated June 27, 2019 (Report). The Report documents investigations conducted to date at the East Central Phoenix (ECP) 48th Street and Indian School Road (48th & IS) Water Quality Assurance Revolving Fund (WQARF) Registry Site (Site). The Report was made available for public review and comment on July 18, 2019 for 60 days ending on September 16, 2019. A public meeting was held at Arcadia High School, 4703 E. Indian School Road, on September 12, 2019. The purpose of the meeting was to receive oral and/or written comments on the Draft RI report and to solicit/comment on proposed remedial objectives. ADEQ received no oral or written comments from meeting attendees. Subsequent to the meeting, ADEQ received written comments to the Report from the City of Phoenix. The following sections include the text of comments followed by a response from ADEQ to address each comment. Copies of the written comment letters received are included in Attachment A.

Copies of written comments and proposed remedial objectives submitted by the public are contained in the attachment following the summaries below.

Oral Comments

None received.

Written Comments

Julie Riemenschneider, Environmental Programs Coordinator for the City of Phoenix

Comments regarding the Report were received in a letter via email from Julie Riemenschneider with the City of Phoenix to ADEQ dated September 16, 2019 (Attachement A) and are as follows:

1. The northeastern boundary is defined by SMW-08 and SMW-05 and the toe of the plume is defined by BMW- 15D and BMW-12B; the analytical data in these wells indicate they are outside the contamination plume. However, there are no wells along the entire northern edge of the plume that can be used to define the north boundary of the plume (Figure 2). This northern area is a significant groundwater data gap. We request that ADEQ address this area of concern.

- ADEQ Response: ADEQ understands the City of Phoenix's concerns regarding the definition of the north boundary of the plume. The need for additional wells will be evaluated during the development of the remedy for the Site.

2. Also, note that all plume boundary lines on the figure are solid and not dashed. In areas where the boundary is not well-defined, dashed lines should be used.

    - ADEQ Response: Comment noted. The figure depicting the plume boundary will be adjusted to denote the north boundary of the plume using a dashed line.

ATTACHMENT A

RESPONSIVENESS SUMMARY – WRITTEN COMMENTS

FINAL DRAFT
REMEDIAL INVESTIGATION REPORT
48TH STREET AND INDIAN SCHOOL ROAD
WQARF REGISTRY SITE
PHOENIX, ARIZONA

The comment letters are attached.

City of Phoenix
OFFICE OF ENVIRONMENTAL PROGRAMS

September 16, 2019

Arizona Department of Environmental Quality
Waste Programs Division
Mr. Tom Titus
1110 West Washington St
Phoenix, Arizona 85007

Re: Comments regarding the Draft Remedial Investigation Report (RI) for the East Central Phoenix 48th Street and Indian School Water Quality Assurance Revolving Fund (WQARF) prepared by Wood for the Arizona Department of Environmental Quality (ADEQ) on June 27, 2019.

Dear Mr. Titus,

The City of Phoenix (City) has reviewed the above referenced draft RI for the 48th Street and Indian School WQARF site and appreciates the hard work the agency has put into this report. The City agrees with a majority of the information in this remediation investigation report.

The cleanup of the groundwater at this site is critical to the City. We may need to place wells or pump water from this area in the future.

The northeastern boundary is defined by SMW-08 and SMW-05 and the toe of the plume is defined by BMW-15D and BMW-12B; the analytical data in these wells indicate they are outside the contamination plume. However, there are no wells along the entire northern edge of the plume that can be used to define the north boundary of the plume (Figure 2). This northern area is a significant groundwater data gap. We request that ADEQ address this area of concern.

Also, note that all plume boundary lines on the figure are solid and not dashed. In areas where the boundary is not well defined, dashed lines should be used.

