Final Remedial Investigation Report

CONTRACT NO.: W912DQ-18-D-3008
TASK ORDER NO.: W912DQ19F3048

Operable Unit 1
700 South 1600 East PCE Plume Site
Salt Lake City, Utah

U.S. Army Corps of Engineers
Kansas City District

Department of Veterans Affairs

September 23, 2022

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CDM Smith

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Acronyms and Abbreviations

δ	delta
≤	less than or equal to
%	percent
‰	per mil
amsl	above mean sea level
AOU1	Accelerated Operable Unit 1
bgs	below ground surface
CDM Smith	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CH2M	CH2M Hill, Inc.
cis-1,2-DCE	cis-1,2-dichloroethene
CLP	Contract Laboratory Program
COC	chemical of concern
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
COVID-19	coronavirus disease 2019
CSEM	conceptual site exposure model
CSIA	compound-specific isotope analysis
CSM	conceptual site model
CTE	central tendency exposure
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DPT	direct-push technology
DQO	data quality objective
DSR	data summary report
EA	EA Engineering, Science, and Technology, Inc.
East Bench Fault	East Bench Segment of the Wasatch Fault
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
ER	engineering regulation
ESL	ecological screening level
ESS	East Side Springs
ESV	ecological screening value
ft/day	feet per day
f_{oc}	fraction of organic carbon
FSP	field sampling plan
g/day	grams per day
GIS	geographic information system
GW	groundwater monitoring location
HAPSITE	Inficon HAPSITE®
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient

HRS	Hazard Ranking System
IDW	investigation-derived waste
IHI	IHI Environmental
ITRC	Interstate Technology and Regulatory Council
IUR	inhalation unit risk
J	result is estimated
ka	kiloannum (thousand years ago)
LANL	Los Alamos National Laboratory
LOAEL	lowest-observed-adverse-effect level
MCL	maximum contaminant level
MDL	method detection limit
MFM	minor field modification
m^3/kg	cubic meters per kilogram
mg/kg	milligram per kilogram
mg/kg day	milligrams per kilogram body weight per day
mg/L	milligram per liter
MGD	million gallons per day
MS	matrix spike
MSD	matrix spike duplicate
MW	monitoring well
NOAEL	no-observed-adverse-effect level
NPL	National Priorities List
NTU	nephelometric turbidity units
OU	operable unit
ORP	oxidation reduction potential
PCE	tetrachloroethene
PID	photoionization detector
PM	Project Manager
PVC	polyvinyl chloride
Q1	first quarter
Q2	second quarter
Q3	third quarter
Q4	fourth quarter
QA	quality assurance
QAM	quality assurance manager
QAPP	quality assurance project plan
RAL	removal action level
RAO	remedial action objective
RBSL	risk-based screening level
RfC	reference concentration
RfD	reference dose
RG	residential groundwater sampling location
RI	remedial investigation
RIWP	remedial investigation work plan
RL	reporting limit

RME	reasonable maximum exposure
RPM	Remedial Project Manager
RSL	regional screening level
S/D	shallow/deep
SF	slope factor
SLCDPU	Salt Lake City Department of Public Utilities
SLC-18	Salt Lake City Department of Public Utilities drinking water well no. 18
SLERA	screening-level ecological risk assessment
SOP	standard operating procedure
SVOC	semivolatile organic compound
SVP	soil vapor probe
SW	surface water sampling location
TCE	trichloroethene
TCRA	time-critical removal action
TDS	total dissolved solids
TOC	total organic carbon
U	not detected
UANG	Utah Army National Guard
UDEQ	Utah Department of Environmental Quality
UF	uncertainty factor
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
VA	U.S. Department of Veterans Affairs
VAMC	George E. Wahlen Veterans Affairs Medical Center
VDEQ	Virginia Department of Environmental Quality
VC	vinyl chloride
VHA	Veterans Health Administration
VI	vapor intrusion
VIMS	vapor intrusion mitigation system
VOC	volatile organic compound
VURAM	Virginia Unified Risk Assessment Model
ZIST	zone isolation sampling technology
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter

Executive Summary

CDM Federal Programs Corporation (CDM Smith) was tasked to perform the remedial investigation (RI) for Operable Unit 1 (OU1) of the 700 South 1600 East Tetrachloroethene Plume Site located near the George E. Wahlen Veterans Affairs Medical Center (VAMC) under U.S. Army Corps of Engineers Kansas City District Contract No. W912DQ-18-D-3008, Task Order No. W912DQ19F3048. This RI report describes the nature, extent, fate, and transport of contamination as well as estimates of current and future potential risks to human health and the environment associated with tetrachloroethene (PCE) contamination present beneath the VAMC property and in areas hydraulically downgradient, extending to the East Side Springs (ESS) area.

Site Overview

The site is located in Salt Lake City, near the University of Utah and the front (west side) of the Wasatch Mountains. The VAMC operated a part time dry-cleaning operation in Building 7 that used PCE over a 6-year period in the late 1970s and early 1980s. During this period, dry-cleaning residuals were disposed of into the sanitary sewer.

PCE was first detected in 1990 during sampling in an irrigation well at the Mount Olivet Cemetery. Following this initial detection, multiple investigations were conducted by the Utah Department of Environmental Quality (UDEQ) and the U.S. Environmental Protection Agency (EPA), resulting in listing the site on the National Priorities List (NPL) in 2013. A tri-party Federal Facility Agreement was signed on November 7, 2016, between the U.S. Department of Veterans Affairs (VA), the State of Utah, and EPA, regulating the site under the Comprehensive Environmental Response, Compensation, and Liability Act.

Historically, the site was divided into two operable units (OUs) to investigate potential impacts to the environment and downgradient receptors. Accelerated Operable Unit 1 (AOU1) was primarily focused on the immediate concerns related to vapor intrusion (VI) in the ESS area. OU2 was designated for investigation and delineation of the groundwater PCE plume and source area. In 2019, the VA combined the two OUs into a single OU, OU1.

Work Summary

Numerous investigations have been conducted to characterize the source of contamination and the potential threats to human health and the environment. Prior to listing the site on the NPL, investigations began in 1990 following the detection of PCE at a concentration of 32 micrograms per liter (µg/L) in the Mount Olivet irrigation well. For reference, the federal maximum contaminant level (MCL) for PCE in drinking water is 5 µg/L. Soil gas investigations began in 1995 by the EPA in areas surrounding the Mount Olivet irrigation well and on the University of Utah property. EPA then installed seven monitoring wells on and near the VAMC campus in 1998 and 1999. In 1998, four springs southwest of Mount Olivet Cemetery were sampled.

UDEQ and EPA completed a site investigation in 2004. At that time, PCE was detected at municipal well SLC-18 at 2.23 µg/L and at the Mount Olivet irrigation well at 128 µg/L. The highest PCE detection was observed in MW-01S, at 278 µg/L. EPA prepared a Hazard Ranking

System (HRS) package to propose the site for inclusion on the NPL. The decision to list the site on the NPL was deferred to allow local officials to seek congressional funding to address the contamination. In July 2005, EPA sent a CERCLA Section 104(e) information request to the VAMC inquiring about their use of PCE. In response to EPA, the VA detailed the use of PCE in an on-site closed-loop dry cleaning system that discharged condensate from the distillation process to the sanitary sewer.

In response to a crude oil spill in 2010 in nearby Red Butte Creek, surface water samples were collected at springs along the East Bench Fault. PCE was detected in these samples, launching a preliminary assessment and site investigation conducted by UDEQ in 2011. This investigation included surface water, groundwater, soil, and soil gas sample collection. UDEQ concluded that the former dry-cleaning operation at the VAMC campus was likely the source of the PCE contamination in the ESS area. In September 2012, EPA completed an HRS evaluation of the site that resulted in a score of 50. The site was listed on the NPL on May 24, 2013, with the VAMC named as a potentially responsible party based on the HRS evaluation.

Following site listing, investigation activities were conducted at the former AOU1, former OU2, and after the two were merged, at OU1. These investigations generally include the following activities:

- Drilling and soil sampling – Drilling and associated soil sampling was completed from 2014–2016 (AOU-1), 2017–2018 (OU2), 2019–2020 (Phase 1 OU2), and 2020–2021 (Phase 2 OU1).
- Monitoring well installation – AOU1 monitoring well installation occurred from 2015–2016 and included installation of 34 temporary groundwater monitoring points. OU2 monitoring well installation occurred from 2017–2018 and included installation of monitoring wells MW-03R, MW-08, and MW-12 through MW-22. Phase 1 OU2 monitoring well installation occurred from 2019–2020 and included installation of monitoring wells MW-23 through MW-32 and MW-34. Phase 2 OU1 monitoring well installation occurred from 2020–2021 and included installation of monitoring wells MW-36, MW-37, MW-38, and MW-13L, replacement of two damaged well intervals at MW-30, and wells RG-01 through RG-11 (residential groundwater sampling locations) that replaced the temporary piezometers installed under AOU-1.
- Groundwater sampling – AOU1 groundwater sampling was completed in 2016 with the sampling of 44 temporary monitoring locations, 34 of which were abandoned immediately after sampling. OU2 groundwater sampling included push-ahead groundwater samples collected during monitoring well installation and sampling of existing and new monitoring wells in September–October and November–December 2018. Phase 1 OU2 groundwater sampling included push-ahead groundwater samples collected during monitoring well installation and sampling of existing and new monitoring wells during quarter four (Q4)-2019, Q2-2020, and Q3-2020. Phase 2 OU1 groundwater sampling included sampling of existing monitoring wells during Q4-2020 and Q1-2021 and residential groundwater location sampling in April 2021.

- Hydraulic testing – Hydraulic conductivity (slug) testing was conducted during Phase 2 OU1 on 27 locations within the monitoring well network, including wells screened in the shallow and deep aquifer zones.
- Surface water sampling – AOU1 surface water sampling was conducted in 2016 with collection of surface water samples from identified and accessible seeps, springs, sumps, and Red Butte Creek. OU2 surface water sampling was conducted in October and December 2018 at nine locations, six of which were previously sampled. Phase 1 OU2 surface water sampling was conducted between December 2019 and March 2020 at seven locations. Phase 2 OU1 surface water sampling was conducted in April 2021 at 11 locations.
- Soil gas sampling – AOU1 soil gas sampling was conducted in the ESS area from 2015–2017. Near-slab soil gas samples were collected along with open-field (collected greater than 5 feet from an occupied building foundation) soil gas samples. Phase 2 OU1 soil gas sampling was conducted in the ESS area in March 2021 at soil vapor points (SVPs) that were installed at four monitoring wells in 2020 and seven SVPs installed in 2021 at residential groundwater sampling locations. Source area OU2 soil gas sampling was completed in 2018–2019 at SVPs and Vapor Pin subslab sampling points on the VAMC campus and in Sunnyside Park. Source area soil gas sampling for Phase 2 OU1 was also conducted in 2021 at SVPs and Vapor Pin subslab sampling ports on the VAMC campus.
- Indoor air sampling – AOU1 indoor air sampling was conducted during multiple field events from 2015–2017, focusing on areas of highest VI potential while evaluating the spatial extent of potential VI impacts in the ESS area. OU2 indoor air sampling was conducted on the VAMC campus in January and February 2019. Phase 1 OU2 indoor air sampling was conducted in 2019–2020 at structures in the ESS area, some of which were previously sampled during the AOU1 sampling events. Phase 2 OU1 indoor air sampling was conducted in 2021 on the VAMC campus at a subset of locations previously sampled in 2019 in Buildings 6 and 7. Phase 2 OU1 indoor air sampling was also conducted at a subset of structures in the ESS area in summer 2021, and at additional structures in the ESS area and VAMC campus in March 2022.

The following previous remedial actions have been conducted at the site:

- Time-critical removal action at residential home 0040-H, which consisted of installing a vapor mitigation system for indoor air. The action was taken based on AOU1 RI VI sampling results that exceeded an interim removal action level.

Physical Characteristics

The site is located in an urban, mostly developed area situated in the Wasatch Fault Zone, which separates the Salt Lake Valley from the Wasatch Mountains to the east. The site is bisected by the East Bench Segment of the Wasatch Fault (East Bench Fault) and the East Bench Fault Spur. The topography slopes to the west with a grade of 4 percent until reaching the East Bench Fault where it steepens to 10 percent. Seeps and springs are present alongside the scarp of the East Bench Fault. Other surface water features in the area include Mount Olivet Reservoir, Red Butte Creek, and Liberty Park Pond.

The surficial geology is mapped as alluvial fan deposits and lacustrine deposits, grading from coarse grained on the east to finer grained to the west.

At the VAMC campus, groundwater was encountered generally from 185 to 200 feet below ground surface (ft bgs). Moving west and southwest, groundwater becomes shallower, with depth to groundwater at approximately 155 ft bgs to the west of the VAMC campus near Guardsman Way. In the ESS area, shallow groundwater was encountered at approximately 15 ft bgs to above ground surface (i.e., artesian conditions).

The local aquifer system includes groundwater flowing through perched (near the VAMC campus and Sunnyside Park only), unconfined shallow, and semiconfined deep aquifer systems. Surface discharge of groundwater occurs through seeps and springs located east of the East Bench Fault and are cumulatively a significant component of the local water balance.

Groundwater elevation data provides information to define the four aquifer zones identified at the site: perched zone, shallow aquifer zone, intermediate aquifer zone, and deep aquifer zone. A silt/clay semi-confining unit is present between the shallow and deep aquifer zones. Flow directions are generally east to west. Vertical gradients are typically strongly downward near the VAMC campus and dissipate along the east to west groundwater flow path. The East Bench Fault Spur is not a significant impediment to groundwater flow. However, the head difference across the East Bench Fault is approximately 112 feet, likely occurring abruptly because of the fault acting as a semipermeable barrier to flow.

Hydraulic conductivity in the shallow aquifer zone generally ranges from 5 feet per day in the northeastern and southwestern areas of the site to 50 feet per day in the central area of the site. In the deep aquifer zone, there was not a significant difference in hydraulic conductivities east and west of the East Bench Fault Spur. In the northeastern and central area of the site, the deep aquifer hydraulic conductivity had a representative value of 45 feet per day.

Nature and Extent of Contamination

Two potential sources of contamination were identified: surface and near-surface releases of dry-cleaning condensate in the Building 6 and 7 area on the VAMC campus and subsurface release through the sanitary sewer line defect in Sunnyside Park. Because PCE degrades to trichloroethene (TCE), cis-1,2-dichloroethene, and vinyl chloride under anaerobic conditions, these compounds are included as preliminary chemicals of potential concern (COPCs). The chemical 1,4-dioxane is also included as a preliminary COPC as requested by EPA in a letter dated June 4, 2014, for the purpose of characterizing the nature and extent of contamination during the RI.

Soil

Soil and sediment samples were collected in the ESS area and from the VAMC campus, Sunnyside Park, and near the Mount Olivet Cemetery. PCE was detected in 21 VAMC area soil samples at low concentrations (less than 0.005 milligram per kilogram [mg/kg]). The highest PCE concentrations in soil were observed in borings advanced between Buildings 6 and 7, but these results were still well below the EPA screening level for residential soil (24 mg/kg).

Groundwater

Groundwater monitoring has been ongoing during the AOU1, OU2, Phase 1 OU2, and Phase 2 OU1 investigations with collection of a total of 419 groundwater samples. Of those, 297 samples contained detectable PCE, and 165 samples exceeded the EPA's MCL for PCE in groundwater (5 µg/L). The PCE groundwater plume originates west of Buildings 6 and 7, near the western edge of the VAMC campus, with the highest concentrations at MW-01S, MW-02, and MW-03RB (approximately 230 µg/L each). MW-01S and MW-02 are screened in the shallow aquifer zone, while MW-03RB is screened in the upper portion of the deep aquifer zone. PCE has been detected in Sunnyside Park shallow zone well MW-04, with current concentrations of approximately 50 µg/L, and in the perched zone well MW-29A, with a concentration of 11 µg/L, likely because of the release from the sanitary sewer. Low concentrations of TCE were detected at several wells at the site, ranging from 1 to 12 µg/L.

Surface water

The seeps and springs in the ESS area are due to the unconfined shallow aquifer intercepting ground surface within the area of steeply dipping topography east of the East Bench Fault. The shallow portion of the shallow aquifer surfaces and the deeper portion of the shallow aquifer is artesian; therefore, a substantial portion of the shallow aquifer discharges to the surface in the ESS area. A total of 96 surface water samples were collected from 55 locations. PCE was detected at 49 locations, with concentrations ranging from 0.13 J µg/L to 82 µg/L.

Soil Gas and Indoor Air

Source Area

In the source area, a soil gas plume and subsequent potential for VI into indoor air in the Building 6 and 7 area is most likely due to dissolved PCE source mass in the vadose zone. The highest PCE concentrations in soil gas observed were collected beneath Building 6 on the VAMC campus, ranging from 19,641 to 46,000 micrograms per cubic meter ($\mu g/m^3$, collected from VP-04). These elevated concentrations were observed at subslab vapor points in the vadose zone, showing that the soil to soil gas migration pathway is complete.

Indoor air samples were initially collected from Buildings 6, 7, 13, and 20 in January and February 2019. No detections of PCE were observed in Buildings 13 and 20. The maximum indoor air PCE concentration observed in Building 7 was 4.76 $\mu g/m^3$, below the industrial risk-based screening level (RBSL) for indoor air (47 $\mu g/m^3$). Ten samples collected in Building 6 exceeded the industrial RBSL for PCE in indoor air; however, six of these samples were measurements of interior sources (chemical containers) in the brake and wheel cleaning area in the electrician shop, and the remaining four samples were of indoor air in or near the electrician shop. After removal of these containers, concentrations decreased to below the industrial RBSL. In September 2019 and March 2021, no indoor air samples collected from Buildings 6 and 7 exceeded the industrial RBSL for PCE, including a sample collected near the electrician shop. While the VI pathway may be complete at Buildings 6 and 7, it is likely insignificant.

In the Sunnyside Park area, the soil gas plume is most likely due to the release of contaminated water from breaks in the sanitary sewer, at depths closer to the surface than groundwater. All samples collected along the sanitary sewer had detections of PCE; however, no samples exceeded the industrial soil gas RBSL of 1,600 µg/m³ PCE. While PCE was detected in soil gas, the lack of overlying structures means the VI pathway is not complete at Sunnyside Park.

East Side Springs

The development of a soil gas plume in the ESS area is due to volatilization of volatile organic compounds (VOCs) from the groundwater plume and migration through the vadose zone; therefore, the area of interest for soil gas and indoor air impacts is defined by the proximity to and the concentrations within the groundwater plume, along with thickness of the soils above groundwater. Also, in the ESS area, contaminated groundwater daylights at the surface and is, at some locations, actively removed from basements using sumps or diverted from properties using French drains, water features, and constructed streams. In these cases, indoor air impacts may not be due to VI of soil gas but intrusion of groundwater and surface water.

A total of 130 soil gas samples were collected in the ESS area, with 70 samples containing detectable PCE. Seven samples exceeded the residential RBSL for PCE in soil gas (360 µg/m³), with a maximum concentration of 4,400 µg/m³ measured at RG-08 in August 2021.

A total of 111 structures have been sampled at the site. These include residences, businesses, schools, churches, and VAMC campus buildings. Of the 111 structures sampled, 84 are within the now-defined VI study area (EPA 2015). In total, 23 structures had at least one sample that exceeded the residential RBSL for PCE (11 µg/m³) or TCE (2.1 µg/m³), and 6 of those structures had at least one sample that exceeded the Tier 1 removal action level for PCE (41 µg/m³) or TCE (2.2 µg/m³). Two of these structures, 0040-H and 0197-H, had vapor mitigation systems installed as a time-critical removal action. For the other structures where a sample exceeded the RAL, corrective actions taken included floor crack sealing and filling a dry floor drain p-trap with water. Following corrective actions, concentrations of PCE were less than the RBSL (11 µg/m³) at these locations during subsequent confirmation sampling with SUMMA canisters. The structures with exceedances of the RBSL and Tier 1 removal action level are generally located in the vicinity of the intersection of 900 South and 1200 East, where groundwater becomes very shallow, the 50 µg/L PCE plume is present, and concentrations of PCE in soil gas exceed the residential RBSL.

Contaminant Fate and Transport

In the vadose zone, contaminant dissolved source mass migration is controlled by gravity and capillary mechanisms and forces. As contaminants have reached groundwater, contaminant transport mechanisms in the saturated zone (i.e., advection, dispersion, diffusion) move contaminants into areas downgradient from the source. As contaminants partition into the vapor phase (from either dissolved source mass in the vadose zone or the groundwater plume in the saturated zone), migration in the vapor phase occurs primarily via diffusion and advection. As contaminants in all phases (i.e., dissolved source mass in vadose zone, dissolved in groundwater, and vapor as soil gas) migrate through the subsurface, partitioning into pore water and sorption onto the soil matrix can occur. Because of the low measured concentrations of COPCs in soil, it is possible that at this point, all remaining source mass in the vadose zone has migrated to groundwater or volatilized to soil gas. However, it is also possible that the remaining dissolved source mass in the vadose zone has migrated laterally along boundaries (i.e., silt and clay layers).

Releases of PCE on the VAMC campus and Sunnyside Park likely migrated vertically as well as laterally to the west-northwest along clay layers and in perched groundwater and encountered the shallow aquifer west of Buildings 6 and 7 near MW-01S, MW-02, MW-03R, and in Sunnyside Park near MW-04. Downward migration of PCE from the shallow aquifer to the upper portion of the deep aquifer has occurred in the vicinity of MW-03R. After encountering groundwater, the PCE plume migrates west along the direction of groundwater flow. The East Bench Fault Spur does not appear to be an impediment to groundwater flow and contaminant migration; however, to the west of the fault spur, changes in hydraulic conductivity and topography cause groundwater flow direction and the PCE groundwater plume to shift to the southwest. The maximum concentration along the 1400 East transect was observed at MW-19 (89 μg/L). The maximum concentrations in the ESS area were observed at MW-13D (75 μg/L) and MW-13L (51 μg/L).

Between the East Bench Fault Spur and the East Bench Fault, topography and horizontal groundwater gradients steepen significantly. Along the hillside between approximately 700 South and Michigan Avenue, groundwater intersects the ground surface, and seeps and springs are observed. The East Bench Fault is acting as a semipermeable barrier to flow. Groundwater flowing from the site is therefore laterally restricted at this fault, with groundwater both flowing through the fault and mounding up at the eastern face. This mounding results in surface discharges to springs and seeps and flowing artesian wells just east of the fault. Both the shallow and deeper portion of the shallow aquifer contribute to the surface water discharges observed in this area.

A comprehensive groundwater flow and solute transport model was created and applied to support the OU1 RI. The modeling objectives were to improve the understanding of the fate and transport of the PCE plume under a range of potential hydrologic and hydraulic conditions, to assess historical flow and transport pathways associated with nearby public supply and irrigation well pumping, and to support the development of the conceptual site model and future remedy alternative evaluation. Historical simulations indicate that pumping at municipal supply well SLC-18 was likely to have drawn in PCE from a VAMC campus source between 1997 and 2004, however, the PCE plume is not expected to migrate toward SLC-18 if SLC-18 is not operating and only irrigation pumping from the University of Utah and Mount Olivet Cemetery is occurring. Historical simulations also represented the current extent of the PCE plume and time line of plume development relatively well. Simulations under several future scenarios indicate that historical average SLC-18 pumping (average rate of 566 gpm between 1979 and 2004) deflects groundwater flow slightly toward the northwest but does not pull the PCE plume into SLC-18 at a concentration exceeding its MCL. If a significant increase in pumping occurs at SLC-18, a change in the deep aquifer zone groundwater flow field would occur with deep aquifer zone PCE mass drawn northwest toward SLC-18.

Natural attenuation occurrence and potential at the site were evaluated using a three-tiered line-of-evidence approach: primary line of evidence (plume stability evaluation), secondary line of evidence (assessment of indirect evidence of attenuation), and tertiary line of evidence (direct evidence measured by compound specific isotopic analysis [CSIA]). Based on these assessments:

- Total molar concentrations of PCE and TCE are decreasing, showing no significant trend, or stable.
- Contaminant mass flux and mass discharge estimates at transects across the plume suggest the source strength is relatively weak. The areas of the plume closest to the ESS area are experiencing the highest contaminant mass discharge.
- There is limited evidence for natural biodegradation, sorption, and abiotic degradation of VOCs in the plume. Degradation of PCE was not confirmed using CSIA, indicating that degradation is likely not occurring at any significant rate at the site.

Risk Assessment

A baseline human health risk assessment (HHRA) and screening-level ecological risk assessment (SLERA) were prepared to evaluate potential risks to human and ecological receptors from exposures to contaminated site media.

The HHRA risk evaluation showed that the following exposure scenarios would not result in unacceptable risks:

- Exposures to chemicals in soil, sediment, surface water (i.e., seeps/springs and daylighting groundwater), and outdoor air for all receptor populations and all exposure scenarios
- Residential and outdoor worker exposures to chemicals in shallow groundwater during digging activities, such as a resident digging in a garden or an outdoor maintenance worker performing sprinkler line maintenance
- Inhalation exposures to volatiles in irrigation water (derived from deep wells), based on the expectation that volatiles would rapidly dissipate in outdoor air
- Consumption of homegrown produce that has been irrigated with seep/spring water, because accumulation of PCE and its daughter products into homegrown produce is unlikely
- Construction worker exposures to volatiles in trench air derived from shallow groundwater and/or soil gas
- Student and teacher exposures to indoor air inside schools

The HHRA exposure scenarios which had potential to result in unacceptable risks are as follows:

- Exposures to chemicals in groundwater used for potable purposes in a hypothetical future scenario
- Current and future exposures to chemicals in indoor air in the ESS area, because of volatilization from shallow groundwater and entering structures through the VI pathway

The SLERA risk conclusions are as follows:

- Exposures to soils/sediments will not result in unacceptable risks to wildlife or to domestic pets that incidentally ingest soil/sediment or feed on aquatic and terrestrial organisms.
- No unacceptable risks are expected for terrestrial plants from exposures to organic chemicals in soil.
- There is the potential for aquatic organisms to have unacceptable exposures because of PCE exposures in sediment within site seep/springs or aquatic features in residential yards (e.g., small ponds). However, these locations are unlikely to represent pristine natural aquatic habitats, and effects from any site-related exposures are likely to be minor.

Summary and Conclusions

Two potential sources of contamination at the site have been identified: (1) surface and near-surface releases of dry-cleaning condensate in the Building 6 and 7 area on the VAMC campus, and (2) subsurface release through the sanitary sewer line defect in Sunnyside Park. The investigations completed during this RI have provided data to support evaluation of the sources and release mechanisms of PCE at the site, have identified and characterized sources of PCE in the vadose zone at Buildings 6 and 7 and Sunnyside Park, and have delineated the lateral and vertical extent of the chemicals of concern (COCs) for the site in groundwater.

The primary contaminant in groundwater is PCE (maximum current concentrations of approximately 250 µg/L at MW-01S, MW-02, and MW-03R), with low concentrations of TCE (approximately 1 to 12 µg/L) present because of localized areas of PCE degradation or possible non-VAMC related sources.

Historical transport simulations concluded that the PCE migration through the aquifer appears to be consistent with the observed site time line, and that municipal pumping at SLC-18 was likely to have drawn low concentrations of PCE from a source on the VAMC campus via the deep aquifer zone but likely did not have a substantial effect on the shallow aquifer zone plume.

Trend analysis demonstrated that concentrations of PCE in groundwater are either decreasing or are stable throughout the plume, and evaluation of trends and mass discharge along the plume suggests that remaining source strength is relatively weak. Natural attenuation through chemical or biological processes (biodegradation, abiotic degradation) is likely not occurring at measurable rates. Physical attenuation processes, such as volatilization, discharge to surface, dispersion, and dilution, are likely contributing to the stable or reducing contaminant concentration trends observed at the site.

The risk assessment identified two site-related COCs: PCE and TCE. During the RI, 1,4-dioxane was evaluated as a potential COPC but was detected only sporadically in groundwater; only two detections exceeded the EPA tap water screening level of 0.46 µg/L. The detections of 1,4-dioxane occurred only in the ESS area and not at locations with the highest concentrations in the PCE plume closer to the VAMC campus. Therefore 1,4-dioxane in groundwater does not appear to originate from the site. Where present in indoor air samples, 1,4-dioxane is likely due to interior background sources; 1,4-dioxane should not be considered a COC for the site and further sampling for 1,4-dioxane is not necessary.

The exposure scenarios that had potential to result in unacceptable risks are as follows:

- Exposures to chemicals in groundwater used for potable purposes in a hypothetical future scenario
- Current and future exposures to chemicals in indoor air in the ESS area because of volatilization from shallow groundwater and entering structures through the VI pathway

Currently, there is no potable use of contaminated groundwater at the site. If contaminated site groundwater were used as a potable source in the future by residents, unacceptable exposures have the potential to occur primarily because of inhalation exposures during domestic water use (e.g., during showering) and ingestion of drinking water.

The VI pathway is complete for some structures in the ESS area. Only Property 0040-H (and possibly Property 0197-H) was identified as having indoor air concentrations that may result in unacceptable human health risk. Despite attempts to sample all residential properties within the ESS area where there is a higher potential for VI impacts, measured indoor air results are not available for all properties. Thus, it is possible there could be a few properties within the ESS area that have not been sampled where VI exposures may result in unacceptable risks.

Based on the data collected during the RI and evaluated during the risk assessment, the following preliminary remedial action objectives (RAOs) are recommended to be used during the feasibility study:

- Groundwater: mitigate human exposure to site-related COCs in groundwater used for potable purposes (e.g., showering, drinking) at concentrations exceeding protective levels under a future scenario
- Groundwater: reduce the mass of site-related COCs in groundwater such that concentrations remain below MCLs at municipal extraction well SLC-18 during pumping at its maximum allowable rate
- Indoor air: mitigate exposure of building occupants in the ESS area to site-related COCs in indoor air derived from the VI pathway at concentrations exceeding protective levels
- Return the site to unlimited use/unrestricted exposure

These preliminary RAOs will be refined as necessary during identification of applicable or relevant and appropriate requirements during the feasibility study. Final RAOs will be presented in the record of decision for the site.

Additional data collection activities may be warranted to support remedial alternatives evaluation during the feasibility study and to evaluate additional structures in the ESS area for VI. These activities include collecting additional data to evaluate the extent of PCE in the upper portion of the deep aquifer zone and additional indoor air sampling in the ESS area focusing on areas where the greater than 50 µg/L PCE groundwater plume is most likely present, where PCE or TCE in soil vapor exceed the residential RBSL, and where the depth to groundwater is 20 feet or less.

Section 1

Introduction

Under U.S. Army Corps of Engineers (USACE), Kansas City District Contract No. W912DQ-18-D-3008, Task Order No. W912DQ19F3048, CDM Federal Programs Corporation (CDM Smith) was directed to perform the remedial investigation (RI) for Operable Unit (OU) 1 of the 700 South 1600 East Tetrachloroethene Plume site. The site is located near the George E. Wahlen Veterans Affairs Medical Center (VAMC) in Salt Lake City, Utah (**Figures 1-1** and **1-2**). The VAMC operated a part-time dry-cleaning operation in Building 7 that used tetrachloroethene (PCE) over a 6-year period in the late 1970s and early 1980s. During this period, dry-cleaning residuals were disposed of into the sanitary sewer. PCE-contaminated groundwater is present beneath the VAMC property and in areas hydraulically downgradient, extending to the East Side Springs (ESS) area[1] (**Figure 1-2**). The RI report has been prepared in accordance with U.S. Environmental Protection Agency's *Guidance for Conducting Remedial Investigations/Feasibility Studies under CERCLA* (EPA 1988).

1.1 Purpose of Report

This report represents the final documentation for the RI and describes the nature, extent, fate, and transport of contamination associated with the site. This includes understanding the hydrogeologic features and natural attenuation processes that control contaminant fate and transport, as well as assessing the source area(s). It also provides estimates of current and future potential risks to human health and the environment based on data collected during the RI and from previous investigations.

1.2 Regulatory History and Authority

The site was investigated under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority after an initial detection of PCE in an irrigation well at the Mount Olivet Cemetery (**Figure 1-2**) in 1990 (UDEQ 2012). Utah Department of Environmental Quality (UDEQ)'s Division of Environmental Response and Remediation, under agreement with the U.S. Environmental Protection Agency (EPA), conducted a site inspection from 1996 to 1999 (UDEQ 2012). As a result of the site inspection, EPA returned to the site in 2005 to prepare a Hazard Ranking System (HRS) package to propose the site for inclusion on the National Priorities List (NPL) (EPA 2012). The decision to list the site on the NPL was deferred to 2006 to allow local officials to seek congressional funding to address the contamination (EPA 2012).

In 2004, PCE was detected in municipal drinking water well SLC-18 (**Figure 1-2**) during sampling conducted by UDEQ and EPA (UDEQ 2012). In 2010, in response to an oil pipeline break near Red Butte Creek, water samples were collected by Salt Lake City Department of Public Utilities (SLCDPU) from Red Butte Creek and springs and seeps emanating along the East Bench Segment

[1] The ESS area is the project-specific name for the area east of the Wasatch Fault where surface seeps and springs are present. The area understood to be the ESS spans a substantially larger geographical area than the groundwater plume. Unless specified otherwise, when the term ESS area is used herein, it is intended to mean the smaller extent within the ESS area where groundwater contamination is present.

of the Wasatch Fault (East Bench Fault) west of 1300 East Street. PCE was detected in several of the springs and seeps downgradient of the identified PCE plume. As a result of these detections, the site was placed in the Comprehensive Environmental Response, Compensation, and Liabilities Information System in January 2011 (EPA 2012). Several additional investigations were performed to identify potential source areas and the nature and extent of PCE contamination (UDEQ 2012; MWH 2012).

On September 18, 2012, EPA completed an HRS evaluation of the site pursuant to CERCLA that resulted in a score of 50. The site was listed on the NPL on May 24, 2013, with the VAMC named as a potential responsible party based on the HRS evaluation (EPA 2014a).

A tri-party Federal Facility Agreement was signed on November 7, 2016, between the U.S. Department of Veterans Affairs (VA), the State of Utah, and EPA (EPA 2016a), regulating the site under CERCLA. UDEQ is the designated single state agency responsible for applicable state programs to be carried out as part of the project and to ensure that environmental and public welfare interests of the State of Utah are addressed. VA is the lead agency responsible for implementing response actions under CERCLA at the site while UDEQ and EPA Region 8 provide regulatory oversight of the RI activities.

1.3 Report Organization

This document is organized in the following sections and appendices:

- **Section 1 – Introduction**. Provides the report purpose and organization.
- **Section 2 – Site Location and Background**. Provides a discussion of the regulatory background of the site, general site setting, and previous investigations conducted at the site.
- **Section 3 – Study Area Investigation**. Presents the objectives of the RI and describes the RI field activities.
- **Section 4 – Physical Characteristics of the Study Area**. Discusses the regional and site physical setting, including surface features, meteorology, geology, hydrogeology, surface water hydrology, and land use.
- **Section 5 – Nature and Extent of Contamination**. Presents the results of the RI investigation and describes the nature and extent of contamination in affected environmental media.
- **Section 6 – Contaminant Fate and Transport**. Discusses the applicable mechanisms for contaminant transport and degradation. This section also presents the conceptual site model and numerical groundwater modeling results for the site.
- **Section 7 – Risk Assessment.** Presents a summary of the human health and ecological risk assessments.
- **Section 8 – Summary and Conclusions.** Provides a summary of the findings and conclusions for the investigation.

- **Section 9 – References**. Provides a list of references used to prepare this report.

Section 2

Site Location and Background

This section presents a general description and history of the site, previous investigations, and previous remedial actions. Additionally, the site preliminary chemicals of potential concern (COPCs), potential exposure pathways, and screening criteria are discussed.

2.1 Site Description

The site is in Salt Lake City, near the University of Utah and the front (west side) of the Wasatch Mountains (**Figure 1-1**). The site is in a mixed commercial and residential area, and the major streets that bound it include 500 South to the north, Michigan Avenue to the south, 1100 East to the west, and Foothill Drive to the east (**Figure 1-2**). The Mount Olivet Cemetery, several schools, University of Utah athletics facilities, and residential neighborhoods are within the site. Future land use of the site is likely to remain similar to current conditions because of the well-established neighborhoods, parks, and schools.

Surface topography in the area of the site generally slopes to the west-southwest, with surficial geology generally becoming finer-grained from east to west. The site elevation ranges from about 4,720 feet above mean sea level (amsl) near the suspected source area (Building 7) on the VAMC campus to about 4,380 feet near 1100 East and 900 South, which is near the western edge of the site (**Figure 1-2**). The East Bench Fault is located within the plume footprint near the western edge of the site, trending in a predominately north-south direction.

Historically, the site was divided into two OUs to investigate potential impacts to the environment and downgradient receptors. Accelerated Operable Unit 1 (AOU1) was primarily focused on the immediate public health concerns related to vapor intrusion (VI) in the ESS area, a residential area generally bounded by 500 South and Michigan Avenue (north to south) and between 1300 East and 900 East (east to west) (**Figure 1-2**). OU2 was designated for investigation and delineation of the groundwater PCE plume and source area. However, in 2019, the VA determined, with regulatory approval, that AOU1 and OU2 will be combined into a single OU, OU1. This decision was based on three key RI-related findings, suggesting a connection between the contamination present in the ESS neighborhood with PCE contamination near Building 7 and the plume downgradient of the VAMC:

1. Identification of a potential PCE source at the VAMC campus near Building 7.
2. Indication, from the installation of monitoring well network transects, of a PCE plume that appears to originate near the VAMC campus.
3. Indication from further investigation of AOU1 that there is not a pervasive vapor intrusion risk to the public; therefore, it is no longer necessary to address VI risks under an accelerated OU.

2.2 Site History

The VAMC was constructed in the late 1940s on property that was formerly part of the Fort Douglas (U.S. Army) military post. A dry-cleaning facility on the VAMC property was operational in Building 7 from approximately 1976 through 1984. A single "closed loop" dry-cleaning system was operated, meaning the system contained a distillation process for the recovery of PCE at the end of each cycle. The condensate from the distillation process was emptied into a vitrified clay drain line attached to the sanitary sewer. This method of disposal was common practice in the 1980s (EPA 2012). Review of historical building construction drawings consisting of "as-built" drawings of the original buildings and plans for construction through the late 1960s, as well as historical photographs, indicate that gravel sumps, dry wells, a scale pit, an underground storage tank, and 55-gallon drum storage areas were present in the vicinity of the former dry-cleaning facility; however, there is no evidence that these features would have been associated with the dry-cleaning operations (Jacobs 2019a). Dry-cleaning condensate is composed of high concentrations of dissolved PCE; therefore, PCE product (i.e., dense non-aqueous phase liquid [DNAPL]) is not expected to occur at the site.

PCE was first detected in 1990 during sampling of the Mount Olivet Cemetery irrigation well (UDEQ 2000). A follow-up site inspection, conducted by UDEQ's Division of Environmental Response and Remediation, found PCE at SLCDPU Drinking Water Well No. 18 (SLC-18). Site investigations were conducted from 1996 to present to further refine the source and extent of groundwater contamination. These investigations and findings are further discussed in Section 2.3, and sampling results of the Mount Olivet Cemetery irrigation well and SLC-18 drinking water well (as well as other irrigation wells in the area) are presented in **Table 2-1**.

As a result of these detections, the site was placed in the CERCLA Information System in January 2011. A preliminary assessment/site inspection was conducted by UDEQ's Division of Environmental Response and Remediation in 2011, which determined that PCE and its breakdown products are present in spring water and shallow groundwater, thus posing a potential human health threat (UDEQ 2011). In September 2012, EPA released the HRS site score and determined the site was eligible for NPL designation. HRS documentation identified the sewer line originating from the VAMC campus as the source of the groundwater contamination and determined there was insufficient evidence to identify additional potential sources (EPA 2012). The site was listed on the NPL on May 24, 2013, with the VAMC named as a potential responsible party (EPA 2014a).

The former AOU1 RI was performed to evaluate the potential for VI because of the shallow groundwater contamination in the ESS area. The investigation activities associated with the AOU1 RI were completed from 2014 through 2017. This investigation included indoor air sampling, soil gas sampling, surface water sampling of ESS seeps and springs and in Red Butte Creek, installation of monitoring wells within ESS, and groundwater sampling. The planning documents associated with the AOU1 RI are listed in **Table 2-2** and further information for the investigation and the findings is presented in Section 3 (along with the more recent OU2 and OU1 investigations and findings). A time-critical removal action (TCRA) was implemented at one home within the ESS area and is further described in Section 2.4.

Following the AOU1 RI, OU2 was designated for investigation and delineation of the PCE source area and groundwater plume, including the AOU1 contaminated groundwater. OU2 investigations began in 2018. However, in 2019, the VA determined that AOU1 and OU2 would be combined into a single OU, OU1. This decision was based on the three key RI-related findings described above.

2.3 Previous Investigations

Because of the initial detection of PCE in 1990, numerous investigations have been conducted to characterize the source of contamination and the potential threats to human health and the environment. The historical investigations prior to the AOU1 and OU2 investigations are summarized below and are included on **Table 2-3**.

2.3.1 SLCDPU Mount Olivet Irrigation Well Monitoring 1990–1997

The initial discovery of PCE was in the Mount Olivet irrigation well (shown in **Figure 2-1**) in 1990 by SLCDPU at a concentration of 32 micrograms per liter (µg/L) (EPA 2012). This well was resampled in 1995 by EPA with detections of PCE, trichloroethene (TCE), and cis-1,2-dichloroethene (DCE) at 85, 1.3, and 2.8 µg/L, respectively. In 1997, PCE concentrations reached a peak of 184 µg/L and subsequent monitoring by EPA, UDEQ, and VA have shown decreasing concentrations since. Because of access restrictions, this well has not been sampled since 2016 (EA 2019).

2.3.2 EPA Soil Gas Investigation 1995–1996

EPA conducted soil gas investigations in 1995 and 1996 in response to the PCE detections at the Mount Olivet irrigation well.

In 1995, soil gas samples were collected from 15 locations and analyzed using a portable gas chromatograph for volatile organic compounds (VOCs) as follows (E&E 1995):

- Seven locations surrounding the Mount Olivet irrigation well (**Figure 2-1**)
- One location near the University of Utah/former Utah Army National Guard (UANG) at the intersection of Guardsman Way and 500 South (**Figure 2-1**)
- Two locations at the U.S. Forest Service (USFS) helicopter pad on the southeast side of Guardsman Way (**Figure 2-1**)
- Five locations around the UANG maintenance buildings at the southwest end of Guardsman Way (**Figure 2-1**)

Two of the soil gas samples (one located on the Mount Olivet cemetery property and one located near a UANG maintenance building) had results of 16 micrograms per cubic meter (µg/m^3) PCE and 1 µg/m^3 TCE.

In 1996, soil gas samples were collected from three locations at approximately 5 feet below ground surface (bgs) using direct-push technology (DPT); they were analyzed by EPA SW-846 Method 8260 modified for gaseous VOCs as follows (UOS 1996):

- One composite sample from three locations near Building 7 on the VAMC campus

- Two samples adjacent to Red Butte Creek on the Fort Douglas Army Reserve Center
- One sample adjacent to Building 515 on the University of Utah property (**Figure 2-1**)

The sample collected adjacent to Building 515 on the University of Utah property had detectable results of 49 $\mu g/m^3$ of PCE and 3.4 $\mu g/m^3$ of TCE.

2.3.3 UDEQ Site Investigation 1996–1999; EPA Monitoring Well Installation and Sampling 1998–2012

Under agreement with the EPA, UDEQ's Division of Environmental Response and Remediation conducted a site investigation. This investigation included evaluation of the soil gas data EPA collected, groundwater sampling EPA conducted in 1998 and 1999, and spring water sampling in 1998.

In 1998 and 1999, six monitoring wells (four individual wells and one nested shallow/deep well) were installed at the site by an EPA Superfund Technical Assessment and Response Team contractor (EPA-MW-01S, EPA-MW-01D, and EPA-MW-02 through EPA-MW-05). Although the sample naming convention for these wells originally included "EPA" at the start of the sample identification, this was removed during later investigations and will therefore be referred to using the updated sample naming convention. These wells were installed on and near the VAMC campus. Initial data from the wells in 1998 indicated PCE detections at MW-01S, MW-02, MW-03 and MW-04 of 320, 290, 11 and 190 μg/L, respectively (UDEQ 2000). MW-03 was abandoned in fall 1999 with the last reported sample indicating a PCE concentration of 7.1 μg/L. An additional monitoring well (MW-06) was installed in 1999 south of the VAMC campus. This well was sampled in January 2000 and February 2005 with no detections of VOCs (USGS 2005). Groundwater sampling of these wells continued by EPA and UDEQ through 2012. No detections of PCE were identified in MW-05 and MW-06, and MW-01S and MW-02 were found to consistently contain the highest PCE concentrations.

Water level measurements taken during this investigation indicated a northwest hydraulic gradient for the shallow monitoring wells (MW-01S, and MW-02 through MW-06).

Additionally, four springs located west to southwest of the Mount Olivet Cemetery were sampled in 1998: Our Lady of Lourdes Spring, Benson Spring, Smith Spring, and Bowen Spring (**Figure 2-1**). Samples were analyzed for VOCs and there were no VOC detections.

During this investigation, the source area(s) for the PCE contamination and the extent of the plume were not clearly identified. However, a sewer line originating from VAMC Building 7 which formerly housed a dry-cleaning facility (**Figure 2-1**) was identified as a potential source based on a 2003 survey that documented multiple physical defects in the sewer line. Defects included cracks, root penetrations, offsets, and sag in the pipe, and evidence of previous breaks and repairs to the clay pipe were noted (EPA 2012).

2.3.4 USGS Groundwater Sampling 2004–2005

On behalf of the EPA, the U.S. Geological Survey (USGS) conducted a groundwater survey in 2004 and 2005. This study included groundwater level measurement and sample collection from monitoring and supply wells. This included two samples from the Fountain of Ute well at two depths (140 feet and 260 feet), one sample from SLC-18, and samples from each of the EPA monitoring wells. No PCE was detected in the Fountain of Ute well (USGS 2005). PCE was detected in SLC-18 (0.2 µg/L) and in all EPA-installed wells except for MW-05 (EPA 2012).

2.3.5 EPA and UDEQ Site Investigation 2004–2005

In 2004, a site investigation conducted by UDEQ and EPA was performed to investigate potential PCE releases along the sewer line originating from VAMC Building 7. Soil samples were collected along the sewer line at 50-foot intervals at depths between 2 and 13 feet bgs between Building 7 and Sunnyside Avenue. No VOCs were detected in soil samples. Groundwater sampling was also completed at four wells (SLC-18, Mount Olivet Irrigation Well, MW-01D, and MW-05). PCE was detected in drinking water well SLC-18 at a concentration of 2.23 µg/L and the well was temporarily removed from service (UDEQ 2012). During this event, PCE was also measured in the Mount Olivet Cemetery irrigation well at a concentration of 128 µg/L (UDEQ 2012). Further groundwater sampling was conducted in October 2005 to collect samples from the EPA monitoring wells. The highest detection was observed in MW-01S at 278 µg/L. In July 2005, EPA sent a CERCLA Section 104(e) information request to the VAMC inquiring about their use of PCE. In response to EPA, the VA detailed the use of PCE in an on-site closed-loop dry cleaning system that discharged condensate from the distillation process to the sanitary sewer.

As a result of the site investigation, EPA prepared an HRS package to propose the site for inclusion on the NPL. This package listed the suspected source of the contamination as the dry-cleaning facility in Building 7 at the VAMC. The decision to list the site on the NPL was deferred to 2006 to allow local officials to seek congressional funding to address the contamination.

2.3.6 VA Soil Gas Investigation 2007

In 2007, the VA conducted a soil gas investigation along the sewer line associated with the former dry-cleaning facility at Building 7 (**Figure 2-1**). Forty-eight passive soil gas samplers were installed at a depth of approximately 1 foot along the sewer line running south from Building 7 to Sunnyside Avenue. Three samples collected directly adjacent to the loading dock area of Building 7, where the sewer line exits the building, and one sample collected near Manhole 22658 in Sunnyside Park had detectable levels of PCE. All other samples collected were non-detect (IHI Environmental [IHI] 2007).

2.3.7 SLCDPU Surface Water Springs Investigation 2010

In 2010, approximately 800 barrels of crude oil was released from a Chevron pipeline into Red Butte Creek and Liberty Park Pond (**Figure 2-1**). As a result of this release, the SLCDPU sampled 11 surface water springs along the East Bench Fault to delineate the extent of crude oil contamination. PCE was detected in 6 of the 11 sampled springs, with concentrations ranging between 2.5 µg/L and 40.4 µg/L (EPA 2012). The area containing the surface water PCE detections was defined as the ESS area in subsequent investigations. The surface water detections were downgradient of the PCE plume at the site, and the groundwater plume was identified as a probable source of the surface water PCE contamination.

2.3.8 UDEQ ESS Preliminary Assessment and Site Investigation 2011

As a result of the 2010 springs sampling, additional sampling in the ESS was conducted by UDEQ in 2011. The results of these sampling events and the previous site investigations were summarized in the Site Investigation Analytical Results Report (UDEQ 2012). The sampling for this event included surface water/spring water, groundwater, soil, and soil gas sample collection.

Three spring locations were sampled; two samples had detectable concentrations of PCE of 3.7 µg/L and 20 µg/L; and the third sample had TCE at 4.6 J µg/L. No other VOCs were detected in any of the samples.

Ten groundwater samples were collected using DPT in the area of the contaminated springs. Two samples contained detectable PCE at 6.1 µg/L and 8 µg/L. TCE was detected in a third sample at 12 µg/L. Groundwater level measurements were collected at all locations and ranged from 6.5 to 10 feet bgs.

Using DPT, two soil samples were collected with no detections of PCE or TCE and eight soil gas samples were collected from three locations with two detections of PCE at concentrations of 2.8 $\mu g/m^3$ and 6.4 $\mu g/m^3$. These locations were upgradient of the contaminated springs.

UDEQ concluded that the limited PCE detections on the VAMC campus was likely the source of the PCE contamination in the ESS area. Following these investigations, the EPA released the HRS site score and determined the site was eligible for NPL designation. In 2013, the VAMC was identified as a potentially responsible party and the site was listed on the NPL.

2.3.9 VA Pre-RI Groundwater Sampling 2014, 2016

Prior to the start of the AOU1 RI, VA completed groundwater sampling in 2014 and 2016. In 2014, VA collected samples from the EPA monitoring wells and the University of Utah Well #1. The highest detection of PCE was collected from MW-01S (240 µg/L). PCE was not detected in the University of Utah Well #1 (FE 2014). In 2016, VA collected samples from the EPA monitoring wells, the University Well #1, SLC-18, and the Mount Olivet Cemetery irrigation well in April, July, and September. PCE was detected in the Mount Olivet Cemetery Irrigation Well (40 µg/L) and in four of the EPA monitoring wells (MW-01S/D, MW-02, and MW-04) ranging from 1.9 µg/L to 210 µg/L (EA 2017a).

2.3.10 Previously Identified Potential Source Areas

The historical investigations described above did not definitively identify a source area, although the investigation findings suggested the likely source of PCE contamination was near Building 7 on the VAMC campus. Several other potential source areas were identified throughout the investigations and were summarized in the AOU1 RI (EA 2019).

The sewer line from VAMC Building 7 which housed the former dry-cleaning facility (**Figure 2-1**) was identified as a potential source during the HRS investigation conducted at the site (EPA 2012). This conclusion was reached through multiple observations and investigations. In the early 1980s, SLCDPU employees observed discolored water and odors of dry-cleaner solvent during cleaning of the sanitary sewer line. EPA's soil gas investigation in 1996, as described above, included a sample near Building 7 with results of 1.9 $\mu g/m^3$ PCE. The sewer video survey conducted in 2003 by SLCDPU indicated multiple defects in the clay pipe including cracks, root penetrations, offsets, and a pipe sag. A soil gas investigation VA conducted in 2007 included the collection of soil gas along the sanitary sewer line; PCE was detected in four samples, three of which were collected where the sewer line exits Building 7. In December 2018, soil gas samples were collected adjacent to Buildings 6 and 7 and elevated concentrations of PCE as high as 3,129 μg/m^3 were identified. Further investigations, described in this report, and these previous observations and investigations led to the conclusion of the former dry-cleaning operation likely being a primary source of PCE contamination.

The former UANG vehicle maintenance facility (**Figure 2-1**) was also considered a potential source of the contamination. The facility is located east of the Mount Olivet Cemetery and was investigated in 1995 by EPA. Fifteen soil gas samples were collected in the vicinity of the facility with only one of the samples reporting a detection of 1 μg/m^3 TCE.

The former USFS helicopter pad is located near the northeast corner of the intersection of Sunnyside Avenue and Guardsman Way (**Figure 2-1**). This land has been converted to a University of Utah softball field and was sampled during the 1995 soil gas survey conducted by EPA. All soil gas results were below detection limits.

2.4 Previous Remedial Actions

Based on the AOU1 RI VI assessment (which is described in Section 3), a TCRA was implemented at one home within the ESS area. Residential VI investigations began in 2015 following the VI screening protocol outlined in Appendix H of the AOU1 remedial investigation work plan (RIWP) (FE 2015a). Residential indoor air risk-based screening levels were developed in the Screening Action Memorandum (CH2M 2015) and were split into tiered removal action levels (RALs). Further discussion of the tiered RALs is provided in Section 2.7.

During the 2016 VI investigations, the residence 0040-H exhibited PCE concentrations exceeding the residential Tier 1 RAL for PCE (41 μg/m^3) in the kitchen and basement samples with concentrations of 59 J μg/m^3 and 74 J μg/m^3, respectively. Based on these exceedances, the installation of a vapor intrusion mitigation system (VIMS) was proposed in the action memorandum and detailed plans for installation were summarized in the Removal Action Work Plan (VA 2016, CTI 2016). Prior to commencing the TCRA, VA installed a temporary vapor filtration system. The VIMS was installed at the residence on November 18, 2016 (CTI 2017), replacing the temporary vapor filtration system. The VIMS consisted of an Amaircare 10000 whole house air purifier installed on the suction side of the house furnace. A vacuum-induced damper was added to the suction of the furnace as well. The air purifier consisted of two AirPura W600 whole house filter units with VOC filter packages, which include a 26-pound carbon filter, a HEPA barrier filter, and a pre-filter.

Because of noise complaints from the homeowner, portable air purifying units were re-installed in the residence to reduce indoor air PCE concentrations in lieu of the whole-house air filter system. An amendment to the action memorandum (VHA 2021) has been approved to allow for implementation of alternative actions that may consist of active or passive approaches to mitigate VI. Specifically, these alternatives may require reduced noise and ongoing operation and maintenance, meaning they are less likely to be modified by homeowners. The proposed alternative actions include:

- Installation of subslab depressurization systems to remove contaminated soil vapor from beneath structures present above the plume

- Sealing openings in the floor slab and basement walls (cracks, drains, and other penetrations through the wall or slab) to reduce the potential for soil vapor to enter a structure
- Seal bare earth crawlspaces or basements using a plastic or flexible membrane barrier to reduce the potential for soil vapor to enter a structure

Monitoring, maintenance, and evaluation of effectiveness of the actions taken at 0040-H to meet the RALs is ongoing. A subslab depressurization system and dewatering sump was installed at residence 0040-H in July 2021 to evaluate whether this system could be effective to mitigate VI (CDM Smith 2021o). In March 2022, two indoor air samples were collected in the basement at 0040-H. The subslab depressurization system was operating, but the indoor air filters were turned off to facilitate sampling. PCE results exceeded the Tier 1 RAL in the two samples collected in March 2022. The indoor air data from 0040-H and evaluation of the effectiveness of the subslab depressurization system will be presented in a separate report.

2.5 Chemicals of Potential Concern

A preliminary list of site-related COPCs was developed during completion of the AOU1 RI, including PCE and its degradation product TCE. Additionally, cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC) have been evaluated as they are also degradation products of PCE. The chemical 1,4-dioxane is also included as a preliminary COPC as requested by EPA in a letter dated June 4, 2014, for purposes of characterizing the nature and extent of contamination during the RI (EPA 2014b). The full list of COPCs will be determined in the risk assessment based on a comparison to risk-based screening levels (RBSLs) and is further described in Section 7.

2.6 Potential Exposure Pathways

Identifying potential exposure pathways is driven by delineation of the extent of impacted soil, soil vapor, surface water, and groundwater in the plume and source areas. Potential exposures for the site include exposure to groundwater through drinking water, contact with surface water in residential areas, and contact with contaminated soil gas through VI. These potential exposure pathways and risks associated with them, as well as additional minor pathways, are further described in Section 7.

2.7 Screening Criteria and Interim Action Levels

Screening criteria were specified in the quality assurance project plans (QAPP) for each OU at the site (FE 2015a for AOU1, CH2M 2018 for OU2, CDM Smith 2019a for Phase 1 OU2, and CDM Smith 2020d for Phase 2 OU1). Screening criteria (human-health RBSLs and federal drinking water maximum contaminant levels [MCLs]) in groundwater are presented in **Table 2-4**. Screening criteria (human health-based interim RALs and RBSLs) in indoor air and soil gas are presented in **Table 2-5**. Screening criteria (human health-based RBSLs) in soil are presented in **Table 2-6**.

RBSLs represent a conservative estimate of exposure and are used as screening values to assess the need for further investigation and evaluation. RBSLs are derived for both cancer and non-cancer endpoints based upon a target cancer risk (TCR) of 1E-06 (or 1 in 1,000,000) and a target hazard quotient (THQ) of 1, respectively. The lower of the cancer or non-cancer values is selected as the final RBSL. The RBSLs for soil gas were based upon the indoor air RBSLs divided by the generic soil-gas-to-indoor-air attenuation factor of 0.03 (CH2M 2015).

Interim RALs for indoor air were developed to assess the need for implementing interim removal actions (e.g., VI mitigation) prior to selecting and implementing CERCLA remedial action(s) (CH2M 2015). Tier 1 and Tier 2 RALs were derived using the same methods used for development of the RBSLs, with the exception of the selected TCR and THQ levels. The Tier 1 RALs were calculated using a TCR of 1E-05 (or 1 in 100,000) and THQ of 1. After confirmation of indoor air concentrations greater than the Tier 1 RALs, planning and implementation of interim action, such as a long-term mitigation, would be completed within six months. The Tier 2 RALs were calculated using a TCR of 1E-04 (or 1 in 10,000) and THQ of 3. After confirmation of indoor air concentrations above the Tier 2 RALs, implementation of a short-term mitigation action, such as installation of portable air purifiers, would be completed as soon as arrangements can be made with occupants, generally within a week. Planning and implementation of interim action such as long-term mitigation would be completed within 6 months.

Screening levels applicable to ecological receptors are presented in **Appendix I**, the Screening Level Ecological Risk Assessment (SLERA).

Section 3

Study Area Investigation

The RI for the site was initiated in 2015 to characterize the nature and extent of contaminants. Historically, the site was divided into two OUs to investigate potential impacts to the environment and downgradient receptors. AOU1 was designated based on the immediate public health concerns for residents of the ESS area related to indoor air inhalation exposure to PCE and its breakdown products. OU2 was designated for investigation and delineation of the groundwater PCE plume and source area. In 2019, AOU1 and OU2 were combined into OU1. The following sections describe the study area objectives, investigative approach, and investigative activities completed for the former AOU1, former OU2, and OU1.

3.1 Study Area Objectives

Consistent with EPA's *Guidance on Systematic Planning Using the Data Quality Objectives Process* (2006), a seven-step process was followed to define data quality objectives (DQOs) for each OU during the RI. These DQOs serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the goals of the RI.

The identified outputs of the DQO process for AOU1 are presented in the RIWP for AOU1 (FE 2015a); the principal study questions are as follows:

- Does VI present a complete pathway to structures overlying AOU1 and is it significant?
- What is the lateral extent of AOU1 groundwater contamination that may result in a complete pathway and significant VI exposures in overlying structures?
- Are there potential unacceptable impacts to human health through direct exposure to AOU1 VOCs in surface water or soil?

The identified outputs of the DQO process for OU2 are presented in the RIWP for OU2 (CH2M 2018); the principal study questions are as follows:

- What is the source(s) of the PCE plume identified by the 1998 EPA monitoring wells? Is there still sufficient mass of PCE in the vadose zone to act as an ongoing source of PCE in groundwater?
- What is the lateral and vertical extent of the PCE plume identified by the 1998 EPA monitoring wells? How far downgradient does the PCE plume extend?
- Are the PCE and daughter products measured in the ESS related to the PCE contamination plume identified by the 1998 EPA monitoring wells?
- What hydrogeological features control PCE fate and transport? If the PCE plume identified by the 1998 EPA monitoring wells extends to ESS, what factors control the plume in fault

zone/hillside? Does the entire plume discharge to the hillside or does some component continue deeper to the west?

- What is the nature of the hydraulic connection between the PCE plume and production wells (SLC-18, University of Utah wells, and Mount Olivet well)?
- Besides VI in AOU1, drinking water wells, or potential source-area soil and soil gas, are there other potential human or ecological exposure pathways?
- Collect data to support possible remedial technologies, including monitored natural attenuation, hydraulic containment, and bioremediation. Determine which natural attenuation processes are operating, and estimate the rate of degradation of PCE and daughter products formed.

The identified outputs of the DQO process for OU1 are presented in the RIWP (CDM Smith 2020d) and the principal study questions are as follows:

- What hydrogeologic features control VOC fate and transport?
- What is the lateral and vertical extent of PCE and degradation products in groundwater downgradient from the source area?
- What is the mass discharge of PCE in groundwater at the source area and in the downgradient groundwater plume (i.e., mid plume and toe of plume)?
- How does natural attenuation change the concentrations of PCE and degradation products in the source area vadose zone and downgradient groundwater plume?
- Is there sufficient mass of PCE in the vadose zone in the source area to act as an ongoing source of PCE in groundwater?
- Would human exposure to site-related VOCs in the source area vadose zone via VI result in unacceptable risks?
- Would human exposures to site-related VOCs in groundwater within the plume area result in unacceptable risks?
- Would human and ecological exposures to site-related VOCs in surface water (i.e., springs, creeks, ponds, irrigation water) within the groundwater plume area result in unacceptable risks?

3.2 Investigative Approach

To achieve the study area objectives identified in the planning documents, the RI investigative approach included:

- Monitoring well installation and groundwater sampling
  - Logging lithology during drilling completed at the site and the collection of geotechnical data to determine the hydrostratigraphic framework

  - Installation of the monitoring well network to laterally and vertically delineate the PCE groundwater plume
  - Installation of monitoring wells along plume transects for the evaluation of mass flux/discharge
  - Time-discrete sampling of monitoring wells to evaluate concentration trends across the site
  - Measurement of water levels at all wells, including multilevel wells, to determine groundwater flow direction, horizontal gradients, and vertical gradients
  - Collection of multiple lines of evidence to evaluate natural attenuation, including concentration trends, geochemical parameters, concentrations of degradation products, compound specific isotopic analysis, fraction of organic carbon, magnetic susceptibility, and ferrous iron minerals

- Hydrogeologic testing, specifically slug testing, to measure hydraulic conductivity and determine groundwater velocity
- Soil and soil vapor sampling in the suspected source areas to evaluate the suspected release points and determine if an ongoing source to groundwater is present
- Shallow groundwater, surface water, and soil gas sampling in the ESS area to delineate the area of the site that could be susceptible to VI
- Indoor air sampling of buildings to determine the risks to occupants due to VI

The following sections present further details on each of these investigative activities, and a summary is included in **Table 2-3**.

3.3 Drilling and Soil Sampling

Drilling investigations at the site have been completed for grab groundwater sampling, soil sampling, monitoring well installation, and soil gas probe installation. Soil samples for VOC analysis, geotechnical parameters, and geochemical parameters were collected, and lithologic logs were completed to delineate VOC contamination and provide geologic and hydrogeologic site information.

3.3.1 AOU1 Drilling and Soil Sampling 2014–2016

The drilling and soil sampling activities for AOU1 were completed under the QAPP, RIWP, and Field Sampling Plan (FSP) for AOU1 (FE 2015a); a description of the soil investigation field activities is presented in Section 5.4 of the AOU1 Remedial Investigation Report (EA 2019).

3.3.1.1 Drilling

Temporary groundwater piezometer locations (referred to as GW) were installed with a Geoprobe® DPT drill rig in February and April 2016. No soil samples were collected; however, lithologic logs were completed at all locations (EA 2019). The temporary monitoring point location information is presented in **Table 3-1**.

3.3.1.2 Soil Sampling

Three surface soil/sediment samples were collected in May 2016 in conjunction with surface water sampling locations (**Figure 3-1**). Two soil samples (SS-09 and SS-26), co-located with surface water sampling locations along Sunnyside Avenue, were collected from seeps and springs with known detections of PCE (SW-09 and SW-26). The third soil sample (SS-01), that served as a baseline sample, was co-located with a surface water sample (SW-01) in which PCE was not detected. Surface soil samples were collected using dedicated stainless-steel spoons, homogenized in dedicated stainless-steel bowls, and aliquots for semivolatile organic compounds (SVOCs) and metals analysis via EPA Contract Laboratory Program (CLP) SOM02.3 and EPA CLP ISM02.3, respectively. Aliquots collected for VOC analysis via EPA CLP SOM02.3 were not homogenized to prevent volatilization; samples were collected with 5-gram core samplers. Soil samples were shipped to Chemtech, an EPA-designated CLP laboratory, for analysis.

3.3.2 OU2 Drilling and Soil Sampling 2017–2018

The drilling and soil sampling activities for OU2 were completed under the QAPP, RIWP, and FSP for OU2 (CH2M 2018); a description of the soil investigation field activities is presented in Section 5 of the 2018 OU2 Data Summary Report (DSR) (Jacobs 2019b, attached in **Appendix B**).

3.3.2.1 Drilling

The following drilling activities were completed:

- Installation of monitoring wells for plume delineation (along transects and in the ESS area), including MW-03R, MW-08, MW-12S/D, MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20S/D, MW-21, and MW-22 (**Figure 3-2**)
- Installation of soil vapor probes (SVPs) for soil gas surveys

Lithologic logs were collected from all monitoring well locations. Borehole locations that conflicted with underground utilities were adjusted prior to drilling. Boreholes were hand-augered until refusal (ranging from 2.3 to 8.3 feet bgs) at all locations on the VAMC campus because of concerns with underground utilities, while boreholes in Sunnyside Park were hand-augered to 5 feet bgs followed by DPT to total depth.

3.3.2.2 Soil Sampling

Geotechnical samples and soil samples for VOC analysis were collected during sonic drilling for monitoring well installation; and soil samples for VOC analysis were collected from hand auger and DPT borings during the soil vapor probe installation. Because of the difference in drilling methods, soil samples from hand-augered borings on the VAMC campus were collected as soil cuttings, and soil samples from DPT borings in Sunnyside Park were collected from the soil core. In both cases, soil samples were collected with EnCore® samplers as soon as possible to minimize volatilization once the soil was brought to the surface. All EnCore samples were collected and submitted for laboratory analysis for VOCs (EPA 8260C). Soil samples were collected from select lithologic units at the monitoring well installation locations for the following geotechnical analyses:

- Unified Soil Classification System (USCS) soil classification (ASTM D2487)
- Moisture content (ASTM D2216)
- Dry bulk density (ASTM D7263)
- Fraction of organic carbon (f_{oc}) (ASTM D2974)
- Vertical hydraulic conductivity (ASTM D5084)
- Grain size analysis (Atterberg Limits by ASTM D4318, sieve analysis by ASTM D6913/D7928, and hydrometer by ASTM D422/D7928)
- Natural gamma and neutron logging was completed during the drilling of MW-08 and MW-03R to provide additional information to facilitate monitoring well design. Natural gamma logs identify intervals with high clay content and neutron logs measure saturated porosity.

3.3.3 Phase 1 OU2 Drilling and Soil Sampling 2019-2020

The drilling and soil sampling activities for Phase 1 OU2 were completed under the RIWP and FSP for OU2 (CH2M 2018), the QAPP for Phase 1 OU2 (CDM Smith 2019a), minor field modification (MFM) #3 (CDM Smith 2019c) and Addendum A to MFM #3 (CDM Smith 2020a) to the FSP. A description of the drilling investigation field activities is presented in the Phase 1 Drilling DSR (CDM Smith 2021a, attached as **Appendix C**). Phase 1 OU2 drilling and soil sampling activities were conducted between March 12 and July 14, 2020, to evaluate subsurface conditions and vertically and spatially delineate the potential source area around Building 7, the potential release point identified during the soil gas investigation along the sanitary sewer line in Sunnyside Park, and define the plume boundary.

3.3.3.1 Drilling

Source area borings (MW-23, MW-24, MW-25, MW-26, MW-27, MW-28, and MW-29) and plume delineation borings (MW-30, MW-31, MW-32, and MW-34) were advanced in Phase 1 OU2 (**Figure 3-2**). Prior to drilling, the borehole locations on the VAMC campus were precleared by hydrovac excavation. The preclearing was attempted to a target depth of 15 feet bgs. Large cobbles and boulders led to refusal at all borehole locations. The depths of hydrovac excavation ranged from 8 to 14 feet bgs and were approved by VA prior to drilling. The boreholes were then drilled using Terrasonic 150 track-mounted mini-rotosonic drill rigs. Continuous soil cores were produced which were field screened using a photoionization detector (PID), photographed, and logged.

3.3.3.2 Soil Sampling

Soil samples were collected from the cores targeting the highest PID readings and submitted to EMAX Laboratory for analysis for VOCs (EPA 8260C). The lithologic logs, analytical results, and field screening data are provided in the Phase 1 OU2 Drilling DSR (CDM Smith 2021a, attached in **Appendix C**).

3.3.4 Phase 2 OU1 Drilling and Soil Sampling 2020–2021

The drilling and soil sampling activities for OU1 were completed under the QAPP, RIWP, and FSP for OU1 (CDM Smith 2020d). Phase 2 OU1 drilling activities were conducted between November 5, 2020, and April 16, 2021, to evaluate subsurface conditions in the ESS, vertically and laterally delineate the extent of the plume, abandon and replace existing temporary piezometers, and replace the A and B well zones of MW-30 that were damaged during installation in the Phase 1 OU2 investigation.

3.3.4.1 Drilling

Plume delineation borings (MW-36, MW-37, MW-38, and MW-13L) were advanced (**Figure 3-2**). A single borehole (MW-30R) was completed approximately 20 feet south of MW-30 to replace two zones damaged during the Phase 1 OU2 investigation. A Terrasonic 150 track-mounted mini-rotosonic drill rig was used to advance the borings. Continuous soil cores were collected and field screened using a PID. The lithology was logged, and photos were taken of the core intervals. No soil samples were collected for laboratory VOC analyses.

The temporary piezometers that were installed during the AOU1 investigation (GW-11, GW-16, GW-20, GW-49, GW-50, GW-52, GW-59, GW-61, shown in **Figure 3-1**) were abandoned and (with the exception of GW-49) were replaced with groundwater monitoring wells screened in the shallow aquifer. A Geoprobe DPT drill rig with hollow stem auger capabilities was used to install the residential groundwater (referred to as RG) monitoring wells. Piezometer locations GW-10 and GW-53 were damaged/removed during road construction along 900 South. RG-01 and RG-08 were installed to replace GW-10 and GW-53, respectively. In addition to the nine piezometer locations, two additional monitoring wells (RG-05, RG-11) were installed at locations north of East High School where piezometers were not installed during the AOU1 RI. These locations are shown in **Figure 3-3**. At each existing piezometer location, the boring was hand-augured or cleared using a hydrovac to a minimum of 5 feet bgs prior to overdrilling. A DPT drill rig with 6.25-inch hollow stem auger capability was used to overdrill each boring to its maximum depth, as presented in **Table 3-1**. The two new well locations (RG-05 and RG-11), the damaged locations (RG-01 and RG-08), and RG-10 (relocated GW-61) were drilled with DPT to collect cores for lithologic logging, then augered to create the annulus for the well installation.

The lithologic logs and field screening data are provided in the Phase 2 OU1 Drilling DSR (CDM Smith 2021h, attached in **Appendix D**) and ESS VI Lines of Evidence DSR (CDM Smith 2021m, attached in **Appendix D**).

3.3.4.2 Soil Sampling

No soil samples were collected during the Phase 2 OU1 investigation.

3.4 Monitoring Well Installation

Monitoring wells have been installed during each phase of the investigation to delineate groundwater VOC contamination and provide geological and hydrogeological site information. The following sections provide further details on the monitoring well installation, construction details are provided in **Table 3-2**, and locations are presented in **Figure 3-2**.

3.4.1 AOU1 Monitoring Well Installation 2015–2016

The monitoring well installation activities for AOU1 were completed under the QAPP, RIWP, and FSP for AOU1 (FE 2015a); a description of the well installation field activities is presented in Section 5.4 of the AOU1 Remedial Investigation Report (EA 2019). A total of 50 boreholes were advanced for temporary groundwater monitoring point installation using a Geoprobe DPT drill rig (**Figure 3-1**). Boreholes were advanced to first-encountered groundwater. The drill rig encountered refusal at six temporary groundwater monitoring point locations prior to reaching groundwater. These six boreholes (GW-02, GW-33, GW-35, GW-42, GW-57, and GW-58) were backfilled with native soil, and no temporary groundwater monitoring point was installed. Of the remaining 44 locations, 34 temporary groundwater monitoring points were installed, sampled, and abandoned, while 10 (GW-10, GW-11, GW-16, GW-20, GW-49, GW-50, GW-52, GW-53, GW-59, and GW-61) were installed and left in place to serve as temporary piezometers for future groundwater sampling (replaced by RG wells in 2021). Piezometer construction information is provided in **Table 3-1**. Temporary groundwater monitoring points were constructed with ¾-inch, schedule 40 polyvinyl chloride (PVC) blank casing and 5-foot screens with 0.010-inch slot size. The filter pack was #10/20 silica sand, filled to 1 foot above the top of screen followed by a foot of bentonite chips that were allowed to hydrate naturally. The remaining annular space was backfilled with soil cuttings.

3.4.2 OU2 Monitoring Well Installation 2017–2018

The monitoring well installation activities for OU2 were completed under the QAPP, RIWP, and FSP for OU2 (CH2M 2018), and a description of the well installation field activities is presented in Section 5 of the 2018 OU2 DSR (Jacobs 2019b, attached in **Appendix B**). Twenty monitoring wells (MW-03RA/B/C/D, MW-08A/B/C, MW-12 shallow/deep [S/D], MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20S/D, MW-21, MW-22) were installed to further define the lateral and vertical extent of contamination (**Figure 3-2**). Final well design was determined in the field based on observed lithology, push-ahead samples (MW-03R and MW-08 only)[2], geophysical logging results (MW-03R and MW-08 only), and water levels. Some locations (MW-03RA/B/C/D and MW-08C) were installed as multilevel Zone Isolation Sampling Technology (ZIST™) wells.

Monitoring well construction information is presented in **Table 3-2** and locations are shown in **Figure 3-2**. Wells in the ESS area (MW-12S/D, MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20S/D, MW-21, MW-22) were constructed inside the drill casing with 2-inch-diameter Schedule 40 PVC casing and 2.5- to 10-foot 0.010-slot PVC screens. The filter pack was constructed using #20/40 mesh silica sand extending 1 to 2 feet above the top of the screened interval. Hydrated bentonite chips were installed above the filter pack to seal and backfill the borehole to approximately 3 feet bgs for the majority of the shallow wells. Four wells (MW-18, MW-19, MW-20D, and MW-20S) were backfilled with bentonite pellets to approximately 5 feet above the filter pack and bentonite grout to approximately 3.5 feet bgs. The bentonite grout was substituted for the neat Portland cement grout specified in the RIWP because of the driller's concerns about potential damage to the PVC from the heat of hydration of the cement. Final

[2] Push-ahead groundwater samples were collected during drilling at monitoring wells MW-03R and MW-08, at vertical intervals of approximately 20 feet, to evaluate the vertical distribution of VOCs in the aquifer.

surface completions consisted of 8-inch steel vault flush-mount completions installed in high-strength concrete as specified by Salt Lake City.

Wells closer to the VAMC campus (MW-03RA/B/C/D and MW-08A/B/C) were constructed inside the drill casing with 1-inch (ZIST intervals MW-03RA/B/C), 1.25-inch (ZIST intervals MW-03D and MW-08C), and 2-inch (paired monitoring wells MW-08A/B) Schedule 40 PVC casing. Screens consisted of 0.02-inch slot screens in 5- to 20-foot intervals. The filter pack was constructed using #10/20 silica sand (MW-03R) and #16/30 silica sand (MW-08) extending 1 to 2 feet above the top of the screened intervals. Size 3/8-inch coated and uncoated bentonite pellets were installed between each filter pack interval to seal the borehole between screen intervals.

Bentonite grout was installed above the uppermost 3/8-inch bentonite chip interval to approximately 20 feet bgs. Neat cement grout was used to backfill the borehole from 20 feet bgs to approximately 3 feet bgs. Bentonite grout was substituted for Portland cement grout because of the driller's concerns about potential damage to the PVC from the heat of hydration of the Portland cement. Surface completions consisted of 16-inch-diameter galvanized steel vault flush-mount completions (MW-03R and MW-08) in concrete (MW-03R) and high-strength concrete specified by Salt Lake City (MW-08).

All installed wells were developed approximately 4 to 32 days after construction was completed. Well development for 2-inch wells that produced adequate water (MW-08A/B, MW-12S/D, MW-13D, MW-14D, MW-15S/D, MW-16S/D, MW-17D, MW-18, MW-19, MW-20S/D, MW-21, and MW-22) was completed using the bail, surge, and pump method until a minimum of five borehole volumes of water were removed and the final three consecutive water quality parameter measurements stabilized. Low-yield 2-inch wells (MW-13S, MW-14S, and MW-17S) were bailed dry three times. The ZIST intervals MW-03RA/B/C/D were developed by low-flow, and MW-08C was developed using the manufacturer-recommended air-lift development procedure. Development methods, total purge volumes, final water quality parameters, development logs, and photographs are included in the OU2 DSR (Jacobs 2019b, attached in **Appendix B**).

3.4.3 Phase 1 OU2 Monitoring Well Installation 2019–2020

The monitoring well installation activities for Phase 1 OU2 were completed under the RIWP and FSP for OU2 (CH2M 2018), the QAPP for Phase 1 OU2 (CDM Smith 2019a), MFM #3 (CDM Smith 2019c) and Addendum A to MFM #3 (CDM Smith 2020a) to the FSP. A description of the monitoring well installation is presented in the Phase 1 Drilling DSR (CDM Smith 2021a, attached as **Appendix C**). Between March and July 2020, boring locations from the OU2 Phase 1 investigation were completed as either multilevel or single-screen interval wells. Seven source delineation borings (including near the potential release point in Sunnyside Park) were completed in locations potentially downgradient of the source area. Four boring locations were completed as plume delineation wells. All monitoring well locations are shown in **Figure 3-2**.

Monitoring well construction information is presented in **Table 3-2**, and locations are shown in **Figure 3-2**. Final well construction designs were determined based on a review of lithology, field screening data[3] and groundwater analytical results. Multilevel wells were installed as ZIST wells with a 1-inch PVC casing for each sampling depth. Single-screen conventional wells were also installed with 2- or 4-inch-diameter PVC casing. The screened interval consisted of a 0.02-inch slot screen in 10- to 30-foot intervals. The filter pack was constructed using #10/20 silica sand and extended 2 to 3 feet above the top of the screened intervals. The borehole was sealed between screen zones with hydrated 3/8-inch coated bentonite pellets and chips. The annular space was sealed from the top of the shallowest screen zone to within 3 feet bgs with bentonite grout. Each monitoring well location was completed at the surface with a flush-mounted well vault.

The boreholes completed as 4-inch monitoring wells (MW-24, MW-27, and MW-28) were developed using a bailer and swab to remove sediment from the screened interval, then pumped until a minimum purge volume was reached, parameter stabilization occurred, and turbidity requirements were met.

The ZIST wells were developed in accordance with manufacturer recommendations using a gas lifting method with compressed nitrogen to purge water and sediment from the well casing while simultaneously surging the well to remove sediment from the filter pack. The gas lifting method consists of lowering a stinger tube to approximately the center of the water column above the well screen, which delivers nitrogen to the water column and lifts the water in the well casing to the surface and into a tote. As ZIST wells have a receiver that restricts the placement of any objects into the well screen, surging refers to the agitation that occurs during gas lifting. Gas lifting continued at the wells until visible clearing of the extracted water. Water quality parameters were not measured during gas lifting because of the disturbance to the water during the process. ZIST wells with no observed sediment were purged with pumps appropriate for future sampling.

During development at MW-30 zones A and B, pumps could not be placed to depth and excess sediment prevented sufficient development. A downhole camera was deployed in MW-30 zones A and B, and sediment was observed to the top of the screen, indicating the wells were damaged during installation. The MW-30 A and B zones were abandoned by grouting in place and replaced as described in Section 3.4.4. The MW-30C zone and the soil vapor point remain installed.

3.4.4 Phase 2 OU1 Monitoring Well Installation 2020–2021

The monitoring well installation activities for Phase 2 OU1 were completed under the QAPP, RIWP, and FSP for OU1 (CDM Smith 2020d). A description of the monitoring well installation is presented in the Phase 2 Drilling DSR (CDM Smith 2021h, attached as **Appendix D**). In November/December 2020 and April 2021, boring locations from the Phase 2 OU1 investigation were completed as single-screen interval wells or shallow/deep well pairs. Final well construction designs were determined based on a review of lithology and groundwater analytical results. Wells that were installed include plume delineation wells in the ESS area (MW-36, MW-37S/D, MW-38S/D, and MW-13L), replacement well zones A and B of MW-30, and monitoring wells (referred to as residential groundwater sampling locations [RG]) that replace the temporary

[3] Push-ahead groundwater samples were collected in the water-bearing zones at approximately 20-foot intervals. Push-ahead groundwater samples were collected for field screening by AQ Colortec and laboratory analysis for VOCs (EPA 8260C) (MFM# 3A). AQ Colortec is a colorimetric indicator of total chlorinated compounds, with a detection limit of approximately 10 µg/L. Field screening of all groundwater samples were below AQ Colortec detection limits.

piezometers installed under AOU-1, as described in Section 3.4.1. Monitoring well construction information is presented in **Table 3-2**, monitoring well locations are shown in **Figure 3-2**, and residential groundwater sampling locations are shown in **Figure 3-3**.

The replacement A and B zones for MW-30R were installed approximately 20 feet south of MW-30 as two 2-inch conventional wells screened at approximately the same depths (from 240 to 250 feet bgs for the A zone and 280 to 290 feet bgs for the B zone). These wells were installed as 2-inch-diameter PVC well casings with 0.02-inch slot screens in 5-foot or 10-foot intervals. The filter pack was constructed using #10/20 silica sand and extended 2 to 3 feet above the top of the screened intervals. At locations where multilevel wells were installed, hydrated bentonite chips were installed between filter pack intervals to seal the borehole between intervals. Hydrated bentonite chips were installed above the shallowest sand filter pack interval to approximately 3 feet bgs. Each monitoring well location was completed at the surface with a flush-mounted well vault. MW-36 and MW-38 required a Salt Lake City-specified high-strength concrete batch mix for the surface completion because the locations were in the city right-of-way.

The temporary piezometers installed under AOU1 (GW-10, GW-11, GW-16, GW-20, GW-49, GW-50, GW-52, GW-53, GW-59, and GW-61) were abandoned and all were replaced (with the exception of GW-49) with groundwater monitoring wells screened in the shallow aquifer near the water table (replacement wells designated as "RG" for residential groundwater). In addition to the nine piezometer locations, two additional monitoring wells (RG-05 and RG-11) were installed at locations north of East High School where piezometers were not installed during the AOU1 RI. Monitoring wells were installed as single two-inch diameter PVC wells with 0.010-slot screens in 5-foot or 10-foot intervals at similar depths as the piezometers. The filter pack was constructed using #10/20 silica sand and extends approximately 2 feet above the top of the screened interval. Each location was completed at the surface with a flush-mounted well vault.

All monitoring wells were developed, a minimum of 48 hours after well installation, to remove fine grain sediment and to verify the monitoring well is connected to the aquifer. Development was completed by purging with a bailer to remove sediment from the screened interval then pumped until the minimum purge volume had been removed. Because of low recharge, parameter stabilization was not achieved, but turbidity requirements were met.

3.5 Groundwater Sampling

A groundwater investigation was conducted during the RI to determine the extent of VOCs in groundwater associated with the former dry-cleaning operation on the VAMC campus. The following sections describe the groundwater sampling activities completed for the former AOU1, former OU2, and OU1.

3.5.1 AOU1 Groundwater Sampling 2015–2016

The groundwater sampling activities for AOU1 were completed under the QAPP, RIWP, and FSP for AOU1 (FE 2015a) and MFMs #3 – 16 (EA 2016a, 2016b, 2016c, 2016d, 2016e); a description of the groundwater investigation field activities is presented in Section 5.2 of the AOU1 Remedial Investigation Report (EA 2019).

To assess the nature and extent of VOCs in shallow groundwater in the ESS area, temporary, small-diameter, groundwater monitoring points were installed (**Figure 3-1**). Information collected from these groundwater monitoring points was also used to better characterize the geology, hydrostratigraphy, and hydrogeology of the shallow aquifer. Groundwater sampling was conducted at the 44 temporary well points between February and April 2016 using a peristaltic pump and low-flow purging and sampling techniques as defined in the RIWP (FE 2015a). When the temporary well points did not yield sufficient water to pump or the groundwater elevation exceeded the peristaltic pump operating depth, a polyethylene bailer was used to purge and sample. During purging, the following water quality parameters were recorded: temperature, specific conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, and turbidity. Thirty-four of the temporary groundwater monitoring points were abandoned immediately after sampling, and 10 temporary monitoring points (GW-10, GW-11, GW-16, GW-20, GW-49, GW-50, GW-52, GW-53, GW-59, and GW-61) were left in place as temporary piezometers. The piezometers were sampled during three additional events that occurred in July 2016, September 2016, and August 2019 using the same techniques described above. Groundwater samples were submitted for analysis of VOCs (EPA CLP SOM02.3), SVOCs (including 1,4-dioxane) (EPA CLP SOM02.3), metals (total and dissolved) (EPA CLP Method ISM02.1), total dissolved solids (TDS) (EPA 160.1), anions (EPA 300.0), pH (EPA 150.1), and total alkalinity (EPA 310.1).

3.5.2 OU2 Groundwater Sampling 2017–2019

The groundwater sampling activities for OU2 were completed under the QAPP, RIWP, and FSP for OU2 (CH2M 2018), and a description of the groundwater investigation field activities is presented in the 2018 OU2 DSR and the Spring 2019 OU2 DSR (Jacobs 2019b and Jacobs 2019c, attached in **Appendix B**). To characterize the groundwater contaminant plume and determine the source, existing and new monitoring wells were sampled (**Figure 3-2**).

Push-ahead groundwater samples were collected during drilling at monitoring wells MW-03R and MW-08, at vertical intervals of approximately 20 feet, to evaluate the vertical distribution of VOCs in the aquifer. Push-ahead groundwater samples were analyzed by a portable gas chromatography/mass spectrometer (Inficon HAPSITE® [HAPSITE]) equipped with a headspace sampling system. Duplicate samples from MW-03R were sent to ALS Laboratory with a 24-hour turnaround time, and 1 in 10 samples were sent to EMAX Laboratory for confirmation laboratory analysis for VOCs (EPA 8260C). The lithologic logs, analytical results, and field screening data are provided in the OU2 DSR (Jacobs 2019b, attached in **Appendix B**).

The newly installed monitoring wells (MW-12S/D, MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20 S/D, MW-21, and MW-22) were sampled in September–October and November–December 2018. Existing wells (MW-01S/D, MW-02, MW-03RA/B/C/D, MW-04, MW-05R, MW-06, and MW-08A/B/C) were also sampled in November–December 2018. All existing wells were sampled again in March and April 2019. Groundwater samples were collected using dedicated bladder or ZIST pumps and low-flow sampling techniques, as described in the QAPP (CH2M 2018). Field parameters were collected during purging to indicate stability prior to sampling, including temperature, pH, conductivity, turbidity, DO, and ORP. Groundwater samples were submitted for analysis of VOCs (SW8260C), SVOCs (SW8270D), 1,4-dioxane (SW8270D-SIM), metals (SW6020A), mercury (SW7470A), pesticides (8081B), total organic carbon (TOC) (SW9060), TDS (SW2540C), anions (E300.0), and alkalinity (SM2320B). Additionally, groundwater samples were collected during both events and submitted to the University of Utah's Stable Isotope Ratio Facility for Environmental Research for hydrogen and oxygen stable isotope analysis.

3.5.3 Phase 1 OU2 Groundwater Sampling 2019–2020

The groundwater sampling activities for Phase 1 OU2 were completed under the RIWP and FSP for OU2 (CH2M 2018), the QAPP for Phase 1 OU2 (CDM Smith 2019a) and MFMs #2and #3a to the FSP (CDM Smith 2019c, 2020b). Phase 1 OU2 groundwater investigation activities were conducted to assist in further characterization of the hydrogeology, temporal trends, and nature and extent of contamination. Three groundwater sampling events were conducted under Phase 1 OU2 and were completed in the fourth quarter (Q4)-2019, second quarter (Q2)-2020, and third quarter (Q3)-2020.

3.5.3.1 Q4-2019 Groundwater Sampling Event

The Q4-2019 synoptic water level and groundwater sampling event took place in December 2019 (CDM Smith 2020c, attached in **Appendix C**). Groundwater samples were collected from MW-01D, MW-02, MW-03RA/B/C/D, MW-04, MW-05R, MW-06, MW-08A/B/C, MW-12S/D, MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, and MW-20S/D (**Figure 3-2**). All wells were sampled with dedicated bladder or ZIST pumps per the low-stress (low-flow) groundwater sampling standard operating procedure (SOP) included in the QAPP (CDM Smith 2019a), with the exception of MW-14D and MW-17D. MW-14D, which is an artesian well, was sampled using a permanent valve and gauge. MW-17D, which is seasonally artesian, was sampled using a peristaltic pump with tubing placed in the screened interval to purge the well. Water quality parameters were measured while purging to check for stabilization, including temperature, DO, pH, specific conductance, ORP, and turbidity.

In accordance with the RIWP (CH2M 2018) and MFM #2 (CDM Smith 2019b), groundwater samples were submitted for analysis of VOCs (SW8260C), 1,4-dioxane (SW8270D-SIM), total metals (unfiltered) (SW6020A/ SW7470A), TOC (SW9060A), TDS (SW2540C), anions (sulfate, chloride) (E300.0), alkalinity (SM2320B), nitrate and nitrite (SM4500-NO3E), and dissolved gases (methane, ethane, ethene) (RSK-175). Additionally, ferrous iron was analyzed and measured in the field for each well. As outlined in MFM #2 (CDM Smith 2019b), groundwater samples were not collected for the analysis of organochlorine pesticides because there were no detections above the maximum contaminant level in the previous three rounds of sampling.

3.5.3.2 Q2-2020 Groundwater Sampling Event

The Q2-2020 synoptic water level and groundwater sampling event took place in June 2020 (CDM Smith 2021d, attached in **Appendix C**). Groundwater samples were collected from 26 existing wells (MW-01S/D, MW-02, MW-03RA/B/C/D, MW-04, MW-05R, MW-06, MW-08A/B/C, MW-12S/D, MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20 S/D, MW-21, and MW-22) and 4 newly installed wells (MW-23C, MW-25C, MW-27, and MW-28) (**Figure 3-2**). All wells were sampled with dedicated bladder or ZIST pumps per the site-specific low-stress (low-flow) groundwater sampling SOP included in MFM #4 to the RIWP (CDM Smith 2020b). MW-14D, which is an artesian well, and MW-17 which is seasonally artesian, were sampled as described previously. Water quality parameters were analyzed continuously while purging to check for stabilization, including temperature, DO, pH, specific conductance, ORP, and turbidity.

In accordance with the RIWP (CH2M 2018) and MFM #2 (CDM Smith 2019b), groundwater samples were submitted for analysis of VOCs (SW8260C), 1,4-dioxane (SW8270D-SIM), total metals (unfiltered) (SW6020A/ SW7470A), TOC (SW9060A), TDS (SW2540C), anions (sulfate, chloride) (E300.0), alkalinity (SM2320B), nitrate and nitrite (SM4500-NO3E), and dissolved gases (methane, ethane, ethene) (RSK-175). Additionally, ferrous iron was analyzed and measured in the field for each well.

3.5.3.3 Q3-2020 Groundwater Sampling Event

The Q3-2020 synoptic water level and groundwater sampling event took place in September–October 2020 (CDM Smith 2021g, attached in **Appendix C**). Groundwater samples were collected in September 2020 from 30 existing wells (MW-01S/D, MW-02, MW-03RA/B/C/D, MW-04, MW-05R, MW-06, MW-08A/B/C, MW-12D, MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20 S/D, MW-21, MW-22, MW-23A/B/C, MW-25A/B/C, MW-26A/B/D, MW-27, and MW-28) and 6 newly installed wells (MW-24, MW-29A/B/C, MW-30C, MW-31A/B/C, MW-32A/B/C, and MW-34B/C/D) (**Figure 3-2**). During the September mobilization, MW-23A/B/C and MW-24 were inaccessible because of construction activities, repairs were required to the pump deployed in MW-05R, and MW-30A/B were inaccessible because of damage. An October mobilization was completed to collect groundwater samples from MW-23A/B/C, MW-24, and MW-05R. All wells were sampled with dedicated bladder or ZIST pumps per the site-specific low-stress (low-flow) groundwater sampling SOP included in MFM #4 to the RIWP (CDM Smith 2020b). MW-14D, which is an artesian well, and MW-17, which is seasonally artesian, were sampled as described previously. Water quality parameters were analyzed continuously while purging to check for stabilization, including DO, pH, specific conductance, ORP, and turbidity.

In accordance with the RIWP (CH2M 2018) and MFM #2 (CDM Smith 2019b), groundwater samples were submitted for analysis of VOCs (SW8260C), total metals (unfiltered) (SW6020A/ SW747020A), TOC (SW9060A), TDS (SW2540C), anions (sulfate, chloride) (E300.0), alkalinity (SM2320B), nitrate and nitrite (SM4500-NO3E), and dissolved gases (methane, ethane, ethene) (RSK-175), with exceptions listed in Section 3.13.3. Samples were collected and submitted for 1,4-dioxane by EPA Method 8270D-SIM for the following wells: MW-25A/B, MW-26A, MW-29A/B/C, MW-30C, MW-31A/B/C, MW-32A/B/C, and MW-34B/C/D. Additionally, samples were collected from the following wells for compound-specific isotope analysis (CSIA): MW-02, MW-04, MW-08A, MW-14D, and MW-16S. Ferrous iron was analyzed and measured in the field for each well.

3.5.4 Phase 2 OU1 Groundwater Sampling 2020–2021

The groundwater sampling activities for Phase 2 OU1 were completed under the QAPP, RIWP, and FSP for OU1 (CDM Smith 2020d), and MFMs #1, #2, #4, and #5 to the OU1 FSP (CDM Smith 2020e, 2020f, 2021c, 2021e); a description of the groundwater investigation field activities is presented in the associated Phase 2 OU1 DSRs (**Appendix D**).

Phase 2 OU1 groundwater investigation activities were conducted to assist in the further characterization of the hydrogeology, temporal trends, and nature and extent of contamination. Two groundwater sampling events were conducted under Phase 2 OU1 and were completed in Q4-2020 and the first quarter (Q1)-2021. In addition, the replaced piezometers (designated "RG" for residential groundwater) were sampled in April 2021.

3.5.4.1 Q4-2020 Groundwater Sampling Event

The Q4-2020 synoptic water level and groundwater sampling event took place in December 2020 (CDM Smith 2021i, attached in **Appendix D**). Groundwater samples were collected from 37 existing wells (MW-01S/D, MW-02, MW-03RA/B/C/D, MW-04, MW-05R, MW-06, MW-08A/B/C, MW-12S/D, MW-13S/D, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20 S/D, MW-21, MW-22, MW-23A/B/C, MW-24, MW-25A/B/C, MW-26A/B/C, MW-27, MW-28, MW-29A/B/C, MW-30RA/B, MW-30C, MW-31A/B/C, MW-32A/B/C, and MW-34A/B/C/D) and 5 newly installed wells (MW-36, MW-37S/D, and MW-38S/D) (**Figure 3-2**). All wells were sampled with dedicated bladder or ZIST pumps per the site-specific low-stress (low-flow) groundwater sampling SOP included in the QAPP (CDM Smith 2020d). Artesian well MW-14D was sampled using a permanent valve and gauge. MW-17D, which is seasonally artesian, was sampled using a standpipe and a dedicated bladder pump, set at the midpoint of the screen. Water quality parameters were analyzed continuously while purging to check for stabilization, including temperature, DO, pH, specific conductance, ORP, and turbidity.

In accordance with the RIWP (CDM Smith 2020d) groundwater samples were submitted for analysis of VOCs (SW8260C), total metals (unfiltered) (SW6020A/ SW7470A), TOC (SW9060A), anions (sulfate, chloride) (E300.0), alkalinity (SM2320B), nitrate and nitrite (SM4500-NO3E), and dissolved gases (methane, ethane, ethene) (RSK-175), with exceptions listed in Section 3.13.3. Samples were collected and submitted for 1,4-dioxane by EPA Method 8270D-SIM for the following wells: MW-26B, MW-30RA/B, MW-34A, MW-36, MW-37S/D, and MW-38S/D.

3.5.4.2 Q1-2021 Groundwater Sampling Event

The Q1-2021 synoptic water level and groundwater sampling event took place in March 2021 (CDM Smith 2021j, attached in **Appendix D**). Groundwater samples were collected from 42 existing wells (MW-01S/D, MW-02, MW-03RA/B/C/D, MW-04, MW-06, MW-08A/B/C, MW-12S/D, MW-13S/D-, MW-14S/D, MW-15S/D, MW-16S/D, MW-17S/D, MW-18, MW-19, MW-20 S/D, MW-21, MW-22, MW-23A/B/C, MW-24, MW-25A/B/C, MW-26A/B/C, MW-27, MW-28, MW-29A/B/C, MW-30RA/B, MW-30C, MW-31A/B/C, MW-32A/B/C, MW-34A/B/C/D, MW-36, MW-37S/D and MW-38S/D) and newly installed well MW-13L (**Figure 3-2**). All wells were sampled with dedicated bladder or ZIST pumps per the site-specific low-stress (low-flow) groundwater sampling SOP included in the QAPP (CDM Smith 2020d). MW-14D, which is an artesian well, and MW-17D, which is seasonally artesian, were sampled as described previously. Water quality parameters were analyzed continuously while purging to check for stabilization, including temperature, DO, pH, specific conductance, ORP, and turbidity.

In accordance with the RIWP (CDM Smith 2020d) and with exceptions listed in Section 3.13.4, groundwater samples were submitted for analysis of VOCs (SW8260C) at all wells sampled, and for total metals (unfiltered) (SW6020A/ SW7470A), TOC (SW9060A), anions (sulfate, chloride) (E300.0), alkalinity (SM2320B), nitrate and nitrite (SM4500-NO3E), and dissolved gases (methane, ethane, ethene) (RSK-175) at a subset of wells as described in MFM #5 (CDM Smith 2021e). Samples were collected and submitted for 1,4-dioxane by EPA Method 8270D-SIM for the following wells: MW-26B, MW-30RA/B, MW-34A, MW-36, MW-37S/D, and MW-38S/D.