The City looks forward to working with ADEQ as you finalize the RI and continue in the WQARF process. If ADEQ would like to discuss these comments, please contact me at 602-256-5681 or by email at julie.riemenschneider@phoenix.gov

Sincerely,

Julie Riemenschneider
Environmental Programs Coordinator
Office of Environmental Programs, City of Phoenix

C: Tina LePage, ADEQ (electronic copy)
Nancy Allen, OEP (electronic copy)
Cynthia Campbell WSD (electronic copy)

APPENDIX M

Remedial Objectives Report

FINAL REMEDIAL OBJECTIVES REPORT

48th Street and Indian School Road
Water Quality Assurance Revolving Fund Registry Site
Phoenix, Arizona

November 12th, 2019

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

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LIST OF ABBREVIATIONS & ACRONYMS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AMA	Active Management Area
A.R.S.	Arizona Revised Statutes
AWQS	Aquifer Water Quality Standard
COC	Contaminants of Concern
COP	City of Phoenix
ERA	Early Response Action
FS	Feasibility Study
GPL	Groundwater Protection Level(s)
LWUS	Land and Water Use Study
PCE	Tetrachloroethene
RO	Remedial Objective(s)
RI	Remedial Investigation
Site	48th Street and Indian School Road WQARF Site
SRL	Soil Remediation Level(s)
SRP	Salt River Project
SVE	Soil Vapor Extraction
VOCs	Volatile Organic Compounds
Wood	Wood Environment & Infrastructure Solutions, Inc.
WQARF	Water Quality Assurance Revolving Fund

1.0 INTRODUCTION

The Arizona Department of Environmental Quality (ADEQ) has prepared this Proposed Remedial Objectives (ROs) Report for the 48th Street and Indian School Road Water Quality Assurance Revolving Fund (WQARF) Registry Site (Site) to meet requirements established under Arizona Administrative Code (A.A.C.) R18-16-406.

The Site is located in east central Phoenix. The Site is bound to the north by Devonshire Avenue, to the east by 48th Street, to the south by Weldon Avenue, and to the west by 42nd Street (Figure 1). The contaminant of concern (COC) at the Site is tetrachloroethene (PCE).

This report was prepared using the data obtained from the Land and Water Use Study (LWUS) prepared by Wood Environment & Infrastructure Solutions, Inc. (Wood). The LWUS was prepared using the Land and Water Use Questionnaires completed by the City of Phoenix (COP) and the Salt River Project (SRP).

ROs are established for the current and reasonably foreseeable uses of land and waters of the state that have been or are threatened to be impacted by a release of a hazardous substance. As defined by A.A.C. R18-16-406(D), the reasonably foreseeable uses of land are those likely to occur at the site and the reasonably foreseeable uses of water at the site are those likely to occur within one hundred years unless a longer time period is shown to be reasonable based on site-specific information.

Reasonably foreseeable uses are those likely to occur, based on information provided by water providers, well owners, land owners, government agencies, and others. Not every use identified in the LWUS will have a corresponding RO. Uses identified in the LWUS may or may not be addressed based on information gathered during the public involvement process, limitations of WQARF, and whether the use is reasonably foreseeable. Ecological uses at the Site are not addressed herein because the remedial investigation has determined that there are no identified ecological receptors as defined by A.A.C. 18-7-201.

The ROs must be stated in the following terms: (1) protecting against the loss or impairment of each use; (2) restoring, replacing, or otherwise providing for each use; (3) when action is needed to protect or provide for the use; and (4) how long action is needed to protect or provide for the use.

The ROs selected for the Site will be evaluated during the Feasibility Study (FS) phase of the WQARF process. The FS will propose a remedial strategy for the Site. A remedial strategy is one or a combination of six general strategies identified in Arizona Revised Statutes (A.R.S.) §49-282.06(B)(4). These strategies include: plume remediation, physical containment, controlled migration, source control, monitoring, and no action. A.R.S. §49-282.06(B)(4)(a) indicates that for remediation of soil, the selected remedial action shall be consistent with the soil remediation standards adopted pursuant to A.R.S. §49-152. A remedial measure is a specific action taken in conjunction with remedial strategies to achieve one or more ROs (for example, well replacement, well modification, water treatment, water supply replacement, and engineering controls.)

Written comments on the proposed ROs were accepted for a period of 30-days following the public notice. The comment period on the proposed ROs ended on October 28, 2019.

Land and Water Use Questionnaires were mailed to the COP and SRP to obtain information regarding current and future uses of land and groundwater at the Site. The COP and SRP completed the questionnaires and returned them to ADEQ. The following sections summarize the current and foreseeable land and groundwater uses at the Site and present the ROs for the Site.