3.5.4.3 Residential Groundwater Locations Sampling

In accordance with MFM #4 (CDM Smith 2021c), the residential groundwater sampling locations (**Figure 3-3**) were sampled in April 2021 using HydraSleeve™ samplers (CDM Smith 2021m, attached in **Appendix D**). Samples were analyzed for VOCs using EPA Method 8260C and water quality parameters (temperature, DO, pH, specific conductance, ORP, and turbidity) were recorded if there was sufficient volume.

3.6 Hydraulic Testing

Hydraulic testing was completed on 27 wells within the source area, and on the hanging wall and footwall sides of both faults, to collect aquifer parameter estimates including hydraulic conductivity and transmissivity. These estimates are used in the calibration of the numerical groundwater model and mass discharge calculations.

3.6.1 Phase 2 OU1 Hydraulic Testing

The hydraulic testing activities for Phase 2 OU1 were completed under the QAPP, RIWP, and FSP (CDM Smith 2020d) and MFM #3 to the Phase 2 FSP (CDM Smith 2021b). Hydraulic testing was completed in February 2021 on the following wells: MW-01S, MW-02, MW-03RA, MW-03RB, MW-03RC, MW-04, MW-08A, MW-08B, MW-08C, MW-13S, MW-13D, MW-13L, MW-15D, MW-18, MW-19, MW-20S, MW-20D, MW-21, MW-22, MW-26B, MW-26C, MW-26D, MW-32A, MW-34A, MW-34B, MW-34C, and MW-34D (**Figure 3-4**). Well locations for hydraulic testing were chosen based on their location with respect to source area or fault lines, depth of screened interval, and aquifer zone (shallow or deep). Four wells were proposed for hydraulic testing, but attempts were unsuccessful because of insufficient surface seal with the pneumatic slug testing kit (MW-01D, MW-26A, MW-32B, and MW-32C).

Hydraulic testing was conducted either mechanically or pneumatically. Mechanical hydraulic testing was completed by using two lengths of mechanical "slugs" of known volume, either for 2-inch-diameter wells or 4-inch-diameter wells. Two types of tests, falling head and rising head, were conducted using both lengths of slugs. Falling head tests included lowering the slug into the water column and observing the recovery or falling water level in the well. Rising head tests included pulling the slug out of the water column (after the falling head test is complete) and observing the recovery, or rising water level in the well. For 2-inch wells, the two slugs used had expected displacements of 12 inches and 24 inches.[4] For 4-inch wells, the two slugs used had expected displacements of 11 inches and 17 inches.[5] Six tests were completed at each mechanically tested well in the following order: 12-inch falling head displacement, 12-inch rising

[4] Midwest Geosciences slugs for use in 2-inch wells are tapered at either end to reduce splashing. The 1-foot displacement slug is 24.48 inches (2.04 feet) long and 1.63 inches in diameter. The 2-foot displacement slug is 45.6 inches (3.8 feet) long and 1.63 inches in diameter.

[5] Midwest Geosciences slugs for use in 4-inch wells are tapered at either end to reduce splashing. The 0.92-foot displacement slug is 25.56 inches (2.13 feet) long and 2.8 inches in diameter. The 1.42-foot displacement slug is 39.48 inches (3.29 feet) long and 2.8 inches in diameter.

head displacement, 24-inch falling head displacement, 24-inch rising head displacement, 12-inch falling head displacement, and 12-inch rising head displacement. In the case of MW-13S, only four tests were completed because of long recovery times: 12-inch falling head displacement, 12-inch rising head displacement, 24-inch falling head displacement, and 24-inch rising head displacement.

Pneumatic hydraulic testing was completed by attaching an air-tight fitting to the top of the PVC casing and increasing air pressure inside the well casing to an expected length of displacement, either 12 or 24 inches. A manual pump was used to pressurize the well casing, and a pressure gauge connected to the pneumatic kit was used to measure expected displacement (pressure in inches of water column). The pressure was released at once and the water level recovery was observed. All pneumatic tests were rising head tests, as it was not possible to pull a vacuum on the well casings with the pneumatic kit set-up. Pneumatic hydraulic testing was completed on all 1-inch wells: MW-03RA, MW-03RB, MW-03RC, MW-08C, MW-26B, MW-26C, MW-26D, MW-34A, MW-34B, MW-34C, and MW-34D. Pneumatic hydraulic testing was also completed at MW-02 because of the reduction at the surface from a 4-inch casing to a 2-inch casing, preventing the use of the appropriate-sized mechanical slug.

In-Situ Level Troll 700 transducers with vented cables were used to collect the water level data during the tests. The data collected during each test at a well were combined into one graph and reviewed for coincidence. Based on the coincident plots, one test was chosen for analysis in AQTESOLV to estimate hydraulic conductivity and transmissivity. A description of the slug test analysis for each well is provided in the aquifer testing technical memorandum (CDM Smith 2021k, attached in **Appendix D**).

3.7 Surface Water Sampling

Surface water sampling was completed during the RI to determine the extent of VOCs in groundwater emanating from seeps and springs in the ESS area. The following sections describe the surface water investigative activities completed for AOU1, OU2, and Phase 2 OU1.

3.7.1 AOU1 Surface Water Sampling 2016

The surface water sampling activities for AOU1 were completed under the QAPP, RIWP, and FSP for AOU1 (FE 2015a) and MFM #17 (EA 2016f); a description of the surface water investigation field activities is presented in Section 5.2 of the AOU1 Remedial Investigation Report (EA 2019). In 2016, collection of surface water samples from identified and accessible seeps, springs, sumps, and Red Butte Creek within AOU1 was performed. Surface water and stormwater sampling locations are presented in **Table 3-4** and in **Figure 3-5**. Several of the springs discharge to the municipal stormwater system; therefore, water samples were collected from selected Salt Lake City stormwater sewer manholes, located in and downgradient of AOU1, to determine if groundwater seepage and discharge from foundation drains is conveying VOC-impacted water to stormwater lines. The first 19 surface water and stormwater locations (SW-01 through SW-19) were located based on recommendations in the AOU1 RIWP (FE 2015a) with minimal repositioning where seeps and springs were not present on the property, if access was not granted from property owners, or to fill data gaps. Additional samples were collected from locations not identified in the work plan but were selected based on field observations. Samples were collected and analyzed in accordance with the AOU1 QAPP (FE 2015a) for VOCs and SVOCs

(EPA CLP SOM02.3), total metals (EPA CLP ISM02.3), anions (EPA 300.0), and TDS (EPA 160.1). A subset of samples was also analyzed for oxygen and hydrogen stable isotopes at the University of Utah Stable Isotope Ratio Facility for Environmental Research.

3.7.2 OU2 Surface Water Sampling 2018

The surface water sampling activities for OU2 were completed under the QAPP, RIWP, and FSP for OU2 (CH2M 2018); a description of the surface water investigation field activities is presented in the 2018 OU2 DSR (Jacobs 2019b, attached in **Appendix B**). In October and December 2018, nine surface water locations were sampled, including six locations previously sampled and three new locations (one new spring discharge location and two locations in Red Butte Creek). Surface water sampling locations are summarized in **Table 3-4** and shown in **Figure 3-5**. Samples were analyzed for VOCs (SW8260C), SVOCs (SW8270D and SW8270SIM), metals (SW6020A/SW7470A), pesticides (SW8081B), TOC (SW9060), TDS (SM2540C), anions (E300.0), and alkalinity (SM2320B). A subset of samples was also analyzed for oxygen and hydrogen stable isotopes at the University of Utah Stable Isotope Ratio Facility for Environmental Research.

3.7.3 Phase 1 OU2 Surface Water Sampling 2019–2020

The surface water sampling activities for Phase 1 OU2 were completed under the RIWP and FSP for OU2 (CH2M 2018) and the QAPP for Phase 1 OU2 (CDM Smith 2019a). A description of the surface water investigation field activities is presented in the Vapor Intrusion Technical Memorandum (CDM Smith 2021f, attached in **Appendix C**). Seven surface water locations were sampled between December 2019 and March 2020. Grab samples were collected at all locations and analyzed for VOCs (8260B). Locations are summarized in **Table 3-4** and shown in **Figure 3-5**.

3.7.4 Phase 2 OU1 Surface Water Sampling 2021

The surface water sampling activities for Phase 2 OU1 were completed under the QAPP, RIWP, and FSP (CDM Smith 2020d); a description of the investigation field activities is presented in the ESS VI Lines of Evidence DSR (CDM Smith 2021m, attached in **Appendix D**). In April 2021, 11 surface water locations were sampled, including eight locations previously sampled and three new locations. Surface water sampling locations are presented in **Table 3-4** and in **Figure 3-5**.

Surface water sampling consisted of flow rate measurements, water quality field parameter measurements, and collection and shipment of samples for analytical testing. Flow measurements were taken using a velocity meter or a bucket and stopwatch, depending on the field conditions at the measurement point. For example, some measuring points were a pipe which led into a stormwater drain; therefore, a bucket and stopwatch were used to obtain the flow rate. Other flow measurement points were in small streams where a velocity meter was used to collect readings at different locations within a transect of the stream to measure the total flow rate.

SW-15 and SW-34 flow rates were measured at transects using a velocity meter, where depths were recorded, and multiple velocity measurements were taken across the width of the discharge. SW-08, SW-12, SW-16E, SW-39, and SW-53 were all discharging out of a pipe; therefore, a bucket was used to collect the discharge during a timed period to determine the flow. SW-166 flowed across a homeowner’s yard; the small flow channel was dammed, and a piece of gutter downspout was inserted into the dam to concentrate the flow. A quart container was used to collect the discharge for a timed period to estimate the flow rate. SW-16I and SW-35 flow rates were estimated because low flows did not allow the use of either of the flow rate methods described previously. A flow rate was unable to be measured or estimated at SW-54 because of very low flow.

Water quality parameters included pH, specific conductivity, temperature, ORP, DO, and turbidity. Analytical samples were collected for VOCs (SW8260C), total metals (SW6020A/SW7470A), dissolved gases (RSK-175), anions (E300.0), nitrate/nitrite (SM4500-NO3), TOC (SW9060A), and alkalinity (SM2320B). Ferrous iron was measured in the field.

3.8 East Side Springs Soil Gas Sampling

Soil gas sampling in the ESS area was completed for AOU1 in 2015, 2016, and 2017, and for OU1 in 2021. Results from the sampling events have been used to delineate VOC contamination to determine the area susceptible to VI.

3.8.1 AOU1 Soil Gas Sampling 2015-2017

The soil gas sampling activities for AOU1 were completed under the QAPP, RIWP, and FSP for AOU1 (FE 2015a) and MFMs #3–13 (EA 2016a, 2016b); a description of the ESS soil gas investigation field activities is presented in Section 5.5 of the AOU1 Remedial Investigation Report (EA 2019). Soil gas sample locations are presented in **Figure 3-6** and **Table 3-5**.

Near-slab (collected within 5 feet of the foundation of a structure) soil gas samples were collected in 2015, 2016, and 2017. Soil vapor probes were installed adjacent to structures where indoor air samples were collected, either 6 inches below ground surface, or at water table, whichever was shallower. All samples were collected with a vacuum pump in a Tedlar® bag and were analyzed by HAPSITE for a subset of VOCs: PCE, TCE, and cis-1,2-DCE. A second Tedlar bag was filled at all sample locations to field screen using a PID. Confirmation SUMMA® canister samples were collected at a subset of HAPSITE sampling locations. If possible, vapor probes were driven to 5 feet bgs and sampled again to further delineate contamination at depth.

In 2015, open-field (collected greater than 5 feet from an occupied building foundation) soil gas samples were also collected and analyzed by HAPSITE or EPA Method TO-15/TO-15 SIM. These samples were collected at seeps and springs expected to be impacted by VOCs, and at locations adjacent to streets and sidewalks in AOU1.

3.8.2 Phase 2 OU1 Soil Gas Sampling 2020–2021

The soil gas sampling activities for Phase 2 OU1 were completed under the QAPP, RIWP, and FSP (CDM Smith 2020d); a description of the investigation field activities is presented in the associated Phase 2 OU1 DSRs (CDM Smith 2021h, 2021m, attached in **Appendix D**).

In December 2020, SVPs were installed at selected monitoring wells where elevated PID readings were observed in the subsurface vadose zone, or where coarse-grained intervals were encountered. Within the ESS area, the SVPs were installed at four monitoring wells: MW-32, MW-34, MW-37, and MW-38 (**Figure 3-7**). SVPs are 6-inch-long, double-woven, stainless-steel wire screens (0.0057-inch pore) with Swagelok® fittings connected to 0.25-inch, outer-diameter

Teflon-lined tubing. SVPs were installed within a 5- to 6-foot filter pack using #10/20 silica sand. Construction information is provided in **Table 3-6**.

In April 2021, SVPs were installed in seven of the residential groundwater sampling locations (designated “RG”) where groundwater is present deeper than 10 feet bgs. Locations are shown in **Figure 3-7**, and construction information is provided in **Table 3-6**. SVPs were installed at a depth of approximately 5 feet bgs. The SVP consists of 6-inch-long, double-woven, stainless-steel wire screens (0.0057-inch pore) with Swagelok fittings connected to 0.25-inch outer-diameter, Teflon-lined tubing to the ground surface. The SVPs were installed within approximately 1 foot of #10/20 filter pack sand.

In March 2021, soil gas samples were collected at four monitoring well locations with SVPs in the ESS area: MW-32, MW-34, MW-37, and MW-38 (**Table 3-5** and **Figure 3-7**). In April 2021, soil gas samples were collected at seven new SVPs installed with RG wells in the ESS area: RG-01, RG-04, RG-05, RG-07, RG-08, RG-10, and RG-11 (**Table 3-5** and **Figure 3-7**). In August 2021, soil gas samples were collected at four previously sampled SVPs installed with RG wells in the ESS area: RG-01, RG-04, RG-07, and RG-08 (**Table 3-5** and **Figure 3-7**). Sampling was completed in accordance with the Phase 2 FSP of the OU1 RIWP. Soil gas samples were collected in 6-liter SUMMA canisters using 30-minute flow regulators and shipped to Eurofins Air Toxics laboratory for EPA Method TO-15/TO-15 SIM analysis. A minimum of three volumes of the sample tubing volume was purged from each soil gas probe using a vacuum hand pump prior to sample collection. Minimum purge volumes were calculated using the probe depth and tubing diameter. Prior to using the vacuum hand pump, a 1-liter Tedlar bag was filled and the number of pumps per 1 liter was calculated (70 pumps per 1 liter). This flow rate was used to determine time (or number of hand pumps) needed to complete minimum purge volume at each soil gas probe.

3.9 Source Area Soil Gas Sampling

Soil gas sampling has been conducted in 2018, 2019, and 2021 on the VAMC campus and in Sunnyside Park to identify and delineate source(s) of PCE contamination. Samples were collected from previously installed and newly installed SVPs in both soil borings and monitoring well borings, and from Vapor Pins®.

3.9.1 OU2 Soil Gas Sampling 2018–2019

The soil gas sampling activities for OU2 were completed under the QAPP, RIWP, and FSP for OU2 (CH2M 2018**)**, Modification #1 to OU-2 Remedial Investigation Work Plan (Jacobs 2018), and Addendum to Modification #1 to OU-2 Remedial Investigation Work Plan (Jacobs 2019a). A description of the investigation field activities is presented in the 2018 OU2 DSR (Jacobs 2019b, attached in **Appendix B**) and the source area investigation DSR (Jacobs 2019e and Jacobs 2019f, attached in **Appendix B**).

In 2018 and 2019, SVPs and Vapor Pin subslab sampling ports were installed as follows:

- In the VAMC Buildings 6 and 7 area, because of underground utilities, SVPs (**Figure 3-8**) were installed by hand-auger until refusal (ranging from 2.3 to 8.3 feet bgs). Construction information is provided in **Table 3-6**.

- Within VAMC Buildings 6 and 7, Vapor Pin subslab sampling ports (**Figure 3-8**) were installed in the basement and ground floor by drilling recessed ports following manufacturer's recommendations. Construction information is provided in **Table 3-6**.

- Along the sewer line from the VAMC Buildings 6 and 7 to the Sunnyside Park area, SVPs (**Figure 3-9**) were by installed by hand-augering to 5 feet bgs followed by DPT advancement to total depths between 6 and 26 feet bgs. Construction information is provided in **Table 3-6**.

In 2018 and 2019, soil gas sampling was conducted on the VAMC campus and in Sunnyside Park at locations listed in **Table 3-5**. Soil gas samples were collected using Tedlar bags and a purge pump or a lung box. Samples were screened in the field using a PID, and then analyzed with the HAPSITE for PCE, TCE, and cis-1,2-DCE concentrations. Approximately 10 percent of HAPSITE samples were confirmed with SUMMA canisters analyzed by EPA Method TO-15/TO-15 SIM (**Table 3-5**).

3.9.2 Phase 2 OU1 Soil Gas Sampling 2021

The investigation activities for Phase 1 OU2 were completed under the RIWP and FSP for OU2 (CH2M 2018) and the QAPP for Phase 1 OU2 (CDM Smith 2019a). A description of the soil gas investigation field activities is presented in the Source Area Soil Gas and Indoor Air Sampling DSR (CDM Smith 2021l, attached in **Appendix D**). In March 2021, 46 soil gas samples were collected on the VAMC campus (**Table 3-5** and **Figure 3-10**) and in Sunnyside Park (**Table 3-5** and **Figure 3-11**).

Prior to sampling Vapor Pins in Buildings 6 and 7, each location was leak checked by adding distilled water at the surface and around the pin and purging with a vacuum hand pump. If no water was seen drawing down or into the hand pump, the Vapor Pin was assumed to be functional. All Vapor Pins sampled during this event were leak checked successfully. Prior to sampling SVPs (including all SVPs at monitoring well locations with the exception of MW-23), at least three times the volume of the tubing was purged from each SVP, using either a vacuum hand pump or an electric vacuum pump. Prior to using the vacuum hand pump, a 1-liter Tedlar bag was filled and the number of pumps per 1 liter was calculated (70 pumps per 1 liter). The electric vacuum pump had a flow controller set to 1 liter per minute for most locations. Minimum purge volumes were calculated using probe depths and tubing diameter.

MW-23 was constructed with a 1-inch PVC SVP. In this case, minimum purge volume was three times the volume of the 1-inch PVC to the total depth of the SVP. An electric vacuum pump was used at this location and set to 2 liters per minute to increase the purge rate and reduce the purge time.

Sampling was completed in accordance with the Phase 2 FSP of the OU1 RIWP. Soil gas samples were collected in 6-liter SUMMA canisters using 30-minute flow regulators and shipped to Eurofins Air Toxics laboratory for TO-15/TO-15 SIM analysis.

3.10 Indoor Air Sampling

An indoor air investigation was conducted during the RI to determine the extent and magnitude of VOCs in indoor air associated with the site. The following sections describe the indoor air investigation activities completed for the former AOU1, former OU2, and OU1. Supporting documentation for indoor air sampling at individual structures is included in **Appendix C**.

3.10.1 AOU1 Indoor Air Sampling 2015–2017

The indoor air sampling activities were completed under the QAPP, RIWP, FSP, and VI Protocol for AOU1 (FE 2015a) and MFMs #3–13, and #18 (EA 2016a, 2016b, 2017c); a description of the VI investigation field activities is presented in Section 5.5 of the AOU1 Remedial Investigation Report (EA 2019).

VI investigations were conducted within AOU-1 in multiple field efforts during the period of 2015 through 2017, focusing on areas with the highest potential for VI occurrence while also evaluating spatial extent. Repeat sampling of some structures was completed to assess temporal variability. The VI investigation was a broad sampling effort that included areas where previous surface water sampling indicated the presence of PCE contamination and other locations where property owners agreed to indoor air sampling.

A summary of the locations and type of VI sampling that was conducted is presented in **Table 3-7**, in **Figure 3-12,** and further detailed in Table 5-10 of the AOU1 Remedial Investigation Report (EA 2019)**.**

Indoor air sampling occurred between 2015 and 2017. These events consisted of indoor and outdoor air HAPSITE testing and SUMMA canister sample collection. Sampling was conducted in accordance with the VI protocol, as presented in Appendix H of the AOU1 RI (EA 2019). In general, this protocol includes identification of potential interior background sources, collection of negative and ambient pressure HAPSITE screening samples to characterize the indoor air space, positive pressure real time quantitative sample collection using a HAPSITE, indoor air sample verification using SUMMA canisters, and ambient outdoor background samples using a HAPSITE. HAPSITE samples were analyzed for PCE, TCE, cis-1,2-DCE, and VC, and SUMMA canisters were submitted for laboratory analysis for VOCs using EPA Method TO-15/TO-15 SIM.

The 2015 VI investigation started in January and ended in April. This event included sampling 36 structures at multiple locations within the structures, including 30 private residences, four schools, a church, and an elderly care facility, as listed in **Table 3-7**. Some of the data collected during this event were qualified during data validation because field data collection was not completed in compliance with the AOU1 QAPP. As stated in Section 6.2.5 of the Final AOU1 RI report (EA 2019), these data are not usable for the risk assessment but can still be used to qualitatively evaluate the extent of VI or as a supporting line of evidence for other data.

The 2016 VI investigation started in February and continued through June. This event included 16 residential structures and one school. Five of the residential structures sampled in 2016 had previously been sampled in 2015 (0003-H, 0011-H, 0017-H, 0018-H, and 0037-H). The team determined that a HAPSITE was not sufficiently sensitive for quantifying VC at concentrations below the project screening level. In 2016, the field team removed VC from the HAPSITE calibration.

The last round of sampling for the AOU1 field investigations took place during March and April 2017. This event included 8 new residential structures and 10 previously sampled residential structures. In the eight new structures, HAPSITE monitoring was conducted both with pressure cycling and under ambient conditions. In the 10 previously sampled locations, HAPSITE monitoring was conducted with no pressure cycling and 24-hour SUMMA sampling was completed. Both TO-15 and TO-15 SIM were used to analyze the SUMMA canister samples.

3.10.2 OU2 Indoor Air Sampling 2018–2019

The indoor air sampling activities for OU2 were completed under the QAPP, RIWP, and FSP for OU2 (CH2M 2018). A VI investigation was conducted in 2018 to assess the presence of vapor intrusion in Buildings 6, 7, 13, and 20 on the VAMC campus; a description of the indoor air investigation field activities is presented in the 2019 Indoor Air DSR (Jacobs 2019d, attached in **Appendix B**). A subsequent VI investigation was conducted in 2019 to assess the extent of VI in Building 6 and 7 (Jacobs 2019e and Jacobs 2019f, attached in **Appendix B**). A summary of the locations and type of VI sampling that was conducted is presented in **Table 3-7** and in **Figure 3-12**.

The indoor air sampling followed procedures outlined in the AOU1 RIWP (FE 2015a) and MFM #18 (EA 2017c). In general, this included a building site walk to determine potential pathways and background sources, HAPSITE testing, pressure cycling, and 24-hour fixed indoor and outdoor samples collected by SUMMA canisters and submitted for analysis by EPA Method TO-15/TO-15 SIM. Pressure cycling (specifically, negative pressure) is used to force "worst-case" scenario conditions and to replicate potential seasonal variation.

In January and February 2019, indoor air samples were collected at Buildings 6, 7, 13, and 20 for analysis by HAPSITE. Following this initial testing, the building was screened for potential background sources and all identified sources were removed. These locations were then rescreened using a HAPSITE to determine where to collect laboratory confirmation samples. It was determined, based on non-detectable PCE concentrations in Buildings 13 and 20, to not collect laboratory confirmation samples in those buildings. In September 2019, a follow-up investigation at Buildings 6 and 7 was conducted to collect SUMMA canister samples for laboratory analysis by EPA Method TO-15/TO-15 SIM. A total of seven indoor air samples were collected from the main level in Building 6 (B6-IA01 through B6-IA06, and B6-IA09), and two indoor air samples were collected from the basement of Building 6 (B6-IA07 and B6-IA08). One outdoor air sample was collected from outside Building 6 (B6-OA02). Six indoor air samples were collected from the main level in Building 7 (B7-IA01 through B7-IA04, B7-IA06, and B7-IA07), and one indoor air sample was collected from the basement in Building 7 (B7-IA05). One outdoor air sample was collected from outside Building 7 (B7-OA01).

3.10.3 Phase 1 OU2 Indoor Air Sampling 2019-2021

The indoor air sampling activities for Phase 1 OU2 were completed under the RIWP and FSP for AOU1 (FE 2015a), the QAPP for Phase 1 OU2 (CDM Smith 2019a), MFM #19 to AOU1 RIWP and FSP (CDM Smith 2019d), and the revised VI protocol (CDM Smith 2019e). A description of the indoor air investigation field activities is presented in the Vapor Intrusion Technical Memorandum (CDM Smith 2021f, attached in **Appendix C**). A summary of the locations and type of VI sampling conducted is presented in **Table 3-7** and in **Figure 3-12**.

The Phase 1 OU2 indoor air sampling investigation followed procedures outlined in the revised VI protocol (CDM Smith 2019a). Visual inspections of homes and interviews of property owners were conducted to obtain supportive information, such as potential background sources. A walk-through was then performed to identify where to locate the vapor sampling devices with the considerations listed in the revised VI protocol (CDM Smith 2019a). Sample collection included a 24-hour SUMMA canister in tandem with 3-week passive absorbent samplers during the heating season under normal conditions to provide a longer-term average exposure sample. Additionally, air samples were collected in Tedlar bags for HAPSITE screening to provide a rapid concentration level assessment at each location. SUMMA canister samples were analyzed for VOCs by modified EPA Method TO-15/TO-15 SIM. Radiello® passive absorbent samples were analyzed for VOCs by modified EPA Method TO-17. Outdoor air samples were collected using SUMMA canisters.

The investigation during 2019–2020 was based on historical data collected during the AOU1 2015–2016 investigations, as described above. This included nine prioritized homes that had previously been investigated and five homes based on nearby soil gas concentrations found during the AOU1 RI. Of the 14 homes identified, 6 homeowners agreed to participate during the 2019–2020 investigation. An additional 24 homes also volunteered for participation based on public outreach efforts conducted by VA. The investigation was conducted over three, 3-week sampling periods: December 2019 to early January 2020, January 2020, and March 2020. A summary of the properties investigated and the dates of investigation are included in **Table 3-7**.

3.10.4 Phase 2 OU1 Indoor Air Sampling 2021–2022

The indoor air sampling activities for Phase 2 OU1 were completed under the QAPP, RIWP, and FSP for OU1 (CDM Smith 2020d) and the revised VI protocol (CDM Smith 2019e); a description of the investigation field activities is presented in the Source Area Soil Gas and Indoor Air Sampling DSR (CDM Smith 2021l, attached in **Appendix D**). The indoor air sampling investigation followed procedures outlined in the revised VI protocol (CDM Smith 2019e). An indoor source assessment was conducted prior to collecting indoor air samples and suspected indoor sources were removed prior to sampling. Sampling included the collection of 24-hour SUMMA canisters to be analyzed by EPA Method TO-15/TO-15 SIM. A subset of locations was selected from the September 2019 investigation of Buildings 6 and 7 for evaluation in March 2021. A summary of the locations and type of VI sampling that was conducted is presented in **Table 3-7** and in **Figure 3-12**. In Building 6, one basement location (B6-IA08) and one main floor location (B6-IA06) were selected and sampled. In Building 7, one basement location (B7-IA05) and one occupied office space location (B7-IA02) were selected and sampled.

Additional indoor air sampling was conducted in August 2021 at 10 residential structures. Of these locations, nine had been previously investigated and one home was newly investigated. The sampling followed procedures outlined in the revised VI protocol (CDM Smith 2019a). Visual inspections of homes and interviews of property owners were conducted to obtain supportive information, such as potential background sources. Sample locations within each home were selected based on prior investigation results, and a walkthrough was performed to confirm where to locate the vapor sampling devices with the considerations listed in the revised VI protocol (CDM Smith 2019a). Outdoor air samples were also collected at four properties within the ESS area. Sample collection included a 24-hour SUMMA canister analyzed for VOCs by modified EPA Method TO-15/TO-15 SIM.

An indoor air sampling event was conducted in March 2022 at 33 residential structures, one church, and one school to represent winter VI conditions in the ESS area. Of these locations, 6 residential structures had been previously investigated and 27 residential structures were newly investigated. Visual inspections of homes and interviews with property owners were conducted to obtain supportive information, such as potential background sources. Sample locations within each home were selected based on prior investigation results, and a walkthrough was performed to confirm placement of vapor sampling devices considering the revised VI protocol (CDM Smith 2019a). Additionally, indoor air samples were collected from two buildings on the VAMC campus (Building 20 and Building 32). Outdoor air samples were collected at five properties within the ESS area and at one location on the VAMC campus. Sample collection included a 24-hour SUMMA canister analyzed for VOCs by modified EPA Method TO-15/TO-15 SIM.

3.11 Surveying

All permanent and temporary groundwater sampling locations installed during the AOU1 investigation were surveyed using horizontal North American Datum of 1983 (NAD83) and vertical control National Geodetic Vertical Datum of 1929 (NAVD29). All new and existing permanent groundwater sampling locations were surveyed during the Phase 1 OU2 and Phase 2 OU1 investigation using NAD83 and vertical control North American Vertical Datum of 1988 (NAVD88), and survey reports are included in **Appendix C** and **Appendix D**.

3.12 Investigation-Derived Waste

All investigation-derived waste (IDW) was handled according to procedures provided in the QAPP (FE 2015a for AOU1, CH2M 2018 for OU2, CDM Smith 2019a for Phase 1 OU2, and CDM Smith 2020d for Phase 2 OU1). All decontamination water, hydrovac water, and purge/development water was transferred to the holding tanks on the VAMC campus IDW yard. All excavated soils were either placed in lined roll-off bins or 55-gallon steel drums. All groundwater and soil IDW were characterized and determined to be nonhazardous and were disposed off-site at the Wasatch Regional Landfill in Tooele County, Utah.

All general refuse was disposed of as municipal waste and placed in a dumpster located on the VAMC campus.

3.13 Deviations from the Work Plan and QAPP

The following sections describe the deviations from the RIWP (and QAPP, FSP, and associated MFMs) for the former AOU1, former OU2, Phase 1 OU2, and Phase 2 OU1 during RI activities.

3.13.1 AOU1 Deviations

- A complete summary of deviations from the RIWP (and QAPP, FSP, and associated MFMs) and the impact on data usability are provided in Table 5-14 of the AOU1 RI Report (EA

2019). No negative impact on data usability was noted, and the data may be used as intended with the following exception:

- As presented in Section 6.2.4 in the AOU1 RI (EA 2019), some of the soil gas, indoor air, and outdoor air EPA Method TO-15/TO-15 SIM and HAPSITE data collected in 2015 were qualified during data validation because field data collection was not completed in compliance with the QAPP. In addition to the data validation, a third-party QA assessment was conducted by an independent contractor to determine usability of the data because of field and laboratory documentation discrepancies. The data evaluation for usability determined the data was not usable for the risk assessment but can still be used in defining the extent of vapor intrusion. Valid usable EPA Method TO-15/TO-15 SIM data for the risk assessment is available for 5 of the 36 structures sampled in 2015. Valid usable HAPSITE data for the risk assessment is available for 7 of the 36 structures sampled in 2015. All data generated during the 2016 and 2017 VI investigations were deemed usable to achieve project objectives.

During the implementation of the RI field activities, the following field deviations occurred:

- Change in the sample naming convention for VI samples collected in 2015 and 2016. The RI compliant sample identifications are included in the report for cross reference (Table 5-15, EA 2019). This deviation does not impact data usability.

- Change in sample naming convention for groundwater, surface water, and soil. A parcel code and date code were not included in the sample identification. The sample identification included the "A" for AOU-1, the sample type "GW, SW, or SS" and a sequential number-01, -02, etc., with the exception of soil samples. Soil sample identification used a number that corresponded to the adjacent surface water sample number. The RI compliant sample identifiers are included in the report for cross reference (Table 5-15, EA 2019). This deviation does not impact data usability.

- Borings GW-01, GW-02, GW-04, GW-07, GW-08, GW-12, GW-13, GW-14, GW-21, and GW-25 were shifted from their proposed locations to either avoid underground utilities or to better define the PCE groundwater plume. This deviation does not impact data usability.

- Changes to the timing for collection of groundwater and surface water samples owing to access and availability of properties. This deviation does not impact data usability.

- Change to the number of manually installed groundwater monitoring points. Only two temporary groundwater monitoring points were manually installed (via hand auger). The remaining points were installed using DPT. All intended groundwater monitoring points were installed; there is no impact upon data usability.

- Depth to groundwater was not measured during purging of temporary groundwater monitoring points because of the small diameter of the well, preventing insertion of the water level indicator with the sampling tubing. Other parameters (i.e., pH, conductivity) were used to evaluate stability prior to sample collection, and because of the small capacity of the monitoring points and annular space, there is high confidence that the water is representative of the aquifer. This deviation does not impact data usability.

- No pH data collected at GW-23 and GW-39 because of malfunction of the pH probe on the water quality meter. Data completeness goals were met, and there is no impact upon data usability.

- Samples were not collected for VOC screening at groundwater monitoring points GW-07 and GW-17 because of low groundwater yield. As the data completeness goal was met, there is no impact upon data usability.

- Surface water locations SW-01, SW-02, SW-03, SW-05, SW-07, SW-08, SW-09, SW-10, SW-13, SW-17, SW-18, and SW-19 were repositioned because of seeps and springs not being present as expected or denied property access. As all intended samples were collected, there is no impact upon data usability.

- Surface soil and surface water samples were not surveyed. The small parcel sizes allowed for physical description of the location that was later georeferenced using GIS. There is no impact upon data usability.

- Two surface water samples were analyzed for stable isotopes deuterium and oxygen-18 instead of 10 samples because of VA storage refrigerator malfunction. The intended samples were collected in 2018 during the OU2 investigation activities, and there is no impact upon data usability.

- It was determined that baseline surface soil/sediment data was necessary to serve as a reference, so one of the three planned surface soil/sediment samples was relocated to a location where PCE was not detected in the groundwater. This deviation does not impact data usability.

- Soil gas sampling was not performed at one location with indoor air RBSL exceedances (0022-S), three locations without indoor air RBSL exceedances but selected as additional VC concentration confirmation sites (0007-H, 0027-H, and 0036-H), and two locations where indoor air confirmation was requested by VA (0019-B and 0028-S).

- The initial agency-approved QAPP indicated that all indoor air samples would be analyzed using the full TO-15 method. The QAPP did not specify the laboratory method detection limits (MDLs) for Method TO-15, which were not adequate for several analytes. The inadequacy of the full TO-15 method was identified at the start of the field effort, and the combination TO-15/TO-15 SIM method was used and not the full TO-15 method for indoor air samples. Subsequent planning documents were corrected to reflect the requirement for the combination TO-15/TO-15 SIM method to meet project quantification goals.

- It was anticipated that a total of 50 open-field soil gas samples would be collected along street right-of-way and on residential properties near seeps and springs; however, because of close spacing of residences, the presence of landscaping and pavement, narrow right-of-way, refusal due to cobbles and clays, and the presence of utilities and trees, open-field soil gas samples were only collected at sites 0018-H, 0019-B, 0026-H, and 0031-S. As near-slab and SVP soil gas samples were collected during later phases of the RI, project objectives were achieved.

- Near-slab soil gas sampling probes could not be installed at two sites, 0032-H and 0038-H, because of very shallow refusal on large cobbles. Data completeness goals were met, and there was no impact upon data usability.
- HAPSITE samples collected at 0050-H on March 23, 2016, were misidentified, indicating that the samples were collected at 0051-H in the 2016 Vapor Intrusion Investigation Field Data Report (EA 2018b). As the sample identifiers were corrected prior to the completion of the AOU1 RI report (EA 2019), there is no impact upon data usability.
- Section 6.2.1.4 of the RIWP indicates indoor air samples would be collected from previously sampled structures in May or June timeframe. However, since groundwater elevations remain high in spring and cool weather months create the most conservative sampling scenarios, the samples were collected during cool weather months (March).
- In addition to deviations associated with the field activities, deviations occurred during the sample analyses at the CLP, EPA Region 8, and ALS Environmental laboratories. These deviations are as follows:
- 1,4-dioxane was analyzed using the CLP SVOC method SOM01.2. The validation of the data resulted in rejection of the 1,4-dioxane results in the groundwater samples because of the associated quality control data that indicated poor surrogate recoveries. At the time, this potentially presented a data gap for groundwater as EPA requested 1,4-dioxane to be included with the analysis; however, subsequent samples have been collected from the monitoring well network for 1,4-dioxane analysis.
- CLP laboratories implemented the more current versions of the CLP Statement of Work analytical methods for VOCs, SVOCs, and metals than were included in the QAPP. Methods SOM02.3 and ISM02.3 were used in lieu of SOM02.2 and ISM02.2; however, this does not impact the data quality or usability.
- Nitrate nitrogen was requested by EPA Method 300.0 for analysis of groundwater samples at the EPA Region 8 laboratory. The samples were analyzed using the correct method; however, the laboratory reported nitrate/nitrite nitrogen data. The data may be biased slightly high because of the inclusion of nitrite; the data is still usable to achieve project objectives.
- TDS analysis by Standard Methods SM2540C was requested of the EPA Region 8 laboratory; however, the laboratory reported the data by EPA Method 160.1. The data is still usable to achieve the project objectives.
- Alkalinity was requested to be analyzed at ALS Environmental using Standard Methods SM2320B; however, the laboratory analyzed the samples using EPA Method 310.1. This data is still usable to achieve project objectives.

3.13.2 OU2 Deviations

A complete summary of deviations from the OU2 RIWP (and QAPP, FSP, and associated MFMs) and the impact on data usability are provided in the 2018 OU2 DSR (Jacobs 2019b, attached in **Appendix B**). No negative impact on data usability or project objectives was noted, and the data may be used as intended. During the implementation of the RI field activities, the following field deviations occurred:

- Several wells were moved to nearby locations for logistical or access reasons; the moved locations are still appropriate to meet project objectives.
  - MW-12S/D proposed location on McClelland Street near 800 South was moved because of overhead power lines at this location. MW-12S/D were moved to the south end of McClelland Street, 35 to 40 feet north of the intersection of McClelland Street and 900 South.
  - MW-16S/D proposed location at the corner of 800 South and Elizabeth Street was moved to accommodate business access in the area. MW-16S/D were moved approximately 140 feet north of the intersection of 800 South and Elizabeth Street.
  - MW-18 proposed location on the north end of the East High School parking lot was adjusted slightly north of its original location to maintain the planned spacing with the adjusted location of MW-20S/D. The well was also moved west into the green space adjacent to the parking lot as requested by the Salt Lake City School District.
  - MW-19 proposed location on the southwest corner of the East High School parking lot was moved north of its original location to accommodate the adjusted location of MW-20S/D. As with MW-18, this well was also moved west into the green space adjacent to the parking lot as requested by the Salt Lake City School District.
  - MW-20S/D proposed location immediately west of the East High School football stadium was adjusted northwest of its original location, into the green space south of the East High School parking lot. MW-20S/D was moved to avoid the steep slope and fenced area in the original location and to move the well closer to the East Bench Fault.
  - MW-22 planned location was moved south into the green space south of the intersection between 1400 East and 900 South. The location was adjusted to reduce impact to local traffic, provide a better workspace for drilling, and increase safety by providing larger buffer between the drill rig and residents in the area.
  - MW-08 was moved approximately 250 feet west of the originally proposed location at the southeast corner of Mount Olivet Cemetery to reduce the noise level in the cemetery, as requested by USACE after receiving feedback from VA and Mount Olivet Cemetery. MW-08 was moved to approximately 70 feet east of the intersection of 700 South and University Street.
- Planned monitoring wells MW-07, MW-09, MW-10, and MW-11 (CH2M 2018) were not installed during the OU2 investigative activities and were superseded by locations MW-34,

MW-30, MW-31, and MW-33 (CDM Smith 2019c) that were installed at similar locations during Phase 1 OU2 investigative activities. As the planned monitoring wells were installed at a later date, project objectives were met.

- The RIWP originally specified dry bulk density analysis (ASTM D2937) and vertical permeability analysis (ASTM D2434). These analyses were substituted for dry unit weight (ASTM D7263) and vertical hydraulic conductivity (ASTM D5084), respectively. Dry bulk density is typically used for fine-grained soils with known volume while dry unit weight can be used for more granular samples with irregular shapes. The hydraulic conductivity test was substituted for vertical permeability, as it is more suitable for the fine-grained soils that were the types of soil selected for testing. Although the tests are performed in a slightly different manner, the results are similar and the data meet project objectives.

- During monitoring well installation the Puregold® grout was substituted for the neat Portland cement grout specified in the RIWP because of the driller's concerns about potential damage to the PVC from the heat of hydration of the cement. This deviation does not impact data quality or project objectives.

- Monitoring wells were developed approximately 4 to 32 days after construction of each well was completed. The RIWP specified that well development would be completed 48 hours to 7 days after construction was complete. The timeframe for well development was adjusted to increase efficiency for the drilling subcontractor. This deviation does not impact data quality or project objectives.

- Four SVPs (SG-08, SG-09, SG-11, and SG-19) were installed at depths less than the planned 5 feet bgs because of refusal while hand-augering. As the SVPs were installed at sufficient depths to delineate the soil gas plume, project objectives were met.

- One SVP (SG-16 on the VAMC campus) was not advanced or installed because of uncertainty in underground utilities caused by a surface obstruction that blocked the utility survey. There are sufficient other SVP locations to delineate the soil gas plume; this deviation does not impact project objectives.

- Eight HAPSITE soil gas samples (SG-24 through SG-31) were sampled using a purge pump, which biased VOC sample results high because of potential sample carry over/cross-contamination in the purge pump system and tubing. These results were qualified as estimated and should be considered conservative. As these conservative results were below the applicable screening levels, the data can be used as intended, and project objectives were met.

- Monitoring well intervals MW-03RD and MW-08C were not sampled during the Q4-2018 groundwater sampling event because pumps were not installed in the wells. As these wells were sampled during subsequent field events, project objectives were met.

3.13.3 Phase 1 OU2 Deviations

During the implementation of the OU2 RI field activities, minor deviations from field procedures were encountered during drilling, well installation, and sampling. A complete summary of deviations from the RIWP (and QAPP, FSP, and associated MFMs) and the impact on data usability are provided in the individual Phase 1 OU2 Data Summary Reports (CDM Smith 2020c, 2021a, 2021d, 2021g, attached in **Appendix C**). No negative impact on data usability or project objectives was noted, and the data may be used as intended. A summary of the deviations is as follows:

- VOC sample preparation and analyses were conducted within the method-specified holding times except for a few Encore samples, which were frozen approximately 40 minutes outside of holding times upon receipt at the laboratory. This situation occurred because the laboratory had additional safety precautions in place for sample receipt because of the coronavirus disease 2019 (COVID-19) pandemic. This deviation does not impact investigation results or DQOs.

- Five additional Encore samples were frozen past the required hold time because of a FedEx shipping delay. This deviation does not impact investigation results or DQOs.

- Ten non-detect VOC analyte results were rejected during validation because of an exceedance of hold time. These results do not affect DQOs as they are not analytes of concern, and completeness goals were met.

- As an SVP was not available at the time of installation, a 1-inch ZIST PVC casing was installed in the vadose zone to act as an SVP at MW-23. This deviation does not impact investigation results or DQOs.

- Plume delineation well MW-33, planned north of MW-32, was determined to be unnecessary to delineate groundwater impacts and was not installed during the Phase 1 OU2 drilling event. During development at MW-30 zones A and B, there was difficulty getting the pumps to depth, and sediment prevented sufficient development. A downhole camera was deployed in MW-30 zones A and B, showing sediment to the depth of the screen, indicating the wells were damaged during installation. MW-30 zones A and B were replaced during the Phase 2 OU1 investigation activities, and project objectives were met.

- During development, only wells with measurable sediment accumulation were airlifted. Pumps were installed in wells without measurable sediment and were purged until water cleared. This deviation does not impact data usability.

- During development, water quality parameters were not measured during gas lifting because of the disturbance to the water during the process. As a result, well development forms were not completed during development of the ZIST wells. Development continued until the water was clear. Volume purged was recorded in the field logbook, and project objectives were met.

- During development, air lifting was performed at MW-32A followed by purging with a stainless steel Hurricane® submersible pump. A well development form was not completed during development of this well. Development continued until the water was clear. Volume purged was recorded in the field logbook, and project objectives were met.

- The following deviations occurred during the Q4-2019 groundwater sampling event (CDM Smith 2020c, attached in **Appendix C**):

  - Groundwater elevation measurements were not completed at MW-14D and MW-17D. Both wells were artesian during the event. MW-17D was not fitted with a gauge at the time of the synoptic water level event, so a groundwater elevation measurement was not made. MW-14D is fitted with a gauge; however, during the synoptic water level event, the gauge displayed no pressure reading. As water level measurements at these locations were completed during subsequent events, project objectives were met.

  - MW-01S was not sampled, as the dedicated pump tubing was found to be detached, and the team was unable to retrieve the pump from the well. The pump was later retrieved and the well has been sampled during subsequent field events. The completeness goals for the Q4-2019 event were met; this deviation does not impact DQOs.

  - MW-21 and MW-22 were not sampled, as the dedicated pumps at these locations had malfunctioning bladders. The bladders were replaced and the wells were sampled during subsequent field events. The completeness goals for the Q4-2019 event were met; this deviation does not impact DQOs.

  - Samples at the following locations were collected prior to meeting the turbidity stabilization criteria: MW-03RB, MW-08C, MW-12S, MW-13S, MW-15D, MW-17D, and MW-20S. Turbidity at these locations was less than 50 nephelometric turbidity units (NTU), but not within 10 percent; therefore, no impact upon data quality at those locations is expected.

- The Q1-2020 groundwater sampling event was not conducted because of travel restrictions in place as part of the COVID-19 pandemic. An additional groundwater sampling event was completed at a later date to meet project objectives.

- The following deviations occurred during the Q2-2020 groundwater sampling event (CDM Smith 2021d, attached in **Appendix C**):

  - Planned groundwater samples from the following locations were not collected: MW-23A/B, MW-25A/B, and MW-26A/B/C/D. Samples were not collected because of pump malfunctions. The pumps were repaired/replaced and the wells were sampled during subsequent field events. The completeness goals for the Q2-2020 event were met; this deviation does not impact DQOs.

- The following deviations occurred during the Q3-2020 groundwater sampling event (CDM Smith 2021g, attached in **Appendix C**):

  - Water levels were not measurement in MW-15S/D (inaccessible because of parked cars) and MW-30A/B (damaged at the time of the sampling event). As water level measurements at these locations were completed during subsequent events, project objectives were met.

- Purge parameter stabilization criteria were not met at MW-05R (DO) and MW-14D (DO and temperature) prior to collection of groundwater samples. While sampling without meeting stabilization criteria may bias the VOC results low, as these wells were sampled during subsequent field events, this deviation does not impact DQOs.
- There was insufficient water to collect a groundwater sample from MW-12S. As this well was sampled during previous field events and completeness goals for the Q3-2020 event were met, this deviation does not impact DQOs.
- Because of damage in the screened interval, no samples were collected from MW-30A/B. As groundwater samples were collected from the replacement wells during subsequent field events, and completeness goals for the Q3-2020 event were met, this deviation does not impact DQOs.
- Because of low flow rate and difficulties with the ZIST sampling system, groundwater samples for TDS and alkalinity analyses were not collected from MW-31A. As completeness goals for the Q3-2020 event were met, this deviation does not impact DQOs.
- Because of difficulties with the ZIST sampling systems, a consistent flow of water to the surface could not be sustained during purging at a few locations:
    - MW-26B/D and MW-34A – groundwater samples for VOCs were collected without meeting purge parameter stabilization criteria. While sampling without meeting stabilization criteria may bias the results low, as these wells were sampled during subsequent field events, this deviation does not impact DQOs.
    - MW-26C – no groundwater samples were collected. As this well was sampled during subsequent field events, and completeness goals for the Q3-2020 event were met, this deviation does not impact DQOs.

3.13.4 Phase 2 OU1 Deviations

During the implementation of the RI field activities, minor deviations from field procedures were encountered during drilling, well installation, and sampling (CDM Smith 2021h, attached in **Appendix D**).

- Source area well MW-35, planned northwest of Building 7, was not installed during the Phase 2 OU1 investigation. The sampling results of other source area wells installed during the Phase 1 OU2 investigation fully delineated the groundwater plume in this area, fulfilling project objectives.
- During well development, a PVC bailer and submersible pump were used at MW-13L instead of air lifting. A well development form was not completed during development of this well. Development continued until the water was clear. Volume purged was recorded in the field logbook, and project objectives were met.
- Airlifting at MW-34A was unsuccessful and development was performed with a Waterra® pump. As development objectives were met, this deviation does not impact DQOs.

- Several ZIST wells installed during the Phase 1 OU2 investigation required further development. Well development forms were not completed during development of the ZIST wells. Development continued until the water was clear. The volume purged was recorded in the field logbook, and project objectives were met.

- During the Phase 2 OU1 drilling investigation, soil samples were not collected for total ferrous iron mineral samples as described in Section 3.3 of the FSP of the RIWP (CDM Smith 2020d). As all planned borings were expected to be outside the plume boundary (with the exception of the replacement well for MW-30, where ferrous iron mineral samples were collected during the installation of the original well), it was determined that the samples were not needed to meet project objectives.

- The following deviations occurred during the Q4-2020 groundwater sampling event (CDM Smith 2021i, attached in **Appendix D**):

  - Purge parameter stabilization criteria for turbidity were not met at MW-03RB/D, MW-25A, and MW-29B prior to the collection of groundwater samples. Turbidity at these locations was less than 50 NTU, but not within 10 percent; therefore, no impact upon data quality at those locations is expected. No analytical result bias for dissolved VOCs, including chlorinated compounds (EPA 2005a), is anticipated to result from turbid water samples. This deviation does not affect DQOs or data usability.

  - As MW-13S was purged dry, a sample was collected the next day once sufficient recharge was observed without meeting purge parameter stabilization. This was an accepted deviation in the low-flow groundwater sampling SOP and does not impact data quality.

  - There was insufficient water to collect a groundwater sample from MW-12S. As this well was sampled during previous field events, and completeness goals for the Q4-2020 event were met, this deviation does not impact DQOs.

  - Because of a high amount of sediment, groundwater samples for VOCs were collected from MW-13L without collecting purge and geochemical parameters. While sampling without meeting stabilization criteria may bias the VOC results low and geochemical parameters were not collected during the Q4-2020 event, as this well was further developed and sampled during subsequent field events, this deviation does not impact DQOs.

  - Because of difficulties with ZIST sampling systems, a consistent flow of water to the surface could not be sustained during purging at the following locations:

    - MW-26C/D and MW-34B/C – Groundwater samples for VOCs were collected without meeting purge parameter stabilization criteria. While sampling without meeting stabilization criteria may bias the results low, as these wells were sampled during subsequent field events this deviation does not impact DQOs.

  - No groundwater samples were collected at MW-26D. As this well was sampled during previous field events and completeness goals for the Q4-2020 event were met, this deviation does not impact DQOs.

- The following deviations occurred during the Q1-2021 groundwater sampling event (CDM Smith 2021j, attached in **Appendix D**):

  - Purge parameter stabilization criteria for turbidity (either less than 10 NTU or less than 50 NTU and within 10 percent) were not met at MW-14S and MW-23B. Turbidity at these locations was less than 50 NTU, but not within 10 percent; therefore, no impact upon data quality at those locations is expected.

  - Purge parameter stabilization criteria for turbidity and conductivity (within 10 percent) was not met for MW-08C. No analytical result bias for dissolved VOCs, including chlorinated compounds (EPA 2005a), is anticipated to result from turbid water samples. This deviation does not affect DQOs or data usability.

  - As MW-13S was purged dry, a sample was collected the next day once sufficient recharge was observed, without meeting purge parameter stabilization. This was an accepted deviation in the low-flow groundwater sampling SOP and does not impact data quality.

  - Because of a malfunctioning pump at MW-05R, groundwater samples could not be obtained. At MW-12S, there was insufficient water to collect a groundwater sample. As these wells were sampled during previous field events and completeness goals for the Q1-2021 event were met, this deviation does not impact DQOs.

  - Water level elevations could not be measured at MW-29A, MW-31A, and MW-34A, as the water levels were above the pump intakes but below the volume booster. As water level measurements at these locations were completed during previous events, project objectives were met.

- The following deviations occurred during the installation of the residential groundwater sampling locations, indoor air sampling of Buildings 6 and 7, soil gas sampling, and surface water sampling during the Q2-2021 events (CDM Smith 2021l, 2021m, and the Quality Control Summary Report attached in **Appendix D**):

  - During RG well development, documentation was completed in the field logbook rather than on field forms. Several locations had slow recharge; therefore, many of the locations were purged dry and then allowed to recharge. Since many of the locations were purged dry, parameter stabilization was not measured. After the minimum calculated purge volume was removed and the groundwater recharged, a bailer was pulled with the recharge water to visually examine the clarity. Development continued until the water was clear, volume purged was recorded in the field logbook, and project objectives were met.

  - Field parameters were only collected at RG wells with sufficient water present in the HydraSleeve following filling containers for laboratory analysis. As HydraSleeve and surface water sampling do not require the collection of field parameters for the determination of stabilization during purging, field parameters were recorded in the field logbook and not on field forms. This deviation does not impact data quality or project objectives.

- As the hollow stem auger cuttings from RG-06 (GW-50) were mixed and saturated because of the relatively shallow depth to water, photographic documentation of the cuttings was not completed. This deviation does not impact data quality or project objectives.

- The following deviations occurred during the March 2022 indoor air sampling events (see the Quality Control Summary Report attached in **Appendix D**):
  - The initial 24-hour SUMMA canister deployed at 0029-H did not collect adequate sample volume for analysis. The sample was recollected at a later date and there was no impact upon data quality or project objectives.
  - Sample identification discrepancies (due to both laboratory error and the field team's failure to follow the sample name convention) occurred for several samples. The sample identification discrepancies were corrected and there was no impact upon data quality or project objectives.
  - Deviation from sample custody procedures occurred as one chain-of-custody was completed in something other than ink. The entries on the chain-of-custody were reviewed for accuracy, and the field team was notified. As a copy of the chain-of-custody that cannot be altered was included in the analytical laboratory data package, there was no impact upon data quality or project objectives.

Section 4

Physical Characteristics of the Study Area

This section describes the physical characteristics of the study area, including surface features, meteorology, surface water hydrology, geology, and hydrogeology.

4.1 Surface Features

The site is located on an alluvial fan formed from the erosion of the Wasatch Mountain front located approximately one mile to the east. The site topography slopes to the southwest with a grade of 4 percent until reaching the East Bench Fault, where it steepens to 10 percent (EPA 2012, UOS 1999, EA 2017b).

The ground surface elevation at the VAMC campus is about 4,735 feet amsl. The approximate elevation of 1300 East, which runs parallel to the East Bench Fault in front of East High School, is 4,530 feet amsl. The elevation of Artesian Well Park at 800 South and 500 East located west and approximately 10,500 feet downgradient of the VAMC campus (**Figure 1-2**) is approximately 4,260 feet amsl (EA 2017b).

The site is located in an urban, mostly developed area. The land area is approximately 75-percent residential, 5-percent commercial, 10-percent public or private schools, and the rest is publicly owned rights-of-way or parkland. The residential areas were generally developed in the early 1900s on land that was undeveloped open fields and farmland. The homes built since range from small homes with on-grade concrete slab foundations to large multi-story homes that are built into the steep hillsides of the fault scarp. Many of the homes have partially to fully below-ground basements that are finished as living spaces. Future land use is likely an urban, mostly developed area because of well-established neighborhoods, public and private schools, and the abundant public parklands (FE 2015a).

4.2 Meteorology

Generally, the climate of the surrounding region is a semiarid continental climate with year-round rainfall (FE 2015a). Summers are typically dry and hot. Winters are mild with precipitation from mid-latitude cyclones. The average temperatures range from 27.9 degrees Fahrenheit (°F) in the coldest month of January to 77.9°F in July, the hottest month in the year. The annual average temperature is 52°F with an average daily temperature range of 23.3°F (Climatemps 2021).

Meteorological data for this site was obtained from three nearby climate stations with data available through the National Oceanic Atmospheric Administration's National Centers for Environmental Information online database. The closest weather station to the site is at the University of Utah (approximately 0.6 miles from the VAMC campus). Data from this station is available through 1989, with an average annual precipitation between 1979 and 1989 of 21.2 inches per year.

The next closest weather station is at the Salt Lake Triad Center, approximately 3.5 miles to the northwest of the VAMC campus. Monthly rainfall totals are available for this weather station between May 1985 and May 2013. The average annual rainfall over that period was measured to be 16.4 inches. During the years when data were available at both the University of Utah weather station and the Triad Center station, annual average rainfall at the University was 20 percent higher than what was recorded at the Triad Center. This is expected as the University is approximately 550 feet higher elevation than the Triad Center.

The third closest National Oceanic and Atmospheric Administration weather station is at the Salt Lake City International Airport, approximately 7.5 miles northwest of the VAMC campus (and approximately 550 feet lower elevation than the University weather station). Monthly rainfall data are available for every year between 1979 and 2020 at this station, with an average annual rainfall of 15.6 inches per year over that period. During the years when data were available at both the University of Utah weather station and the Airport station, annual average rainfall at the University was 29 percent higher than what was recorded at the airport, which is expected owing to the elevation difference between the sites.

The average annual relative humidity is 44.8 percent, ranging from 26 percent in July to 70 percent in January (Climatemps 2021). The wind data was obtained from the University of Utah weather station. The average historical data taken between 2013 and 2021 indicates wind direction from the northwest with average speed of 5 miles per hour and gusts of 7 miles per hour (Windfinder 2021).

4.3 Surface Water Hydrology

The site is located in the lower Red Butte Creek subwatershed portion within the Jordan River Watershed (University of Utah 2016). Surface water features near the site include Mount Olivet Reservoir, Red Butte Creek, Liberty Park Pond, named springs, and multiple unnamed seeps and springs.

4.3.1 Mount Olivet Reservoir

The Mount Olivet Reservoir is located adjacent to the Mount Olivet Cemetery property, near the northeast corner of the cemetery (**Figure 1-2**). The reservoir is lined and is supplied by diversions from Red Butte Creek and Emigration Creek. The diversion pipeline from the creek to the reservoir is oriented west-northwest along the south and western edges of the VAMC campus (FE 2015a, Taylor 2000). Occasionally, withdrawals pump the reservoir dry and sometimes reservoir overflow waters enter the city storm sewer system. The water from the Mount Olivet Reservoir has never been used for drinking purposes.

4.3.2 Red Butte Creek

The closest surface water body to the site is Red Butte Creek, which travels from the northeast to southwest near the east side of the VAMC campus before traveling more westerly at a distance of about 1,500 feet to the southwest of the site in the ESS area (**Figure 1-2**). Red Butte Creek is a perennial stream with an average annual baseflow of 3.9 cubic feet per second based on USGS data from 1965 until 2020. Maximum average flow recorded was 12.5 cubic feet per second in 1983 and minimum flow recorded was 1.12 cubic feet per second in 1990 (USGS 2021). The peak flow of Red Butte Creek occurs in late April through June because of snowmelt and runoff from the upper elevations and lower flow seasons are impacted by groundwater discharge entering the creek in the lower elevations of Red Butte Canyon (Ehleringer et al. 1992). Red Butte Creek is a losing stream as it flows across the primary and secondary recharge areas near the Wasatch Front, including the eastern portions of the site. In the East Side Springs area, groundwater discharges to Red Butte Creek through springs present in the area (SLCDPU 2010). Red Butte Creek receives surface water via both direct runoff and storm sewer discharges (EA 2017b).

The headwaters of Red Butte Creek are located in the Wasatch Range. Red Butte Creek is divided into two subwatersheds, and the lower subwatershed flows near the site. The upper subwatershed is on USFS land and is designated a Research Natural Area closed to public access (EA 2017b). As Red Butte Creek exits the Wasatch Range through Red Butte Canyon, it enters the Salt Lake Valley. While the upper subwatershed is undisturbed, the lower subwatershed is within a fully urbanized area and flows through developed business and residential areas including the University of Utah campus, the VAMC campus, Sunnyside Park, and residential neighborhoods. Red Butte Creek then flows west-southwest through Miller and Liberty Parks toward Liberty Park Pond. Surface exposure of Red Butte Creek ends east of Liberty Park and the creek is diverted underground into the 1300 South conduit where water is conveyed to the Jordan River via an underground pipe that is about 4 miles long (Taylor 2000). Water from Red Butte Creek supports recreational areas such as the pond in Liberty Park (EA 2017b).

4.3.3 Liberty Park Pond

Liberty Park Pond, which is supplied by Red Butte Creek, is in Liberty Park, approximately 2 miles downgradient and west of the VAMC campus (**Figure 1-2**). Liberty Park is the second-largest public park in Salt Lake City and is also the location of the Tracy Aviary and Botanical Gardens and the Museum of Utah Folk Arts. The pond is approximately 300,000 square feet and features two islands. In June of 2010, an oil pipeline rupture impacted Red Butte Creek, which in turn impacted the Liberty Park Pond; this resulted in the draining, dredging, and cleaning of the pond and the banks of Red Butte Creek (FE 2015a, EA 2017b).

4.3.4 East Side Seeps and Springs

Seeps and springs are present alongside the scarp of the East Bench Fault, which is part of the Salt Lake City Segment of the Wasatch Fault Zone. Four of those springs have been named (**Figure 1-2**):

- Our Lady of Lourdes Spring to the north-northwest of the ESS area and south of the Our Lady of Lourdes Catholic School and the Judge Memorial Catholic High School. This spring is not accessible to children at the school.
- Benson Spring in the north main area of the ESS
- Smith Spring in the central ESS area, on Alpine Place
- Bowen Spring to the south in the ESS area

Many of these seeps and springs surface on residential properties near residential structures. Some of the seeps and springs are expressed as diffuse wet areas that form small trickling streams on slopes, while others have been altered by property owners to collect and channel flowing water into landscape features (e.g., ponds, streams) or water collection systems (e.g., buried drains, sump pumps) (FE 2015a, EA 2017b).

4.4 Geology

4.4.1 Regional Geology

The site is located near the eastern edge of the Salt Lake Valley. The Salt Lake Valley is within a north-south trending normal-fault bounded basin (graben) on the eastern margin of the Basin and Range physiogeographic province (DuRoss et al. 2014). The Salt Lake Valley is bounded by the Wasatch Range to the east, the Oquirrh Mountains to the west, the Traverse Mountains to the south, and the Great Salt Lake to the north (EA 2017b). The two Quaternary geologic features that produce the modern physiogeography at the site are the Wasatch Fault Zone and the Pleistocene Lake Bonneville (DuRoss et al. 2014).

The Wasatch Fault Zone separates the Salt Lake Valley from the Wasatch Mountains to the east. The Wasatch Fault Zone has been divided into 10 segments, including the Salt Lake City Segment, which has been subdivided into three sections from north to south: Warm Springs Fault, East Bench Fault, and Cottonwood Fault (Personius and Scott 1992; McDonald et al. 2020). The site is bisected by the west and east spurs of the East Bench Fault (EA 2017b). Slip estimates on the East Bench Fault have been estimated from 0.5 millimeter per year (DuRoss et al. 2014) to 1 millimeter per year (Scott and Shroba 1985).

Lake Bonneville, a predecessor to the Great Salt Lake, filled the Salt Lake basin from 30 kiloannum (ka) to 10 ka. The Lake Bonneville highstand (maximum shoreline elevation approximately 5,090 feet amsl) was approximately 18 ka. The Provo phase of Lake Bonneville occurred when elevation stabilized at approximately 4,760 feet amsl from 15 ka to 14 ka (DuRoss et al. 2014).

4.4.2 Local Geology

The surficial geology at the site is mapped as alluvial fan deposits and lacustrine deposits (Personius and Scott 1992). The surficial geologic features are presented in **Figure 4-1.** The alluvial fan deposits are from aggraded stream and debris flow deposits likely sourced from Red Butte Canyon and Dry Creek Canyon (DuRoss et al. 2014). The alluvial fan deposits are described as clast-supported pebble and cobble gravel, occasionally with boulders, with a sand and silty sand matrix. The clasts may be subangular to rounded (Personius and Scott 1992).

The lacustrine deposits may be either Lake Bonneville highstand or Provo phase deposits. The Lake Bonneville highstand deposits are predominantly silt and clay with some fine sand and fine gravel. The Provo phase deposits are clast-supported pebble and cobble gravel in a sand matrix with minor silt (Personius and Scott 1992).

Overall, the surficial geology grades from coarse-grained alluvial fan/Provo phase deposits on the east, to finer-grained lacustrine deposits to the west. The topography of the site slopes to the west-southwest at an approximate grade of 4 percent, until the grade steepens to 10 percent near the East Bench Fault west of 1300 East, where springs and seeps emanate from the hillside (i.e., the ESS area) (EA 2017b).

Generally, the heterogeneity of the sediments in the area and similar lithologic descriptions of the alluvial and lacustrine phase deposits limit lithologic unit correlations across the site. As such, hydrostratigraphic unit determination and lithologic correlations were made through an evaluation of piezometric heads and other hydrogeologic observations. Select lithologic logs from borings across the site are presented in **Figure 4-2**. This figure also shows a semi-confining unit separating the shallow and deep aquifer that was identified through the evaluation of piezometric heads (further discussion of the aquifers and identification of the semi-confining unit is presented in Section 4.5). As the lateral extent of the semi-confining unit between borings is unknown, the semi-confining unit is shown as dashed.

At the VAMC campus, the borings were generally coarse-grained dominated from 0 to approximately 200 feet bgs. From approximately 200 to 360 feet bgs, the lithology is fine-grained dominated (**Appendix E**). A perched groundwater zone was encountered at approximately 150 feet bgs in some of the borings near Buildings 6 and 7 (MW-23, MW-24, MW-25, MW-27, and MW-28) but was not encountered at MW-26. Groundwater was encountered at approximately 185 to 200 feet bgs in all of the borings around Buildings 6 and 7.

West of the VAMC campus, the depth to groundwater is shallower with less gravel dominated sediments. MW-01 is coarse-grained dominated to 160 feet bgs with depth to water approximately 155 feet bgs (EA 2019). MW-34 is course-grained dominated to 95 feet bgs with the shallow groundwater encountered at 140 feet bgs (**Appendix E**). MW-32 and MW-08 are less gravel dominated where MW-18, MW-19, and MW-20S/D have fine-grained dominated shallow lithology (less than 20 feet bgs) with gravel dominated lithology to approximately 80 to 90 feet bgs. MW-20D was drilled into a clay unit from approximately 130 to 150 feet bgs (Jacobs 2019b, attached in **Appendix B**).

In the ESS area, the lithology is less gravel dominated, and generally has sand and gravel lenses in clay and silt dominated units (MW-13S/D/L, MW-14S/D)(Jacobs 2019b, attached in **Appendix B** and CDM Smith 2021h, attached in **Appendix D**). Shallow groundwater was encountered at depths ranging from 15 feet bgs to above ground surface (i.e., artesian conditions).

Geophysical logging, specifically natural gamma and neutron logging, was completed at MW-03R and MW-08. Natural gamma logging can identify intervals with high clay content and neutron logging can determine the saturated porosity. The geophysical logs (Jacobs 2019b, attached in **Appendix B**) illustrate the heterogeneous nature of the sediments and were used in conjunction with push-ahead groundwater samples to determine the monitoring well construction for MW-03R and MW-08.

The generalized geologic conceptual model for the site, including topography, locations of faults, observed semi-confining unit, and general grain size distribution is presented in **Figure 4-3**. Boring logs for the site are compiled in **Appendix E**.

4.4.3 Geotechnical Characteristics

During the drilling investigation activities for OU2, samples were collected for geotechnical analyses, including USCS soil classification (ASTM D2487), moisture content (ASTM D2216), dry bulk density (ASTM D7263), fraction of organic carbon (f_{oc}) (ASTM D2974), vertical hydraulic conductivity (ASTM D5084), and grain-size analysis (Atterberg Limits by ASTM D4318, sieve analysis by ASTM D6913/D7928, hydrometer by ASTM D422/D7928) (Jacobs 2019b, attached in **Appendix B**). Geotechnical results are presented in **Table 4-1**. Samples were collected from monitoring wells advanced across the site (MW-03R, MW-08, MW-12S/D, MW-13S/D, MW-14S/D, MW-15S/D and MW-20D) at depths representing the varying observed lithologies.

In general, the USCS soil classification agreed with the field classification, with a few minor exceptions. Observed lithologies were widely variable, and included lean clay, clay with sand and/or gravel, silt with sand and/or gravel, sand with silt and/or gravel, and gravel with silt, clay and/or sand.

Vertical hydraulic conductivity was measured in eight samples, with the following results:

- 6.2×10^{-4} to 8.2×10^{-2} feet per day (ft/day) in lean clay
- 8.8×10^{-4} to 9.6×10^{-2} ft/day in lean clay with sand and silt
- 4.8×10^{-4} to 3.7×10^{-2} ft/day in sandy lean clay with gravel
- 6.0×10^{-4} ft/day in silty sand
- Twenty samples were analyzed for f_{oc}, with the following results:
- 0.0051 to 0.0074 in clay or silt
- 0.0016 to 0.0059 in sand with silt and/or gravel
- Less than 0.0001 to 0.0047 in gravel with silt, clay, and/or sand
- Water content was measured in 17 samples and ranged from 2 to 15.9 percent. Dry bulk density was measured in eight samples and ranged from 90.1 to 120.2 pounds per cubic feet.
- Sieve analyses on samples logged in the field as gravel contained approximately 30- to 60-percent gravel, 20- to 40-percent sand, and 15- to 40-percent fines. Samples logged in the field as clay and silt had approximately 0- to 20-percent gravel, 5- to 50-percent sand, and 35- to 95-percent fines.

4.5 Hydrogeology

Regional hydrogeology has been described in detail in Waddell et al. (1987), Thiros (2003), and Wallace and Lowe (2009), and summarized in EA (2017b). Groundwater in the Salt Lake Valley occurs in alluvial fan and lacustrine deposits within perched, unconfined, and deep aquifers (EA 2017). The deposits are very complex and consist of multiple aquifers and semi-confining layers that are laterally discontinuous and internally heterogeneous (EA 2017b).

Closer to the site, data collected and presented in the following sections describe the local aquifer system, where groundwater flows through perched, unconfined shallow and semiconfined deep aquifer systems from the base of the Wasatch Mountains towards the west/southwest and across the East Bench Fault. Surface discharge of groundwater through seeps and springs located to the east of the fault occur and are cumulatively a significant component of the local water balance.

Historically, water supply and irrigation well pumping have come primarily from the semiconfined deep aquifer deflected the groundwater flow toward these wells.

4.5.1 Potentiometric Surfaces, Gradients, and Flow Directions

Historical groundwater elevations and the identified aquifer zone for all site monitoring wells are presented in **Table 4-2**. The most recent measured groundwater elevations (Q1-2021) are presented on the potentiometric groundwater surface maps (**Figures 4-4** and **4-5**). Vertical gradients were calculated using the approach described by EPA (EPA 2016b) and are presented in **Table 4-3**. The observed piezometric heads and aquifer distinctions are discussed below:

- Perched zone: This zone is situated above the water table; it exhibits significantly higher piezometric heads than what is observed at other wells. Site wells that exhibit this feature are MW-06 (screened 100 to 130 feet bgs) and MW-29A (screened 120 to 130 feet bgs). Perched head data have not been contoured. While MW-06 and MW-29A are the only site wells screened in the perched zone, a perched groundwater zone was observed during drilling in all borings advanced at VAMC Buildings 6 and 7 (except MW-26) at approximately 150–160 feet bgs. The assumed saturated thickness of the perched zone based upon the volume of water retrieved during drilling and observations of wet or saturated conditions in the soil cores near Buildings 6 and 7 was less than at MW-06 and MW-29 and was not sufficient to screen a monitoring well.

- Shallow aquifer zone: This zone extends to approximately 220 feet bgs at VAMC Building 7 and its vertical extents get shallower to the west as the ground surface dips. The shallow aquifer zone is contoured (using a 10-foot-contour interval) in **Figure 4-4**.

  - Groundwater flow directions are generally east to west, with horizontal gradients approximately 0.014 feet per foot along the 2,500 feet between MW-24 and MW-34. Over the next 1,000 feet between MW-34 and MW-18, the horizontal gradients are approximately 0.012 feet per foot. Between MW-13S and MW-14S (approximately 500 feet), horizontal gradients are an order of magnitude higher, at approximately 0.12 feet per foot.

  - An intermediate aquifer zone is present in the lower portion of the shallow aquifer zone (approximately 220 to 260 feet bgs) at wells near VAMC Building 7 including MW-23B, MW-25B, MW-26B, MW-29C, and MW-30A. The zone is characterized by heads that are slightly lower than those in the shallow aquifer zone. It is unclear how laterally extensive this zone is and whether it is bound by lower permeability units. Head data from this unit have not been contoured.

- Silt/clay semi-confining unit: This unit is present between the shallow and deep aquifer zones. This unit was identified through the evaluation of piezometric heads and lithologic logs from borings across the site. Head differences between the shallow and deep aquifer zones in September 2020 were 17.65 feet at MW-03R (as measured by the difference in heads between MW-03RA and MW-03RB) and 15.3 feet at MW-01 (as measured by the difference in heads between MW-01S and MW-01D). These head differences represent a vertical hydraulic separation between the two zones related to the presence of this semi-confining unit.

- Deep aquifer zone: This zone sits below approximately 260 feet bgs at VAMC Building 7 and gets shallower to the west as the ground surface dips. The deep aquifer zone heads are contoured in **Figure 4-5**.
  - Flow directions are generally east to west. Horizontal gradients between MW-23C and MW-34C are approximately 0.002 feet per foot, and 0.013 feet per foot between MW-34C and MW-13L.
  - Measured piezometric heads at MW-03RB/C/D are approximately 18 feet lower than in the shallow aquifer zone situated approximately 40 feet above and measured in MW-03RA. These steep vertical gradients are indicative of hydraulic separation between the shallow and deep aquifer zones, likely because of the presence of the semi-confining unit between these two zones.
  - Heads at MW-03RB/C/D are nearly identical despite spanning nearly 100 vertical feet of the aquifer. This, along with inferences from the geophysical boring log, likely indicates the lack of significant and continuous aquitard units within the deep aquifer zone.

Vertical gradients, which are typically strongly downward near the VAMC campus, dissipate along the east to west groundwater flow path (**Table 4-3**). While MW-34C/D and MW-32C are estimated to be screened in the deep aquifer zone, there is little distinction in heads between MW-34C/D and MW-32C and the shallow aquifer zone at MW-34A/B and MW-32A/B. West of MW-34, vertical head gradients shift upward within the shallow aquifer zone, with artesian conditions present in the deeper portions of the shallow aquifer zone at wells MW-17D and MW-14D, just east of the East Bench Fault. West of the fault, there is little distinction observed in heads between the shallow and deep wells installed at MW-12S/D and MW-15S/D. The vertical gradient and hydraulic distinction between the shallow and deep aquifers likely resumes further to the west, as evident by the flowing well at the Artesian Well Park.

The head difference across the fault (as measured by the difference between heads at MW-14S and MW-15S) is approximately 112 feet. This head drop likely occurs abruptly across the fault, which is acting as a semipermeable barrier to flow. Groundwater flowing from the site is therefore laterally restricted at the fault, with groundwater both flowing through the fault and mounding up at the eastern face of the fault. This mounding results in both the approximately 112-foot head difference between MW-14S and MW-15S, as well as the surface discharges to springs and seeps just east of the fault.

Measured water levels (**Table 4-2**) from 1998 to 2021 for the oldest wells (MW-01S/D, MW-02, MW-04, and MW-06) show that fluctuations in elevation of up to 12 feet have occurred in the shallow aquifer during this time period. Transducers have been recording water levels at select monitoring wells since 2017, including these locations (results are compiled in **Appendix E**). The data show that the largest observed groundwater elevation fluctuations between 2017 and 2021 were approximately 4 feet, with the largest fluctuations occurring in wells within the eastern portion of the site. The highest water level elevations (as observed in the transducer data for these locations) occurred in winter 2018 and 2020, and the lowest water level elevations occurred in winter 2019 and 2021. This suggests that water level fluctuations are most likely due to variations in annual climate, and seasonal changes in elevation are minimal.

The generalized hydrogeologic conceptual model for the site, including the locations of the springs and observed aquifer units, is presented in **Figure 4-3**.

4.5.2 Recharge Zones

The deep aquifer is recharged in the primary recharge area, near the Wasatch Mountain Front. In the primary recharge area, the alluvial fan and lacustrine deposits consist of more coarse-grained materials, and any confining layers that are present are relatively thin (Anderson et al. 1994). Secondary recharge of the localized perched aquifers and shallow aquifer occurs in the secondary recharge area, where the alluvial fan and lacustrine deposits consist of more fine-grained materials (Anderson et al. 1994). The secondary recharge area borders the primary recharge area on the west. The site is primarily within both the primary and secondary recharge areas; however, a localized discharge area is present in the area of the East Bench Fault and the ESS area where artesian conditions occur (Anderson et al. 1994). Based on the observed vertical gradients, the groundwater discharging in the ESS area is from the deeper portions of the shallow aquifer zone. Based on the boundaries defined by the USGS, the northeastern area of the site is within the primary recharge area (including the Mount Olivet irrigation well and SLC-18), while the southwestern area of the site is within the secondary recharge area (Anderson et al. 1994).

4.5.3 Hydraulic Conductivity and Groundwater Velocity

As described in Section 3.6, slug testing was completed at select monitoring wells. The summary of the data evaluation is provided in the aquifer testing technical memorandum (CDM Smith 2021k, attached in **Appendix D**), and the results are presented in **Figures 4-6** and **4-7** and in **Table 4-4**. The calculated hydraulic conductivity and groundwater velocity are discussed below:

- Shallow aquifer zone:
  - In the northeastern area of the site that includes MW-01S, MW-02, MW-03RA, and MW-04, slug test estimated hydraulic conductivities range from approximately 5 to 19 ft/day, with a representative value of 5 ft/day. Darcy velocities calculated by multiplying horizontal hydraulic conductivity by the horizontal gradient ranged from approximately 0.07 to 0.2 ft/day, with a representative Darcy velocity of 0.07 ft/day. Representative seepage velocity (which is the Darcy velocity divided by the effective porosity [assumed to be approximately 0.2]) can be approximated as 0.4 ft/day for this portion of the site.
  - In the central area of the site that includes MW-08A, MW-18, MW-19, MW-20S/D, MW-21, MW-22, MW-32A, and MW-34A/B, slug-test estimated hydraulic conductivities range from approximately 10 to 200 ft/day, with a representative value of 50 ft/day. Representative Darcy and seepage velocities are estimated to be approximately 0.6 and 3 ft/day, respectively. These values are higher than what is observed at the other areas of the site and coincide with their locations west of (or very close to) the East Bench Fault Spur. These data indicate that shallow aquifer zone properties west of the spur

differ from those east of the spur. This distinction is consistent with surface geology mapping (EA 2017) that indicates an abrupt change in geologic unit at the spur.

- In the southwestern area of the site that includes MW-13S/D, hydraulic conductivity ranges from 0.1 to 2 ft/day, with a representative value of 5 ft/day. Representative Darcy and seepage velocities are estimated to be approximately 0.6 and 3 ft/day, respectively. The representative values are likely more applicable to the deep portion of the shallow aquifer in this area (screened by MW-13D), as the hydraulic conductivity in the shallow portion of the shallow aquifer is approximately one order of magnitude lower.

- Deep aquifer zone:

  - In the northeastern and central area of the site, hydraulic conductivity derived from MW-03RB/C, MW-08B/C, MW-13L, MW-26C/D, and MW-34C/D slug tests ranged from 0.75 to 51 ft/day, with a representative value of 45 ft/day. The representative Darcy velocity is approximately 0.09 ft/day, with a representative seepage velocity of approximately 0.45 ft/day.

  - Unlike in the shallow aquifer zone, there was not a significant difference in hydraulic conductivities east and west of the East Bench Fault Spur.

Determination of the representative values noted above was made following the calibration of the VAMC Groundwater Model. Through the calibration process, which is discussed in detail in the Groundwater Model Report included as **Appendix F**, the ranges of slug test-derived values were assessed in the context of the conceptual model, previously conducted hydraulic testing, regional groundwater flow fields, and piezometric head data.

4.5.4 Water Quality

The chemical composition of groundwater in the Salt Lake Valley varies with location and depth, primarily because of variations in the composition of recharge sources and water-sediment interactions with changing lithology. TDS concentrations in the Salt Lake Valley are typically greater than 500 milligrams per liter (mg/L) because of water-rock interactions with easily eroded shale or water-sediment interactions with alluvial fan and lacustrine deposits (Thiros et al. 2010). Based on the State of Utah groundwater classifications (UDEQ 2019), groundwater in the area is classified as Class II—Drinking Water Quality Groundwater (TDS between 500 and 3,000 mg/L). Groundwater in the Salt Lake Valley is generally oxic with a neutral pH (Thiros et al. 2010). Groundwater and surface water quality are further evaluated in Section 6.

4.6 Ecology

Most of the areas of the site have been substantially developed and are no longer natural conditions. The exceptions to this are parts of Dry Gulch and streamside areas of Red Butte Creek, which are outside of the site boundary, and very small private woodland properties.

The Utah Bureau of Land Management maintains lists of sensitive wildlife and plant species for the state (UBLM 2018). Within Salt Lake County, there are no identified sensitive plant species.

The following sensitive wildlife species have been identified within Salt Lake County; however, as the site is significantly developed, presence of these species is likely limited:

- Fish
  - Least chub (*Iotichthys phlegethontis*)
- Amphibians
  - Columbia spotted frog (*Rana luteiventris*)
  - Western (boreal) toad (*Anaxyrus boreas*)
- Reptiles
  - Smooth green snake (*Opheodrys vernalis*)
- Birds
  - American three-toed woodpecker (*Picoides dorsalis*)
  - Bald eagle (*Haliaeetus leucocephalus*)
  - Black swift (*Cypseloides niger*)
  - Bobolink (*Dolichonyx oryzivorous*)
  - Burrowing owl (*Athene cunicularia*)
  - Ferruginous hawk (*Buteo regalis*)
  - Northern goshawk (*Accipiter gentilis*)
  - Snowy plover (*Charadrius nivosus*)

Section 5

Nature and Extent of Contamination

A principal objective of the RI is to evaluate the nature and extent of the contamination and to assess impact to human health and the environment. This includes defining contaminant mass that may be acting as a continuing source of groundwater contamination and defining the extent of the contamination in soil, soil vapor, groundwater, and surface water. The following sections detail the nature and extent of contamination as determined by the RI investigations.

5.1 Soil

As discussed in Section 3, and presented in **Figure 5-1**, three soil/sediment samples were collected in the ESS area and 298 soil samples were collected from 44 locations on the VAMC campus, Sunnyside Park, and near the Mount Olivet Cemetery. AOU1 soil investigation validation reports are provided in Appendix H-3 of the AOU1 Remedial Investigation Report (EA 2019). OU2 soil investigation data validation reports are provided in Appendices I and J of the OU2 DSR (Jacobs 2019b, attached as **Appendix B**). Phase 1 OU2 soil investigation quality control summary reports are provided in Appendix J of the 2020 Drilling Investigation DSR (CDM Smith 2021a, attached as **Appendix C**). All data are usable to determine the nature and extent of contamination in soil.

All soil and sediment samples were analyzed for VOCs; analytical results for PCE and TCE are presented in **Table 5-1**. Sample depths for sediment samples were 0 feet bgs and sample depths for soil samples ranged from 0.75 to 355 feet bgs. PCE was detected in 21 VAMC-area soil samples at low concentrations (less than 0.005 milligram per kilogram [mg/kg]), well below the RBSL for residential soil (24 mg/kg). The highest PCE soil concentrations were observed in borings advanced between Buildings 6 and 7. There were no detections of TCE, cis-1,2-DCE or VC. The three soil/sediment samples collected in the ESS area were also analyzed for SVOCs, 1,4-dioxane, and metals; there were no detections of SVOCs or 1,4-dioxane (EA 2019).

5.2 Soil Gas and Indoor Air (Source Area)

The dry-cleaning facility on the VAMC property was operational in Building 7; it is likely the PCE condensate from the distillation process was emptied into a vitrified clay drain line attached to the sanitary sewer or that surface spills occurred in the immediate area. Therefore, the source area is considered the immediate area of Buildings 6 and 7, as well as along the sanitary sewer extending to Sunnyside Park. The development of a soil gas plume and subsequent potential for vapor intrusion in the Building 6 and 7 area is most likely due to residual PCE mass in the vadose zone; the groundwater plume is not present beneath the Building 6 and 7 source area. The development of a soil gas plume in the Sunnyside Park area is most likely due to the release of PCE-contaminated water from breaks in the sanitary sewer, at depths closer to the surface than groundwater.

The following sections describe the nature and extent of preliminary COPCs in soil gas and indoor air in these two source areas.

5.2.1 Soil Gas

As discussed in Section 3.9, soil gas sampling was conducted in 2018, 2019, and 2021 on the VAMC campus and in Sunnyside Park to determine the nature and extent of contamination in soil gas associated with the former dry-cleaning operations. **Table 5-2** details the soil gas sample dates, locations, and analytical results for preliminary COPCs screened against the industrial soil gas RBSLs. **Figure 5-2A** and **Figure 5-2B** present the soil gas sample locations and sample type, color coded by the maximum PCE detection at each location. Samples were analyzed for VOCs using SUMMA canisters and/or HAPSITE. Detailed descriptions of the sampling results and data quality reports for all samples collected are presented in **Appendix B, Appendix C,** and **Appendix D,** which include the 2018 OU2 DSR (Jacobs 2019b), the expanded source area investigation DSR (Jacobs 2019e), and the 2021 Source Area Soil Gas and Indoor Air Sampling DSR (CDM Smith 2021l). All data are usable for determining the nature and extent of contamination in soil gas. Further discussion of migration of COPCs in soil gas is presented in Section 6.2.

5.2.1.1 PCE

Table 5-2 presents the concentrations of PCE in soil gas screened against the industrial RBSL (1,600 µg/m^3). The highest detections for all sample locations in the Building 6 and 7 area are presented in **Figure 5-2A**. The highest PCE concentrations detected during the soil gas investigations were observed beneath Building 6. Concentrations of PCE from samples collected from VP-04, located in Building 6, ranged from 19,641 to 46,000 µg/m^3. All samples collected at VP-15, which is located directly to the north of VP-04, exceeded the PCE industrial soil gas RBSL of 1,600 µg/m^3, with a maximum concentration of 23,000 µg/m^3. Two soil gas samples were collected at depths of 28 and 113 feet bgs from MW-27, and one sample was collected from MW-23 at a depth of 130–140 feet bgs. MW-23 and MW-27 are located directly east of Building 6. Both samples collected in 2021 at MW-27 exceeded the industrial soil gas RBSL with a maximum of 39,000 µg/m^3 at 28 feet bgs. Samples collected from MW-23 in March 2021 at a depth of 130–140 feet bgs had a PCE detection of 16,000 µg/m^3.

Other locations that exceeded the industrial soil gas RBSL for PCE include SG-03, SG-04, SG-05, SG-06, VP-16, VP-17, and MW-28. Out of these locations, SG-03, SG-04, SG-05, SG-06, and MW-23 are located between Buildings 6 and 7. VP-17 and VP-16 are located under Building 6. MW-28 is located further west of Building 6, near the loading dock for Building 7 and near the sanitary sewer line. PCE concentrations in this area ranged from 1,800 µg/m^3 (VP-17, July 2019) to 5,300 µg/m^3 (SG-05, July 2019). Two of the three samples collected from MW-28 exceeded the industrial soil gas RBSL for PCE, with concentrations of 2,200 µg/m^3 at 48 feet bgs and 3,600 µg/m^3 at 118 feet bgs. The shallow interval (24 feet bgs) had a PCE detection of 1,400 µg/m^3.

Additional soil gas samples collected on site that had elevated concentrations of PCE included SG-13 (1,600 µg/m^3), located to the southwest of Buildings 6 and 7 along the sewer line; SG-08 (1,300 µg/m^3); SG-09 (1,000 µg/m^3); SG-11 (1,200 µg/m^3), located near the loading dock for Building 7; and SG-04 (1,045 µg/m^3), located between Buildings 6 and 7.

Soil gas samples were also collected along the sewer line as it leaves the VAMC campus (SG-17 through SG-44); the highest detections of PCE for all sample locations are presented in **Figure 5-**

2B. Sample results are screened against both the industrial RBSL (1,600 µg/m^3) and residential RBSL (360 µg/m^3). All samples collected along the sewer had detections of PCE. No samples exceeded the industrial soil gas RBSL; however, the residential soil gas RBSL was exceeded at SG-33 (1,281 µg/m^3), SG-34 (819 µg/m^3), SG-35 (555 µg/m^3), SG-36 (462 µg/m^3), SG-41 (1,387 µg/m^3), and SG-42 (1,110 µg/m^3 at 12-13 feet bgs, 819 µg/m^3 at 16–17 feet bgs, and 1,201 µg/m^3 at 25–26 feet bgs).

5.2.1.2 TCE

Table 5-2 presents the concentrations of TCE in soil gas screened against the industrial RBSL (100 µg/m^3). A total of 68 samples contained detectable TCE. Three samples exceeded the industrial RBSL for TCE in soil gas, all collected from VP-15 beneath Building 6. Other detections of TCE include VP-04 (maximum concentration 53.7 µg/m^3), MW-27 (maximum concentration 52 µg/m^3), and MW-28 (maximum concentration 6.6 µg/m^3) located in the Building 6 and 7 area. TCE was also detected at MW-29 (maximum concentration 4.7 µg/m^3) and SG-42 (maximum concentration 18.8 µg/m^3) along the sewer line.

5.2.1.3 cis-1,2-DCE

There were minimal detections of cis-1,2-DCE in SUMMA canister samples collected during the 2018 and 2021 soil gas investigations. HAPSITE samples collected during July 2019 were not analyzed for cis-1,2-DCE. Most of the detections were noted in sample locations along the sewer line, with a maximum concentration of 11.3 µg/m^3 at SG-29. Two sample locations on campus, MW-27 and MW-23, had concentrations of cis-1,2-DCE of 9 J µg/m^3 and 6.7 J µg/m^3, respectively, at the deep intervals (113 and 130 feet bgs).

5.2.1.2 Vinyl Chloride

There were minimal detections of VC during the 2019 and 2021 SUMMA canister sampling. HAPSITE samples were not analyzed for VC. No soil gas samples collected on site exceeded the industrial RBSL for VC (93 µg/m^3). The only detections of VC were noted at MW-29 (maximum concentration 0.23 J µg/m^3), MW-25 (0.039 J µg/m^3), MW-24 (0.15 J µg/m^3), and VP-14 (0.013 J µg/m^3).

5.2.2 Indoor Air

As discussed in Section 3.10, indoor air samples were collected from five buildings on the VAMC campus (Building 6, Building 7, Building 13, Building 20, and Building 32) to determine whether indoor air contamination was present. **Table 5-3** details the indoor air sample dates, locations, and analytical results for preliminary COPCs screened against the industrial indoor air RBSLs. **Figure 5-3** presents the indoor air sample locations and sample type, color coded by the maximum PCE detection. Samples were analyzed for VOCs using SUMMA canisters and/or HAPSITE. Detailed descriptions of the sampling results and data quality summaries for all samples collected are presented in **Appendix B** and **Appendix D,** which include the 2019 Indoor Air DSR (Jacobs 2019d) and the 2021 Source Area Soil Gas and Indoor Air Sampling DSR (CDM Smith 2021l). All data are usable to determine the nature and extent of contamination in indoor air.

Buildings 13 and 20 were sampled in February 2019 using the HAPSITE. No samples had detectable PCE, TCE, or cis-1,2-DCE at either location; VC was not analyzed. Building 20 was sampled again in March 2022 along with Building 32 using SUMMA canisters. All samples contained detectable PCE but none exceeded the residential RBSL for indoor air. No samples had detectable TCE, cis-1,2-DCE, or VC.

Building 7 was sampled in January 2019, September 2019, and March 2021. No samples collected exceeded the industrial RBSL for indoor air for PCE (47 µg/m^3). The maximum PCE concentration of 4.76 µg/m^3 was measured at the hallway near room 1A15B (B7-IA-012). Location IA02, sampled in 2021 in the office in Building 7, had a PCE concentration of 2.3 µg/m^3. The maximum TCE concentration of 8 µg/m^3 was measured in the basement of Building 7 (B7-IA05), which exceeded the industrial RBSL. This area was subsequently screened using a HAPSITE in October 2019. One sample in the basement contained TCE at a concentration of 0.48 µg/m^3, and TCE was not detected in two other samples. This location (B7-IA05) was sampled again in 2021, and TCE was detected at an estimated concentration of 0.081 J µg/m^3. Cis-1,2-DCE was detected in one sample (B7-IA05) at 1 J µg/m3. There were no detections of VC in Building 7.

Building 6 was sampled in January 2019, September 2019, and March 2021. Ten samples collected in January 2019 exceeded the PCE industrial screening level for indoor air (47 µg/m^3) with a maximum PCE concentration of 9,358 µg/m^3, and five samples exceeded the TCE industrial screening level for indoor air (3 µg/m^3) with a maximum TCE concentration of 1,441 µg/m^3. Of the ten samples that exceeded the screening level for PCE, six samples were measurements of suspected indoor sources (indicated by "NB" in the Sample Identification). The samples were collected near the brake and wheel cleaning area in the electrician shop. These potential sources were removed after the January 24, 2019, sampling event and several of the locations were resampled on January 30, resulting in lower indoor air concentrations. For example, the sample collected in the electrician shop on January 24, 2019, (B6-IA-015-01) with a result of 916 µg/m^3 PCE and 7.13 µg/m^3 TCE was resampled on January 30, 2019, after the removal of the potential indoor air sources. The results from resampling were 25 µg/m^3 PCE and 2.5 µg/m^3 TCE, which are below the industrial RBSLs. **Table 5-3** and **Figure 5-3** indicate the locations that were resampled after removal of indoor sources. No indoor air samples collected in September 2019 or in March 2021 exceeded the industrial RBSLs for PCE and TCE. The maximum PCE concentration was 4.4 µg/m^3 and only two samples had TCE detections (0.15 J µg/m^3 at B6-IA01 and 0.042 J µg/m^{3}at B6-IA06). There were no detections of cis-1,2-DCE or VC in Building 6.

5.3 Groundwater

As discussed in Section 3.5, groundwater monitoring events have been conducted as part of AOU1, OU2, Phase 1 OU2, and Phase 2 OU1 investigations to determine the nature and extent of contamination in groundwater associated with the former dry-cleaning operations on the VAMC campus. Groundwater samples collected during the RI were analyzed for VOCs, 1,4-dioxane, SVOCs, pesticides, and general chemistry. Detailed descriptions of the sampling results and the data quality summary reports are presented in the AOU1 Remedial Investigation Report (EA 2019), 2018 OU2 DSR (Jacobs 2019b, attached in **Appendix B**), Phase 1 OU2 DSRs (**Appendix C**), and Phase 2 OU1 DSRs (**Appendix D**). All data are usable to determine the nature and extent of contamination in groundwater.

5.3.1 Contaminants of Interest

Groundwater samples were collected and analyzed for VOCs during each groundwater monitoring event. **Table 5-4** presents the concentrations of the preliminary COPCs: PCE, TCE, cis-1,2-DCE, VC, and 1,4-dioxane. Detections are presented as bolded values and exceedances of the screening levels (MCL or RBSL, as applicable) are presented as highlighted values. The most recent results for all monitoring well locations were integrated to show the approximate extent of PCE in groundwater (**Figure 5-4A**). **Figure 5-4B** also presents the shallow grab groundwater and surface water samples in the ESS area. Furthermore, **Figure 5-5** presents a cross section displaying the vertical extent of the groundwater PCE plume in the shallow and deep aquifers along the plume center. Additionally, **Table 5-5** presents the concentrations of the preliminary COPCs (PCE, TCE, cis-1,2-DCE, and VC) in push-ahead groundwater samples that were collected during drilling.

5.3.1.1 PCE

During the AOU1, OU2, Phase 1 OU2, and Phase 2 OU1 investigations, a total of 419 groundwater samples were collected; 297 samples contained detectable PCE and 165 samples exceeded the EPA's MCL for PCE in groundwater (5 µg/L). The exceedances ranged from 5.1 to 230 µg/L (**Table 5-4**). Prior to the RI, 36 groundwater samples were collected from the EPA monitoring wells (MW-01 through MW-06), 26 of which contained detectable PCE and 22 that exceeded the EPA's MCL for PCE (**Table 5-4**). During the OU2 and Phase 1 OU2 drilling investigations, 85 push-ahead groundwater grab samples were collected from 13 locations (**Table 5-5**). PCE was detected in 36 of the push-ahead groundwater grab samples and exceeded the MCL in 13 samples. The locations with concentrations of PCE greater than 5 µg/L included the shallow and deep aquifer at MW-03R, the shallow aquifer at MW-08, MW-29, and MW-34, and the perched aquifer at MW-23, MW-27, and MW-29.

The plume is bounded vertically and laterally to the east on the VAMC campus by MW-05R, MW-23A/B/C, MW-24, MW-25A/B/C, MW-26A/B/D, MW-27, and MW-28 where there have been either low (less than 5 µg/L) or no detections of PCE. Detections of PCE during the most recent sampling included MW-25A (1.6 µg/L), MW-25C (1.1 µg/L), and MW-26C (0.79 J µg/L). The plume is bounded to the southeast by MW-06 (maximum detection of 0.48 µg/L), to the south by MW-31 (maximum detection of 0.73 J µg/L at MW-31A), and to the north by MW-30 (maximum detection of 0.35 J µg/L at MW-30C).

The highest detections of PCE at the VAMC campus occurred at MW-03RA/B/C. PCE concentrations at MW-03RA, screened in the shallow aquifer, have remained above the MCL at a relatively constant concentration around 28 µg/L since 2019. At MW-03RB, screened in the deep aquifer as shown in **Figure 5-5**, consistently higher concentrations of PCE (170 to 230 µg/L) have been observed since the well was installed in 2018. The plume is vertically bounded in the deep aquifer at this location by MW-03RD, where PCE has only been detected once (0.18 J µg/L in March 2019).

The highest detections of PCE downgradient of the VAMC campus have been observed at MW-01S and MW-02. Concentrations of PCE at MW-01S have varied from a high of 420 µg/L in 1998 to a low of 60 µg/L in 2016, with a concentration of 170 µg/L in 2021. PCE concentrations at MW-02 have varied from a high of 296 µg/L in 2005 to a low of 72 µg/L in 2016, with a concentration of

230 μg/L in 2021. A statistical analysis of the concentration trends is presented in Section 6.7.1. In this area, the PCE groundwater plume is bounded in the deep aquifer by MW-01D, which has been non-detect since December 2018.

In the Sunnyside Park area (**Figure 5-4A**), PCE has been detected at MW-29A (most recent detection of 11 μg/L), MW-29B (maximum detection of 0.56 J μg/L), and MW-04 (most recent detection 42 μg/L and maximum detection of 190 μg/L in 1998). MW-29A is screened in the perched zone and MW-04 is screened in the shallow zone. The groundwater PCE plume in the Sunnyside Park area is vertically bounded by MW-29C, which is screened in the intermediate zone and has had no detections of PCE.

There appears to be a gap in the greater than 50 μg/L PCE groundwater plume (**Figure 5-4A**) in the area of MW-34 and the Mount Olivet well, based upon the PCE concentrations at MW-34A (36 μg/L). Because of access limitations, the Mount Olivet well was most recently sampled in May 2016 (PCE was detected at 40 μg/L); however, as this well has four separate screened intervals extending from 175 to 463 feet bgs, that result is not included in the groundwater PCE contours. It is possible that variations in PCE source loading to groundwater or pumping at the Mount Olivet well have resulted in an area of reduced concentrations. Further discussion of contaminant migration is provided in Section 6.4. The PCE groundwater plume is vertically bounded at MW-34C/D (**Figure 5-5**), which are both screened in the deep aquifer and have had no detections of PCE.

PCE concentrations greater than 50 μg/L again appear downgradient of MW-34, along the 1400 East transect at MW-08A, MW-18, and MW-19, where maximum PCE concentrations (68 J μg/L, 96 μg/L, and 89 μg/L, respectively), were observed in 2018. PCE concentrations at these locations have been decreasing; further evaluation of trends is presented in Section 6.3.1. The plume is vertically bounded at MW-08C along the 1400 East transect, as PCE was not detected at this location (**Figure 5-5**).

The greater than 50 μg/L PCE groundwater plume is assumed to be continuous from the 1400 East transect into the ESS area (**Figure 5-4A**). PCE concentrations at MW-13D, which is screened in the deeper portion of the shallow aquifer, have consistently been above 50 μg/L. As presented in **Figure 5-5**, PCE concentrations in this area within the shallowest portion of the shallow aquifer are less than 50 μg/L (the maximum detection at MW-13S was 31 μg/L in September 2018) and PCE concentrations in the deeper portion of the shallow aquifer and the deep aquifer are greater than 50 μg/L (the maximum detections at MW-13D and MW-13L were 75 μg/L in September 2020 and 51 μg/L in March 2021, respectively).

Other wells within the PCE groundwater plume in the ESS area include MW-14 and MW-16. PCE has been detected at both the shallow and deep intervals of MW-14, with MW-14D having higher detections ranging up to 37 μg/L during September 2018. Three of the eight samples collected at MW-14S have exceeded the MCL with a maximum of 10 μg/L in September 2018. PCE has also been detected at concentrations above the MCL during each sampling event at MW-16S, ranging from 20 to 28 μg/L. PCE has not been detected at MW-16D, indicating a vertical plume boundary at the northern edge of the PCE groundwater plume in the ESS area. The cross section (**Figure 5-3**) shows that the shallow groundwater at both MW-14S and MW-13S has lower levels of PCE (6 μg/L and 14 μg/L, respectively), while PCE in the shallow groundwater at RG-08, RG-02, and

RG-03 is greater than 50 µg/L (**Figure 5-4B**). At MW-14D, which is an artesian well, the most recent detection of PCE was 33 µg/L. This suggests the deeper, more contaminated portion of the shallow aquifer is likely contributing to surface water, especially in this area, and explains the occurrence of PCE at concentrations greater than 50 µg/L at SW-166 and SW-35 (**Figure 5-4B**). Further discussion of the extent of PCE in surface water is presented in Section 5.4.

The plume in the ESS area is laterally bounded to the north by MW-38S/D, to the west by MW-37S/D, MW-12S/D, and MW-15S/D, and to the south by MW-36 and MW17-S/D. Both MW-38S/D and MW-37S/D have not had any detections of PCE since installation in 2020. Low detections of PCE at MW-12S/D and MW-15S/D have occurred but have not exceeded the MCL and are often non-detect. MW-36 had one estimated detection of PCE in December 2020 (0.28 J µg/L). MW-17S/D have often had detections of PCE during sampling events; however, the detections have been under the MCL of 5 µg/L, ranging from 0.38J µg/L in MW-17S (December 2018) to 2.8 µg/L at MW-17D (March 2021). The PCE groundwater plume delineation is supported by surface water samples and shallow residential groundwater wells in the area as presented in **Figure 5-4B** and will be discussed further in Section 5.4.

5.3.1.2 TCE

Three TCE samples collected from the monitoring well network exceeded the MCL of 5 µg/L (**Table 5-4**). All three samples were collected from MW-14S during the December 2019, September 2020, and December 2020 groundwater monitoring events. TCE was also detected at concentrations less than the MCL at MW-02, MW-01S, MW-03RB, MW-13S, and MW-15S.

Within the shallow residential groundwater monitoring network, three of the four samples collected from GW-059/RG-09 exceeded MCL for TCE, with a maximum concentration of 7.7 µg/L. The MCL for TCE was also exceeded at RG-06/GW-050 in three of the four samples collected, with a maximum concentration of 7.4 µg/L.

5.3.1.3 Cis-1,2-DCE

No groundwater samples collected exceeded the MCL of 70 µg/L for cis-1,2-DCE (**Table 5-4**). The highest detections were observed at MW-14S (3.2 µg/L, September 2020), MW-03RB (1.5 µg/L, March 2019), and GW-059 (RG-09) (3.9 µg/L, March 2016).

5.3.1.4 Vinyl Chloride

There were no detections of vinyl chloride throughout the monitoring well network and shallow residential groundwater monitoring network (**Table 5-4**).

5.3.1.5 1,4-Dioxane

As 1,4-dioxane has historically been used as a solvent stabilizer, primarily for 1,1,1-trichloroethane, it is included as a preliminary COPC at the request of the EPA. Samples for 1,4-dioxane have been collected at 76 locations, and multiple samples have been collected at 41 locations. The following detections of 1,4-dioxane have been observed across the site (**Table 5-4**):

- MW-13S in September 2018 (0.47 J µg/L)
- MW-14D in December 2018 (0.3 J µg/L)

- MW-14S in March 2019 (0.23 J µg/L)
- MW-15S in September 2018 (0.18 J µg/L), December 2018 (0.21 J µg/L), and March 2019 (0.25 J µg/L)
- MW-17D in September 2018 (0.2 J µg/L)
- GW-052/RG-07 in July 2016 (2.7 µg/L)

Because no MCL is established for 1,4-dioxane, results are screened against the tap water regional screening level (RSL) of 0.46 µg/L (EPA 2022b). Only two detections exceeded the EPA tap water RSL (MW-13S and GW-052/RG-07); however, the reporting limit for all samples collected prior to December 2018 and a few samples collected after December 2018 were greater than the RSL. Locations with higher detection limits and all locations with detections of 1,4-dioxane (with the exception of GW locations) have been sampled more recently with an adequate reporting limit. The detections of 1,4-dioxane occurred sporadically in the ESS area at concentrations near the reporting limit, and not at locations with the highest concentrations of PCE closer to the VAMC campus. There is also no evidence that the dry-cleaning operation at the VAMC used 1,4-dioxane-containing products such as 1,1,1-trichloroethane. 1,4-dioxane in groundwater does not appear to originate from the site.

5.3.2 Geochemical Conditions

As described in Section 3.5, geochemical parameters, including total and dissolved metals, TOC, dissolved gases (ethene, ethane, methane), anions (sulfate, chloride, nitrate, nitrite), alkalinity, TDS, ferrous iron, and field parameters (conductivity, pH, temperature, turbidity, DO, ORP) were collected in groundwater samples. Results are presented in **Table 5-6** (geochemical parameters) and **Table 5-7** (total and dissolved metals). Geochemical parameters are used to assess conditions in groundwater, including general chemistry and redox conditions, and to evaluate conditions that facilitate PCE degradation. A more detailed discussion of the geochemical evidence for the potential of natural attenuation is provided in Section 6.7.2.

5.3.2.1 Redox Conditions

Nitrate/nitrite, sulfate, ferrous iron, DO, ORP, and methane are redox parameters used to evaluate the degree to which reducing conditions are established at a location. Reductive dechlorination of PCE and TCE to cis-1,2-DCE generally occurs under iron-reducing to sulfate-reducing conditions. Complete dechlorination to ethene and ethane typically occurs under sulfate-reducing to methanogenic conditions. Thus, understanding redox conditions provides key insight into the potential for anaerobic reductive dechlorination to occur at a site.

DO is the most preferred terminal electron acceptor for use by microorganisms. If DO is present at concentrations greater than 0.5 mg/L, conditions are considered aerobic and aerobic microbial processes dominate (NJDEP 2012). If a source of organic carbon exists, microorganisms will consume available oxygen, resulting in anaerobic conditions. At DO concentrations less than 0.5 mg/L, conditions are considered anaerobic, and microorganisms will use nitrate as the terminal electron acceptor, followed by ferric iron, then sulfate, and finally carbon dioxide (NJDEP 2012). Conditions are considered nitrate reducing, and denitrification is the dominant microbial process when DO is less than 0.5 mg/L, nitrate is less than 1 mg/L, and measurable nitrite is present (NJDEP 2012). Conditions are considered iron-reducing when DO is less than 0.5 mg/L and concentrations of ferrous iron are greater than 1 mg/L (NJDEP 2012). Conditions are considered sulfate-reducing when DO is less than 0.5 mg/L and concentrations of sulfate are less than 20 mg/L (NJDEP 2012). Conditions are considered methanogenic and methanogenesis is the dominant microbial process when methane concentrations are greater than 1 mg/L (EPA 2006b).

Redox conditions at the site are predominantly aerobic, as demonstrated by DO greater than 1 mg/L at most locations (**Table 5-6**). Localized exceptions include MW-03RD, MW-14S, MW-17S, MW-23A/B, MW-30C, MW-31C, MW-36, and MW-37S, where DO was occasionally less than 1 mg/L (**Table 5-6**). Nitrate-reducing conditions may be present at MW-03RD, MW-14S, MW-23A, MW-30C, MW-31C, and MW-36, based on sporadic concentrations of nitrate less than 1 mg/L. Iron-reducing conditions may be present at MW-14S, MW-23A, and MW-31C, as indicated by intermittent concentrations of ferrous iron greater than 1 mg/L (**Table 5-6**). Sulfate ranged from 50 to 230 mg/L, suggesting sulfate-reducing conditions are not present. The highest concentration of methane detected at the site was 15 µg/L at MW-31C, indicating that methanogenic conditions are not present (**Table 5-6**).

ORP is a measure of the redox state of groundwater and is an indicator of the relative tendency of the groundwater to accept or transfer electrons (NJDEP 2012). Lower ORP values generally represent more reduced conditions and can indicate areas where enhanced anerobic microbial processes are occurring. Recurrent negative ORP was observed at MW-03RB/D, MW-05R, MW-08B/C, MW-14S, MW-15D, MW-17S, MW-23A/C, MW-30C, MW-31C, MW-32B/C, MW-36, and MW-37D (**Table 5-6**).

In addition, redox conditions often control the mobility and subsequent concentration in groundwater of redox-sensitive metals such as iron, manganese, and arsenic. Under reducing conditions, these metals are transformed from their oxidized (and immobile) states to their more soluble, reduced forms (NJDEP 2012). In addition, many metals that are not redox sensitive are sorbed to iron and manganese oxyhydroxides, which may dissolve under reducing conditions, releasing sorbed metals. If site soil/sediments contain redox-sensitive metals, elevated concentrations of dissolved metals will be observed in areas with reducing conditions.

Total and dissolved arsenic (**Table 5-7**) was detected at most locations at low concentrations (less than 2 µg/L); however, elevated concentrations (up to 14 µg/L) of total arsenic were observed at shallow GW locations in the ESS, specifically GW-010, GW-011, GW-014, GW-015, GW-020. Concentrations of total and dissolved manganese were typically less than 200 µg/L. Elevated concentrations of total manganese (up to 2,770 µg/L) were observed at MW-03RA/B/D, MW-08A/C, MW-13S, MW-14S, MW-15D, MW-17S, MW-23A/C, MW-26A, MW-29A, MW-30C, MW-31C, MW-34B/C/D, MW-36, and most shallow GW/RG locations. Concentrations of total and dissolved iron are highly variable across the site and over time at each location. Locations with recurrent elevated concentrations of total iron (greater than 500 µg/L) include MW-13S, MW-14S, MW-23A, MW-30C, MW-31C, and most shallow GW/RG locations in the ESS. As reducing conditions will generally cause an elevation in dissolved redox-sensitive metals, and elevations of redox-sensitive metals were observed only in the total fraction (i.e., not dissolved), variations in total metals across the site demonstrate variations in lithology and support the previous observation that conditions are aerobic.

5.3.2.2 Degradation By-Products and Other Indicators

TOC and alkalinity can be used as general indicators of the amount of dissolved carbon within the system, which can increase the rate and extent of microbial activity. Reductive dechlorination is favored when concentrations of TOC are greater than 20 mg/L (EPA 2006b). TOC was generally low (less than 5 mg/L) except for MW-03RC/D, MW-08C, MW-13S, and MW-14S (**Table 5-6**). Increasing concentrations of alkalinity can be indicative of enhanced microbial activity (NJDEP 2012). Alkalinity was fairly consistent across the site and over time, ranging from 210 to 460 mg/L (**Table 5-6**).

A key factor influencing both potential and rates of biotic and abiotic PCE degradation reactions is pH. Inhibition of the bacteria capable of complete reductive dechlorination to ethene (including *Dehalococcoides* and *Dehalogenimonas*) is generally observed at pH below 6 with complete inhibition at pH of 5.5 or less (NJDEP 2012). The optimal range of pH for microbial activity is 6 to 8 standard units. pH at the site varied from 6.3 to 7.7 standard units (**Table 5-6**).

Ethene/ethane are the end products of complete microbial reductive dechlorination of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and/or VC. Ethene was detected in MW-03RD, MW-08C, MW-23A/B/C, MW-25C, MW-30C, MW-31C, and MW-34B/D at concentrations ranging from 0.3 to 8.8 µg/L. Ethane was detected in MW-08C, MW-23A/C, MW-31C, and MW-34B/C at concentrations ranging from 0.3 to 14 µg/L.

Chloride is released into groundwater during the biodegradation of chlorinated ethenes, which can result in elevated concentrations of chloride. As chloride is also naturally occurring, increases in concentration because of biodegradation are only observed when the concentrations of chlorinated ethenes are in the parts per million range (NJDEP 2012). Because PCE at the site is below the parts per million range and chloride is greater than 100 mg/L, chloride cannot be used as an indicator of degradation.

5.3.2.3 General Chemistry

The chemical composition of groundwater in the Salt Lake Valley varies with location and depth, primarily because of recharge sources and water-sediment interactions (Thiros et al. 2010). Groundwater at the site is classified as Class II Drinking Water Quality Groundwater (TDS between 500 and 3,000 mg/L), which is consistent with the measured TDS at the site (**Table 5-6**). Based upon the concentrations of major cations (calcium, magnesium, sodium, and potassium) and major anions (sulfate, chloride, and bicarbonate), groundwater can be further classified using the dominant geochemistry (calcium sulfate type, sodium chloride type, magnesium bicarbonate type, sodium bicarbonate type, and mixed). Groundwater in all aquifers (i.e., shallow, deep, and perched) are predominantly mixed-calcium sulfate type. However, inputs from surface recharge to the shallow aquifer can be observed in elevated concentrations of chloride and sodium (**Tables 5-6** and **5-7**).

5.4 Surface Water

As discussed in Section 3.7, surface water sampling has been conducted as part of AOU1, Phase 1 OU2, and Phase 2 OU1 investigations to determine the nature and extent of contamination in surface water. Surface water samples collected during the RI were analyzed for VOCs, metals, and geochemical parameters. A data quality evaluation is provided in the AOU1 Remedial

Investigation Report (EA 2019), 2018 OU2 DSR (Jacobs 2019b, attached in **Appendix B**), Vapor Intrusion Technical Memorandum (CDM Smith 2021f, attached in **Appendix C**), and the ESS VI Lines of Evidence DSR (CDM Smith 2021m, attached in **Appendix D**). All data are usable to determine the nature and extent of contamination in surface water.

5.4.1 Contaminants of Interest

The analytical results for the preliminary COPCs (not including 1,4-dioxane) from samples collected during all surface water monitoring events are presented in **Table 5-8**. A total of 96 surface water samples were collected from 55 locations between February 2016 and April 2021. Of the 37 locations sampled once, PCE was detected at 32 locations and was not detected at 5 locations. Of the 18 locations sampled multiple times:

- PCE was consistently not detected at 4 locations (SW-16/SW-16E/SW-16I, SW-48, SW-51, and SW-52).
- PCE was consistently detected at 10 locations (SW-06, SW-12, SW-23, SW-34, SW-35, SW-39, SW-44, SW-47, SW-53, and SW-166).
- Declining PCE concentrations were observed at 2 locations (SW-15 and SW-50).
- Fluctuating PCE concentrations were observed at 5 locations (SW-06, SW-34, SW-35, SW-39, and SW-53).

Because groundwater is known to discharge to the surface in the ESS area, the most recent concentrations of PCE in groundwater and surface water were integrated and the approximate extent of PCE is shown in **Figure 5-4B**. As surface water is not used for drinking water, MCLs are not applicable; however, as the surface water and groundwater results were integrated to show the approximate extent of PCE, MCLs are presented on **Figure 5-4B** and **Table 5-8** for screening and demonstration purposes. Surface water samples that did not contain detectable PCE are located to the north of the PCE groundwater plume and south of the plume along Red Butte Creek. Surface water locations SW-10 and SW-24 (PCE was not detected at either location) are samples representative of stormwater upgradient of areas where surface water discharges—while they are located within the extent of the PCE plume, these samples are not indicative of groundwater discharge to surface water. Surface water samples that contain detectable PCE at less than 5 µg/L generally bound the PCE plume to the west and south; however, storm water (i.e., precipitation, run-off) may have been a substantial component of the sample volume at some locations, particularly SW-05, SW-30, and SW-36.

Within the extent of the PCE plume, there are multiple surface water locations (SW-09, SW-11, SW-26, SW-27, SW-28, and SW-31) where PCE concentrations less than 50 µg/L are shown inside of the 50 µg/L isoconcentration contour. At these locations, groundwater may not be the dominant component. Geochemical parameters were collected at SW-26, SW-27, and SW-28, and discussed further in Section 5.4.2.

Low-level concentrations of TCE were observed at 33 surface water locations; however, TCE concentrations did not exceed the MCL (5 µg/L) at any location. Low-level concentrations of cis-

1,2-DCE (less than 2 µg/L) were observed at 24 locations. VC was not detected in any surface water samples (**Table 5-8**).

5.4.2 Geochemical Conditions

As described in Section 3.7, geochemical parameters, including total metals, TOC, dissolved gases (ethene, ethane, methane), anions (sulfate, chloride, nitrate, nitrite), alkalinity, TDS, ferrous iron, and field parameters (conductivity, pH, temperature, turbidity, ORP) were collected in a subset of surface water samples. Results are presented in **Table 5-9** (geochemical parameters) and **Table 5-10** (total and dissolved metals). Geochemical parameters are used to assess general chemistry and redox conditions and to evaluate whether groundwater was a significant component of surface water. A more detailed discussion of the contaminant migration due to groundwater-surface water interactions is provided in Section 6.2.

In general, a similar range of concentration of total metals, TOC, chloride, and redox-sensitive parameters (nitrate/nitrite, dissolved gases, ORP) is present in surface water samples, compared to groundwater. Lower concentrations of sulfate, alkalinity, calcium, magnesium, and TDS can be observed in the surface water samples collected along Red Butte Creek (SW-47, SW-51, and SW-52).

As discussed in the previous section, the contribution of groundwater at surface water locations where the observed concentrations of PCE conflict with nearby concentrations of PCE in groundwater can be evaluated using geochemical parameters. Locations that warrant evaluation and have appropriate data for this evaluation include SW-26, SW-27, and SW-28. Surface water locations SW-26, SW-27, and SW-28 are located in proximity to GW-011/RG-02. Geochemical parameters were collected at GW-011 in 2016. Concentrations of chloride, sulfate, TDS, calcium, and magnesium were similar at SW-26, SW-27, and SW-28 compared to GW-011; however, concentrations of aluminum, iron, and potassium were lower, and concentrations of sodium were higher. This suggests that lower concentrations of PCE at SW-26, SW-27, and SW-28 compared with GW-011/RG-02 are likely due to surface runoff contribution.

5.5 Soil Gas and Indoor Air (East Side Springs)

The potential development of a soil gas plume in the ESS area would be due to volatilization of VOCs from the groundwater plume; therefore, the area of interest for soil gas impacts is defined by the proximity to the groundwater plume. The following sections describe the nature and extent of preliminary COPCs in soil gas and indoor air in the ESS area. As discussed in Section 3.13.1, during the AOU1 RI, it was determined that field data collection procedures were not in compliance with the AOU1 QAPP for some of the soil gas and indoor air samples collected in 2015. These data were qualified during data validation as not usable for the risk assessment; however, the data can be used to support other data in defining the extent of soil gas and VI impacts in the ESS area (qualitative use). These data are noted in **Tables 5-11** and **5-12** and are included in **Figures 5-6** and **5-7**.

5.5.1 Soil Gas

As discussed in Section 3.8, soil gas sampling was conducted in 2015, 2016, 2017, and 2021 to determine the nature and extent of the soil gas plume. **Table 5-11** details the soil gas sample dates, locations, and analytical results for preliminary COPCs screened against the residential soil gas RBSLs. **Figure 5-6** presents the soil gas sample locations and sample type, color coded by the maximum PCE detection. Samples were analyzed for VOCs using SUMMA canisters and/or HAPSITE. Detailed descriptions of the sampling results and a data quality summary for all samples collected are presented in the AOU1 Remedial Investigation Report (EA 2019), the AOU1 DSRs (FE 2015b; EA 2018; and CH2M 2017, attached in **Appendix A**) and Phase 2 OU1 DSRs (CDM Smith 2021h, 2021m, attached in **Appendix D**). Further discussion of migration of COPCs in soil gas is presented in Section 6.2.

5.5.1.1 PCE

A total of 130 soil gas samples were collected in the ESS area, resulting in 70 detections of PCE. Seven samples exceeded the residential RBSL for PCE in soil gas (360 µg/m^3), with a maximum concentration of 4,200 µg/m^3 measured at RG-08 in August 2021. Four of the seven samples that exceeded the RBSL were collected at 0053-H, ranging from 510 to 2,000 J µg/m^3. The other samples that exceeded the RBSL were collected at RG-08 in April 2021 (570 µg/m^3), located approximately 140 feet to the southeast of 0053-H, and 0017-H (431 µg/m^3), located approximately 600 feet to the northeast of 0053-H. Additionally, the sample collected in 2015 from 0011-H, neighboring 0053-H, had a PCE concentration of 356 µg/m^3. Although lower concentrations were noted in other areas in the ESS, the highest soil gas concentrations were centered around the intersection of 900 South and 1200 East.

For the four soil gas locations sampled during April and August 2021, PCE concentrations were higher during the August sampling (**Table 5-11)**. Concentrations of PCE were two to eight times higher in August compared to April. However, only location RG-08 exceeded the residential RBSL for PCE during either sampling event.

5.5.1.2 TCE

TCE was detected in 19 of the 130 soil gas samples collected in the ESS area. These concentrations ranged from 0.11 J to 21 µg/m^3. Three samples exceeded the residential RBSL for TCE in soil gas (16 µg/m^3). Two of the samples that exceeded the RBSL were collected from 0053-H in 2016 (21 µg/m^3 and 18 µg/m^3), and the third sample was collected from 0030-H in 2015 (17 µg/m^3). The samples collected at 0053-H that exceed the residential RBSL for TCE correlate with the area containing the maximum detections of PCE in the ESS-area soil vapor.

5.5.1.3 Cis-1,2-DCE

Thirteen soil gas samples contained detectable cis-1,2-DCE with a maximum concentration of 2.8 µg/m^3 at 0030-H. The sample at 0030-H correlates with the TCE RBSL exceedance observed in 2016 at this location.

5.5.1.4 VC

Eight of the 22 soil gas samples analyzed for VC contained detectable concentrations. None of the samples exceeded the residential RBSL for VC in soil gas (5.6 µg/m^3), with a maximum concentration of 0.13 ug/m^3 at both MW-34 and RG-10 collected by SUMMA canister in March and April 2021, respectively.

5.5.2 Indoor Air

As discussed in Section 3.10, indoor air sampling has been conducted from 2015 to 2022 to delineate the area of the site that may be susceptible to VI and identify any properties that require an interim removal action. **Table 5-12** details the indoor air sample dates, locations, and analytical results for preliminary COPCs screened against the residential indoor air RBSLs. **Figure 5-7** presents the indoor air sample locations and sample type, color coded by the maximum PCE detection screened against the indoor air RBSL and Tier 1 RAL. Samples were collected for VOCs using SUMMA canisters, HAPSITE, and/or passive samplers. Detailed descriptions of the sampling results and data quality summaries for all samples collected are presented in the AOU1 Remedial Investigation Report (EA 2019) and Phase 1 OU2 DSRs (CDM Smith 2021h, 2021m, attached in **Appendix D**).

In 2015, HAPSITE samples were collected throughout structures at 36 locations, from January through April and in December. SUMMA canister samples were collected at 14 of those structures. Certain data from this event were qualified during data validation because the field data collection was not completed in compliance with the AOU1 QAPP. While these data were not used in the risk assessment, they may still be used to support the data collected from 2016 through 2020 in defining the extent of the vapor intrusion. In 2016, HAPSITE samples were collected within structures at 16 locations during the months of February, March, May, and June. SUMMA samples were collected at 9 of those locations in March and May 2016. In 2017, HAPSITE samples were collected within 18 structures during March and April. SUMMA samples were collected at 14 of those locations in March and April 2017. Some of the HAPSITE samples were collected during building pressure cycling. Pressure cycling (specifically, negative pressure) was used to force “worst-case” scenario conditions and to replicate potential seasonal variation. Pressure cycling study results may be considered to represent conservatively high results.

From 2019 to 2021, under the Phase 1 OU2 investigation, samples were collected from 32 locations. HAPSITE samples were collected from all locations, excluding locations sampled in 2021. SUMMA and passive samples were collected at 30 locations (excluding 0045-S where only HAPSITE samples were collected, and locations sampled in 2021 where only SUMMA samples were collected). SUMMA samples were collected over a 24-hour period, while passive samples, placed adjacent to SUMMA canisters, were collected over an approximate 3-week period. Under the Phase 2 OU1 investigation, SUMMA samples were collected from 10 locations in August 2021 and 33 locations in March 2022, SUMMA samples were collected over a 24-hour period.

5.5.2.1 Non-Residential Structures

The sample identification suffix is the structure type designator; home (H), business (B), church (C), or school (S). Most structures included in the VI investigation were homes (**Table 5-12**); however, one business (0019-B), two churches (0020-C and 0366-C), and six schools (0021-S, 0022-S, 0028-S, 0031-S, 0045-S, and 0365-S) were also included. While businesses, churches, and schools are commercial properties, and it is appropriate to screen indoor air concentrations against commercial RBSLs, there is the potential for sensitive populations to be present at these structures. The business (0019-B) is an assisted living facility, there is a daycare in one school (0045-S), and there is the potential for a daycare at the churches (0020-C and 0366-C); therefore, the residential RBLSs were also used for screening (**Table 5-12**).

There were no detections of PCE, TCE, cis-1,2-DCE, or VC in indoor air within one church (0020-C) (**Table 5-12**). The other church (0366-C) contained PCE and TCE at low concentrations, less than their residential RBSLs, and cis-1,2-DCE and VC were not detected.

PCE was observed at low concentrations (less than the residential RBSL of 11 μg/m^3) at locations primarily in the basement of the business (0019-B). Low concentrations of cis-1,2-DCE were also detected at 0019-B. TCE and VC were not detected.

There were no detections of PCE, TCE, cis-1,2-DCE, or VC at two of the schools (0021-S and 0028-S) except for one sample at 0021-S (PCE was 0.8 μg/m^3).

The maximum concentration of PCE observed in indoor air at 0022-S was reported in the maintenance storage closet (11.2 μg/m^3) slightly in excess of the residential RBSL but less than the commercial RBSL. Other detections of PCE ranged from 0.8 to 8.4 μg/m^3. TCE was observed in two samples at concentrations in excess of the residential RBSL (1.3 and 0.7 μg/m^3). At the time of sampling, a stainless steel cleaning solution containing TCE and PCE was observed in the second floor maintenance storage closest (FE 2015b), suggesting these detections of PCE and TCE are due to indoor air sources.

At 0031-S, RI activities were limited to soil gas sampling, but an independent contractor collected indoor air samples (IHI 2012). The independent contractor also collected indoor air samples at school located at 800 S and 1000 E. SUMMA canisters were deployed in basement locations on both campuses for 24 hours with analysis completed using EPA Method TO-15. There were no detections of PCE, TCE, or VC in any of the indoor air samples (IHI 2012).

0045-S was sampled in March 2016 and December 2019 (**Table 5-12**). During the March 2016 sampling, three rooms on the ground level were selected based upon the proximity to PCE-impacted groundwater for sampling under ambient, negative, and positive pressure. Other indoor air samples were collected from the four levels of the building. Under ambient conditions, PCE and TCE were only detected near the auto shop (PCE was detected in three samples ranging from 0.8 to 40 μg/m^3 and TCE was detected in one sample at 1.3 μg/m^3), where interior contaminant sources (i.e., brake cleaner) were positively identified. In two rooms that were sampled under negative and positive pressure, PCE, TCE, cis-1,2-DCE, and VC were not detected. In the third room sampled under negative and positive pressure, low level (less than the residential RBSL) concentrations of PCE were observed. During the December 2019 sampling, indoor air samples were collected under ambient pressure conditions. In proximity to the ground level auto shop (boiler room, HVAC room, auto shop chemical waste, auto shop chemical storage, sump room, and elevator), concentrations of PCE ranged from 0.9 to 11.2 μg/m^3. Three samples out of a total of 126 samples exceeded the residential RBSL for PCE or TCE, and no samples exceeded the commercial RBSLs.

0365-S was sampled in March 2022. PCE was detected in all four indoor air samples, at concentrations well below its residential RBSL. TCE, cis-1,2-DCE, and VC were not detected.

5.5.2.2 PCE in Residential Structures

From 2015 to 2017, PCE was detected in 33 of 48 residential structures sampled, with an exceedance of the RBSL for PCE (11 μg/m^3) observed during initial sampling at 10 structures

(**Table 5-12**), including 0011-H, 0017-H, 0018-H, 0023-H, 0037-H, 0040-H, 0051-H, 0053-H, 0054-H, and 0059-H. Subsequent sampling was completed at 25 structures, and PCE was detected in 19 of the structures at concentrations ranging from 0.037 to 74 µg/m^3. PCE concentrations greater than the RBSL were observed in four structures: 0003-H, 0011-H, 0018-H, and 0053-H.

Overall, during the 2015–2017 sampling events, a total of five structures had a concentration of PCE that exceeded the Tier 1 RAL in at least one sample: 0023-H, 0037-H, 0040-H, 0051-H, and 0059-H. The indoor air samples that exceeded the Tier 1 RAL for PCE are described below:

- In 2015, one sample collected at 0023-H within a covered basement sump (132 µg/m^3).
- In 2015, one sample collected at 0037-H in the furnace room at floor level near a crack (88 µg/m^3).
- In 2016, several samples collected at 0040-H in the basement and main level (43 to 153 µg/m^3).
- In 2016, one sample collected at 0051-H in the mechanical room at floor level under forced negative pressure conditions (402 µg/m^3).
- In 2017, one sample collected at 0059-H at the basement laundry room floor drain under forced negative pressure conditions (1,071 µg/m^3).

After confirming the PCE exceedances were a result of vapor intrusion at 0040-H, a TCRA was executed in accordance with an Action Memorandum (VA 2016) to install a vapor mitigation system.

The PCE RAL exceedance at 0023-H (123 µg/m^3) was from a sample collected inside a covered sump in the basement. Additional samples collected from rooms in the basement did not exceed the PCE RBSL. In addition to sampling under normal pressure conditions, the home was sampled under forced negative and positive pressures in an effort to replicate potential season variability and force worst-case conditions. Samples collected in the basement during pressure-cycling did not exceed the PCE RBSL.

The PCE RAL exceedance at 0037-H (88 µg/m^3) was from a sample collected at floor level in the basement furnace room near a crack. A breathing zone sample collected in the same room was below the PCE RBSL. A portable air purifier was provided to the resident until the floor crack was sealed in November 2016.

The PCE RAL exceedance at 0051-H (402 µg/m^3) was from a sample collected at floor level in the mechanical room near a crack while the house was under negative pressure (-10 pascals). A breathing zone sample collected in the same room, at the same pressure, was below the PCE RAL and under normal pressure conditions, the breathing zone PCE concentration was below the RBSL. A portable air purifier was provided to the resident until the floor crack was sealed in November 2016.

The PCE RAL exceedance at 0059-H (1,071 µg/m^3) was from a sample collected 2 inches above the floor drain while the house was under negative pressure (-10 pascals). A breathing zone sampled collected in the same room, at the same pressure, was below the PCE RBSL. The floor drain p-trap was observed to be dry, so water was added, and the room was retested. PCE concentrations decreased at the floor drain (219 μg/m^3) and in the breathing zone (0.96 μg/m^3). PCE was not detected in the room under normal pressure conditions.

Following corrective actions, concentrations of PCE were less than the RBSL (11 μg/m^3) at these locations during subsequent confirmation sampling with SUMMA canisters.

In the winter of 2019–2020, 10 structures sampled from 2015 to 2017 (0003-H, 0011-H, 0017-H, 0025-H, 0026-H, 0037-H, 0045-S, 0051-H, 0053-H, and 0059-H) were resampled along with an additional 21 new locations. All properties (with the exception of 0045-S where only HAPSITE sampling was completed) were investigated using HAPSITE, SUMMA, and passive sample collection. PCE concentrations exceeded the RBSL at 0011-H, 0018-H, 0026-H, and 0053-H, with the highest concentrations occurring at 0011-H (16 and 19 μg/m^3 in the basement storage). Samples collected from new location 0091-H exceeded the RBSL (14 to 18 μg/m^3 in multiple samples). PCE concentrations did not exceed the Tier 1 RAL in any sample.

In August 2021, nine structures sampled in the winter of 2019–2020 were resampled, along with one additional new location (0102-H). PCE concentrations exceeded the RBSL at 0091-H, 0011-H, and 0018-H with the highest concentration occurring at 0011-H (19 μg/m^3 in the basement storage). PCE concentrations in the nine homes that had been previously sampled were all the same or lower than concentrations measured during previous events in winter and spring seasons. PCE did not exceed the Tier 1 RAL in any sample.

In March 2022, 33 residential structures were sampled, six of which were previously sampled. PCE concentrations exceeded the RBSL at 0064-H (13 μg/m^3 in the living room), 0192-H (16 μg/m^3 in the living room), 0197-H (23 μg/m^3 in the basement laundry room), 0263-H (12.6 μg/m^3 in the basement bedroom), 0274-H (12 μg/m^3 in the basement living room), and 0336-H (16 μg/m^3 in the basement storage room). PCE had not previously been detected at 0013-H or 0062-H but was detected during the March 2022 event at low concentrations (below the residential RBSL). At 0029-H, 0041-H, and 0146-H, PCE concentrations were lower than those previously measured.

Figure 5-7 shows the locations with exceedances of the RBSL and Tier 1 RAL are generally located in the vicinity of the intersection of 900 South and 1200 East.

5.5.2.3 TCE in Residential Structures

From 2015 to 2022, TCE was detected at 50 of the 96 residential structures and exceeded the residential RBSL (0.48 μg/m^3) at 10 structures (0003-H, 0017-H, 0018-H, 0023-H, 0040-H, 0098-H, 0166-H, 0193-H, 0194-H, and 0263-H). The Tier 1 RAL was exceeded at 0197-H. A TCRA was executed at 0040-H. Indoor sources of TCE were identified at 0017-H, 0023-H, 0054-H, 0059-H, and 0197-H. At 0197-H, suspected indoor sources were removed and additional samples collected in April 2022. TCE concentrations in four indoor air samples exceeded the Tier 1 RAL, with three samples exceeding the Tier 2 RAL. The highest TCE concentrations were on the upper level of the structure. A TCRA was executed at 0197-H, while evaluation of the TCE source is ongoing.

5.5.2.4 Cis-1,2-DCE in Residential Structures

Cis-1,2-DCE was detected during 2015 at the following locations: 0001-H, 0002-H, 0003-H, 0004-H, 0008-H, 0010-H, 0014-H, 0015-H, 0017-H, 0025-H, 0029-H, 0033-H, 0036-H, and 0037-H. Detected concentrations ranged from 0.40 $\mu g/m^3$ to 2.20 $\mu g/m^3$ (at 0003-H). Cis-1,2-DCE was detected in 51 samples during 2016 at the following locations: 0041-H, 0047-H, 0052-H, 0053-H, 0055-H, and 0056-H. Detected concentrations ranged from 0.36 $\mu g/m^3$ to 3.05 $\mu g/m^3$ (at 0003-H). Cis-1,2-DCE was detected in two samples during the 2017 sampling event at the following locations: 0026-H and 0059-H. Detected concentrations ranged from 0.48 $\mu g/m^3$ to 2.18 $\mu g/m^3$ (at 0059-H).

Cis-1,2-DCE was detected in five samples during 2019 at the following locations: 0003-H, 0018-H, and 0051-H. Detected concentrations ranged from 1.1 $\mu g/m^3$ to 2.5 $\mu g/m^3$ (at 0003-H). Cis-1,2-DCE was detected in 23 samples collected in 2020 at the following locations: 0011-H, 0018-H, 0059-H, 0091-H, and 0166-H. Detected concentrations ranged from 0.034 J $\mu g/m^3$ to 11.2 $\mu g/m^3$.

During 2021, cis-1,2-DCE was detected in one sample at 0018-H, with a concentration of 0.2 $\mu g/m^3$. In 2022, cis-1,2-DCE was detected in nine samples. The maximum concentration observed in 2022 was 0.69 $\mu g/m^3$.

An RBSL was not established for cis-1,2-DCE in indoor air.

5.5.2.5 VC in Residential Structures

A total of 33 samples from 14 locations were analyzed for VC in 2015; however, all results were below detectable limits. In 2016, 10 samples were analyzed for VC at the following locations: 0003-H, 0011-H, 0017-H, 0018-H, 0023-H, 0037-H, 0051-H, and 0053-H. VC was not detected in any of these 10 samples. In 2017, 14 samples were analyzed for VC in 11 locations. VC was detected in two of these samples, both at 0001-H in the basement living room. Concentrations ranged from 0.17 $\mu g/m^3$ to 0.19 $\mu g/m^3$ (an exceedance of the RBSL).

In 2019, VC was detected in one sample at 0003-H at a concentration of 0.038 J $\mu g/m^3$. VC was detected in nine of the SUMMA samples collected in 2020, but concentrations were not above the RBSL. VC was not analyzed in the HAPSITE or passive samples in 2020.

During 2021, VC was detected in one sample at 0037-H, with a concentration of 0.016 J $\mu g/m^3$, below the RBSL. VC was not detected in any samples collected in 2022.

No samples analyzed for VC exceeded the Tier 1 RAL of 17 $\mu g/m^3$.

Section 6

Contaminant Fate and Transport

Evaluation of fate and transport of the preliminary COPCs is based on the conceptual site model (CSM), including site physical characteristics, source characteristics, results from contaminant investigations, and contaminant characteristics. This section provides a discussion of some of the components of the CSM (**Figure 6-1**), including contaminant source, migration routes (including the results of the groundwater model), and contaminant persistence.

6.1 Potential Sources of Contamination and Contaminant Characteristics

The dry-cleaning facility on the VAMC property was operational in Building 7 from approximately 1976 through 1984. A single "closed loop" dry-cleaning system was operated, meaning the system contained a distillation process for the recovery of PCE at the end of each cycle. The condensate from the distillation process was emptied directly into a vitrified clay drain line attached to the sanitary sewer. This method of disposal was common practice in the 1980s (EPA 2012). Soil gas investigations in 2018 along the sanitary sewer identified a sewer line defect adjacent to Manhole 22658 in Sunnyside Park (Jacobs 2019b, attached in **Appendix B**). Review of historical building construction drawings and historical photographs indicate that gravel sumps, dry wells, a scale pit, an underground storage tank, and 55-gallon drum storage areas were present in the vicinity of the former dry-cleaning facility; however, there is no evidence that these features would have been associated with the dry-cleaning operations (Jacobs 2019a). Review of historical aerial photographs was unable to confirm locations of these features.

Therefore, two potential sources of contamination at the site have been identified: surface and near-surface releases of dry-cleaning condensate in the Building 6 and 7 area on the VAMC campus and subsurface release through the sanitary sewer line defect in Sunnyside Park (**Figure 6-1**). Dry-cleaning condensate is composed of high concentrations of dissolved PCE; therefore, DNAPL is not expected to occur at the site.

Because PCE degrades to TCE, cis-1,2-DCE, and VC under anaerobic conditions, these compounds are included as preliminary COPCs. The chemical 1,4-dioxane is also included as a preliminary COPC at the request of EPA. The physical properties of the preliminary COPCs are presented in **Table 6-1**. PCE has a low solubility; TCE and VC have a moderate solubility; cis-1,2-DCE has a high solubility; and 1,4-dioxane is completely miscible in water. PCE, TCE, and cis-1,2-DCE have a high vapor pressure and high Henry's constant; VC has a very high vapor pressure and high Henry's constant; and 1,4-dioxane has a moderate vapor pressure and low Henry's constant. Each of the preliminary COPCs will migrate through soils in groundwater. In groundwater, VC volatilizes most readily into air of any of these compounds, while 1,4-dioxane will not readily volatize into air.

6.2 Transport Processes and Potential Routes of Migration

The presumed source of PCE in groundwater is releases of dry-cleaning condensate into the vadose zone in the Building 6 and 7 area on the VAMC campus and near Manhole 22658 in Sunnyside Park. In the vadose zone, dissolved contaminant source mass migration is controlled by gravity and capillary mechanisms and forces. As contaminants migrate through the vadose zone, the dissolved source mass is retained by capillary forces and undergoes adsorption to clays and organic materials. The dissolved source mass will continue to move downward because of gravity and leaching by infiltrating water until a barrier is encountered and the contaminant is diverted laterally. Volatilization into air, migration with infiltrating water, and migration with encountered groundwater will deplete the remaining dissolved source mass in the vadose zone at the source areas and generate groundwater and soil gas plumes.

Once contaminants have reached groundwater, contaminant transport mechanisms in the saturated zone (i.e., advection, dispersion, diffusion) move contaminants into areas downgradient from the source. Advection is the process by which chemicals are transported at the same velocity as the average linear velocity of groundwater (and is slowed by retardation, which varies based on the contaminant type). Dispersion in porous media is defined as the spreading of a chemical in groundwater as the water flows through the subsurface. This process allows for the dilution of the chemical as the contaminated groundwater mixes with unaffected groundwater along the dispersion front. Diffusion is the process whereby chemical compounds move from areas of higher concentration to lower concentration. In high-permeability zones, advection is the dominant process, while in low-permeability zones (e.g., clay layers), diffusion is the dominant process. Diffusion of contaminants into low permeability zones because of the concentration gradient between the low- and high-permeability zones results in "storage" of contaminants that can then act as secondary sources of contamination to more transmissive zones when concentrations decline and the concentration gradient between the low- and high-permeability unit reverses (a process known as back diffusion).

As contaminants partition into the vapor phase (from either dissolved source mass in the vadose zone or the groundwater plume in the saturated zone), migration in the vapor phase occurs primarily via diffusion and advection. Advection processes in the vadose zone may result from barometric pumping because of natural variations in temperature and pressure that occur with weather changes. In deep vadose zones, density differences between VOC soil gas and air can also affect migration.

As contaminants in all phases (i.e., source mass in vadose zone, dissolved in groundwater, and vapor as soil gas) migrate through the subsurface, partitioning into pore water and sorption onto the soil matrix can occur. As water level fluctuations and infiltration occur, porewater and sorbed mass can leach back into groundwater. The amount of sorbed-phase contamination on soil matrix is a function of the amount of organic carbon and clay present.

6.3 Contaminant Migration in Soil

As discussed in Section 5.1, three sediment samples were collected in the ESS area and 298 soil samples were collected from 44 locations on the VAMC campus, in Sunnyside Park, and near the Mount Olivet Cemetery (**Figure 5-1**). The highest PCE soil concentrations were observed in borings advanced between Buildings 6 and 7 at concentrations less than 0.005 mg/kg, which is three orders of magnitude below the RBSL for residential soil (24 mg/kg). It is possible that at this point, all remaining source mass in the vadose zone has migrated to groundwater or volatilized to soil gas. However, it is also possible that the remaining dissolved source mass in the vadose zone has migrated laterally along boundaries (i.e., silt and clay layers). A discussion of the extent of contaminants in soil vapor, plume stability, and evaluation of remaining dissolved source mass acting as a source to groundwater will be presented in Section 6.6 and Section 6.7, respectively.

6.4 Contaminant Migration in Groundwater

The primary contaminant in groundwater is PCE, with localized concentrations of TCE (approximately 1 to 12 µg/L) possibly present because of localized areas conducive to anaerobic degradation. The PCE groundwater plume originates west of Buildings 6 and 7 near the western edge of the VAMC campus, with the highest concentrations at MW-01S, MW-02, and MW-03RB (approximately 230 µg/L) (**Figure 5-4A**). Any surface releases of PCE on the VAMC campus likely migrated vertically as well as laterally to the west-northwest along clay layers and in perched groundwater and encountered the shallow aquifer west of Building 6 and 7 in the vicinity of MW-01S, MW-02, and MW-03R. Downward migration of PCE from the shallow aquifer to the deep aquifer has occurred in the vicinity of MW-03R (**Figure 5-5**). Concentrations of PCE at MW-04 and MW-29 in Sunnyside Park are likely due to the release from the sanitary sewer, which traveled vertically and laterally along low-permeability layers and perched groundwater, ultimately migrating to the shallow aquifer west-northwest of the release location.

After encountering groundwater, the PCE plume migrates west along the direction of groundwater flow. The East Bench Fault Spur does not appear to be an impediment to groundwater flow and contaminant migration; however, to the west of the fault spur, changes in hydraulic conductivity and topography cause groundwater flow direction and the PCE groundwater plume to shift to the southwest (**Figure 5-4A**). Between the East Bench Fault Spur and the East Bench Fault, topography and horizontal groundwater gradients steepen significantly. Along the hillside between approximately 700 South and Michigan Avenue, groundwater intersects the ground surface and seeps, and springs are observed (**Figure 6-1**). The East Bench Fault is acting as a semipermeable barrier to flow. Groundwater flowing from the site is therefore laterally restricted at this fault, with groundwater both flowing through the fault and mounding up at the eastern face. This mounding results in surface discharges to springs and seeps and flowing artesian wells just east of the fault. Both the shallow and deeper portion of the shallow aquifer contribute to the surface water discharges observed in this area.

6.4.1 Groundwater Modeling Approach

A comprehensive groundwater flow and solute transport model (the VAMC Model) was created and applied to support the OU1 RI. The groundwater modeling is documented in the *OU1 RI Groundwater Model Report*, which is included as **Appendix F** of this document. The use of the VAMC Model for this project followed the approach documented in the final *Groundwater Model Quality Assurance Project Plan* (QAPP) (CDM Smith 2021n). The QAPP outlined the methods for project oversight, data usage, and modeling approach, and was developed in accordance with EPA guidelines contained in *Guidance for Quality Assurance Project Plans for Modeling* (EPA 2002).

The objectives of the groundwater modeling tasks executed for the OU1 RI are to improve the understanding of the future fate and transport of the PCE plume under a range of potential hydrologic and hydraulic conditions, to assess historical flow and transport pathways associated with nearby public supply and irrigation well pumping, and to support the continued development and evolution of the CSM. Although there is not a regulatory requirement for groundwater modeling, it has been used in conjunction with other site information and professional judgment to meet these objectives.

The following steps were completed to achieve these objectives:

- One groundwater flow model (the VAMC Model) was constructed based on regional and site data and previous studies and models.
- The VAMC Model represents historical conditions at OU1 and the surrounding vicinity by running in transient (time varying) mode from January 1, 1979, to September 30, 2020, using monthly stress periods.
- Hydraulic properties were estimated through a combination of historical and newly collected hydraulic testing data.
- The VAMC Model was calibrated to historical piezometric head data available from the USGS's National Water Information System and the September 2020 synoptic round of piezometric head data documented in the DSR from Q3 2020 (CDM Smith 2021g).
- Model calibration was validated to the September 2011 aquifer performance test-derived drawdowns at three wells (MW-1S, MW-1D, and the Fountain of Ute irrigation well), as documented in the *Hydrogeological and Groundwater Model Summary Report for SLC-18* (MWH 2012).
- PCE transport under historical flow conditions was simulated using the January 1, 1979, to September 30, 2020, transient flow field represented by the calibrated VAMC Model.
- Present-day PCE concentration data were interpolated onto the VAMC Model and used as a starting point to simulate the fate and transport of PCE under a range of prescribed future conditions. Site data were used to implement decaying sources of PCE for these simulations.

While a detailed description of each of these steps is included in the Groundwater Model Report, the following sections highlight the key features and results of the modeling work.

6.4.2 Numerical Model Features

The numerical groundwater flow and solute transport model creation and applications were completed following procedures described in the *Groundwater Model Quality Assurance Project Plan* (CDM Smith 2021n). The steps for creating and validating the VAMC Model are described in detail in the Groundwater Model Report (**Appendix F**) and summarized below.

6.4.2.1 Development of Conceptual Model

The purpose of the conceptual model task was to synthesize the available data into an understanding of the water balance (flow inputs and outputs), groundwater flow directions and gradients, groundwater flow impediments (such as faults), and hydrostratigraphy of OU1 and surrounding areas before numerical modeling. The electronic regional model files from the USGS regional model described in Stolp (2007) were used to provide a framework for model structure, stratigraphy, boundaries, and water balance terms.

6.4.2.2 Selection of Numerical Groundwater Flow and Solute Transport Simulation (Model) Codes

Model codes were reviewed and selected to meet the objectives of the project. It was determined that the groundwater flow and fate and transport modeling would be performed using MODFLOW-SURFACT, implemented within the Groundwater Vistas graphical user interface. MODFLOW-SURFACT is a proprietary version of the MODFLOW (McDonald and Harbaugh 1996) family of codes that has been used extensively in groundwater evaluations worldwide for more than 20 years. MODFLOW-SURFACT is well-documented and is an enhanced version of MODFLOW that includes a Newton-Raphson linearization approach to solving the governing groundwater flow equations.

6.4.2.3 Numerical Model Creation

The creation of the numerical model included the translation of the conceptual model into the numerical model representation, using the model code(s) selected. The VAMC Model domain, finite-difference grid, and boundary conditions are depicted in **Figure 6-6.** The model grid and layering are described below:

- The VAMC Model has uniform grid cell size of 150 feet by 150 feet and contains 128 rows and 128 columns covering a total area of 368,640,000 ft^2, of which 52 percent (194,670,000 ft^2) is the "active" area of the grid (only active cells are shown in **Figure 6-6**). The remaining 48 percent is inactive and not included in the model solution.

- The coordinate system of the model is NAD83 State Plane Utah Central, Feet. All elevations are in NAVD88 vertical datum.

- The model contains five computational layers as described below:

  - Model layers 1 and 2 represent the shallow aquifer zone. The top of layer 1 is the ground surface interpolated onto the model grid from digital elevation model data. The bottom of layer 2 is the inferred bottom of the shallow aquifer zone. The shallow aquifer zone was divided equally into two layers (layers 1 and 2) to represent vertical head gradients and artesian conditions within the shallow aquifer zone and to properly assign the drain boundary conditions to the springs.

  - Model layer 3 represents the silt/clay semi-confining layer between the shallow aquifer zone and deep aquifer zone. The position of this layer is based on lithologic logs and piezometric heads. The silt/clay semi-confining layer in the model is continuous and leaky, with hydraulic properties calibrated based on observed heads and head differences at monitoring wells.

- Model layer 4 represents the deep aquifer zone. Only one layer was used for the deep aquifer zone because of the limited vertical piezometric head differences across the zone.

- Model layer 5 is designed to match the USGS Regional Model layer 4. This layer has lower transmissivity and hydraulic conductivity than the deep aquifer zone and extends to rock. The bottom of the model is assumed impermeable and coincides with the top of rock in the USGS Regional Model.

The VAMC Model domain was aligned with natural site features where possible and positioned along estimated groundwater flow lines based on regional (USGS) piezometric head contour maps and recorded heads at long-term monitoring locations when natural features were not present. The lateral boundaries of the groundwater model are far enough away from OU1 such that the boundary assignments do not have a significant impact on the simulation of historical groundwater flow and transport pathways near SLC-18, springs east of the fault, and other potential receptors.

Informed by the conceptual model, hydraulic testing, and model calibration, values of horizontal hydraulic conductivity (K_h), vertical hydraulic conductivity (K_v), specific yield (S_y), and specific storage (S_s) were applied to each cell in the model and presented below.

- Shallow aquifer zone:
  - Shallow aquifer zone properties are depicted for layers 1 and 2 (identical) in **Figure 6-3**.
  - In the area of the site east of the East Bench Fault Spur and a portion of the area west of the spur but east of the fault coincident with low K_h values at MW-13, K_h and K_v values were set to 5 and 0.05 ft/day, respectively. West of the spur, K_h and K_v values were set to 50 and 0.5 ft/day, respectively, except as noted.
  - West of the fault, K_h and K_v values were set to 15 and 0.15 ft/day, respectively.
  - Both horizontal and vertical hydraulic conductivities of the fault were set to 0.1 ft/day throughout all layers of the model.
- Silt/clay semi-confining layer:
  - Silt/clay semi-confining layer properties are depicted for layer 3 in **Figure 6-4**.
  - East of the fault, K_h and K_v values were set to 0.01 and 0.001 ft/day, respectively.
  - West of the fault K_h and K_v values were set to 15 and 0.15 ft/day, respectively.
  - Both horizontal and vertical hydraulic conductivities of the fault were set to 0.1 ft/day throughout all layers of the model.
- Deep aquifer zone:

    - Deep aquifer zone properties are depicted for layer 4 in **Figure 6-5**.
    - East of the fault, K_h and K_v values were set to 45 and 0.45 ft/day, respectively.
    - West of the fault K_h and K_v values were set to 15 and 0.15 ft/day, respectively.
    - Both horizontal and vertical hydraulic conductivities of the fault were set to 0.1 ft/day throughout all layers of the model.
    - Unlike in the shallow aquifer zone, there was not a significant difference in hydraulic conductivities east and west of the East Bench Fault Spur.
- Deeper, lower transmissivity zone below the deep aquifer zone:
    - K_h and K_v values were set to 1 and 0.1 ft/day, respectively, both east and west of the fault.

Specific yield (S_y) and specific storage (S_s) were set to 0.15 and 0.00001 throughout the model domain.

The VAMC Model simulates saturated groundwater flow over the historical period of January 1, 1979, through September 30, 2020, using time-varying data and monthly transient stress periods. This simulation period is based on the availability of historical data and the current CSM.

6.4.2.4 Groundwater Flow Model Calibration

A groundwater flow model is calibrated to measured water level data to establish confidence in its ability to represent the aquifer system and to be used to meet the objectives of the project. The VAMC Model was calibrated to water level data available for the model simulation period of January 1, 1979, through September 30, 2020. A parameter sensitivity analysis was also completed as part of the calibration as detailed in the Groundwater Model Report.

Detailed results of the model calibration are provided in the Groundwater Model Report. The water balance for the model stress period associated with September 2020 is shown in **Table 6-2**. Water enters the modeled system via approximately 9.1 million gallons per day (MGD) of recharge and lost to the constant head boundaries to the west (7.7 MGD), the drains representing springs (1.3 MGD) and pumping wells (0.7 MGD). Storage increased 0.6 MGD from the previous stress period because of a decrease in pumping between August and September 2020. This water balance is for the September 2020 stress period within the transient model simulation. It, therefore, represents a snapshot in time in the simulation and not steady-state conditions.

Sixteen additional simulations were conducted as part of the sensitivity analysis described in detail in the Groundwater Model Report. This sensitivity analysis focused on the quantitative goodness of fit of the model calibration with respect to changes in horizontal and vertical hydraulic conductivity, conductance of the drains representing the springs, properties of the fault, University of Utah irrigation well pumping, and recharge.

6.4.3 Historical PCE Transport Simulations

The historical movement of PCE released from potential source areas associated with the dry-cleaning operation was simulated for the period of January 1, 1979, to September 30, 2020, using the VAMC Model. This transient flow field includes the historical pumping record from SLC-18 and available pumping information for irrigation wells (Mount Olivet and University of Utah), as well as historical time-varying recharge to the system. The transient nature of the aquifer system means that PCE transport pathways were likely different when the PCE releases are presumed to have begun than they are now. The objectives of these historical PCE transport simulations are to estimate whether PCE released from suspected source areas likely impacted SLC-18, Mount Olivet Cemetery, and the ESS area as suspected and to provide another line of evidence to support the VAMC Model's ability to represent the aquifer system.

Iterative simulations were run using the historical groundwater flow field and variations on source strength, source location, and source duration to determine which combination resulted in the best match with the historical timeline and the present-day concentrations in the shallow and deep aquifer zones. The resulting simulation used a constant source of mass (as a prescribed concentration of 500 µg/L) for the full duration of the simulation spanning the middle portion of the vitrified clay sanitary sewer drain line within model layer 2 (shallow aquifer zone), as well as prescribed concentrations of 50 and 25 µg/L within model layers 2 and 4 at MW-03RA and MW-03RB, respectively. The simulated September 2020 concentrations generated from this simulation are shown in **Figures 6-10 and 6-11** for the shallow and deep aquifer zones, respectively. The use of a constant source of mass for the full duration of the simulation (through September 2020), as well as the simulated location in the shallow aquifer spanning the sewer line between Buildings 6 and 7 and Sunnyside Park, likely overestimate the plume mass and concentrations currently present in the area immediately west of the VAMC campus south of wells MW-02 and MW-03R. However, the simulation along this area represents a conservative approach to modeling the source strength and the historical migration of releases from two separate sources, which combine into a single plume just west of the VAMC and Sunnyside Park.

An additional simulation was made with the constant source within the shallow aquifer zone along the drain line source term that was turned off in 2015 in the model. Under these conditions, simulated September 2020 PCE concentrations within the shallow aquifer zone just downgradient of the drain line provide a better match to those observed at MW-26A, MW-25A, MW-29B, and MW-04, as shown in **Figure 6-12.** The equivalent figure for the deep aquifer zone is shown in **Figure 6-13**. This alternate representation is less conservative with respect to mass loading from the drain source but has no bearing on September 2020 simulated concentrations at, and downgradient of, MW-01. Nor does it change the simulated PCE concentrations prior to 2015.

- These two representations complement each other, as the exact nature, timing, and location of the source(s) are uncertain. While the presence of a continuous source of PCE to the shallow aquifer zone has not been established, concentration trends within MW-02, MW-03RA, MW-03RB, MW-01S, and MW-04 have been stable to slightly declining. This, combined with the relatively fast seepage velocities within the shallow aquifer zone, suggest that there may be a continuous, decaying source, perhaps in the vadose zone between the drain line and the higher concentrations observed at MW-03R, MW-02, and

MW-04. Regardless, the width of the shallow aquifer zone PCE plume, which includes PCE concentrations of 49 to 53 µg/L (as of December 2020) at (from south to north) MW-13S, MW-19, MW-18, and MW-08A is indicative of a source dispersed along the drain line. Historical PCE transport-modeled results were compared to the OU1 timeline and the following observations were made:

- PCE was first detected in 1990 at 32 µg/L during sampling of the Mount Olivet Cemetery irrigation well (UDEQ 2000). Concentrations measured at the irrigation well between 1990 and 1997 were between 32 and 184 µg/L during this time period.
  - **Figure 6-14** shows simulated shallow aquifer zone PCE concentrations in June 1990. Simulated concentrations at Mount Olivet are within the 5–25 µg/L contour. While this is not a perfectly timed match, it indicates that the assumption of no (or limited) retardation used in the modeling simulations is likely valid, as sorption to aquifer materials would delay breakthrough of the PCE plume generated from a late 1970s source to arrive at the Mount Olivet well at a later date.
- PCE concentrations of 0.6 µg/L were detected at SLC-18 in 1997 and at 2.8 µg/L in 2004, which prompted the supply well to be shut down.
  - **Figure 6-15** shows simulated deep aquifer zone PCE concentrations in June 2004. Simulated concentrations at SLC-18 are less than 1 µg/L, though simulated mass is present at the well at 0.1 µg/L or higher beginning around 1990. Consistent SLC-18 and University of Utah irrigation well pumping between 1979 and 2004 drew PCE to the northwest of the site and into these extraction wells in the deep aquifer zone.
- PCE concentrations of up to 40 µg/L were detected in seep and spring water discharging to the ESS area in 2010.
  - **Figure 6-16** shows simulated shallow aquifer zone PCE concentrations in June 2010. Groundwater concentrations at ESS at this time are simulated to be as high as 25–50 µg/L, consistent with measured data.
- The overall timing of simulated PCE migration through the aquifer system appears to be consistent with the observed timeline, while the present-day PCE is relatively well represented within the existing monitoring well network. Using the baseline historical transport simulation, the following is surmised:
- SLC-18 was likely to have drawn in PCE from a VAMC source between 1997 and 2004, but the PCE plume is not expected to migrate toward SLC-18 if only irrigation pumping from the University of Utah and Mount Olivet Cemetery is occurring.
- Building 7 does not appear to be a source of PCE to the water table below it. Lateral migration of PCE could have occurred in the perched zone (not modeled) and contributed to a saturated zone source in the vicinity of MW-03R.
- If a late 1970s source release is assumed, the plume does not appear to have experienced significant sorption or retardation along its flow paths.

- The silt/clay semi-confining unit does not fully prevent the downward migration of PCE from the shallow aquifer zone to the deep aquifer zone.

Model results suggest PCE mass may be migrating west of the East Bench Fault; however, the monitoring wells west of the fault show very low or non-detected concentrations of PCE in the shallow groundwater. Additionally, PCE detections have not been reported at the wells at Artesian Well Park and Liberty Park (EA 2019). If PCE is migrating west of the East Bench Fault, it is likely present at very low concentrations predominantly in deeper groundwater intervals. Understanding this past migration better through modeling enhances the CSM and provides another line of evidence in support of the VAMC Model's representation of the aquifer system.

6.4.4 Projected PCE Transport Simulations

A range of future conditions were simulated to predict possible trajectories and discharges of the present-day PCE plume. The primary objective of these simulations was to create a means for comparison of the impacts of plausible future pumping on the PCE plume.

As opposed to the historical transport simulations described in Section 6.4.3, the PCE projection simulations were conducted using simulated steady state groundwater flow fields. The potential future scenarios were simulated as steady state using the groundwater flow component of the VAMC Model. Pumping rates for SLC-18, University of Utah Well #1 and Mount Olivet Cemetery well are listed for each of these five simulations in **Table 6-3.** The simulations are presented below:

- Baseline Conditions: average (last ten years) pumping at University of Utah Well #1 and Mount Olivet and recharge; represents current conditions continuing into the future
- Scenario 1: Baseline recharge and irrigation pumping with SLC-18 pumping its historical (1979–2004) average rate
- Scenario 2: Baseline recharge and irrigation pumping with SLC-18 pumping its maximum extraction rate permitted under its water right
- Scenario 3: Baseline recharge and irrigation pumping, no SLC-18 pumping, increased University of Utah Well #1 pumping set based on the July 2018 irrigation pumping specified in Table 1 of White[6] (2020) assuming 365 days
- Scenario 4: Baseline recharge and irrigation pumping, SLC-18 pumping its maximum extraction rate permitted under its water right, and increased University of Utah Well #1 pumping set based on the July 2018 irrigation pumping specified in Table 1 of White (2020) assuming 365 days

The simulated groundwater flow fields for the baseline conditions simulation and scenarios 1–4 were used to simulate future PCE groundwater plume migration to evaluate the potential effect of pumping on the migration of the groundwater plume. The present-day PCE plume (CDM Smith

[6] The impact of the geothermal project evaluated in White (2020) was not included in the future simulation transport scenarios. The geothermal project assumes the water extracted is injected at an adjacent well, both screened in the deep aquifer zone, for a net-zero effect.

2021c) was interpolated onto the model and used as starting concentrations to simulate the fate and transport of PCE under potential future conditions in the scenarios described above.

Sources of mass were added in the shallow aquifer zone layer 2 along the line between the greater than 5 µg/L concentration contour (Figure 4-1) south of MW-04 through the greater than 5 µg/L north of MW-03RA with prescribed source concentrations equivalent to the present-day concentrations. In the deep aquifer zone layer 4, a 25 µg/L prescribed concentration source was applied at and in the vicinity of MW-03R. All of these sources incorporated a first order decay rate of 10^{-4} per day, meaning that the source strength would diminish over time. The decay rate used was based on trend analyses of PCE concentration data within the most concentrated portions of the PCE plume.

The PCE transport simulation results were evaluated by reviewing the simulated PCE plume extent and concentrations at 5 years, 10 years, 15 years, and 20 years. Figures showing the simulated head contours and PCE concentrations for each run are included in the Groundwater Model Report, with a subset included below.

The results of these simulations are summarized below:

- Under baseline conditions, the PCE plume follows the trajectory observed over the last decade plus, with shallow aquifer zone PCE discharging to springs. Year 20 simulation results are shown for the shallow aquifer zone and deep aquifer zone in **Figures 6-17** and **6-18**, respectively.

- Historic average SLC-18 pumping simulated in Scenario 1 deflects groundwater flow slightly toward the northwest but does not pull a significant amount of the PCE plume into SLC-18. Year 20 simulation results are shown for the shallow aquifer zone and deep aquifer zone in **Figures 6-19** and **6-20**, respectively.

- Results are similar for Scenario 3, in which University of Utah Well #1 pumping is increased with SLC-18 not pumped. Year 20 simulation results are shown for the shallow aquifer zone and deep aquifer zone in **Figures 6-21** and **6-22**, respectively. Groundwater flow is deflected slightly toward the northwest, but the increased pumping does not draw a significant amount of the PCE plume toward the well.

- The significant increase in pumping at SLC-18 associated with Scenarios 2 and 4 results in a significant change in the deep aquifer zone groundwater flow field, with deep aquifer zone PCE mass drawn toward the northwest towards SLC-18 and University of Utah Well #1. Shallow aquifer zone heads are lowered under these conditions as well, with simulated Scenario 4 water levels at VHA Building 7 approximately 20 feet lower than baseline conditions. Year 20 simulation results are shown for the shallow aquifer zone and deep aquifer zone in **Figures 6-23** and **6-24** for Scenario 2 and in **Figures 6-25** and **6-26** for Scenario 4.

By simulating a large range of potential future pumping conditions, the future projection simulations allowed for a comparison of the resulting PCE plume trajectories that can be used to better understand potential impacts to receptors.

The development and application of the VAMC Model has resulted in a better understanding of the water balance, the stratigraphy, the hydraulic properties, and the impacts of pumping on the site. These insights have been incorporated into the CSM, which along with the VAMC Model, will be a valuable tool in future phases of work at the site. Overall, the objectives of the modeling have been met.

6.5 Contaminant Migration in Surface Water

The seeps and springs in the ESS area are due to the unconfined shallow aquifer intercepting ground surface within the area of steeply dipping topography between the East Bench Fault Spur and the East Bench Fault. The shallow portion of the shallow aquifer surfaces and the deeper portion of the shallow aquifer is artesian; therefore, a substantial portion of the shallow aquifer discharges to the surface in the ESS area. The concentrations of PCE and TCE in surface water are similar to groundwater in this area (**Figure 5-4B**). To determine the source of surface water, and therefore, examine contaminant migration from groundwater to surface water, a geochemical and stable isotope evaluation was completed as discussed below.

6.5.1 Geochemical Evaluation

Based upon the concentrations of major cations (i.e., calcium, magnesium, sodium, and potassium) and major anions (i.e., sulfate, chloride, and bicarbonate), water can be classified by the dominant geochemistry (i.e., calcium sulfate type, sodium chloride type, magnesium bicarbonate type, sodium bicarbonate type, and mixed), as presented on a piper plot (Drever 2002). Groundwater in all site aquifers (i.e., shallow, deep, and perched) and surface water are predominantly mixed-calcium sulfate type. However, inputs from surface recharge to the shallow aquifer can be observed in elevated concentrations of chloride and sodium, which can also be seen in surface water (**Figure 6-27**).

6.5.2 Stable Isotope Evaluation

Along with geochemical parameters and concentrations of preliminary COPCs, stable isotopes of oxygen and hydrogen were collected from groundwater and surface water. The isotopic ratio (delta value [δ]) given in per mil (‰) of a compound is measured relative to a standard, in this case Vienna Standard Mean Ocean Water as follows:

$$\delta = \frac{R_{sample} - R_{Standard}}{R_{Standard}} \times 1000$$

Hydrogen has two stable isotopes (^{1}H and ^{2}H); the isotopic ratio is known as $\delta^{2}H$ or δD (deuterium). Oxygen has three stable isotopes (^{16}O, ^{17}O, and ^{18}O); however, because of the higher mass difference and greater abundance of ^{18}O versus ^{17}O, the isotopic ratio is measured using the $^{18}O/^{16}O$ pair, known as $\delta^{18}O$.

In all processes concerning evaporation and condensation, hydrogen isotopes are fractionated in proportion to oxygen isotopes. Therefore, hydrogen and oxygen isotope distributions are correlated in meteoric waters by the following relationship:

$$\delta D = 8 \times \delta^{18}O + 10$$

This equation, known as the Global Meteoric Water Line (GMWL), is based on precipitation data from locations around the globe, and has an r^2 value greater than 0.95. The slope and intercept of any Local Meteoric Water Line, which is the line derived from precipitation collected from a single site or set of "local" sites, can be significantly different from the GMWL. Natural processes can cause waters to plot off the GMWL. Water that has evaporated or has mixed with evaporated water typically plots below the meteoric water line along lines that intersect the meteoric water line at the location of the original unevaporated composition of the water.

Stable isotope results for all groundwater and surface water samples are presented in **Table 6-4** and plotted on **Figure 6-28**, along with the GMWL. The isotopic composition of surface water and groundwater samples are very similar; most are within a 1‰ range for $\delta^{18}O$. This indicates that groundwater and surface water are evolving along similar geochemical pathways and are likely hydraulically connected. Samples collected from Red Butte Creek in October 2018 are isotopically distinct, possibly because of a precipitation event during sampling.

Similar concentrations of PCE and TCE, geochemistry, and isotopic composition provide lines of evidence that contaminant migration from groundwater to surface water is occurring in the ESS area.

6.6 Contaminant Migration in Vapor

The preliminary COPCs that are VOCs (PCE, TCE, cis-1,2-DCE, and VC) are highly volatile, and volatilization from other phases into vapor is expected. As contaminants partition into the vapor phase (from either contaminant mass in the vadose zone or the groundwater plume in the saturated zone), migration occurs primarily via diffusion and advection. Advection processes in the vadose zone may result from barometric pumping because of natural variations in temperature and pressure that occur with weather changes. In deep vadose zones, density differences between VOC soil gas and air can affect migration.

Vapors present in the vadose zone can migrate into overlying structures. The indoor air concentrations within a structure do not consistently correlate with concentrations in soil gas, as structure construction and ventilation significantly affect the completion of the VI pathway.

As previously noted in Section 5.4 and 5.5, contaminant migration in vapor in the source area and along the groundwater plume exhibit several important differences. The following sections discuss contaminant migration in vapor in these areas separately.

6.6.1 Source Area

The development of a soil gas plume and subsequent potential for VI into indoor air in the Building 6 and 7 area is most likely due to dissolved PCE source mass in the vadose zone. Depth to groundwater in this area is approximately 185 feet bgs and elevated VOC concentrations in groundwater were not encountered beneath the Building 6 and 7 source area. Elevated concentrations of PCE (greater than 10 times the industrial soil gas RBSL) in subslab vapor beneath Building 6 and in soil gas at all depths sampled within the vadose zone between Buildings 6 and 7 show that the soil to soil gas migration pathway is complete (**Figure 5-2A** and **Table 5-2**). Indoor air concentrations of PCE and TCE greater than the industrial RBSLs were detected in proximity to suspected indoor sources. Indoor air concentrations of PCE and TCE during resampling after the suspected indoor sources were removed were below the industrial RBSLs (**Figure 5-3** and **Table 5-3**). While the VI pathway may be complete at Buildings 6 and 7, it is likely insignificant. Further discussion will be provided in the risk assessment (Section 7).

The development of a soil gas plume in the Sunnyside Park area is most likely due to the release of contaminated water from breaks in the sanitary sewer, at depths closer to the surface than groundwater. Elevated concentrations of PCE in soil gas (maximum 1,387 µg/m^3) in proximity to the sanitary sewer break show that the migration to soil gas pathway is complete. However, as PCE concentrations do not exceed the industrial RBSL and there are no overlying structures, the VI pathway is not complete in this area.

6.6.2 East Side Springs

The development of a soil gas plume in the ESS area is due to volatilization of VOCs from the groundwater plume and migration through the vadose zone; therefore, the area of interest for soil gas and indoor air impacts is defined by the proximity to and the concentrations within the groundwater plume. The shallower the groundwater, the more readily VOCs can volatilize at atmospheric pressure and the shorter the pathway to enter the atmosphere or overlying structures. Therefore, the thickness of the soils above groundwater (depth to groundwater) is a contributing factor to VI. Also, in the ESS area, contaminated groundwater daylights at the surface and is, at some locations, actively removed from basements using sumps or diverted from properties using French drains, water features, and constructed streams. In these cases, indoor air impacts may not be due to vapor intrusion of soil gas but rather by intrusion of groundwater and surface water. **Figure 6-29A** and **Figure 6-29B** show the extent of PCE in groundwater and surface water, depth to groundwater, and the concentration of PCE in soil gas. The black outline shows a vertical and lateral distance of 100 feet to the 5 µg/L PCE isoconcentration contour, which was used to define the study area for assessing VI (EPA 2015).

Structures where indoor air samples have been collected are also shown in **Figure 6-29A** and **Figure 6-29B**. A total of 111 structures have been sampled at the site. These include residences, businesses, schools, churches, and VAMC campus buildings. Of the 111 structures sampled, 84 are within the now-defined VI study area. **Figure 6-29C** shows the locations within the VI study area where the VA has attempted to gain access to structures to collect indoor air samples during the RI. Multiple outreach campaigns have been conducted to obtain access for sampling, including holding public meetings, sending letters and postcards, going door to door, and using social media. Indoor air sampling was completed at all structures where access was granted.

As can be seen in **Figure 6-29A**, the locations with exceedances of the RBSL and Tier 1 RAL are generally located in the vicinity of the intersection of 900 South and 1200 East. This is the area where groundwater becomes very shallow, the 50 µg/L PCE plume is present, and concentrations of PCE in soil gas exceed the residential RBSL. Further discussion of the VI pathway will be provided in the risk assessment (Section 7).

6.7 Contaminant Persistence

Natural attenuation refers to a variety of physical, chemical, or biological processes that, under favorable conditions, reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in situ processes include biodegradation; dispersion;

dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants (EPA 1997).

In assessing natural attenuation occurrence and potential, a three-tiered approach of site-specific information or lines of evidence are evaluated (EPA 1997):

- Primary line of evidence – Historical groundwater and/or soil chemistry data that demonstrate a clear and meaningful trend of decreasing contaminant mass and/or concentration over time at appropriate monitoring or sampling points. In the case of a groundwater plume, decreasing concentrations should not be solely the result of plume migration.

- Secondary line of evidence – Hydrogeologic and geochemical data that can be used to indirectly demonstrate the type(s) of natural attenuation processes active at the site and the rate at which such processes will reduce contaminant concentrations to required levels. For example, characterization data may be used to quantify the rates of contaminant sorption, dilution, or volatilization, or to demonstrate and quantify the rates of biological degradation processes occurring at the site.

- Tertiary line of evidence – Data from field or bench scale studies that directly demonstrate the occurrence of a particular natural attenuation process at the site and its ability to degrade the contaminants of concern (e.g., biological and abiotic degradation processes).

- The following sections discuss the lines of evidence of natural attenuation at the site.

6.7.1 Natural Attenuation Primary Line of Evidence - Plume Evaluation

The evaluation of the groundwater plume, specifically contaminant trends and identification of areas where mass discharge is occurring, are important components of the primary line of evidence of natural attenuation. The following sections describe the statistical analysis for the evaluation of contaminant trends and the transect approach for the calculation of mass discharge.

6.7.1.1 Trend Analysis

Chemical concentration trends and plume stability were evaluated using the Mann-Kendall statistical test and Theil-Sen slope. Statistical evaluation of contaminated trends included the following chemicals: PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; 1,1-DCE; VC; ethene; ethane; molar summation of these chemicals (sum of the molar concentration); and chloride. The Mann-Kendall statistical test evaluates the existence of significant monotonic concentration change (e.g., increase or decrease) with time by comparing more recent with all previously measured concentrations. The Theil-Sen slope evaluates the magnitude of the trend change by comparing medians of concentrations (Helsel 2020; ITRC 2013; Meals 2011; EPA 2009a; and Gilbert 1987).

The Mann-Kendall statistical test uses statistics test value S (sum of sign differences) and standard deviation values computed from the concentration change to evaluate the existence of the trend by comparing it with a critical point value. If the critical point value is exceeded, a large positive S number indicates an increase in concentration trend over time, whereas a large negative S number denotes a decrease in the trend. The significance of the trend is determined by calculating the p-value (probability). The confidence level for each trend is calculated from the p-value, where a significant trend is occurring when the p-value is less than 0.05 and the confidence level is more than 95 percent. For the Theil-Sen slope, data are paired up by date and the median slope is calculated for each data set. Then, median concentration and time of sampling are evaluated against the median of all the measurements (overall slope estimate Q) with a 95 percent confidence level (Helsel 2020; Meals 2011; EPA 2009a; and Gilbert 1987).

This statistical analysis requires datasets of at least six data points. Less than six data points are not sufficient to perform the statistical evaluation and such outcome was indicated as “insufficient data” in the analysis output. If the dataset contained more than 50 percent non-detects, the trend analysis was suffixed with “>50% ND” and non-detected data were assigned one-half of the reporting limit value to ensure non-detects are lower than any detected values (USGS 2009).

Statistical trends for all locations with sufficient data (i.e., at least six data points) for analysis are summarized in **Table 6-5** and presented in **Figure 6-30** and **Figure 6-31**, for PCE and TCE, respectively. All available historical data for PCE, TCE, and cis-1,2-DCE were compiled in time series trend charts for each monitoring well (**Appendix G**), and select charts are presented in this report. Significant decreasing trends with a confidence level exceeding 95 percent for PCE are observed at MW-01S, MW-04, MW-06, MW-08B, MW-18, MW-19, and MW-21. These wells are located within the eastern and central portion of the plume in the shallow aquifer, with many of these locations within the 50 µg/L isoconcentration contour (MW-06 and MW-21 are the exception). Significant stable PCE trends are observed at MW-03RA/B/C, MW-13D, MW-14D, MW-20D, and MW-22. MW-03R is located in the eastern area of the 50 µg/L isoconcentration contour, and the B/C intervals are in the deep aquifer. All other wells are located in the central and western area of the site within the deep portion of the shallow aquifer. No significant trend is observed at MW-01D, MW-02, MW-13S, MW-14S, MW-15S, MW-16S, MW-17D, MW-20S. A statistically significant increasing trend for PCE is observed at MW-17S, which is located at the southwestern edge of the plume where concentrations have been less than 1 µg/L. A statistically significant increasing trend for TCE is observed at MW-13S, where concentrations are less than 1 µg/L and possibly at MW-14S (**Figure 6-31**). As seen on the trend chart for MW-14S (**Figure 6-32**), TCE and cis-1,2-DCE are within the same order of magnitude as PCE. MW-15S historically has similar trends; however, the latest results from March 2021 are at or near detection limits for TCE, cis-1,2-DCE, and PCE.

The trend chart for MW-17S is presented in **Figure 6-33**; chart symbols differentiate between detects (solid) and non-detects (open) for each analyte. Although the PCE trend is increasing, PCE is the only detected COPC at MW-17S and detections are all below 1 µg/L. These results suggest that overall, the concentrations of PCE in the groundwater plume are decreasing or stable. Generally, PCE is the most substantial contaminant in all wells. Except at locations where PCE is composed of non-detected values, TCE and cis-1,2-DCE are one to two orders of magnitude below the concentrations of PCE.

The remaining 42 well locations are predominantly composed of non-detected COPCs, with maximum detected concentrations less than the MCL (with the exception of MW-29 and MW-34A/B). The summary in **Table 6-7** does not include these locations where non-detected results precluded statistical analysis. Instead, these data sets can be found in **Appendix G.**

As shown in **Table 6-6** and **Figure 6-34**, at MW-02, no statistically significant trend was observed for PCE based on data available from 1998–2021. However, when comparing historical data (November 1998 to July 2016) to more recent data (July 2016 to March 2021), there is a statistically significant decreasing trend until July 2016, and an increasing trend from July 2016 until March 2021 (**Figure 6-30**). The most recent PCE detection (230 µg/L) is still lower as compared with historical concentrations (290 and 296 µg/L in November 1998 and February 2005, respectively).

Results from 1998–2000 are also available at MW-01S/D, MW-04, and MW-06. At MW-01S and MW-04, concentrations of PCE have maintained decreasing trends. The trend chart for MW-04 (**Figure 6-35**) shows recent concentrations have dropped below 50 µg/L. Historical data from 1998 and 2000 for MW-01D and MW-06, respectively, also show decreasing trends; however, these locations are impacted by elevated historical detection limits, as indicated by open symbols in trend charts (**Figure 6-36** shows MW-06) and trend input ">50% ND" caveat for both wells (**Table 6-5**).

At MW-12S, an apparent increasing PCE trend exists from February 2019 until June 2020 (**Figure 6-37)**. To calculate a statistically significant value, at least one more VOC sample should be collected. However, the well has been dry since June 2020 and no additional samples could be collected. Both PCE and TCE concentrations were below 5 µg/L.

Other inputs used for the statistical analysis, as well as a summation of chlorinated ethenes and daughter products on a molar basis, are presented in **Table 6-7**. Total molar concentration was calculated using only detected values. Generally, detected total molar concentrations are either decreasing, are showing no significant trend, or are stable. An increasing trend is observed only at MW-17S, as discussed above. Decreasing or probably decreasing trends are observed at 10 wells, no significant trend is observed at 7 wells, and a statistically stable trend is present at 6 wells. The statistical evaluation of degradation end products ethene, ethane, and chloride is not presented in **Table 6-7**; additional information is provided in **Appendix G**. There were limited detected concentrations of ethene and ethane to complete the statistical analysis. Chloride exhibited a stable, decreasing, or lack of trend at most locations. Increasing concentrations of chloride were observed at MW-04, MW-08B, and MW-15D.

6.7.1.2 Contaminant Mass Flux and Discharge

Determining the mass flux and mass discharge can help evaluate natural attenuation by providing an estimate of source strength, fate, and transport within the plume, and attenuation capacity of the aquifer (NJDEP 2012). Further, areas of the site where mass discharge is occurring can be identified to aid in the future evaluation of remedial alternatives for the site by quantifying impacts to receptors and delineating optimal treatment zones within the plume. In addition, repeating mass flux measurements at the same locations at points of time in the future allow for assessment of remedy progress.

Mass flux is the amount of a chemical that moves through a defined surface area per time. The defined area is usually a portion of a plume cross section. Mass flux can be calculated using the following general equation (ITRC 2010):

$$J = qC$$

where

q = groundwater flux (specific discharge or Darcy velocity)

C = concentration of a chemical

Mass discharge is the integrated mass flux estimate, or the sum of all mass flux measurements across all defined areas combined (the cross-section plane). Mass discharge describes how much of a chemical transfers through a defined cross section or from a source area. The general equation for mass discharge is:

$$M = \int_A JA$$

Where:

J = spatially variable VOC flux, defined above

A = area of the control plane

Fate and transport of chemicals in the subsurface mainly depends on aquifer formation properties, which are often highly heterogeneous. Mass flux measurement is highly dependent on adequate data density because of this heterogeneity, which can cause a multitude of subsurface conditions and flow paths within a relatively small portion of the aquifer. While mass discharge is a tool to determine how much mass per unit of time leaves a source area, the approach requires adequate data density that also helps identify these aquifer heterogeneities and preferential chemical flow paths (i.e., hydraulic conductivity).

Mass flux/discharge was calculated using the transect method that selects discrete sampling points along a transect across the plume area where the plume concentrations and groundwater flow is characterized. Sufficient groundwater sample locations must be sampled such that the plume is delineated laterally and vertically and the distribution of a chemical within the plume is established. Discharge velocity may be calculated for multiple defined areas along a transect of the entire cross section, depending on whether the same conductivity and gradient is applied throughout the entire cross section. Evaluation of hydraulic conductivity and gradient for each sample location may not be practical; however, the accuracy of the method may be limited if the same parameters are used across the entire cross section of a highly heterogenous aquifer. Regardless, the hydraulic gradient must be determined from a potentiometric surface map developed for a synoptic water level measurement event, and hydraulic conductivity must also be obtained from pump tests, slug tests, or passive flux meters before mass discharge can be calculated.

Mass discharge was calculated in the shallow aquifer along three transects (**Figure 5-4A**): Guardsman Way Transect, 1400 East Transect, and ESS Transect. The monitoring wells along each transect were selected to laterally bound the plume as follows: the Guardsman Way Transect (MW-31A, MW-04, MW-02, MW-03R, and MW-30RA), the 1400 East Transect (MW-21, MW-20D/S, MW-19, MW-18, MW-08A, and MW-38S/D), and the ESS Transect (MW-17S, RG-07, MW-

13S/D, RG-08, RG-02, RG-03, MW-16S, and RG-04). Vertically, the plume top was defined as the water table, and the plume bottom was defined as the bottom of the shallow aquifer (or the top of the semi-confining unit). At wells where slug tests were completed, the measured hydraulic conductivity was used (**Table 4-4**). If slug tests were not completed, a representative value for the area was used (**Figure 4-6**). The horizontal gradient for each area of the site was used as provided in **Table 4-4**. All inputs for the mass discharge calculations are provided in **Table 6-8** for the Guardsman Way Transect, 1400 East Transect, and the ESS Transect.

When using the Interstate Technology and Regulatory Council (ITRC) mass flux tool kit, the following steps are followed (ITRC 2010):

1. **Characterize plume concentrations.** Delineate the groundwater plume.

2. **Characterize groundwater flow.** Discharge velocity is calculated according to the following equation:

   $$q_i = -K_i i_i$$

   Where:

   q_i = specific discharge of the aquifer (L/t, length per time)

   K_i = hydraulic conductivity at defined area i (L/t, length per time)

   i_i = hydraulic gradient through transect at i (L/L, length per length)

3. **Calculate mass flux**. Mass flux is calculated based on the following equation:

   $$J_i = q_i C_i$$

   J_j = time-averaged contaminant mass flux ($M/L^2/t$, mass per area per time) at measured point

   C_j = flux averaged chemical concentration in the groundwater (M/L^3, mass per volume) at measured point

   q_j = specific discharge of the aquifer (L/t, length per time)

4. **Apply interpolation method.** The nearest neighbor method was chosen as the approach to interpolate concentration, hydraulic gradient, hydraulic conductivity, and subsequent mass discharge calculations and analysis.

5. **Calculate mass discharge through the transect**. For each defined area within the transect, the mass discharge was calculated using the area of the zone and the calculated mass flux, and all individual mass discharges are summed for a total mass discharge determination for the transect.

- The current total mass discharge of PCE as determined by the ITRC Mass Flux Toolkit using input parameters presented in **Table 6-8** was 37 grams per day (g/day) at the Guardsman

Way Transect, 143 g/day at the 1400 East Transect, and 117 g/day at the ESS Transect. Screenshots of the ITRC Mass Flux Toolkit calculations are presented in **Appendix G**.

- While the highest concentrations of PCE are observed along or near the Guardsman Way Transect (MW-01S, MW-02, and MW-03RA), the lowest mass discharge is observed in this area (37 g/day). The mass discharge estimate is an underestimation, as it does not include the portion of the deep aquifer in this area that contains higher PCE concentrations (MW-03RB). Additionally, this area of the site has the lowest hydraulic conductivity and horizontal gradients, which result in a lower calculated mass discharge.

- The area of highest mass discharge (143 g/day along the 1400 East Transect) has the highest hydraulic conductivity, low horizontal gradients, and moderate concentrations of PCE. The ESS Transect (117 g/day) had low to moderate hydraulic conductivity, moderate concentrations of PCE, and the highest horizontal gradients. It is possible the mass discharge in this area is an overestimate, as many of the shallow groundwater sampling locations are within a low hydraulic conductivity clay layer that was not accounted for in the mass discharge calculations.

- The evaluation of mass flux and mass discharge help to show the combined effects of contaminant concentration and groundwater velocity on contaminant migration (NJDEP 2012). The area of the site with the lowest contaminant migration was along the Guardsman Way Transect, closest to the source area. This suggests that the source strength is relatively weak, and contaminant migration in this area is relatively low. Mass discharge along the remaining areas of the plume are similar, suggesting aquifer attenuation capacity at the site is low. The areas of the plume closest to identified receptors (i.e., the ESS area) are experiencing the highest contaminant migration, suggesting this area should be a focus of future remedial alternatives.

6.7.2 Natural Attenuation Secondary Lines of Evidence – Assessment of Indirect Evidence

The following sections describe the indirect evidence of natural attenuation, including the observed geochemical conditions, concentration of degradation products, an evaluation of sorption, and the potential for abiotic degradation by iron minerals.

6.7.2.1 Geochemical Conditions and Degradation Products

Natural biodegradation of chlorinated solvents is well established in peer-reviewed literature and shown to occur under both aerobic and anaerobic conditions. For PCE and TCE, the primary biotic degradation pathway is anaerobic transformation via reductive dechlorination where sequential transformation from PCE to TCE to cis-1,2-DCE (primary) or trans-1,2-DCE, VC, ethene, and/or ethane and chloride. Reductive dechlorination of PCE to TCE and cis-1,2-DCE generally occurs under iron-reducing to sulfate-reducing conditions, while complete dechlorination to ethene and ethane requires sulfate-reducing to methanogenic conditions. Under aerobic conditions, PCE is largely recalcitrant, while aerobic cometabolism can be significant for TCE, cis-1,2-DCE, and VC (Dolinova et al. 2017).

As presented in Section 5.2, geochemical conditions at the site are generally aerobic, with localized areas of reducing conditions where slightly elevated concentrations (greater than 1 µg/L) of degradation products (TCE, cis-1,2-DCE, VC, ethene, and ethane) are observed. These locations include MW-01S, MW-02, MW-03RB, MW-13S, MW-14S, GW-50/RG-06, and GW-59/RG-09. If a source of organic carbon exists, microorganisms will consume available oxygen, resulting in anaerobic conditions. It is possible that elevated naturally occurring organic carbon is present at these locations because of the presence of clay layers. Anthropogenic sources (service stations, high school auto shop, small engine repair home business, etc.) of carbon in localized areas may have included historical releases of petroleum products at the site. The localized areas of reducing conditions are not prevalent enough to provide a line of evidence that substantial reduction in contaminant mass through anaerobic biodegradation is occurring; however, increases in daughter products may continue to be observed in groundwater and soil gas in localized areas of the site.

6.7.2.2 Sorption

Natural attenuation of contaminants in groundwater can occur because of sorption, which occurs almost exclusively onto the organic carbon fraction. The Natural Resource Conservation Service online soil report documents that expected f_{oc} in the area is low, with values ranging from 0.02 to 0.008 (NRCS 2021). Twenty samples were collected from 11 borings across the site for the analysis of f_{oc}. Detected values of f_{oc} ranged from 0.0016 to 0.0074 (**Table 4-1**). Given the generally low organic carbon content, natural attenuation of contaminants and retardation of plume migration because of sorption onto organic carbon is likely not extensively occurring at this site.

6.7.2.3 Potential for Abiotic Degradation

Abiotic degradation has been shown to occur under a variety of conditions because of mineralogy of the subsurface, specifically the iron mineral content (EPA 2009b). The overall degradation pathway is referred to as “biogeochemical transformation” (as the iron minerals may have formed as a result of both biological and chemical processes), and does not produce the intermediate byproducts associated with biodegradation (i.e., TCE, cis-1,2-DCE, VC, ethene, ethane) (NJDEP 2012). More reactive iron minerals such as mackinawite, magnetite, and iron sulfide have been shown to be effective in abiotically degrading VOCs such as chlorinated VOCs. Field methods for evaluating the mineralogical makeup of the soil or sediment are focused on screening these reactive iron minerals. One field method is magnetic susceptibility (Wiedemeier et al. 2017), which is a technique used to screen for the presence of magnetite. A magnetic susceptibility in the range of 1×10^{-6} cubic meters per kilogram (m^3/kg) may indicate that abiotic degradation of PCE is occurring (EPA 2009b). Another approach is to estimate ferrous mineral content via simple, spectrophotometric-based ferrous iron measurements (Schaefer et al. 2018). Bench experiments have shown that measurable rates of degradation occur when ferrous iron content exceeds approximately 100 mg/kg (Schaefer et al. 2018).

Sixteen samples were collected from 11 borings for ferrous mineral content analysis (**Table 6-9**). Ferrous iron concentrations ranged from 0.02 mg/kg to 0.75 mg/kg and was not detected in nine samples. Twenty discrete samples for magnetic susceptibility were collected from 10 borings, and screening with a magnetic susceptibility meter was completed at 1- to 2-foot intervals at 15 borings (**Table 6-10**). Magnetic susceptibility values ranged from 4.5×10^{-8} to 3.5×10^{-6} m^3/kg;

however, values in the 1 × 10^{-6} m^3/kg or greater range were only observed at two borings (MW-29 and MW-13L). These results show that levels of ferrous iron and magnetite in the subsurface are relatively low across the site. There is limited evidence at the site for potential abiotic degradation of VOCs by iron minerals in the subsurface.

6.7.3 Natural Attenuation Tertiary Line of Evidence - Direct Evidence Measured by Compound Specific Isotopic Analysis

The atoms of a particular element (e.g., carbon, hydrogen, and chlorine) must have the same number of protons and electrons; however, the number of neutrons can vary. When atoms differ only in the number of neutrons, they are referred to as isotopes of each other, and since isotopes differ in mass, they can be measured by mass spectrometer (EPA 2008). CSIA measures the ratio of $^{13}C/^{12}C$ (referred to as $\delta^{13}C$) defined relative to an established reference material and is expressed in per mil (‰) as follows:

$$\delta^{13}C = \left[\frac{\left(^{13}C/^{12}C\right)_{Sample} - \left(^{13}C/^{12}C\right)_{Standard}}{\left(^{13}C/^{12}C\right)_{Standard}}\right] \times 1000$$

The deviation of the $\delta^{13}C$ value of the sample from the standard reference material will be either negative or positive. The more negative the value, the more the sample is depleted in ^{13}C relative to the $^{13}C/^{12}C$ content of the reference standard. Conversely, more positive values are considered enriched in ^{13}C.

CSIA can be used to evaluate the relevance of degradation processes for chlorinated ethenes in groundwater. Physical processes, such as dilution and/or dispersion, do not cause a measurable isotopic fractionation. During biodegradation, microorganisms preferentially use molecules with ^{12}C as opposed to ^{13}C, which causes the ratio of $^{13}C/^{12}C$ to increase or become heavy/enriched. In addition, the degradative daughter products (i.e., TCE and cis-1,2-DCE) are initially predominantly ^{12}C and therefore, the $\delta^{13}C$ is a relatively low value, or light. As the parent compound becomes depleted, microorganisms begin using ^{13}C, and the daughter product becomes heavier. Once the reaction is complete and all chlorinated ethenes are converted to ethene, the $^{13}C/^{12}C$ ratio of the ethene reaches the same isotopic ratio of the original PCE parent compound, assuming ethene is the final transformation product, thereby conserving the isotopic mass balance. By comparing the isotopic signature of the parent compound with the degradation byproducts along the length of the plume, or as a function of time, changes in the combination of concentration and isotopic composition can be used to distinguish between physical and degradative processes. For the observed extent of fractionation to be considered significant, it must be greater than the total analytical uncertainty. For reliable interpretation, fractionation on the order of 2‰ is required for the positive identification of degradation (EPA 2008).

Groundwater samples were collected from select wells for CSIA to evaluate attenuation of VOCs along the plume. Monitoring well locations (MW-02, MW-04, MW-08A, MW-14D, and MW-16S) were selected along the PCE plume groundwater flow path to compare upgradient and downgradient locations for evidence of degradation along the groundwater plume. As concentrations of daughter products at the site are below the detection limit for CSIA, only the isotopic composition of PCE was compared at upgradient and downgradient locations to evaluate the potential of degradative processes along the groundwater plume flow path. The greatest difference in isotopic composition was observed between upgradient location MW-04 (-26.8‰) and downgradient location MW-14D (-25.0‰), for a difference of 1.8‰ (**Table 6-11**). As the maximum isotopic fractionation for PCE at the site is less than 2‰, degradation of PCE has not been confirmed using CSIA. This provides another line of evidence that natural attenuation due to biotic or abiotic degradation is not occurring at any significant rate at the site.

Section 7

Risk Assessment

Historical disposal of PCE from a dry-cleaning facility in Building 7 on the VAMC campus has resulted in contamination of groundwater beneath the VAMC campus and in downgradient areas. PCE and its degradation products have been identified in groundwater at the site. Contaminated groundwater is present in shallow groundwater and in seeps and springs that daylight in the ESS residential neighborhood. Humans may come into contact with contaminated site media, including groundwater (non-potable under current conditions and possibly potable in the future), shallow soil, seep/spring surface water, and seep/spring sediment. VOCs in groundwater can volatilize into the interstitial spaces in the soil and can migrate and be released at the soil surface. If overlying buildings are present, vapors can contaminate indoor air. Exposures to volatile chemicals have the potential to cause a range of non-cancer and cancer effects in humans. Residents, students, daycare children, and workers within the contaminated groundwater area could be at risk of adverse health effects if excessive exposure to contaminated environmental media were to occur. Ecological receptors, including aquatic receptors such as small fish, aquatic invertebrates, and aquatic plants, terrestrial plants and soil invertebrates, wildlife, and domestic pets may also be exposed to contaminated site media.

A baseline human health risk assessment (HHRA) and screening-level ecological risk assessment (SLERA) were prepared to evaluate potential risks to human and ecological receptors from exposures to contaminated site media. The results of the risk assessments are intended to help inform risk managers and the public about current and potential future risks at the site and determine if there is a need for remedial actions to protect public health and the environment at the site. The baseline HHRA is presented in **Appendix H** and the SLERA is presented in **Appendix I**. These risk assessments are briefly summarized below.

7.1 Human Health Risk Assessment

The following sections provide a summary of the HHRA approach and risk conclusions. Detailed information on the HHRA is available in **Appendix H**.

7.1.1 Summary of the AOU1 HHRA

The AOU1 RI provided an accelerated evaluation of VI arising from shallow groundwater contamination in the ESS area. The AOU1 RI investigation activities were completed from 2014 through 2017. This investigation included indoor air sampling, soil gas sampling, surface water sampling of ESS seeps and springs and Red Butte Creek, installation of monitoring wells within ESS, and groundwater sampling.

A preliminary list of site-related COPCs was developed during completion of the AOU1 RI. This list included PCE and its degradation products TCE, cis-1,2- DCE, and VC. The chemical 1,4-dioxane was also included as a preliminary COPC as requested by EPA in a letter dated June 4, 2014, for the purpose of characterizing the nature and extent of contamination during the RI (EPA 2014b).

Other analytes were not included in the AOU1 HHRA because they were deemed as not site attributable.

An HHRA was completed as part of the AOU1 RI. The scope of the AOU1 HHRA was primarily to assess the VI pathway for residents in the ESS neighborhood to determine the need for interim actions to mitigate exposures from VI. An evaluation of potential exposures to surface water, soil, and homegrown produce was also included in the AOU1 HHRA. The AOU1 HHRA concluded that potential exposures from these media were considered insignificant and no quantitative risk estimates were derived.