As per A.A.C. R18-16-406(I), a public meeting was held at Arcadia High School on September 12, 2019 during the 45-day to 90-day public solicitation period for the ROs. The purpose of the meeting was to solicit and consider proposed ROs for the East Central Phoenix 48th Street and Indian School Road WQARF Site. The meeting gave a public forum for oral and written comments to be submitted.

2.0 REMEDIAL OBJECTIVES FOR LAND USE

The Site is located within a mixed residential and commercial area. The current COP zoning maps indicate the Site is zoned as residential (multiple family residence, residential office, and single family residence) and commercial (neighborhood retail, intermediate commercial, and restricted commercial). The COP indicated there are no current foreseeable plans to alter the current land use at the Site or in the vicinity of the Site.

2.1 Summary of Impacts to Current and Reasonably Foreseeable Land Use

ROs for land use are typically established for those properties known to be contaminated with hazardous substances above a Soil Remediation Level (SRL) or a risk-based level. Several phases of investigation have been conducted at the Site including soil, soil vapor, and groundwater sampling. The investigative sampling results indicated that volatile organic compounds (VOCs) are present in soil, soil vapor, and groundwater at the Site. PCE is the primary COC at the Site.

The source of the PCE at the Site was determined to be two dry cleaners (One Hour Martinizing/Cleaners by George [operated from 1966 to 1987] and Sandy's Magic Touch Cleaners [operated from 1987 to the present]). The source area is located at 4730 East Indian School Road. A soil vapor extraction (SVE) system was operated as an Early Response Action (ERA) at the source area from 2006 to 2012. The SVE system removed approximately 319 pounds of PCE. The SVE system effectively removed the source of the soil contamination at the Site. VOC concentrations collected in soil samples collected within the source area are below the residential SRL and Groundwater Protection Levels (GPLs). Soil gas and indoor air samples collected off-Site confirmed that no other properties at the Site are impacted with soil or soil vapor contamination at concentrations above regulatory levels.

2.2 Soil Remedial Objective

The impacted soil within the source area at the Site has been remediated with a SVE system. The concentrations of COCs in the soil are below the residential SRLs and GPLs. Soil gas and indoor air samples collected off-Site confirm that no other properties at the Site are impacted with soil or soil vapor contamination above regulatory levels. Thus, a RO for land use is not needed at the Site.

3.0 REMEDIAL OBJECTIVES FOR GROUNDWATER USE

The groundwater use portion of the LWUS Report is a summary of information gathered from the Arizona Department of Water Resources (ADWR), water providers, and municipalities. The water providers at the Site are the COP and SRP.

The Site lies within the Phoenix Active Management Area (AMA), an area where groundwater use is controlled and regulated. The Phoenix AMA was created by the Arizona Groundwater Management Code passed in 1980 and covers approximately 5,646 square miles in central Arizona. All groundwater withdrawn from any AMA must occur under a groundwater right or permit, unless groundwater is being withdrawn from an exempt well.

ADWR records indicate there are 11 non-exempt and five exempt water supply wells located within approximately one mile of the PCE plume boundary. The non-exempt wells include: (a) nine wells owned and operated by SRP; (b) one well owned by COP; and (c) one well owned by Maricopa County Flood Control District. According to ADWR, the COP owned well was used to fill the swimming pool at Perry Park. The well owned by Maricopa County was used for de-watering purposes. The intended use of the five exempt wells is domestic irrigation. There are no grandfathered rights in the vicinity of the PCE plume boundary. The COP and SRP have service area rights in the vicinity of the Site, however, only SRP is currently pumping groundwater in the vicinity of the PCE plume boundary. The current use of water at the Site is for irrigation water. The future use of groundwater at the Site includes irrigation and municipal (potable supply).

3.1 Summary of Impacts to Current and Reasonably Foreseeable Groundwater Use

The COP has one groundwater well located within one mile of the PCE groundwater plume. The COP indicated that it may install additional municipal wells at the Site in the future. The groundwater at the Site is currently contaminated with PCE at concentrations that exceed the Aquifer Water Quality Standard (AWQS). The current groundwater contamination would restrict the use of the groundwater for municipal purposes.

SRP operates nine irrigation wells located within one mile of the PCE groundwater plume. The most recent groundwater data collected from these SRP wells indicated that PCE is currently below the AWQS in each well. SRP operates these wells intermittently and plans to continue pumping them intermittently, as needed, to provide irrigation water. SRP has no plans to eliminate any of these wells from their system. SRP anticipates these wells will remain in use over the next 100 years. SRP anticipates that these and other groundwater supply wells located in the vicinity of the Site will likely transition from irrigation to municipal service (potable supply) over the next 100 years. SRP may also need to install additional groundwater supply wells at the Site or in the vicinity of the Site.

3.2 Groundwater Remedial Objective

The current use of water at the Site is for irrigation water. The future use of groundwater at the Site includes irrigation and municipal (potable supply). The groundwater at the Site is currently contaminated with PCE at concentrations that exceed the AWQS. Thus, the ROs for groundwater use at the Site are as follows:

Irrigation Use

Protect against the loss or impairment of irrigation water threatened by the contaminants of concern at the 48th and Indian School Road WQARF Site. Where protection cannot be achieved in a reasonable, necessary, or cost-effective manner; restore, replace, or otherwise provide for irrigation water that is lost or impaired by the contaminants of concern at the 48th and Indian School Road WQARF Site. Action is needed for as long as necessary to ensure that, while the water exists and the resource remains available, the contamination associated with the 48th and Indian School Road WQARF Site does not prohibit or limit the designated use of groundwater.

Potable Use

Protect against the loss or impairment of potable water threatened by the contaminants of concern at the 48th and Indian School Road WQARF Site. Where protection cannot be achieved in a reasonable, necessary, or cost-effective manner; restore, replace, or otherwise provide for potable water that is lost or impaired by the contaminants of concern at the 48th and Indian School Road WQARF Site. Action is needed for as long as necessary to ensure that, while the water exists and the resource remains available, the contamination associated with the 48th and Indian School Road WQARF Site does not prohibit or limit the designated use of groundwater.

4.0 REMEDIAL OBJECTIVES FOR SURFACE WATER USE

Surface water at the Site is currently used for residential irrigation. SRP provides the irrigation water. The water comes to the Site from the Arizona and Grand Canals via SRP lateral canals. The lateral canals also receive water from nearby SRP irrigation wells.

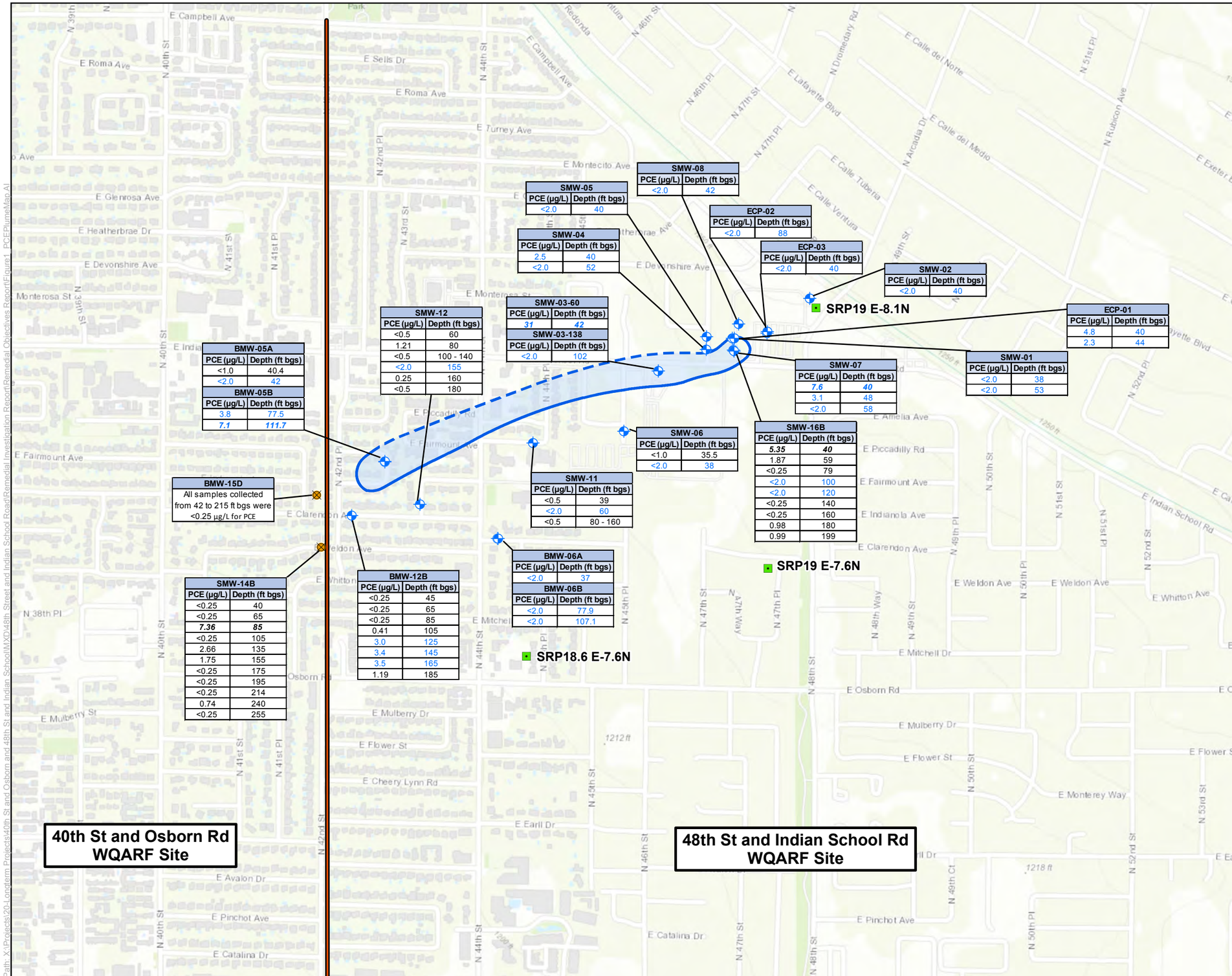
4.1 Summary of Current and Reasonably Foreseeable Surface Water Use