The AOU1 HHRA relied primarily on indoor air and soil gas data collected between 2015 and 2017 as part of the AOU1 RI. During these investigations, one property (0040-H) was identified as having indoor air concentrations of PCE at concentrations greater than the established action level and required interim actions (VA 2016). Data for 36 properties evaluated during the AOU1 RI were assessed quantitatively in the AOU1 HHRA. For all properties, available indoor air data indicated the cancer risk estimates were within the acceptable risk range and non-cancer hazards were below the acceptable threshold, based on a current residential scenario and current and future commercial/school worker scenario. However, groundwater and soil gas data collected as part of the AOU1 RI showed the potential for VI exposures under a future residential scenario.[7]

While the AOU1 HHRA provided an initial risk characterization of potential exposures at the site, this accelerated risk assessment was intentionally limited in that it was focused on a specific subarea of the site (i.e., the ESS neighborhood), those exposure pathways that were likely to be key risk drivers, and only those chemicals that were site-attributable (i.e., PCE, TCE, cis-1,2-DCE, and VC) to identify where prompt action was necessary prior to completion of the final record of decision. Since the completion of the AOU1 HHRA, additional data have been collected that further inform the exposure assessment and support the need for possible remedial action.

The baseline HHRA builds upon what was done as part of the AOU1 HHRA and provides a comprehensive risk characterization in support of the OU1 RI to evaluate potential human health risks from exposures due to contaminated groundwater. The baseline HHRA evaluates the full list of COPCs, assesses exposure scenarios not included in the AOU1 HHRA, and re-evaluates exposure scenarios where more recent data have been collected.

7.1.2 Exposure Assessment

Exposure is the process by which humans come into contact with chemicals in the environment. In general, humans can be exposed to chemicals in a variety of environmental media (i.e., soil, sediment, water, air, or food), and these exposures can occur through three routes (i.e., ingestion, dermal contact, or inhalation).

7.1.2.1 Conceptual Site Exposure Model

The site is affected by PCE, which was historically disposed into the sanitary sewer in the 1980s by a dry-cleaning facility in Building 7 on the VAMC campus. PCE was likely released from the sewer line into the surrounding soil via cracks in the line. It is also possible that there were spills

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[7] This future residential scenario was intended to address both new homes and existing homes without measured indoor air results.

on the ground surface in the vicinity of the building. These releases resulted in contaminated groundwater, which migrated over time from beneath the VAMC campus along with the alluvial flow into downgradient areas, including the ESS neighborhood. PCE and its degradation products are the primary contaminants of interest at the site.

Site contaminants can migrate in the environment by several processes, including groundwater migration, volatilization from groundwater into soil gas, volatilization from soil gas into outdoor air or into buildings via vapor intrusion, daylighting of shallow groundwater in the form of seeps and springs, adsorption from groundwater to soil and sediment particles, uptake by homegrown produce, and wind transport or human disturbance of impacted soil/sediment particulates.

The site consists of mixed commercial and residential uses, and the main receptor populations of interest that were evaluated are residents, students, daycare children, indoor workers, outdoor workers, and construction workers. Exposure pathways for these receptor populations include:

- Inhalation of indoor air impacted by VI originating from shallow groundwater
- Inhalation of outdoor air impacted by volatiles originating from shallow and daylighting groundwater
- Incidental ingestion, dermal contact, inhalation of air within trenches and excavation areas impacted by shallow groundwater (construction workers)
- Incidental ingestion, dermal contact, and inhalation of air impacted by volatiles derived from surface water and sediment in seeps/springs
- Incidental ingestion, dermal contact, and inhalation of airborne soil and sediment particulates
- Ingestion of homegrown produce irrigated by seeps/springs
- Future potable use of groundwater: ingestion of groundwater as drinking water, dermal contact with potable groundwater, and inhalation of indoor air impacted by home use of potable groundwater

Figure 7-1 presents the conceptual site exposure model (CSEM) that summarizes the exposure scenarios and populations evaluated in the HHRA. Not all exposure scenarios are likely to be of equal concern. Complete exposure pathways that have the potential to be important contributors to exposure are indicated by boxes containing a solid circle (●) and minor contributors are indicated by boxes containing an open circle (❍).

7.1.2.2 COPC Selection

COPCs are chemicals that exist in the environment at concentrations that might be of potential health concern to humans, as determined based on a comparison to conservative health-based screening levels, which are identified for further evaluation in a quantitative risk assessment. As noted previously, PCE and its degradation products (i.e., TCE, cis-1,2-DCE, VC) are the primary site-related contaminants of interest, and 1,4-dioxane was investigated as potentially site-related. However, in accordance with EPA guidance (EPA 2002), the HHRA evaluated exposures for all chemicals in exceedance of risk-based screening levels, regardless of their source, to fully characterize potential health risks.

Detailed tables showing the summary statistics for each environmental medium, the basis of the screening levels used in the COPC selection process, and the COPC outcome for each medium are presented in **Appendix H**. In brief, maximum concentrations for each chemical were compared to conservative default residential screening levels. **Table 7-1** summarizes the list of chemicals in each medium selected as COPCs for further quantitative assessment. These COPCs are summarized below:

- **Groundwater:** *SVOCs/VOCs*: 1,4-dioxane, bis(2-ethylhexyl)phthalate, 2-hexanone, benzene, bromodichloromethane, chloroform, cis-1,2-DCE, dibromochloromethane, ethylbenzene, PCE, TCE; *Metals*: aluminum, antimony, arsenic, barium, beryllium, cobalt, copper, iron, lead, manganese, nickel, thallium, vanadium, zinc

- **Soil Gas:** *SVOCs/VOCs*: 1,3-butadiene, benzene, bromodichloromethane, chloroform, ethyl acetate, PCE, TCE

- **Indoor/Outdoor Air:** *SVOCs/VOCs*: 1,3-butadiene, benzyl chloride, 1,4-dioxane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, benzene, bromodichloromethane, bromomethane, carbon tetrachloride, chloroform, ethyl acetate, ethylbenzene, hexachloro-1,3-butadiene, isopropyl alcohol, xylenes (m-,p- and o-), methylene chloride; naphthalene; PCE; TCE; vinyl acetate; VC

- **Soil/Sediment:** *Metals*: arsenic, cadmium, cobalt, manganese, thallium

- **Surface Water:** *SVOCs/VOCs*: bis(2-ethylhexyl)phthalate, benzene, bromodichloromethane, chloroform, PCE, TCE. *Metals*: aluminum, antimony, arsenic, cadmium, cobalt, copper, iron, lead, manganese, thallium, vanadium, zinc

Potential risks from exposures to metals are presented and discussed in the HHRA (**Appendix H**); however, given that elevated metal concentrations are not expected to be attributable to the site, they are not discussed further in the RI.

No organic COPCs were identified for soil/sediment, which means that risks are likely to be negligible for all receptor populations for all soil/sediment exposure routes. No further quantitative assessment of soil/sediment was performed in the HHRA.

The list of COPCs for surface water (seeps/springs) and shallow (non-potable) groundwater were evaluated further in the HHRA. This was done because the COPC selection for these media were screened against the EPA residential tap water RSLs; however, this type of screening level is overly conservative because neither media is used for potable purposes. Refined screening levels for seeps/springs were developed using reduced exposure frequencies, exposure time, skin surface areas, and ingestion rates to approximate a more realistic seep/spring exposure scenario (e.g., adjusting the exposure frequency from a year-round residential tap water use of 350 days per year to a less frequent seep/spring contact scenario). Likewise, refined screening levels for shallow groundwater were also developed specific to a digging scenario where shallow groundwater is encountered (e.g., a resident digging in a garden or an outdoor maintenance worker performing sprinkler-line maintenance). See Section 2.3.3 of the HHRA (**Appendix H**) for additional information on these refined exposure assumptions. Comparisons to these refined screening levels showed risks from exposures to seeps/springs are likely to be negligible for all receptor populations for all exposure routes and all COPCs. In addition, risks from contact with shallow groundwater during digging activities are likely to be negligible for both residents and outdoor workers for all exposure routes and all COPCs. However, because construction worker exposures during excavation activities have the potential to be higher due to the accumulation of volatiles derived from groundwater into trench air, exposures to shallow groundwater by construction workers were still assessed quantitatively in the risk characterization.

All organic COPCs for groundwater, soil gas, and air were retained for further evaluation in the risk assessment.

7.1.2.3 Exposure Parameters

The risk assessment evaluates potential exposures for each receptor population for the relevant complete exposure pathways. Exposure estimates in the risk assessment do not seek to evaluate exposures for specific individuals. Rather, risk estimates are calculated for representative members of the exposure population, calculating risks based on both members of the population with “typical” levels of exposure and members of the population with “high-end” exposures. These two exposure estimates are referred to as central tendency exposure (CTE) and reasonable maximum exposure (RME), respectively. Risk management decisions for Superfund are typically based on RME estimates (EPA 1991).

The HHRA employs standard equations to estimate the intake (or dose) of COPCs from receptor-specific parameters (such as body weight, exposure frequency, and duration), exposure pathway-specific parameters (such as intake rates), and chemical-specific parameters (such as absorption fraction). These inputs are combined with information on the exposure point concentrations (EPCs) to provide an estimate of the daily intake of each COPC for each exposure pathway, for each receptor population of interest.

7.1.2.4 Exposure Point Concentrations

An exposure area is an area where a receptor may be exposed to one or more environmental media over a specified period of time (e.g., lifetime). In general, receptors are assumed to move about at random within an exposure area. Based on the assumption of random exposure over an exposure area, risk from a chemical within an exposure area is related to the arithmetic mean concentration of that chemical averaged over the entire exposure area for the entire time frame of exposure. Since the true arithmetic mean concentration cannot be calculated with certainty from a limited number of measurements, EPA recommends that the 95 percent upper confidence limit of the arithmetic mean for each exposure area be used as the EPC when calculating exposure and risk at that location (EPA 1992).

For Properties with Measured Air Data

For properties with measured air data, initially, risk estimates were calculated based on the maximum concentration for each exposure area (property). For example, when evaluating inhalation exposures to indoor air inside a residence, the EPC was set equal to the maximum concentration across all indoor air samples, regardless of sampling method. This provides a conservative estimate of exposures and allows for a first-tier evaluation of properties. If risks based on the maximum concentration were potentially unacceptable, the property-specific EPC was refined based on a review of the available data for that property.

For Properties without Measured Air Data

This site encompasses hundreds of properties, and although attempts have been made to sample as many residences, schools, and businesses as possible within the PCE plume extent, measured indoor air data is not available for every property. For properties without measured indoor air data, the available soil gas and shallow groundwater data were used qualitatively to evaluate the potential for VI exposures. Groundwater plume delineation maps for PCE (see **Figure 6-29**) and TCE were also developed to illustrate the boundary where potentially unacceptable risks to site-related contaminants could occur to target properties for future assessment during the remedial design.

Construction Worker Exposures

Because the depth to groundwater can be very shallow at the site, with groundwater present within several feet of the ground surface in some areas and daylighting in seeps/springs in other areas, construction workers have the potential to come into contact with shallow groundwater during digging activities. For construction workers performing activities within a trench, it is possible that vapors could occur within the trench. For the purposes of this exposure scenario, it is assumed digging activities could extend to depths of 10 feet bgs.

Measured shallow groundwater data were used to assess exposures to construction workers from incidental ingestion and dermal contact with groundwater, and inhalation of trench air (impacted by volatiles derived from groundwater) using a transport model, which is contained within the Virginia Department of Environmental Quality (VDEQ) Virginia Unified Risk Assessment Model (VURAM v3.1) (VDEQ 2020). Even if construction workers do not come into contact with shallow groundwater during digging activities (i.e., in areas where groundwater is greater than 10 feet bgs), if contaminated soil gas is present, construction workers could also be exposed to volatiles that accumulate within a trench. Therefore, measured soil gas data were also evaluated using VURAM to assess trench air inhalation exposures.

Because construction activities likely would be conducted within a smaller construction zone, exposures were evaluated on a location-by-location basis (i.e., a piezometer location or a well location).

Hypothetical Future Use of Groundwater as Drinking Water

Currently, there is no potable use of contaminated groundwater at the site. However, to inform risk management decisions, the risk assessment evaluated a hypothetical scenario in which deep groundwater is used as a potable source in the future. For this scenario, residential exposures and risks were evaluated on a well-by-well basis for the subset of wells that represent deeper groundwater.

7.1.3 Toxicity Assessment

The objective of a toxicity assessment is to identify the types of adverse health effects that are caused by a particular chemical, and to determine how the appearance of these adverse effects depends upon exposure level. In addition, the toxic effects of a chemical frequently depend upon the route of exposure (oral, inhalation, and dermal) and the duration of exposure.

The toxicity assessment process is divided into two parts—the first characterizes and quantifies the cancer effects of the chemical, while the second addresses the non-cancer effects. This two-part approach is employed because there are typically major differences in the time course of action and the shape of the dose-response curve for cancer and non-cancer effects.

7.1.3.1 Cancer Effects

For cancer effects, the toxicity assessment process has two components. The first is a qualitative evaluation of the weight of evidence that the chemical does or does not cause cancer in humans. For chemicals that are classified in Group A (known human carcinogen), B1 (probable human carcinogen, suggestive evidence of cancer incidence in humans), B2 (probable human carcinogen, sufficient evidence of cancer in animals), or C (possible human carcinogen) using EPA guidelines (EPA 1986), the second part of the toxicity assessment is to describe the carcinogenic potency of the chemical. This is done by quantifying how the number of cancers observed in exposed animals or humans increases as the dose increases. Typically, it is assumed that the dose-response curve for cancer has no threshold, arising from the origin and increasing linearly until high doses are reached. Thus, the most convenient descriptor of cancer potency is the slope of the dose-response curve at low doses (where the slope is still linear). This is referred to as the slope factor (SF), which has dimensions of risk of cancer per unit dose.

Estimating the cancer SF is often complicated by the fact that observable increases in cancer incidence usually occur only at relatively high doses, frequently in the part of the dose-response curve that is no longer linear. Thus, it is necessary to use mathematical models to extrapolate from the observed high-dose data to the desired (but unmeasurable) slope at low-dose. To account for the uncertainty in this extrapolation process, EPA typically chooses to employ the 95 percent upper confidence limit of the slope as the SF. That is, there is a 95 percent probability that the true cancer potency is lower than the value chosen for the SF. This approach ensures that there is a margin of safety in cancer risk estimates.

For inhalation exposures, cancer risk is characterized by an inhalation unit risk (IUR) value. This value represents the upper-bound excess lifetime cancer risk estimated to result from continuous lifetime exposure to a chemical at a concentration of 1 $\mu g/m^3$ in air.

7.1.3.2 Non-Cancer Effects

Essentially all chemicals can cause adverse health effects at a sufficient dose. However, when the dose is sufficiently low, typically no adverse effect is observed. Thus, in characterizing the non-cancer effects of a chemical, the key parameter is the threshold dose at which an adverse effect first becomes evident. Doses below the threshold are considered to be safe, while doses above the threshold are likely to cause an effect.

The threshold dose is typically estimated from toxicological data (derived from studies of humans and/or animals) by finding the highest dose that does not produce an observable adverse effect, and the lowest dose which does produce an effect. These are referred to as the no-observed-adverse-effect level (NOAEL) and the lowest-observed-adverse-effect level (LOAEL), respectively. The threshold is presumed to lie in the interval between the NOAEL and the LOAEL. However, in order to be conservative (protective), non-cancer risk evaluations are not based directly on the threshold exposure level but rather on a value referred to as the reference dose (RfD) or reference concentration (RfC). The RfD is used to evaluate oral exposures (e.g., incidental ingestion of soil, ingestion of drinking water, and ingestion of dietary items) and is reported in units of milligrams of chemical per kilogram body weight per day (mg/kg day). The RfC is used to evaluate inhalation exposures and is reported in units of mg/m^3. The RfD and RfC are estimates (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

The RfD and RfC values are derived from the NOAEL, LOAEL, or benchmark dose by dividing by an uncertainty factor (UF) that reflects the limitations of the data used. If the data are from studies in humans, and if the observations are considered to be very reliable, the UF may be as small as 1. However, the UF is normally at least 10, and can be much higher if the data are limited. UFs are assigned to account for uncertainty arising from extrapolation of animal data to humans, the use of a LOAEL instead of a NOAEL, the use of less than chronic exposure, and other limitations in the available data (e.g., lack of reproductive data).

7.1.3.3 Toxicity Values

Toxicity values (RfD, RfC, SF, and IUR values) established by EPA are listed in the Integrated Risk Information System (IRIS) (EPA 2022a). Other toxicity values are available as interim recommendations from EPA's Superfund Technical Assistance Center operated by the National Center for Environmental Assessment. A toxicity value hierarchy was developed by EPA for use in site-specific risk assessments (EPA 2003a). This hierarchy provides an order of preference of toxicity values, with Tier 1 (IRIS) being the preferred source of toxicity information, if available, then Tier 2 (EPA Provisional Peer-Reviewed Toxicity Values), followed by Tier 3 (other sources, including non-EPA sources such as the California Environmental Protection Agency and the Agency for Toxic Substances and Disease Registry).

The EPA RSL tables include a summary of toxicity values derived from these sources using the tiered system described above. EPA maintains and updates these tables biannually (EPA 2022b). All toxicity values used in the HHRA were taken from the most recent version of the RSL tables (May 2022).

7.1.4 Risk Characterization

The HHRA presents the detailed equations used to compute non-cancer hazards and cancer risks. The following sections describe how hazards and risks are interpreted and presents a summary of the overall risk conclusions for each exposure scenario.

7.1.4.1 Risk Interpretation

The potential for non-cancer effects from a COPC is evaluated by comparing the estimated site-related exposure for a receptor over a specified time period to the RfD or RfC for that COPC. This ratio of site-related exposure to the safe exposure level is called the hazard quotient (HQ). If an individual is exposed to more than one chemical, a screening-level estimate of the total non-cancer hazard is derived simply by summing the HQ values across individual chemicals and exposure pathways. This total is referred to as the hazard index (HI). If the HI value is less than or equal to [≤] 1, non-cancer hazards are not expected from any chemical, alone or in combination with others. If the screening level HI exceeds 1, it may be appropriate to perform a follow-on evaluation in which HQ values are added only across chemicals that affect the same target tissue or organ system (e.g., the liver). This is because chemicals that do not cause toxicity in the same tissues are not likely to cause additive effects.

The excess risk of cancer from exposure to a chemical is described in terms of the probability that an exposed individual will develop cancer because of that exposure. Excess cancer risks are summed across all carcinogenic chemicals and all exposure pathways that contribute to exposure of an individual in a given population. The level of total cancer risk that is of concern is a matter of personal, community, and regulatory judgment. In general, EPA considers excess cancer risks that are below 1E-06 to be so small as to be negligible, and risks above 1E-04 to be sufficiently large that some sort of remediation is desirable.[8] Excess cancer risks that range between 1E-04 and 1E-06 are generally considered to be acceptable (EPA 1991), although this is evaluated on a case-by-case basis, and EPA may determine that risks lower than 1E-04 are not sufficiently protective and warrant remedial action.

For vapor intrusion exposures, EPA guidance (EPA 2015) recommends the evaluation of multiple lines of evidence along with the risk calculations to help support (or refute) the exposure assessment and risk estimates. Overall risk conclusions are to be based on the weight of evidence, taking into consideration the strengths and weaknesses of each line of evidence.

7.1.4.2 Risk Conclusions

In the HHRA, conservative risk-based screening levels were used to identify COPCs. Health protective assumptions were used to estimate non-cancer hazards and cancer risks from exposures to COPCs for a range of human receptor populations. While the risk assessment evaluated exposures to all COPCs, only two volatiles are identified as being the main site-related chemicals of concern (COCs)—PCE and TCE. Although 1,4-dioxane contributes to total indoor air risks, as discussed in Section 5.3.1.5 of the RI, review of the groundwater data shows 1,4-dioxane was only detected sporadically in the ESS area and not at the locations with the highest PCE concentrations in the groundwater plume closer to the VAMC campus. Thus, the presence of 1,4-dioxane in indoor air, like most of the volatile COPCs, does not appear to originate from the site and is likely because of interior background sources.

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[8] Excess cancer risk can be expressed in several formats. A cancer risk expressed in a scientific notation format as 1E-06 is equivalent to 1 in 1,000,000 or 10-6. Similarly, a cancer risk of 1E-04 is equivalent to 1 in 10,000 or 10-4. For the purposes of this document, all cancer risks are presented in a scientific notation format.

Table 7-2 summarizes the overall risk conclusions of the HHRA. The following sections summarize the risk conclusions for each of the exposure scenarios evaluated quantitatively in the HHRA. More detailed information on the risk calculations and conclusions is presented in **Appendix H**.

Minor Exposure Media and Pathways

The risk evaluation showed that the following exposure scenarios would not result in unacceptable risks:

- Exposures to chemicals in soil, sediment, surface water (i.e., seeps/springs and daylighting groundwater), and outdoor air for all receptor populations and all exposure scenarios
- Residential and outdoor worker exposures to chemicals in shallow groundwater during digging activities, such as a resident digging in a garden or an outdoor maintenance worker performing sprinkler line maintenance
- Inhalation exposures to volatiles in irrigation water (derived from deep wells), based on the expectation that volatiles would rapidly dissipate in outdoor air
- Consumption of homegrown produce that has been irrigated with seep/spring water, because accumulation of PCE and its daughter products into homegrown produce is unlikely
- Construction worker exposures to volatiles in trench air derived from shallow groundwater and/or soil gas
- Student and teacher exposures to indoor air inside schools

Hypothetical Future Exposures to Potable Groundwater

Currently, there is no potable use of contaminated groundwater at the site. However, to inform risk management decisions for the site, risk estimates were calculated for a hypothetical scenario in which deep groundwater is used as a potable source in the future. For this scenario, risks were evaluated for a hypothetical residential exposure on a well-by-well basis for the subset of wells that represent deeper groundwater.

Table 7-3 summarizes the risks for a hypothetical future residential exposure to potable groundwater. In this table, the cumulative non-cancer HIs and total cancer risks are presented for two groupings—“Based on Detects Only” and “Site-Related Only”—to illustrate the hazards/risks for the subset of groundwater COPCs that are expected to be site-related (e.g., PCE and TCE) to show the portion of the total exposure that is likely to be site-attributable. In this table, non-cancer HIs greater than 1 and cumulative cancer risks greater than 1E-04 are shaded in orange. Cancer risks within EPA’s acceptable risk range of 1E-06 to 1E-04 are shaded in green.

If contaminated site groundwater were used as a potable source in the future by residents, unacceptable exposures have the potential to occur because of elevated concentrations of PCE. Two wells—MW-03R located near the VAMC and MW-13L in the ESS neighborhood—showed unacceptable residential risks from PCE, primarily because of inhalation exposures during domestic water use (e.g., during showering) and ingestion of drinking water.

While deep groundwater is not currently being used for potable use near the site, appropriate mitigation measures should be taken to ensure contaminated groundwater is not used in the future.

Properties with Measured Indoor Air

In total, indoor air samples with data suitable for quantitative risk evaluation have been collected at 86 residential properties, two schools[9] (0045-S and 0365-S), one church (0366-C), and five VAMC buildings (Buildings 6, 7, 13, 20, and 32). For these properties, risks were evaluated on a property-by-property basis. Three sampling/analysis methods were employed to measure VOCs in air: in-field HAPSITE, SUMMA canisters, and passive samplers. There are pros and cons associated with each of these methods, with implications for the HHRA. Section 5.1.1 of the HHRA (**Appendix H**) provides a detailed discussion of the advantages and disadvantages of each method.

Initially, screening level risk estimates were determined for each property based on the maximum indoor air concentration across all sampling methods (i.e., HAPSITE, SUMMA, and passive). Detailed risk calculations for each receptor population are presented in **Attachment H.6** of **Appendix H**. The overall risk conclusions are summarized briefly below.

Selected risk summary tables are presented below to provide the by-property risk estimates from inhalation of indoor air. In these tables, the cumulative RME non-cancer HIs and total RME cancer risks are presented for two groupings—“Based on Detects Only” and “Site-Related Only” —to illustrate the hazards/risks for the subset of indoor COPCs that are expected to be site-related (e.g., PCE and TCE) to show the portion of the total exposure that is likely to be site-attributable. This distinction is important because for many properties, many non-site-related chemicals were identified as potential risk drivers. In these tables, non-cancer HIs greater than 1 and cumulative cancer risks greater than 1E-04 are shaded in orange. Cancer risks within EPA’s acceptable risk range of 1E-06 to 1E-04 are shaded in green.

<u>Residential Exposures</u>

The risk evaluation of potential exposure to COPCs in indoor air shows that cumulative hazards/risks are biased high because of the contribution of non-detect COPCs with inadequate MDLs. As shown in **Table 7-4**, 12 residential properties have an RME non-cancer HI greater than 1 and/or an RME cancer risk greater than 1E-04. However, review of the list of risk drivers shows many of the volatile chemicals identified are not site-related, which suggests there are other indoor sources present inside many of these residences. If risk estimates are restricted to detected site-related COPCs only, only five properties (0040-H, 0051-H, 0054-H, 0059-H, and 0197-H) have potentially unacceptable exposures (see **Table 7-4**).

Inspection of the indoor air datasets and collocated information on soil gas, outdoor ambient air, and groundwater for these four properties indicates the VI pathway is likely complete at nearly all properties. However, other indoor sources of both site-related COCs (PCE and TCE) and non-site-related volatiles were also noted at several of these properties. For Property 0040-H, indoor air concentrations of PCE and TCE were above the Tier 1 RAL and determined to primarily be due

[9] Refer to Section 5.5.2.1 for more discussion on schools.

to VI; interim measures have been taken at this property to mitigate exposures (CTI 2017, VA 2021). For Property 0051-H, floor cracks were sealed to minimize the potential for VI. For both 0040-H and 0051-H, the risk estimates shown in **Table 7-4** are based on pre-mitigation conditions. For Property 0054-H, pressure cycling results indicate elevated exposures were because of indoor sources and not VI. For Property 0059-H, risks are being driven by a single historical sample collected near a floor drain; risk estimates based on the most recent (and more representative) indoor air results shows there are no unacceptable risks. Portable air filters were provided to Property 0197-H as an interim measure pending further investigation of a suspected indoor TCE source.

Despite the VI pathway being complete, with the exception of Property 0040-H and (potentially) Property 0197-H, there are no unacceptable human health risks from exposures to site-related COCs (PCE and TCE) under current conditions for all residential properties that have been sampled.

Daycare Children Exposures

Daycares are known to exist within the OU1 study area, including the daycare within one school, in VAMC Building 13, and on the University of Utah campus. Daycares may also be operating out of residential properties and churches in the study area.

Maximum indoor air concentrations within the school daycare (School 0045-S) and the daycare inside VAMC Building 13 did not result in unacceptable risks for daycare children (see **Table 7-5**).

In the HHRA, it was assumed that any residential property could operate as a daycare facility in the future. The risk estimates indicate there is the potential that daycare children could have slightly elevated exposures to site-related COCs inside a few residences in the ESS area if they become daycare facilities in the future (see **Table 7-5**). However, if risks are mitigated for residents, this will also be protective of exposures to daycare children.

Indoor Worker Exposures

Indoor air samples have been collected from five on-site VAMC buildings, including Buildings 6 and 7, which are closest to the suspected PCE source location. No indoor air data is available for commercial properties within the ESS area because there are very few commercial properties located in the ESS area. Measured data for residential properties within the ESS area was used as a surrogate for concentrations inside commercial properties.

Worker exposures to site-related COCs inside the VAMC buildings did not result in unacceptable risks (see **Table 7-6**). For Building 6, soil gas represents an ongoing potential source of VI for this building; however, indoor sources of PCE and TCE (e.g., battery and brake cleaners and lubricants) were also present. Subsequent indoor air sampling performed after these indoor sources were removed resulted in site-related non-cancer hazards less than 1 and cancer risk estimates below 1E-06.

For commercial properties in the ESS area, if commercial buildings have similar indoor air concentrations to the residential properties, there is the potential that indoor workers could have non-cancer hazards slightly higher than 1 because of site-related COCs inside a few buildings.

Unsampled Properties

Attempts have been made to conduct indoor air sampling at as many properties as possible within the ESS area, but there are unsampled properties within this area (**Figure 6-29C**). The risk results described above for the properties with measured indoor air data provide the most applicable information to estimate what potential exposures may exist inside unsampled properties within the ESS area. These risk estimates suggest that while VI may be occurring inside the unsampled properties, the majority of these properties are likely to have indoor air exposures that are within EPA's acceptable risk ranges. However, it is possible there could be a few properties within the ESS area where VI exposures may result in unacceptable hazards.

Property characteristics where VI may be occurring include properties in the ESS area where the basement has moisture issues due to the presence of shallow groundwater, with daylighting seeps/springs in the yard, where sump water is present and can directly volatilize into indoor air, where basement floor and/or foundation cracks are present, with bare soil crawl spaces, where sewer or underground utility lines enter through the floor or foundation without adequate sealant, and older homes that are less airtight than newer (or recently remodeled) properties. The presence of one or more of these property characteristics would tend to increase the potential for unacceptable exposures because of VI. However, because each home is unique, property-specific sampling of indoor air concentrations would be needed to determine actual indoor exposures.

<u>Plume Extents</u>

Available groundwater data and soil gas data can also be used to identify the areas where the potential for VI exposures is likely to be highest. The site soil gas data show the highest soil gas concentrations of PCE and TCE were within the ESS area and centered around Property 0053-H (see **Figure 5-6** for PCE). PCE and TCE groundwater contour maps, and measured indoor air results, also support the conclusion that properties within the vicinity of the intersection of 900 South and 1200 East have the highest potential for VI concerns (see **Figure 6-29B** for PCE). The available indoor air data corroborate this conclusion and show that this is also the area where the highest indoor air exposures have been reported, including the four properties (0037-H, 0040-H, 0051-H, and potentially 0197-H) where interim measures were taken to address PCE and TCE that were attributable to VI.

<u>Correlations Between Media and Analytes</u>

To understand the potential relationships between the different COPCs in the different media types (indoor air, soil gas, and groundwater), regressions between various combinations were considered as presented in the figures in **Attachment H.10** of the HHRA (**Appendix H**). As observed from the regression plots, weak or no correlations were observed between most COPCs in most media. These regressions were based upon the maximum concentration of the respective analyte in the respective media at each location. Thus, the weak correlations are likely because of the spatial and temporal variability in the concentrations at a location and limited occurrences where COPCs were present in the same location in different media. The lack of correlation may also be because of property-specific differences that affect VI potential (e.g., presence of floor cracks, sump maintenance). While the lack of COPC detections in site media makes development of correlations challenging, the fact of limited occurrences is consistent with the conclusions that exposures are generally low at this site as indicated by the risk calculations.

In addition to evaluating the relationship between COPC concentrations in different media, to understand the potential relationships between COPCs within a medium, regressions between various combinations of COPCs were considered. In summary, positive associations between PCE and TCE were observed for indoor air, soil gas, and groundwater, but these relationships varied by area (i.e., stronger correlations near the VAMC campus and weaker within the ESS area) partly because of the limitations mentioned above.

The absence of strong relationships between the different media and analytes indicates it may not be possible to predict exposures at an individual location based on nearby measurements of indoor air, soil gas, or groundwater. Nevertheless, inspection of the larger datasets for these media show that the general area where these media indicate the potential for unacceptable exposures may occur does overlap in the ESS area, which shows there is a correlation between PCE and TCE in groundwater, soil gas, and indoor air when assessed for the larger ESS area.

7.1.5 Uncertainty Assessment

Confidence in the quantitative evaluation of the risks to humans from environmental contamination may be limited by uncertainty regarding a number of key data items, including concentration levels in the environment, the true level of human contact with contaminated media, and the true dose-response curves for non-cancer and cancer effects in humans. This uncertainty is usually addressed by making conservative assumptions or estimates for uncertain parameters based on available data. The HHRA (**Appendix H**) provides a detailed discussion of the key uncertainties that affect the risk assessment. While attempts have been made to conduct indoor air sampling at as many properties as possible, one important limitation of the HHRA is the lack of measured indoor air data for all residential properties within the ESS area where there is a higher potential for VI impacts. Even so, the risk estimates suggest that, while VI may be occurring inside the unsampled properties, the majority of these properties are likely to have indoor air exposures that are within EPA's acceptable risk ranges.

Because of these uncertainties, the results of risk calculations are themselves uncertain, and it is important for risk managers and the public to keep this in mind when interpreting the results of a risk assessment.

7.2 Screening-Level Ecological Risk Assessment

EPA developed an eight-step process recommended for conducting ecological risk assessments (ERAs) at Superfund sites under CERCLA (EPA 1997). Steps 1 and 2 of the ERA process include a screening-level risk evaluation to identify the contaminants, pathways, and receptors of potential concern. These steps are intentionally simplified and conservative, and usually tend to overestimate the amount of potential risk. This conservatism allows for the elimination of those factors that are not associated with risk, permitting subsequent efforts to focus on factors that are of potential concern.

The SLERA includes an initial screen to identify the chemicals of potential ecological concern (COPECs) for each receptor using the existing site data. The following sections provide a summary of the SLERA approach and risk conclusions. Detailed information on the SLERA is available in **Appendix I**.

7.2.1 Summary of the AOU1 SLERA

A SLERA was completed as part of the AOU1 RI. The scope of AOU1 RI was primarily to assess the VI pathway for residents in the ESS neighborhood to determine the need for interim actions to mitigate exposures from VI. The AOU1 SLERA was intentionally limited, focusing only on potential ecological exposures to surface water and groundwater and the site-related chemicals of interest (i.e., PCE and its degradation products). The AOU1 SLERA concluded that exposure of aquatic organisms, plants, wildlife (birds and mammals), and domestic dogs to site-related contaminants in groundwater and surface water will not result in unacceptable risks. The AOU1 SLERA also concluded that potential ecological risks to aquatic receptors in the Jordan River, which is located several miles west of the site and could be potentially affected because of discharges to the river through the storm drain system, would be significantly lower than exposures at the site.

7.2.2 Problem Formulation

Problem formulation is a systematic planning step that identifies the major concerns and issues considered in the SLERA and provides a description of the basic approach used to identify the potential risks that may exist (EPA 1997). Problem formulation usually begins by developing a CSEM that identifies sources of contaminant release to the environment, the fate and transport of contaminants in the environment, and exposure pathways of potential concern for ecological receptors. Based on the CSEM, ecological goals (i.e., assessment endpoints and measures of effect) are identified that form the basis of the ERA.

7.2.2.1 Conceptual Site Exposure Model

The site is a residential/commercial area; thus, the ecological receptors of interest include plants and wildlife species that are common in suburban areas as well as residential pets. Most terrestrial and aquatic ecosystems support a variety of ecological organisms that can be exposed to chemicals in the environment. It is not feasible to perform risk evaluations for all species potentially exposed; thus, representative receptor groups were selected for evaluation. These receptor groups included aquatic receptors (e.g., fish, aquatic invertebrates, aquatic plants, and early life-stage amphibians), terrestrial receptors (e.g., terrestrial plants and soil invertebrates), and wildlife (i.e., birds and mammals of various feeding guilds). For the site, burrowing animals are of particular interest because soil vapors derived from volatiles in groundwater have the potential to impact air within burrows. Representative species of birds and mammals are considered in the screening-level assessment and are expected to be adequately protective of domestic pets.

Figure 7-2 presents the screening-level ecological CSEM for the site. As indicated in the CSEM, there are several complete exposure pathways by which ecological receptors may come into contact with site-related contaminants. However, not all are likely to be of equal concern. Complete exposure pathways that have the potential to be important contributors to exposure are indicated by boxes containing a solid circle (●) and minor contributors are indicated by boxes containing an open circle (❍).

7.2.2.2 Assessment and Measurement Endpoints

Management goals are descriptions of the basic objectives that the risk manager at a site wants to achieve. The overall management goal identified for ecological health for the site is to ensure adequate protection of ecological receptors within the impacted areas of the site by protecting them from the deleterious effects of acute and chronic exposures to site-related contaminants of concern. “Adequate protection” is generally defined as the protection of growth, reproduction, and survival of local populations and communities.

Assessment endpoints identify the ecological values to be protected (e.g., abundance and diversity of aquatic receptors). Assessment endpoints are directly related to the management goals and objectives determined for a site. Appropriate assessment endpoints are developed by risk assessors and often consider guidance from relevant regulatory agencies.

Ecological risk-related remedial goals and objectives for the site include (EPA 2003b):

- Protection of aquatic receptors, such as small fish, aquatic invertebrates, and aquatic plants from site-related adverse exposures in ponds or water features fed by springs/seeps
- Protection of terrestrial plants and invertebrates from site-related adverse exposures in soils near springs/seeps and buildings where PCE releases and spills may have occurred
- Protection of wildlife from site-related adverse exposures to contaminated media within the PCE plume extent
- Protection of domestic pets from site-related adverse exposures to contaminated media on residential properties

Measurement endpoints represent quantifiable ecological characteristics that can be measured, interpreted, and related to the valued ecological components chosen as the assessment endpoints (EPA 1997, 1992). In general, there are four basic categories of measures of effect that are useful in evaluating the assessment endpoints at a site: predicted risks (i.e., HQs), site-specific toxicity studies, in situ measures of exposure and effects, and site-specific community surveys. The measurement endpoints used in screening-level assessments are generally restricted to the predicted risks approach.

7.2.3 Risk Characterization

The purpose of the screening-level risk characterization is to identify COPECs, exposure pathways, and receptors of potential concern. The results of this assessment are used to quantify the screening-level risk estimates, identify the chemicals that are likely to be key risk drivers, and determine if a more refined risk assessment is needed.

7.2.3.1 Evaluation of Groundwater and Surface Water

Several springs and seeps emanate along the East Bench Fault within the ESS residential neighborhood west of 1300 East Street. PCE was detected in several of the springs and seeps within the downgradient portion of the PCE plume. Red Butte Creek also flows along the southern extent of the site.

The SLERA evaluated the following water exposure scenarios – direct contact exposures by aquatic organisms residing in the seeps, springs, ponds, and other water features within the ESS area, direct contact (root) exposures by terrestrial plants near seeps/springs, and ingestion exposures by wildlife and domestic pets that drink or feed from these water features. Ecological receptor exposures under current conditions were assessed based on surface water data. Potential future ecological exposures were assessed based on groundwater data, as this data represents groundwater that could potentially daylight in the future.

When performing the initial screen for ecological receptor exposures to surface water and groundwater, the exposure concentration was based on the maximum concentration of each analyte across all samples. The COPEC selection was performed separately for surface water and groundwater.

Ecological screening values (ESVs) for the protection of aquatic receptors from direct contact exposures to chemicals in surface water have been developed by various regulatory agencies and derived from published scientific literature and experimental studies. The surface water ESVs for ecological receptors were compiled from the following sources:

- UDEQ water quality standards for state waters (UDEQ 2020)
- EPA national ambient water quality criteria for aquatic life (EPA 2020)
- Los Alamos National Laboratory ECORISK Database ecological screening levels (ESLs) for aquatic community organisms and wildlife ingestion (LANL 2021; version 4.2)
- Oak Ridge National Laboratory soil solution benchmarks for plant roots (Efroymson et al. 1997)

The lowest ESV across all sources was selected for use in identifying COPECs for surface water and groundwater.

The COPECs identified for further quantitative assessment in surface water and/or groundwater include VOCs (chloroform, PCE, and toluene), SVOCs (bis[2-ethylhexyl]phthalate and dimethyl phthalate), and metals (aluminum, arsenic, barium, beryllium, cadmium, cobalt, copper, iron, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc).

- Section 7.2.3.5 below discusses the evaluation of the metal COPCs identified in surface water and groundwater.

The SLERA (**Appendix I**) provides a detailed description of the refined risk evaluation for seep/spring water that was performed for each ecological receptor of interest. These refined risk evaluations support the following risk conclusions:

- Exposures to seeps/springs, both now and in the future, will not result in unacceptable risks to wildlife or to domestic pets that drink the water or feed on aquatic organisms.

- No unacceptable risks are expected for terrestrial plants from exposure to organic chemicals in seeps/springs.
- Acute impacts to aquatic organisms from exposures to COPECs in seep/spring water are not expected.
- The potential exists for aquatic organisms to have unacceptable chronic exposures; however, the COPECs associated with these exposures are not site-related contaminants. PCE concentrations in surface water did not result in unacceptable aquatic receptor risks, and PCE concentrations in deep groundwater would be expected to attenuate below the chronic screening level prior to daylighting and therefore would not pose unacceptable risks.

No further evaluation of ecological exposures to site-related contaminants in surface water is necessary.

7.2.3.2 Evaluation of Sediment and Soil

This section presents the screening-level evaluation of ecological exposures to chemicals in site sediment and soil. In the SLERA, the term "sediment" is used when describing materials that have been collected within seep/spring features and from the bottom of creek beds. The term "soil" is used when describing all other materials (e.g., collected from boreholes).

The SLERA evaluated the following sediment and soil exposure scenarios – direct contact sediment exposures by aquatic invertebrates residing in the seeps, springs, ponds, and other water features within the ESS area, direct contact soil exposures by terrestrial plants, and ingestion exposures by wildlife and domestic pets (including both incidental ingestion of sediment and soil and ingestion of aquatic and terrestrial food items).

When performing the initial screen for ecological receptor exposures to soil/sediment, the exposure concentration was based on the maximum concentration of each analyte across all samples. The COPEC selection was performed together for soil and sediment samples.

ESVs for the protection of ecological receptors from exposures to chemicals in soil and sediment have been derived from published scientific literature and experimental studies and compiled in the LANL ECORISK Database (LANL 2021; version 4.2). The LANL ECORISK Database includes both sediment ESLs for the protection of aquatic invertebrates and aquatic invertebrate-feeding wildlife (i.e., bats and swallows) and soil ESLs for terrestrial plants, invertebrates, and terrestrial-feeding wildlife. The wildlife ESLs are protective of incidental soil/sediment ingestion and ingestion of food items. LANL derives both no-effect ESLs and low-effect ESLs. In the initial screen, the lowest no-effect soil/sediment ESL was used to identify COPECs and compute initial HQ estimates.

The COPECs identified for further quantitative assessment in soil/sediment include VOCs (acetone and PCE), SVOCs (benzo[b]fluoranthene), and metals (antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc).

- Section 7.2.3.5 below discusses the evaluation of the metal COPCs identified in soil/sediment.

The SLERA (**Appendix I**) provides a detailed description of the refined risk evaluation for seep/spring water that was performed for each ecological receptor of interest. These refined risk evaluations support the following risk conclusions:

- Exposures to soils/sediments will not result in unacceptable risks to wildlife or to domestic pets that incidentally ingest soil/sediment or feed on aquatic and terrestrial organisms.
- No unacceptable risks are expected for terrestrial plants from exposures to organic chemicals in soil.
- There is the potential for aquatic organisms to have unacceptable exposures due to PCE exposures in sediment within site seep/springs or aquatic features in residential yards (e.g., small ponds). However, these locations are unlikely to represent pristine natural aquatic habitats, and effects from any site-related exposures are likely to be minor.

No further evaluation of ecological exposures to site-related contaminants in sediment or soil is necessary.

7.2.3.4 Evaluation of Soil Gas

Wildlife inhalation exposures are usually considered to be minor in comparison to exposures from ingestion (EPA 2005b). However, for burrowing animals (e.g., rabbits), it is possible that animals could be exposed to relatively high concentrations of VOCs via inhalation if concentrations accumulate inside their burrows. Thus, exposure to soil gas was also evaluated quantitatively by using collected soil gas samples to estimate potential air concentrations that could be present inside underground burrows.

When performing the initial screen for ecological receptor exposures to soil gas, the exposure concentration was based on the maximum concentration of each analyte across all samples.

Toxicity data to assess inhalation exposures by wildlife is quite limited. The LANL ECORISK Database (LANL 2021) provides ecological screening level in air for a subset of VOCs. These screening levels are protective of burrowing mammal inhalation exposures and derived based on exposure assumptions for a Botta's pocket gopher. The no-effect ESLs for air were used to identify COPECs for soil gas.

Maximum soil gas concentrations of all chemicals are below their respective air-based ESVs; therefore, no COPECs were identified for further quantitative assessment in soil gas. These results show that inhalation of volatile chemicals in burrows is unlikely to result in unacceptable risks to burrowing animals.

No further evaluation of burrowing animal exposures to volatile chemicals is necessary for the site.

7.2.3.5 Evaluation of Metal COPECs

Metals are naturally present in the earth's crust and expected to be detected in water, soil, and sediment. Based on the site history, there is no expectation that elevated metal concentrations would be attributable to site-related impacts. Even so, in accordance with EPA guidance (EPA 2002), which states that COPECs that have both release-related and background-related sources should be included in the risk assessment, potential risks from exposures to metals are discussed in **Attachment I.1 and I.2** of **Appendix I** to inform risk management decisions, but metals were not retained for further characterization in the SLERA.

7.2.4 Uncertainty Assessment

There are a variety of sources of uncertainty in the SLERA that need to be evaluated and considered when making risk management decisions. The uncertainty assessment presented in the SLERA (see **Appendix I**) discusses the uncertainties associated with the HQ evaluations, including uncertainties that impact the exposure assessment, the toxicity assessment, and the risk characterization. Uncertainties can lead to either an overestimation or an underestimation of risk. However, because of the inherent conservatism in the derivation of many of the exposure estimates and toxicity values, risk estimates presented in the SLERA should generally be viewed as being more likely to be high than low. The conclusions presented in the SLERA should be viewed in light of these inherent uncertainties, and risk management decisions based on the risk assessment conclusions should be interpreted accordingly.

Section 8

Summary and Conclusions

The overall objectives of the RI were as follows:

- Identify the sources and release mechanisms of PCE at the site, and describe the nature and extent of site-related contaminants in soil, soil vapor, groundwater, and surface water.
- Evaluate the fate and transport of site-related chemicals in the environment at the site. This includes understanding the hydrogeologic features and natural attenuation processes that control contaminant fate and transport, as well as assessing the nature, extent, and strength of the source area.
- Estimate current and future potential risks to human health and the environment based on data collected during the RI and from previous investigations.

The following sections provide a summary of the RI results and describe how these objectives were met, present the site-related COCs and recommended preliminary remedial objectives, and provide recommendations for future activities.

8.1 Summary

8.1.1 Nature and Extent of Contamination

The dry-cleaning facility on the VAMC property that was operational in Building 7 from approximately 1976 through 1984 is the primary source of PCE through two potential release mechanisms: surface and near-surface releases of dry-cleaning condensate in the Building 6 and 7 area on the VAMC campus, and subsurface release through sanitary sewer line defects in the vicinity of Buildings 6 and 7 and in Sunnyside Park.

Infiltrating water has dispersed dissolved PCE through the vadose zone, which has migrated vertically as well as laterally to the west-northwest along clay layers and in perched groundwater. Volatilization of PCE from the dissolved phase has also led to formation of soil vapor PCE plumes in the vicinity of Buildings 6 and 7 and Sunnyside Park. The PCE plume is not present in the shallow or deep aquifer zones underlying Buildings 6 and 7 or the Sunnyside Park manhole potential release point. Dissolved PCE migrating through the vadose zone encountered perched groundwater and migrated to the west-northwest, before migrating downward and encountering the shallow aquifer west of Buildings 6 and 7 (in the vicinity of MW-01S, MW-02, and MW-03R) and in Sunnyside Park (in the vicinity of MW-04). Downward migration of PCE from the shallow aquifer to the deep aquifer has occurred in the vicinity of MW-03R. The primary contaminant in groundwater is PCE (maximum current concentrations of approximately 250 µg/L at MW-01S, MW-02, and MW-03R), with low concentrations of TCE (approximately 1 to 12 µg/L) present at a few wells because of localized areas of PCE degradation or possible non-VAMC sources.

The groundwater PCE plume migrates west along the direction of groundwater flow. The East Bench Fault Spur does not appear to be an impediment to groundwater flow and contaminant migration; however, to the west of the fault spur, changes in hydraulic conductivity and topography cause groundwater flow direction and the PCE groundwater plume to shift to the southwest. Between the East Bench Fault Spur and the East Bench Fault, topography and horizontal groundwater gradients begin to steepen significantly. Along the hillside between approximately 700 South and Michigan Avenue, shallow groundwater intersects the ground surface and seeps and springs are observed in an area referred to as the ESS area. The East Bench Fault is acting as a semipermeable barrier to flow. Groundwater flowing from the site is laterally restricted at this fault, with groundwater both flowing through the fault and mounding up at the eastern face of the fault. This mounding results in surface discharges to springs and seeps and flowing artesian wells just east of the fault. Both the shallow and deep portion of the shallow aquifer contribute to the surface water discharges observed in this area. In the ESS area, PCE and TCE volatilize from the shallow groundwater to the vadose zone, with the potential to enter structures via the vapor intrusion pathway.

The investigations completed during this RI have provided data to support evaluation of the sources and release mechanisms of PCE at the site, have identified and characterized sources of PCE in the vadose zone at Buildings 6 and 7 and Sunnyside Park, and have delineated the lateral and vertical extent of the COCs for the site in groundwater.

8.1.2 Fate and Transport

A groundwater flow and solute transport model was used to evaluate the historical transport of PCE from the suspected source areas on the VAMC campus and Sunnyside Park. The primary objectives of the groundwater modeling were to assess historical flow and transport pathways associated with nearby public supply and irrigation well pumping and to improve the understanding of the future fate and transport of the PCE plume under a range of potential hydrologic and hydraulic conditions. Historical transport simulations concluded that the PCE migration through the aquifer appears to be consistent with the observed site timeline, and the model was able to represent the existing PCE plume relatively well. Municipal pumping at SLC-18 was likely to have drawn low concentrations of PCE from a source on the VAMC campus via the deep aquifer zone, but pumping likely did not have a substantial effect on the shallow aquifer zone plume extent or transport. The historical transport simulations also indicate that a significant portion of the PCE mass in the shallow aquifer zone discharges to the springs in the ESS area. Modeling of future scenarios indicates that a return to historical average pumping at SLC-18 is likely to pull a small amount of PCE toward the well in the deep aquifer zone, with greater amounts of PCE transported to the well if pumping at SLC-18 or University of Utah irrigation wells is increased to greater than historical averages.

Trend analysis demonstrated that concentrations of PCE in groundwater are either decreasing or are stable throughout the plume, suggesting an ongoing source of PCE migrating from the vadose zone to groundwater is likely not present. The evaluation of mass discharge at multiple transects throughout the plume revealed that the lowest mass discharge measurement among the transects was along the Guardsman Way Transect (closest to the source area), suggesting that the remaining source strength is relatively weak.

The evaluation of lines of evidence supporting natural attenuation through chemical or biological processes (biodegradation, abiotic degradation) revealed these processes are likely not occurring at measurable rates. Physical attenuation processes, such as volatilization, discharge to surface, dispersion, and dilution, are likely contributing to the stable or reducing contaminant concentration trends observed at the site.

8.1.3 Risk Assessment

While the risk assessment evaluated exposures to all COPCs, only two volatiles are identified as being site-related COCs—PCE and TCE. Although 1,4-dioxane contributes to total indoor air risks at a few properties, detections of 1,4-dioxane in groundwater occur sporadically and are not correlated with the highest PCE concentrations at the site. Thus, the presence of 1,4-dioxane in indoor air is likely due to interior background sources; 1,4-dioxane should not be considered a COC for the site and further sampling for 1,4-dioxane is not necessary.

The risk evaluation showed that the following exposure scenarios would not result in unacceptable risks:

- Exposures to chemicals in soil, sediment, surface water (i.e., seeps/springs and daylighting groundwater), and outdoor air for all receptor populations and all exposure scenarios
- Residential and outdoor worker exposures to chemicals in shallow groundwater during digging activities, such as a resident digging in a garden or an outdoor maintenance worker performing sprinkler line maintenance
- Inhalation exposures to volatiles in irrigation water (derived from deep wells), based on the expectation that volatiles would rapidly dissipate in outdoor air
- Consumption of homegrown produce that has been irrigated with seep/spring water, because accumulation of PCE and its daughter products into homegrown produce is unlikely
- Construction worker exposures to volatiles in trench air derived from shallow groundwater and/or soil gas
- Student and teacher exposures to indoor air inside schools

The exposure scenarios which had potential to result in unacceptable risks are as follows:

- Exposures to chemicals in groundwater used for potable purposes in a hypothetical future scenario
- Current and future exposures to chemicals in indoor air in the ESS area because of volatilization from shallow groundwater and entering structures through the vapor intrusion pathway

Currently, there is no potable use of contaminated groundwater at the site. However, to inform risk management decisions, risk estimates were calculated for a hypothetical scenario in which deep groundwater is used as a potable source in the future. If contaminated site groundwater were used as a potable source in the future by residents, unacceptable exposures have the potential to occur primarily because of inhalation exposures during domestic water use (e.g., during showering) and ingestion of drinking water.

Indoor air samples have been collected from four on-site VAMC buildings, including Buildings 6 and 7, which are closest to the suspected PCE source location. Worker exposures to site-related COCs inside the VAMC buildings did not result in unacceptable risks. For Building 6, soil gas also represents an ongoing potential source of VI for this building; however, indoor sources of PCE and TCE (e.g., battery and brake cleaners and lubricants) were also present. The risk assessment indicates that while soil gas represents an ongoing source of vapor intrusion at Building 6, there is not an unacceptable human health risk to indoor workers at Building 6 because of site-related COCs (PCE and TCE). In Sunnyside Park, while a soil gas plume is present, PCE concentrations do not exceed the industrial RBSL and there are no overlying structures, meaning that the VI pathway is not complete in this area.

In the ESS area, the area of interest for soil gas and indoor air impacts is defined by the proximity to and the concentrations within the groundwater plume. The shallower the groundwater, the more readily VOCs can volatilize at atmospheric pressure and the shorter the pathway to enter the atmosphere or overlying structures. Therefore, the thickness of the soils above groundwater (depth to groundwater) is a contributing factor to VI. Also in the ESS area, contaminated groundwater daylights at the surface and is actively removed from basements using sumps or diverted from properties using French drains, water features, and constructed streams. In these cases, elevated concentrations of VOCs in indoor air can also result from intrusion of groundwater directly into homes.

The VI pathway is complete for some structures in the ESS area. The locations with exceedances of the RBSL are generally located in the vicinity of the intersection of 900 South and 1200 East, where groundwater becomes very shallow and discharges to the surface, the 50 µg/L PCE plume is present, and concentrations of PCE in soil gas exceed the residential RBSL. The risk assessment indicates that of the structures with indoor air data, only Property 0040-H (and possibly Property 0197-H) has indoor air concentrations that may result in unacceptable human health risk because of site-related impacts. Despite attempts to sample all residential properties within the ESS area where there is a higher potential for VI impacts, measured indoor air results are not available for all properties. Thus, it is also possible there could be a few properties within the ESS area that have not been sampled where vapor intrusion exposures may result in unacceptable risks.

8.2 Conclusions

Because of current unacceptable risks to residents in the ESS area due to exposure to groundwater through VI and hypothetical future unacceptable risks to residents if groundwater was used for potable purposes, further action is warranted. The data collected during the course of the RI are adequate to characterize the nature and extent of impacts at the site. The following sections outline recommended preliminary remedial action objectives (RAOs) to be used to aid in remedy alternative evaluation during the feasibility study and recommendations for data collection during subsequent phases of the project.

8.2.1 Recommended Preliminary Remedial Action Objectives

Based on the data collected during the RI and evaluated during the risk assessment, the following preliminary RAOs are recommended to be used during the feasibility study.

- Groundwater: mitigate human exposure to site-related COCs in groundwater used for potable purposes (e.g., showering, drinking) at concentrations exceeding protective levels under a future scenario
- Groundwater: reduce the mass of site-related COCs in groundwater such that concentrations remain below MCLs at municipal extraction well SLC-18 during pumping at its maximum allowable rate
- Indoor air: mitigate exposure of building occupants in the ESS area to site-related COCs in indoor air derived from the vapor intrusion pathway at concentrations exceeding protective levels
- Return the site to unlimited use/unrestricted exposure

These preliminary RAOs will be refined as necessary during identification of applicable or relevant and appropriate requirements during the feasibility study. Final RAOs will be presented in the record of decision for the site.

8.2.2 Recommendations for Future Work

Several additional data collection activities may be warranted to support remedial alternatives evaluation during the feasibility study and to evaluate additional structures in the ESS area for VI concerns.

- PCE transport from the shallow aquifer to the deep aquifer: The extent of elevated PCE concentrations in the upper portion of the deep aquifer zone is not well understood, particularly in the vicinity of MW-02 and MW-03R near the VAMC and MW-13L in the ESS area. Additional data regarding PCE concentrations in the upper portion of the deep aquifer could improve the understanding of PCE transport between the shallow and deep aquifer and the lateral extent of these impacts. Improved understanding of PCE extent and migration in these areas will permit development of robust remedial alternatives in the feasibility study to address the recommended preliminary RAOs for groundwater.
- Extent of VI in the ESS area: While there has been substantial outreach and attempts to gain access to structures in the ESS area, there are still structures that have not been sampled for indoor air. There may still be structures with an unacceptable risk because of the concentrations of PCE and TCE in indoor air resulting from vapor intrusion, based on the presence of these chemicals in shallow groundwater, surface water, and soil vapor. Continued outreach and attempts to gain access to unsampled structures in the ESS should occur, with a focus on the areas in the vicinity of the intersection of 900 South and 1200 East, where the greater than 50 μg/L PCE groundwater plume is present, where PCE or TCE in soil vapor exceed the residential RBSL, and where the depth to groundwater is 20 feet or less.

Section 9

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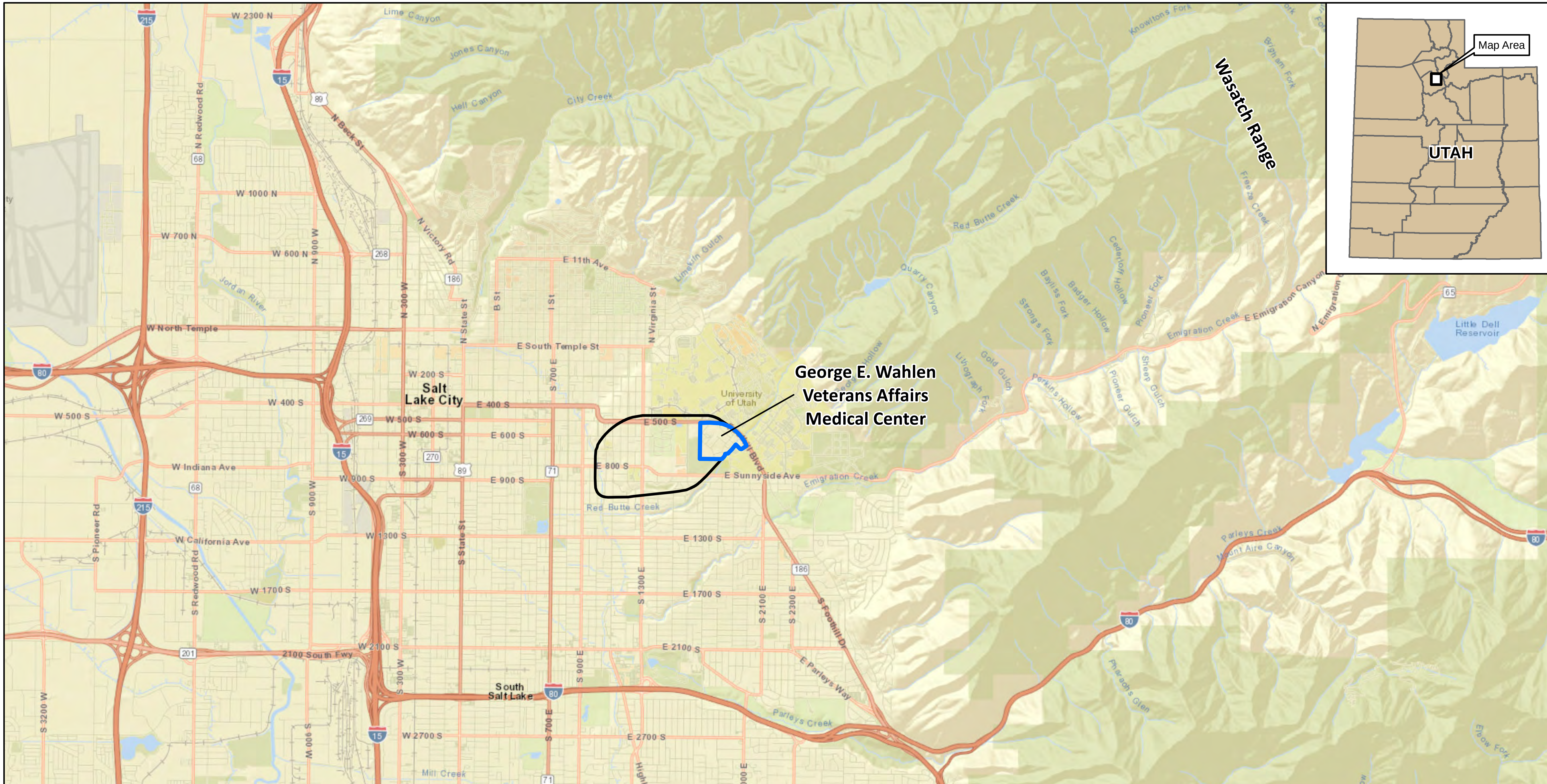
Figures



Legend

George E. Wahlen Veterans Affairs Medical Center Boundary

Study Area Boundary

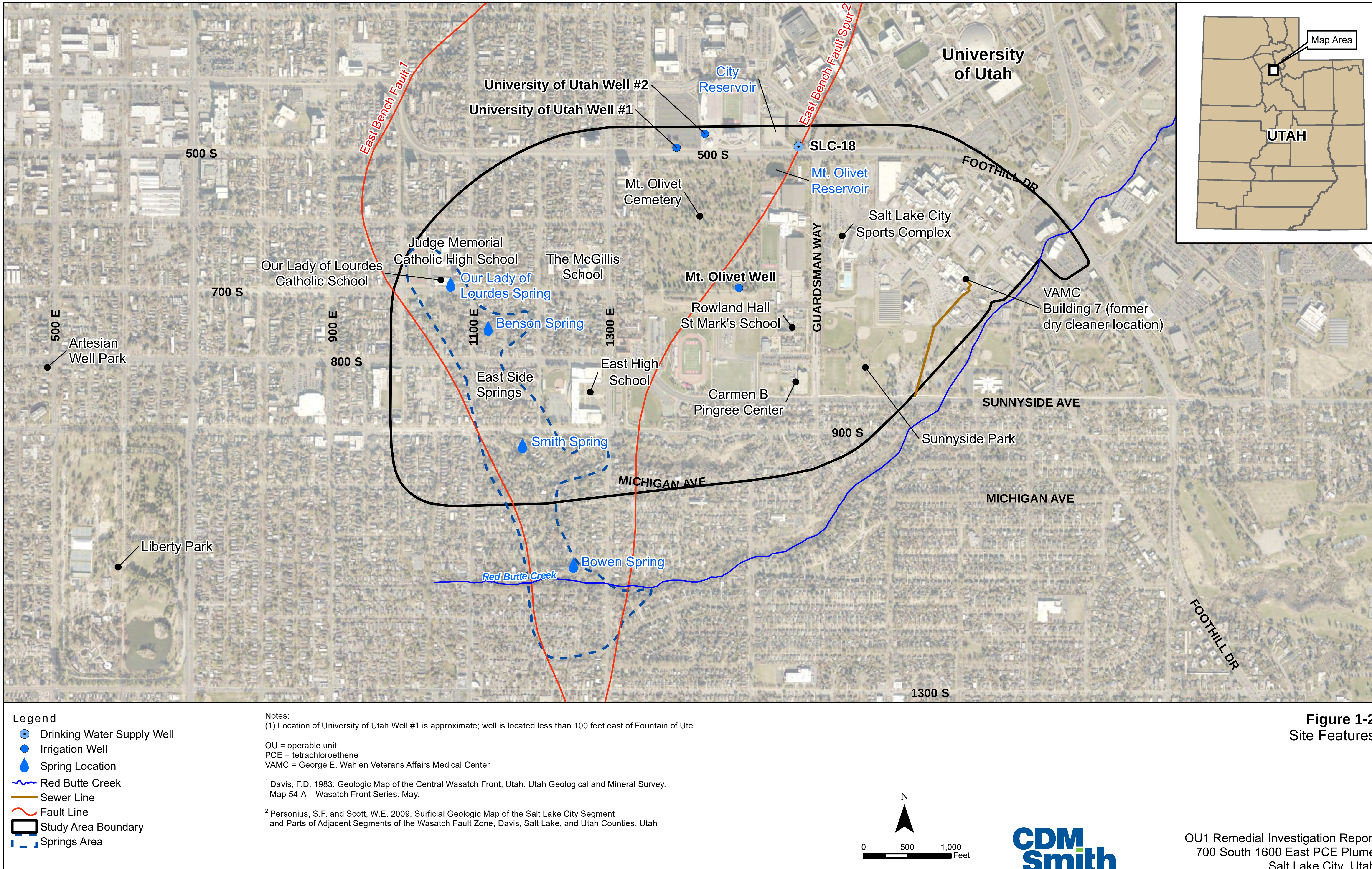
Notes:
OU = operable unit
PCE = tetrachloroethene

N

0 0.5 1 Miles

Figure 1-1
Site Location Map

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah



Notes:
(1) Location of University of Utah Well #1 is approximate; well is located less than 100 feet east of Fountain of Ute.

OU = operable unit
PCE = tetrachloroethene
VAMC = George E. Wahlen Veterans Affairs Medical Center

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

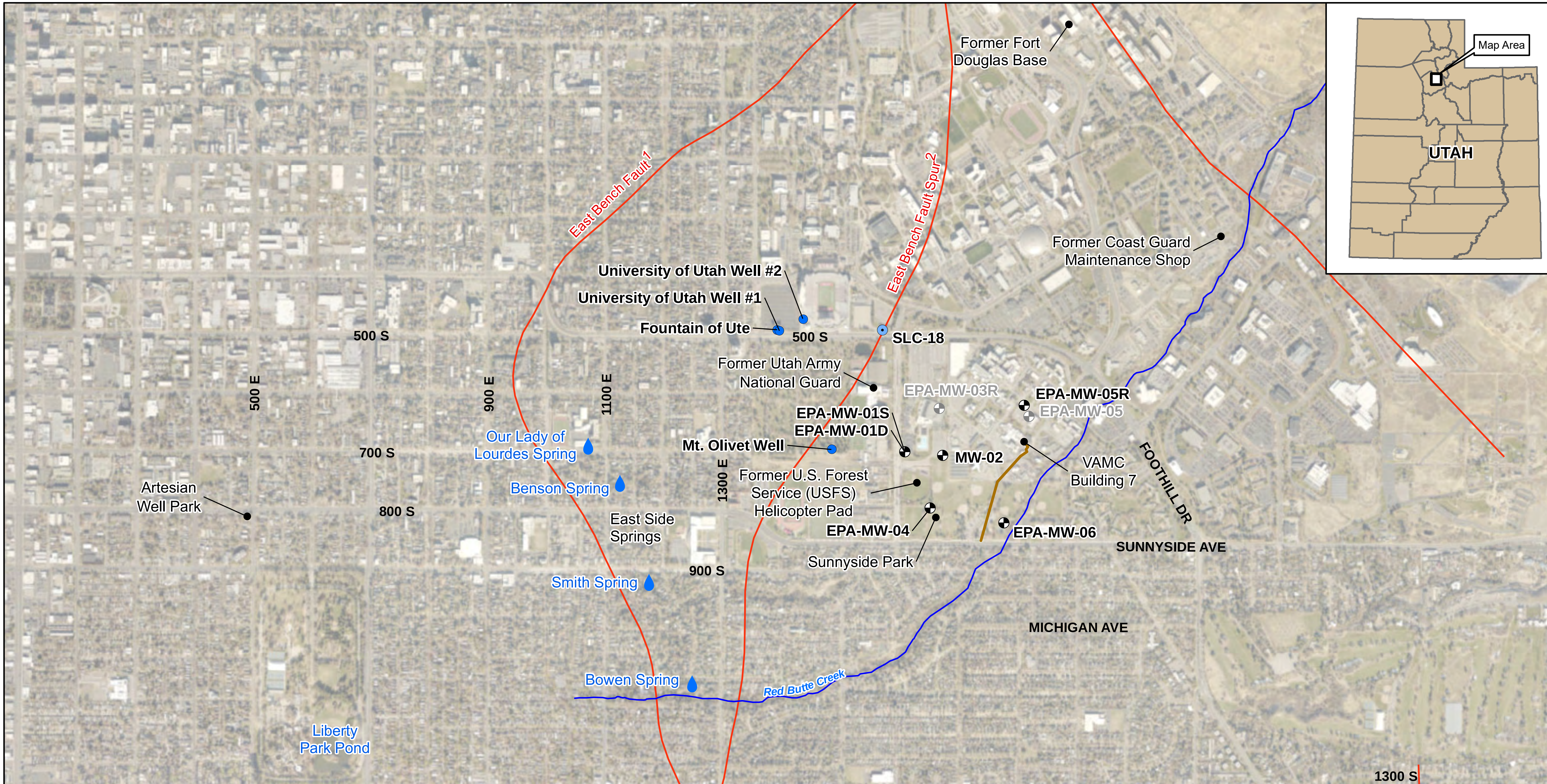
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

Figure 1-2
Site Features

CDM Smith

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig1-2_SiteFeatures.mxd WAGNERA 10/15/2021



Legend
- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Spring Location
- Red Butte Creek
- Sewer Line
- Fault Line

Notes:
(1) Location of University of Utah Well #1 is approximate; well is located less than 100 feet east of Fountain of Ute.

OU = operable unit
PCE = tetrachloroethene
VAMC = George E. Wahlen Veterans Affairs Medical Center

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

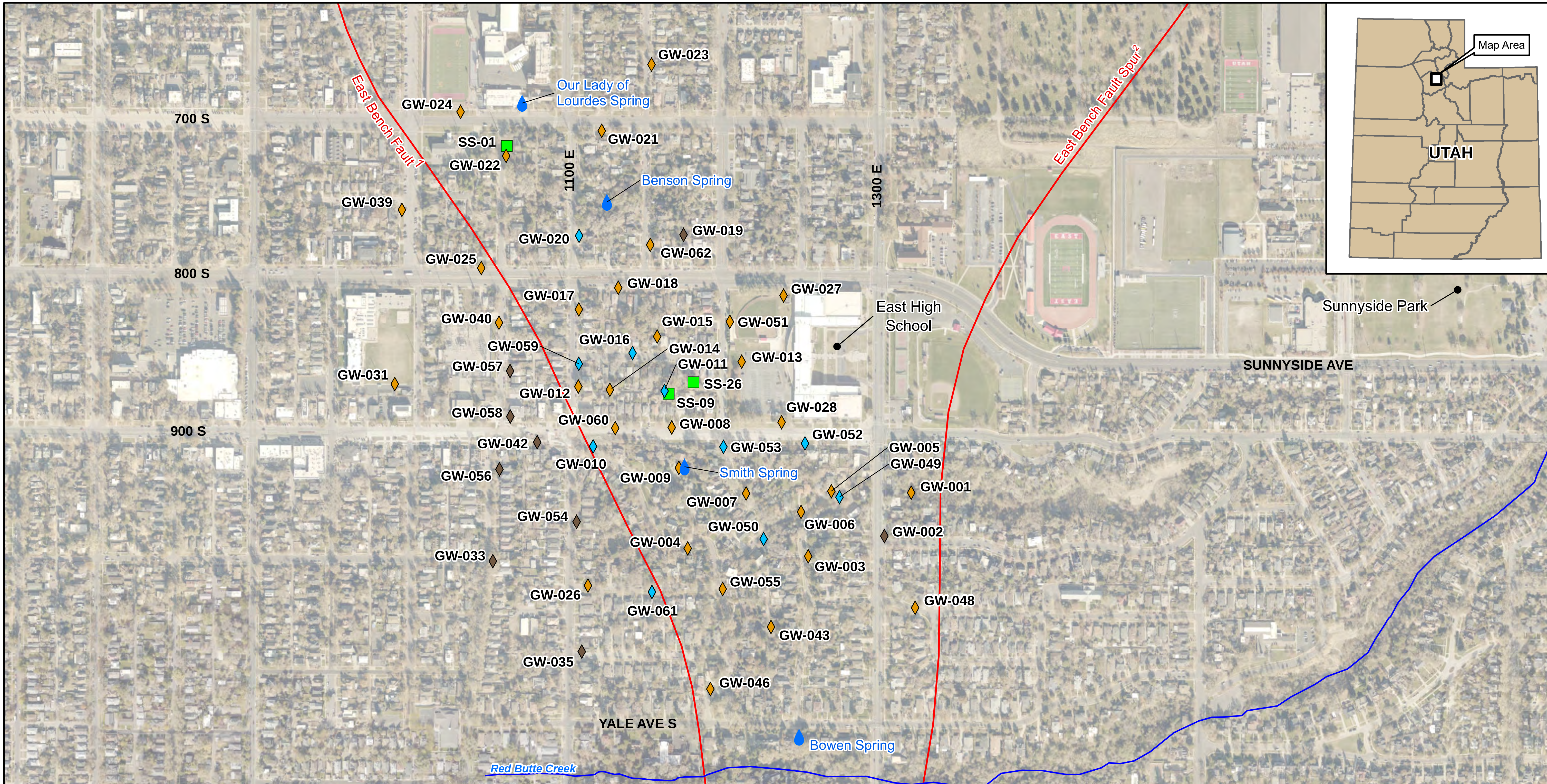
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

Figure 2-1
Historical Sampling Locations

CDM Smith

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig2-1_Historic_Sampling.mxd WAGNERA 9/23/2021



Legend

- Temporary Groundwater Monitoring Point
- Temporary Groundwater Monitoring Point/Piezometer
- Drilled to Refusal/No Groundwater
- Soil/Sediment Sampling Location
- Spring Location
- Landmark
- Red Butte Creek
- Fault Line

Notes:
GW = groundwater monitoring location
SS = soil/sediment sampling location

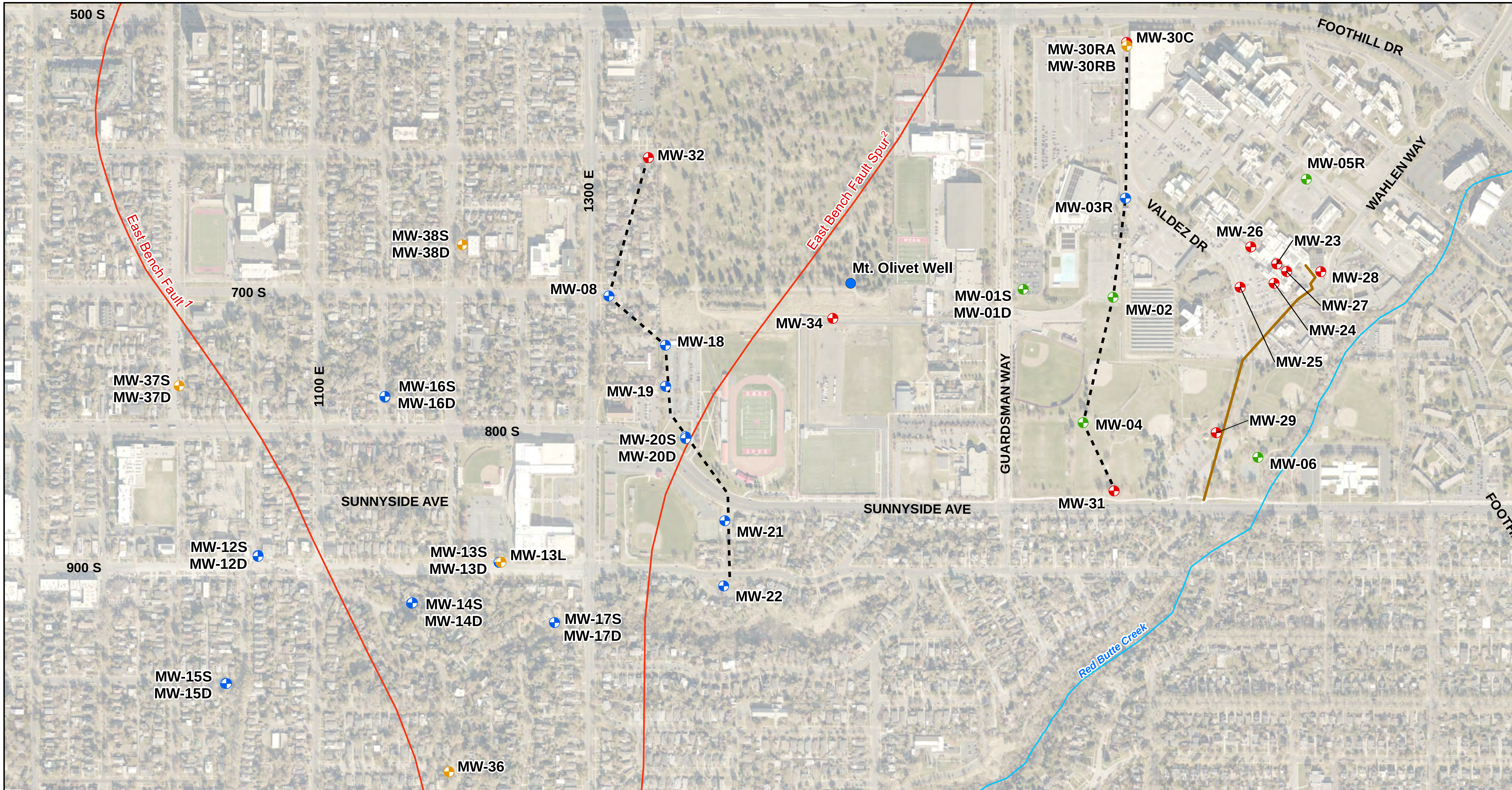
[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

CDM Smith

Figure 3-1
AOU1 Temporary Groundwater Monitoring Point and Piezometers and Soil/Sediment Sampling Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-1_Temp_GW_Monitoring.mxd WAGNERA 9/23/2021 5:29:11 PM



Legend

- Installed during pre-RI investigation activities
- Installed during OU2 investigation activities
- Installed during Phase 1 OU2 investigation activities
- Installed during Phase 2 OU1 investigation activities
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line
- Sewer Line

Notes
1. Location IDs MW-07, MW-09, MW-10 and MW-11 were not used. MW-33 and MW-35 were not installed.

OU = operable unit
RI = remedial investigation
PCE = tetrachloroethene
MW = monitoring well

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

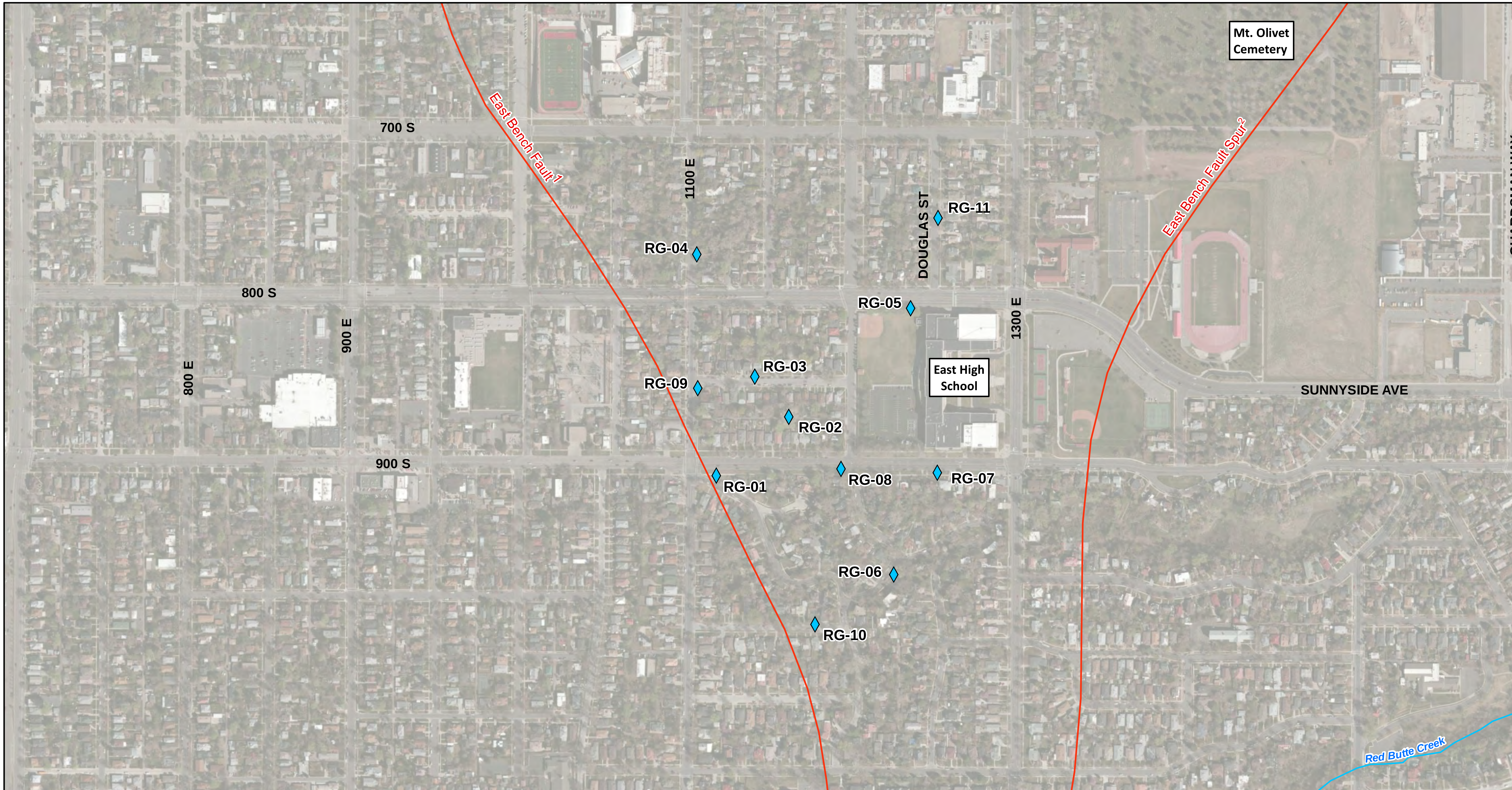
N S W E
0 250 500 Feet

CDM Smith

Figure 3-2
Monitoring Well Network

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-2_Monitoring_Well_Network.mxd WAGNERA 9/23/2021



Legend

Residential Groundwater Sampling Location

Red Butte Creek

Fault Line

Notes:
RG = residential groundwater sampling location
PCE = tetrachloroethene
OU = operable unit

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N
W E
S

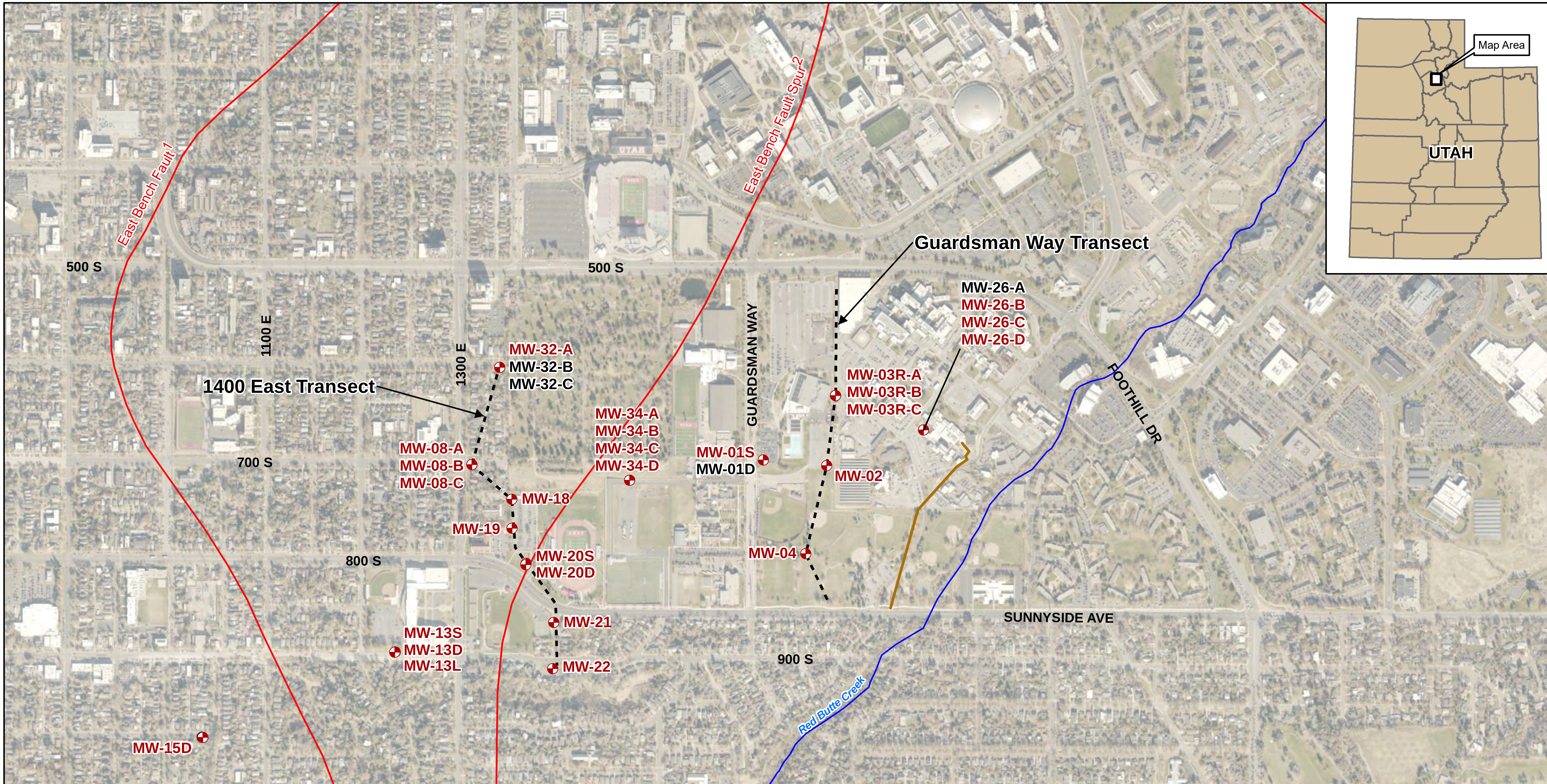
0 250 500 Feet

CDM Smith

Figure 3-3
Residential Groundwater
Sampling Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-3_Piezometer_Locations.mxd WAGNERA 9/23/2021



Legend

- Completed Slug Test Location
- Proposed Slug Test Location (unsuccessful)
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line
- Sewer Line

Notes:
OU = operable unit
PCE = tetrachloroethene

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N W E S

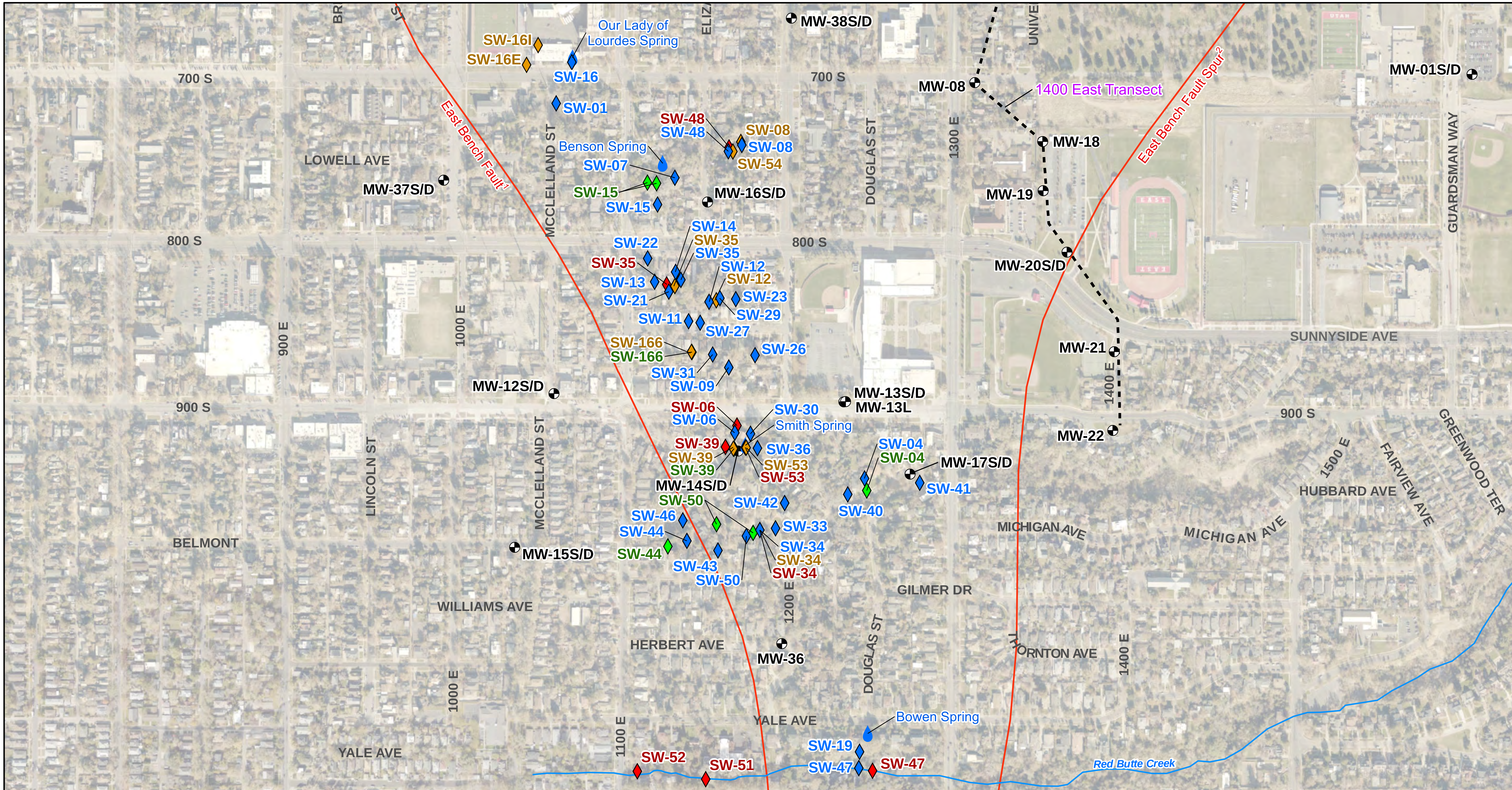
0 500 1,000 Feet

CDM Smith

Figure 3-4
Hydraulic Testing Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-4_Hydraulic_Testing.mxd WAGNERA 9/23/2021



Legend

- Monitoring Well

Surface Water Sampling Locations

- AOU1 Surface Water Sample
- OU2 Surface Water Sample
- Phase 1 OU2 Surface Water Sample
- Phase 2 OU1 Surface Water Sample
- Spring Location
- Red Butte Creek
- Fault Line
- Transect Line

Notes:
SW = surface water sampling location
OU = operable unit
AOU = accelerated operable unit
PCE = tetrachloroethene

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N S E W

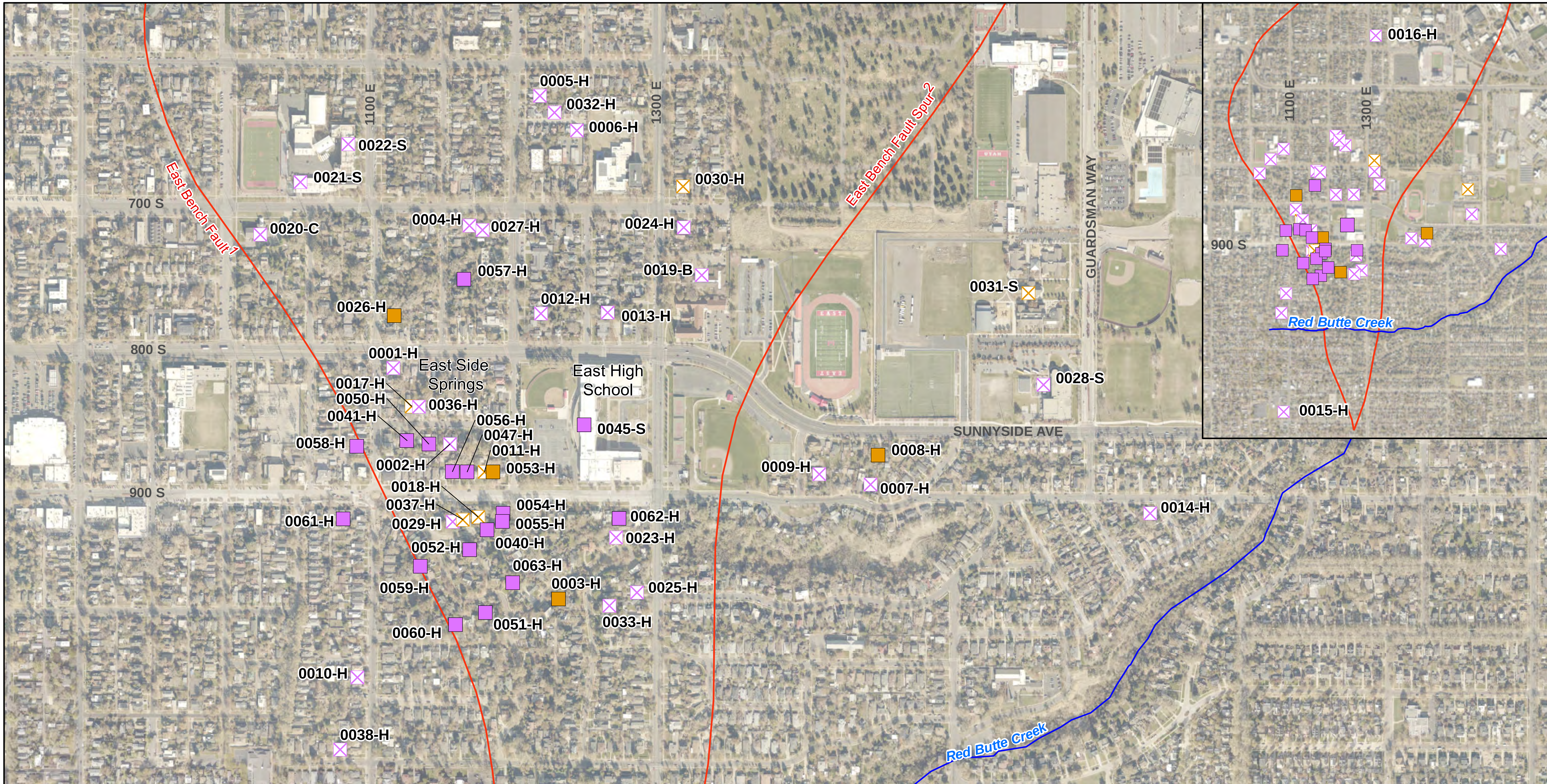
0 250 500 Feet

CDM Smith

Figure 3-5
Surface Water Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-5_SW_Locations.mxd WAGNERA 9/24/2021



Legend

Soil Gas Analysis Location and Method

- HAPSITE
- TO-15/HAPSITE
- Qualified 2015 Data
- Streams
- Fault Line

Notes:

1. Soil gas samples were collected between April 8th, 2015 and April 5th, 2017, using both a HAPSITE® for field screening and SUMMA® Canister for TO-15 laboratory analysis.

OU = operable unit
PCE = tetrachloroethene

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N

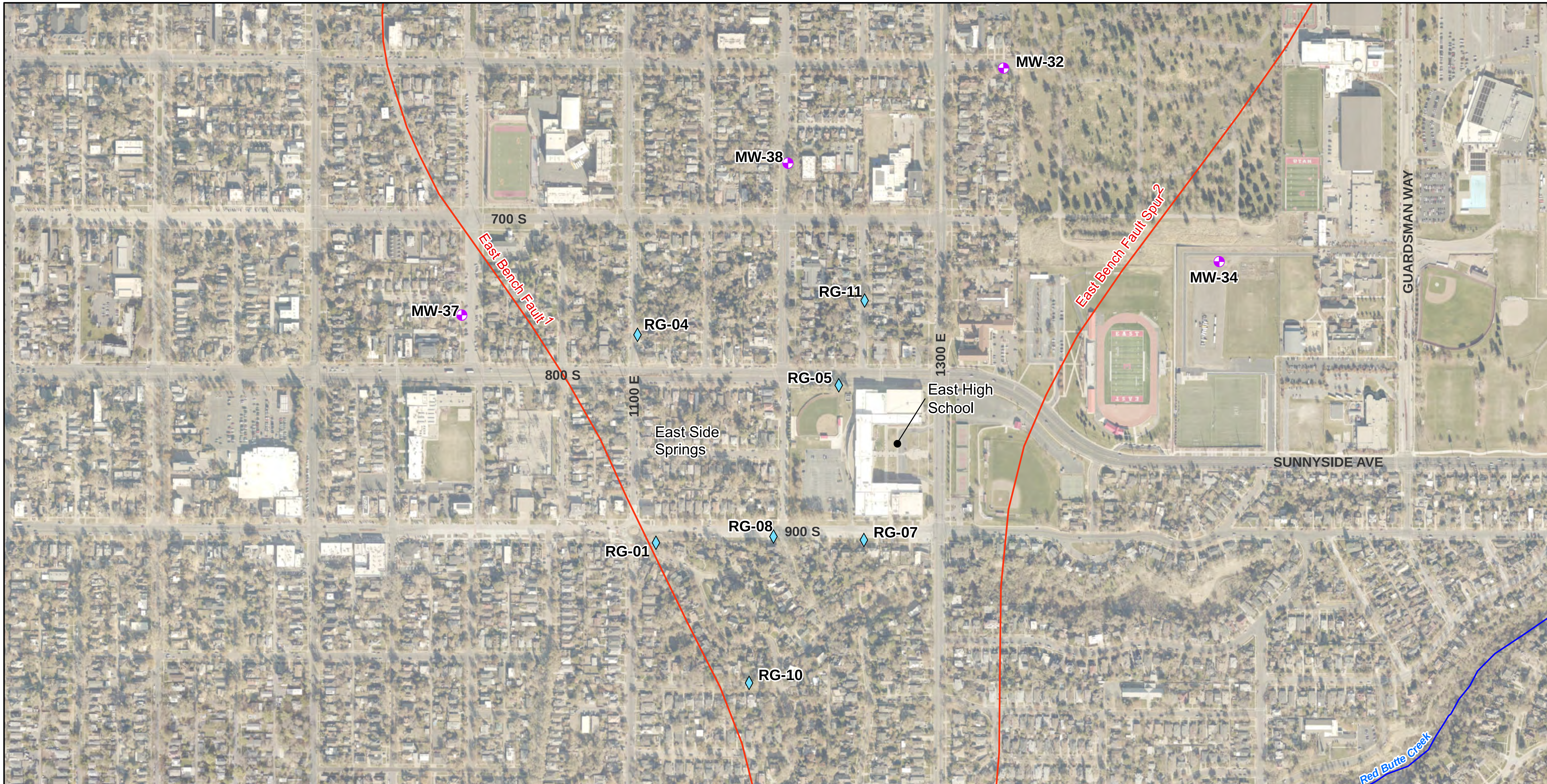
0 250 500 Feet

Figure 3-6
AOU1 East Side Springs Soil Gas Sampling Locations

CDM Smith

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-6_ESS_SoilGas_AOU1.mxd WAGNERA 7/11/2022



Legend
- Monitoring Well with Soil Vapor Probe
- Residential Groundwater Sampling Location with Soil Vapor Probe
- Landmark
- Red Butte Creek
- Fault Line

Notes:
OU = operable unit
PCE = tetrachloroethene
RG = residential groundwater sampling location with soil vapor probe
MW = monitoring well

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

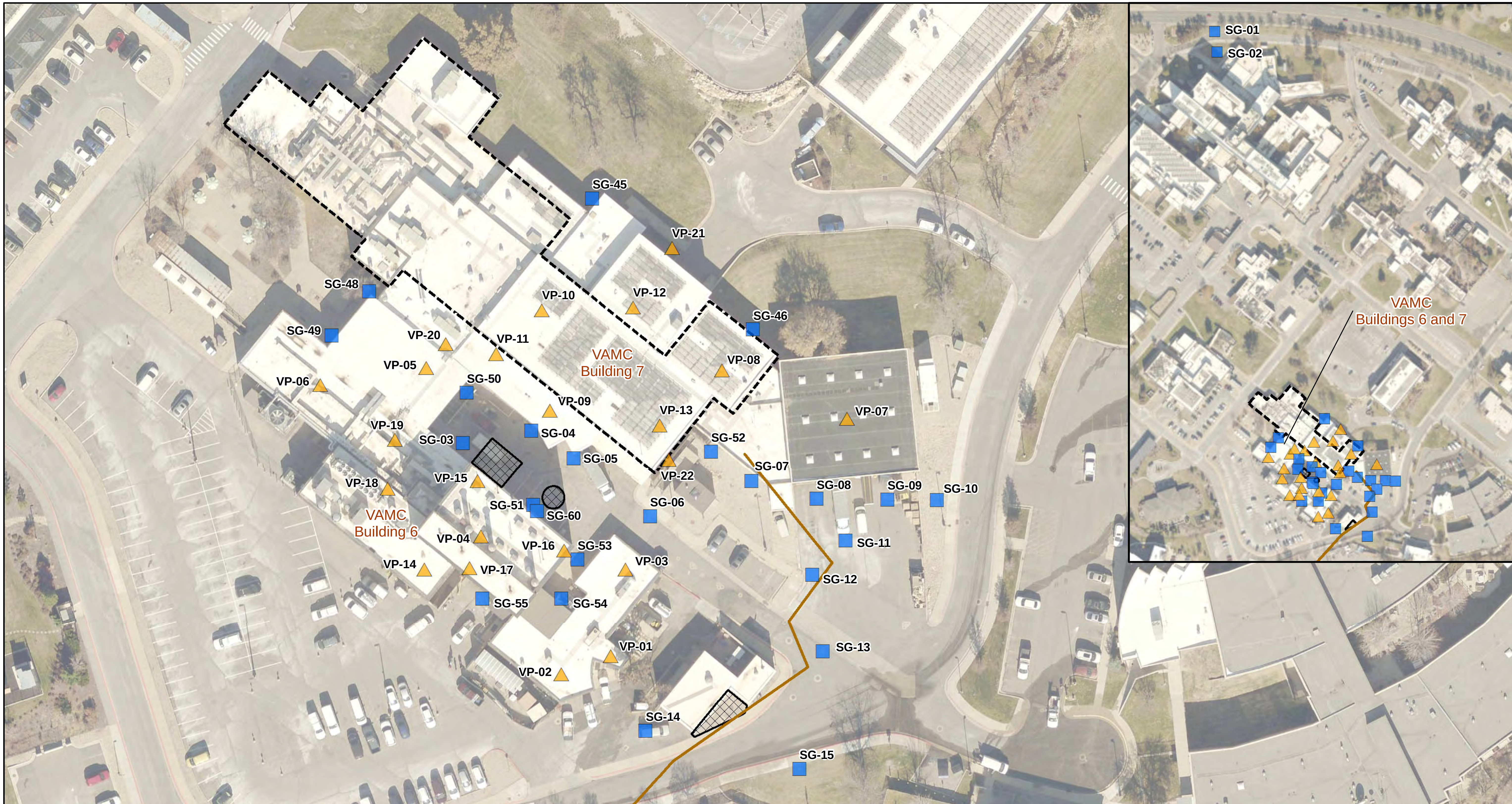
N
0 250 500 Feet

CDM Smith

Figure 3-7
OU1 East Side Springs Soil Gas Sampling Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-7_ESS_SoilGas_OU1.mxd WAGNERA 9/24/2021



Legend
- Soil Vapor Probe
- Vapor Pin
- Sewer Line
- Perimeter of Building 7 in 1981
- Underground Storage Tank or Foundation

Notes:
Soil gas probe SG-16 was not installed.