There are currently no known impacts from the Site to the water in the SRP canals. SRP anticipates that a drinking water plant will be built on the Grand Canal within the next 100 years and the SRP wells in the vicinity of the Site could provide water to that plant. The current and future source of the water in the SRP canals that originates from the Site is groundwater pumped by SRP wells.

4.2 Surface Water Remedial Objective

Current surface water use at the Site is irrigation from SRP canals. The water in the SRP canals is supplemented with groundwater pumped from SRP wells at the Site. The future use of the surface water in the SRP canals includes irrigation and drinking water. The current and future source of the water in the SRP canals originating from the Site is groundwater pumped by SRP wells. Thus, ROs for surface water use are not needed because the ROs for groundwater use for the water pumped into the canals are applicable.

Figures



Legend

- Groundwater Monitor Well
- SRP Production Well
- Boring Location - Abandoned
- Approximate Distribution of PCE Above 5 µg/L (Dashed Where Inferred)

Notes:

SMW-16B	Groundwater Monitoring Well Identification
1.87	Results that are black are from historic PCE sampling
<2.0	Results that are blue are from December 2018
5.35	Results that are ***bolded and italicized*** exceed the Aquifer Water Quality Standard of 5 µg/L
µg/L	Microgram per liter
ft	Feet
bgs	Below Ground Surface
PCE	Tetrachloroethene
WQARF	Water Quality Assurance Revolving Fund

0 400 800 Feet

N

Remedial Objectives Report
ECP 48th St & Indian School Rd WQARF Site
Phoenix, Arizona

FIGURE 1

Site Plan

Job No. 14-2019-2043
PM: JC
Date: 11/13/2019
Scale: 1"= 800'

wood.

The map shown here has been created with all due and reasonable care and is strictly for use with Wood Environment & Infrastructure Solutions, Inc. Project Number 14-2019-2043. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood Environment & Infrastructure Solutions, Inc. assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

Path: X:\Projects\20-Longterm Projects\40th St and Osborn and 48th St and Indian School\MXD\48th Street and Indian School Road\Remedial Investigation Report\Remedial Objectives Report\Figure1_PCEPlumeMap.aI