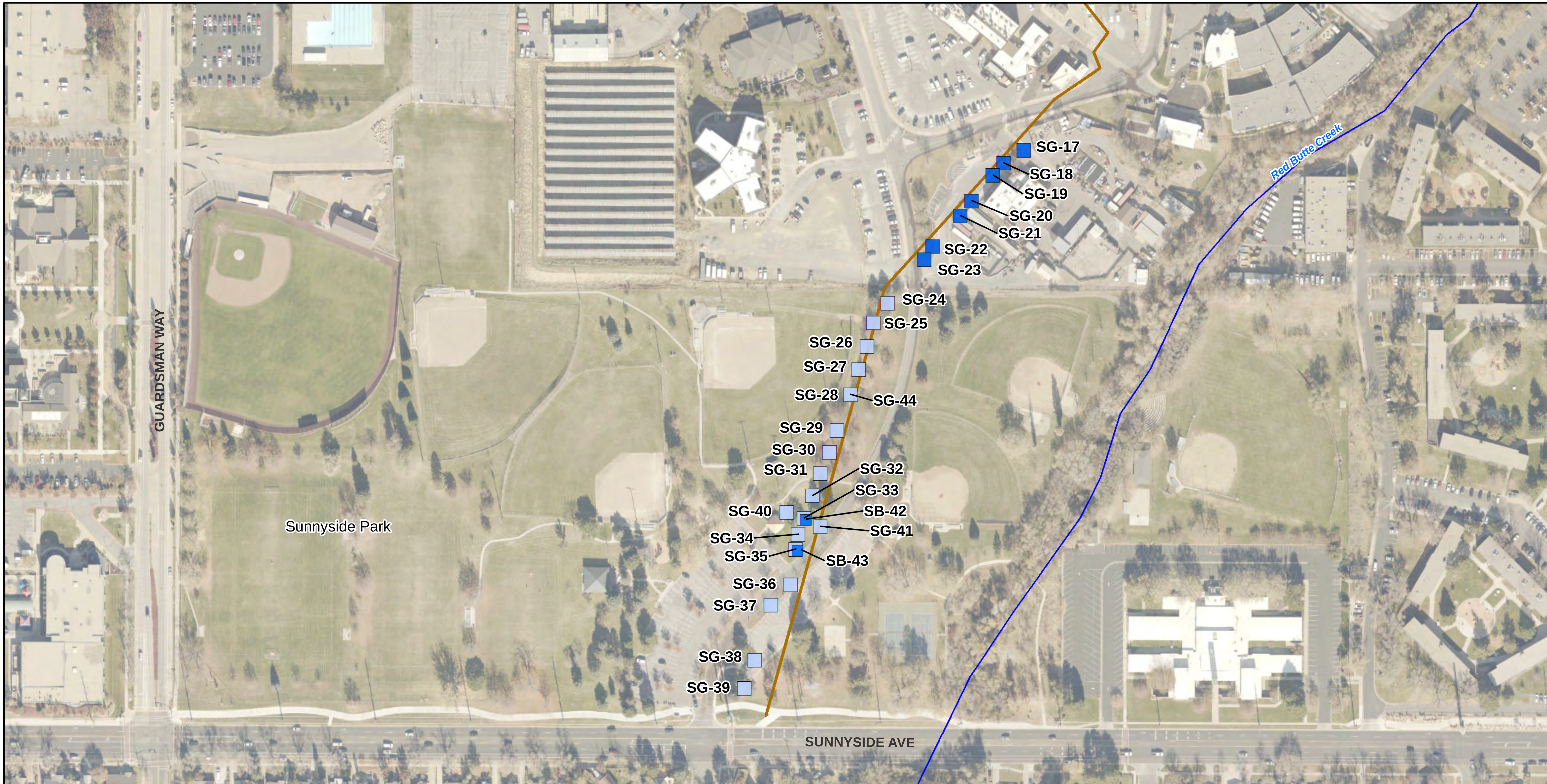
SG = soil gas probe
VP = vapor pin. Locations for vapor pins are approximate.
VAMC = George E. Wahlen Veterans Affairs Medical Center
PCE = tetrachloroethene
OU = operable unit

CDM Smith

Figure 3-8
OU2 Source Area Soil Gas
Sampling Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-8_SourceArea_SoilGas_OU2.mxd WAGNERA 8/20/2021



Legend

- Soil Vapor Probe
- Soil Vapor Probe Abandoned After Sampling
- Red Butte Creek
- Sewer Line

Notes:
1. Soil gas probe SG-16 was not installed.

OU = operable unit
PCE = tetrachloroethene

N

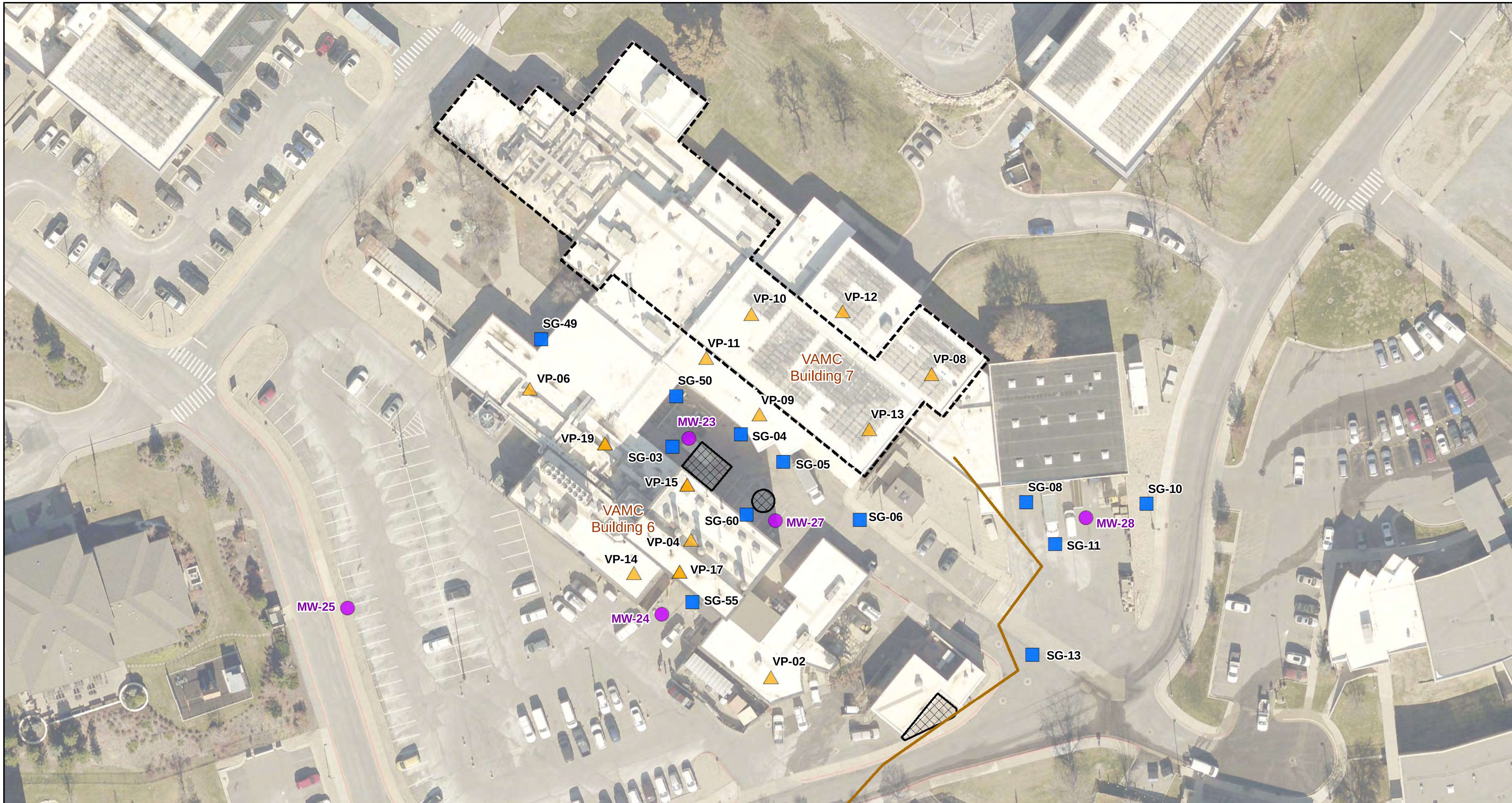
0 200 400 Feet

CDM Smith

Figure 3-9
OU2 Sunnyside Park Soil Gas Sampling Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-9_Sunnyside_SoilGas_OU2.mxd WAGNERA 8/20/2021



- Monitoring Well with Soil Vapor Probe
- Soil Vapor Probe
- Vapor Pin
- Sewer Line
- Perimeter of Building 7 in 1981
- Underground Storage Tank or Foundation

Notes:
SG = soil gas probe
VP = vapor pin. Locations for vapor pins are approximate.
VAMC = George E. Wahlen Veterans Affairs Medical Center
PCE = tetrachloroethene
OU = operable unit

N

0 25 50 Feet

CDM Smith

Figure 3-10
OU1 Source Area Soil Gas Sampling Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

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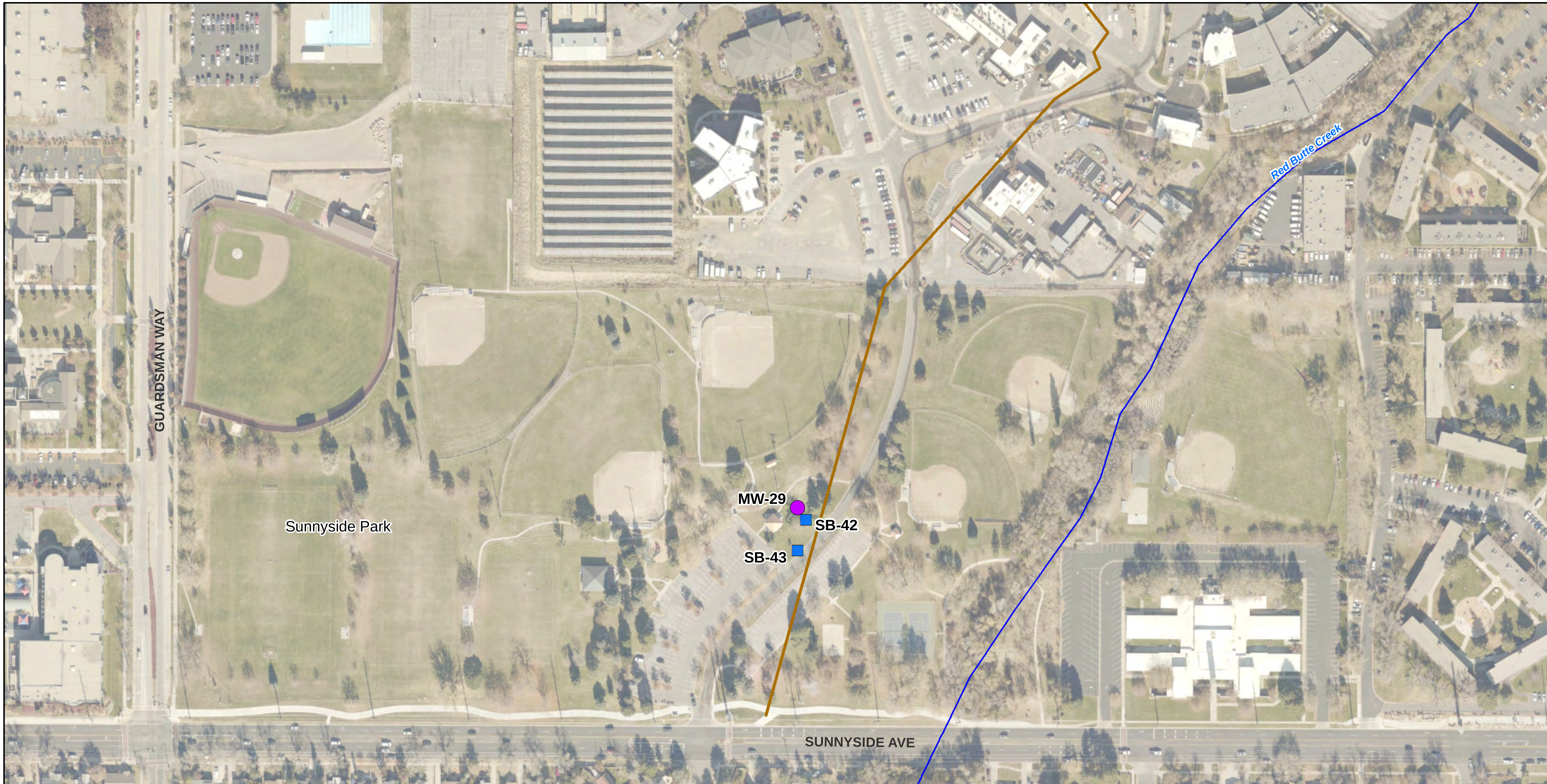


Legend
- Monitoring Well with Soil Vapor Probe
- Multi-Depth Soil Vapor Probe
- Red Butte Creek
- Sewer Line

Notes:
OU = operable unit
PCE = tetrachloroethene

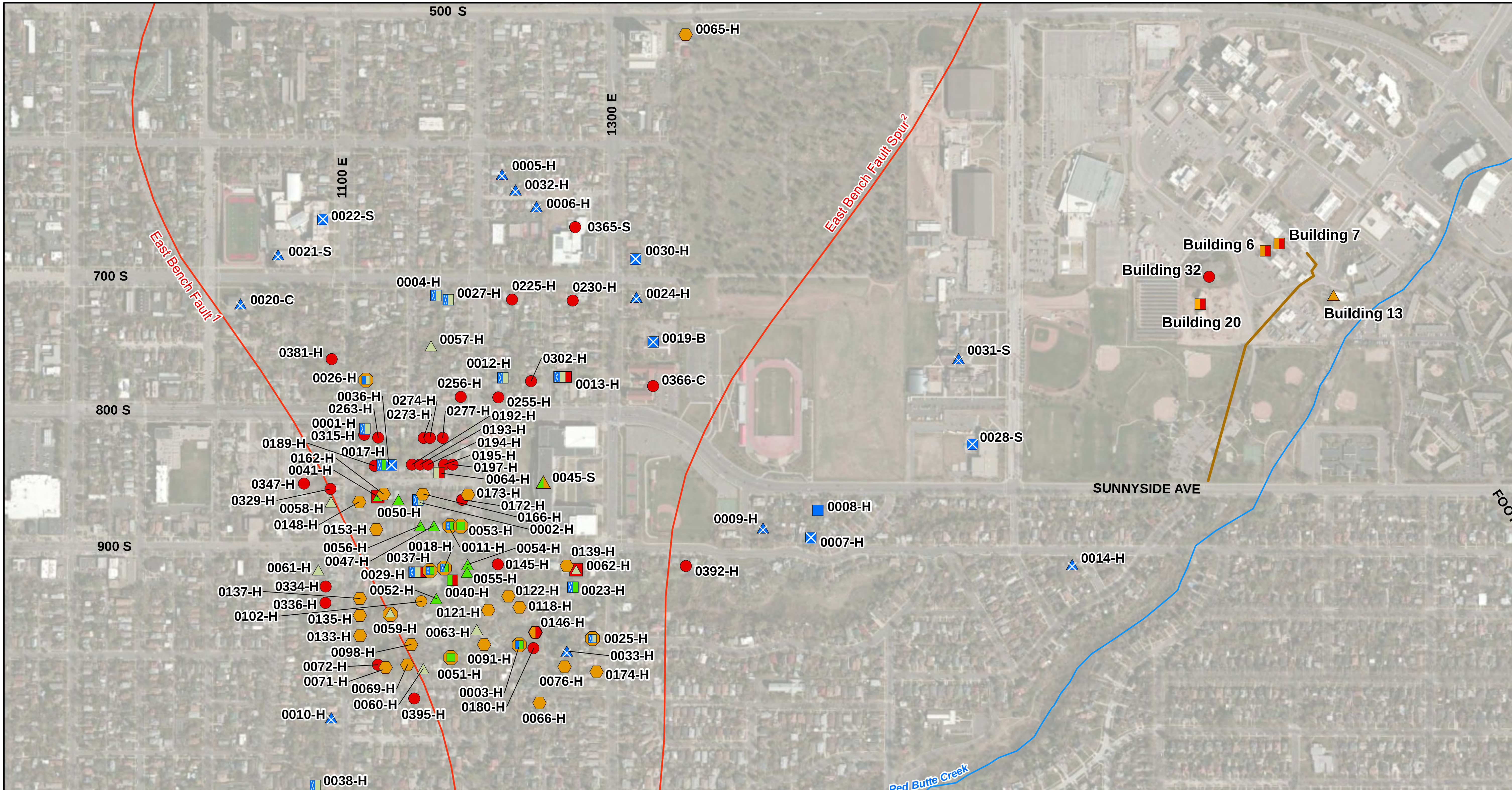
Figure 3-11
OU1 Sunnyside Park Soil Gas Sampling Locations

N
0 200 400 Feet

CDM Smith

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-11_Sunnyside_SoilGas_OU1.mxd WAGNERA 8/20/2021



Legend
- Red Butte Creek
- Fault Line
- Sewer Line

Sample Analysis
- HAPSITE only
- SUMMA only
- HAPSITE and SUMMA
- HAPSITE, SUMMA, and Passive Sampler

Sampling Event
- 2015 (AOU1)
- Qualified 2015 Data
- 2016 (AOU1)
- 2017 (AOU1)
- 2018 (OU2)
- 2019-2021 (Phase 1 OU2)
- 2021-2022 (Phase 2 OU1)

Notes
OU = operable unit
AOU = accelerated operable unit
PCE = tetrachloroethene

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

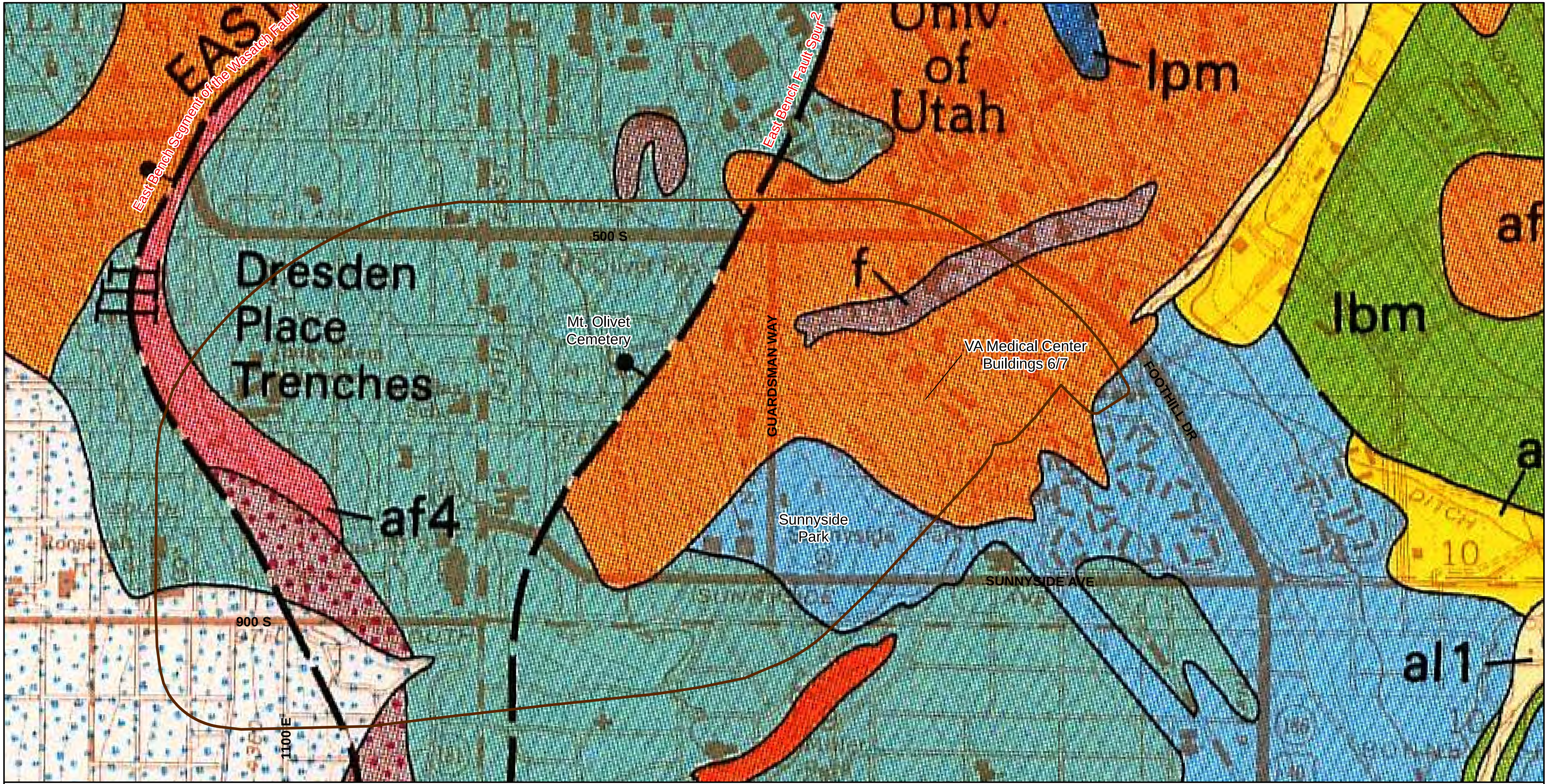
N
0 250 500 Feet

Figure 3-12
Indoor Air Sample Locations and Types

CDM Smith

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig3-12_Indoor_Air_Samples.mxd WAGNERA 7/11/2022/>



laly	Lacustrine, marsh, and alluvial deposits (Holocene to uppermost Pleistocene)	al1	Stream alluvium 1 (upper Holocene)	ca	Colluvium and alluvium, undivided (Holocene to middle Pleistocene)
lpg	Lacustrine sand and gravel related to regressive phase (uppermost Pleistocene)	alp	Stream alluvium related to regressive phase (uppermost Pleistocene)	f	Manmade fill (historic)
lpm	Lacustrine clay and silt related to regressive phase (uppermost Pleistocene)	af2	Fan alluvium 2 (middle Holocene to uppermost Pleistocene)		Fault Line
lbm	Lacustrine clay and silt related to transgressive phase (upper Pleistocene)	afb	Fan alluvium related to transgressive phase (upper Pleistocene)		Study Area Boundary
lbpm	Lacustrine clay and silt, undivided (uppermost Pleistocene)	af4	Fan alluvium 4 (upper middle Pleistocene)		

U.S. Geological Survey Miscellaneous Investigations Series Map I-2106, 1992.

N

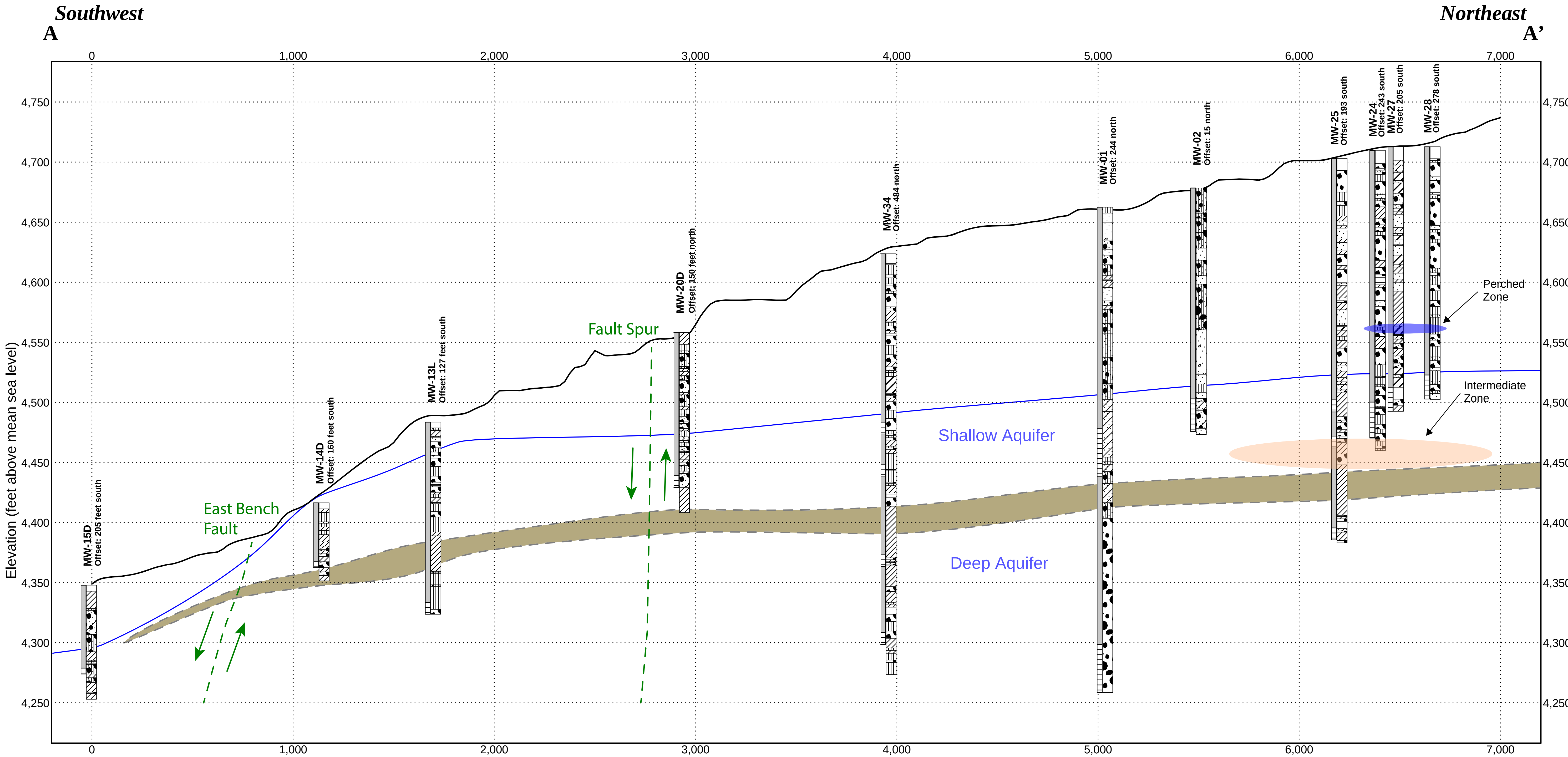
0 500 1,000 Feet

CDM Smith

Figure 4-1
Geologic Map

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: C:\Users\wagnera\Desktop\Fig4-1_Geologic_Map.mxd WAGNERA 5/10/2021



Stratigraphy

USCS Silt	USCS Well-graded Sand	USCS Well-graded Gravel	USCS Clayey Gravel
USCS Silty Gravel	USCS Low Plasticity Clay	USCS Poorly-graded Sand	USCS Silty Sand
USCS Clayey Sand	USCS Poorly-graded Gravel	USCS Well-graded Sand with Silt	USCS High Plasticity Clay

Well Construction Schematic

Casing

Screened Interval

Semi-Confining Unit

Fault

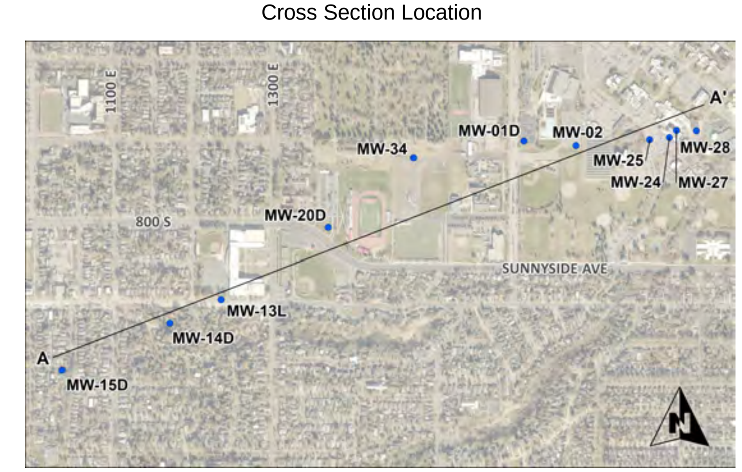
Groundwater Elevation (3/15/21)

Perched Zone

Indicates direction of movement

Intermediate Zone

Cross Section Location



0 502

Horizontal Scale (feet)

Vertical Scale (feet) 0 84

Vertical Exaggeration: 6x

Figure 4-2
Geologic Cross Section

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

CDM Smith

CAYUGA CROSS SECTION 1-1 SLC VA PLUME SCTN_061021_JCM.GPJ SLC VA PLUME DRAFT_031121.GPJ 6/10/21 REV.

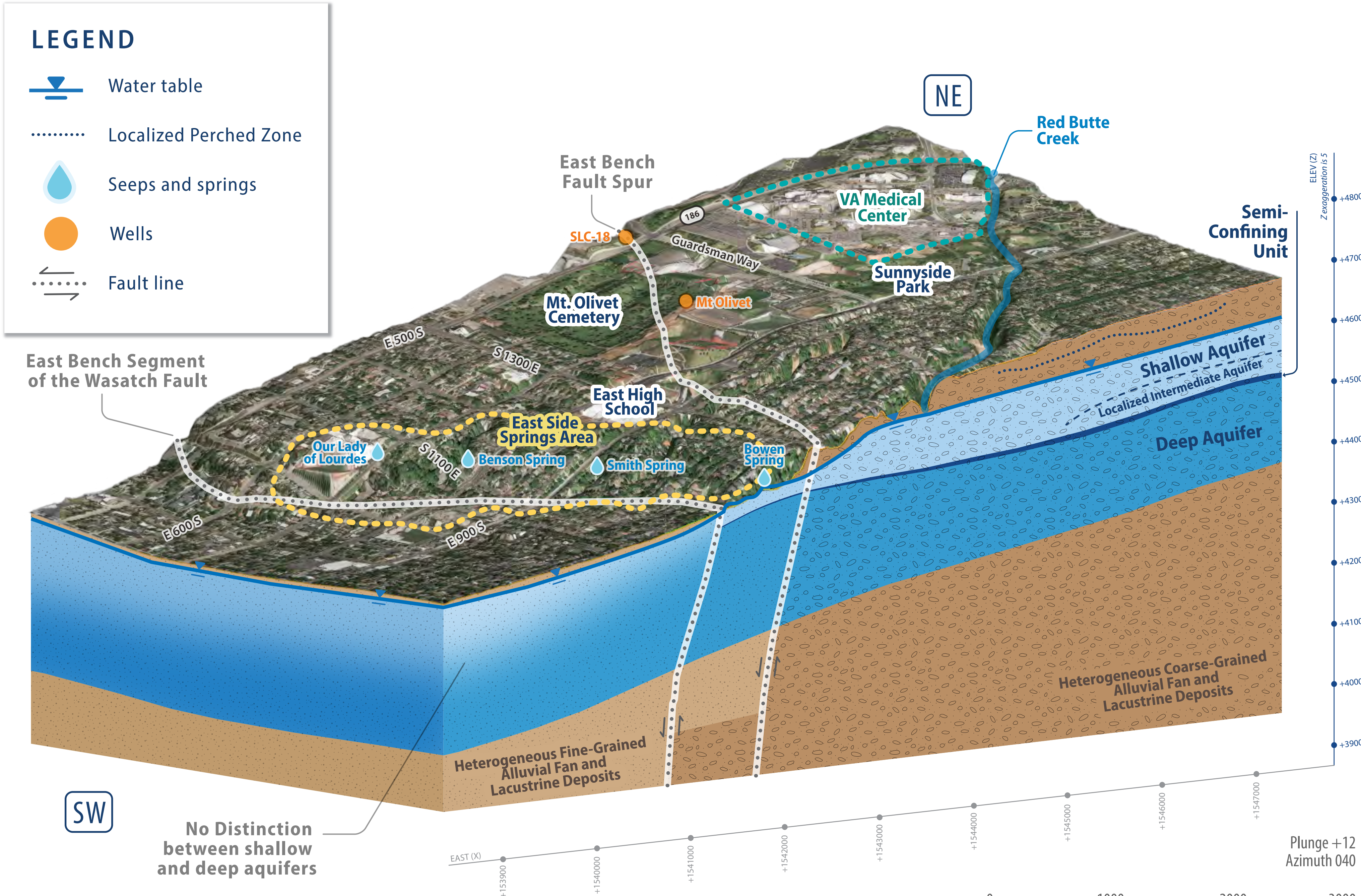
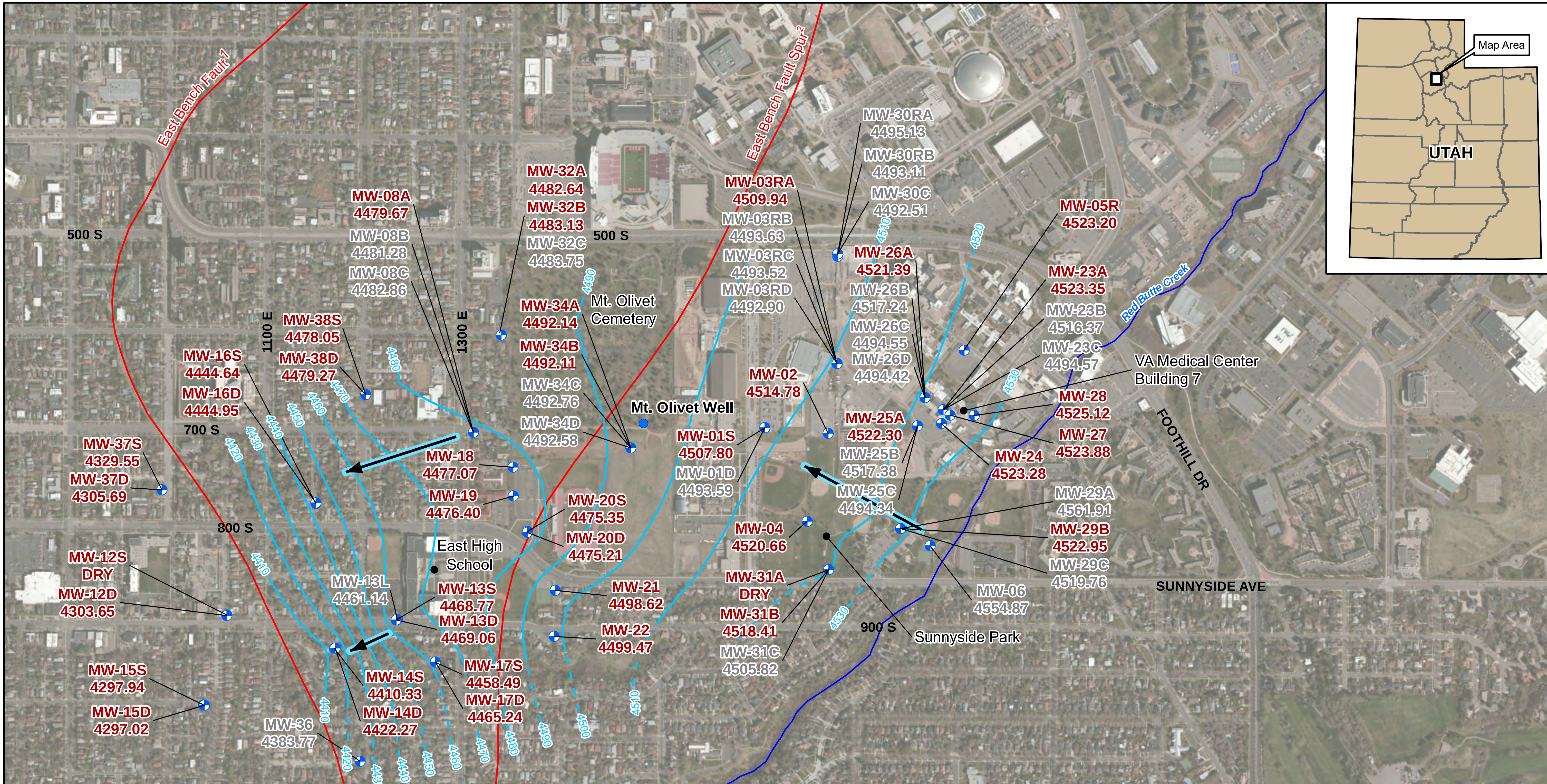


Figure 4-3
Conceptual Diagram of Topography, Surface Features, Geology, and Hydrogeology



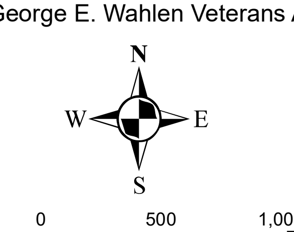
Legend

- Monitoring Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Groundwater Contour
- Dashed Line - Inferred Extent
- Groundwater Flow Direction

Notes:
1. All ground surface elevations in feet amsl
2. Measurements taken December 6th through 8th 2020.
3. Water levels shown in grey were not used for the generation of the potentiometric contours and are shown for information only
4. Water level values for MW-14S/D and MW-17S/D were averaged during contouring.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

amsl = above mean sea level
OU = operable unit
VAMC = George E. Wahlen Veterans Affairs Medical Center

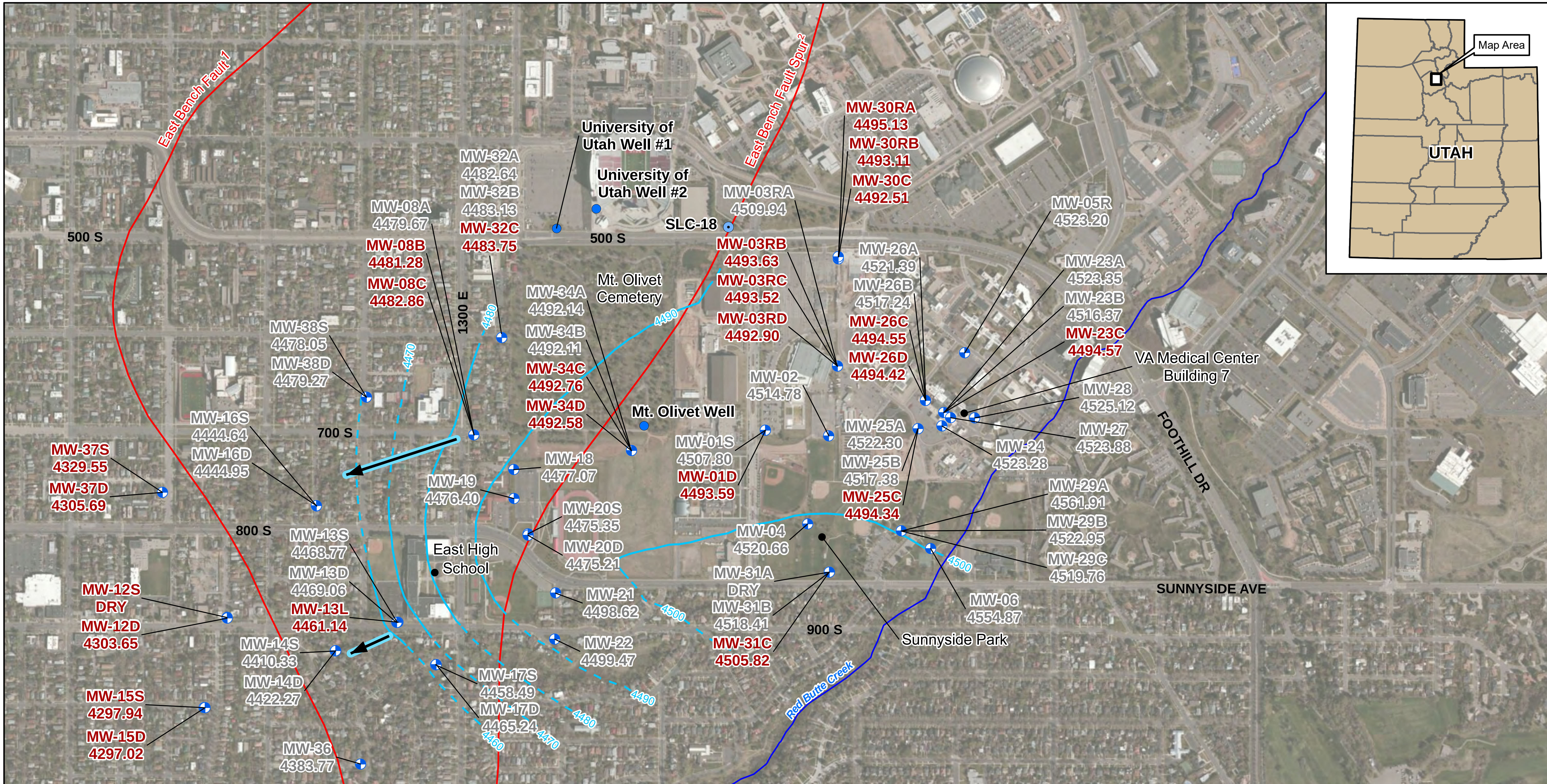


CDM Smith

Figure 4-4
Potentiometric Groundwater Surface Map - Shallow Aquifer

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig4-4_GW_Shallow_Aquifer.mxd WAGNERA 9/24/2021 8:41:23 AM



Legend
- Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Groundwater Contour

Dashed Line - Inferred Extent
- Groundwater Flow Direction

Notes:
1. All ground surface elevations in feet amsl
2. Measurements taken December 6th through 8th 2020.
3. Water levels shown in grey were not used for the generation of the potentiometric contours and are shown for information only

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

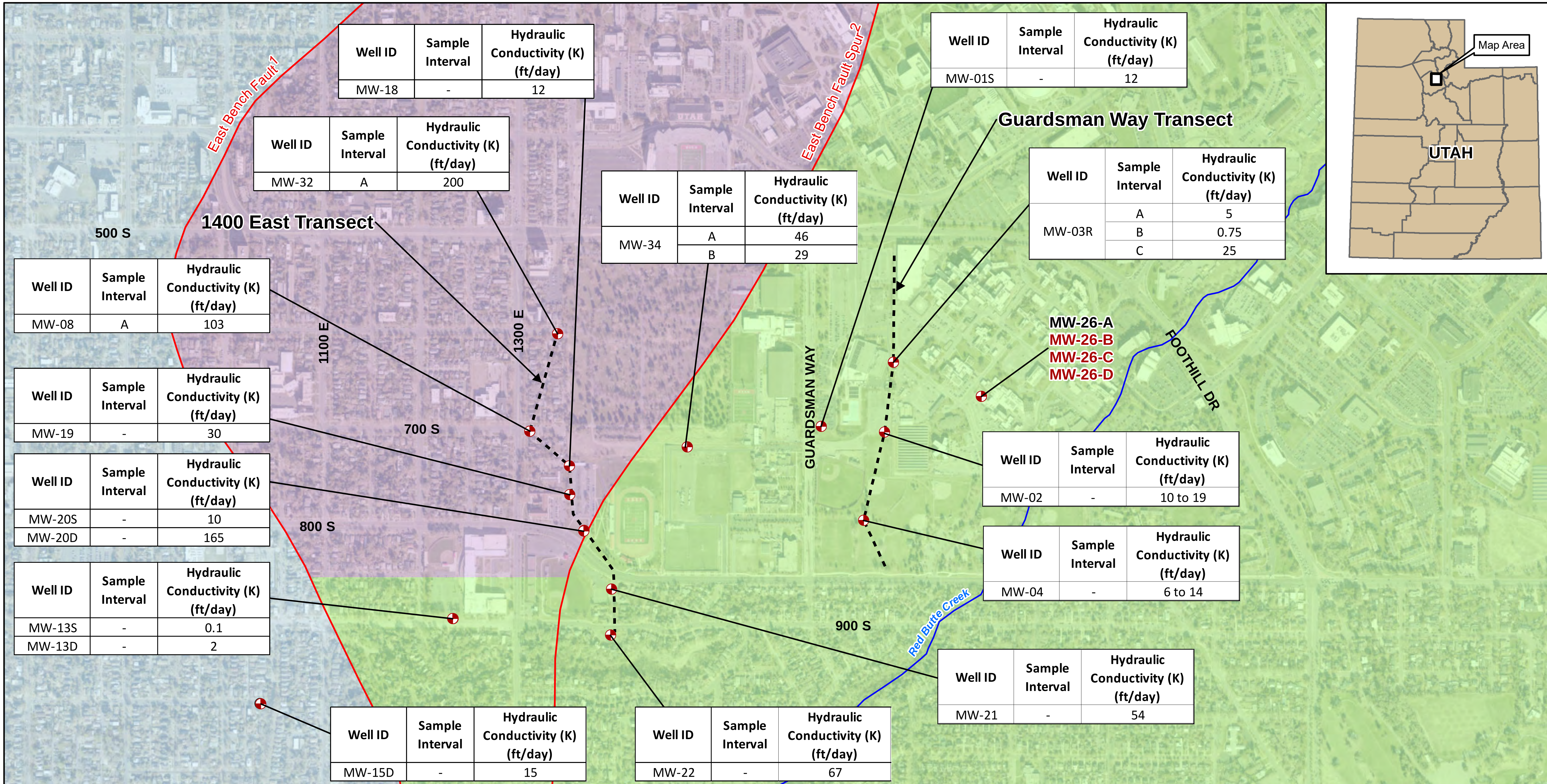
amsl = above mean sea level
OU = operable unit
VAMC = George E. Wahlen Veterans Affairs Medical Center

CDM Smith

Figure 4-5
Potentiometric Groundwater Surface Map - Deep Aquifer

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig4-5_GW_Deep_Aquifer.mxd WAGNERA 9/24/2021 8:51:43 AM



Legend

- Completed Slug Test Location
- Proposed Slug Test Location (unsuccessful)
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

Horizontal Hydraulic Conductivity (feet/day)

- 5
- 15
- 50

Notes:
[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

OU = operable unit
PCE = tetrachloroethene

N W E S

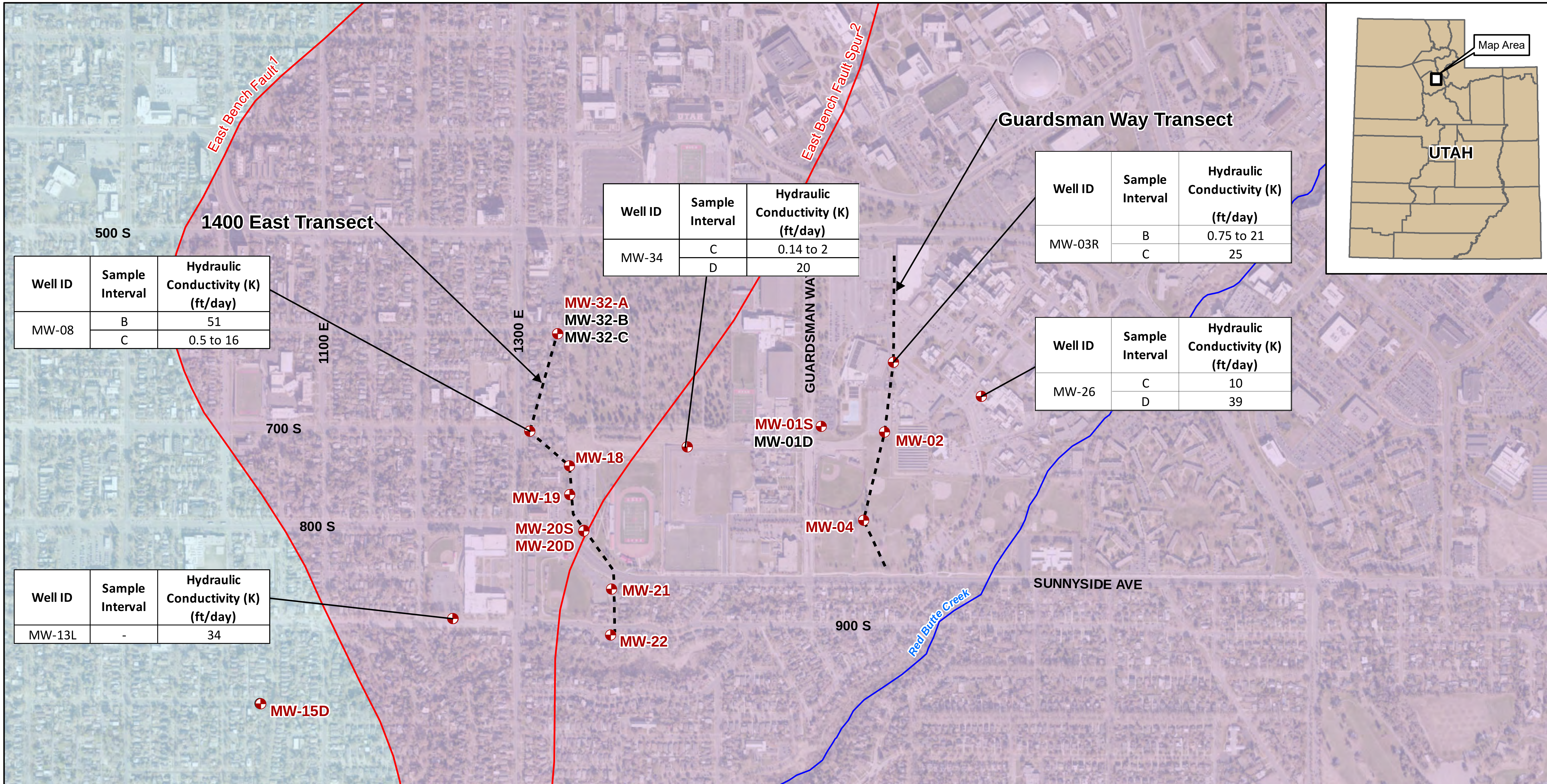
0 500 1,000 Feet

CDM Smith

Figure 4-6
Hydraulic Conductivity in the Shallow Aquifer from Slug Tests

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig4-6_Hydraulic_Conductivity_Shallow.mxd WAGNERA 9/24/2021



Well ID	Sample Interval	Hydraulic Conductivity (K) (ft/day)
MW-08	B	51
	C	0.5 to 16

Well ID	Sample Interval	Hydraulic Conductivity (K) (ft/day)
MW-34	C	0.14 to 2
	D	20

Well ID	Sample Interval	Hydraulic Conductivity (K) (ft/day)
MW-03R	B	0.75 to 21
	C	25

Well ID	Sample Interval	Hydraulic Conductivity (K) (ft/day)
MW-26	C	10
	D	39

Well ID	Sample Interval	Hydraulic Conductivity (K) (ft/day)
MW-13L	-	34

Legend
- Completed Slug Test Location
- Proposed Slug Test Location (unsuccessful)
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

Horizontal Hydraulic Conductivity (feet/day)
- 15
- 45

Notes:
[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

OU = operable unit
PCE = tetrachloroethene

N W E S

0 500 1,000 Feet

CDM Smith

Figure 4-7
Hydraulic Conductivity in the Deep Aquifer from Slug Tests

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig4-7_Hydraulic_Conductivity_Deep.mxd WAGNERA 9/24/2021

Legend

- Soil Sample Location
- Sediment Sample Location
- Red Butte Creek
- Sewer Line
- Fault Line

Notes:
OU = operable unit
RI = remedial investigation
PCE = tetrachloroethene
MW = monitoring well
SG = soil gas

N W E S

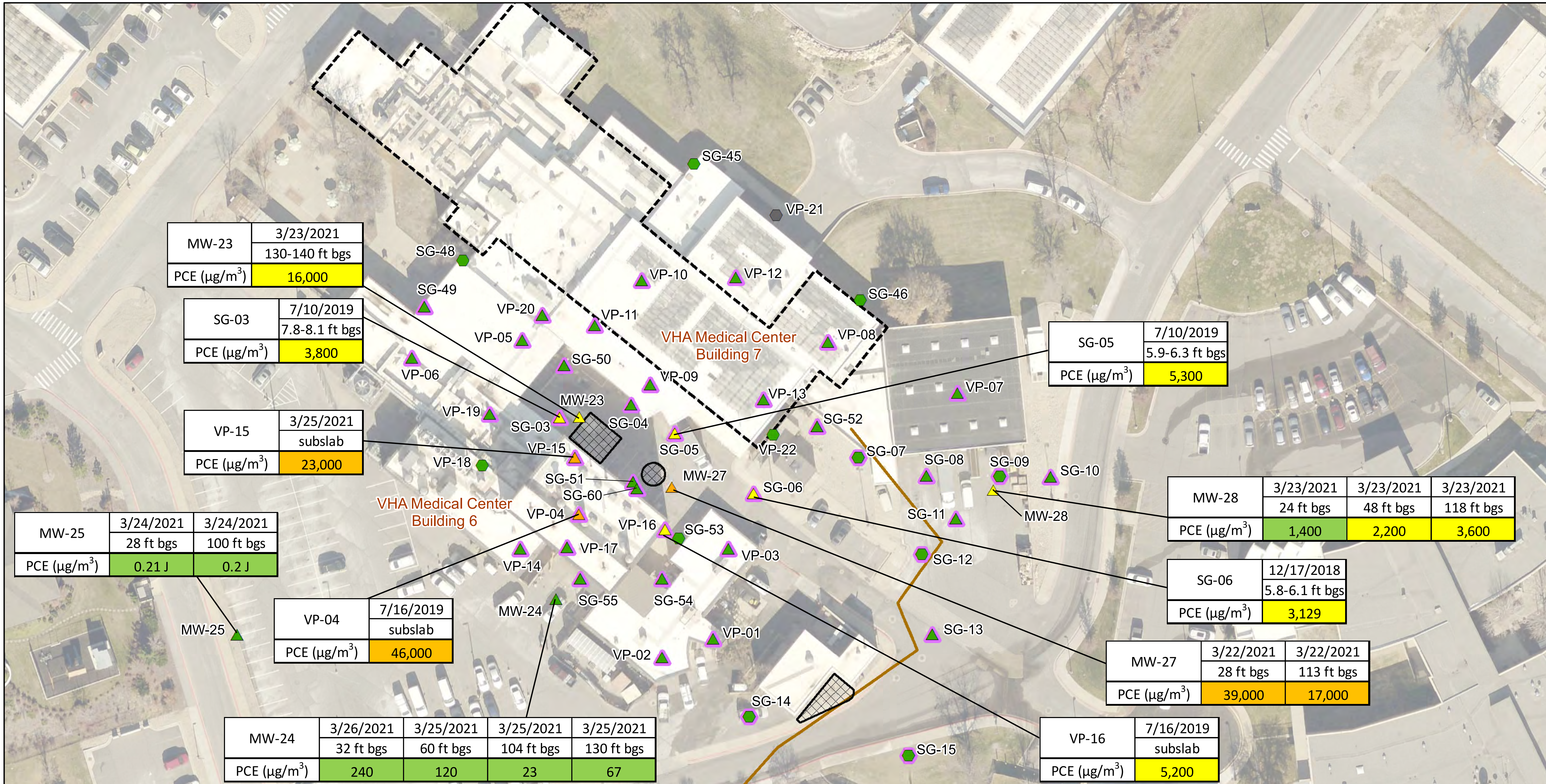
0 200 400 Feet

CDM Smith

Figure 5-1
Soil Sample Locations

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-1_Soil_Samples.mxd WAGNERA 8/3/2021



Legend

Soil Gas Sample Analysis

- △ SUMMA
- ⬡ HAPSITE
- ○ Multiple sampling events at locations
- Sewer Line
- Perimeter of Building 7 in
- Underground Storage Tank or Foundation

PCE Concentration (µg/m³)

- = Non-detect
- = < Industrial RBSL
- = > Industrial RBSL
- = > 10X Industrial Soil Gas RBSL

Industrial Soil Gas RBSL: 1,600 µg/m³

Notes:
1. The color coded concentrations are based on the highest historical detection reported.
2. Soil gas RBSL is the EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1x10-6 and a hazard quotient of 1 divided by an attenuation factor of 0.03 (November 2020 RSL table version). RBSLs are used in this figure for evaluation of PCE concentrations near suspected source areas, and not for assessment of vapor intrusion risk.
3. Result tables are only presented for locations with multiple sampling depths or where a RBSL was exceeded.

OU = operable unit
PCE = tetrachloroethene
RBSL = risk based screening level
µg/m³ = micrograms per cubic meter
ft bgs = feet below ground surface
J = result is estimated

N S E W

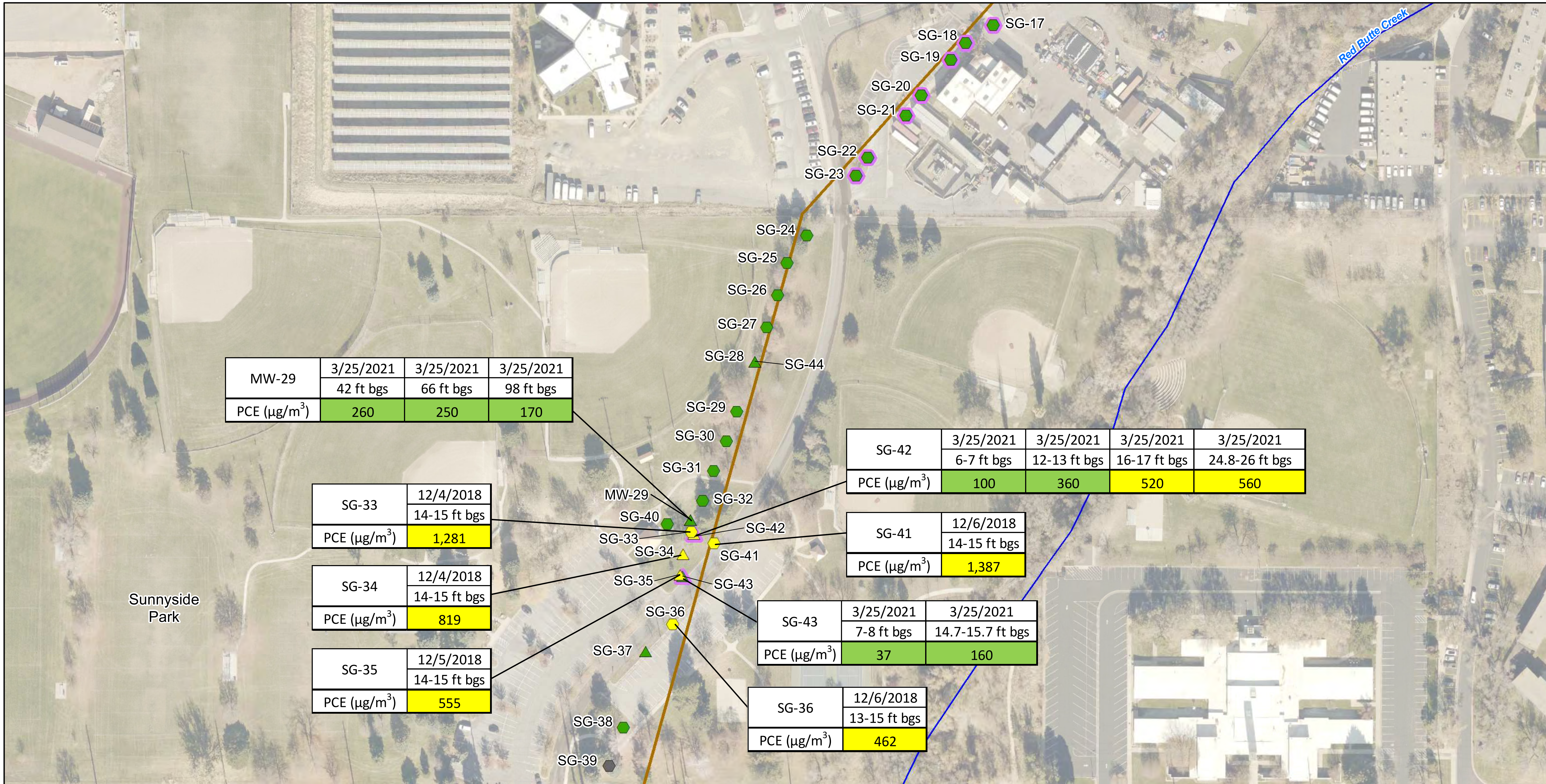
0 50 100 Feet

Figure 5-2A
Tetrachloroethene in Soil Vapor
Source Area - Buildings 6 and 7

CDM Smith

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-2A_PCE_in_SoilVapor_SourceArea.mxd WAGNERA 6/22/2022 12:43:56 PM



MW-29	3/25/2021	3/25/2021	3/25/2021
	42 ft bgs	66 ft bgs	98 ft bgs
PCE (µg/m^3)	260	250	170

SG-42	3/25/2021	3/25/2021	3/25/2021	3/25/2021
	6-7 ft bgs	12-13 ft bgs	16-17 ft bgs	24.8-26 ft bgs
PCE (µg/m^3)	100	360	520	560

SG-33	12/4/2018
	14-15 ft bgs
PCE (µg/m^3)	1,281

SG-41	12/6/2018
	14-15 ft bgs
PCE (µg/m^3)	1,387

SG-34	12/4/2018
	14-15 ft bgs
PCE (µg/m^3)	819

SG-43	3/25/2021	3/25/2021
	7-8 ft bgs	14.7-15.7 ft bgs
PCE (µg/m^3)	37	160

SG-35	12/5/2018
	14-15 ft bgs
PCE (µg/m^3)	555

SG-36	12/6/2018
	13-15 ft bgs
PCE (µg/m^3)	462

Legend

Soil Gas Sample

- △ SUMMA
- ⬡ HAPSITE
- ○ Multiple sampling events at locations
- Red Butte Creek
- Sewer Line

PCE Concentrations (µg/m^3)

- = Non-detect
- = < Residential RBSL
- = > Residential RBSL and =< Industrial RBSL
- = > Industrial RBSL

Residential Soil Gas RBSL: 360 µg/m^3
Industrial Soil Gas RBSL: 1,600 µg/m^3

Notes:
1. The color coded concentrations are based on the highest historical detection reported.
2. Soil gas RBSL is the EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1x10-6 and a hazard quotient of 1 divided by an attenuation factor of 0.03 (November 2020 RSL table version). RBSLs are used in this figure for evaluation of PCE concentrations near suspected source areas, and not for assessment of vapor intrusion risk.
3. Result tables are only presented for locations with multiple sampling depths or where a RBSL was exceeded.

OU = operable unit
PCE = tetrachloroethene
RBSL = risk based screening level

µg/m^3 = micrograms per cubic meter
ft bgs = feet below ground surface
J = result is estimated

N S E W

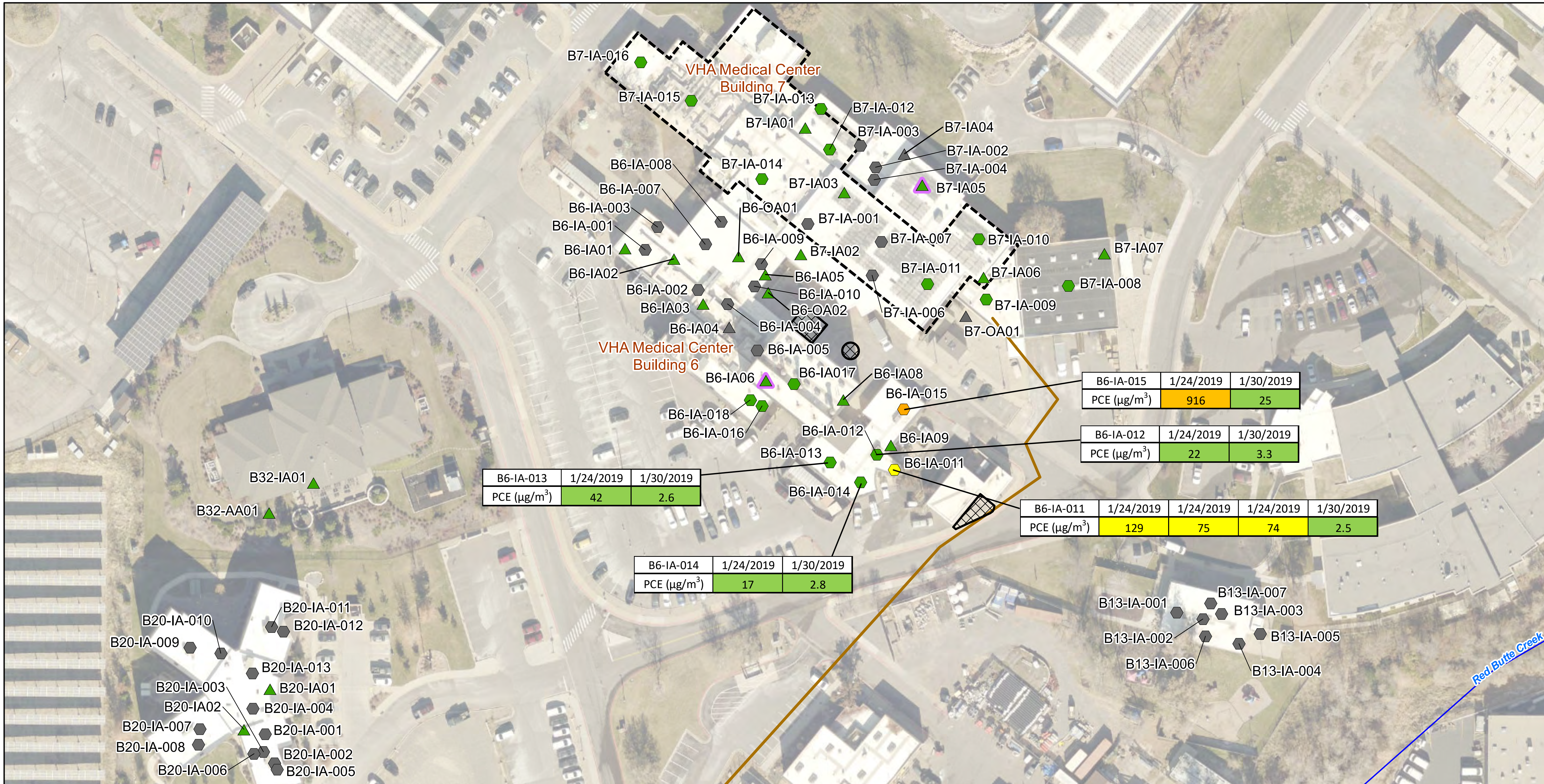
0 50 100 Feet

CDM Smith

Figure 5-2B
Tetrachloroethene in Soil Vapor
Source Area - Sunnyside Park

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-2B_PCE_in_SoilVapor_Sunnyside.mxd WAGNERA 6/22/2022 1:12:14 PM



B6-IA-015	1/24/2019	1/30/2019
PCE (μg/m^3)	916	25

B6-IA-012	1/24/2019	1/30/2019
PCE (μg/m^3)	22	3.3

B6-IA-013	1/24/2019	1/30/2019
PCE (μg/m^3)	42	2.6

B6-IA-011	1/24/2019	1/24/2019	1/24/2019	1/30/2019
PCE (μg/m^3)	129	75	74	2.5

B6-IA-014	1/24/2019	1/30/2019
PCE (μg/m^3)	17	2.8

Legend

Soil Gas Sample

- △ SUMMA
- ⬡ HAPSITE
- Multiple sampling events at locations
- Red Butte Creek
- Sewer Line
- Perimeter of Building 7 in 1981
- Underground Storage Tank or Foundation

PCE Concentrations (μg/m^3)

- = Non-detect
- = < Industrial RBSL
- = > Industrial RBSL
- = > Industrial Indoor Air Tier 1 RAL

Industrial Indoor Air RBSL: 47 μg/m^3
Industrial Indoor Air Tier 1 RAL: 180 μg/m^3

Notes:
1. The color coded concentrations are based on the highest historical detection reported.
2. Industrial RBSL is EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1x10-6 and a hazard quotient of 1 (November 2020 RSL table version).
3. Industrial Indoor Air Tier 1 RAL provided in memorandum (CH2M 2015). Tier 1 RAL corresponding to an excess lifetime cancer risk of 1x10-5 and a hazard quotient of 1.
4. Result tables are only shown for locations where indoor sources were identified and removed. Results from 1/24/2019 were prior to source removal, and results from 1/30/2019 are after indoor source removal.

OU = operable unit
PCE = tetrachloroethene
RBSL = risk based screening level
RAL = removal action level
μg/m^3 = micrograms per cubic meter

N E S W

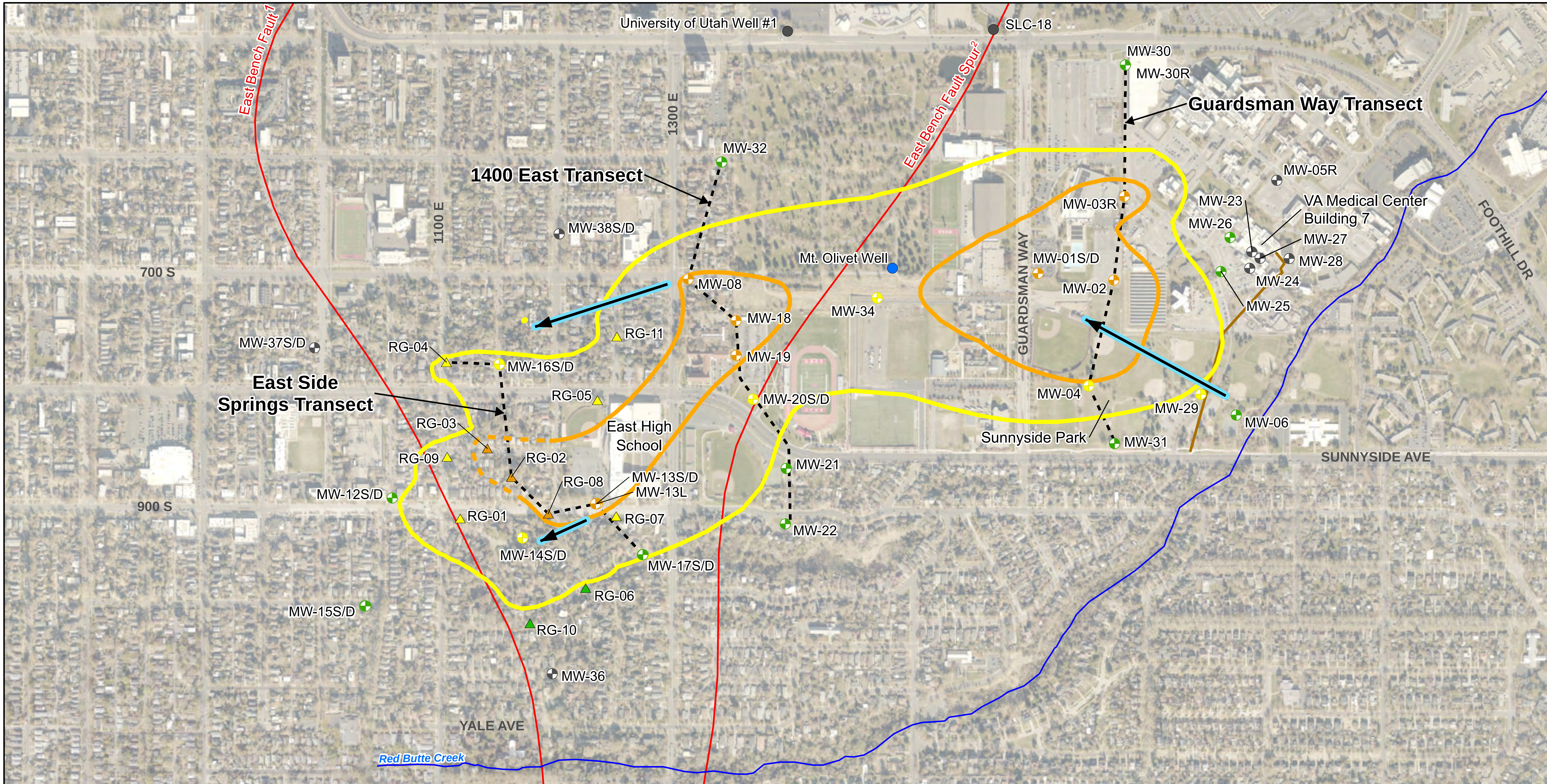
0 50 100 Feet

CDM Smith

Figure 5-3
Tetrachloroethene in Indoor Air
Source Area - Buildings 6, 7, 13, 20, 32

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-3_PCE_in_IndoorAir_SourceArea.mxd WAGNERA 6/6/2022 12:59:33 PM



Legend

- Monitoring Well
- Production/Irrigation Well
- Residential Groundwater Well
- Red Butte Creek
- Monitoring Well Transect Line
- Sewer Line
- Fault Line
- Groundwater Flow Direction

PCE Concentration

- = Non-detect
- = < 5 µg/L
- = 5 - 50 µg/L
- = > 50 µg/L

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

Notes:

1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.
2. The color coded PCE concentration at each location is based on the most recent result.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N
W E
S

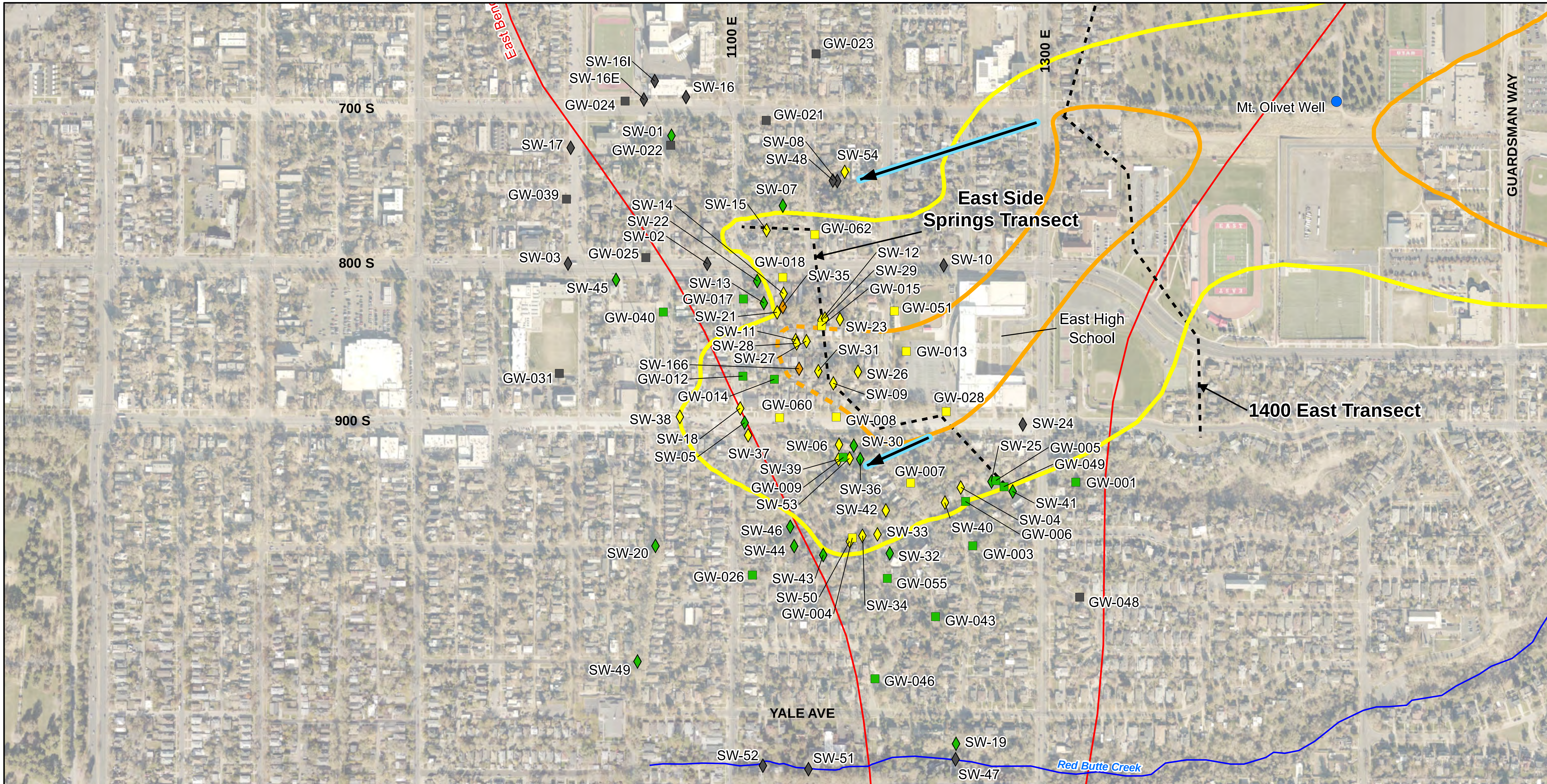
0 250 500
Feet

CDM Smith

Figure 5-4A
Tetrachloroethene in Groundwater
Monitoring Wells

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-4A_PCE_in_Groundwater-MW.mxd WAGNERA 9/24/2021 9:19:59 AM



Legend

- Groundwater Location
- Surface Water Location
- Irrigation Well
- Red Butte Creek
- Monitoring Well Transect Line
- Sewer Line
- Fault Line
- Groundwater Flow Direction

PCE Concentration

- = Non-detect
- = < 5 µg/L
- = 5 - 50 µg/L
- = > 50 µg/L

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

Notes:

1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.
2. The color coded PCE concentration at each location is based on the most recent result.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N E S W

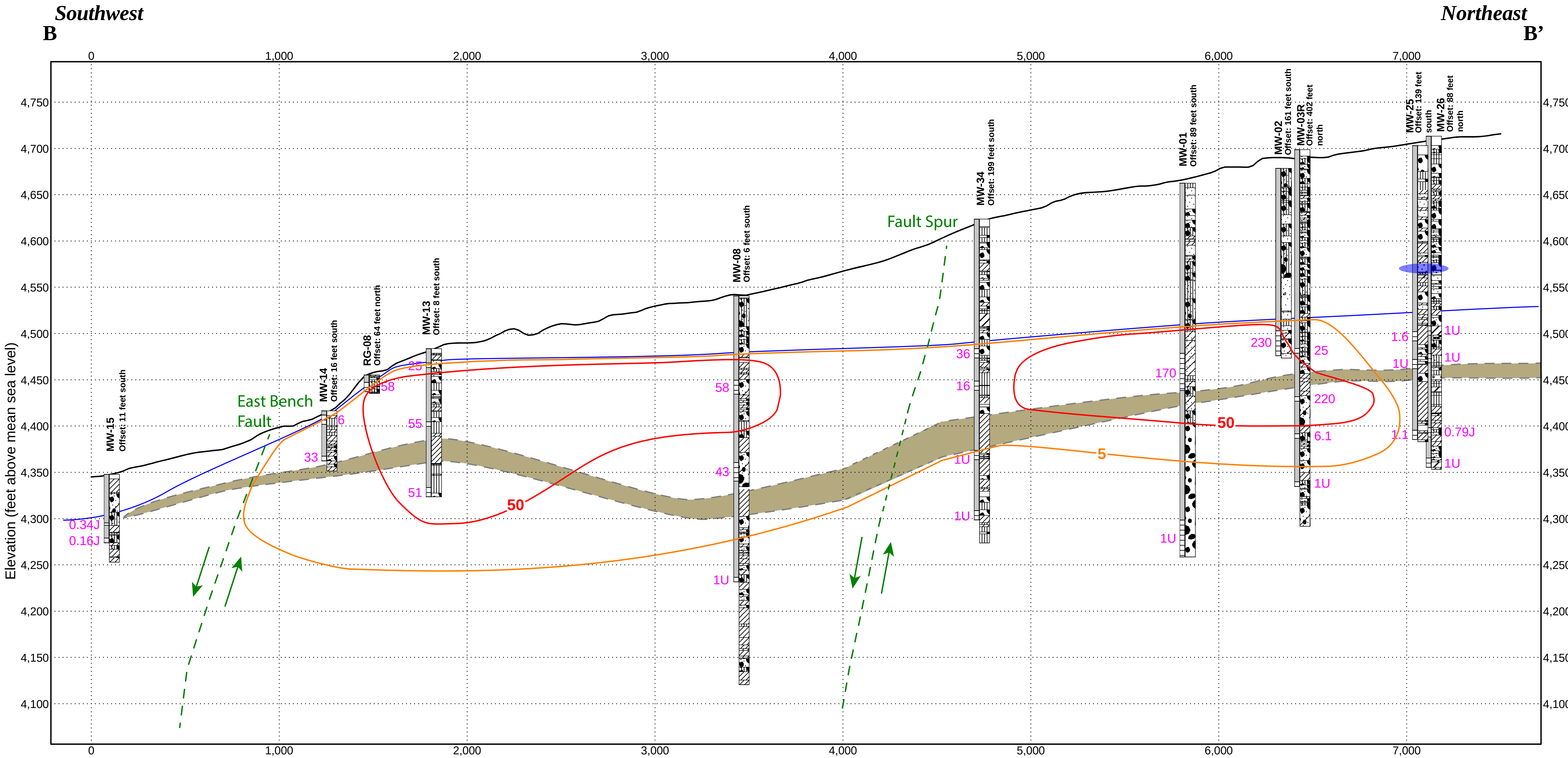
0 250 500 Feet

CDM Smith

Figure 5-4B
Tetrachloroethene in Groundwater
Shallow Groundwater and Surface Water

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-4B_PCE_in_GW_ShallowGW_SW.mxd WAGNERA 8/6/2021 9:17:47 AM



Stratigraphy

- USCS Silt
- USCS Well-graded Sand
- USCS Well-graded Gravel
- USCS Clayey Gravel
- USCS Silty Gravel
- USCS Low Plasticity Clay
- USCS Poorly-graded Sand
- USCS Silty Sand
- USCS Clayey Sand
- USCS Poorly-graded Gravel
- USCS Well-graded Sand with Silt
- USCS High Plasticity Clay

Well Construction Schematic

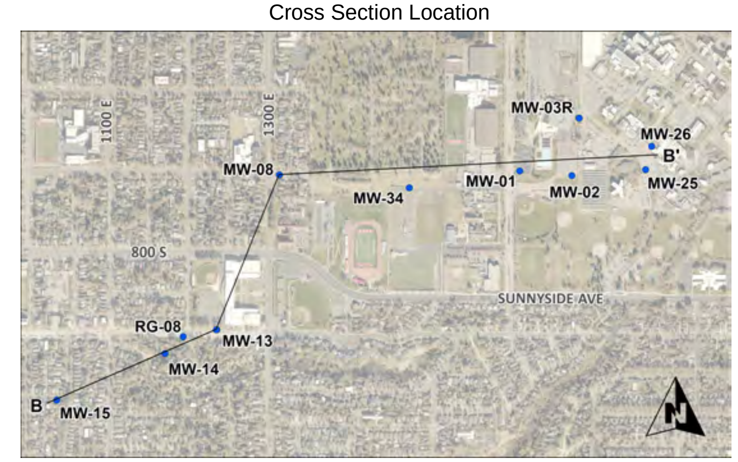
- Casing
- Screened Interval

- Semi-Confining Unit
- Fault
- Groundwater Elevation (3/15/21) (RG Wells measured on 4/15/21)

- Perched Zone
- Indicates direction of movement
- 51 — Tetrachloroethene in Groundwater (µg/L)
  Monitoring Well Data - Q1-2021
  RG Well Data - April 2021
  * - Collected June 19, 2020
  J - Result is estimated
  U - Not detected at associated value
- Tetrachloroethene Isoconcentration Contour (µg/L) >5µg/L
- Tetrachloroethene Isoconcentration Contour (µg/L) >50µg/L

MW-13, MW-14, and MW-15 are well clusters with each well installed in its own borehole

Cross Section Location



Horizontal Scale (feet): 0 – 538

Vertical Scale (feet): 0 – 109

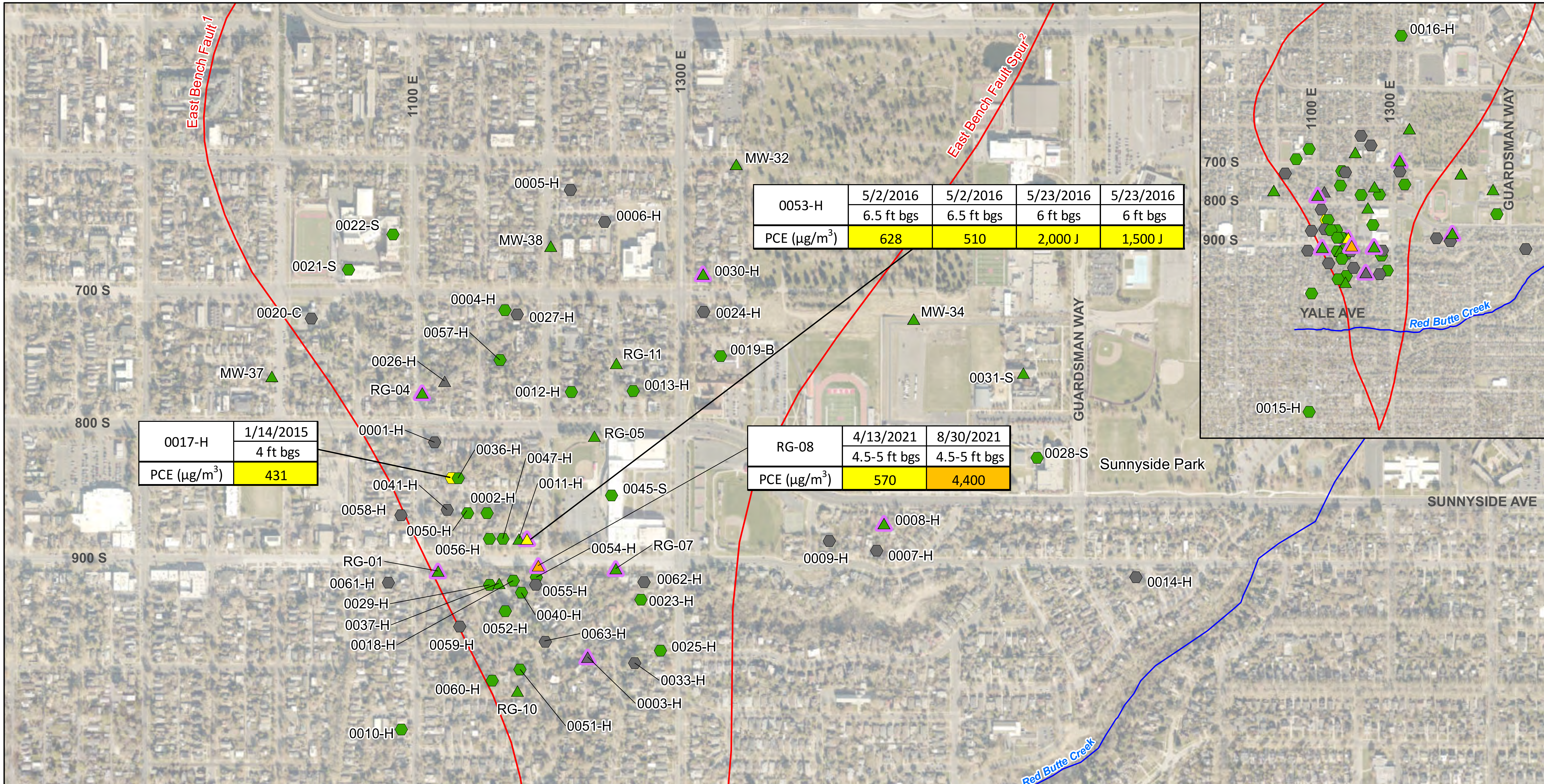
Vertical Exaggeration: 5x

Figure 5-5
Tetrachloroethene in Groundwater Along Plume Center

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, UT

CDM Smith

CAYUGA CROSS SECTION 1-1 SLC VA PLUME SCTN_062421.GPJ SLC VA PLUME DRAFT_031121.GPJ 6/29/21 REV.



Legend

Soil Gas Sample Analysis

- △ SUMMA
- ⬡ HAPSITE
- Multiple sampling events at locations
- Red Butte Creek
- Fault Line

PCE Concentration (µg/m^3)

- = Non-detect
- = < Residential RBSL
- = > Residential RBSL
- = >10X Residential Soil Gas RBSL

Residential Soil Gas RBSL: 360 µg/m^3

OU = operable unit
PCE = tetrachloroethene
RBSL = risk based screening level
µg/m^3 = micrograms per cubic meter
J = result is estimated

Notes:
1. The color coded concentrations are based on the highest historical detection reported.
2. Soil gas RBSL is the EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1x10-6 and a hazard quotient of 1 divided by an attenuation factor of 0.03 (November 2020 RSL table version).
3. Result tables are only shown for locations that exceed the residential soil gas RBSL.
4. Qualified 2015 data is included on figure to define the extent of vapor intrusion. See Table 5-11 for further information.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N S E W

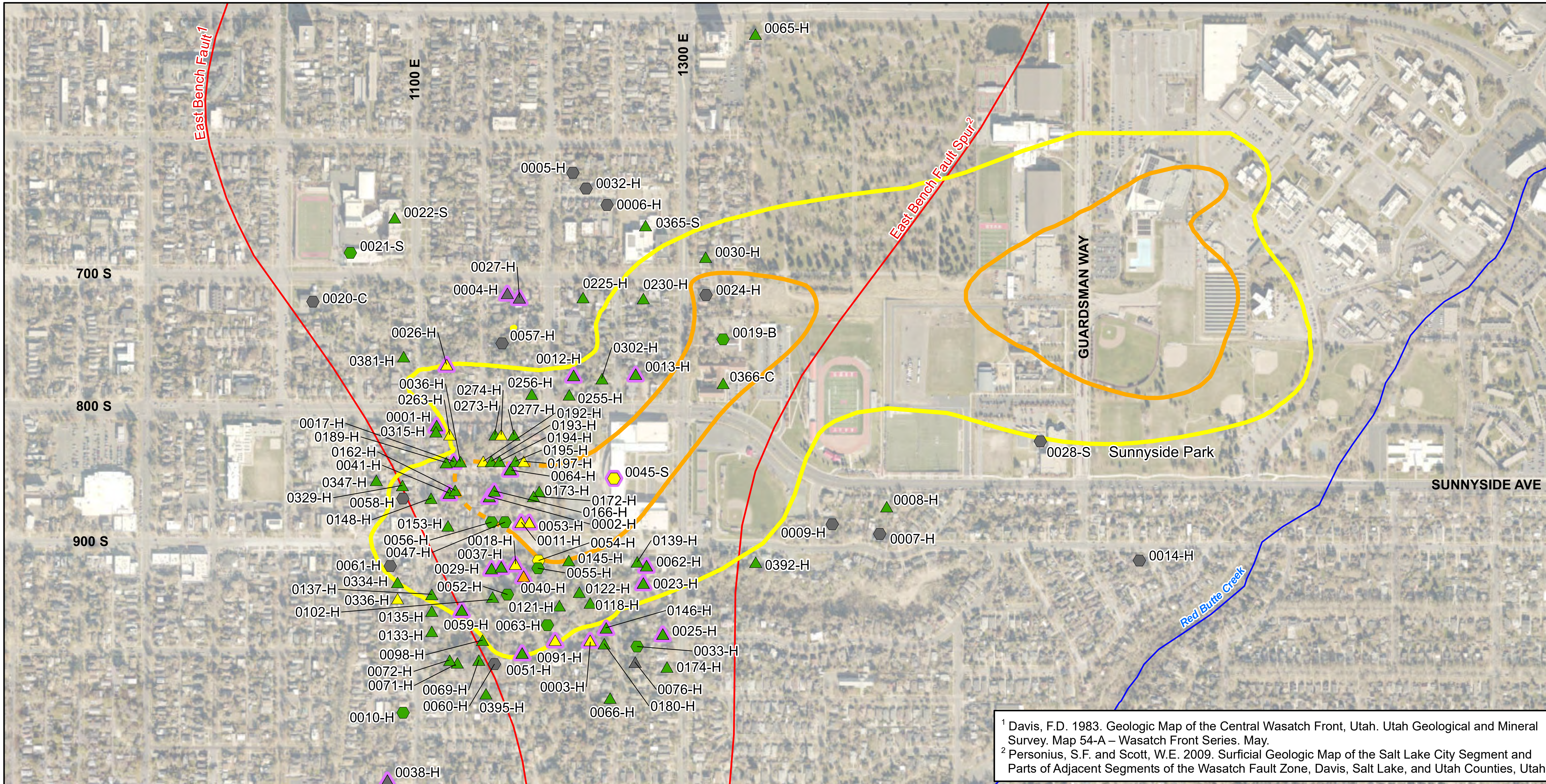
0 250 500 Feet

CDM Smith

Figure 5-6
Tetrachloroethene in Soil Vapor
East Side Springs Area

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-6_PCE_in_SoilVapor_ESS.mxd WAGNERA 7/11/2022 8:42:24 AM



Legend

Indoor Air Sample Analysis

- △ SUMMA
- ⬡ HAPSITE
- Multiple sampling events at locations
- Red Butte Creek
- Fault Line

OU = operable unit
PCE = tetrachloroethene
RBSL = risk based screening level

PCE Concentration (µg/m³)

- = Non-detect
- = < residential RBSL
- = > residential RBSL
- = > residential Tier 1 RAL

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent
RAL = removal action level
µg/m³ = micrograms per cubic meter
J = result is estimated

Notes:

1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.
2. The color coded concentrations are based on the highest historical detection reported.
3. Residential indoor air RBSL is EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1x10-6 and a hazard quotient of 1 (November 2020 RSL table version).
4. Residential Indoor Air Tier 1 RAL provided in memorandum (CH2M 2015). Tier 1 RAL corresponding to an excess lifetime cancer risk of 1x10-5 and a hazard quotient of 1.
5. Qualified 2015 data is included on figure to define the extent of vapor intrusion. See Table 5-12 for further information.
6. Not all structures shown are residential, however, all are screened against residential RBSL and RAL.

Residential Indoor Air RBSL: 11 µg/m³
Residential Indoor Air Tier 1 RAL: 42 µg/m³

N E S W

0 250 500 Feet

CDM Smith

Figure 5-7
Tetrachloroethene in Indoor Air
East Side Springs Area

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

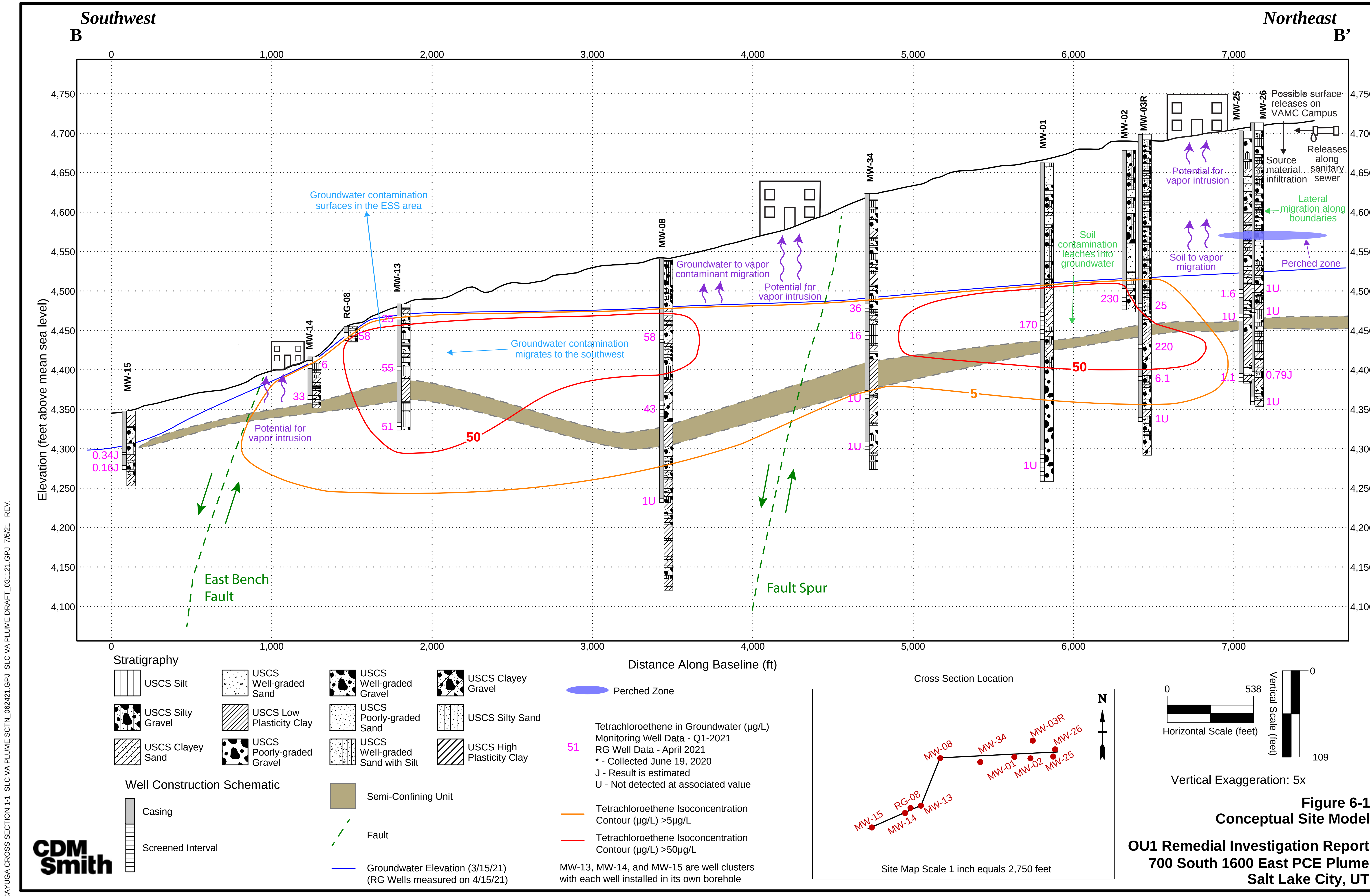
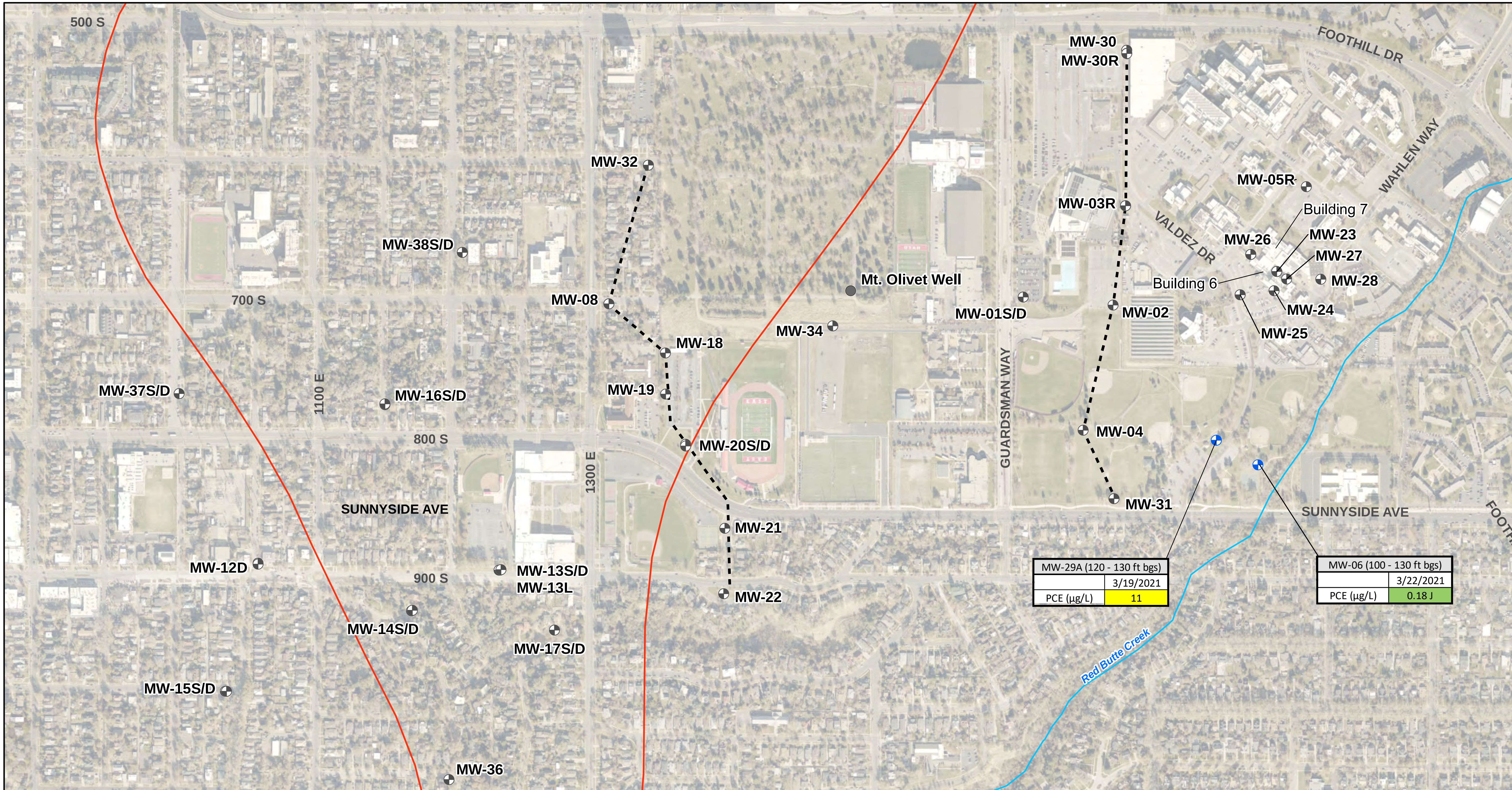


Figure 6-1
Conceptual Site Model

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, UT



Legend

- Monitoring Well Screened in Perched Zone
- Monitoring Well
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

PCE Concentrations (µg/L)

- = < 5 µg/L
- = 5 - 50 µg/L
- = > 50 µg/L

Notes

1. Proposed monitoring wells MW-07, MW-09, MW-10, MW-11, MW-33, and MW-35 were not installed.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter

ft bgs = feet below ground surface
J = Result is estimated
U = Analyte was not detected at the associated value

N S W E

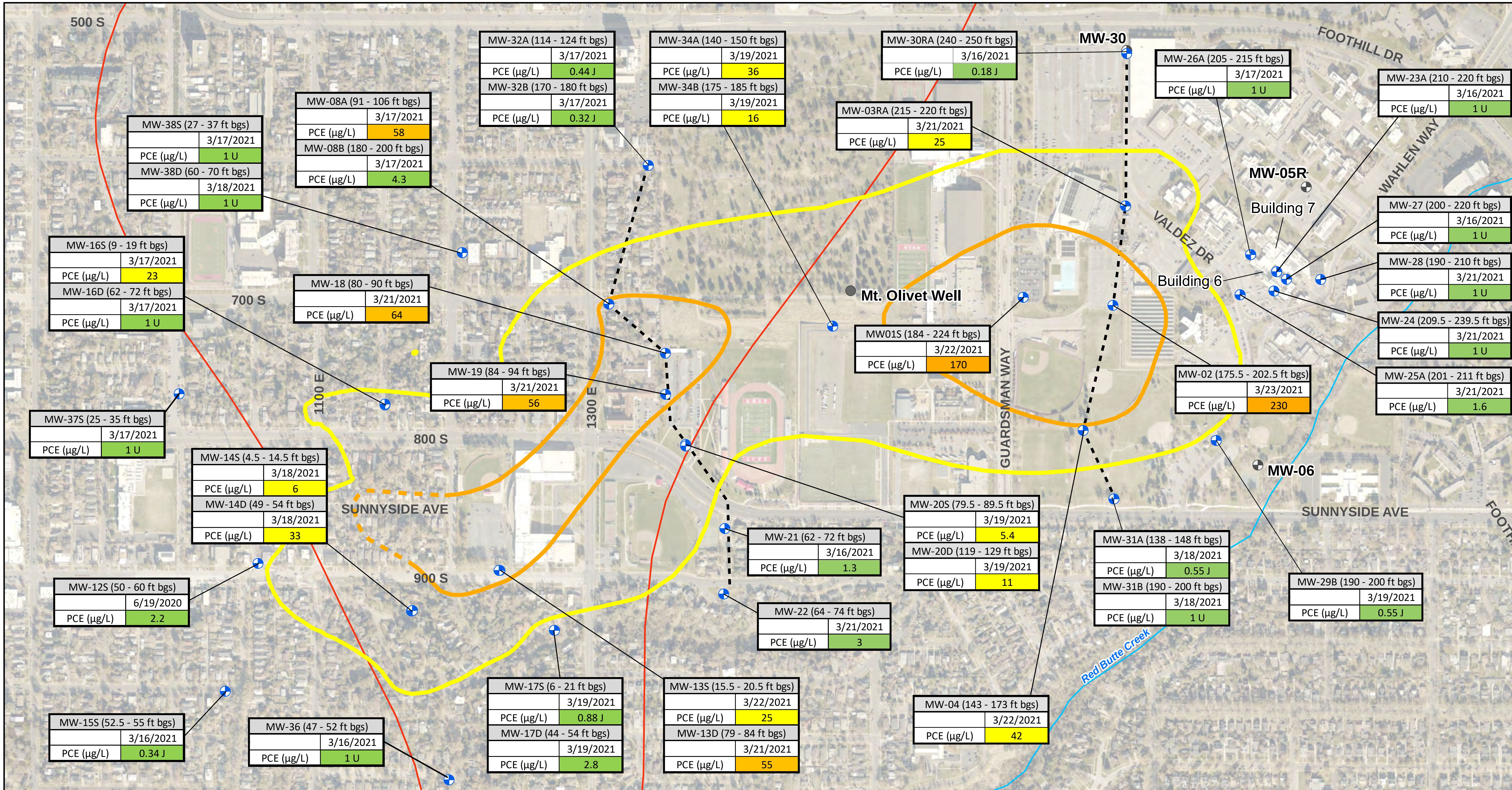
0 250 500 Feet

CDM Smith

Figure 6-2
Tetrachloroethene in the Perched Zone

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-2_PCE_in_Perched_Zone_MW.mxd WAGNERA 10/5/2021



Legend

- Monitoring Well Screened in Shallow Aquifer
- Monitoring Well
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

PCE Concentrations (µg/L)

- = < 5 µg/L
- = 5 - 50 µg/L
- = > 50 µg/L

PCE Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

Notes

1. Proposed monitoring wells MW-07, MW-09, MW-10, MW-11, MW-33, and MW-35 were not installed.
2. MW-12S, MW-15S, MW-30RA, MW-36, and MW-37S represent conditions in the shallowest groundwater encountered at each location.
3. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate data from the Q2 2021 groundwater sampling event. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter
ft bgs = feet below ground surface
J = Result is estimated
U = Analyte was not detected at the associated value

N S W E

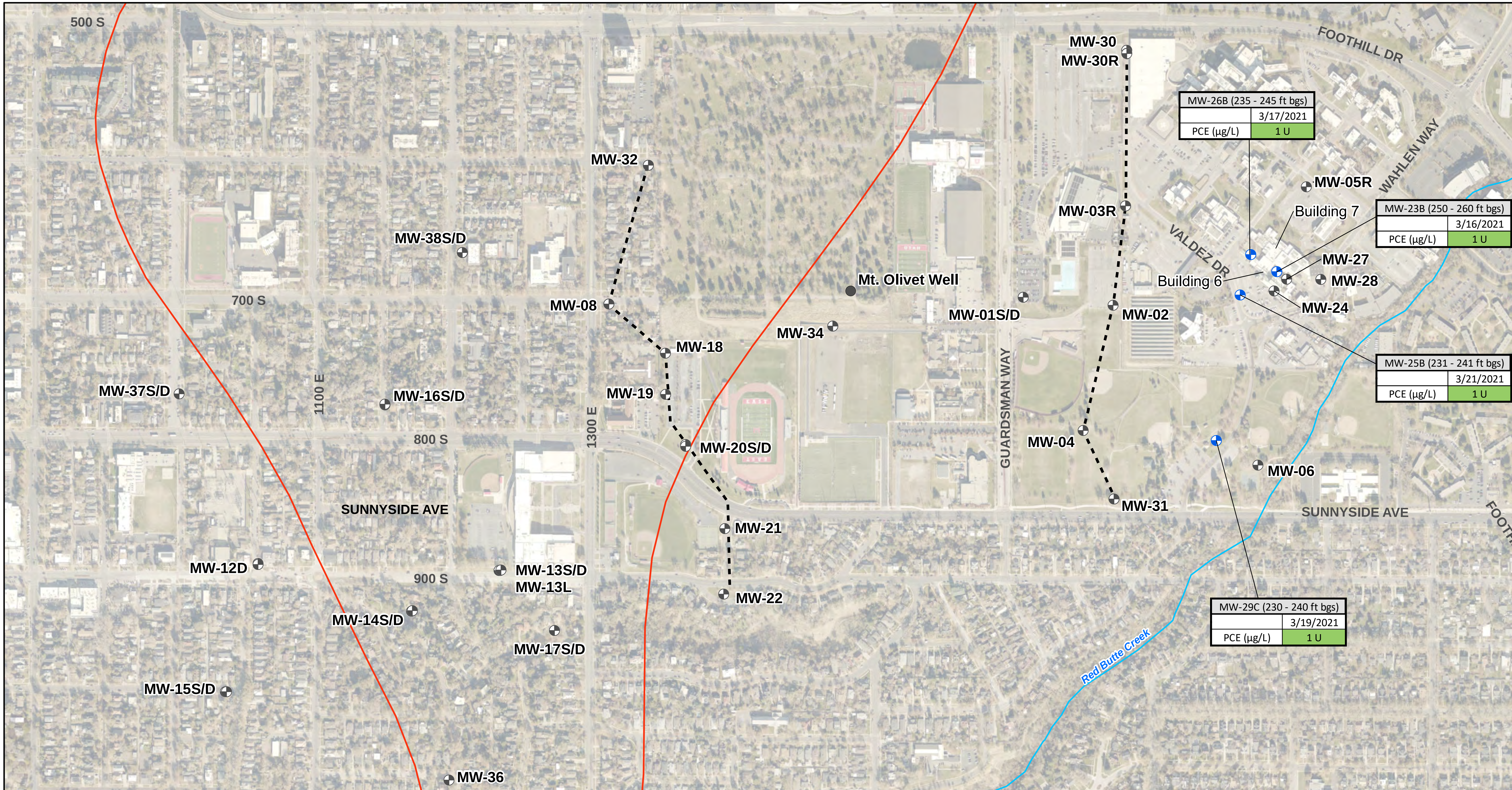
0 250 500 Feet

CDM Smith

Figure 6-3
Tetrachloroethene in the Shallow Aquifer

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-3_PCE_in_Shallow_Aquifer.mxd WAGNERA 4/27/2022



Legend
- Monitoring Well Screened in Intermediate Zone
- Monitoring Well
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

PCE Concentrations (µg/L)
- = < 5 µg/L
- = 5 - 50 µg/L
- = > 50 µg/L

Notes
1. Proposed monitoring wells MW-07, MW-09, MW-10, MW-11, MW-33, and MW-35 were not installed.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter

ft bgs = feet below ground surface
J = Result is estimated
U = Analyte was not detected at the associated value

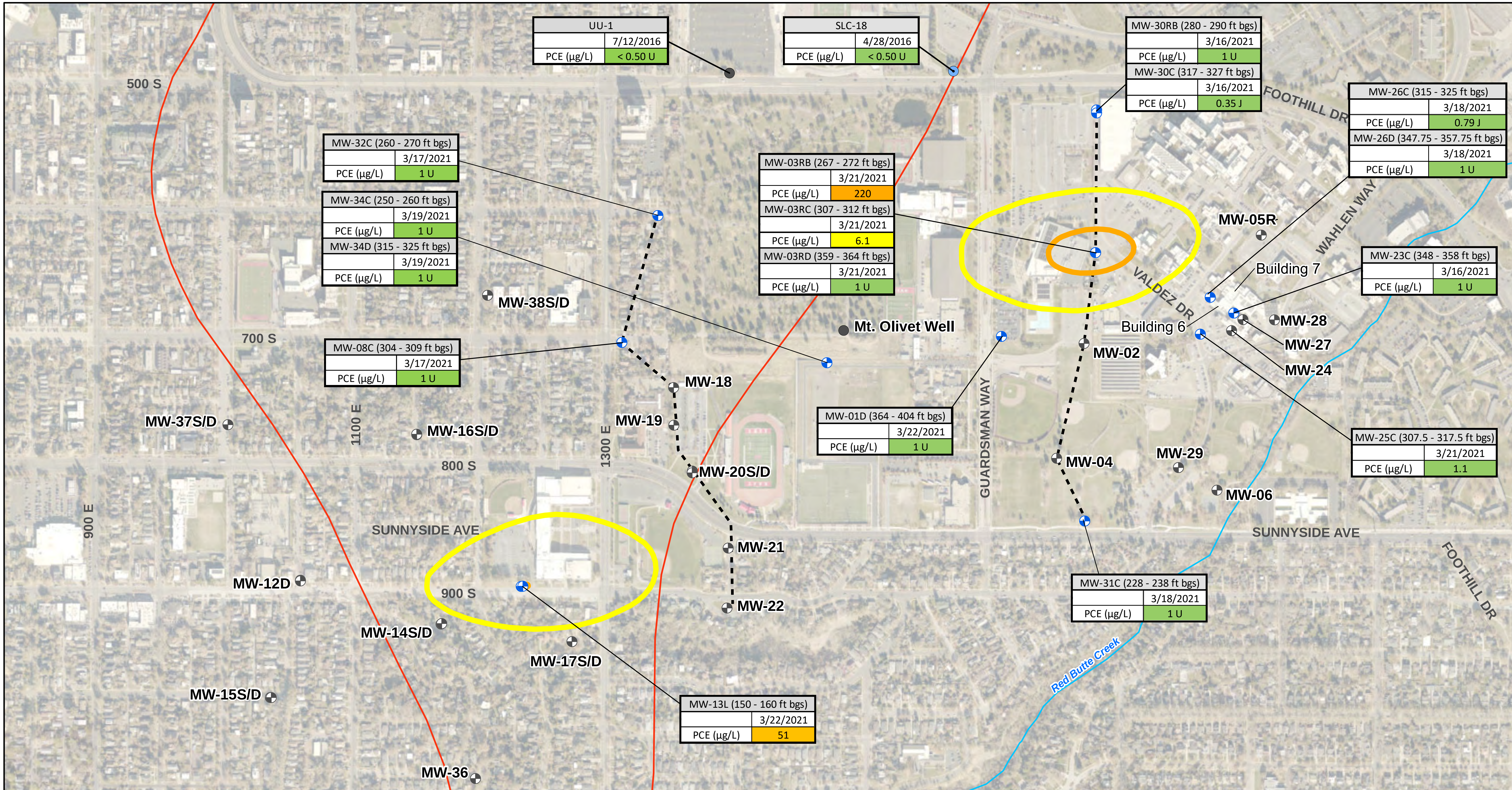
N W E S

0 250 500 Feet

CDM Smith

Figure 6-4
Tetrachloroethene in the Intermediate Zone

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah



Legend
- Monitoring Well Screened in Deep Aquifer
- Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

PCE Concentrations (µg/L)
- = < 5 µg/L
- = 5 - 50 µg/L
- = > 50 µg/L

PCE Contours
- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

Notes
1. Proposed monitoring wells MW-07, MW-09, MW-10, MW-11, MW-33, and MW-35 were not installed.
2. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate data from the Q2 2021 groundwater sampling event. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter
ft bgs = feet below ground surface
J = Result is estimated
U = Analyte was not detected at the associated value

N W E S

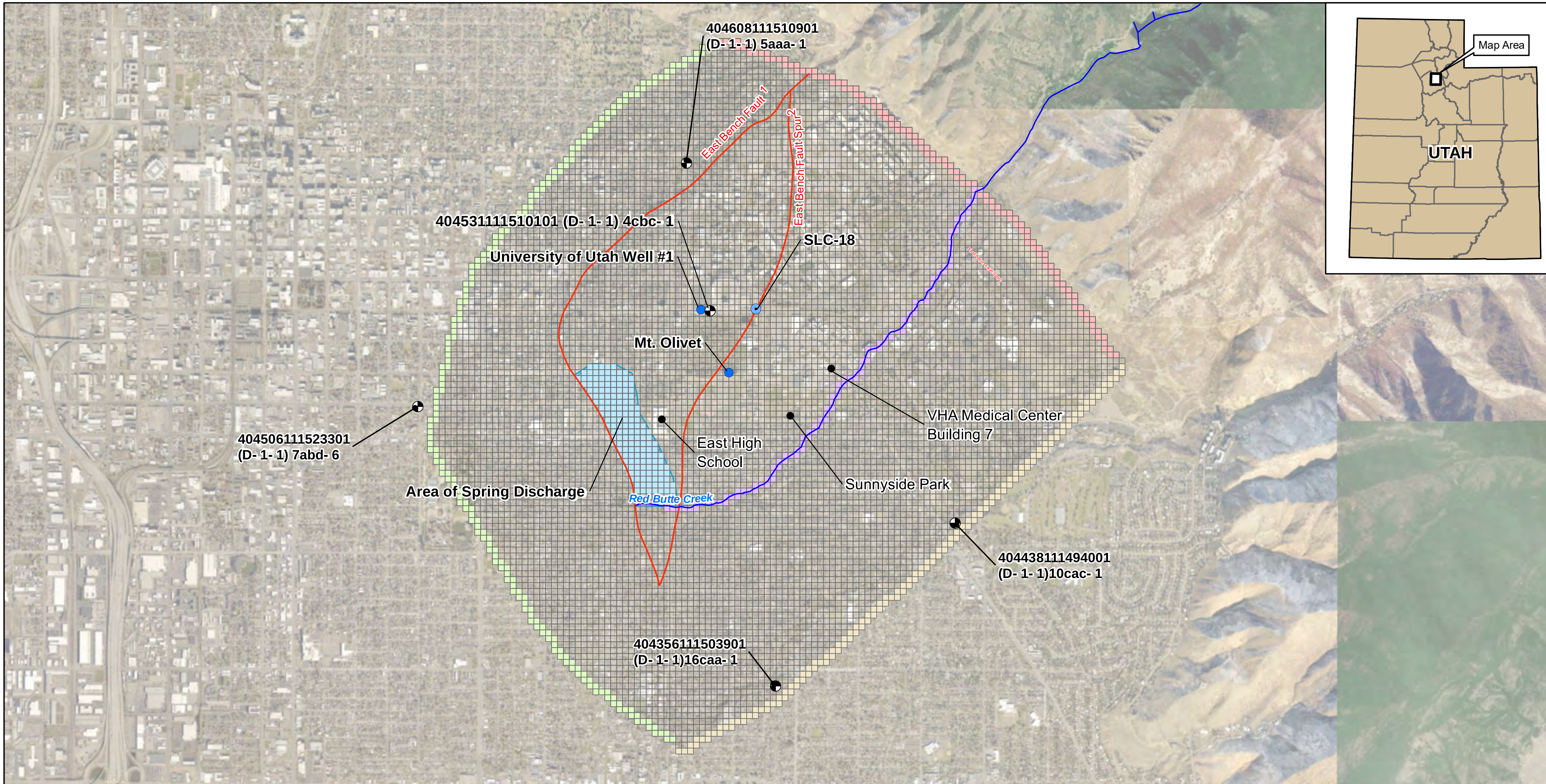
0 250 500 Feet

CDM Smith

Figure 6-5
Tetrachloroethene in the Deep Aquifer

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-5_PCE_in_Deep_Aquifer.mxd WAGNERA 4/27/2022



Legend

- USGS Monitoring Wells
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Model Grid
- Drain Boundary Condition
- Specified Flux Boundary Condition
- Constant Head Boundary Condition
- Recharge from Red Butte Creek
- No Flow Boundary Condition

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N

0 0.5 1 Miles

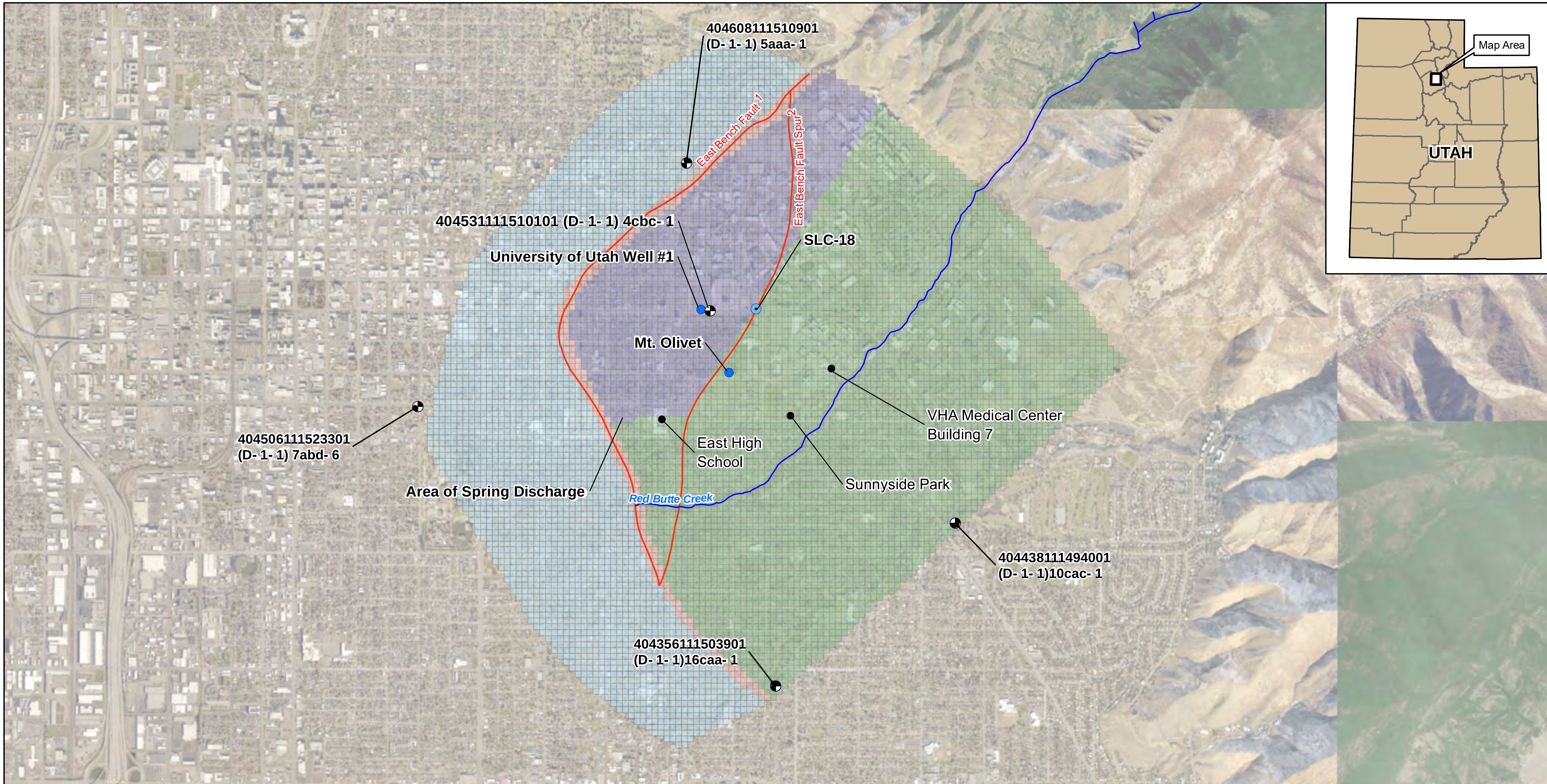
VHA = Veterans Health Administration

Figure 6-6
Model Grid and Boundary Conditions

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-6_Model_Domain_MODFLOW.mxd HoughtonG 9/27/2021



Legend

- USGS Monitoring Wells
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line

Horizontal Hydraulic Conductivity (ft/d)

- 0.1
- 5
- 15
- 50

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

Figure 6-7
Model Layers 1 and 2 Properties

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-7_Kx_Layer2.mxd HoughtonG 9/27/2021

Legend

- USGS Monitoring Wells
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line

Horizontal Hydraulic Conductivity (ft/d)

- 0.01
- 0.1
- 15

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N

0 0.5 1 Miles

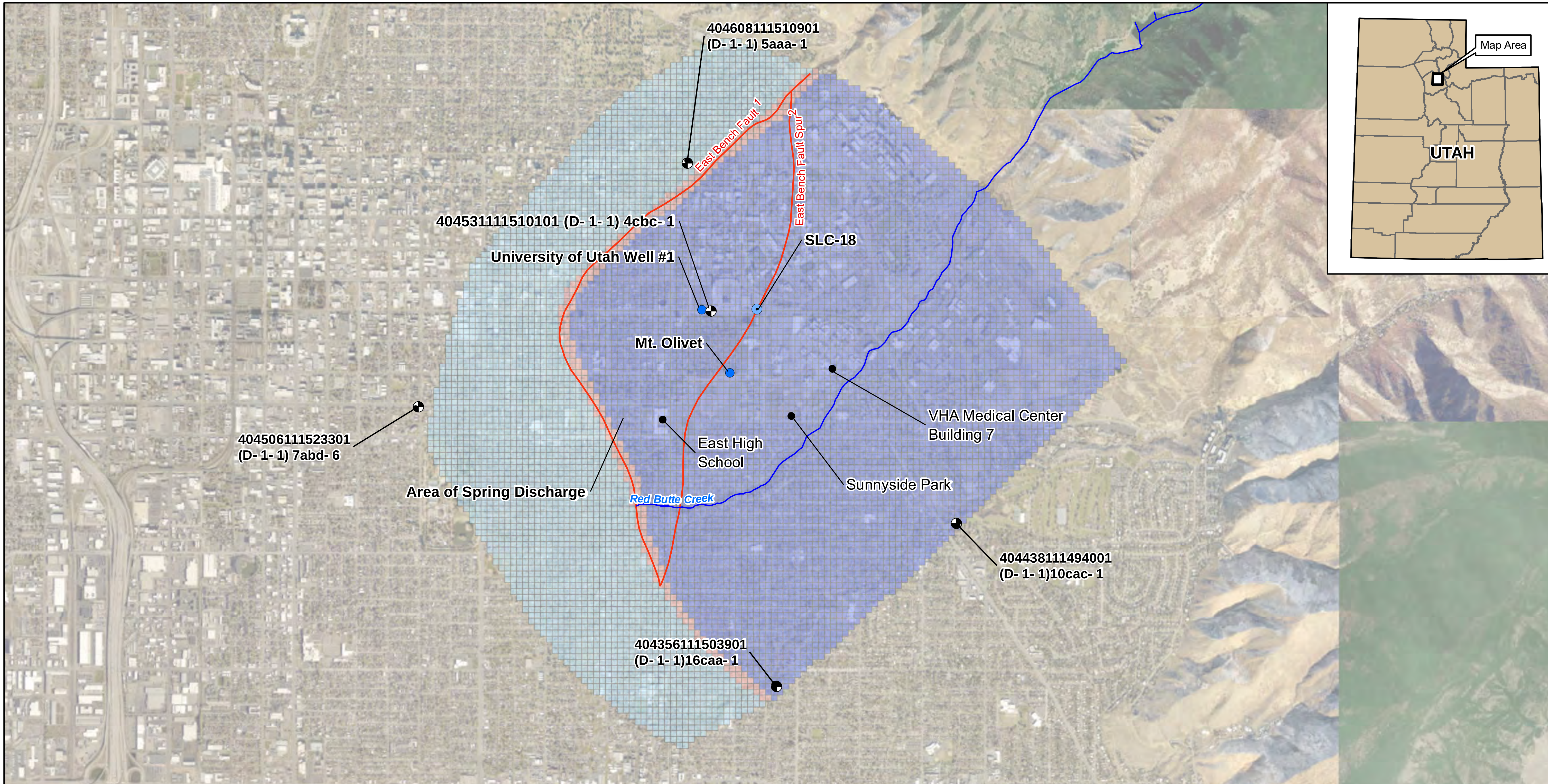
VHA = Veterans Health Administration

Figure 6-8
Model Layer 3 Properties

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-8_Kx_Layer3.mxd HoughtonG 9/27/2021



Legend

- USGS Monitoring Wells
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line

Horizontal Hydraulic Conductivity (ft/d)

- 0.1
- 15
- 45

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N

0 0.5 1 Miles

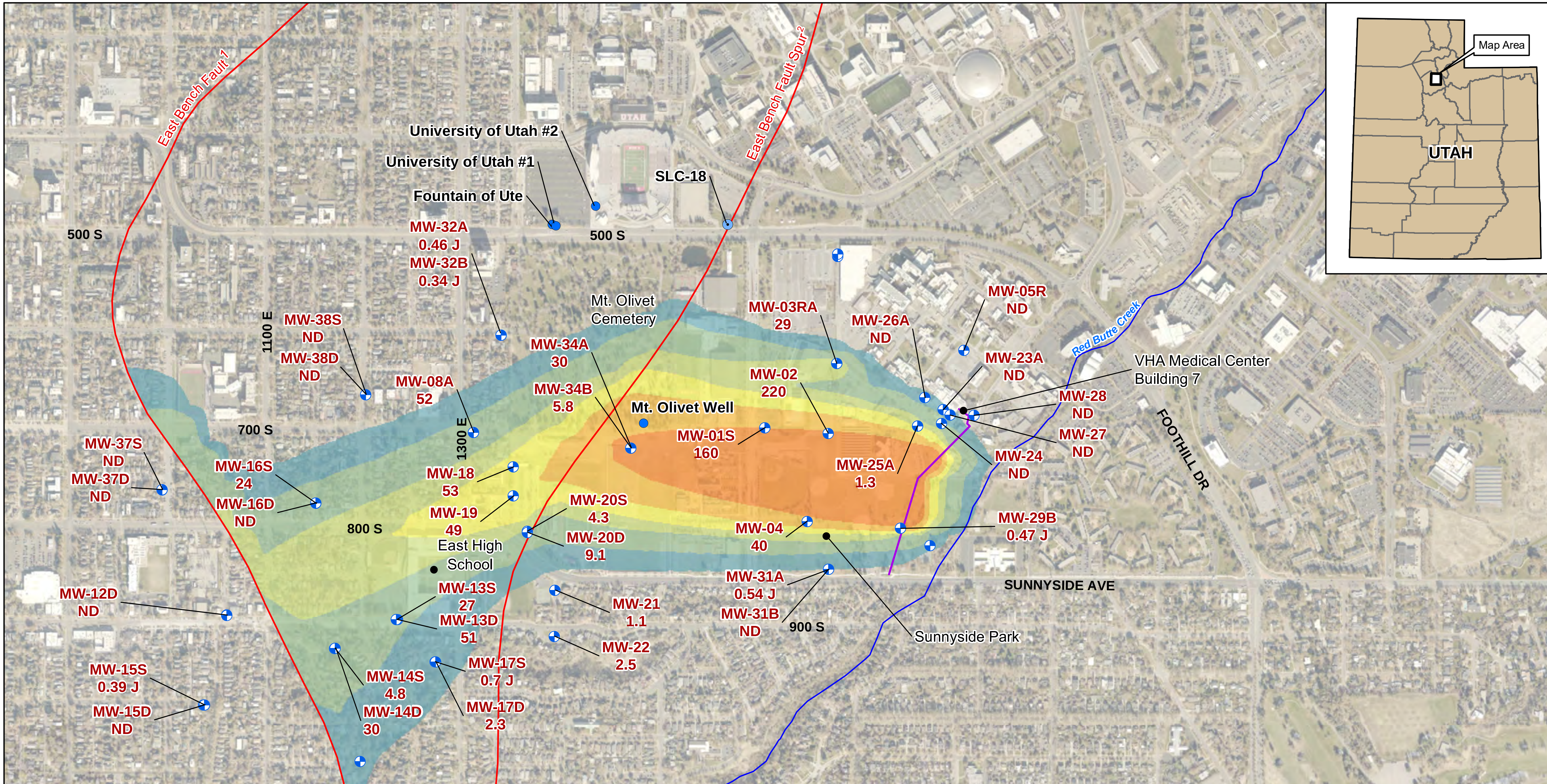
VHA = Veterans Health Administration

Figure 6-9
Model Layer 4 Properties

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-9_Kx_Layer4.mxd HoughtonG 9/27/2021



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

Notes:
- Measured PCE concentrations are from December 2020.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N
W E
S

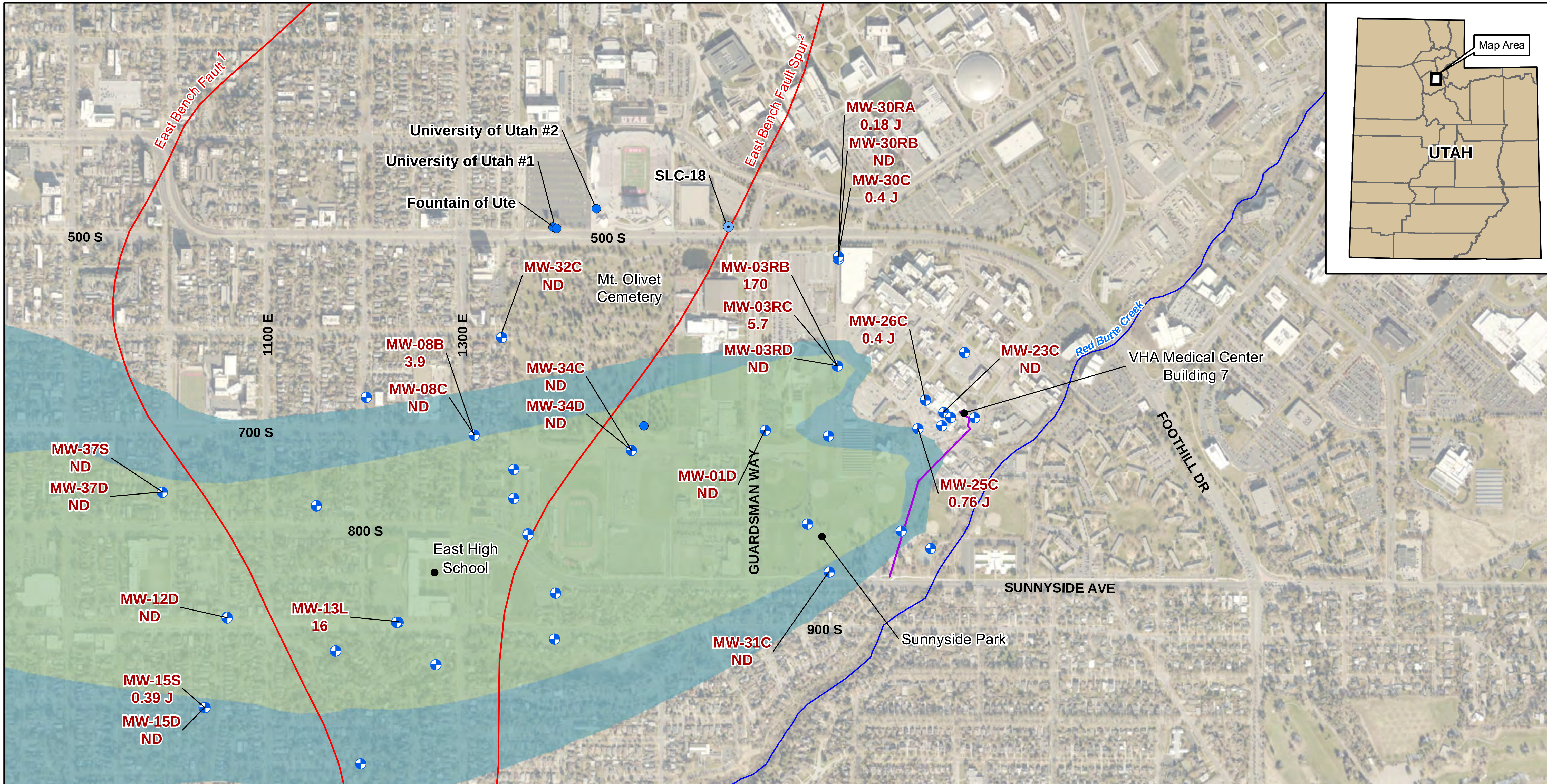
0 500 1,000 Feet

CDM Smith

Figure 6-10
Simulated PCE Concentrations, September 2020
Shallow Aquifer

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-10_Shallow_Aquifer_Concentrations_Sept2020_T14.mxd HoughtonG 9/27/2021 6:10:56 PM



Notes:
- Measured PCE concentrations are from December 2020.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

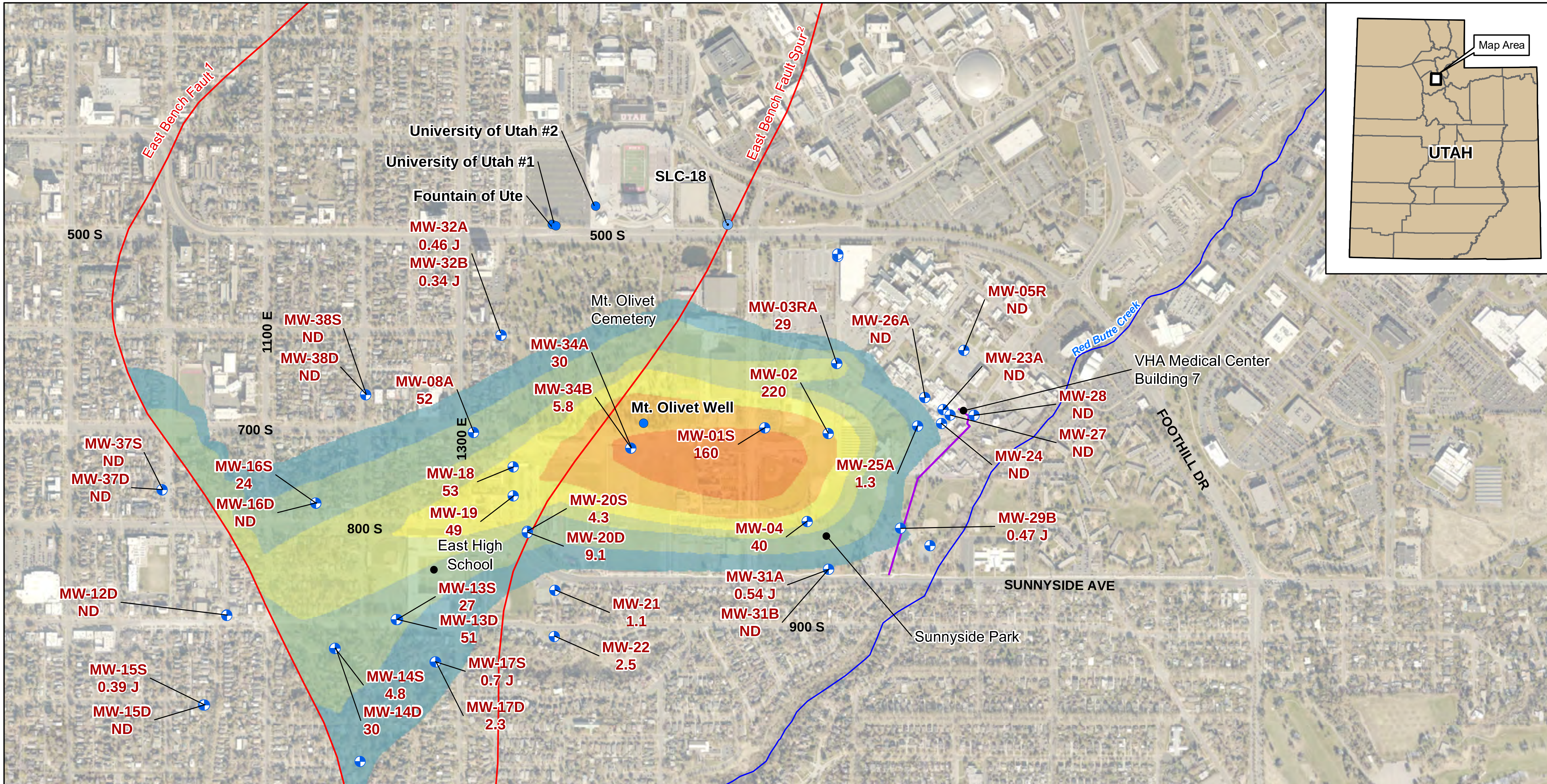
VHA = Veterans Health Administration

Figure 6-11
Simulated PCE Concentrations, September 2020
Deep Aquifer

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-11_DSR_GW_B_Aquifer_Concentrations_Sep2020_T23.mxd HoughtonG 9/27/2021 6:12:08 PM



Legend

Monitoring Well	
Abandoned Monitoring Well	
Drinking Water Supply Well	
Irrigation Well	
Landmark	
Red Butte Creek	
Fault Line	
Sewer Line	

PCE (ug/L)
< 1
1 - 5
5 - 25
25 - 50
50 - 100
100 - 200
>200

Notes:
- Measured PCE concentrations are from December 2020.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N W E S

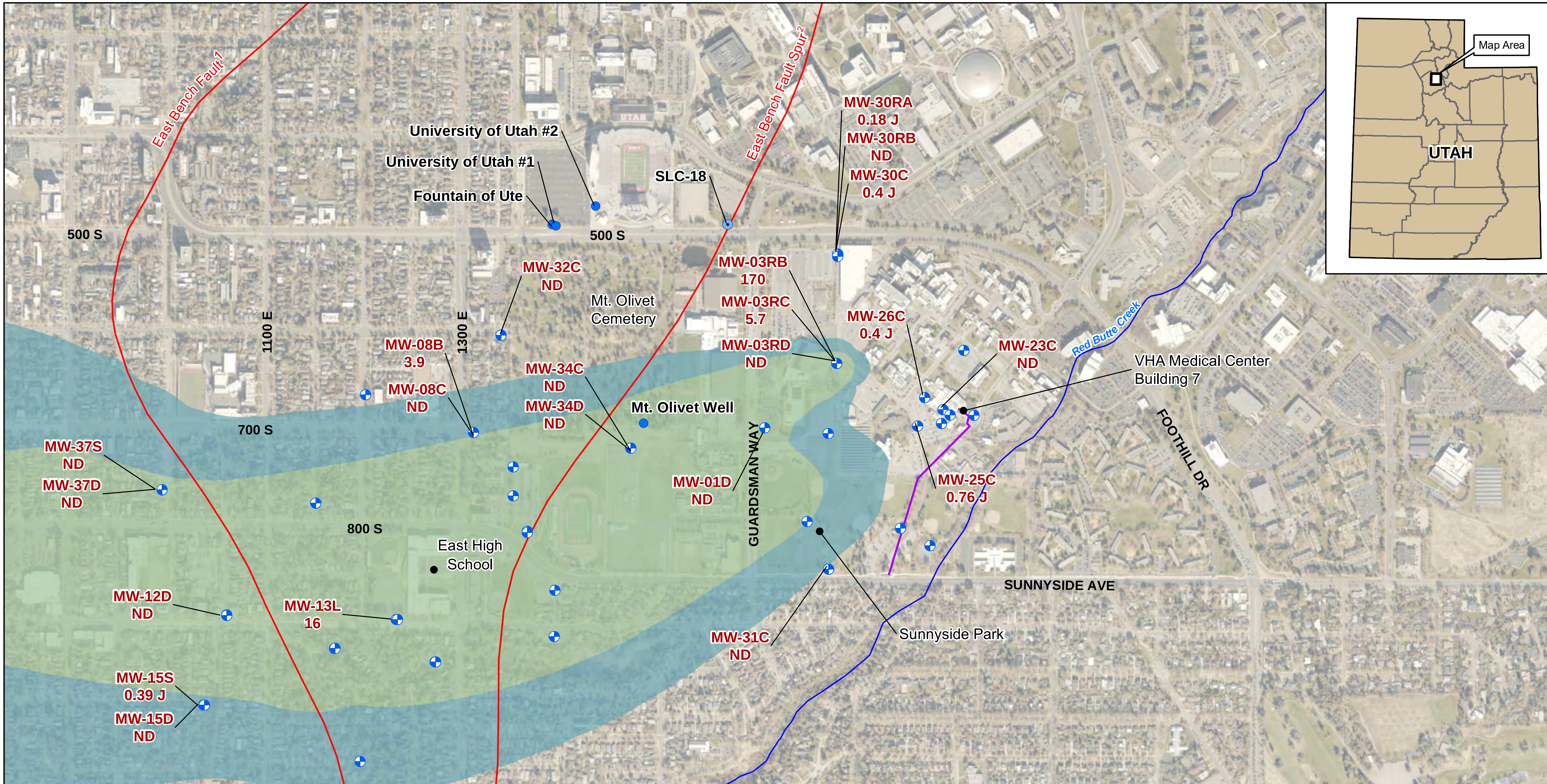
0 500 1,000 Feet

CDM Smith

Figure 6-12
Simulated PCE Concentrations, September 2020
Continuous Shallow Aquifer Source Through 2015
Shallow Aquifer

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-12_Shallow_Aquifer_Concentrations_Sept2020_T20.mxd HoughtonG 9/27/2021 6:13:03 PM



Legend

- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

Notes:
- Measured PCE concentrations are from December 2020.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N W E S

0 500 1,000 Feet

Figure 6-13
Simulated PCE Concentrations, September 2020
Continuous Shallow Aquifer Source Through 2015
Deep Aquifer

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

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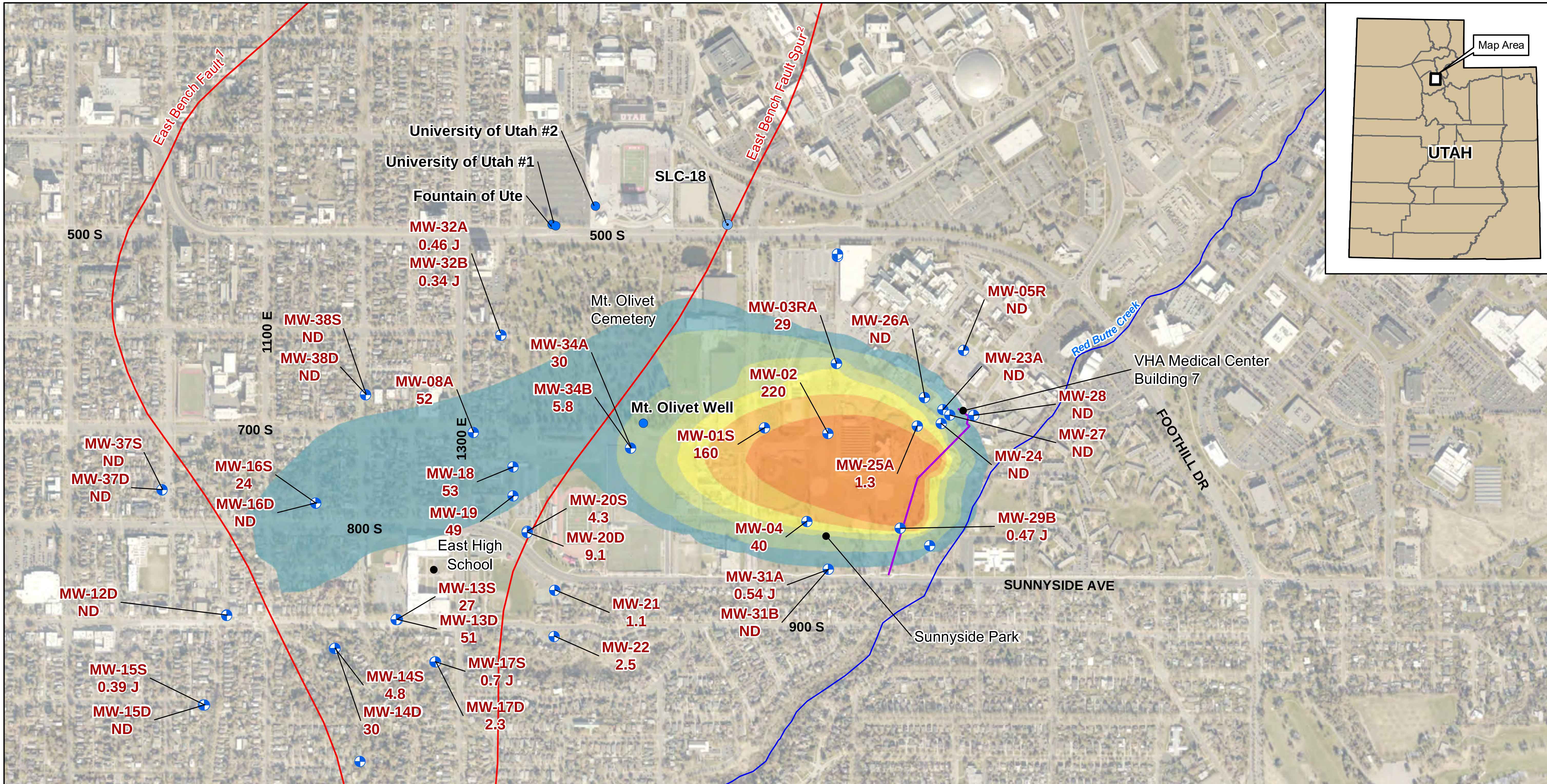

Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

Notes:

- Measured PCE concentrations are from December 2020.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N E S W

0 500 1,000 Feet

CDM Smith

Figure 6-14
Simulated PCE Concentrations, June 1990
Shallow Aquifer

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

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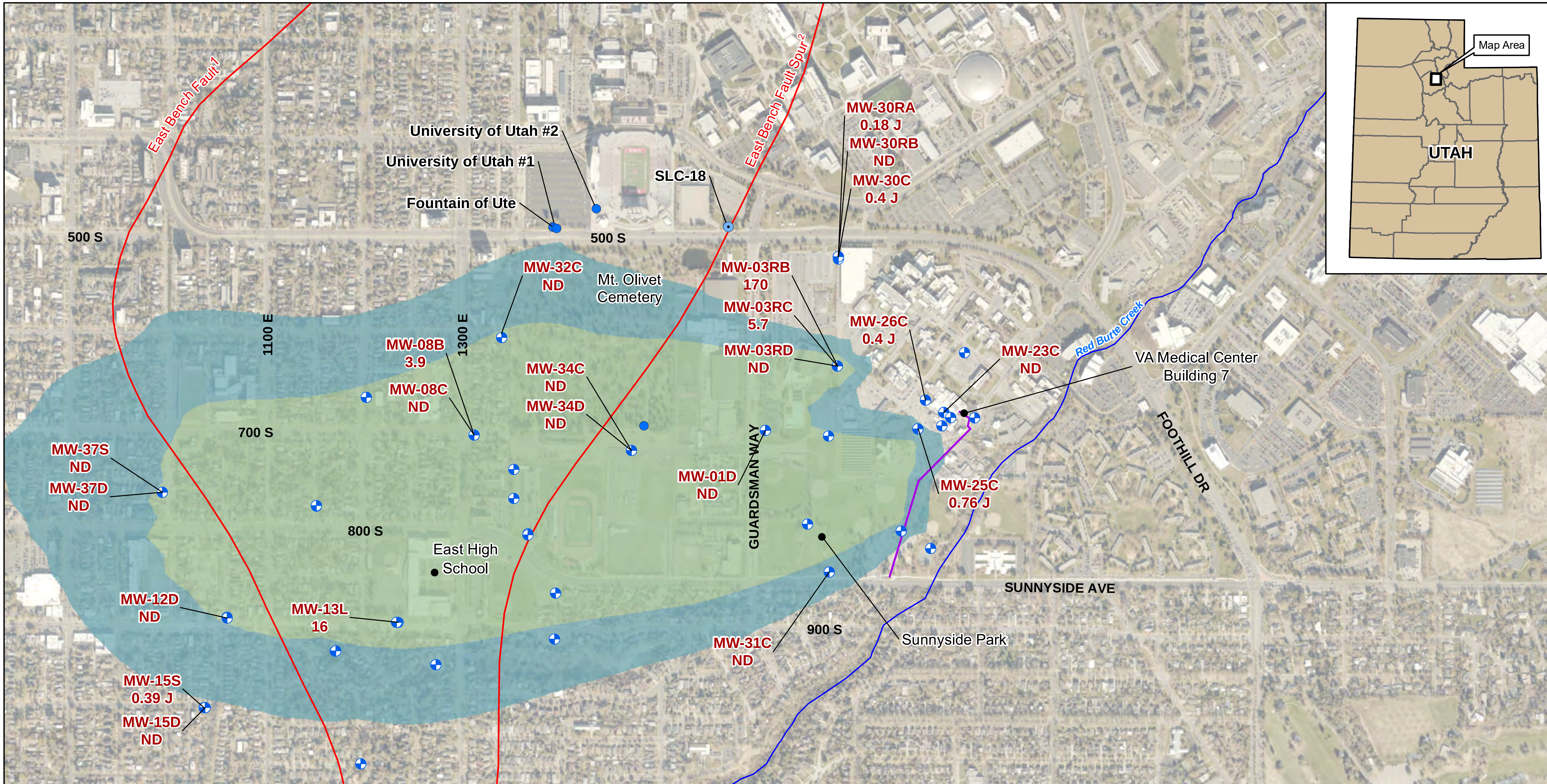

Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

Notes:
- Measured PCE concentrations are from December 2020.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N E S W

0 500 1,000 Feet

CDM Smith

Figure 6-15
Simulated PCE Concentrations, June 2004
Deep Aquifer

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

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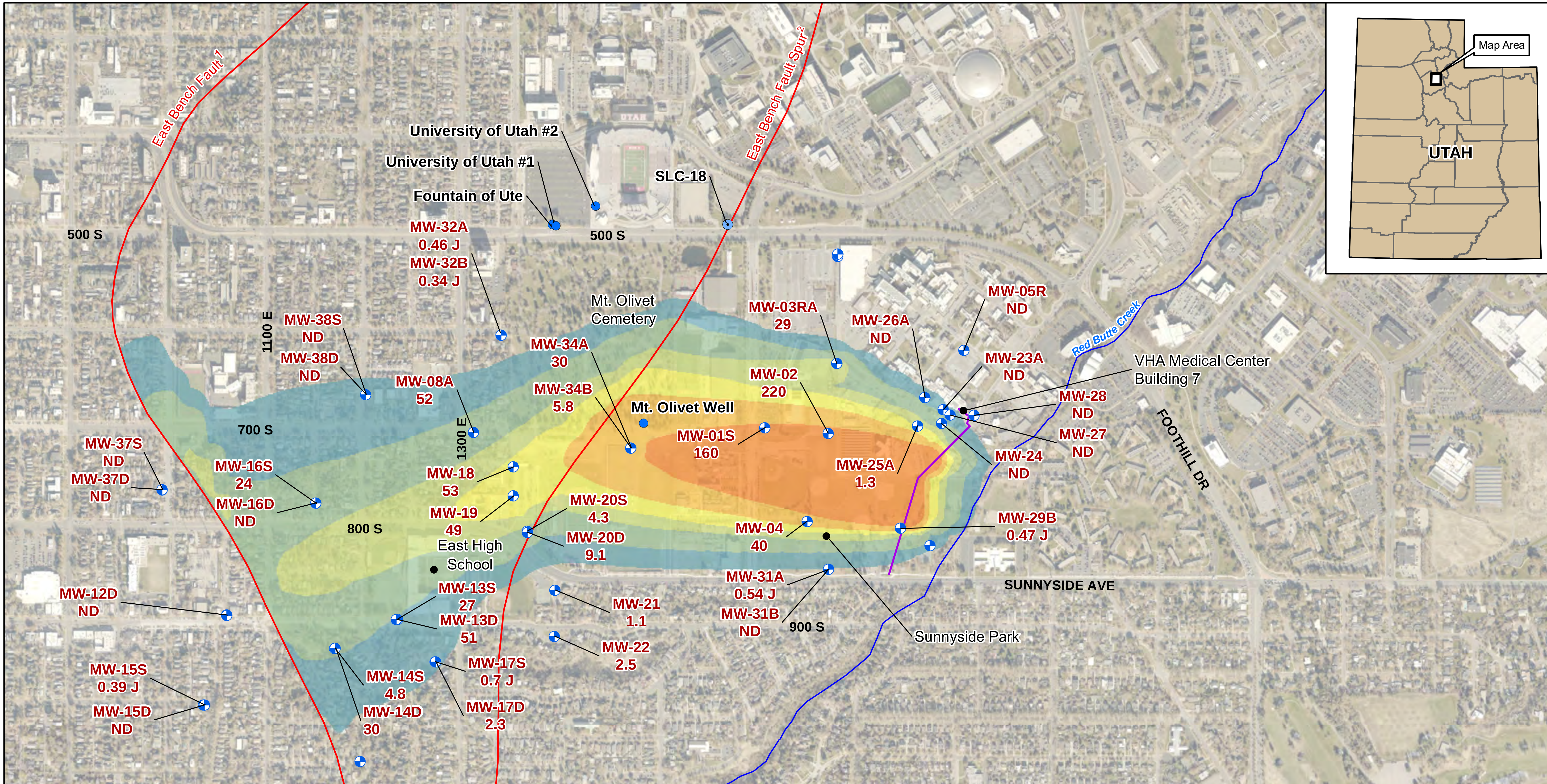


Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

Notes:
- Measured PCE concentrations are from December 2020.

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

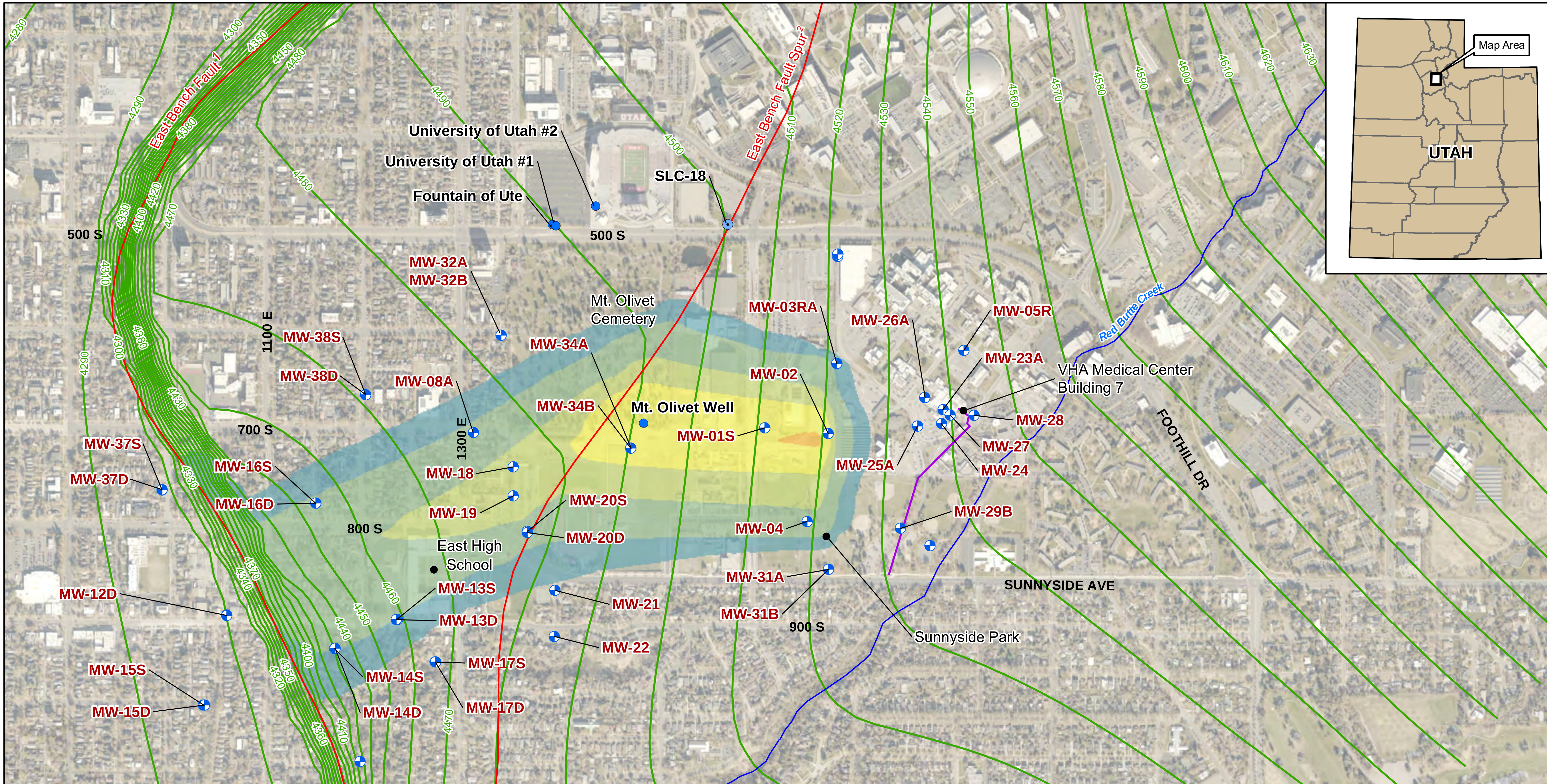
N E S W

0 500 1,000 Feet

Figure 6-16
Simulated PCE Concentrations, June 2010
Shallow Aquifer

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

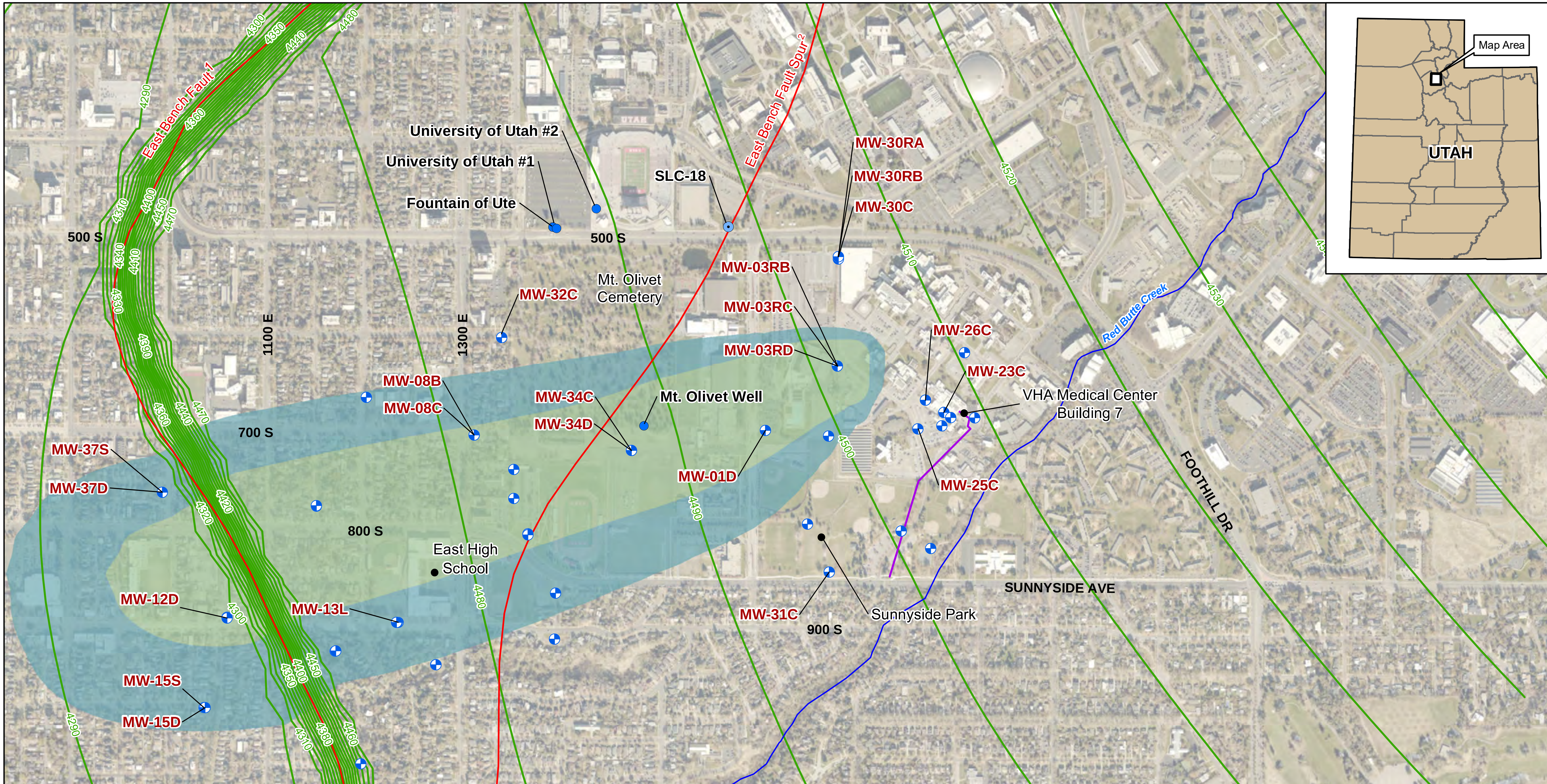
N S E W

0 500 1,000 Feet

CDM Smith

Figure 6-17
Future Conditions - Simulated 20 Year PCE Concentrations
Shallow Aquifer
Baseline: Average Conditions for Last Ten Years

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N W E S

0 500 1,000 Feet

CDM Smith

Figure 6-18

Future Conditions - Simulated 20 Year PCE Concentrations

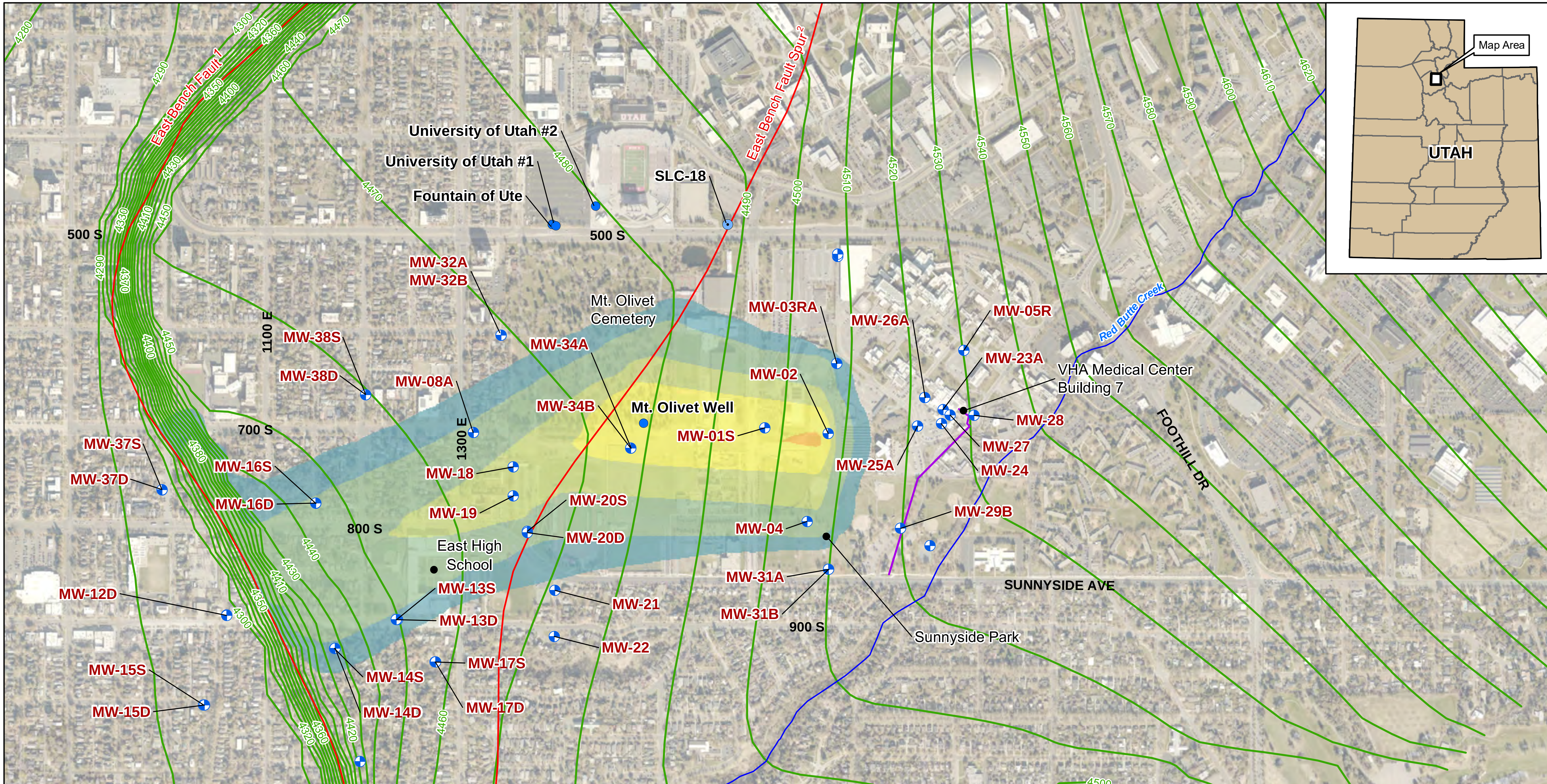
Deep Aquifer

Baseline: Average Conditions for Last Ten Years

OU1 700 South 1600 East PCE Plume

Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-18_Deep_Aquifer_ConcentrationsT4_Future1_20yr.mxd HoughtonG 9/27/2021 6:20:47 PM



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)
< 1
1 - 5
5 - 25
25 - 50
50 - 100
100 - 200
>200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

0 500 1,000 Feet

CDM Smith

Figure 6-19
Future Conditions - Simulated 20 Year PCE Concentrations
Shallow Aquifer
Scenario 1: Historic SLC-18 Pumping

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-19_Shallow_Aquifer_ConcentrationsT4_Future2_20yr.mxd HoughtonG 9/27/2021 6:21:36 PM

Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N W E S

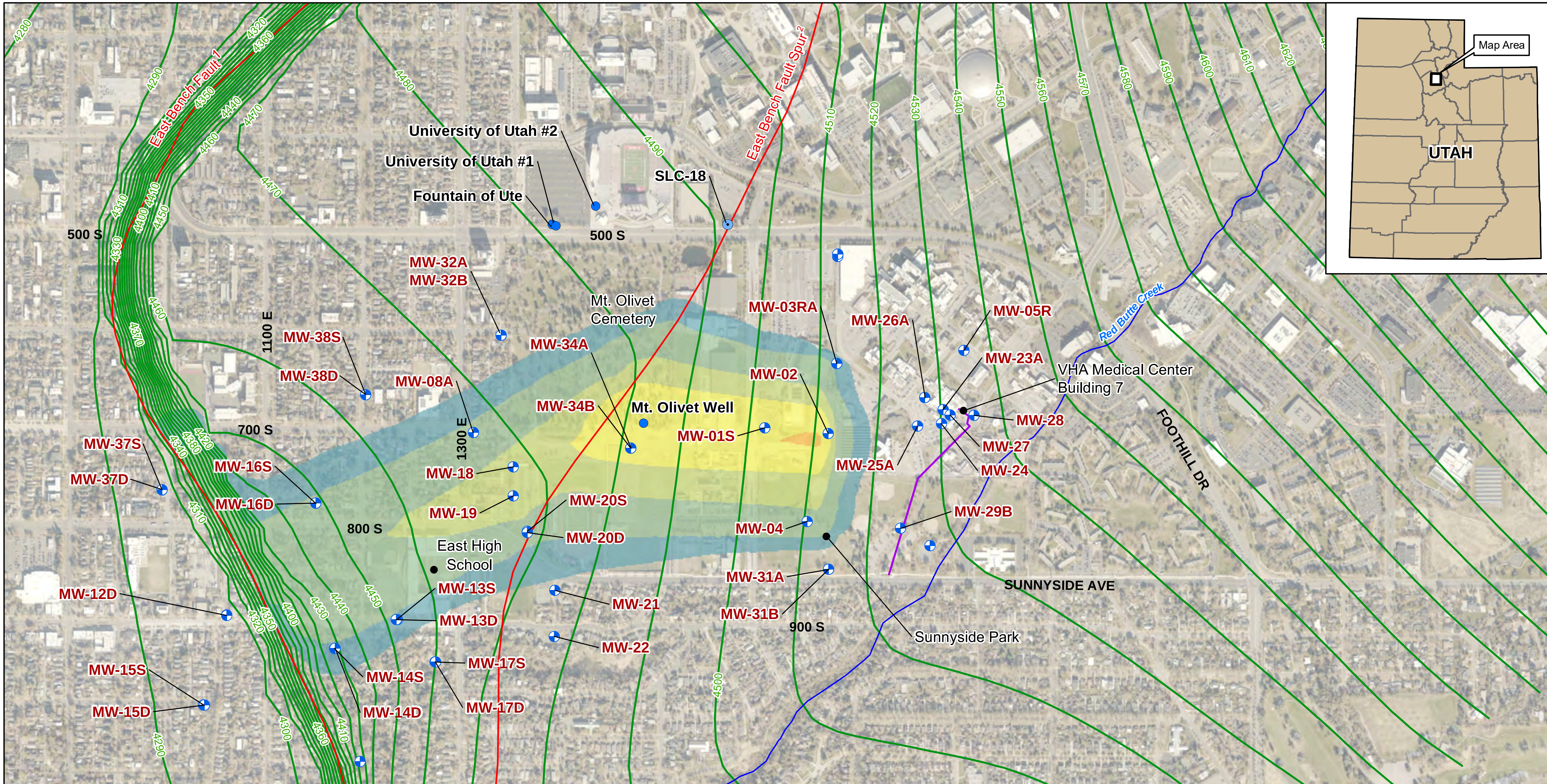
0 500 1,000 Feet

CDM Smith

Figure 6-20
Future Conditions - Simulated 20 Year PCE Concentrations
Deep Aquifer
Scenario 1: Historic SLC-18 Pumping

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-20_Deep_Aquifer_ConcentrationsT4_Future2_20yr.mxd HoughtonG 9/27/2021 6:22:18 PM



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N W E S

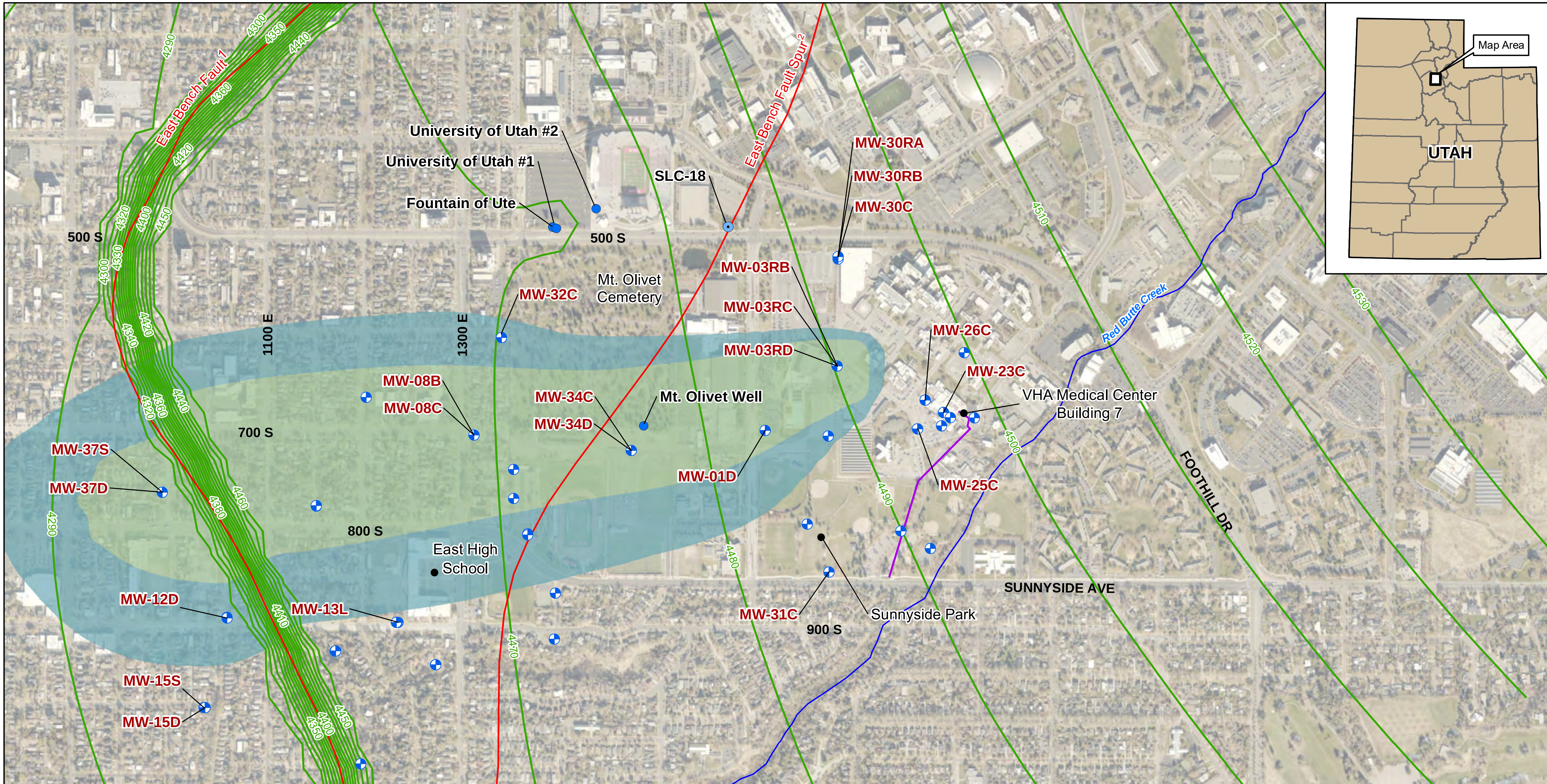
0 500 1,000 Feet

Figure 6-21
Future Conditions - Simulated 20 Year PCE Concentrations
Shallow Aquifer
Scenario 3: Proposed University Irrigation Pumping

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-21_Shallow_Aquifer_ConcentrationsT4_Future4_20yr.mxd HoughtonG 9/27/2021 6:22:55 PM



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N W E S

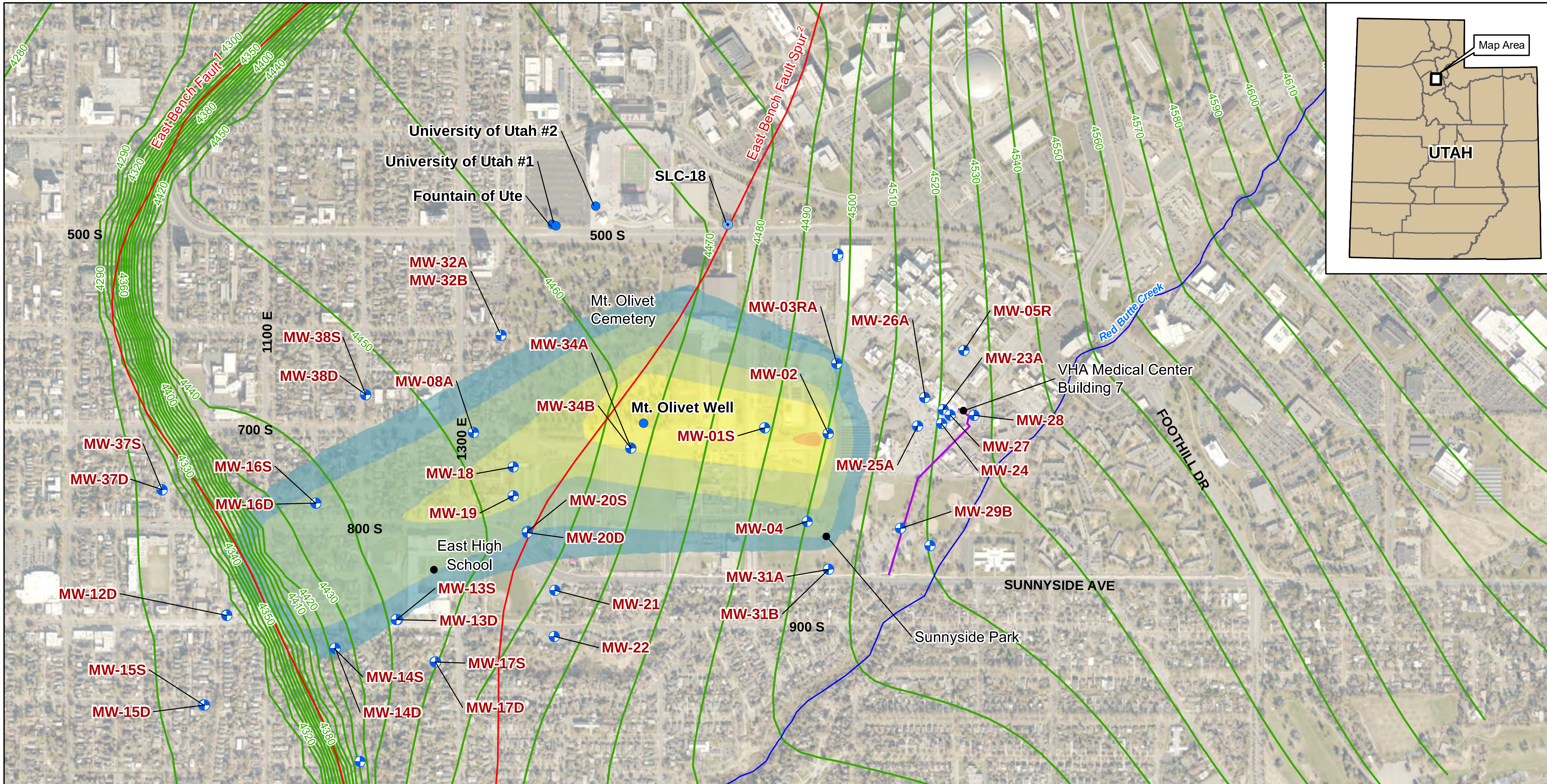
0 500 1,000 Feet

Figure 6-22
Future Conditions - Simulated 20 Year PCE Concentrations
Deep Aquifer
Scenario 3: Proposed University Irrigation Pumping

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-22_Deep_Aquifer_ConcentrationsT4_Future4_20yr.mxd HoughtonG 9/27/2021 6:25:29 PM



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N E S W

0 500 1,000 Feet

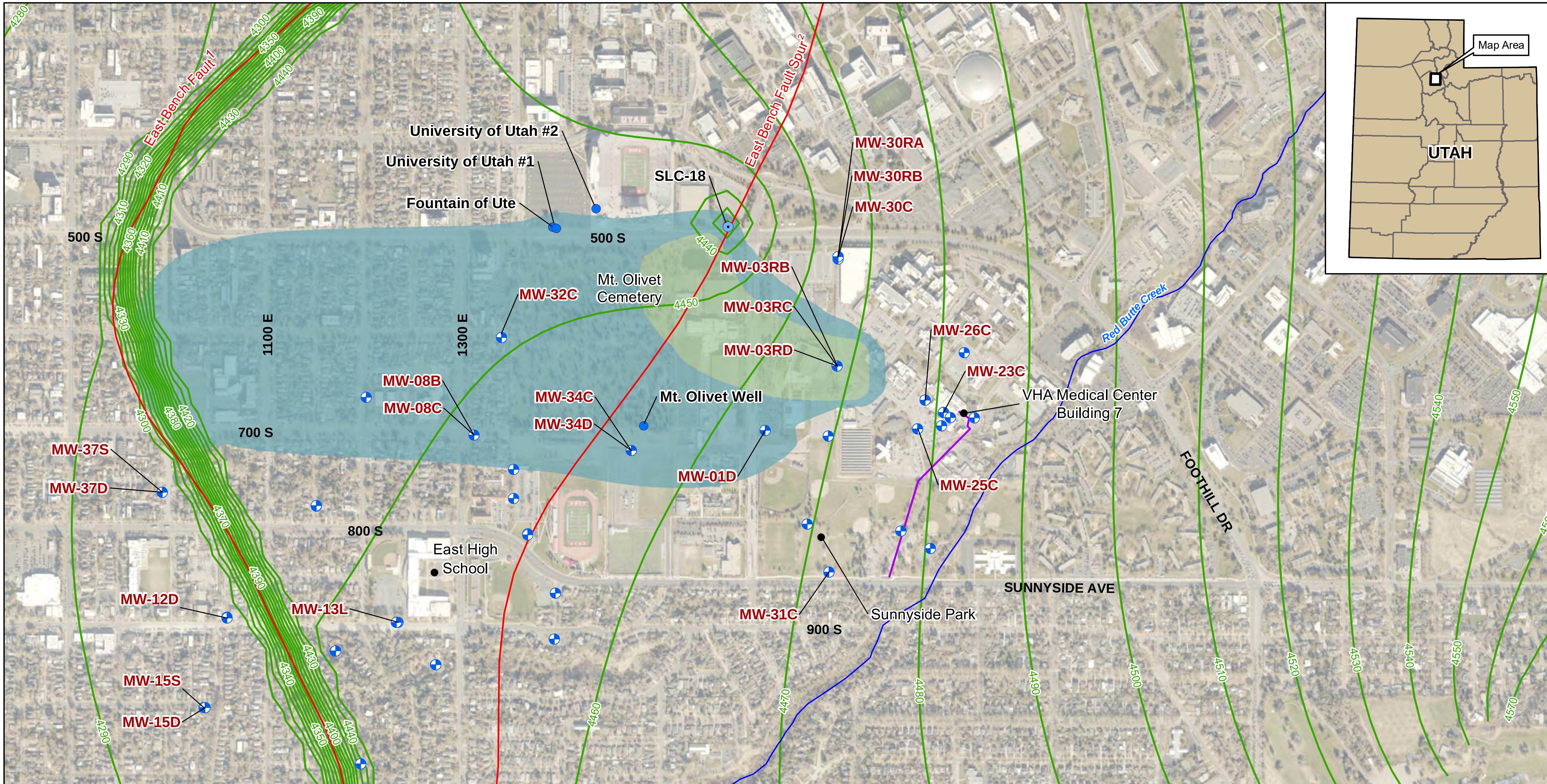
CDM Smith

Figure 6-23

Future Conditions - Simulated 20 Year PCE Concentrations
Shallow Aquifer
Scenario 2: Maximum (Water Right) SLC-18 Pumping

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-23_Shallow_Aquifer_ConcentrationsT4_Future3_20yr.mxd HoughtonG 9/27/2021 6:26:09 PM



Legend

		PCE (ug/L)	
Monitoring Well		< 1	
Abandoned Monitoring Well		1 - 5	
Drinking Water Supply Well		5 - 25	
Irrigation Well		25 - 50	
Landmark		50 - 100	
Red Butte Creek		100 - 200	
Fault Line		>200	
Sewer Line			
Head Contour (10-ft)			

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

Figure 6-24
Future Conditions - Simulated 20 Year PCE Concentrations
Deep Aquifer
Scenario 2: Maximum (Water Right) SLC-18 Pumping

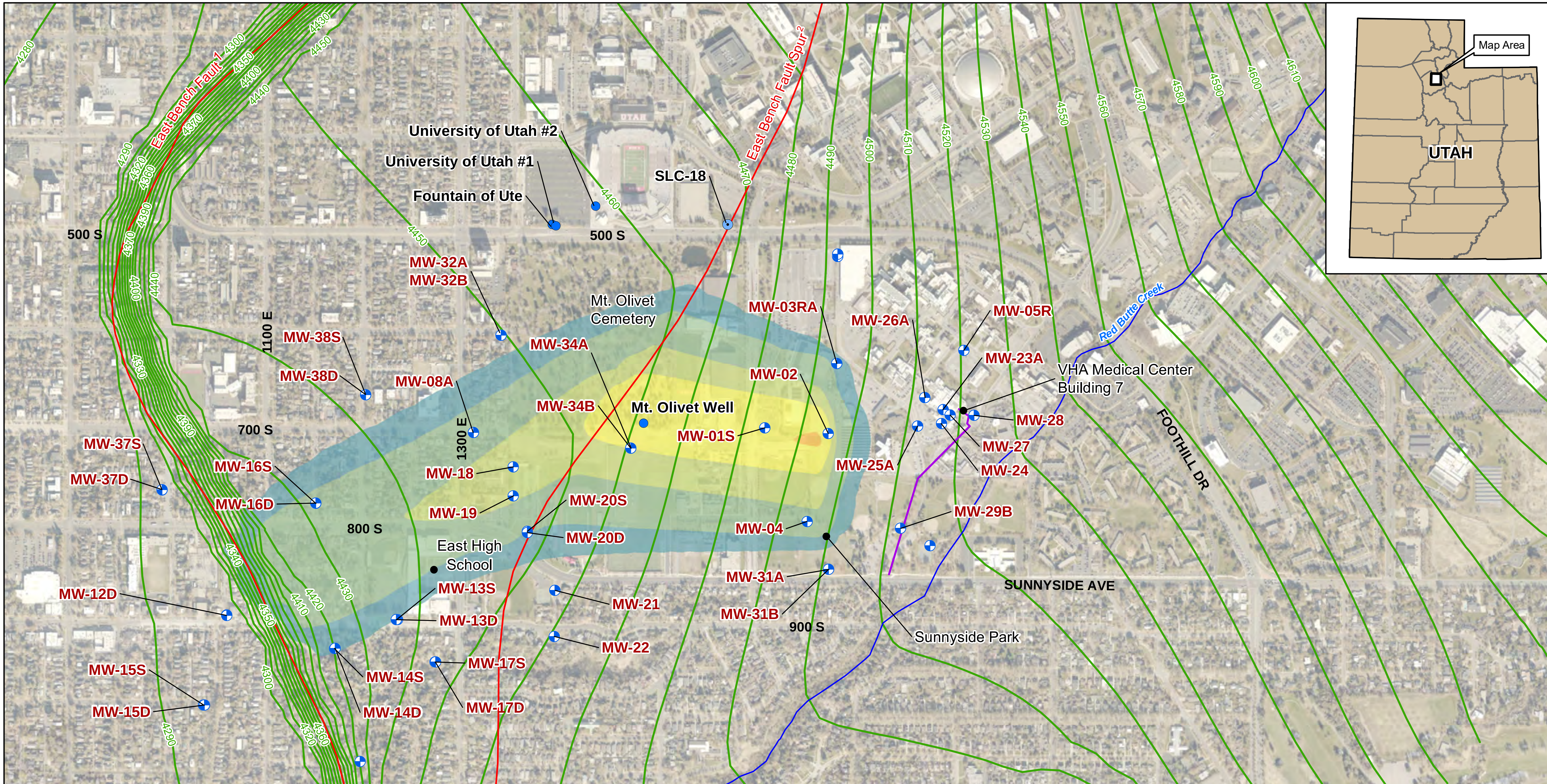
N E S W

0 500 1,000 Feet

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-24_Deep_Aquifer_ConcentrationsT4_Future3_20yr.mxd HoughtonG 9/27/2021 6:26:59 PM



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.
[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

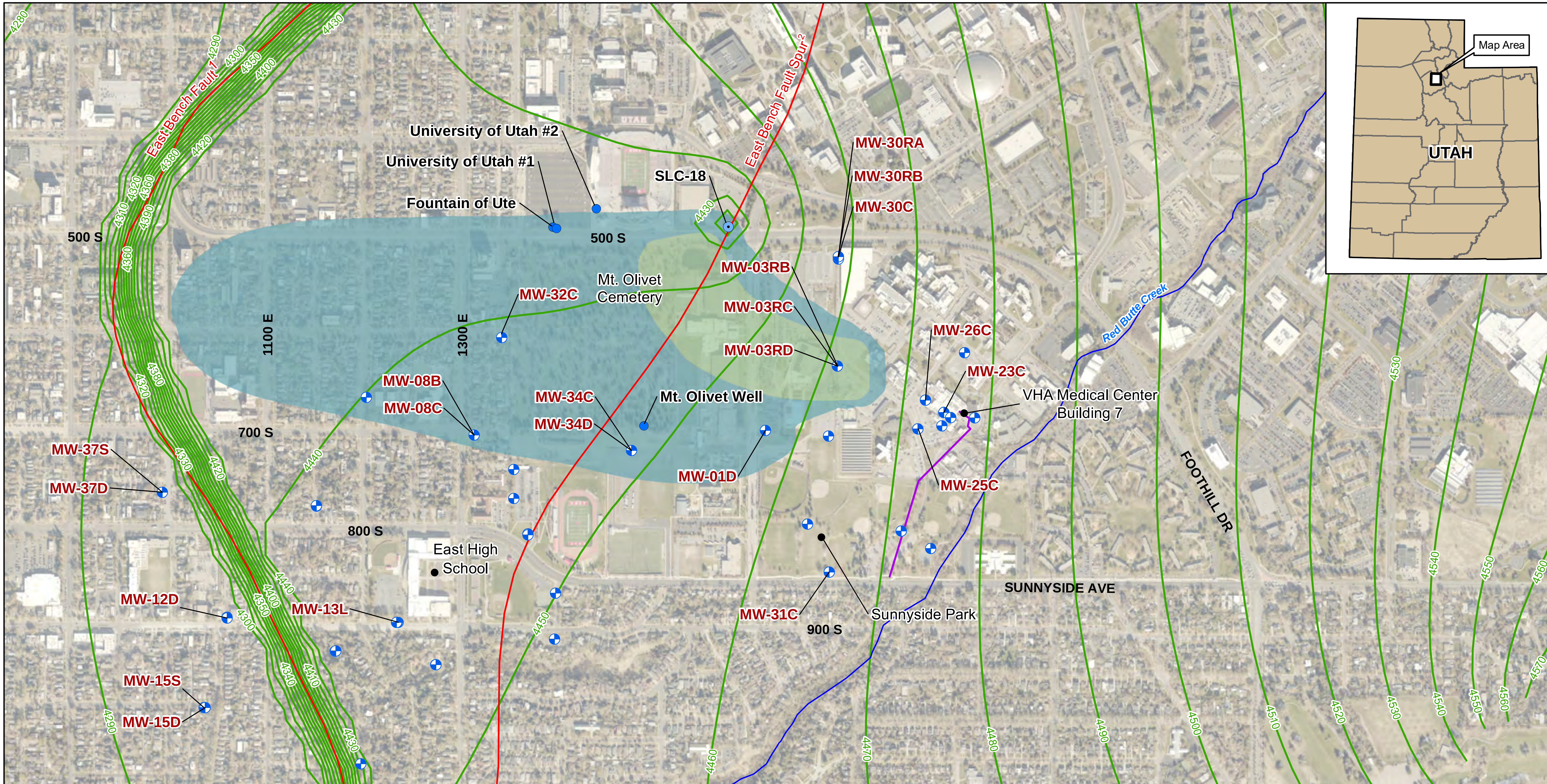
N E S W

0 500 1,000 Feet

CDM Smith

Figure 6-25
Future Conditions - Simulated 20 Year PCE Concentrations
Shallow Aquifer
Scenario 4: Proposed University Irrigation Pumping
and Maximum (Water Right) Pumping at SLC-18

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah



Legend

- Monitoring Well
- Abandoned Monitoring Well
- Drinking Water Supply Well
- Irrigation Well
- Landmark
- Red Butte Creek
- Fault Line
- Sewer Line
- Head Contour (10-ft)

PCE (ug/L)

- < 1
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- >200

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

VHA = Veterans Health Administration

N E S W

0 500 1,000 Feet

Figure 6-26
Future Conditions - Simulated 20 Year PCE Concentrations
Deep Aquifer
Scenario 4: Proposed University Irrigation Pumping
and Maximum (Water Right) Pumping at SLC-18

CDM Smith

OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: E:\Salt_Lake_PCE\GIS\mxd\RI_Body_Figures\Fig6-26_Deep_Aquifer_ConcentrationsT4_Future5_20yr.mxd HoughtonG 9/27/2021 6:29:11 PM

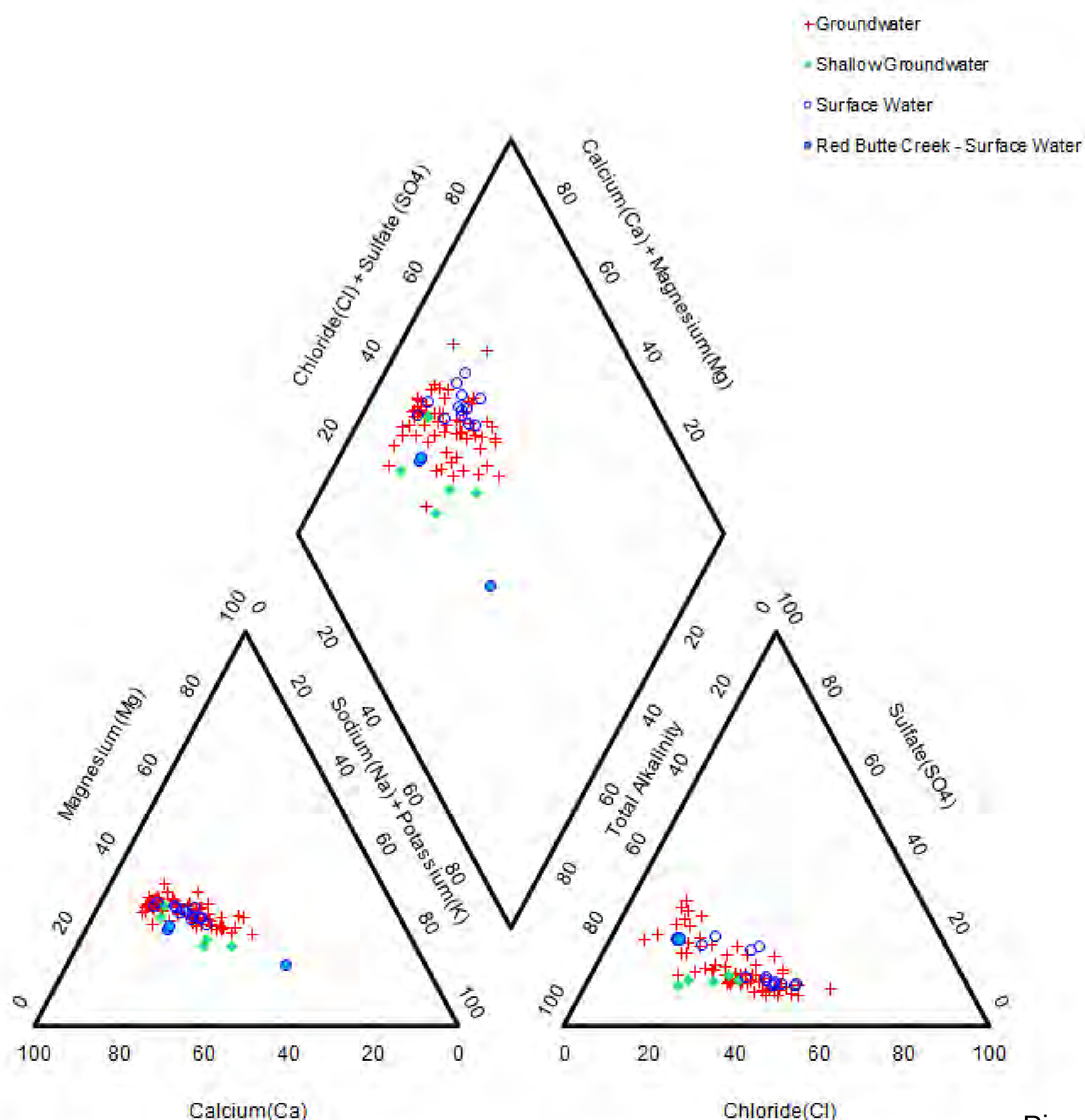
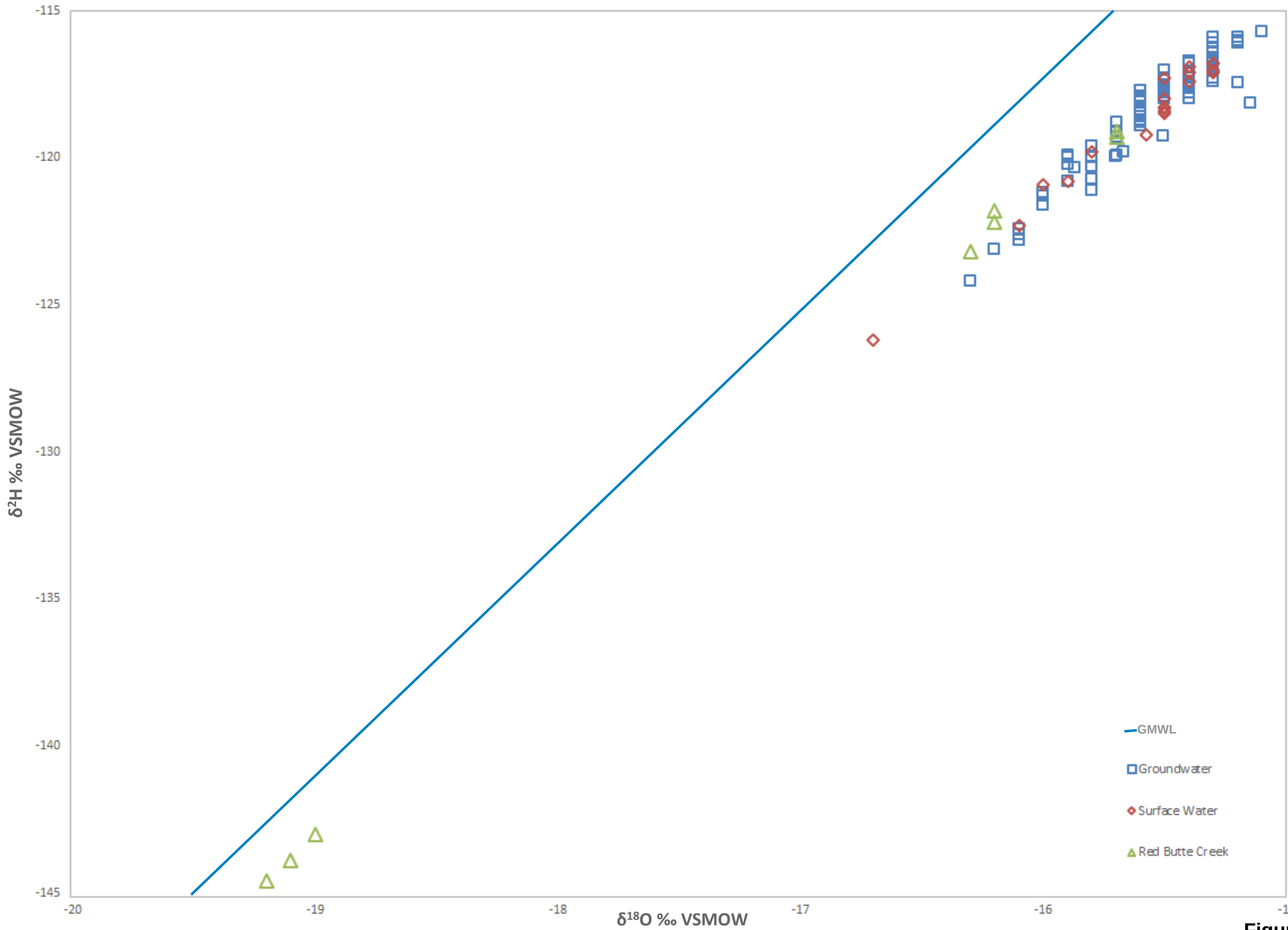


Figure 6-27
Piper Diagram Surface Water and Groundwater

OU1 Remedial Investigation Report
700 1600 East PCE Plume
Salt Lake City, Utah



Notes

δ^{18}O and δ^{2}H analysis performed by University of Utah SIRFER laboratory; precision of δ^{18}O ±0.1‰ and δ^{2}H ±0.3‰ during analysis.