Attachment A

REMEDIAL OBJECTIVES RESPONSIVENESS SUMMARY

A COMMENTS RECEIVED FROM ORAL AND WRITTEN SOLICITATIONS FOR PROPOSED REMEDIAL OBJECTIVES

As per A.A.C. R18-16-406(I), a public meeting was held at Arcadia High School on September 12, 2019 during the 45-day to 90-day public solicitation period for the ROs. The purpose of the meeting was to solicit and consider proposed ROs for the East Central Phoenix 48th Street and Indian School Road WQARF Site. The meeting gave a public forum for oral and written comments to be submitted. The comments received are summarized below with ADEQ responses. Copies of written comments and proposed remedial objectives submitted by the public are contained in the attachment following the summaries below

Written Comments

Julie Riemenschneider, COP (Comments dated October 28, 2019)

- The City of Phoenix (City) agrees with the proposed RO's that ADEQ has written for irrigation and potable groundwater.
- The RO for groundwater indicates that ADEQ acknowledges the important resource groundwater is for the City and the future of our citizens.

ADEQ's Response: ADEQ thanks the City for their comment.

Andrea Martinez, SRP (Comments dated October 28, 2019)

SRP has reviewed the ROs and respectfully requests that the Arizona Department of Environmental Quality (ADEQ) include surface water ROs for the Site.

As ADEQ is aware, SRP provides water to its customers in the Phoenix area through a series of canals and laterals. In 2017, SRP entered into an Agreement with the City of Goodyear to wheel Goodyear's surface water supplies to the future Goodyear WTP via the Grand Canal and its associated laterals. Although the water delivered to Goodyear will primarily be Goodyear's surface water supplies, from an operational perspective, some of that water may be physically comingled with groundwater from SRP production wells located near WQARF sites. Once the Goodyear WTP is completed, the designated use of groundwater wells in and around the Site will include both irrigation and raw drinking water supplies. As a practical matter, groundwater pumped from around the Site may also be included in the raw drinking water supply for Goodyear.

Multiple SRP groundwater production wells are located within one mile of the Site and dischargeto the Grand Canal either directly or via distribution laterals off the Arizona Canal. As ADEQ isaware, the Grand Canal is a Water of the State and SRP maintains a policy that prohibits wellsto discharge into canals if the water does not meet applicable standards for the receiving waterbody. Consistent with Arizona Pollutant Discharge Elimination System (AZPDES) permit #AZ0024341, wells

discharging into canals that feed municipal drinking water systems must not exceed established drinking water standards for volatile organic compounds. Thus, it is SRP's expectation that ROs for the Site will accurately reflect and protect SRP's current and foreseeable water use.

SRP is appreciative that ADEQ proposed groundwater ROs for both irrigation use and potable water use at the Site. SRP agrees that both RO types are appropriate in light of the current and reasonably foreseeable use of groundwater in the area. However, ADEQ did not propose any surface water ROs. Instead, ADEQ states: "…ROs for surface water use are not needed because the ROs for groundwater use for the water pumped into the canals are applicable." SRP disagrees and believes that both groundwater and surface water ROs should be adopted for the Site. ADEQ is encouraged to include ROs for surface water that not only protect against the loss or impairment, but also restore, replace or otherwise provide a water supply in the event contamination from the Site impacts SRP canal waters.

ADEQ's Response: With regard to the requests by SRP:

SRP has previously communicated to ADEQ that it has entered into an agreement that may result in pumped groundwater from around the WQARF Sites being included in the drinking water supply for the City of Goodyear. In the Final Remedial Objectives Report, the groundwater remedial objective for potable use is written to protect, restore, replace, or otherwise provide for the use of groundwater at the Site for drinking water. This remedial objective accounts for the foreseeable use of SRP discharging groundwater into a canal

Attachment B

COPIES OF WRITTEN COMMENTS RECEIVED

City of Phoenix
OFFICE OF ENVIRONMENTAL PROGRAMS

October 28, 2019

Arizona Department of Environmental Quality
Waste Programs Division
Ms. Lisa Kowalczyk
400 West Congress, Suite 433
Tucson, Arizona 85701

Re: Comments regarding the Draft Remedial Objective Report (RO) for the East Central Phoenix 48th Street and Indian School Water Quality Assurance Revolving Fund (WQARF) prepared by the Arizona Department of Environmental Quality (ADEQ) on August 15, 2019.

Dear Ms. Kowalczyk,

The City of Phoenix (City) has reviewed the above referenced draft RO for the 48th Street and Indian School WQARF site.