‰ = per mil

δ = delta

^{18}O = 18-Oxygen

^{2}H = 2-Hydrogen (deuterium)

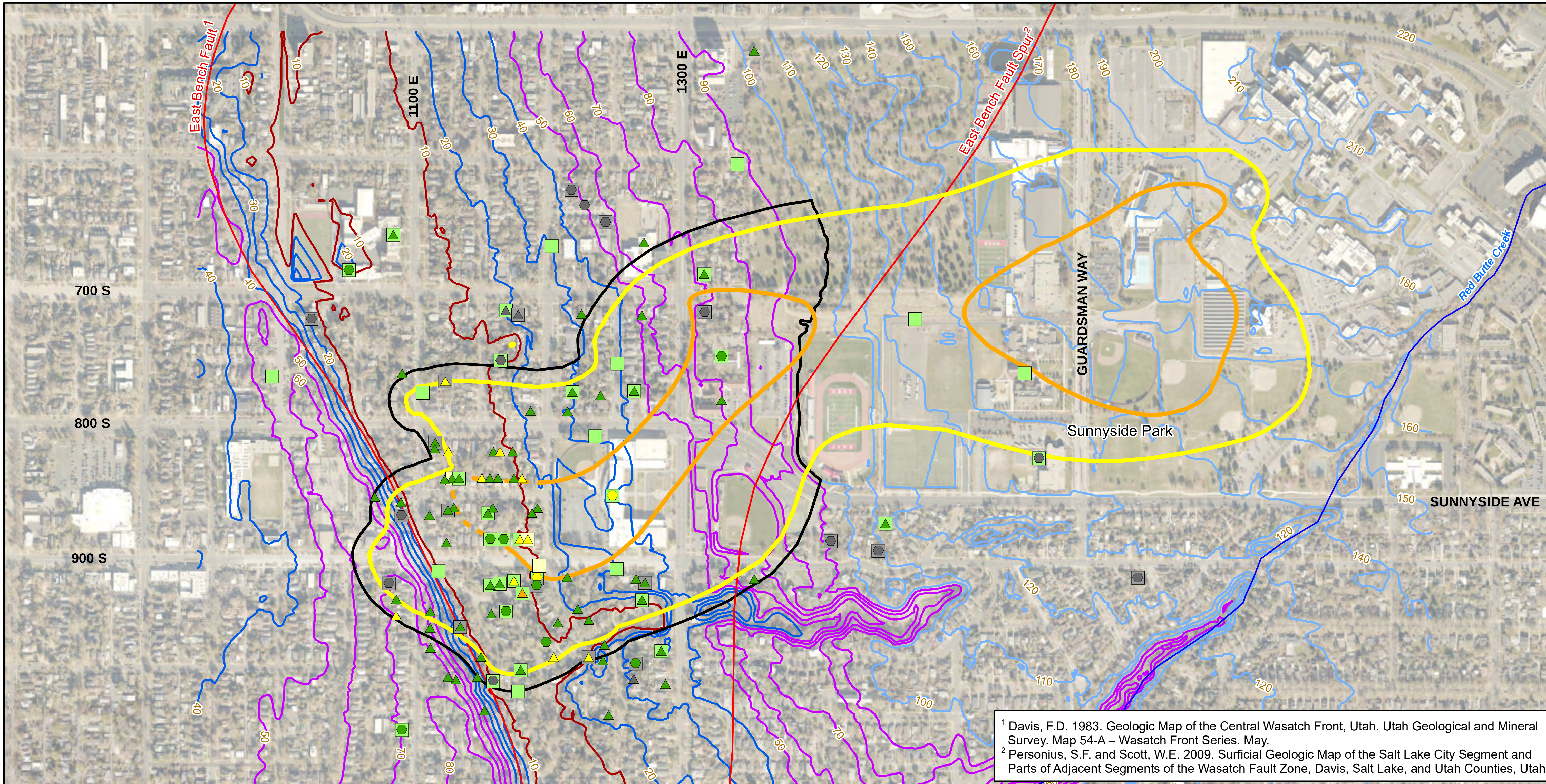
GMWL = Global Meteoric Water Line

VSMOW = Vienna Standard Mean Ocean Water

Figure 6-28

Oxygen and Hydrogen Stable Isotopes

OU1 Remedial Investigation Report
700 1600 East PCE Plume
Salt Lake City, Utah



[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

Legend

Soil Gas Sample Location

Indoor Air Sample Analysis

- SUMMA
- HAPSITE

Depth to Groundwater Contours

- 0 - 19 feet
- 20 - 49 feet
- 50 - 99 feet
- > 100 feet
- Fault Line

PCE Concentrations (µg/m³)

- = Non-detect
- = < Residential RBSL
- = > Residential RBSL
- = > Residential Tier 1 RAL

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

100 feet (lateral or vertical) from the 5 µg/L groundwater plume

Notes:

1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.
2. The color coded PCE concentration at each location is based on the highest detection reported.
3. Residential indoor air RBSL is EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1x10-6 and a hazard quotient of 1 (November 2020 RSL table version).
4. Residential Indoor Air Tier 1 RAL provided in memorandum (CH2M 2015). Tier 1 RAL corresponding to an excess lifetime cancer risk of 1x10-5 and a hazard quotient of 1.
5. Soil gas RBSL is the EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1x10-6 and a hazard quotient of 1 divided by an attenuation factor of 0.03 (November 2020 RSL table version).
6. Qualified 2015 data is included on figure to define the extent of vapor intrusion. See Tables 5-10 and 5-11 for further information.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter
µg/m³ = micrograms per cubic meter
RBSL = risk based screening level
RAL = removal action level

N S E W

0 250 500 Feet

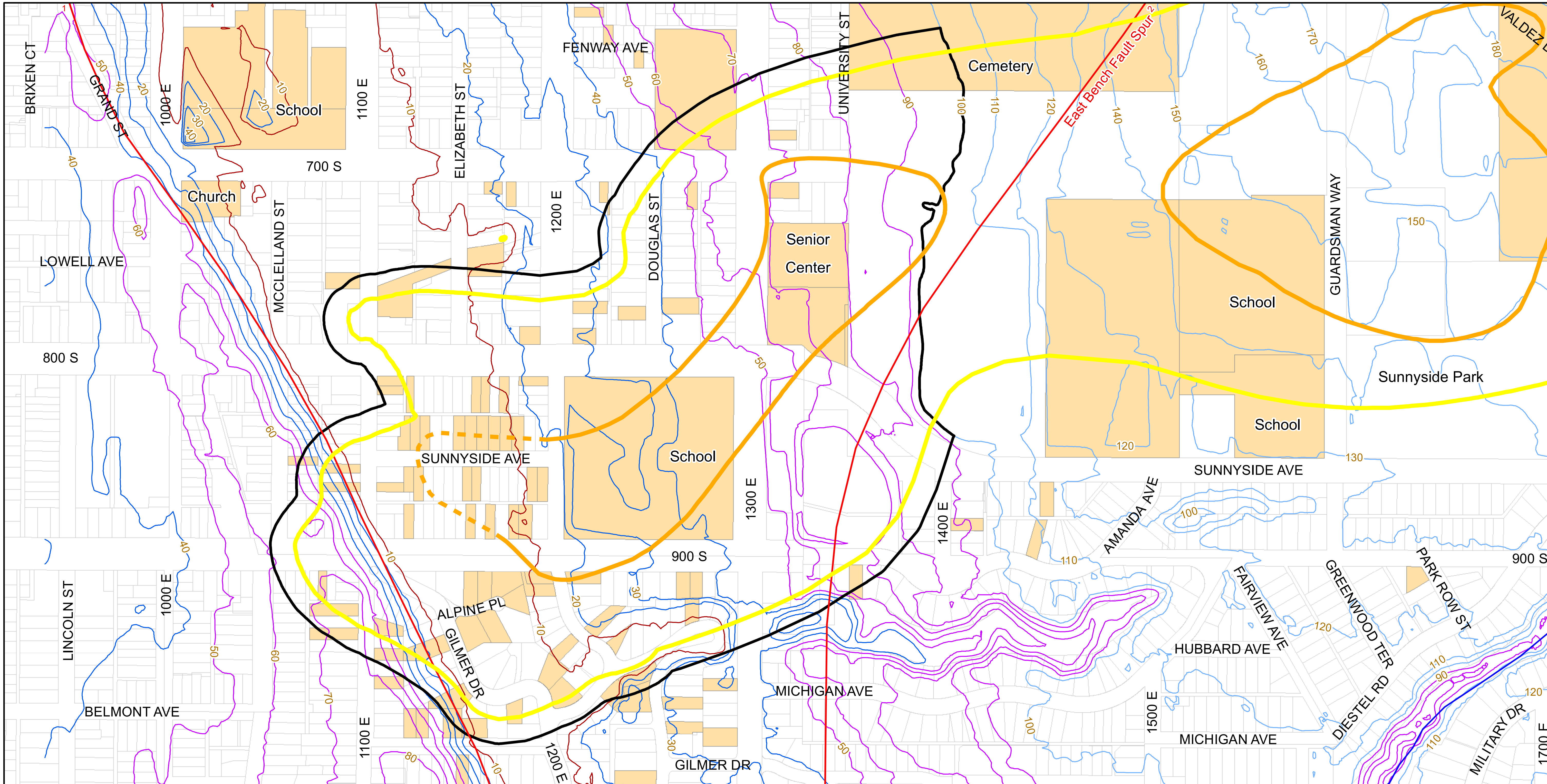
Residential Soil Gas RBSL: 360 µg/m³
Residential Indoor Air RBSL: 11 µg/m³
Residential Indoor Air Tier 1 RAL: 42 µg/m³

CDM Smith

Figure 6-29A
Vapor Intrusion
Lines of Evidence

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-29A_VI_Evidence.mxd WAGNERA 6/3/2022 11:18:18 AM



Legend

- Fault Line
- Red Butte Creek
- Parcel Boundary
- Parcel with Indoor Air Samples

Depth to Groundwater Contours

- 0 - 19 feet
- 20 - 49 feet
- 50 - 99 feet
- > 100 feet

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

- 100 feet (lateral or vertical) from the 5 µg/L groundwater plume

Notes:

1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.

OU = operable unit
PCE = tetrachloroethene
µg/L = micrograms per liter

[1] Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey. Map 54-A – Wasatch Front Series. May.

[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

N W E S

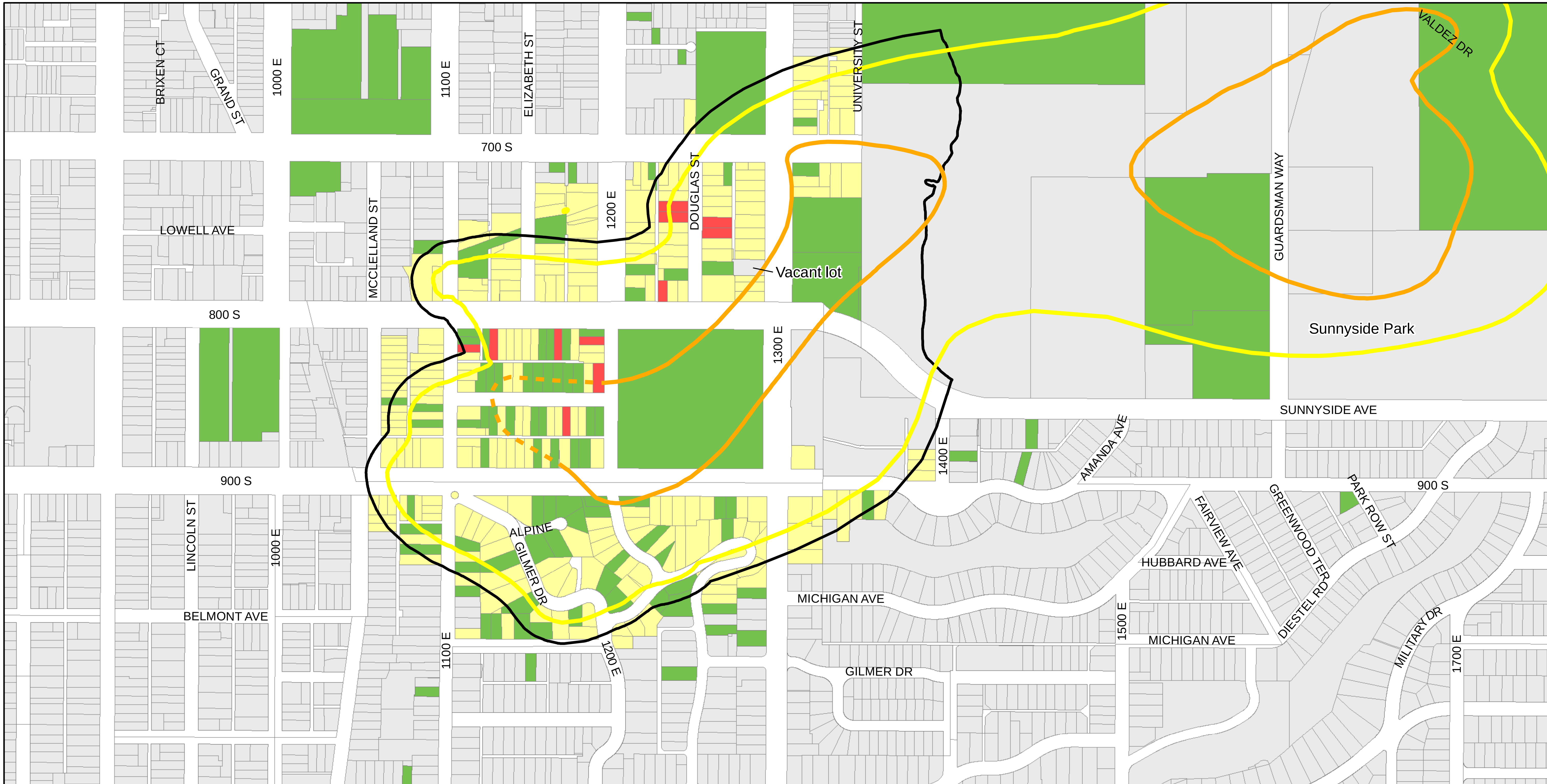
0 250 500 Feet

CDM Smith

Figure 6-29B
Vapor Intrusion
Lines of Evidence
East Side Springs

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-29B_VI_Evidence_ESS.mxd WAGNERA 6/22/2022 10:10:05 AM



Legend

- More than 100 feet from PCE plume or groundwater greater than 50 feet or parcel where no structures are present
- Properties where access has been requested and denied
- Properties where access has been requested but no response has been provided
- Properties where access has been granted and indoor air sampling has been performed
- Roads or right-of-way
- 100 feet (lateral or vertical) from the 5 µg/L groundwater plume

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

OU = operable unit
PCE = tetrachloroethene

Notes:

1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.
2. Properties 0015H and 0016H are outside the map extent. Property 0015H is located more than 2,500 feet to the south of the plume extent and property 0016H is located more than 2,200 feet to the north of the plume extent.

N W E S

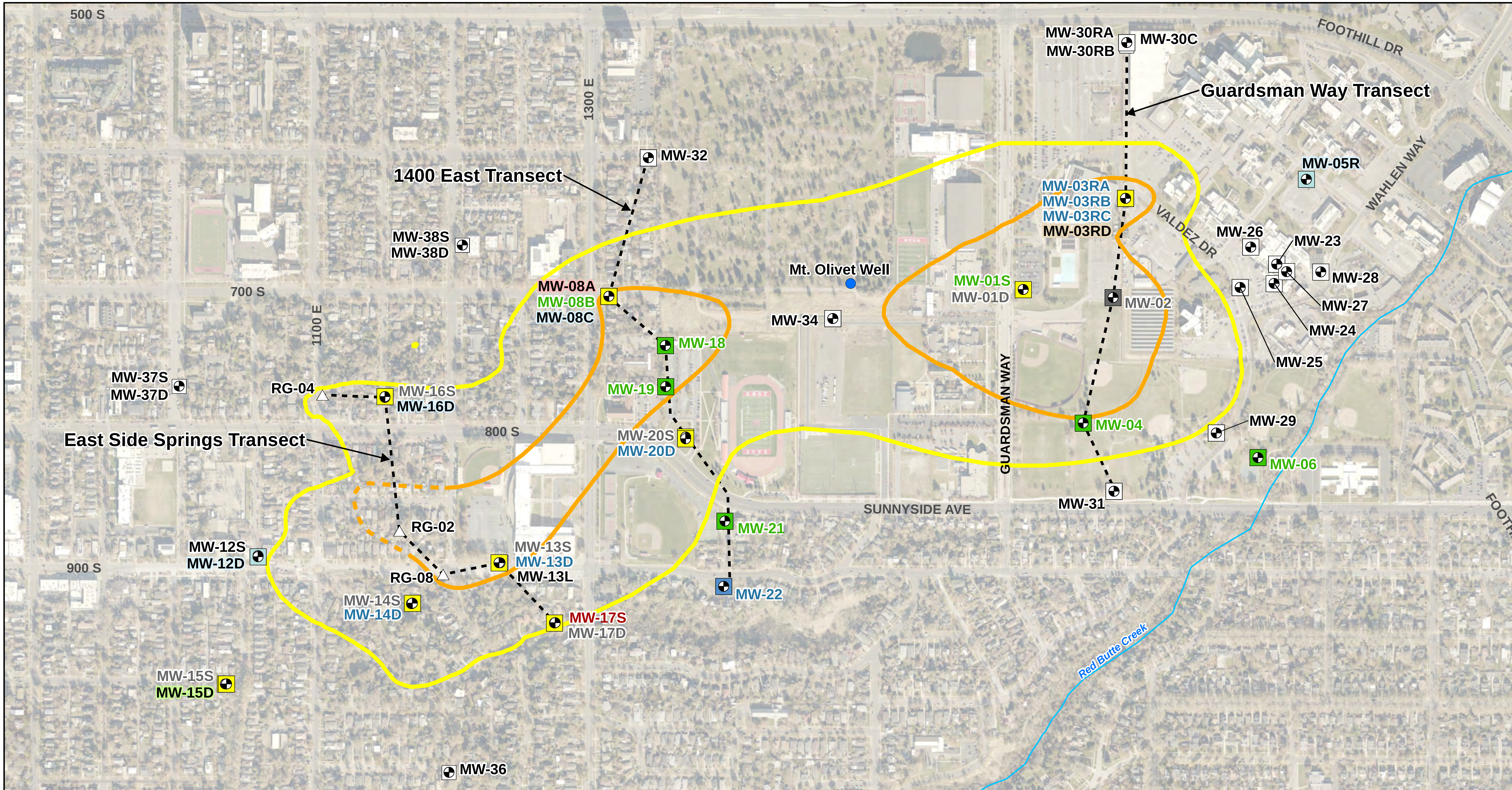
0 250 500 Feet

CDM Smith

Figure 6-29C
OU1 Indoor Air Sampling
Spatial Coverage

700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-29C_IA_Sampling_Spatial_Coverage.mxd WAGNERA 7/11/2022 10:32:51 AM



PCE Statistical Trends

- Increasing
- Probably Increasing, >50% ND
- Stable
- Stable, >50% ND
- Decreasing
- Probably Decreasing, >50% ND
- No Trend
- No Trend, >50% ND
- Insufficient Detections for Statistical Analysis
- Multiple Screen Intervals
- Monitoring Well
- Residential Groundwater Well
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek

Notes:
1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.
2. For wells with multiple screening intervals, see well ID label for statistical trend.

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L

Dashed Line - Inferred Extent

OU = operable unit
RI = remedial investigation
PCE = tetrachloroethene
MW = monitoring well

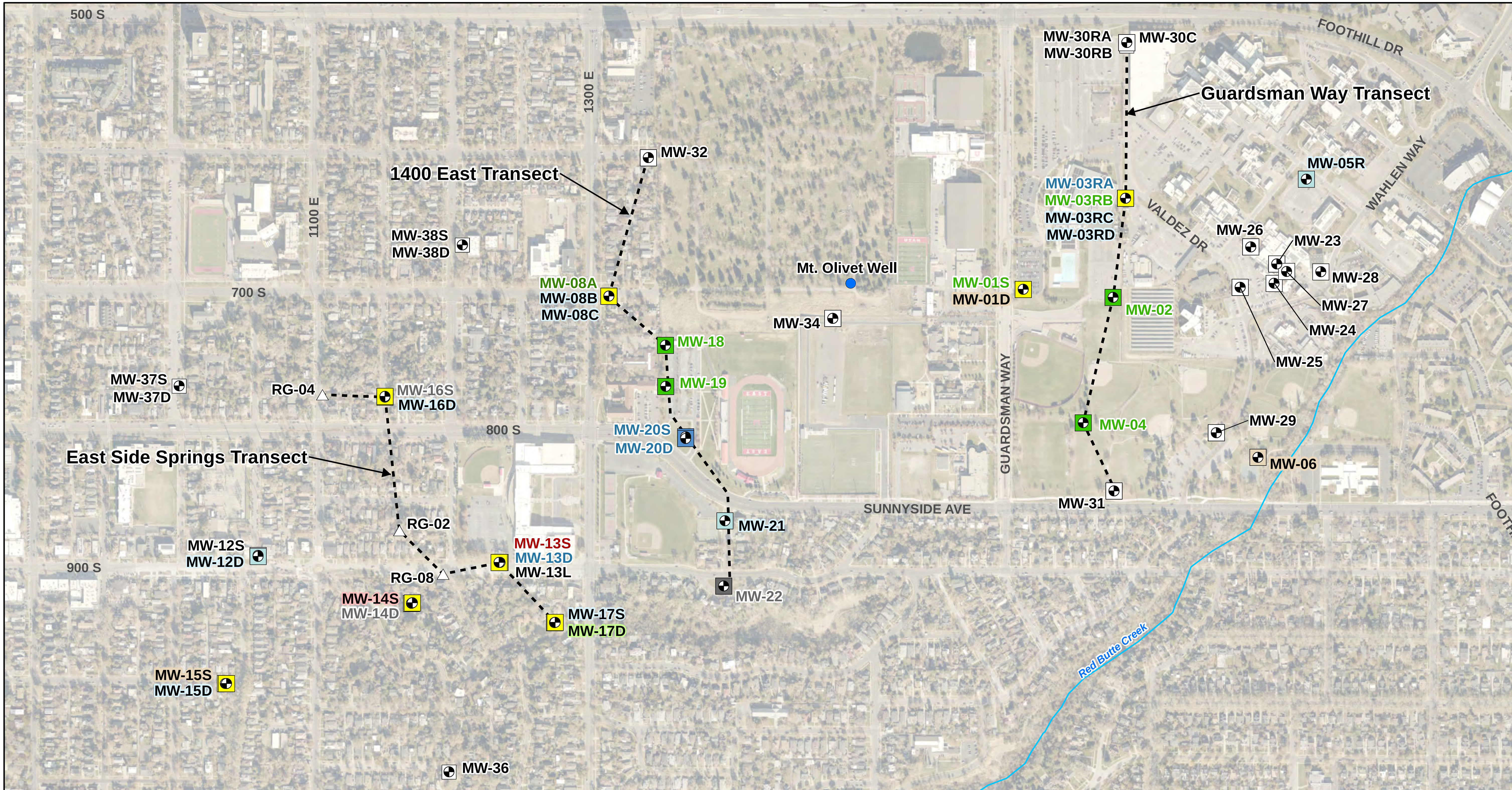
N
W E
S
0 250 500
Feet

CDM Smith

Figure 6-30
Summary of Tetrachloroethene Concentration Trends Analysis

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-30_PCE_Trend_Analysis.mxd WAGNERA 10/20/2021



TCE Statistical Trends

- Increasing
- Probably Increasing, >50% ND
- Stable
- Stable, >50% ND
- Decreasing
- Probably Decreasing, >50% ND
- No Trend
- No Trend, >50% ND
- Insufficient Detections for Statistical Analysis
- Multiple Screen Intervals
- Monitoring Well
- Residential Groundwater Well
- Irrigation Well
- Monitoring Well Transect
- Red Butte Creek

Notes:
1. For wells with multiple screening intervals, see well ID label for statistical trend.

OU = operable unit
RI = remedial investigation
PCE = tetrachloroethene
MW = monitoring well

N S W E

0 250 500 Feet

CDM Smith

Figure 6-31
Summary of Trichloroethene Concentration Trends Analysis

OU1 Remedial Investigation Report
700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig6-31_TCE_Trend_Analysis.mxd WAGNERA 10/20/2021

Figure 6-32
MW-14S Trend Chart

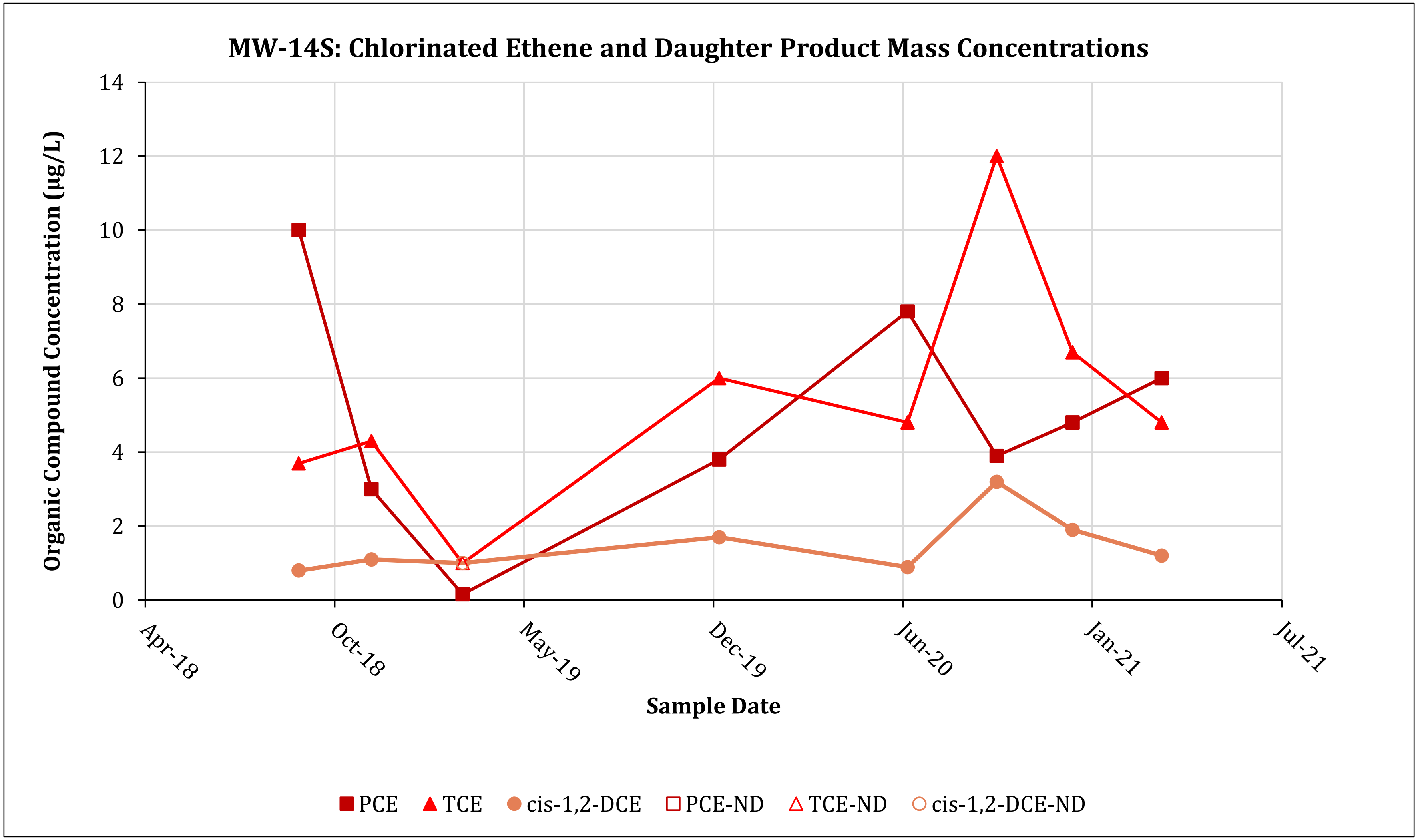


Figure 6-33
MW-17S Trend Chart

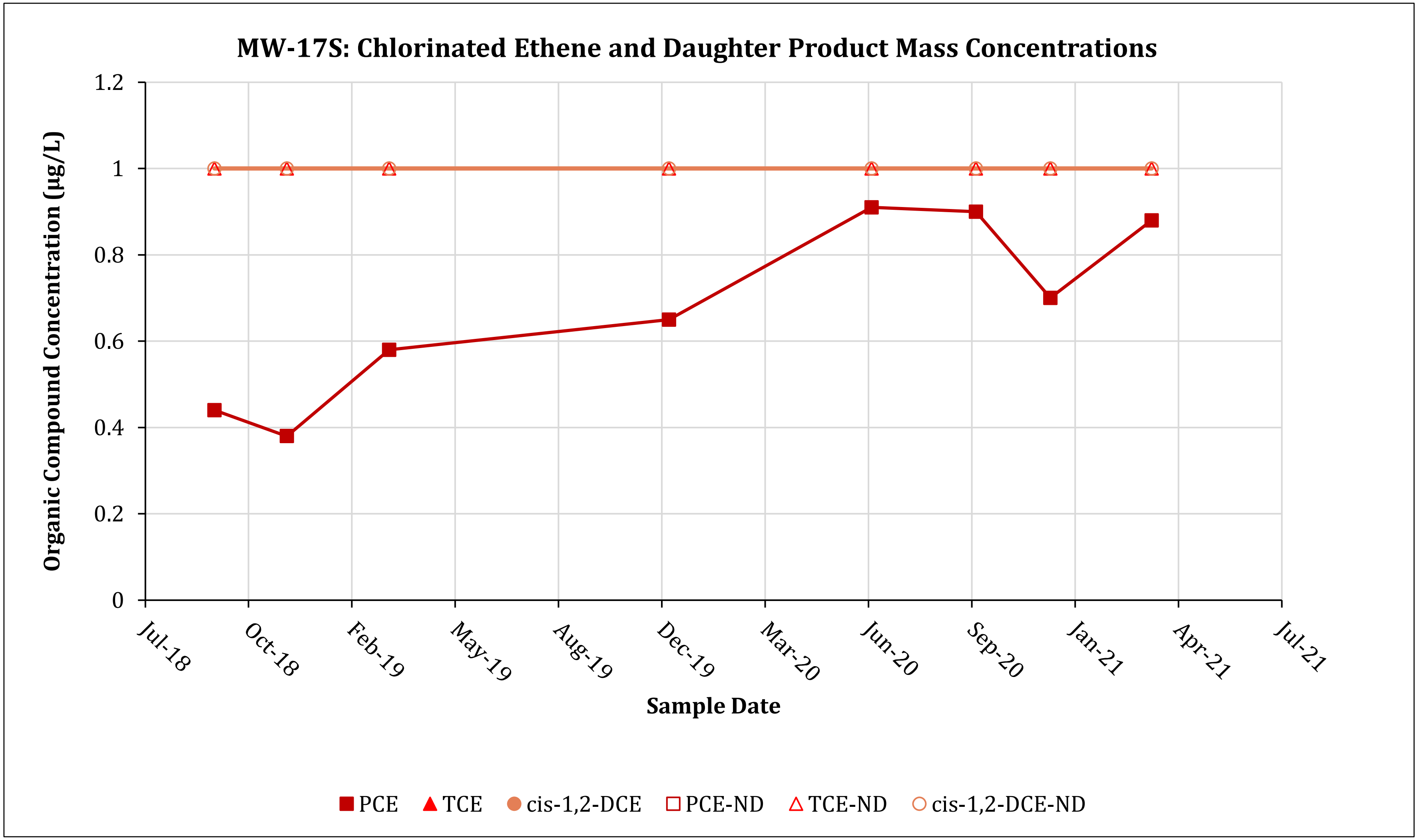


Figure 6-34
MW-02 Trend Chart and Statistical Analysis

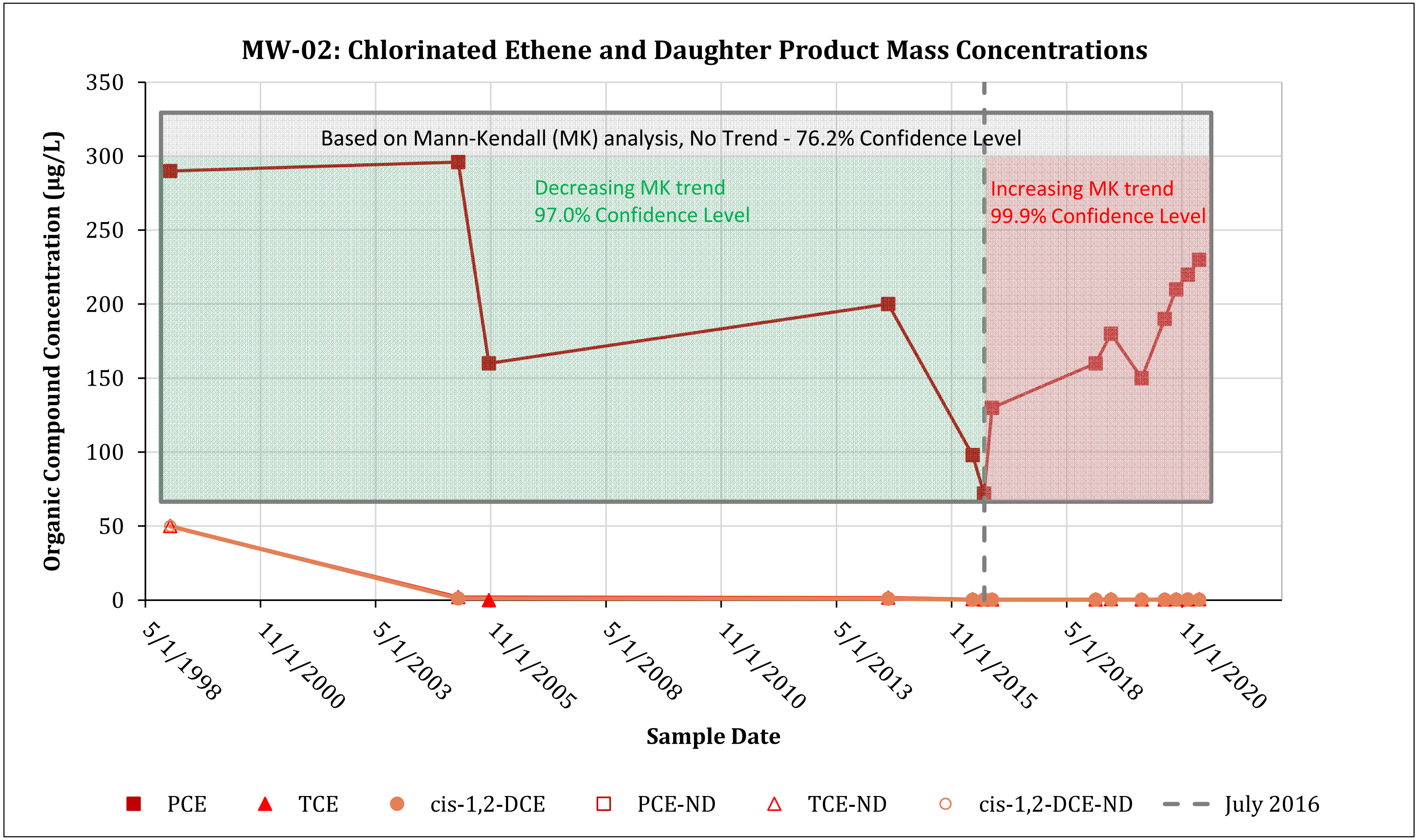


Figure 6-35
MW-04 Trend Chart

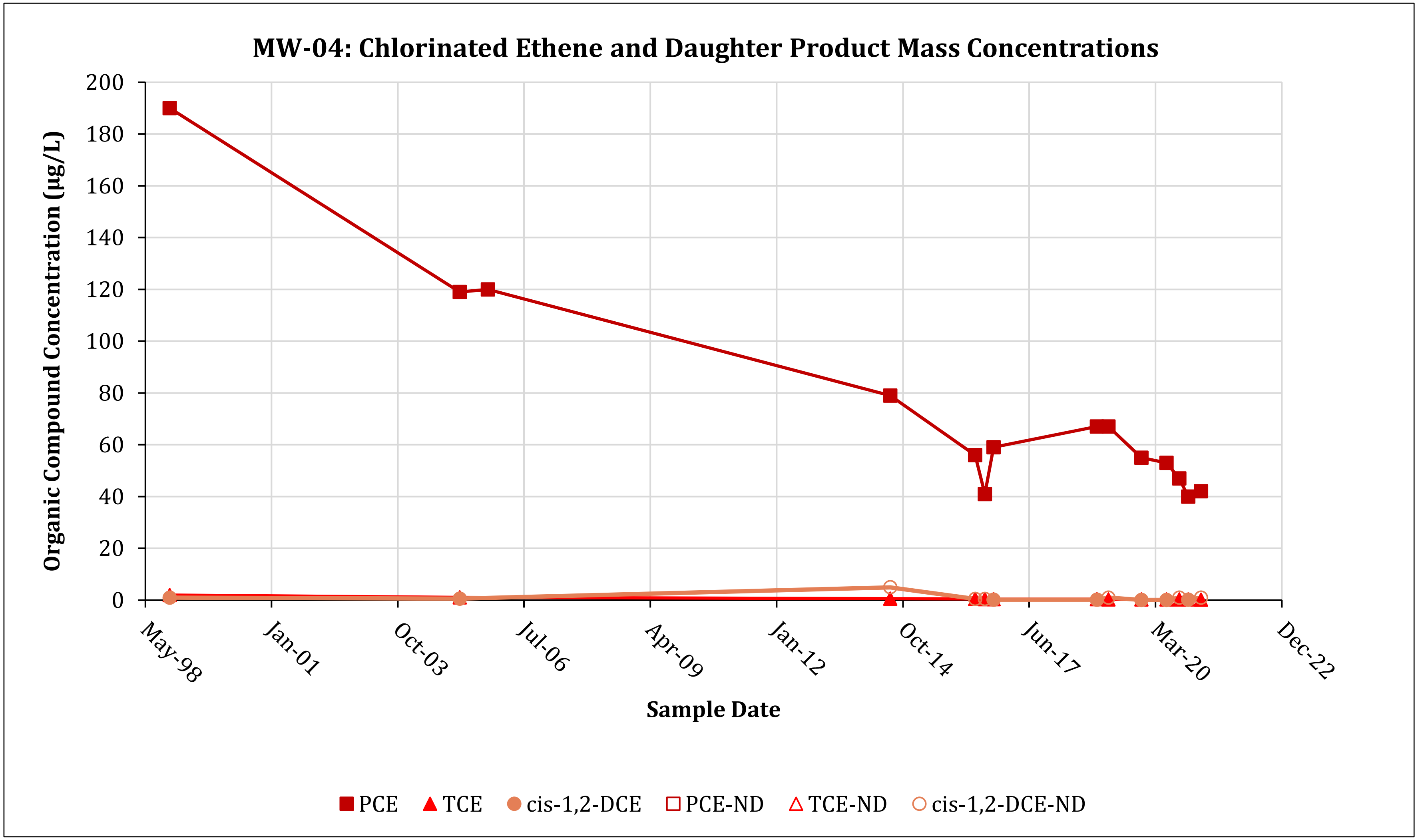


Figure 6-36
MW-06 Trend Chart

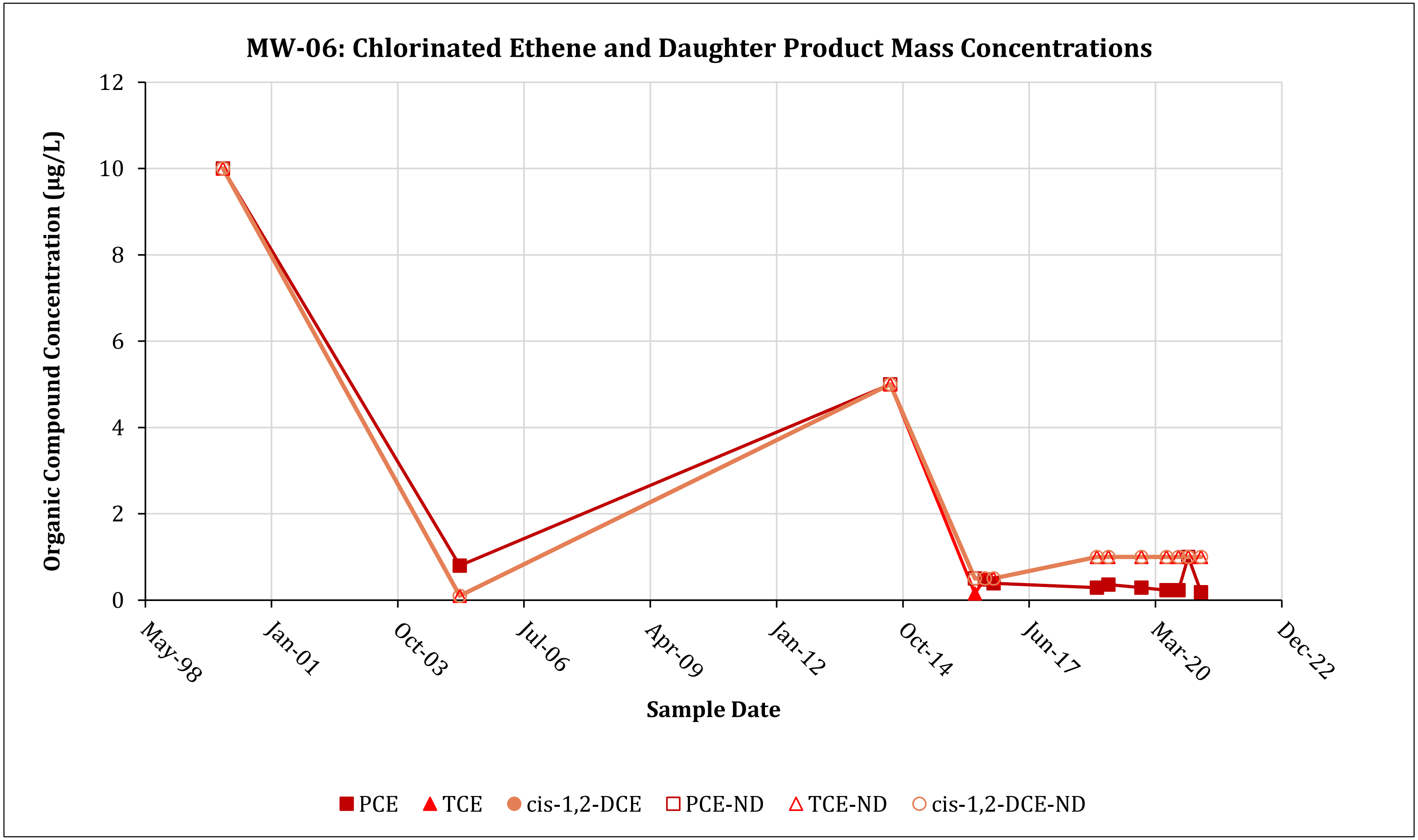


Figure 6-37
MW-12S Trend Chart

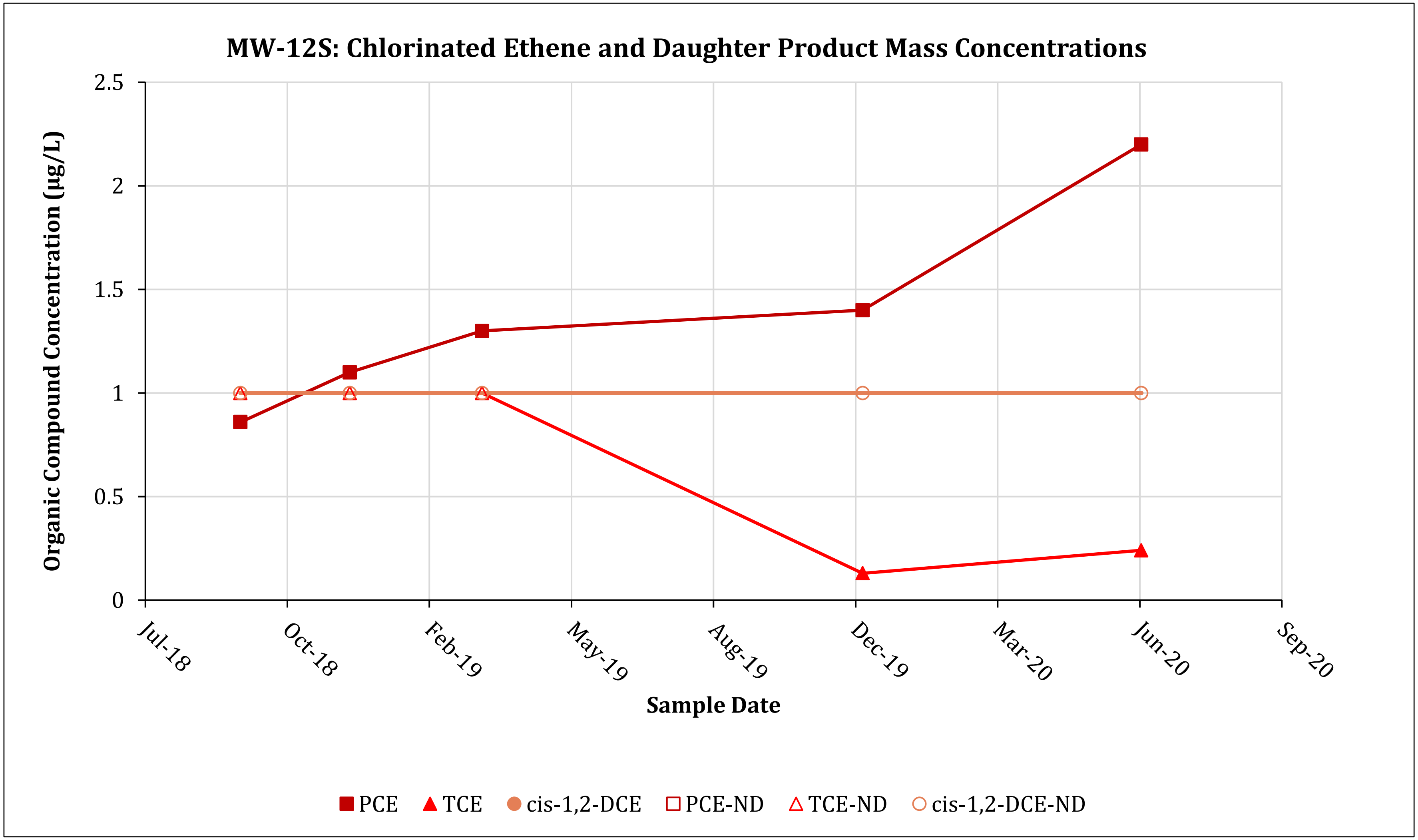
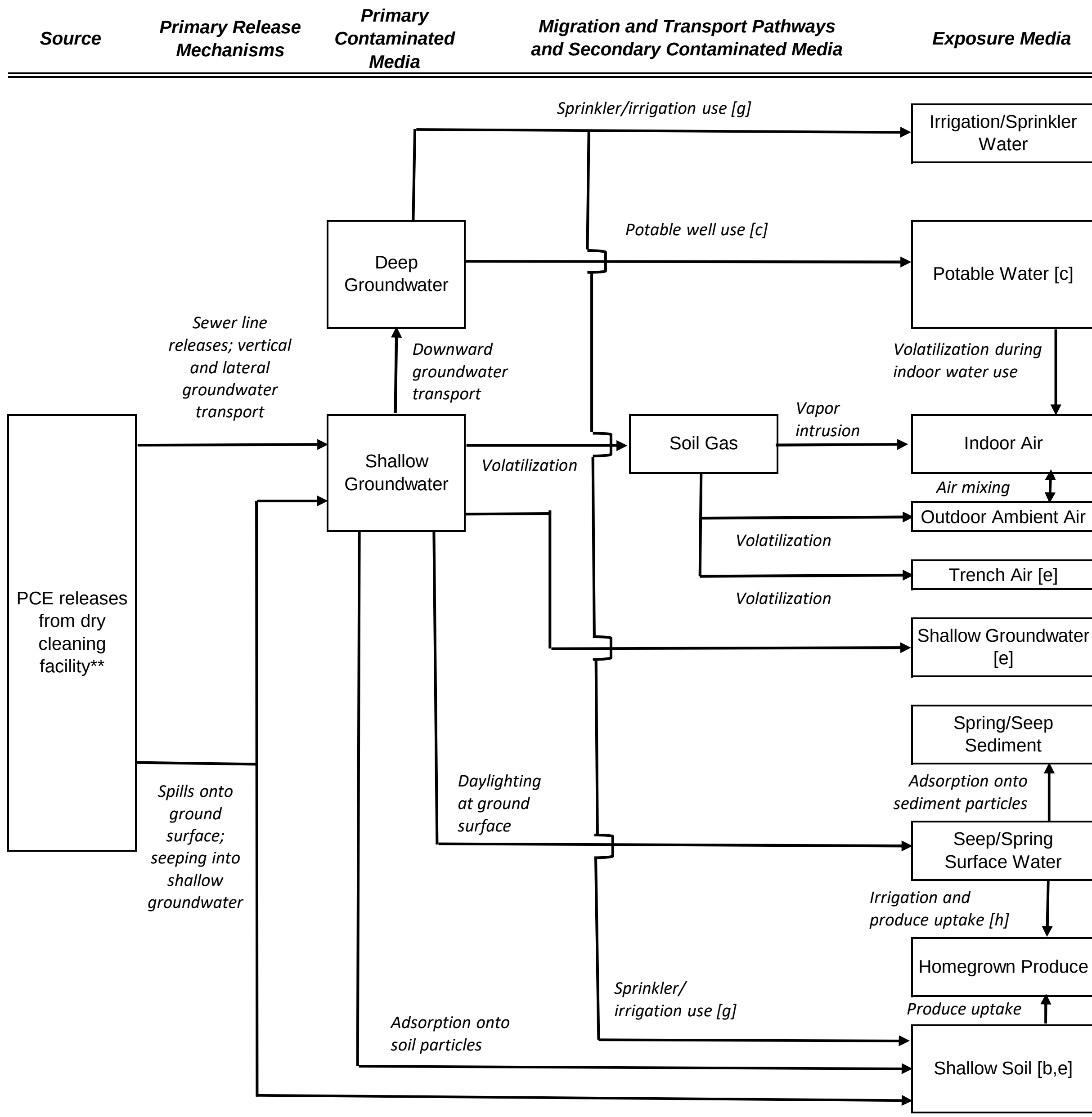


Figure 7-1 Conceptual Site Exposure Model for Human Health

700 South 1600 East PCE Plume, Salt Lake City, Utah



Exposure Media	Exposure Route	Residents	Students	Daycare Children	Indoor Workers [f]	Outdoor Workers	Construction Workers
Irrigation/Sprinkler Water	Ingestion	X	X	X	X	○	X
	Dermal	X	X	X	X	○	X
	Inhalation [a]	○	X	X	X	○	X
Potable Water [c]	Ingestion	current: X future: ●	current: X future: ●	current: X future: ●	current: X future: ●	X	X
	Dermal	current: X future: ●	current: X future: ●	current: X future: ●	current: X future: ●	X	X
Indoor Air	Inhalation	●	●	●	●	X	X
Outdoor Ambient Air	Inhalation	○	○	○	X	○	○
Trench Air [e]	Inhalation	X	X	X	X	X	●
Shallow Groundwater [e]	Ingestion	○	X	X	X	○	○
	Dermal	○	X	X	X	○	○
Spring/Seep Sediment	Ingestion	○	○	○	X	○	○
	Dermal	○	○	○	X	○	○
	Inhalation [d]	○	○	○	X	○	○
Seep/Spring Surface Water	Ingestion	○	○	○	○[i]	○	○
	Dermal	○	○	○	○[i]	○	○
	Inhalation [a]	○	○	○	○[i]	○	○
Homegrown Produce	Ingestion [j]	○	X	X	X	X	X
Shallow Soil [b,e]	Ingestion	○	○	○	X	○	○
	Dermal	○	○	○	X	○	○
	Inhalation [d]	○	○	○	X	○	○

LEGEND

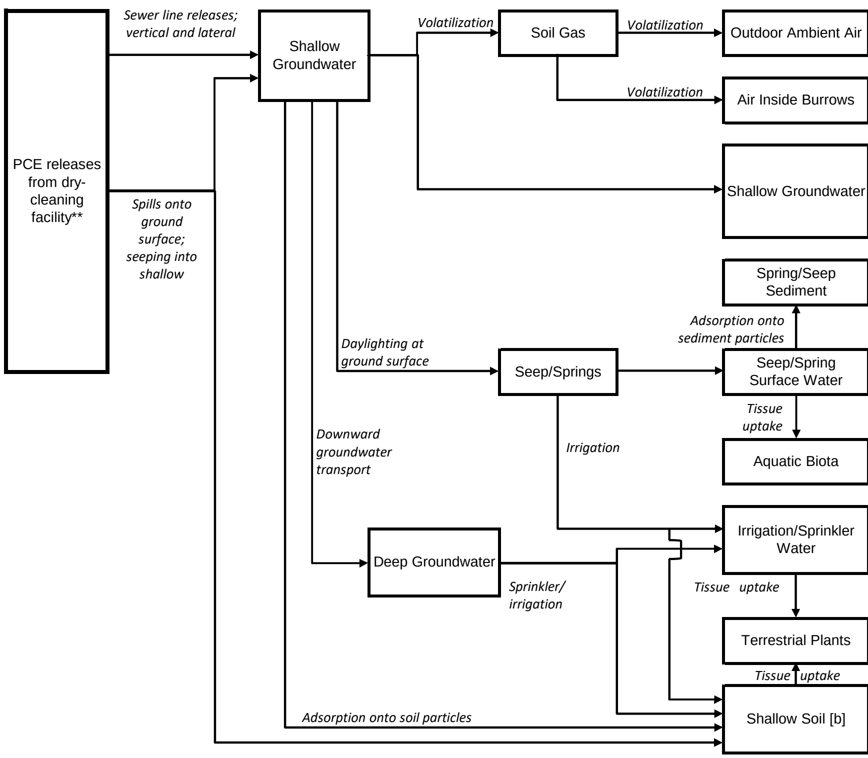
X	Pathway is not complete; no evaluation required
○	Pathway is or might be complete, but is likely to be minor
●	Pathway is or might be complete

**These releases likely occurred as disposal of PCE into the sanitary sewer line and releases from the sewer line into the surrounding soil because of line cracks and possibly from spills on the ground surface.

Footnotes:

[a] Due to volatilization from spring/seep surface water or sprinkler/irrigation water
[b] The expectation is that, outside of the seep/spring areas, shallow soil (0 to 10 feet bgs) contamination is likely to be negligible, with the possible exception of near Buildings 6 and 7 where historical spills may have occurred.
[c] There is no potable groundwater use under current conditions, but hypothetical future use will be evaluated
[d] Inhalation of airborne particulates and volatiles derived from shallow soil or spring/seep sediment
[e] During excavation or other digging activities (e.g., home sprinkler repair)
[f] Includes adult commercial/office workers and teachers
[g] Use of deep groundwater for irrigation is only expected in limited areas (e.g., University of Utah and Mount Olivet Cemetery). Deep groundwater is not used for residential property irrigation. While it is possible individuals near these properties could be exposed to volatiles in outdoor air derived from sprinklers and irrigation water, with the exception of university and cemetery outdoor maintenance workers, no direct contact exposures with sprinkler/irrigation water are expected to occur.
[h] Use of springs/seeps for irrigation is only expected for a subset of residential properties where springs/seeps are present.
[i] Several properties have sumps in their basements, which means that indoor workers could come into contact with sump water located inside properties.
[j] Homegrown produce ingestion is not expected to occur in non-residential settings.

FIGURE 7-2
CONCEPTUAL SITE EXPOSURE MODEL FOR ECOLOGICAL RECEPTORS
700 South 1600 East PCE Plume, Salt Lake City, Utah



Exposure Media	Exposure Route	Aquatic Receptors [g]	Terrestrial Plants, Invertebrates	Birds	Mammals [h]	Domestic Pets
Outdoor Ambient Air	Inhalation	X	X	❍	❍	❍
Air Inside Burrows	Inhalation	X	X	X	● [e]	X
Shallow Groundwater	Ingestion	X	X	current: X future: ❍ [f]	❍ [e]	current: X future: ❍ [f]
	Direct Contact	current: X future: ● [f]	●	X	❍ [e]	X
Spring/Seep Sediment	Ingestion	X	X	❍	❍	❍
	Direct Contact	●	●	❍	❍	❍
	Inhalation [d]	X	X	❍	❍	❍
Seep/Spring Surface Water	Ingestion	X	X	❍	❍	❍
	Direct Contact	●	●	❍	❍	❍
	Inhalation [a]	X	X	❍	❍	❍
Aquatic Biota	Ingestion	X	X	❍	❍	X
Irrigation/Sprinkler Water	Ingestion	X	X	❍	❍	❍
	Direct Contact	X	●	❍	❍	❍
	Inhalation [a]	X	X	❍	❍	❍
Terrestrial Plants	Ingestion	X	X	❍	❍	❍
Shallow Soil [b]	Ingestion	X	X	❍	❍	❍
	Direct Contact	X	●	❍	❍	❍
	Inhalation [d]	X	X	❍	❍	❍

LEGEND

X	Pathway is not complete; no evaluation required
❍	Pathway is or might be complete, but is likely to be minor
●	Pathway is or might be complete

NOTES

**These releases likely occurred as disposal of PCE into the sanitary sewer line and releases from the sewer line into the surrounding soil because of line cracks and possibly from spills on the ground surface.

[a] Resulting from volatilization from spring/seep surface water and irrigation/sprinkler water

[b] The expectation is that, outside of the seep/spring areas, shallow soil (0–10 feet bgs) contamination is likely to be negligible, with the possible exception of near Buildings 6 and 7 where historical spills may have occurred.

[c] There is no potable groundwater use under current conditions, but hypothetical future use will be evaluated.

[d] Inhalation of airborne particulates and volatiles derived from shallow soil or spring/seep sediment

[e] Restricted to burrowing animal exposures only (e.g., rabbits)

[f] Incomplete scenario under current conditions, but a screening-level evaluation of groundwater will be performed to address potential for daylighting under future site conditions.

[g] Aquatic receptors can include small fish (e.g., in ponds or water features fed by springs/seeps), aquatic invertebrates, and aquatic plants.

[h] Includes burrowing mammals (e.g., rabbits)

[i] Use of deep groundwater for irrigation is only expected in limited areas (e.g., University of Utah, Mount Olivet Cemetery); no residential use of deep groundwater is anticipated.

[j] Use of springs/seeps for irrigation is only expected for a subset of residential properties where springs/seeps are present.

Tables

Table 2-1
Historical Detections of Volatile Organic Compounds in Irrigation/Supply Wells

Location Identifier	Location Type	Screened Interval (ft bgs)	Well Diameter (inches)	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)	VC (µg/L)	Reference
EPA Maximum Contaminant Level (MCL) (µg/L)					5	5	70	2	
SLC-18	Municipal drinking water well (taken offline in 2004)	266-470	20	5/1995	ND	--	--	--	Bowen Collins 2004
				7/1997	0.6	--	--	--	UOS 1999
				11/1998	ND	--	--	--	UDEQ 2012
				11/1999	ND	ND	ND	ND	UDEQ 2000
				8/2000	0.8	--	--	--	Bowen Collins 2004
				8/2000	0.8	--	--	--	Bowen Collins 2004
				6/2001	1.22	--	--	--	Bowen Collins 2004
				6/2001	0.9	--	--	--	Bowen Collins 2004
				8/2001	1.3	--	--	--	Bowen Collins 2004
				8/2001	1.2	--	--	--	Bowen Collins 2004
				8/2001	1.4	--	--	--	Bowen Collins 2004
				9/2001	ND	--	--	--	Bowen Collins 2004
				8/2002	ND	--	--	--	Bowen Collins 2004
				1/2003	ND	--	--	--	Bowen Collins 2004
				6/2003	ND	--	--	--	Bowen Collins 2004
				10/2004	2.2	ND	ND	ND	EPA 2005
				2/2005	0.2	ND	ND	--	USGS 2005
				9/2005	1.2	--	--	--	EPA 2005
				9/2005	1.5	--	--	--	EPA 2005
				9/2005	1.7	--	--	--	EPA 2005
				9/2005	1.8	--	--	--	EPA 2005
				4/2016	ND	ND	ND	ND	EA 2017a
Mt. Olivet	Irrigation Well	175-195 215-235 280-377 400-463	10	10/1990	32	--	--	--	UBWPC 1991
				10/1990	26	--	--	--	UDEQ 2012
				4/1995	85	1.3	2.8	--	Bowen Collins 2004
				1997	184	--	--	--	Bowen Collins 2004
				11/1998	150	1 J	ND	ND	UDEQ 2000
				6/1999	183	1.1	1.1	ND	EPA 1999

Table 2-1
Historical Detections of Volatile Organic Compounds in Irrigation/Supply Wells

Mt. Olivet	Irrigation Well	175-195 215-235 280-377 400-463	10	10/2004	128	--	--	--	UDEQ 2012
				10/2004	92	--	--	--	UDEQ 2012
				4/2016	40	0.56	0.26	ND	EA 2017a
Fountain of Ute	Irrigation Well	200-450	20	2/2005	ND	ND	ND	ND	USGS 2005
				2/2005	ND	ND	ND	ND	USGS 2005
University of Utah Well #1	Irrigation Well	--	20	6/2014	ND	ND	ND	--	FE 2014
				4/2016	ND	ND	ND	ND	EA 2017a
				7/2016	ND	ND	ND	ND	EA 2017a
				9/2016	ND	ND	ND	ND	EA 2017a

Notes:
Highlight indicates values greater than screening level

µg/L = microgram per liter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
J = Result is estimated

MCL = maximum contaminant level
ND = not detected
OU = operable unit
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride
-- = not available

Table 2-2
Summary of Remedial Investigation Planning Documentation

Document Title	Document Date	Organization Leading Investigation (and Contractor Name if applicable)	Summary of Document	Reference
AOU1 Remedial Investigation Work Plan and Field Sampling Plan	July 2015	VA (FE)	Presentation of the technical approach and rationalee guiding the AOU-1 Remedial Investigation. The Work Plan includes a Sampling and Analysis Plan, Quality Assurance Project Plan, Health and Safety Plan, Conceptual Site Model Technical Memorandum, Risk Assessment Work Plan, Vapor Intrusion Screening Levels and Removal Action Levels Technical Memorandum, Site Management Plan, Community Involvement Plan, Vapor Intrusion Field Sampling Protocol, Project Communication Plan, and Minor Field Modifications (MFMs) 1 and 2 to the RIWP.	Remedial Investigation Work Plan AOU-1: East Side Springs 700 South 1600 East PCE Plume (FE 2015)
AOU1 Remedial Investigation Work Plan Minor Field Modifications #3 - #6	March 2016	VA (EA)	MFM #3: Change of analytical method for analysis of 1,4-dioxane MFM #4: Updates to the analytical methods, parameters, and the sample media on which the analyses will be performed; the number of samples; sample locations and depth, analyses, collection methodology, etc. for each targeted media; change in use of HAPSITE gas chromatograph/mass spectrometer for field screening of groundwater and surface water samples MFM #5: Update to Health and Safety Plan MFM #6: Inclusion of isotope analysis of surface water	Minor Field Modifications #3-#6 to the Remedial Investigation Work Plan AOU1 (EA 2016a)
AOU1 Sampling and Analysis Plan Minor Field Modifications #7 - #13	March 2016	VA (EA)	MFM #7: Change of analytical method for analysis of 1,4-dioxane MFM #8: Updates to the analytical methods, parameters, and the sample media on which the analyses will be performed; the number of samples; sample locations and depth, analyses, collection methodology, etc. for each targeted media; change in use of HAPSITE gas chromatograph/mass spectrometer for field screening of groundwater and surface water samples MFM #9: Inclusion of isotope analysis of surface water MFM #10: Excludes installation of pressure transducers in temporary monitoring points for the 2016 field event MFM #11: Clarifies use of the term definitive data MFM #12: Updates to sample containers, preservatives, hold times, and sample methods MFM #13: Removes field screening for SVOCs	Minor Field Modifications #7-#13 to the Sampling and Analysis Plan AOU1 (EA 2016b)
AOU1 Remedial Investigation Work Plan Minor Field Modifications #14	April 2016	VA (EA)	MFM #14: Addition to the number of groundwater sampling events and locations.	Minor Field Modifications #14 to the Remedial Investigation Work Plan AOU1 (EA 2016c)
AOU1 Sampling and Analysis Plan Minor Field Modifications #15	April 2016	VA (EA)	MFM #15: Addition to the number of groundwater sampling events and locations.	Minor Field Modifications #15 to the Sampling and Analysis Plan AOU1 (EA 2016d)
AOU1 Remedial Investigation Work Plan Minor Field Modifications #16	April 2016	VA (EA)	MFM #16: Updates to RIWP options for multi-parameter water quality meters to be used during sampling and the sample collection method for sampling seeps, springs, surface water, and stormwater.	Minor Field Modifications #16 to the Remedial Investigation Work Plan AOU1 (EA 2016e)
AOU1 Sampling and Analysis Plan Minor Field Modifications #17	April 2016	VA (EA)	MFM #17: Updates to SAP options for multi-parameter water quality meters to be used during sampling and the sample collection method for sampling seeps, springs, surface water, and stormwater.	Minor Field Modifications #17 to the Sampling and Analysis Plan AOU1 (EA 2016e)
AOU1 Remedial Investigation Work Plan Minor Field Modifications #18	February 2017	VA (EA)	MFM #18: Addition of supplemental VI sampling for both previously sampled locations and new locations.	Minor Field Modifications #18 to the Remedial Investigation Work Plan AOU1 (EA 2017c)
Remedial Investigation Work Plan OU-2 Remedial Investigation	February 2018	VA (CH2M)	The remedial investigation work plan details of the approach to conduct the OU-2 RI, including objectives, approaches, rationalees, and general investigation methods. The document includes a sampling and analysis plan, standard operating procedures, investigation derived waste management plan, accident prevention plan which includes the site health and safety plan.	Remedial Investigation Work Plan OU-2 Remedial Investigation 700 South 1600 East PCE Plume (CH2M 2018)
Addendum to Modification #1 to OU-2 Remedial Investigation Work Plan	July 2019	Jacobs	Modification #1A to Modification #1 to the Remedial Investigation Work Plan includes additional locations and techniques for soil gas sampling at OU-2.	Addendum to Modification #1 to OU-2 Remedial Investigation Work Plan (Jacobs 2019a)
Minor Field Modification #19 to AOU-1 Remedial Investigation Work Plan	July 2019	CDM Smith	Revised Vapor Intrusion sampling protocol for the site and rationalee for selection of sampling locations at a subset of properties, including East High School	Modification #19 to AOU-1 Remedial Investigation Work Plan (CDM Smith 2019d)
Final Vapor Intrusion Protocol 700 South 1600 East PCE Plume Site	December 2019	VA (CDM Smith)	Guidance document for the creation of event-specific sampling and analysis plans to evaluate the potential for vapor intrusion in structures.	Vapor Intrusion Protocol (CDM Smith 2019e)
Quality Assurance Project Plan 700 South 1600 East PCE Plume Site, Operable Unit 2	November 2019	VA (CDM Smith)	Presentation of the policies, organizations, objectives and functional activities/procedures for the remedial investigation. The QAPP includes data quality objectives and the field sampling plan.	Quality Assurance Project Plan, Operable Unit 2 (CDM Smith 2019a)
Modification #2 to OU-2 Remedial Investigation Work Plan and Sampling and Analysis Plan	October 2019	CDM Smith	Removal of Method 8270 SVOCs (except for 1,4-Dioxane), organochlorine pesticides and oxygen and hydrogen stable isotopes from the groundwater sampling analyte list, and updates to the analytical method for nitrate/nitrite.	Modification #2 to OU-2 Remedial Investigation Work Plan and Sampling and Analysis Plan (CDM Smith 2019b)
Modification #3 to OU-2 Remedial Investigation Work Plan	November 2019	CDM Smith	Addition of twelve borings for source area and plume delineation with field screening of soil and groundwater and installation of groundwater monitoring wells and soil vapor points.	Modification #3 to OU-2 Remedial Investigation Work Plan and Sampling and Analysis Plan (CDM Smith 2019c)
Addendum to Modification #3 to OU-2 Remedial Investigation Work Plan	April 2020	CDM Smith	Change of analysis for push-ahead groundwater samples associated with the installation of monitoring wells to utilizing the Color-Tec method and submission to EMAX laboratory for VOC analysis on rapid turnaround time. Revision of sample naming convention to remove the operable unit designation.	Addendum to Modification #3 to OU-2 Remedial Investigation Work Plan and Sampling and Analysis Plan (CDM Smith 2020a)

Table 2-2
Summary of Remedial Investigation Planning Documentation

Document Title	Document Date	Organization Leading Investigation (and Contractor Name if applicable)	Summary of Document	Reference
Modification #4 to Remedial Investigation Work Plan	June 2020	CDM Smith	Addition of three groundwater sampling events in 2020.	Modification #4 to OU-2 Remedial Investigation Work Plan and Sampling and Analysis Plan (CDM Smith 2020b)
Phase 2 Remedial Investigation Work Plan Operable Unit 1	December 2020	VA (CD Smith)	Details of the approach to conduct Phase 2 of the RI, including the objectives, rationalee, and methods for implementing the planned work for the Phase 2 RI. The document includes a Field Sampling Plan, Quality Assurance Project Plan, Investigation-Derived Waste Management Plan, Accident Prevention Plan, and Data Management Plan	Phase 2 Remedial Investigation Work Plan, Operable Unit 1 (CDM Smith 2020d)
Modification #1 to Phase 2 Field Sampling Plan	November 2020	CDM Smith	rationalee and description of work for the installation of an additional groundwater monitoring well, MW-13L.	Modification #1 to Phase 2 Field Sampling Plan (CDM Smith 2020e)
Modification #2 to Phase 2 Field Sampling Plan	December 2020	CDM Smith	Removal of total dissolved solids from the analyte list for all future groundwater monitoring events.	Modification #2 to Phase 2 Field Sampling Plan (CDM Smith 2020e)
Modification #3 to Phase 2 Field Sampling Plan	January 2020	CDM Smith	Provides the locations where slug testing will be completed and the approach that will be taken at each location.	Modification #3 to Phase 2 Field Sampling Plan (CDM Smith 2020b)
Modification #4 to Phase 2 Field Sampling Plan	March 2021	CDM Smith	Proposal of abandonment of up to 10 piezometers and replacement with shallow (near water table) groundwater monitoring wells at those locations, installation of two additional shallow groundwater wells and installation of shallow soil vapor monitoring probes at the new well locations.	Modification #4 to Phase 2 Field Sampling Plan (CDM Smith 2021c)
Modification #5 to Phase 2 Field Sampling Plan	March 2021	CDM Smith	Removal of geochemical analyses from the analyte list for select monitoring wells.	Modification #5 to Phase 2 Field Sampling Plan (CDM Smith 2021e)

Notes:
EA = EA Engineering, Science, and Technology, Inc., PBC
FE = First Environment, Inc.

Table 2-3
Summary of Historical and Remedial Investigation Activities

Investigation Date	Organization Leading Investigation (and Contractor Name if applicable)	Media	Investigation	Reference
Oct 1990	SLCDPU	Irrigation well groundwater	Sampling of Mount Olivet irrigation well.	Memorandum to File from Dennis Frederick, UBWPC (UBWPC 1991)
Apr-May 1995	EPA (E&E)	Soil gas	Mount Olivet irrigation well sampling. 15 soil gas samples collected from the: Mount Olivet Cemetery, University of Utah (former UANG property), current UANG property, and the U.S. Forest Service helicopter pad.	Analytical Results Report, Mt. Olivet Well Site (E&E 1995)
Nov 1996	EPA and UDEQ (UOS)	Soil Gas	Four soil gas samples collected by EPA (UOS) southwest of VAMC Building 7, Ft. Douglas, and University of Utah Building 515).	Field Activities and Analytical Results for Soil Gas Sampling at the Mount Olivet Cemetery Plume (UOS 1996)
May 1997	EPA and UDEQ (UOS)	Irrigation well groundwater	Mount Olivet irrigation well sampling	Site Activities Report, Mount Olivet Cemetery (UOS 1999)
Jun-Aug 1998	EPA and UDEQ (UOS)	Groundwater	Site Investigation - 6 monitoring wells installed around VAMC	Site Activities Report, Mount Olivet Cemetery (UOS 1999)
Aug-Sept 1998* (*May have been Aug- Sept 1999. Both years are mentioned in the text)	EPA and UDEQ (UOS)	Spring water	4 - 5 screening samples collected of spring water emerging west to southwest of Mount Olivet Cemetery: Our Lady of Lourdes Spring, Benson Spring, Smith Spring, Bowen Spring	Analytical Results Report, Mount Olivet Cemetery Plume (UDEQ 2000)
Nov 1998	EPA and UDEQ (UOS)	Groundwater	Sampling at EPA monitoring wells	Site Activities Report, Mount Olivet Cemetery (UOS 1999)
Sept 1999	EPA and UDEQ (UOS)	Groundwater	EPA-MW-03 abandoned, EPA-MW-06 installed in southeast corner of Sunnyside Park. Sept. 1999: Groundwater sample collected at EPA-MW-03 prior to abandonment for PCE analysis.	Supplement to Site Activities Report, Mt. Olivet Cemetery (UOS 2000)
Jan 2000	EPA and UDEQ (UOS)	Groundwater	EPA-MW-06 sampled on Jan. 6, 2000.	Supplement to Site Activities Report, Mt. Olivet Cemetery (UOS 2000)
May 2001	USGS	Groundwater	Sampling at SLC-18	PCE Well Contamination Evaluation. Technical Memorandum prepared for Salt Lake City Department of Public Utilities (Bowen Collins 2004)
July – August 2001	UDEQ (Beacon)	Soil Gas	19 soil gas samples collected around U of U Building 515.	EMFLUX Passive Soil-Gas Survey, Building 515 University of Utah (Beacon 2001)
December 2003	EPA/UDEQ/ SLCDPU	Sewer Survey	Survey of the sewer line leading from Building 7 of the VAMC for breaks and cracks, conducted by SLCDPU at the request of EPA and UDEQ.	Screen shots from a video survey recorded by SLCDPU of the sewer line leading from Building 7 of the VAMC (SLCDPU 2012)
June 2004	Bowen Collins	Groundwater Modeling	Groundwater modeling conducted to evaluate PCE contamination in SLC wells, including PCE in the Mount Olivet Cemetery Plume.	PCE Well Contamination Evaluation Technical Memorandum (Bowen Collins 2004)
June 2004	EPA/UDEQ	Soil	Soil sampling was conducted along the Building 7 sewer line between Building 7 and Sunnyside Avenue.	Soil-Sampling Event Summary Report, Mount Olivet Cemetery Plume (UDEQ 2004)
October 2004	EPA/UDEQ	Groundwater	Sampling at EPA-MW-01D, EPA-MW-05, Mount Olivet irrigation well, and SLC-18 drinking water well.	Memorandum, Analytical Results — Mt. Olivet VA (EPA 2004a)
February 2005	USGS	Groundwater	Sampling from SLC-18, EPA-MW-01S, EPA- MW-01D, EPA-MW-02, EPA-MW-04, EPA-MW-05, and EPA-MW-06; and University of Utah Fountain of Ute well.	Record 1116769 – R8 SDMS. Compilation of 2005 well data (USGS 2005)
Fall 2005	EPA/UDEQ	Groundwater	Sampling from EPA monitoring wells, SLC-18, and preparation of the CERCLA HRS package.	Preliminary Assessment, East Side Springs (UDEQ 2011)
February 2007	VA (IHI)	Soil gas	Soil gas sampling in 48 locations along the VAMC Building 7 sewer line.	Soil Gas Investigation Report, Sanitary Sewer Lateral, VALSCHCS Building 7 to Sunnyside Avenue (IHI 2007)

Table 2-3
Summary of Historical and Remedial Investigation Activities

Investigation Date	Organization Leading Investigation (and Contractor Name if applicable)	Media	Investigation	Reference
Jun-Aug 2010	SLCDPU	Spring water, storm drain water, groundwater	Response to crude oil release near Red Butte Canyon. Identification of 25 springs. Samples collected from 11 springs, 1 manhole, and 2 artesian wells.	Described in Preliminary Assessment, East Side Springs (UDEQ 2011)
Aug 2010	UDEQ	Soil	10 soil samples were collected from 5 locations around Building 515 using direct push. Sample intervals were 0-4 ft and 4-8 ft bgs.	Expanded Site Investigation (ESI) Analytical Results Report, University of Utah Building 515 (UDEQ 2013)
Nov-Dec 2011	UDEQ	Groundwater, spring water, soil, soil gas	10 groundwater samples (from 5 direct-push borings, 3 monitoring wells, and 2 artesian drinking wells), 3 surface (spring) water samples, 2 soil samples, 8 soil gas samples collected in ESS area.	Site Investigation-Analytical Results Report, East Side Springs (UDEQ 2012)
2014	VA (FE)	Groundwater	6 groundwater samples from permanent monitoring wells (EPA-MW-01S/D, EPA-MW-02, EPA-MW-04, EPA-MW-05, EPA-MW-06) and 4 groundwater samples from SLC-18, Fountain of Ute Well, and University of Utah Wells #1 and 2.	Results of Initial Groundwater Sampling Event June 2014, 700 South 1600 East PCE Plume (FE 2014)
2015	VA (FE)	Indoor Air, Outdoor Air, Soil Gas	HAPSITE screening samples at 36 structures, 14 indoor air, 6 outdoor air, and 10 near slab soil gas samples were collected with SUMMA canisters for TO-15 analysis.	700 South 1600 East PCE Plume AOU-1: East Side Springs Remedial Investigation Report (EA 2019) Vapor Intrusion Data Collection Report AOU1 700 South 1600 East PCE Plume (FE 2015b) **Appendix A**
February-May 2016	VA (EA)	Surface water, Stormwater	Samples from surface water seeps and springs. Stormwater system samples were collected at least 24 hours after a precipitation event to ensure it was diverted spring water, not surface rainwater or runoff.	700 South 1600 East PCE Plume AOU-1: East Side Springs Remedial Investigation Report (EA 2019) 700 South 1600 East PCE Plume AOU-1: East Side Springs 2016 Groundwater, Surface Water, and Soil Sampling Technical Memorandum (EA 2016g) **Appendix A**
May 2016	VA (EA)	Soil Sampling	3 soil samples from 0-0.5 feet bgs at locations adjacent to seeps and springs where surface water samples were collected	700 South 1600 East PCE Plume AOU-1: East Side Springs Remedial Investigation Report (EA 2019) 700 South 1600 East PCE Plume AOU-1: East Side Springs 2016 Groundwater, Surface Water, and Soil Sampling Technical Memorandum (EA 2016g) **Appendix A**
July-September 2016	VA (EA)	Groundwater	50 boring locations in the ESS areas and collected groundwater samples from 44 of the temporary well locations. Ten locations were completed as temporary piezometers for future sampling.	700 South 1600 East PCE Plume AOU-1: East Side Springs Remedial Investigation Report (EA 2019) 700 South 1600 East PCE Plume AOU-1: East Side Springs 2016 Groundwater, Surface Water, and Soil Sampling Technical Memorandum (EA 2016g) **Appendix A**
2016	VA (EA)	Indoor Air, Outdoor Air, Soil Gas	Indoor air samples using HAPSITE at 11 structures and SUMMA canisters for TO-15 analysis at 9 structures. Outdoor air samples were collected near 11 structures using HAPSITE screening. Near slab soil gas samples were collected from 11 structures using HAPSITE and 1 structure with a SUMMA canister for TO-15 analysis.	700 South 1600 East PCE Plume AOU-1: East Side Springs Remedial Investigation Report (EA 2019) 700 South 1600 East PCE Plume AOU-1: East Side Springs 2016 Vapor Intrusion Investigation Field Data Report (EA 2018) **Appendix A**

Table 2-3
Summary of Historical and Remedial Investigation Activities

Investigation Date	Organization Leading Investigation (and Contractor Name if applicable)	Media	Investigation	Reference
2017	VA (EA)	Groundwater	Groundwater samples were collected from the EPA monitoring wells, SLC-18, University of Utah Well #1, and the Mount Olivet irrigation well, in April, July and September 2016.	700 South 1600 East PCE Plume AOU-1: East Side Springs Remedial Investigation Report (EA 2019) 700 South 1600 East PCE Plume 2016 Monitoring and Supply Well Groundwater Sampling Technical Memorandum (EA 2017a) **Appendix A**
March-April 2017	VA (EA)	Indoor Air, Outdoor Air, Soil Gas	Indoor air samples were collected using HAPSITE at 18 structures and SUMMA canisters for TO-15 analysis at 11 structures. Outdoor air samples were collected near 15 structures using HAPSITE screening. Soil gas samples were collected from 7 structures using HAPSITE.	700 South 1600 East PCE Plume AOU-1: East Side Springs Remedial Investigation Report (EA 2019) 2017 Vapor Intrusion Investigation Field Data Report AOU1 700 South 1600 East PCE Plume (CH2M 2017) **Appendix A**
June-July 2018	VA (Jacobs)	Shallow Groundwater Well Construction	18 shallow monitoring wells were installed, including 7 well pairs and 4 individual wells down gradient from the VAMC campus.	Operable Unit 2 Remedial Investigation 700 South 1600 East PCE Plume, Salt Lake City, Utah 2018 OU-2 Data Summary Report (Jacobs 2019b) **Appendix B**
October-December 2018	VA (Jacobs)	Deep Groundwater Well Construction	MW-03R was installed with 4 screened intervals to replace MW-03, and installed MW-08 with 3 screened intervals west of Mt. Olivet Cemetery.	Operable Unit 2 Remedial Investigation 700 South 1600 East PCE Plume, Salt Lake City, Utah 2018 OU-2 Data Summary Report (Jacobs 2019b) **Appendix B**
September-October 2018	VA (Jacobs)	Groundwater, Surface Water	Groundwater samples were collected from 18 shallow groundwater monitoring well locations installed in June and July 2018. Nine surface water locations were sampled in the ESS area.	Operable Unit 2 Remedial Investigation 700 South 1600 East PCE Plume, Salt Lake City, Utah 2018 OU-2 Data Summary Report (Jacobs 2019b) **Appendix B**
November - December 2018	VA (Jacobs)	Groundwater, Surface Water	Groundwater samples were collected from 18 shallow groundwater monitoring well locations installed in June and July 2018, the 6 EPA monitoring wells and monitoring wells MW-03R and MW-08. Nine surface water locations were sampled in the ESS area.	Operable Unit 2 Remedial Investigation 700 South 1600 East PCE Plume, Salt Lake City, Utah 2018 OU-2 Data Summary Report (Jacobs 2019b) **Appendix B**
December 2018	VA (Jacobs)	Soil	Soil gas sampling in 43 locations in four areas; VAMC north area, VAMC Building 7, along the sewer line from Building 7 and Sunnyside Park. Soil samples were collected from the bottom of each soil gas sample location on the VAMC campus and two locations in Sunnyside Park.	Operable Unit 2 Remedial Investigation 700 South 1600 East PCE Plume, Salt Lake City, Utah 2018 OU-2 Data Summary Report (Jacobs 2019b) **Appendix B**
January-February 2019	VA (Jacobs)	Indoor Air	Indoor Air HAPSITE screening was conducted in Buildings 6, 7, 13, and 20 on the VAMC campus.	Operable Unit 2 Remedial Investigation 700 South 1600 East PCE Plume, Salt Lake City, Utah 2019 Indoor Air Data Summary Report (Jacobs 2019c) **Appendix B**
June-July 2019	VA (Jacobs)	Soil gas, Soil	Soil gas samples were screened using HAPSITE from 61 locations including sub slab samples in Buildings 6 and 7 on the VAMC campus and along the sewer line and in Sunnyside Park. Eleven of the locations were sampled with SUMMA canisters for TO-15 analysis. Nine soil samples were collected as part of the soil gas investigation.	Compilation of Daily Reports and Analytical Results for 2019 Soil Gas Sampling and Building 6 and 7 Indoor Air Sampling (Jacobs 2019d) **Appendix B**
September 2019	VA (Jacobs)	Indoor Air	Indoor air sampling with SUMMA canisters for TO-15 analysis was conducted at nine locations in Building 6 and eight locations in Building 7 of the VAMC campus.	Compilation of Daily Reports and Analytical Results for 2019 Soil Gas Sampling and Building 6 and 7 Indoor Air Sampling (Jacobs 2019d) **Appendix B**
December 2019	VA (CDM Smith)	Groundwater	Groundwater samples were collected from 28 existing wells.	Q4 2019 Data Summary Report Groundwater Sampling Event (CDM Smith 2020c) **Appendix C**

Table 2-3
Summary of Historical and Remedial Investigation Activities

Investigation Date	Organization Leading Investigation (and Contractor Name if applicable)	Media	Investigation	Reference
December 2019-March 2020	VA (CDM Smith)	Indoor Air, Surface Water	Six previously sampled homes and 24 new homes were sampled for potential vapor intrusion. VI sampling included screening with the HAPSITE, SUMMA canisters for TO-15/TO-15 SIM and passive samplers for TO-17. Seven surface water locations were sampled for VOCs.	Vapor Intrusion Technical Memorandum/ Data Summary Report Winter 2019-2020 (CDM Smith 2021f) **Appendix C**
March-July 2020	VA (CDM Smith)	Groundwater Well Installation, Soil	Seven source area delineation borings were completed around Buildings 6 and 7 at the VAMC, and near the manhole in Sunnyside Park. Four plume delineation borings were completed on the north side of the VAMC campus, Sunnyside Park, and south and west of Mt. Olivet Cemetery. Soil samples were collected at each of the borings. The groundwater monitoring wells were completed as either traditional wells or multilevel wells. Soil vapor points were also installed to monitor soil vapor at 9 of the locations.	Data Summary Report Spring and Summer 2020 Drilling Investigation (CDM Smith 2021a) **Appendix C**
June 2020	VA (CDM Smith)	Groundwater	Groundwater samples were collected from 26 existing wells and 4 of the new wells installed at the VAMC.	Q2 2020 Data Summary Report Groundwater Sampling Event (CDM Smith 2021d) **Appendix C**
October 2020	VA (CDM Smith)	Groundwater	Groundwater samples were collected from 30 existing wells and 6 of the new wells installed at the VAMC, Sunnyside Park, and the ESS area.	Q3 2020 Data Summary Report Groundwater Sampling Event (CDM Smith 2021g) **Appendix D**
November-December 2020	VA (CDM Smith)	Groundwater Well Installation	Two zones at MW-30 were reinstalled after determining they were damaged during installation. Four additional borings were completed in the ESS area to delineate the plume. Two of the borings were completed as shallow-deep well pairs, and two were individual wells. Two locations had soil vapor points installed.	Data Summary Report Phase 2 2020 Drilling Investigation (CDM Smith 2021h) **Appendix D**
December 2020	VA (CDM Smith)	Groundwater	Groundwater samples were collected from 37 existing wells and 5 new well locations.	Q4 2020 Data Summary Report Groundwater Sampling Event (CDM Smith 2021i) **Appendix D**
February 2021	VA (CDM Smith)	Hydraulic Testing	Hydraulic testing was completed on 27 well intervals by mechanic or pneumatic slug testing.	Slug Testing Technical Memorandum (CDM Smith 2021k) **Appendix D**
March 2021	VA (CDM Smith)	Groundwater	Groundwater samples were collected from 42 existing wells.	Q1 2021 Data Summary Report Groundwater Sampling Event (CDM Smith 2021j) **Appendix D**
March 2021	VA (CDM Smith)	Indoor Air/Soil Gas	Soil gas samples were collected using SUMMA canisters for TO-15 anaylsis at 46 source area locations (around VAMC Buildings 6 and 7, and Sunnyside Park) and 4 locations in the ESS area. Two indoor air samples in Building 6 and two samples in Building 7 were collected by SUMMA canisters for TO-15 analysis.	2021 Source Area Vapor Instrusion Data Summary Report (CDM Smith 2021l) **Appendix D**
April 2021	VA (CDM Smith)	Residential Groundwater well installation	Ten temporary piezometers installed during AOU1 investigation were abandoned. Nine of the locations were converted to 2-inch residential groundwater (RG) monitoring wells, and two additional locations were installed as residential groundwater monitoring wells. Soil vapor probes were installed on seven of the RG wells.	2021 East Side Springs Vapor Intrusion Lines of Evidence Data Summary Report (CDM Smith 2021m) **Appendix D**
April 2021	VA (CDM Smith)	Surface Water, Soil Gas, Groundwater	Eleven surface water locations in the ESS area were sampled. Eight previously sampled locations and three new locations. Groundwater was sampled at the 11 newly installed RG wells. The seven locations with soil vapor probes were sampled.	2021 East Side Springs Vapor Intrusion Lines of Evidence Data Summary Report (CDM Smith 2021m) **Appendix D**
August 2021	VA (CDM Smith)	Indoor Air	Eleven indoor air samples were collected using SUMMA canisters for TO-15 analysis from 10 residential buildings to evaluate conditions during the summer season. Nine of these locations have been previously sampled.	Remedial Investigation Report Operable Unit 1 700 South 1600 East PCE Plume Site Salt Lake City, Utah

Table 2-3
Summary of Historical and Remedial Investigation Activities

Investigation Date	Organization Leading Investigation (and Contractor Name if applicable)	Media	Investigation	Reference
March 2022	VA (CDM Smith)	Indoor Air	Forty-six indoor air samples were collected using SUMMA canisters for TO-15 analysis from 34 residential buildings, one church and one school. Seven of these locations have been previously sampled. Indoor air sampling with SUMMA canisters for TO-15 analysis was conducted at two locations in Building 20 and two locations in Building 32 of the VAMC campus.	Remedial Investigation Report Operable Unit 1 700 South 1600 East PCE Plume Site Salt Lake City, Utah

NOTES:
µg/L = micrograms per liter
Bowen Collins = Bowen Collins and Associates, Inc.
CERCLA = Comprehensive Environmental Response, Compensation and Liability Act
E&E = Ecology and Environment, Inc.
EA = EA Engineering, Science, and Technology, Inc., PBC
EPA = U.S. Environmental Protection Agency
ESS = East Side Springs
FE = First Environment, Inc.
HRS = Hazard Ranking System
MW = Monitoring well
PCE = Tetrachloroethene
SLC = Salt Lake City
SLCDPU = Salt Lake City Department of Public Utilities
UANG = Utah Army National Guard

Table 2-4
Groundwater Risk-Based Screening Levels and Maximum Contaminant Levels

Analyte	CAS No.	Tapwater RSL[a] (µg/L)	MCL (µg/L)
1,1,1-Trichloroethane	71-55-6	8000	200
1,1,2,2-Tetrachloroethane	79-34-5	0.076	NA
1,1,2-Trichloroethane	79-00-5	0.28	5
1,1,2-Trichlorotrifluoroethane	76-13-1	10000	NA
1,1-Dichloroethane	75-34-3	2.8	NA
1,1-Dichloroethene	75-35-4	280	7
1,2,3-Trichlorobenzene	87-61-6	7	NA
1,2,4-Trichlorobenzene	120-82-1	1.2	70
1,2,4-Trimethylbenzene	95-63-6	56	NA
1,2-Dibromo-3-Chloropropane	96-12-8	0.00033	0.2
1,2-Dibromoethane	106-93-4	0.0075	0.05
1,2-Dichlorobenzene	95-50-1	300	600
1,2-Dichloroethane	107-06-2	0.17	5
1,2-Dichloropropane	78-87-5	0.85	5
1,3,5-Trimethylbenzene	108-67-8	60	NA
1,3-Dichlorobenzene	541-73-1	NA	NA
1,4-Dichlorobenzene	106-46-7	0.48	75
1,4-Dioxane	**123-91-1**	**0.46**	**NA**
2-Butanone (MEK)	78-93-3	5600	NA
2-Hexanone	591-78-6	38	NA
4-Methyl-2-Pentanone (MIBK)	108-10-1	6300	NA
Acetone	67-64-1	18000	NA
Benzene	71-43-2	0.46	5
Bromochloromethane	74-97-5	83	NA
Bromodichloromethane	75-27-4	0.13	80
Bromoform	75-25-2	3.3	80
Bromomethane	74-83-9	7.5	NA
Carbon Disulfide	75-15-0	810	NA
Carbon Tetrachloride	56-23-5	0.46	5
Chlorobenzene	108-90-7	78	100
Chloroethane	75-00-3	8300	NA
Chloroform	67-66-3	0.22	80
Chloromethane	74-87-3	190	NA
cis-1,2-Dichloroethene	**156-59-2**	**36**	**70**
cis-1,3-Dichloropropene & trans-1,3-Dichloropropene	542-75-6	0.47	NA
Dibromochloromethane	124-48-1	0.87	80
Dichlorodifluoromethane	75-71-8	200	NA
Ethylbenzene	100-41-4	1.5	700
Isopropylbenzene	98-82-8	450	NA
m,p-Xylene	106-42-3 & 108-38-3	190	NA
Methyl Tert-Butyl Ether	1634-04-4	14	NA
Methyl Acetate	79-20-9	20000	NA
Methylene Chloride	75-09-2	11	5
o-Xylene	95-47-6	190	NA
Styrene	100-42-5	1200	100
Tetrachloroethene	**127-18-4**	**11**	**5**
Toluene	108-88-3	1100	1000
trans-1,2-Dichloroethene	**156-60-5**	**68**	**100**
Trichloroethene	**79-01-6**	**0.49**	**5**
Trichlorofluoromethane	75-69-4	5200	NA
Vinyl Chloride	**75-01-4**	**0.019**	**2**
Vinyl Acetate	108-05-4	410	NA

Notes:

a. EPA Tapwater RSLs corresponding to an excess lifetime cancer risk of 1×10^{-6} and a hazard quotient of 1 (May 2022 RSL table version).