The City agrees with the proposed RO's that ADEQ has written for irrigation and potable groundwater. The RO for groundwater indicates that ADEQ acknowledges the important resource groundwater is for the City and the future of our citizens.

The City looks forward to working with ADEQ on the feasibility study and development of the proposed remedy for this site. If ADEQ would like to discuss these comments, please contact me at 602-256-5681.

Sincerely,

Julie Riemenschneider

Julie Riemenschneider
Environmental Programs Coordinator
Office of Environmental Programs, City of Phoenix

C: Tina LePage, ADEQ (electronic copy)
Nancy Allen, OEP (electronic copy)
Cynthia Campbell WSD (electronic copy)
Elizabeth Zima, OEP (electronic copy)

Andrea Martinez, Water Quality &
Waste Management Services, Manager
PAB 359 | P.O. Box 52025
Phoenix, AZ 85072-2025
P: (602) 236-2618 | srpnet.com
Andrea.Martinez@srpnet.com

October 28, 2019

Via Electronic Mail

To: Lisa Kowalczyk
Arizona Department of Environmental Quality
Waste Programs Division
1110 W. Washington Street
Email: Kowalczyk.Lisa@azdeq.gov

Reference: Proposed Remedial Objectives Report, East Central Phoenix – 48th Street and Indian School Road, Water Quality Assurance Revolving Fund Site; Phoenix, AZ

RE: Salt River Project Comments – Proposed Remedial Objectives Report, 48th Street and Indian School Road, Water Quality Assurance Revolving Fund Site

Dear Ms. Kowalczyk:

Salt River Project Agricultural Improvement and Power District (SRP) appreciates the opportunity to provide comments on the Proposed Remedial Objectives (RO) Report dated August 15, 2019, for the 48th Street and Indian School Road Water Quality Assurance Revolving Fund (WQARF) site in Phoenix, AZ (Site). SRP has reviewed the ROs and respectfully requests that the Arizona Department of Environmental Quality (ADEQ) include surface water ROs for the Site.

As ADEQ is aware, SRP provides water to its customers in the Phoenix area through a series of canals and laterals. In 2017, SRP entered into an Agreement with the City of Goodyear to wheel Goodyear's surface water supplies to the future Goodyear WTP via the Grand Canal and its associated laterals. Although the water delivered to Goodyear will primarily be Goodyear's surface water supplies, from an operational perspective, some of that water may be physically comingled with groundwater from SRP production wells located near WQARF sites. Once the Goodyear WTP is completed, the designated use of groundwater wells in and around the Site will include both irrigation and raw drinking water supplies. As a practical matter, groundwater pumped from around the Site may also be included in the raw drinking water supply for Goodyear.

Multiple SRP groundwater production wells are located within one mile of the Site and discharge to the Grand Canal either directly or via distribution laterals off the Arizona Canal. As ADEQ is aware, the Grand Canal is a Water of the State and SRP maintains a policy that prohibits wells to discharge into canals if the water does not meet applicable standards for the receiving water body. Consistent with Arizona Pollutant Discharge Elimination System (AZPDES) permit #AZ0024341, wells discharging into canals that feed municipal drinking water systems must not exceed established drinking water standards for volatile organic compounds. Thus, it is SRP's expectation that ROs for the Site will accurately reflect and protect SRP's current and foreseeable water use.

SRP is appreciative that ADEQ proposed groundwater ROs for both irrigation use and potable water use at the Site. SRP agrees that both RO types are appropriate in light of the current and reasonably foreseeable use of groundwater in the area. However, ADEQ did not propose any surface water ROs. Instead, ADEQ states: "…ROs for surface water use are not needed because the ROs for groundwater use for the water pumped into the canals are applicable." SRP disagrees and believes that both groundwater and surface water ROs should be adopted for the Site. ADEQ is encouraged to include ROs for surface water that not only protect against the loss or impairment, but also restore, replace or otherwise provide a water supply in the event contamination from the Site impacts SRP canal waters.

SRP appreciates the opportunity to provide these comments to ADEQ and reserves its right to provide additional comments once these concerns are addressed. If you have any questions, please call me at 602-236-2618.

Sincerely,

Andrea Martinez
Water Quality & Waste Management Services, Manager

cc: Robert Pane, SRP
Karis Nelson, SRP