Preliminary Chemicals of Potential Concern for the Remedial Investigation are in bold font and shaded

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

MCL = Maximum Contaminant Level

NA = not applicable

RSL = Regional Screening Level

Table 2-5
Indoor Air Risk-Based Screening Levels and Removal Action Levels

Analyte	CAS No.	Residential				Industrial/Commercial			
		Indoor Air RBSL[a] (µg/m^3)	Indoor Air Tier 1 RAL[b] (µg/m^3)	Indoor Air Tier 2 RAL[b] (µg/m^3)	Soil Gas RBSL[c] (µg/m^3)	Indoor Air RBSL[a] (µg/m^3)	Indoor Air Tier 1 RAL[b] (µg/m^3)	Indoor Air Tier 2 RAL[b] (µg/m^3)	Soil Gas RBSL[c] (µg/m^3)
1,1,1-Trichloroethane	71-55-6	5200	--	--	170000	22000	--	--	730000
1,1,2,2-Tetrachloroethane	79-34-5	0.048	--	--	1.6	0.21	--	--	7
1,1,2-Trichloroethane	79-00-5	0.18	--	--	6	0.77	--	--	26
1,1,2-Trichlorotrifluoroethane	76-13-1	5200	--	--	170000	22000	--	--	730000
1,1-Dichloroethane	75-34-3	1.8	--	--	60	7.7	--	--	260
1,1-Dichloroethene	**75-35-4**	**210**	**210**	**630**	**7000**	**880**	**880**	**2640**	**29000**
1,2,3-Trichlorobenzene	87-61-6	NA	--	--	NA	NA	--	--	NA
1,2,4-Trichlorobenzene	120-82-1	2.1	--	--	70	8.8	--	--	290
1,2,4-Trimethylbenzene	95-63-6	63	--	--	2100	260	--	--	8700
1,2-Dibromo-3-Chloropropane	96-12-8	0.00017	--	--	0.0057	0.002	--	--	0.067
1,2-Dibromoethane	106-93-4	0.0047	--	--	0.16	0.02	--	--	0.67
1,2-Dichlorobenzene	95-50-1	210	--	--	7000	880	--	--	29000
1,2-Dichloroethane	107-06-2	0.11	--	--	3.7	0.47	--	--	16
1,2-Dichloropropane	78-87-5	0.76	--	--	25	3.3	--	--	110
1,3,5-Trimethylbenzene	108-67-8	63	--	--	2100	260	--	--	8700
1,3-Dichlorobenzene	541-73-1	NA	--	--	NA	NA	--	--	NA
1,4-Dichlorobenzene	106-46-7	0.26	--	--	8.7	1.1	--	--	37
1,4-Dioxane	**123-91-1**	**0.56**	**5.6**	**56**	**19**	**2.5**	**130**	**390**	**82**
2-Butanone (MEK)	78-93-3	5200	--	--	170000	22000	--	--	730000
2-Hexanone	591-78-6	31	--	--	1000	130	--	--	4300
4-Methyl-2-Pentanone (MIBK)	108-10-1	3100	--	--	100000	13000	--	--	430000
Acetone	67-64-1	NA	--	--	NA	NA	--	--	NA
Benzene	71-43-2	0.36	--	--	12	1.6	--	--	53
Bromochloromethane	74-97-5	42	--	--	1400	180	--	--	6000
Bromodichloromethane	75-27-4	0.076	--	--	2.5	0.33	--	--	11
Bromoform	75-25-2	2.6	--	--	87	11	--	--	370
Bromomethane	74-83-9	5.2	--	--	170	22	--	--	730
Carbon Disulfide	75-15-0	730	--	--	24000	3100	--	--	100000
Carbon Tetrachloride	56-23-5	0.47	--	--	16	2	--	--	67
Chlorobenzene	108-90-7	52	--	--	1700	220	--	--	7300
Chloroethane	75-00-3	4200	--	--	140000	18000	--	--	600000
Chloroform	67-66-3	0.12	--	--	4	0.53	--	--	18
Chloromethane	74-87-3	94	--	--	3100	390	--	--	13000
cis-1,2-Dichloroethene	**156-59-2**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
cis-1,3-Dichloropropene & trans-1,3-Dichloropropene	542-75-6	0.7	--	--	23	3.1	--	--	100
Dibromochloromethane	124-48-1	NA	--	--	NA	NA	--	--	NA
Dichlorodifluoromethane	75-71-8	100	--	--	3300	440	--	--	15000
Ethylbenzene	100-41-4	1.1	--	--	37	4.9	--	--	160
Isopropylbenzene	98-82-8	420	--	--	14000	1800	--	--	60000
mm-Xylene	106-42-3 & 108-38-3	100	--	--	3300	440	--	--	15000
Methyl Tert-Butyl Ether	1634-04-4	11	--	--	370	47	--	--	1600
Methyl Acetate	79-20-9	NA	--	--	NA	NA	--	--	NA
Methylene Chloride	75-09-2	100	--	--	3300	1200	--	--	40000
o-Xylene	95-47-6	100	--	--	3300	440	--	--	15000
Styrene	100-42-5	1000	--	--	33000	4400	--	--	150000
Tetrachloroethene	**127-18-4**	**11**	**42**	**120**	**360**	**47**	**180**	**540**	**1600**
Toluene	108-88-3	5200	--	--	170000	22000	--	--	730000
trans-1,2-Dichloroethene	**156-60-5**	**42**	**--**	**--**	**1400**	**180**	**--**	**--**	**6000**
Trichloroethene	**79-01-6**	**0.48**	**2.1**	**6.3**	**16**	**3**	**8.8**	**26**	**100**
Trichlorofluoromethane	75-69-4	NA	--	--	NA	NA	--	--	NA
Vinyl Chloride	**75-01-4**	**0.17**	**1.7**	**17**	**5.6**	**2.8**	**440**	**1320**	**93**
Vinyl Acetate	108-05-4	210	--	--	7000	880	--	--	29000

Notes:
a. Indoor air RBSLs are the EPA indoor air RSLs corresponding to an excess lifetime cancer risk of 1×10^{-6} and a hazard quotient of 1 (May 2022 RSL table version).
b. Indoor Air Tier 1 and Tier 2 removal action levels (RALs) provided in memorandum (CH2M 2015). Tier 1 RAL corresponding to an excess lifetime cancer risk of 1 x 10-5 and a hazard quotient of 1. Tier 2 RAL corresponding to an excess lifetime cancer risk of 1 x 10-4 and a hazard quotient of 3.
c. Soil gas RBSLs are the EPA indoor air RSLs corresponding to an excess lifetime cancer risk of 1×10^{-6} and a hazard quotient of 1 divided by an attenuation factor of 0.03 (May 2022 RSL table version).
Preliminary Chemicals of Potential Concern for the Remedial Investigation are in bold font and shaded
µg/m^3 = micrograms per cubic meter
EPA = U.S. Environmental Protection Agency
NA = not applicable
RSL = regional screening level
RBSL = risk-based screening level
VISL = vapor intrusion screening level
-- = not calculated

Table 2-6
Soil Risk-Based Screening Levels

Analyte	CAS No.	Regional Screening Levels[a]	
		Resident Soil (mg/kg)	Industrial Soil (mg/kg)
1,1,1-Trichloroethane	71-55-6	8100	36000
1,1,2,2-Tetrachloroethane	79-34-5	0.6	2.7
1,1,2-Trichloroethane	79-00-5	1.1	5
1,1,2-Trichlorotrifluoroethane	76-13-1	6700	28000
1,1-Dichloroethane	75-34-3	3.6	16
1,1-Dichloroethene	75-35-4	230	1000
1,2,3-Trichlorobenzene	87-61-6	63	930
1,2,4-Trichlorobenzene	120-82-1	24	110
1,2,4-Trimethylbenzene	95-63-6	300	1800
1,2-Dibromo-3-Chloropropane	96-12-8	0.0053	0.064
1,2-Dibromoethane	106-93-4	0.036	0.16
1,2-Dichlorobenzene	95-50-1	1800	9300
1,2-Dichloroethane	107-06-2	0.46	2
1,2-Dichloropropane	78-87-5	2.5	11
1,3,5-Trimethylbenzene	108-67-8	270	1500
1,3-Dichlorobenzene	541-73-1	NA	NA
1,4-Dichlorobenzene	106-46-7	2.6	11
1,4-Dioxane	**123-91-1**	**5.3**	**24**
2-Butanone (MEK)	78-93-3	27000	190000
2-Hexanone	591-78-6	200	1300
4-Methyl-2-Pentanone (MIBK)	108-10-1	33000	140000
Acetone	67-64-1	70000	1100000
Benzene	71-43-2	1.2	5.1
Bromochloromethane	74-97-5	150	630
Bromodichloromethane	75-27-4	0.29	1.3
Bromoform	75-25-2	19	86
Bromomethane	74-83-9	6.8	30
Carbon Disulfide	75-15-0	770	3500
Carbon Tetrachloride	56-23-5	0.65	2.9
Chlorobenzene	108-90-7	280	1300
Chloroethane	75-00-3	5400	23000
Chloroform	67-66-3	0.32	1.4
Chloromethane	74-87-3	110	460
cis-1,2-Dichloroethene	**156-59-2**	**160**	**2300**
cis-1,3-Dichloropropene & trans-1,3-Dichloropropene	542-75-6	1.8	8.2
Dibromochloromethane	124-48-1	8.3	39
Dichlorodifluoromethane	75-71-8	87	370
Ethylbenzene	100-41-4	5.8	25
Isopropylbenzene	98-82-8	1900	9900
m,p-Xylene	106-42-3, 108-38-3	560	2400
Methyl Tert-Butyl Ether	1634-04-4	47	210
Methyl Acetate	79-20-9	78000	1200000
Methylene Chloride	75-09-2	57	1000
o-Xylene	95-47-6	650	2800
Styrene	100-42-5	6000	35000
Tetrachloroethene	**127-18-4**	**24**	**100**
Toluene	108-88-3	4900	47000
trans-1,2-Dichloroethene	**156-60-5**	**70**	**300**
Trichloroethene	**79-01-6**	**0.94**	**6**
Trichlorofluoromethane	75-69-4	23000	350000
Vinyl Chloride	**75-01-4**	**0.059**	**1.7**
Vinyl Acetate	108-05-4	910	3800

Notes:
a. Screening levels corresponding to an excess lifetime cancer risk of 1×10^{-6} and a hazard quotient of 1 (May 2022 RSL table version).
Preliminary Chemicals of Potential Concern for the Remedial Investigation are in bold font and shaded
mg/kg = milligrams per kilogram
EPA = U.S. Environmental Protection Agency
NA = not applicable
RSL = regional screening level

Table 3-1
AOU1 Temporary Groundwater Monitoring Point and Piezometer Construction Information

Location ID	Installation Date	Abandonment Date	Piezometer Completion Date	Latitude[a]	Longitude[a]	Elevation Top of Casing[b] (ft amsl)	Water Table Elevation[b] (ft amsl)			Screen Interval (ft)	Total Boring Depth (ft bgs)	Well Diameter (inches)
							February/ March 2016	July 2016	September 2016			
GW-01	03/02/16	04/05/16	NA	40.7489943	-111.853302	4486.95	4475.02	NA	NA	8.0 – 13.0	13.0	0.75
GW-02	02/24/16	Drilled to refusal, groundwater not encountered - no temporary groundwater monitoring point set.								NA	40.0	NA
GW-03	02/24/16	04/05/16	NA	40.7481034	-111.855183	4484.03	4455.63	NA	NA	28.0 – 33.0	35.0	0.75
GW-04	02/26/16	04/06/16	NA	40.7482076	-111.857389	4415.71	4398.45	NA	NA	20.0 – 25.0	25.0	0.75
GW-05	02/25/16	04/05/16	NA	40.7490131	-111.854764	4465.01	4462.55	NA	NA	3.5 – 8.5	15.0	0.75
GW-06	02/25/16	04/06/16	NA	40.7487218	-111.855318	4455.29	4450.63	NA	NA	5.0 – 10.0	10.0	0.75
GW-07	02/25/16	04/06/16	NA	40.7489754	-111.856326	4456.07	4447.44	NA	NA	4.0 – 9.0	10.0	0.75
GW-08	02/27/16	04/05/16	NA	40.7498921	-111.857694	4430.31	4423.35	NA	NA	10.0 – 15.0	15.0	0.75
GW-09	02/26/16	04/06/16	NA	40.7493292	-111.857562	4416.96	4412.05	NA	NA	5.0 – 10.0	10.0	0.75
GW-10	02/26/16	NA	04/05/16	40.7496230	-111.859130	4382.52	4370.30	4369.21	4369.17	13.0 – 18.0	20.0	0.75
GW-11	02/25/16	NA	04/05/16	40.7503997	-111.857826	4437.77	4435.21	4435.02	4434.79	10.0 – 15.0	15.0	0.75
GW-12	03/01/16	04/05/16	NA	40.7504542	-111.859407	4382.57	4378.22	NA	NA	5.0 – 10.0	10.0	0.75
GW-13	03/04/16	04/05/16	NA	40.7508103	-111.856415	4489.66	4468.22	NA	NA	20.0 – 25.0	25.0	0.75
GW-14	03/02/16	04/05/16	NA	40.7504123	-111.858828	4399.05	4389.05	NA	NA	15.0 – 20.0	20.0	0.75
GW-15	02/27/16	03/08/16	NA	40.7511576	-111.857964	4443.22	4442.72	NA	NA	0.0 – 5.0	5.0	0.75
GW-16	02/27/16	NA	04/05/16	40.7509267	-111.858417	4422.96	4420.96	4421.26	4421.27	3.0 – 8.0	10.0	0.75
GW-17	03/01/16	04/05/16	NA	40.7515298	-111.859403	4395.42	4381.02	NA	NA	10.0 – 15.0	15.0	0.75
GW-18	03/01/16	04/05/16	NA	40.7518339	-111.858680	4433.39	4425.24	NA	NA	5.0 – 10.0	10.0	0.75
GW-19	02/29/16	03/08/16	NA	Well set, but groundwater did not recharge. Well not sampled or surveyed.						7.0 – 12.0	30.0	0.75
GW-20	02/29/16	NA	04/05/16	40.7525556	-111.859404	4417.16	4405.69	4405.52	4405.72	11.5 – 16.5	20.0	0.75
GW-21	02/29/16	03/08/16	NA	40.7540186	-111.858996	4462.16	4452.19	NA	NA	12.0 – 17.0	20.0	0.75
GW-22	02/29/16	04/05/16	NA	40.7536645	-111.860744	4406.25	4400.92	NA	NA	10.0 – 15.0	15.0	0.75
GW-23	02/22/16	03/08/16	NA	40.7549456	-111.858090	4480.78	4471.88	NA	NA	8.5 – 13.5	20.0	0.75
GW-24	02/23/16	03/08/16	NA	40.7542761	-111.861584	4394.76	4377.86	NA	NA	13.0 – 18.0	20.0	0.75
GW-25	02/29/16	04/05/16	NA	40.7521000	-111.861190	4368.33	4345.23	NA	NA	25.0 – 30.0	30.0	0.75
GW-26	02/26/16	04/06/16	NA	40.7476847	-111.859216	4376.06	4359.58	NA	NA	15.0 – 20.0	20.0	0.75
GW-27	03/04/16	04/05/16	NA	40.7517325	-111.855656	4493.18	4472.95	NA	NA	25.0 – 30.0	30.0	0.75
GW-28	03/04/16	04/05/16	NA	40.7499706	-111.855680	4491.28	4472.83	NA	NA	20.0 – 25.0	25.0	0.75
GW-31	02/27/16	03/08/16	NA	40.7504814	-111.862766	4334.23	4302.36	NA	NA	30.0 – 35.0	35.0	0.75
GW-33	02/23/16	Drilled to refusal, groundwater not encountered - no temporary groundwater monitoring point set.								NA	40.0	NA
GW-35	02/23/16	Drilled to refusal, groundwater not encountered - no temporary groundwater monitoring point set.								NA	45.0	NA
GW-39	02/22/16	03/08/16	NA	40.7529075	-111.862650	4349.59	4333.11	NA	NA	17.7 – 22.7	25.0	0.75
GW-40	03/01/16	04/05/16	NA	40.7513409	-111.860866	4366.97	4332.44	NA	NA	35.0 – 40.0	40.0	0.75
GW-42	03/01/16	Drilled to refusal, groundwater not reached - no temporary groundwater monitoring point set								NA	40.0	NA
GW-43	03/03/16	04/05/16	NA	40.7471177	-111.855858	4471.03	4440.53	NA	NA	28.0 – 33.0	35.0	0.75
GW-46	02/24/16	03/08/16	NA	40.7462486	-111.856967	4418.18	4388.60	NA	NA	30.0 – 35.0	35.0	0.75

Table 3-1
AOU1 Temporary Groundwater Monitoring Point and Piezometer Construction Information

Location ID	Installation Date	Abandonment Date	Piezometer Completion Date	Latitude[a]	Longitude[a]	Elevation Top of Casing[b] (ft amsl)	Water Table Elevation[b] (ft amsl)			Screen Interval (ft)	Total Boring Depth (ft bgs)	Well Diameter (inches)
							February/ March 2016	July 2016	September 2016			
GW-48	02/24/16	03/08/16	NA	40.7473947	-111.853223	4511.11	4474.77	NA	NA	35.0 – 40.0	40.0	0.75
GW-49	02/25/16	NA	04/05/16	40.7489291	-111.854616	4465.84	4458.27	4458.53	4458.35	7.5 – 12.5	15.0	0.75
GW-50	02/26/16	NA	04/06/16	40.7483434	-111.856004	4445.12	4442.43	4442.67	4442.67	4.0 – 9.0	10.0	0.75
GW-51	03/04/16	04/05/16	NA	40.7513681	-111.856637	4480.08	4467.61	NA	NA	10.0 – 15.0	15.0	0.75
GW-52	03/02/16	NA	04/06/16	40.7496775	-111.855253	4490.60	4467.76	4467.80	4467.45	25.0 – 30.0	30.0	0.75
GW-53	03/02/16	NA	04/05/16	40.7496231	-111.856746	4459.05	4448.29	4448.07	4448.21	10.0 – 15.0	15.0	0.75
GW-54	03/03/16	03/08/16	NA	Well set, but groundwater did not recharge. Well not sampled or surveyed.						8.3 – 13.3	13.3	0.75
GW-55	03/03/16	04/06/16	NA	40.7476446	-111.856747	4429.71	4407.74	NA	NA	10.0 – 15.0	15.0	0.75
GW-57	03/05/16	Drilled to refusal, groundwater not encountered - no temporary groundwater monitoring point set.								NA	33.0	NA
GW-58	03/05/16	Drilled to refusal, groundwater not encountered - no temporary groundwater monitoring point set.								NA	40.0	NA
GW-59	03/04/16	NA	04/05/16	40.7507703	-111.859399	4385.84	4377.26	4378.43	4378.60	10.0 – 15.0	15.0	0.75
GW-60	03/08/16	04/05/16	NA	40.7498778	-111.858728	4394.15	4384.45	NA	NA	10.0 – 15.0	15.0	0.75
GW-61	03/05/16	NA	04/06/16	40.7475988	-111.858042	4399.80	4388.09	4387.89	4387.60	15.0 – 20.0	20.0	0.75
GW-62	03/08/16	04/05/16	NA	40.7524309	-111.858097	4455.16	4442.34	NA	NA	15.0 – 20.0	20.0	0.75

Notes:
a. Coordinate system is North American Datum of 1983 High Accuracy Reference Network.
b. Coordinate system is National Geodetic Vertical Datum of 1929 (feet).
Shaded cells represent locations completed as a temporary groundwater monitoring point.
This table is reproduced from the AOU1 RI Report, locations were not resurveyed during subsequent phases of the RI.

AOU1 = accelerated operable unit 1
ft amsl = feet above mean sea level
ft bgs = feet below ground surface
ft = feet
ID = identification
NA = not applicable
RI = Remedial Investigation

Table 3-2
Monitoring Well Survey Data and Construction Details

Location	Sample Interval	Y Coordinate (Utah State Plane, ft)[1]	X Coordinate (Utah State Plane, ft)[1]	Surface Elevation (ft amsl)[2]	Top of casing elevation (ft amsl)[2]	Total Well Depth (ft bgs)	Screen Start (ft bgs)	Screen End (ft bgs)	Pump Depth (ft bgs)	Borehole Diameter (inches)	Well Diameter (inches)	Pump Type
MW-01S	-	7443663.78	1544832.82	4665.50	4664.80	224	184	224	204	10	2	Bladder pump
MW-01D	-				4664.80	404	364	404	384		4	Bladder pump
MW-02	-	7443618.23	1545346.65	4685.76	4685.24	205.5	175.5	202.5	195	8	2	Bladder pump
MW-03R	A	7444184.94	1545418.19	4698.74	4698.12	223	215	220	215	8	1	ZIST - with receiver
	B				4697.90	275	267	272	267		1	ZIST - with receiver
	C				4697.92	315	307	312	307		1	ZIST - with receiver
	D				4697.93	367	359	364	359		1	ZIST - with receiver
MW-04	-	7442902.88	1545176.20	4657.20	4656.85	173	143	173	160	8	4	Bladder pump
MW-05R	-	7444293.27	1546450.38	4738.25	4737.99	230	198	228	222	8	4	Bladder pump
MW-06	-	7442705.05	1546174.37	4679.13	4678.66	134	100	130	128	8	4	Bladder pump
MW-08	A	7443625.54	1542467.21	4540.36	4539.81	106	91	106	99	10	2	Bladder pump
	B				4539.77	200	180	200	190		2	Bladder pump
	C				4539.68	312	304	309	304		1	ZIST - with receiver
MW-12S	-	7442144.27	1540464.18	4360.35	4360.03	65	50	60	60	6	2	Bladder pump
MW-12D	-	7442139.2	1540464.27	4360.40	4360.07	95	88.5	93.5	90	6	2	Bladder pump
MW-13S	-	7442104.9	1541844.99	4483.26	4482.93	22	15.5	20.5	19	6	2	Bladder pump
MW-13D	-	7442104.65	1541840.18	4482.93	4482.62	90	79	84	82	6	2	Bladder pump
MW-13L	-	7442106.298	1541851.01	4483.67	4483.23	160	150	160	155	6	2	Bladder pump
MW-14S	-	7441871.55	1541340.04	4415.96	4415.69	15	4.5	14.5	12	6	2	Bladder pump
MW-14D	-	7441874.22	1541345.22	4416.45	4415.93	65	49	54	NA	6	2	Artesian
MW-15S	-	7441412.92	1540276.55	4347.65	4347.35	65	52.5	55	54	6	2	Bladder pump
MW-15D	-	7441412.63	1540283.39	4347.99	4347.72	95	69	74	72	6	2	Bladder pump
MW-16S	-	7443049.27	1541188.74	4455.19	4454.83	20	9	19	16.0	6	2	Bladder pump
MW-16D	-	7443052.83	1541188.80	4455.32	4454.84	73	62	72	67	6	2	Bladder pump
MW-17S	-	7441761.45	1542156.28	4465.51	4465.18	22	6	21	20	6	2	Bladder pump
MW-17D	-	7441762.17	1542159.83	4465.86	4465.69	70	44	54	NA	6	2	Artesian/Bladder pump
MW-18	-	7443344.52	1542789.74	4559.06	4558.76	110	80	90	88	6	2	Bladder pump
MW-19	-	7443109.99	1542791.56	4557.51	4557.16	110	84	94	89	6	2	Bladder pump
MW-20S	-	7442822.74	1542905.98	4558.92	4558.61	90.8	79.5	89.5	88	6	2	Bladder pump
MW-20D	-	7442813.21	1542905.39	4558.46	4558.19	150	119	129	124	6	2	Bladder pump
MW-21	-	7442343.24	1543130.25	4563.57	4563.32	80	62	72	70	6	2	Bladder pump
MW-22	-	7441969.31	1543122.59	4563.06	4562.72	120	64	74	72	6	2	Bladder pump
MW-23	A	7443809.38	1546280.59	4712.47	4711.80	222	210	220	210	8	1	ZIST - with receiver
	B				4711.77	262	250	260	250		1	ZIST - with receiver
	C				4711.69	360	348	358	348		1	ZIST - with receiver
MW-24	-	7443698.74	1546266.48	4709.77	4709.19	250	209.5	239.5	211	8	4	Bladder pump
MW-25	A	7443676.94	1546071.97	4703.04	4702.02	213	201	211	201	7	1	ZIST - with receiver
	B				4702.09	243	231	241	231		1	ZIST - with receiver
	C				4702.07	320	307.5	317.5	308		1	ZIST - with receiver
MW-26	A	7443907.17	1546132.96	4713.25	4712.29	217	205	215	205	8	1	ZIST - with receiver
	B				4712.55	247	235	245	235		1	ZIST - with receiver
	C				4712.51	327	315	325	315		1	ZIST - with receiver
	D				4712.50	360	347.75	357.75	348		1	ZIST - with receiver
MW-27	-	7443766.76	1546337.14	4712.61	4712.34	220	200	220	210	8	4	Bladder pump
MW-28	-	7443764.76	1546532.92	4712.80	4712.54	210	190	210	204	8	4	Bladder pump
MW-29	A	7442845.95	1545935.59	4679.35	4678.46	132	120	130	128	8	1	ZIST - w/o receiver
	B				4678.45	202	190	200	190		1	ZIST - with receiver
	C				4678.68	242	230	240	230		1	ZIST - with receiver
MW-30	RA	7445055.62	1545425.12	4722.89	4722.60	252	240	250	245		2	Bladder pump
	RB	7445055.62	1545425.12	4722.89	4722.36	294	280	290	285		2	Bladder pump
	C	7445073.45	1545424.98	4723.07	4721.92	329	317	327	317	7	1	ZIST - with receiver
MW-31	A	7442512.47	1545351.52	4655.22	4654.27	150	138	148	138	7	1	ZIST - w/o receiver
	B				4654.39	202	190	200	190		1	ZIST - with receiver
	C				4654.35	230	228	238	228		1	ZIST - with receiver
MW-32	A	7444416.40	1542692.62	4566.22	4565.67	126	114	124	119	7	2	Bladder pump
	B				4565.63	182	170	180	170		1	ZIST - w/o receiver
	C				4565.59	272	260	270	260		1	ZIST - w/o receiver
MW-34	A	7443498.84	1543745.66	4623.61	4623.09	152	140	150	148	8	1	ZIST - w/o receiver
	B				4622.71	187	175	185	175		1	ZIST - w/o receiver
	C				4622.63	262	250	260	250		1	ZIST - w/o receiver
	D				4622.58	327	315	325	315		1	ZIST - w/o receiver
MW-36	-	7440955.06	1541547.17	4429.01	4428.49	52	47	52	50	8	2	Bladder pump
MW-37S	-	7443160.46	1539938.63	4348.36	4348.00	35	25	35	30	8	2	Bladder pump
MW-37D	-	7443160.46	1539938.63	4348.36	4347.97	70	60	70	65	8	2	Bladder pump
MW-38S	-	7443931.79	1541593.58	4498.56	4497.64	37	27	37	32	8	2	Bladder pump
MW-38D	-	7443931.79	1541593.58	4498.56	4497.80	70	60	70	65	8	2	Bladder pump

Notes:
[1] Coordinates system is NAD 83 State Plane Coordinate System
[2] Coordinate system is NAVD 88 vertical datum

amsl = above mean sea level
bgs = below ground surface
ft = feet
w/o = without
ZIST = Zone Isolation Sampling Technology

Table 3-3
Piezometer Replacement Information

Residential Groundwater Location	Installation Date	Piezometer Location	Abandonment Date	Y Coordinate (Utah State Plane, ft)[1]	X Coordinate (Utah State Plane, ft)[1]	Surface Elevation (ft amsl)[2]	Top of casing elevation (ft amsl)[2]	Total Well Depth (ft bgs)	Screen Start (ft bgs)	Screen End (ft bgs)
RG-01	4/5/2021	GW-10	4/5/2021	7442006.70	1540924.03	4383.92	4383.49	20	9	19
RG-02	4/2/2021	GW-11	4/2/2021	7442286.89	1541270.19	4437.32	4436.95	15	5	15
RG-03	4/2/2021	GW-16	4/2/2021	7442479.61	1541107.48	4422.98	4422.53	8	3	8
RG-04	4/5/2021	GW-20	4/5/2021	7443062.83	1540830.39	4415.83	4415.47	20	10	20
RG-05	4/3/2021	GW-27	4/3/2021	7442805.72	1541851.88	4497.38	4496.96	30	20	30
RG-06	4/5/2021	GW-50	4/5/2021	7441534.16	1541771.71	4443.66	4443.23	10	4	9
RG-07	4/2/2021	GW-52	4/2/2021	7442021.00	1541979.13	4490.30	4490.05	30	20	30
RG-08	4/6/2021	GW-53	4/6/2021	7442038.61	1541519.86	4455.17	4454.74	20	8	18
RG-09	4/1/2021	GW-59	4/1/2021	7442423.54	1540835.33	4385.39	4384.93	15	5	15
RG-10	4/7/2021	GW-61	4/7/2021	7441296.08	1541395.71	4410.37	4409.82	30	20	30
RG-11	4/8/2021	NA	NA	7443236.76	1541982.64	4504.70	4504.39	40	30	40
NA	NA	GW-49	4/5/2021	NA	NA	NA	NA	12.5	NA	NA

Notes:
[1] Coordinates system is NAD 83 State Plane Coordinate System
[2] Coordinate system is NAVD 88 vertical datum

amsl = above mean sea level
bgs = below ground surface
ft = feet

Table 3-4
Surface Water Sampling Locations

Location ID	Location Type	Y Coordinate (Utah State Plane, ft)[b]	X Coordinate (Utah State Plane, ft)[b]	Sampling Method
AOU1 Sample Locations				
SW-01	Seep	7443526.30	1540474.07	Peristaltic Pump
SW-02	Stormwater and mitigated spring water[a]	7442875.94	1540655.42	Grab
SW-03	Stormwater and mitigated spring water[a]	7442877.33	1539949.16	Grab
SW-04	Spring-fed ponds	7441741.32	1541941.25	Peristaltic Pump
SW-05	Stormwater and mitigated spring water[a]	7442069.97	1540844.47	Peristaltic Pump
SW-06	Spring-fed sump	7441958.38	1541323.94	Grab
SW-07	Spring box	7443171.71	1541038.69	Grab
SW-08	Seep	7443328.19	1541357.40	Peristaltic Pump
SW-09	Seep	7442269.29	1541294.98	Peristaltic Pump
SW-10	Stormwater	7442868.95	1541854.57	Grab
SW-11	Seep	7442489.02	1541104.12	Peristaltic Pump
SW-12	Spring	7442581.90	1541201.74	Peristaltic Pump
SW-13	Seep	7442676.94	1540942.78	Peristaltic Pump
SW-14	Spring-fed sump	7442724.28	1541041.89	Peristaltic Pump
SW-15	Seep	7443045.61	1540956.73	Peristaltic Pump
SW-16	Spring (Our Lady of Lourdes)	7443722.38	1540548.00	Peristaltic Pump
SW-17	Jordan and Salt Lake City Canal	7443464.61	1539962.07	Peristaltic Pump
SW-18	Mitigated spring water[a]	7442141.84	1540822.87	Peristaltic Pump
SW-19	Spring (Bowen)	7440440.70	1541917.52	Peristaltic Pump
SW-20	Stormwater	7441445.12	1540392.52	Peristaltic Pump
SW-21	Spring-fed sump	7442630.04	1541009.65	Peristaltic Pump
SW-22	Spring-fed sump	7442788.20	1540909.15	Peristaltic Pump
SW-23	Spring-fed sump	7442594.88	1541328.70	Peristaltic Pump
SW-24	Stormwater	7442061.43	1542256.18	Peristaltic Pump
SW-25	Mitigated spring water[a]	7441770.58	1542097.37	Peristaltic Pump
SW-26	Seep	7442328.18	1541419.90	Peristaltic Pump
SW-27	Seep	7442482.97	1541158.68	Peristaltic Pump
SW-28	Mitigated spring water[a]	7442472.25	1541108.21	Peristaltic Pump
SW-29	Spring	7442599.19	1541252.52	Grab
SW-30	Spring (Smith)	7441953.71	1541398.73	Peristaltic Pump
SW-31	Seep	7442331.53	1541218.20	Peristaltic Pump
SW-32	Mitigated spring water[a]	7441407.56	1541581.65	Peristaltic Pump
SW-33	Seep	7441503.63	1541518.30	Peristaltic Pump
SW-34	Spring	7441495.55	1541442.90	Grab
SW-35	Seep	7442685.92	1541067.50	Peristaltic Pump
SW-36	Seep	7441885.08	1541431.71	Peristaltic Pump
SW-37	Mitigated spring water[a]	7442005.78	1540862.78	Peristaltic Pump
SW-38	Stormwater and mitigated spring water[a]	7442099.72	1540515.69	Peristaltic Pump
SW-39	Mitigated spring water[a]	7441890.66	1541312.58	Peristaltic Pump
SW-40	Spring-fed sump	7441665.13	1541861.15	Grab
SW-41	Mitigated spring water[a]	7441720.97	1542204.40	Peristaltic Pump
SW-42	Spring	7441624.42	1541561.18	Peristaltic Pump
SW-43	Spring	7441397.97	1541244.11	Peristaltic Pump
SW-44	Spring	7441444.11	1541095.77	Peristaltic Pump
SW-45	Jordan and Salt Lake City Canal	7442794.74	1540192.10	Peristaltic Pump
SW-46	Spring	7441542.20	1541076.49	Peristaltic Pump
SW-47	Creek (Red Butte)	7440362.38	1541914.44	Grab
SW-48	Spring (Benson)	7443298.21	1541293.00	Peristaltic Pump
SW-49	Jordan and Salt Lake City Canal	7440858.89	1540301.48	Peristaltic Pump
SW-50	Spring	7441467.75	1541378.78	Peristaltic Pump
OU2 Sample Locations				
SW-06	Decorative Well	7441992.66	1541334.32	Peristaltic Pump
SW-34	Spring	7441495.55	1541442.90	Peristaltic Pump
SW-35	Seep	7442664.49	1541000.31	Peristaltic Pump

Table 3-4
Surface Water Sampling Locations

Location ID	Location Type	Y Coordinate (Utah State Plane, ft)[b]	X Coordinate (Utah State Plane, ft)[b]	Sampling Method
SW-39	Storm Water Drain	7441891.75	1541279.02	Peristaltic Pump
SW-48	Pond Inlet (Benson Spring)	7443316.65	1541297.12	Grab
SW-53	Pond Inlet	7441888.37	1541374.95	Grab
SW-47	Red Butte Creek	7440350.58	1541979.13	Grab
SW-51	Red Butte Creek	7440309.74	1541185.25	Grab
SW-52	Red Butte Creek	7440347.94	1540859.68	Grab
Phase 1 OU2 Sample Locations				
SW-04	Spring	7441686.28	1541948.79	Grab
SW-15	Seep	7443147.66	1540948.83	Grab
SW-15	Spring	7443151.48	1540904.51	Grab
SW-39	Storm Water Drain	7441885.54	1541317.83	Grab
SW-44	Spring	7441420.44	1541002.85	Grab
SW-50	Spring	7441525.17	1541233.26	Grab
SW-50	Spring	7441484.40	1541407.66	Grab
SW-166	Seep	7442345.42	1541117.40	Grab
Phase 2 OU1 Sample Locations[c]				
SW-08	Seep	7443296.66	1541315.16	Grab
SW-12	Spring	7442589.42	1541235.30	Peristaltic Pump
SW-15	Seep	7443150.02	1540904.50	No Sample[d]
SW-16I (Interior)	Sump (Our Lady of Lourdes)	7443803.55	1540388.19	Peristaltic Pump
SW-16E (Exterior)	Spring (Our Lady of Lourdes)	7443710.13	1540333.23	Grab
SW-34	Spring	7441495.55	1541442.90	Grab
SW-35	Seep	7442656.89	1541038.29	Peristaltic Pump
SW-39	Mitigated spring water[a]	7441883.72	1541316.99	Grab
SW-53	Pond Inet	7441888.22	1541377.41	Grab
SW-54	Seep	7443342.42	1541352.19	Grab
SW-166	Seep	7442343.60	1541117.39	Peristaltic Pump

Notes:
a. Mitigated spring water is spring water that has been diverted off of private property through a drainage system into storm drain:
b. Coordinate system is NAD 83 State Plane Coordinate System
c. Locations sampled during Phase 2 OU1 also had flow rate measurements.
d. Only a flow rate measurement was collected.

ID = Identification

Table 3-5
Soil Vapor Sample Locations and Types

Location ID	Sample Area	Sample Depth (feet bgs)	Sample Type	
			HAPSITE®	SUMMA® (TO-15)
SG-01	VAMC North Area	5.9 - 6.25	2018, 2019	-
SG-02		5.5 - 5.8	2018, 2019	-
MW-30		30	-	2021
SG-03	VAMC Building 6 and 7 Area	7.8 - 8.1	2018, 2019	2021
SG-04		5.5 - 5.8	2018, 2019	2021
SG-05		5.9 - 6.3	2018, 2019	2018, 2019, 2021
SG-06		5.8 - 6.1	2018, 2019	2021
SG-07		5.2 - 5.5	2018, 2019	-
SG-08		3.0 - 3.3	2018, 2019	2018, 2021
SG-09		2.3 - 2.7	2018, 2019	-
SG-10		6.3 - 6.8	2018, 2019	2021
SG-11		4.7 - 5.0	2018, 2019	2018, 2021
SG-12		4.8 - 5.2	2018, 2019	-
SG-13		5.3 - 6.0	2018	2018, 2021
SG-14		7.4 - 7.8	2018, 2019	-
SG-15		8.0 - 8.3	2018, 2019	-
SG-45		7 - 7.5	2019	-
SG-46		4.8 - 5.2	2019	-
SG-48		5.0 - 5.5	2019	-
SG-49		6.1 - 6.7	2019	2021
SG-50		6.7 - 7.3	2019	2021
SG-51		8.8 - 9.3	2019	2019
SG-52		4.6 - 5.1	2019	2019
SG-53		4.5 - 5.0	2019	-
SG-54		4.5 - 5.1	2019	2019
SG-55		4.5 - 5.0	2019	2021
SG-60		3.8 - 4.3	2019	2021
MW-23		130-140	-	2021
MW-24		32	-	2021
		60	-	2021
		104	-	2021
		130	-	2021
MW-25		28	-	2021
		100	-	2021
MW-27		28	-	2021
		48	-	2021
		75	-	2021
		113	-	2021
		155	-	2021
MW-28		24	-	2021
		48	-	2021
		118	-	2021
VP-01	VAMC Building 6 Subslab - Ground Level	Sub-Slab	2019	-
VP-02		Sub-Slab	2019	2021
VP-03		Sub-Slab	2019	-

Table 3-5
Soil Vapor Sample Locations and Types

Location ID	Sample Area	Sample Depth (feet bgs)	Sample Type	
			HAPSITE®	SUMMA® (TO-15)
VP-05	VAMC Building 6 Subslab - Ground Level	Sub-Slab	2019	-
VP-06		Sub-Slab	2019	2021
VP-18		Sub-Slab	2019	-
VP-19		Sub-Slab	2019	2021
VP-04	VAMC Building 6 Subslab - Basement	Sub-Slab	2019	2019, 2021
VP-14		Sub-Slab	2019	2021
VP-15		Sub-Slab	2019	2019, 2021
VP-16		Sub-Slab	2019	2019
VP-17		Sub-Slab	2019	2019, 2021
VP-07	VAMC Building 7 Subslab - Ground Level	Sub-Slab	2019	-
VP-08		Sub-Slab	2019	2021
VP-09		Sub-Slab	2019	2021
VP-10		Sub-Slab	2019	2021
VP-11		Sub-Slab	2019	2019, 2021
VP-20		Sub-Slab	2019	2019
VP-12	VAMC Building 7 Subslab - Basement	Sub-Slab	2019	2021
VP-13		Sub-Slab	2019	2021
VP-21	VAMC Building 7 Subslab - Exterior	Sub-Slab	2019	-
VP-22		Sub-Slab	2019	-
SG-17	VAMC Sewer Line Area	6.3 - 6.7	2018, 2019	-
SG-18		4.7 - 5.2	2018, 2019	-
SG-19		3.8 - 4.1	2018, 2019	-
SG-20		6.1 - 6.5	2018, 2019	-
SG-21		7.8 - 8.1	2018, 2019	-
SG-22		5.3 - 5.6	2018, 2019	-
SG-23		5.8 - 6.1	2018, 2019	-
SG-24[a]	Sunnyside Park	14 - 14.5	2018	-
SG-25[a]		13.5 - 14.5	2018	-
SG-26[a]		14 - 15	2018	-
SG-27[a]		14 - 15	2018	-
SG-28[a]		14 - 15	2018	2018
SG-29[a]		14 - 15	2018	-
SG-30[a]		14 - 15	2018	-
SG-31[a]		14 - 15	2018	-
SG-32		14 - 15	2018	-
SG-33		14 - 15	2018	-
SG-34		14 - 15	2018	2018
SG-35		14 - 15	2018	2018
SG-36		13 - 15	2018	-
SG-37		14 - 15	2018	2018
SG-38		14 - 15	2018	-
SG-39		14 - 15	2018	-
SG-40		14 - 15	2018	-
SG-41		14 - 15	2018	-
SG-42		6 - 7	2018, 2019	2021
		12 - 13	2018, 2019	2021
		16 - 17	2018, 2019	2021
		24.8 - 26	2018, 2019	2021

Table 3-5
Soil Vapor Sample Locations and Types

Location ID	Sample Area	Sample Depth (feet bgs)	Sample Type	
			HAPSITE®	SUMMA® (TO-15)
SG-43	Sunnyside Park	7 - 8	2018, 2019	2021
		14.7 - 15.7	2018, 2019	2018, 2021
SG-44		14 - 15	2018	2018
MW-29		42	-	2021
		66	-	2021
		98	-	2021
MW-34	Rowland Hall School	20	-	2021
MW-32	East Side Springs	18	-	2021
MW-37		8	-	2021
MW-38		8	-	2021
RG-01		4.5	-	2021
RG-04		5	-	2021
RG-05		5	-	2021
RG-07		5	-	2021
RG-08		4.5	-	2021
RG-10		5	-	2021
RG-11		5	-	2021
0001-H		4	2015	-
0002-H		4, 8	2015	-
0003-H		8 (HAPSITE®), 4 (SUMMA®)	2015	2015
0004-H		4, 7	2015	-
0005-H		4	2015	-
0006-H		4	2015	-
0007-H		4	2015	-
0008-H		4	2015	2015
0009-H		4	2015	-
0010-H		4	2015	-
0011-H		4	2015	2015
0012-H		4, 8	2015	-
0013-H		8	2015	-
0014-H		4	2015	-
0015-H		4	2015	-
0016-H		4, 6	2015	-
0017-H		4	2015	-
0018-H		4	2015	-
0019-B		4, 8	2015	-
0020-C		4, 6	2015	-
0021-S		4	2015	-
0022-S		4, 8.5	2015	-
0023-H		4, 6.5	2015	-
0024-H		4	2015	-
0025-H		4	2015	-
0026-H		4	2015	2015
0027-H		4, 5.5	2015	-
0028-S		4, 8	2015	-
0029-H		4, 6	2015	-
0030-H		4 (HAPSITE®), 6 (HAPSITE® and SUMMA®)	2015	2015

Table 3-5
Soil Vapor Sample Locations and Types

Location ID	Sample Area	Sample Depth (feet bgs)	Sample Type	
			HAPSITE®	SUMMA® (TO-15)
0031-S	East Side Springs	3.5 (HAPSITE®), 4 (HAPSITE® and SUMMA®)	2015	2015
0033-H		5	2015	-
0036-H		4, 8	2015	-
0037-H		4	2015	2015
0040-H		4, 6	2016	-
0041-H		7	2016	-
0045-S		4	2016	-
0047-H		4.5	2016	-
0050-H		5	2016	-
0051-H		4.5, 7.5, 8.5	2016	-
0052-H		4.5	2016	-
0053-H		6.5 (HAPSITE®), 6 (SUMMA®)	2016	2016
0054-H		7	2016	-
0055-H		5	2016	-
0056-H		5.5	2016	-
0057-H		2	2017	-
0058-H		4, 6	2017	-
0059-H		1.8, 5	2017	-
0060-H		4.8	2017	-
0061-H		4.7, 6.1	2017	-
0062-H		6.5	2017	-
0063-H		6	2017	-

Notes:

a. Locations were sampled using a purge pump, which potentially biased sample results high due to carry over. All other

AOU1 = accelerated operable unit 1
bgs = below ground surface
ID = identification
OU = operable unit
RI = Remedial Investigation
VAMC = George E. Wahlen Veterans Affairs Medical Center

Table 3-6
Soil Vapor Probe Construction Information

Location ID	Sample Area	Installation Date	Northing (feet)	Easting (feet)	Surface Elevation (ft amsl)	Sample Depth (ft bgs)
SG-01	VAMC North Area	2018	7445150.52	1546013.43	4742.28	5.9 - 6.25
SG-02		2018	7445087.81	1546021.31	4744.28	5.5 - 5.8
MW-30		2020	7445073.45	1545424.98	4723.07	30
SG-03	VAMC Building 6 and 7 Area	2018	7443809.00	1546268.75	4712.59	7.8 - 8.1
SG-04		2018	7443816.69	1546312.02	4712.07	5.5 - 5.8
SG-05		2018	7443799.27	1546338.69	4712.11	5.9 - 6.3
SG-06		2018	7443762.75	1546386.92	4712.83	5.8 - 6.1
SG-07		2018	7443784.75	1546450.84	4714.08	5.2 - 5.5
SG-08		2018	7443773.66	1546492.04	4712.58	3.0 - 3.3
SG-09		2018	7443773.33	1546536.79	4712.53	2.3 - 2.7
SG-10		2018	7443772.95	1546567.85	4717.55	6.3 - 6.8
SG-11		2018	7443747.47	1546510.21	4713.06	4.7 - 5.0
SG-12		2018	7443725.84	1546489.30	4713.04	4.8 - 5.2
SG-13		2018	7443677.39	1546495.82	4711.88	5.3 - 6.0
SG-14		2018	7443627.33	1546384.14	4709.79	7.4 - 7.8
SG-15		2018	7443603.43	1546481.25	4711.53	8.0 - 8.3
SG-45		2019	7443963.21	1546350.55	*	7 - 7.5
SG-46		2019	7443880.46	1546451.98	*	4.8 - 5.2
SG-48		2019	7443904.46	1546209.77	*	5.0 - 5.5
SG-49		2019	7443876.64	1546186.02	*	6.1 - 6.7
SG-50		2019	7443840.69	1546271.18	*	6.7 - 7.3
SG-51		2019	7443769.87	1546313.33	*	8.8 - 9.3
SG-52		2019	7443803.46	1546425.45	*	4.6 - 5.1
SG-53		2019	7443735.42	1546341.14	*	4.5 - 5.0
SG-54		2019	7443710.81	1546331.09	*	4.5 - 5.1
SG-55		2019	7443710.81	1546281.23	*	4.5 - 5.0
SG-60		2019	7443765.87	1546315.60	*	3.8 - 4.3
MW-23		2020	7443809.38	1546280.59	4712.47	130-140
MW-24		2020	7443698.74	1546266.48	4709.77	32
						60
						104
						130
MW-25		2020	7443676.94	1546071.97	4703.04	28
						100
MW-27		2020	7443766.76	1546337.14	4712.61	28
						48
						75
						113
						155
MW-28		2020	7443764.76	1546532.92	4712.80	24
						48
						118
VP-01	VAMC Building 6 Subslab - Ground Level	2018	7443674.65	1546362.13	*	Sub-Slab
VP-02		2018	7443663.25	1546330.89	*	Sub-Slab
VP-03		2018	7443729.11	1546371.42	*	Sub-Slab

Table 3-6
Soil Vapor Probe Construction Information

Location ID	Sample Area	Installation Date	Northing (feet)	Easting (feet)	Surface Elevation (ft amsl)	Sample Depth (ft bgs)
VP-05	VAMC Building 6 Subslab - Ground Level	2018	7443856.18	1546245.83	*	Sub-Slab
VP-06		2018	7443845.41	1546178.70	*	Sub-Slab
VP-18		2018	7443780.01	1546221.38	*	Sub-Slab
VP-19		2018	7443810.95	1546225.98	*	Sub-Slab
VP-04	VAMC Building 6 Subslab - Basement	2018	7443750.08	1546280.28	*	Sub-Slab
VP-14		2019	7443729.23	1546244.48	*	Sub-Slab
VP-15		2019	7443784.84	1546278.00	*	Sub-Slab
VP-16		2019	7443740.98	1546332.69	*	Sub-Slab
VP-17		2019	7443730.05	1546273.15	*	Sub-Slab
VP-07	VAMC Building 7 Interior - Ground Level	2018	7443824.09	1546511.16	*	Sub-Slab
VP-08		2018	7443854.91	1546432.21	*	Sub-Slab
VP-09		2018	7443829.16	1546323.72	*	Sub-Slab
VP-10		2018	7443892.50	1546318.66	*	Sub-Slab
VP-11		2018	7443865.08	1546289.95	*	Sub-Slab
VP-20		2019	7443871.29	1546258.19	*	Sub-Slab
VP-12	VAMC Building 7 Subslab - Basement	2018	7443894.26	1546376.10	*	Sub-Slab
VP-13		2018	7443820.00	1546392.95	*	Sub-Slab
VP-21	VAMC Building 7 Subslab - Exterior	2019	7443931.96	1546400.75	*	Sub-Slab
VP-22		2019	7443798.36	1546398.78	*	Sub-Slab
SG-17	VA Sewer Line Area	2018	7443514.28	1546345.20	4705.23	6.3 - 6.7
SG-18		2018	7443490.22	1546308.22	4704.25	4.7 - 5.2
SG-19		2018	7443467.67	1546287.83	4703.33	3.8 - 4.1
SG-20		2018	7443419.82	1546248.31	4701.71	6.1 - 6.5
SG-21		2018	7443392.17	1546227.52	4699.18	7.8 - 8.1
SG-22		2018	7443335.44	1546175.65	4694.63	5.3 - 5.6
SG-23		2018	7443310.94	1546159.81	4692.99	5.8 - 6.1
SG-24	Sunnyside Park	2018	7443230.18	1546092.50	4689.60	14 - 14.5
SG-25		2018	7443193.02	1546066.12	4684.50	13.5 - 14.5
SG-26		2018	7443149.46	1546053.64	4682.62	14 - 15
SG-27		2018	7443106.51	1546038.63	4681.45	14 - 15
SG-28		2018	7443059.86	1546022.75	4682.36	14 - 15
SG-29		2018	7442992.46	1545997.84	4681.73	14 - 15
SG-30		2018	7442952.29	1545984.47	4681.04	14 - 15
SG-31		2018	7442912.44	1545967.06	4680.77	14 - 15
SG-32		2018	7442871.44	1545952.19	4679.97	14 - 15
SG-33		2018	7442829.69	1545936.59	4679.00	14 - 15
SG-34		2018	7442799.53	1545925.69	4678.09	14 - 15
SG-35		2018	7442771.79	1545921.39	4676.97	14 - 15
SG-36		2018	7442705.31	1545911.54	4674.10	13 - 15
SG-37		2018	7442668.37	1545874.99	4671.80	14 - 15
SG-38		2018	7442565.83	1545844.95	4668.69	14 - 15
SG-39		2018	7442513.48	1545825.56	4666.78	14 - 15
SG-40		2018	7442840.30	1545904.38	4678.37	14 - 15
SG-41		2018	7442814.16	1545967.17	4678.78	14 - 15

Table 3-6
Soil Vapor Probe Construction Information

Location ID	Sample Area	Installation Date	Northing (feet)	Easting (feet)	Surface Elevation (ft amsl)	Sample Depth (ft bgs)
SB-42	Sunnyside Park	2018	7442828.84	1545936.88	4679.06	6 - 7
						12 - 13
						16 - 17
						24.8 - 26
SB-43		2018	7442771.79	1545921.39	4676.97	7 - 8
						14.7 - 15.7
MW-29		2020	7442845.95	1545935.59	4679.35	42
						66
						98
MW-34	Rowland Hall School	2020	7443498.84	1543745.66	4623.61	20
MW-32	East Side Springs	2020	7444416.40	1542692.62	4566.22	18
MW-37		2020	7443160.46	1539938.63	4348.36	8
MW-38		2020	7443931.79	1541593.58	4498.56	8
RG-01		2021	7442006.70	1540924.03	4383.92	4.5
RG-04		2021	7443062.83	1540830.39	4415.83	5
RG-05		2021	7442805.72	1541851.88	4497.38	5
RG-07		2021	7442021.00	1541979.13	4490.30	5
RG-08		2021	7442038.61	1541519.86	4455.17	4.5
RG-10		2021	7441296.08	1541395.71	4410.37	5
RG-11		2021	7443236.76	1541982.64	4504.70	5

Notes:
Northing / Easting measured using the NAD 83 State Plane Coordinate System; UT Central Zone
Surface elevations measured using the NAVD 88 vertical datum
amsl = above mean sea level
bgs = below ground surface
ft = feet
VAMC = George E. Wahlen Veterans Affairs Medical Center
* = Elevation information not collected

Table 3-7
Indoor and Outdoor Air Samples Locations and Dates

Location	Investigation Phase[1]	Indoor Air			Outdoor Air	
		HAPSITE[2]	SUMMA[3]	Passive Sampler[4]	HAPSITE	SUMMA
		Sample Date(s)				
0001-H	AOU1	2015, 2017	2017	-	2015, 2017	-
0002-H	AOU1	2015, 2017	2017	-	2015, 2017	-
0003-H	AOU1	2015	2015,2016	-	2015	-
	Phase 1 OU2	2020	2020, 2021	2020	-	2020
0004-H	AOU1	2015, 2017	2017	-	2015, 2017	-
0005-H	AOU1	2015	-	-	2015	-
0006-H	AOU1	2015	-	-	2015	-
0007-H	AOU1	2015	2015	-	-	-
0008-H	AOU1	2015	2015	-	2015	-
0009-H	AOU1	2015	-	-	2015	-
0010-H	AOU1	2015	-	-	2015	-
0011-H	AOU1	2015	2015,2016	-	2015	2015
	Phase 1 OU2	2020	2020, 2021	2020	-	2020, 2021
0012-H	AOU1	2015, 2017	2017	-	2015, 2017	-
0013-H	AOU1	2015, 2017	2017	-	2015, 2017	-
	Phase 2 OU1	-	2022	-	-	-
0014-H	AOU1	2015	-	-	2015	-
0015-H	AOU1	2015	-	-	2015	-
0016-H	AOU1	2015	-	-	2015	-
0017-H	AOU1	2015	2015,2016	-	2015	2015
0018-H	AOU1	2015	2015,2016	-	2015	2015
	Phase 1 OU2	2020	2020, 2021	2020	-	2020
0019-B	AOU1	2015	2015	-	2015	-
0020-C	AOU1	2015	-	-	2015	-
0021-S	AOU1	2015	-	-	2015	-
0022-S	AOU1	2015	2015	-	2015	-
0023-H	AOU1	2015	2016	-	2015	-
0024-H	AOU1	2015	-	-	2015	-
0025-H	AOU1	2015, 2017	2017	-	2015, 2017	-
	Phase 1 OU2	2020	2020	2020	-	2020
0026-H	AOU1	2015, 2017	2015,2017	-	2015, 2017	2015
	Phase 1 OU2	2020	2020, 2021	2020	-	2020
0027-H	AOU1	2015, 2017	2015,2017	-	2015, 2017	2015
0028-H	AOU1	2015	2015	-	2015	-
0029-H	AOU1	2015, 2017	2017	-	2015, 2017	-
	Phase 2 OU1	-	2022	-	-	-
0030-H	AOU1	2015	2015	-	2015	2015
0031-H	AOU1	2015	-	-	-	-
0032-H	AOU1	2015	-	-	2015	-
0033-H	AOU1	2015	-	-	2015	-
0034-H	AOU1	-	-	-	-	-
0035-H	AOU1	-	-	-	-	-
0036-H	AOU1	2015	2015	-	2015	-
0037-H	AOU1	2015	2015,2016	-	2015	-
	Phase 1 OU2	2020	2020, 2021	2020	-	2020
0038-H	AOU1	2015, 2017	2017	-	2015	-
0040-H	AOU1	2016	2016	-	-	-
	Phase 2 OU1	-	2022	-	-	-
0041-H	AOU1	2016	-	-	-	-
	Phase 2 OU1	-	2022	-	-	-
0045-S	AOU1	2016	-	-	-	-
	Phase 1 OU2	2020	-	-	-	-

Table 3-7
Indoor and Outdoor Air Samples Locations and Dates

Location	Investigation Phase[1]	Indoor Air			Outdoor Air	
		HAPSITE[2]	SUMMA[3]	Passive Sampler[4]	HAPSITE	SUMMA
		Sample Date(s)				
0047-H	AOU1	2016	-	-	-	-
0050-H	AOU1	2016	-	-	-	-
0051-H	AOU1	2016	2016	-	-	-
	Phase 1 OU2	2020	2020, 2021	2020	-	2020, 2021
0052-H	AOU1	2016	-	-	-	-
0053-H	AOU1	2016	2016	-	-	-
	Phase 1 OU2	2020	2020	2020	-	2020
0054-H	AOU1	2016	-	-	-	-
0055-H	AOU1	2016	-	-	-	-
0056-H	AOU1	2016	-	-	2016	-
0057-H	AOU1	2017	-	-	-	-
0058-H	AOU1	2017	-	-	2017	-
0059-H	AOU1	2017	-	-	2017	-
	Phase 1 OU2	2020	2020, 2021	2020	-	2020
0060-H	AOU1	2017	-	-	2017	-
0061-H	AOU1	2017	-	-	2017	-
0062-H	AOU1	2017	-	-	2017	-
	Phase 2 OU1	-	2022	-	-	-
0063-H	AOU1	2017	-	-	2017	-
0064-H	AOU1	2017	2017	-	-	-
	Phase 2 OU1	-	2022	-	-	2022
0065-H	Phase 1 OU2	2020	2020	2020	-	2020
0066-H	Phase 1 OU2	2020	2020	2020	-	2020
0069-H	Phase 1 OU2	2020	2020	2020	-	2020
0071-H	Phase 1 OU2	2020	2020	2020	-	2020
0072-H	Phase 2 OU1	-	2022	-	-	-
0076-H	Phase 1 OU2	2020	2020	2020	-	2020
0091-H	Phase 1 OU2	2020	2020, 2021	2020	-	2020, 2021
0098-H	Phase 1 OU2	2020	2020	2020	-	2020
0102-H	Phase 1 OU2	-	2021	-		2021
0118-H	Phase 1 OU2	2020	2020	2020	-	2020
0121-H	Phase 1 OU2	2020	2020	2020	-	2020
0122-H	Phase 1 OU2	2020	2020	2020	-	2020
0133-H	Phase 1 OU2	2020	2020	2020	-	2020
0135-H	Phase 1 OU2	2020	2020	2020	-	2020
0137-H	Phase 1 OU2	2020	2020	2020	-	2020
0139-H	Phase 1 OU2	2020	2020	2020	-	2020
0145-H	Phase 2 OU1	-	2022	-	-	-
0146-H	Phase 1 OU2	2020	2020	2020	-	2020
	Phase 2 OU1		2022			
0148-H	Phase 1 OU2	2020	2020	2020	-	2020
0153-H	Phase 1 OU2	2020	2020	2020	-	2020
0162-H	Phase 1 OU2	2020	2020	2020	-	2020
0166-H	Phase 1 OU2	2020	2020, 2021	2020	-	2020
0172-H	Phase 2 OU1	-	2022	-	-	-
0173-H	Phase 1 OU2	2020	2020	2020	-	2020
0174-H	Phase 1 OU2	2020	2020	2020	-	2020
0180-H	Phase 2 OU1	-	2022	-	-	-
0189-H	Phase 2 OU1	-	2022	-	-	-
0192-H	Phase 2 OU1	-	2022	-	-	-
0193-H	Phase 2 OU1	-	2022	-	-	-
0194-H	Phase 2 OU1	-	2022	-	-	-

Table 3-7
Indoor and Outdoor Air Samples Locations and Dates

Location	Investigation Phase[1]	Indoor Air			Outdoor Air	
		HAPSITE[2]	SUMMA[3]	Passive Sampler[4]	HAPSITE	SUMMA
		Sample Date(s)				
0195-H	Phase 2 OU1	-	2022	-	-	-
0197-H	Phase 2 OU1	-	2022	-	-	-
0225-H	Phase 2 OU1	-	2022	-	-	-
0230-H	Phase 2 OU1	-	2022	-	-	-
0255-H	Phase 2 OU1	-	2022	-	-	-
0256-H	Phase 2 OU1	-	2022	-	-	-
0263-H	Phase 2 OU1	-	2022	-	-	-
0273-H	Phase 2 OU1	-	2022	-	-	-
0274-H	Phase 2 OU1	-	2022	-	-	-
0277-H	Phase 2 OU1	-	2022	-	-	-
0302-H	Phase 2 OU1	-	2022	-	-	2022
0315-H	Phase 2 OU1	-	2022	-	-	-
0329-H	Phase 2 OU1	-	2022	-	-	-
0334-H	Phase 2 OU1	-	2022	-	-	2022
0336-H	Phase 2 OU1	-	2022	-	-	-
0347-H	Phase 2 OU1	-	2022	-	-	-
0365-S	Phase 2 OU1	-	2022	-	-	2022
0366-C	Phase 2 OU1	-	2022	-	-	-
0381-H	Phase 2 OU1	-	2022	-	-	2022
0392-H	Phase 2 OU1	-	2022	-	-	-
0395-H	Phase 2 OU1	-	2022	-	-	-
Building 6	OU2	2019	2019	-	-	2019
	Phase 2 OU1	2021	2021	-	-	-
Building 7	OU2	2019	2019	-	-	2019
	Phase 2 OU1	2021	2021	-	-	-
Building 13	OU2	2019	-	-	-	2019
Building 20	OU2	2019	-	-	-	2019
	Phase 2 OU1	-	2022	-	-	-
Building 32	Phase 2 OU1	-	2022	-	-	2022

Notes:

1. Vapor intrusion protocol changed between AOU1 RI investigation activities and Phase 1 of OU2 investigation activities.
2. Samples collected using the HAPSITE GC/MS were analyzed for tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene.
3. Samples collected using SUMMA Canisters were submitted for VOC analysis by Method TO-15/TO-15 SIM.
4. Samples collected using Radiello passive samplers were submitted for VOC analysis by Method TO-17.

Table 4-1
Geotechnical Results

Method				USCS Soil Classification (ASTM D2487)		Hydraulic Conductivity (ASTM D5084)	foc (ASTM D2974)				Density (ASTM D7263) Water Content (ASTM D2216)		Atterberg Limits (ASTM D4318)			Sieve Analysis (ASTM D6913/D7928) Hydrometer (ASTM D422/D7928)[b,c]				
Monitoring Well ID	Depth (ft bgs)	Field Classification[a]	Field Group Symbols[a]	Soil Classification	Group Symbol	Vertical Hydraulic Conductivity (feet/day)	Moisture (as received weight %)	Ash (Moist Free weight %)	Organic Matter (Moist Free weight %)	foc (Calculated)	Water Content (%)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	Fines (%)	Silt (%)	Clay (%)
MW-03R	39-40	Sandy Silt with Gravel	ML	-		-	-				15.8	-		-			-		-	
	185-195[d]	Clayey Gravel with Sand	GC	Silty, clayey gravel with sand	GC-GM	-	-				11.6	-	19	14	5	53.4	28	18.6	13	6
	187-197	Silty Gravel with Sand	GM	-		-	10.65	99.42	0.58	0.0034	-			-			-		-	
	205-215[d]	Silty Gravel with Sand/Clayey Gravel with Sand	GM/GC	Silty, clayey gravel with sand	GC-GM	-	-				-		20	16	4	58.3	27.5	14.2	10	4
	207-217	Silty Gravel with Sand/Clayey Gravel with Sand	GM/GC	-		-	8.92	99.53	0.47	0.0027	-			-			-		-	
	250-252.5	Sandy Silty Clay/Lean Clay	CL-ML/CL	Sandy lean clay	CL	4.3E-03	-				14.6	118	27	14	13	7.8	32.1	60.1	40	20
	267-277[d]	Silty, Clayey Gravel with Sand	GC	Silty, clayey sand with gravel	SC-SM	-	-				-		20	13	7	30.3	36.6	33	22	11
	300	Sandy, Silty Clay	CL-ML	-		-	15.36	98.98	1.02	0.0058	-			-			-		-	
	338-340	Clayey Gravel with Sand	GC	-		-	8.06	99.5	0.5	0.0029	-			-			-		-	
	347-349	Clayey Gravel with Sand	GC	-		-	-				9.8	-		-			-		-	
	349-351	Gravelly Clay with Sand	CL	-		-	-				10.4	-		-			-		-	
	351-353	Gravelly Clay with Sand	CL	-		-	-				7.8	-		-			-		-	
	353-355	Gravelly Clay with Sand	CL	-		-	-				6.5	-		-			-		-	
	355-357	Gravelly Clay with Sand	CL	-		-	-				6.6	-		-			-		-	
	347-357	Clayey Gravel with Sand/ Gravelly Clay with Sand	GC/CL	Clayey sand with gravel	SC	-	-				-		23	13	10	29.8	29.8	40.4	-	
	357-367[d]	Silty Gravel/Clayey Gravel/Gravelly Lean Clay	GM/GC/CL	Silty, clayey gravel with sand	GC-GM	-	-				-		21	14	7	41.5	32.5	25.9	17	9
MW-08	66	Clayey Sand with Gravel	SC	-		-	14.10	99.73	0.27	0.0016	-			-			-		-	
	72-78	Sandy Lean Clay	CL	Sandy silty clay	CL-ML	-	-				-		22	16	6	8.4	31	60.6	46	15
	79.5-83	Lean Clay with Sand	CL	Lean clay with sand	CL	-	-				-		28	16	12	0.7	15.4	83.9	61	23
	87-89	Sandy Lean Clay with Gravel	CL	-		3.7E-02	-				9.1	110.9		-			-		-	
	90-97[d]	Clayey Gravel with Sand	GC	Silty gravel with sand	GM	-	10.85	100.04	<0.01	<0.0001	-		18	15	3	51.3	31.3	17.4	11	6
	147-153[d]	Silty Gravel with Sand	GM	Silty, clayey gravel with sand	GC-GM	-	12.46	100.07	<0.01	<0.0001	-		19	15	4	42.8	35.8	21.4	15	6
	171-175[d]	Clayey Gravel with Sand	GC	Clayey gravel with sand	GC	-	9.52	100.03	<0.01	<0.0001	-		24	16	8	42.3	35.7	21.9	16	6
	237	Sandy Lean Clay	CL	Sandy lean clay	CL	-	-				15.9	-	25	15	10	0	33.3	66.7	45	22
	237-239	Sandy Lean Clay/Clayey Gravel with Sand	CL/GC	-		4.8E-04	-				11.6	115.1		-			-		-	
	238-247[d]	Clayey Gravel with Sand	GC	Clayey gravel with sand	GC	-	-				-		22	13	9	35.6	30.2	34.2	22	12
	279	Lean Clay	CL	-		-	18.90	99.11	0.89	0.0051	-			-			-		-	
	355	Silt	ML	Lean clay	CL	-	-				-		38	19	19	0	3.9	96.1	52	44
	401-406[d]	Silty Gravel with Sand	GM	Clayey gravel with sand	GC	-	-				-		23	15	8	54.2	25.5	20.4	13	7
	405	Silty Gravel with Sand	GM	-		-	-				11.8			-			-		-	
	420-422	Lean Clay with Sand	CL	-		8.8E-04	-				14.8	116.8		-			-		-	
MW12D	88.5-93.5	Clayey Gravel with Sand	GC	-		-	7.56	99.65	0.35	0.0020	-			-			-		-	
MW12S	59-60	Silty Gravel with Sand	GM	-		-	8.06	99.18	0.82	0.0047	-			-			-		-	
MW13D	50-60	Clayey Gravel with Sand	GC	Clayey gravel with sand	GC	-	11.16	99.51	0.49	0.0028	-		25	14	11	54.3	23.0	22.7	-	
	70-72	Silty Sand	SM	-		6.0E-04	-				14.4	116.6		-			-		-	
	80-82.5	Poorly Graded Sand with Silt	SP	Poorly graded sand with silt	SP-SM	-	19.62	99.53	0.47	0.0027	-			Nonplastic		0.7	90.2	9.1	-	
MW13S	15-20	Silty Sand with Gravel/Clayey Gravel with Sand/Sandy Silt	SM/GC/ML	Silty, clayey sand with gravel	SC-SM	-	13.58	99.28	0.72	0.0041	-		22	16	6	22.7	37.8	39.5	-	
	21-22	Sandy Lean Clay	CL	-		9.6E-02	-				3.3	90.1		-			-		-	
MW14D	49-54	Clayey Gravel with Sand	GC	-		-	11.30	99.42	0.58	0.0033	-			-			-		-	
MW14S	7-15	Silt with Sand	ML	Silt with sand	ML	-	21.05	98.98	1.02	0.0059	-			Nonplastic		0	29.9	70.1	56	14
MW15D	95-96	Lean Clay	CL	-		8.2E-02	-				2	116.6		-		9.7	54.5	35.9	24	12
MW15S	52-55	Silty Gravel with Sand	GM	Silty, clayey gravel with sand	GC-GM	-	9.71	99.57	0.43	0.0024	-		20	14	6	48.9	36.7	14.5	-	
	55-56	Lean Clay	CL	Lean clay with sand	CL	-	-				-		30	15	15	0.5	18.2	81.2	53	28
MW-20D	37-40	Silty Gravel with Sand	GM	Silty, clayey gravel with sand	GC-GM	-	-				-		19	14	5	47.6	30.0	22.4	-	
	82-87	Silty Sand with Gravel	SM	-		-	11.41	99.38	0.62	0.0036	-			-			-		-	
	100-105	Sandy Silt/Lean Clay with Sand and Gravel	ML/CL	Sandy, lean clay	CL	-	-				-		23	15	8	4.1	35.8	60.2	42	18
	113-114	Silty Sand with Gravel	SM	-		-	10.56	99.47	0.53	0.0030	-			-			-		-	
	129-130	Lean Clay	CL	-		-	17.22	98.71	1.29	0.0074	-			-		0	11.8	88.2	50	38
	130-132	Lean Clay	CL	-		6.2E-04	-				2.1	120.2		-		18.6	40.1	41.3	27	14

Notes

[a] Some sample intervals cover multiple field classifications; these intervals are separated by "/"

[b] Methods ASTM D422 and ASTM D7928 (particle-size analysis of soil with hydrometer) were applied if more than 20% of material passes through the No. 200 sieve and 90% or more passes the No. 4 sieve

[c] Percent clay and silt determined for hydrometer samples and estimated from the grain size distribution graph; clay defined as particle size < 0.002-inches

[d] Samples froze prior to delivery.

- = not applicable
% = percent
< = less than
cm/sec = centimeter(s) per second
foc = fraction of organic carbon
ft bgs = feet below ground surface
ID = identification
m^3/kg = cubic meter(s) per kilogram
pcf = pounds per cubic foot
USCS = Unified Soil Classification System

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-01D	-	Deep	9/1/1998	193.15	4471.65
			10/1/1998	184.80	4480.00
			11/1/1998	181.25	4483.55
			2/1/2011	180.92	4483.88
			12/1/2011	172.16	4492.64
			6/1/2014	173.16	4491.64
			4/1/2016	172.84	4491.96
			7/1/2016	174.33	4490.47
			9/1/2016	173.93	4490.87
			4/3/2018	168.81	4495.99
			6/14/2018	169.45	4495.35
			9/27/2018	171.26	4493.54
			11/30/2018	170.93	4493.87
			3/4/2019	170.70	4494.10
			6/5/2019	170.53	4494.27
			12/4/2019	167.72	4497.08
			6/16/2020	170.10	4494.70
			9/21/2020	172.56	4492.24
			12/7/2020	171.21	4493.59
			3/15/2021	170.40	4494.40
MW-01S	-	Shallow	9/1/1998	157.97	4506.83
			10/1/1998	156.52	4508.28
			11/1/1998	155.58	4509.22
			2/1/2011	160.31	4504.49
			11/1/2011	156.62	4508.18
			6/1/2014	157.25	4507.55
			4/1/2016	156.83	4507.97
			7/1/2016	157.29	4507.51
			9/1/2016	157.48	4507.32
			4/3/2018	153.31	4511.49
			6/14/2018	154.20	4510.60
			9/27/2018	155.82	4508.98
			11/30/2018	156.09	4508.71
			3/4/2019	155.57	4509.23
			6/5/2019	155.21	4509.59
			12/4/2019	153.31	4511.49
			6/16/2020	155.90	4508.90
			9/21/2020	157.26	4507.54
			12/7/2020	157.00	4507.80
			3/15/2021	156.56	4508.24
MW-02	-	Shallow	10/1/1998	169.73	4515.51
			11/1/1998	168.93	4516.31
			2/1/2011	179.71	4505.53
			11/1/2011	169.73	4515.51
			6/1/2014	176.81	4508.43
			4/1/2016	176.49	4508.75
			7/1/2016	176.84	4508.40

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-02	-	Shallow	9/1/2016	177.06	4508.18
			4/3/2018	167.41	4517.83
			6/14/2018	168.13	4517.11
			9/27/2018	169.95	4515.29
			11/30/2018	170.44	4514.80
			3/4/2019	170.04	4515.20
			6/5/2019	168.58	4516.66
			12/4/2019	167.31	4517.93
			6/16/2020	169.30	4515.94
			9/21/2020	170.77	4514.47
			12/7/2020	170.46	4514.78
			3/15/2021	170.68	4514.56
MW-03R	A	Shallow	12/19/2018	187.93	4510.19
			12/4/2019	185.12	4513.00
			6/16/2020	184.00	4514.12
			9/21/2020	188.25	4509.87
			12/7/2020	188.18	4509.94
			3/15/2021	188.99	4509.13
	B	Deep	12/19/2018	203.74	4494.16
			12/4/2019	200.51	4497.39
			6/16/2020	203.23	4494.67
			9/21/2020	205.68	4492.22
			12/7/2020	204.27	4493.63
			3/15/2021	201.45	4496.45
	C	Deep	12/4/2019	200.71	4497.21
			6/16/2020	203.50	4494.42
			9/21/2020	205.75	4492.17
			12/7/2020	204.40	4493.52
			3/15/2021	203.71	4494.21
	D	Deep	12/19/2018	203.82	4494.11
			12/4/2019	201.05	4496.88
			6/16/2020	203.51	4494.42
			9/21/2020	205.70	4492.23
			12/7/2020	205.03	4492.90
			3/15/2021	203.78	4494.15
MW-04	-	Shallow	9/1/1998	135.35	4521.50
			10/1/1998	134.05	4522.80
			11/1/1998	133.35	4523.50
			2/1/2011	140.97	4515.88
			11/1/2011	136.90	4519.95
			6/1/2014	137.01	4519.84
			4/1/2016	136.40	4520.45
			7/1/2016	136.80	4520.05
			9/1/2016	137.20	4519.65
			4/3/2018	132.32	4524.53
			6/14/2018	133.14	4523.71
			9/27/2018	135.42	4521.43
			11/30/2018	135.90	4520.95

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-04	-	Shallow	3/4/2019	135.08	4521.77
			6/5/2019	133.25	4523.60
			12/4/2019	132.39	4524.46
			6/16/2020	134.38	4522.47
			9/21/2020	135.90	4520.95
			12/7/2020	136.19	4520.66
			3/15/2021	136.14	4520.71
MW-05	-	Shallow	9/1/1998	213.00	4524.99
			10/1/1998	211.40	4526.59
			11/1/1998	210.61	4527.38
			2/1/2011	218.08	4519.91
			11/1/2011	214.34	4523.65
			6/1/2014	214.52	4523.47
			4/1/2016	214.41	4523.58
MW-05R	-	Shallow	4/3/2018	210.37	4527.62
			6/14/2018	211.28	4526.71
			9/27/2018	213.90	4524.09
			12/20/2018	214.49	4523.50
			3/4/2019	213.73	4524.26
			6/5/2019	212.28	4525.71
			12/4/2019	211.06	4526.93
			6/16/2020	212.92	4525.07
			9/21/2020	214.20	4523.79
			12/7/2020	214.79	4523.20
			3/15/2021	214.95	4523.04
MW-06	-	Perched	2/1/2011	124.67	4553.99
			11/1/2011	124.01	4554.65
			6/1/2014	118.10	4560.56
			4/1/2016	123.46	4555.20
			7/1/2016	124.03	4554.63
			9/1/2016	123.39	4555.27
			4/3/2018	116.42	4562.24
			6/14/2018	120.80	4557.86
			9/27/2018	123.77	4554.89
			11/30/2018	123.57	4555.09
			3/4/2019	121.45	4557.21
			6/5/2019	115.71	4562.95
			12/4/2019	121.10	4557.56
			6/16/2020	122.80	4555.86
			9/21/2020	123.95	4554.71
			12/7/2020	123.79	4554.87
			3/15/2021	123.59	4555.07
MW-08	A	Shallow	12/19/2018	59.53	4480.28
			12/4/2019	57.77	4482.04
			6/16/2020	59.30	4480.51
			9/22/2020	61.17	4478.64
			12/8/2020	60.14	4479.67
			3/15/2021	60.09	4479.72

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-08	B	Shallow	12/19/2018	57.96	4481.81
			12/4/2019	55.70	4484.07
			6/16/2020	57.65	4482.12
			9/22/2020	59.74	4480.03
			12/8/2020	58.49	4481.28
			3/15/2021	58.30	4481.47
	C	Deep	12/19/2018	62.38	4477.30
			12/4/2019	53.53	4486.15
			6/16/2020	55.75	4483.93
			9/22/2020	58.02	4481.66
			12/8/2020	56.82	4482.86
			3/15/2021	51.98	4487.70
MW-12S	-	-	12/4/2019	56.10	4303.93
			6/16/2020	53.90	4306.13
			9/21/2020	57.02	4303.01
MW-12D	-	-	12/19/2018	55.22	4304.85
			12/4/2019	52.90	4307.17
			6/16/2020	56.66	4303.41
			9/21/2020	57.15	4302.92
			12/7/2020	56.42	4303.65
			3/15/2021	54.36	4305.71
MW-13S	-	Shallow	12/19/2018	13.88	4468.94
			12/4/2019	12.57	4470.25
			6/16/2020	13.17	4469.76
			9/21/2020	14.31	4468.62
			12/6/2020	14.16	4468.77
			3/15/2021	13.89	4469.04
MW-13D	-	Shallow	12/19/2018	13.13	4469.68
			12/20/2018	13.11	4469.70
			3/5/2019	13.22	4469.59
			6/5/2019	12.60	4470.21
			12/4/2019	11.63	4471.18
			6/16/2020	12.45	4470.17
			9/21/2020	13.72	4468.90
			12/6/2020	13.56	4469.06
			3/15/2021	13.21	4469.41
MW-13L	-	Deep	12/6/2020	22.09	4461.14
			3/15/2021	16.35	4466.88
MW-14S	-	Shallow	12/19/2018	5.49	4410.24
			12/20/2018	5.43	4410.30
			3/5/2019	5.40	4410.33
			6/5/2019	5.32	4410.41
			12/4/2019	5.28	4410.45
			6/16/2020	5.23	4410.46
			9/21/2020	5.22	4410.47
			12/7/2020	5.36	4410.33
			3/15/2021	5.21	4410.48

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-14D[3]	-	Shallow	6/16/2020	-6.93	4422.86
			9/21/2020	-6.93	4422.86
			12/8/2020	-6.34	4422.27
			3/15/2021	-4.62	4420.55
MW-15S	-	-	12/19/2018	48.89	4298.22
			12/4/2019	46.28	4300.83
			6/16/2020	46.72	4300.63
			9/28/2020	49.05	4298.30
			12/7/2020	49.41	4297.94
			3/15/2021	48.51	4298.84
MW-15D	-	-	12/19/2018	50.11	4297.40
			12/20/2018	50.07	4297.44
			3/5/2019	48.80	4298.71
			6/5/2019	46.43	4301.08
			12/4/2019	47.81	4299.70
			6/16/2020	48.20	4299.52
			9/28/2020	50.50	4297.22
			12/7/2020	50.70	4297.02
			3/15/2021	49.65	4298.07
MW-16S	-	Shallow	12/19/2018	11.01	4443.82
			12/4/2019	10.74	4444.09
			6/16/2020	10.80	4444.03
			9/21/2020	11.23	4443.60
			12/7/2020	10.19	4444.64
			3/15/2021	11.15	4443.68
MW-16D	-	Shallow	12/19/2018	9.59	4445.01
			12/20/2018	9.55	4445.05
			3/4/2019	9.45	4445.15
			6/5/2019	8.88	4445.72
			12/4/2019	8.42	4446.18
			6/16/2020	9.22	4445.62
			9/21/2020	10.39	4444.45
			12/7/2020	9.89	4444.95
			3/15/2021	9.61	4445.23
MW-17S	-	Shallow	12/19/2018	6.34	4458.90
			12/4/2019	6.29	4458.95
			6/16/2020	5.82	4459.36
			9/21/2020	5.49	4459.69
			12/8/2020	6.69	4458.49
			3/15/2021	6.51	4458.67
MW-17D	-	Shallow	12/19/2018	4.01	4461.40
			6/16/2020	-2.61	4468.30
			9/21/2020	0.65	4465.04
			12/7/2020	0.45	4465.24
			3/15/2021	0.37	4465.32

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-18	-	Shallow	12/19/2018	81.38	4477.30
			12/4/2019	79.44	4479.24
			6/16/2020	80.73	4478.03
			9/21/2020	82.50	4476.26
			12/7/2020	81.69	4477.07
			3/15/2021	81.53	4477.23
MW-19	-	Shallow	12/19/2018	80.73	4476.25
			12/4/2019	78.82	4478.16
			6/16/2020	80.00	4477.16
			9/21/2020	81.82	4475.34
			12/7/2020	80.76	4476.40
			3/15/2021	80.95	4476.21
MW-20S	-	Shallow	11/30/2018	82.79	4475.57
			12/19/2018	82.99	4475.37
			3/5/2019	83.01	4475.35
			6/5/2019	80.42	4477.94
			12/4/2019	81.05	4477.31
			6/16/2020	82.15	4476.46
			9/21/2020	83.93	4474.68
			12/7/2020	83.26	4475.35
			3/15/2021	83.16	4475.45
MW-20D	-	Shallow	11/30/2018	82.52	4475.45
			12/19/2018	82.69	4475.28
			3/5/2019	82.73	4475.24
			6/5/2019	81.90	4476.07
			12/4/2019	80.80	4477.17
			6/16/2020	81.90	4476.29
			9/21/2020	83.65	4474.54
			12/7/2020	82.98	4475.21
			3/15/2021	82.92	4475.27
MW-21	-	Shallow	12/19/2018	65.13	4498.01
			12/20/2018	65.09	4498.05
			3/4/2019	64.92	4498.22
			6/5/2019	63.71	4499.43
			12/4/2019	63.18	4499.96
			6/16/2020	64.25	4499.07
			9/21/2020	65.11	4498.21
			12/7/2020	64.70	4498.62
			3/15/2021	64.98	4498.34
MW-22	-	Shallow	12/19/2018	63.62	4499.11
			12/20/2018	63.61	4499.12
			3/4/2019	63.31	4499.42
			6/5/2019	62.46	4500.27
			12/4/2019	62.09	4500.64
			6/16/2020	63.00	4499.72
			9/21/2020	63.62	4499.10
			12/7/2020	63.25	4499.47
			3/15/2021	63.46	4499.26

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-23	A	Shallow	6/16/2020	186.07	4525.73
			9/22/2020	188.22	4523.58
			12/7/2020	188.45	4523.35
			3/15/2021	188.39	4523.41
	B	Intermediate	6/16/2020	196.60	4515.17
			9/22/2020	197.61	4514.16
			12/7/2020	195.40	4516.37
			3/15/2021	197.10	4514.67
	C	Deep	6/16/2020	214.71	4496.98
			9/22/2020	218.22	4493.47
			12/7/2020	217.12	4494.57
			3/15/2021	216.32	4495.37
MW-24	-	Shallow	6/16/2020	183.90	4525.29
			9/21/2020	185.41	4523.78
			12/7/2020	185.91	4523.28
			3/15/2021	185.84	4523.35
MW-25	A	Shallow	6/16/2020	177.61	4524.41
			9/21/2020	179.30	4522.72
			12/7/2020	179.72	4522.30
			3/15/2021	179.68	4522.34
	B	Intermediate	6/16/2020	182.96	4519.13
			9/21/2020	184.50	4517.59
			12/7/2020	184.71	4517.38
			3/15/2021	184.69	4517.40
	C	Deep	6/16/2020	206.60	4495.47
			9/21/2020	208.89	4493.18
			12/7/2020	207.73	4494.34
			3/15/2021	207.20	4494.87
MW-26	A	Shallow	6/9/2020	188.89	4523.40
			9/21/2020	190.59	4521.70
			12/7/2020	190.90	4521.39
			3/15/2021	189.92	4522.37
	B	Intermediate	6/9/2020	193.58	4518.97
			9/21/2020	195.12	4517.43
			12/7/2020	195.31	4517.24
			3/15/2021	195.32	4517.23
	C	Deep	6/9/2020	218.60	4493.91
			9/21/2020	218.77	4493.74
			12/7/2020	217.96	4494.55
			3/15/2021	217.15	4495.36
	D	Deep	6/9/2020	222.20	4490.30
			9/21/2020	219.50	4493.00
			12/7/2020	218.08	4494.42
			3/15/2021	217.29	4495.21
MW-27	-	Shallow	6/16/2020	185.86	4526.48
			9/22/2020	188.15	4524.19
			12/7/2020	188.46	4523.88
			3/15/2021	188.57	4523.77

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-28	-	Shallow	6/16/2020	185.21	4527.33
			9/21/2020	187.02	4525.52
			12/8/2020	187.42	4525.12
			3/15/2021	187.42	4525.12
MW-29	A	Perched	7/20/2020	116.36	4562.10
			9/21/2020	116.53	4561.93
			12/8/2020	116.55	4561.91
	B	Shallow	7/20/2020	154.31	4524.14
			9/21/2020	155.23	4523.22
			12/8/2020	155.50	4522.95
			3/15/2021	155.28	4523.17
	C	Intermediate	7/20/2020	157.38	4521.30
			9/21/2020	158.52	4520.16
			12/8/2020	158.92	4519.76
			3/15/2021	158.41	4520.27
MW-30	RA	Deep	12/7/2020	227.47	4495.13
			3/15/2021	226.83	4495.77
	RB	Deep	12/7/2020	229.25	4493.11
			3/15/2021	229.06	4493.30
	C	Deep	7/20/2020	232.69	4489.23
			9/21/2020	230.90	4491.02
			12/7/2020	229.41	4492.51
			3/15/2021	228.60	4493.32
MW-31	A	Shallow	7/20/2020	130.42	4523.85
			9/21/2020	131.85	4522.42
	B	Shallow	7/20/2020	134.93	4519.46
			9/21/2020	135.84	4518.55
			12/7/2020	135.98	4518.41
			3/15/2021	135.78	4518.61
	C	Deep	7/20/2020	147.99	4506.36
			9/21/2020	148.99	4505.36
			12/7/2020	148.53	4505.82
			3/15/2021	148.06	4506.29
MW-32	A	a	9/21/2020	84.25	4481.42
			12/8/2020	83.03	4482.64
			3/15/2021	82.78	4482.89
	B	Shallow	9/21/2020	83.77	4481.86
			12/8/2020	82.50	4483.13
			3/15/2021	82.15	4483.48
	C	Deep	9/21/2020	83.18	4482.41
			12/8/2020	81.84	4483.75
			3/15/2021	81.51	4484.08
MW-34	A	Shallow	7/20/2020	131.04	4492.05
			9/21/2020	132.00	4491.09
			12/7/2020	130.95	4492.14

Table 4-2
Aquifer Zones and Groundwater Elevations

Well Identification	Sample Interval	Aquifer Zone	Water Level Measurement Date[1]	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[2]
MW-34	B	Shallow	7/20/2020	132.88	4489.83
			9/21/2020	131.67	4491.04
			12/7/2020	130.60	4492.11
			3/15/2021	130.05	4492.66
	C	Deep	7/20/2020	130.33	4492.30
			9/21/2020	131.22	4491.41
			12/7/2020	129.87	4492.76
			3/15/2021	129.29	4493.34
	D	Deep	7/20/2020	131.13	4491.45
			9/21/2020	131.20	4491.38
			12/7/2020	130.00	4492.58
			3/15/2021	129.36	4493.22
MW-36	-	-	12/7/2020	44.72	4383.77
			3/15/2021	44.43	4384.06
MW-37S	-	-	12/7/2020	18.45	4329.55
			3/15/2021	17.76	4330.24
MW-37D	-	-	12/7/2020	42.28	4305.69
			3/15/2021	40.36	4307.61
MW-38S	-	Shallow	12/7/2020	19.59	4478.05
			3/15/2021	19.45	4478.19
MW-38D	-	Shallow	12/7/2020	18.53	4479.27
			3/15/2021	18.39	4479.41

Notes:
[1] For dates prior to 2017, the day was not provided, only month and year. As a result, the day was assumed to be the first day of the month indicated.
[2] Elevations measured using NAVD 88 vertical datum

[3] Water level measured using pressure gauge, converted to height above top of casing (head [ft] = pressure [psi] x 2.31)

Acronyms:
amsl = above mean sea level
btoc = below top of casing
ft = feet
psi = pounds per square inch

Table 4-3
Vertical Gradients

Location	Sample Interval	Aquifer Zone	Water Level Measurement Date and Time	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[1]	Direction of Gradient[2]	Gradient[2]
MW-01S	-	Shallow	12/4/2019	153.31	4511.32	down	0.08
MW-01D	-	Deep	12/4/2019	167.72	4497.01		
MW-01S	-	Shallow	6/16/2020	155.90	4508.90	down	0.08
MW-01D	-	Deep	6/16/2020	170.10	4494.70		
MW-01S	-	Shallow	9/21/2020	157.26	4507.54	down	0.08
MW-01D	-	Deep	9/21/2020	172.56	4492.24		
MW-01S	-	Shallow	12/7/2020	157.00	4507.80	down	0.08
MW-01D	-	Deep	12/7/2020	171.21	4493.59		
MW-01S	-	Shallow	3/15/2021	156.56	4508.24	down	0.07
MW-01D	-	Deep	3/15/2021	170.40	4494.40		
MW-03R	A	Shallow	12/4/2019	185.12	4512.74	down	0.26
	B	Deep	12/4/2019	200.51	4497.36		
MW-03R	A	Shallow	6/16/2020	184.00	4514.12	down	0.34
	B	Deep	6/16/2020	203.23	4494.67		
MW-03R	A	Shallow	9/21/2020	188.25	4509.87	down	0.31
	B	Deep	9/21/2020	205.68	4492.22		
MW-03R	A	Shallow	12/7/2020	188.18	4509.94	down	0.29
	B	Deep	12/7/2020	204.27	4493.63		
MW-03R	A	Shallow	3/15/2021	188.99	4509.13	down	0.22
	B	Deep	3/15/2021	201.45	4496.45		
MW-08	A	Shallow	12/4/2019	57.77	4482.20	up	0.02
	C	Deep	12/4/2019	53.53	4486.27		
MW-08	A	Shallow	6/16/2020	59.30	4480.51	up	0.02
	C	Deep	6/16/2020	55.75	4483.93		
MW-08	A	Shallow	9/22/2020	61.17	4478.64	up	0.01
	C	Deep	9/22/2020	58.02	4481.66		
MW-08	A	Shallow	12/8/2020	60.14	4479.67	up	0.01
	C	Deep	12/8/2020	56.82	4482.86		
MW-08	A	Shallow	3/15/2021	60.09	4479.72	up	0.04
	C	Deep	3/15/2021	51.98	4487.70		
MW-12S	-	-	12/4/2019	56.10	4304.09	up	0.09
MW-12D	-	-	12/4/2019	52.90	4307.19		
MW-12S	-	-	6/16/2020	56.66	4303.37	up	0.08
MW-12D	-	-	6/16/2020	53.90	4306.17		
MW-12S	-	-	9/21/2020	57.02	4303.01	-	0.00
MW-12D	-	-	9/21/2020	57.15	4302.92		
MW-13S	-	Shallow	12/4/2019	12.57	4470.25	-	0.01
MW-13D	-	Shallow	12/4/2019	11.63	4471.18		
MW-13S	-	Shallow	6/16/2020	13.17	4469.76	-	0.01
MW-13D	-	Shallow	6/16/2020	12.45	4470.17		
MW-13S	-	Shallow	9/21/2020	14.31	4468.62	-	0.00
MW-13D	-	Shallow	9/21/2020	13.72	4468.90		
MW-13D	-	Shallow	12/6/2020	13.56	4469.06	down	0.08
MW-13L		Deep	12/6/2020	22.09	4461.14		
MW-13D	-	Shallow	3/15/2021	13.21	4469.41	-	0.02
MW-13L		Deep	3/15/2021	16.35	4466.88		

Table 4-3
Vertical Gradients

Location	Sample Interval	Aquifer Zone	Water Level Measurement Date and Time	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[1]	Direction of Gradient[2]	Gradient[2]
MW-14S	-	Shallow	6/16/2020	5.23	4410.46	up	0.26
MW-14D*	-	Shallow	6/16/2020	-6.93	4422.86		
MW-14S	-	Shallow	9/21/2020	5.22	4410.47	up	0.26
MW-14D*	-	Shallow	9/21/2020	-6.93	4422.86		
MW-14S	-	Shallow	12/7/2020	5.36	4410.33	up	0.25
MW-14D*	-	Shallow	12/8/2020	-6.34	4422.27		
MW-14S	-	Shallow	3/15/2021	5.21	4410.48	up	0.22
MW-14D*	-	Shallow	3/15/2021	-4.62	4420.55		
MW-15S	-	-	12/4/2019	46.28	4300.83	down	0.06
MW-15D	-	-	12/4/2019	47.81	4299.70		
MW-15S	-	-	6/16/2020	46.72	4300.63	down	0.06
MW-15D	-	-	6/16/2020	48.20	4299.52		
MW-15S	-	-	9/28/2020	49.05	4298.30	down	0.06
MW-15D	-	-	9/28/2020	50.50	4297.22		
MW-15S	-	-	12/7/2020	49.41	4297.94	down	0.05
MW-15D	-	-	12/7/2020	50.70	4297.02		
MW-15S	-	-	3/15/2021	48.51	4298.84	down	0.04
MW-15D	-	-	3/15/2021	49.65	4298.07		
MW-16S	-	Shallow	12/4/2019	10.74	4444.09	up	0.04
MW-16D	-	Shallow	12/4/2019	8.42	4446.18		
MW-16S	-	Shallow	6/16/2020	10.80	4444.03	-	0.03
MW-16D	-	Shallow	6/16/2020	9.22	4445.62		
MW-16S	-	Shallow	9/21/2020	11.23	4443.60	-	0.02
MW-16D	-	Shallow	9/21/2020	10.39	4444.45		
MW-16S	-	Shallow	12/7/2020	10.19	4444.64	-	0.01
MW-16D	-	Shallow	12/7/2020	9.89	4444.95		
MW-16S	-	Shallow	3/15/2021	11.15	4443.68	-	0.03
MW-16D	-	Shallow	3/15/2021	9.61	4445.23		
MW-17S	-	Shallow	6/16/2020	5.82	4459.36	up	0.23
MW-17D	-	Shallow	6/16/2020	-2.61	4468.30		
MW-17S	-	Shallow	9/21/2020	5.49	4459.69	up	0.14
MW-17D	-	Shallow	9/21/2020	0.65	4465.04		
MW-17S	-	Shallow	12/8/2020	6.69	4458.49	up	0.18
MW-17D	-	Shallow	12/7/2020	0.45	4465.24		
MW-17S	-	Shallow	3/15/2021	6.51	4458.67	up	0.17
MW-17D	-	Shallow	3/15/2021	0.45	4465.24		
MW-20S	-	Shallow	12/4/2019	81.05	4477.31	-	0.00
MW-20D	-	Shallow	12/4/2019	80.80	4477.17		
MW-20S	-	Shallow	12/7/2020	83.26	4475.35	-	0.00
MW-20D	-	Shallow	12/7/2020	82.98	4475.21		
MW-20S	-	Shallow	6/16/2020	82.15	4476.46	-	0.00
MW-20D	-	Shallow	6/16/2020	81.90	4476.29		
MW-20S	-	Shallow	9/21/2020	83.93	4474.68	-	0.00
MW-20D	-	Shallow	9/21/2020	83.65	4474.54		
MW-20S	-	Shallow	3/15/2021	83.16	4475.45	-	0.00
MW-20D	-	Shallow	3/15/2021	82.92	4475.27		

Table 4-3
Vertical Gradients

Location	Sample Interval	Aquifer Zone	Water Level Measurement Date and Time	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[1]	Direction of Gradient[2]	Gradient[2]
MW-23	A	Shallow	6/16/2020	186.07	4525.73	down	0.21
	C	Deep	6/16/2020	214.71	4496.98		
MW-23	A	Shallow	9/22/2020	188.22	4523.58	down	0.23
	C	Deep	9/22/2020	218.22	4493.47		
MW-23	A	Shallow	12/7/2020	188.45	4523.35	down	0.21
	C	Deep	12/7/2020	217.12	4494.57		
MW-23	A	Shallow	3/15/2021	188.39	4523.41	down	0.21
	C	Deep	3/15/2021	216.32	4495.37		
MW-25	A	Shallow	6/16/2020	177.61	4524.41	down	0.28
	C	Deep	6/16/2020	206.60	4495.47		
MW-25	A	Shallow	9/21/2020	179.30	4522.72	down	0.29
	C	Deep	9/21/2020	208.89	4493.18		
MW-25	A	Shallow	12/7/2020	179.72	4522.30	down	0.27
	C	Deep	12/7/2020	207.73	4494.34		
MW-25	A	Shallow	3/15/2021	179.68	4522.34	down	0.27
	C	Deep	3/15/2021	207.20	4494.87		
MW-26	A	Shallow	6/9/2020	188.89	4523.40	down	0.29
	C	Deep	6/9/2020	218.60	4493.91		
MW-26	A	Shallow	9/21/2020	190.59	4521.70	down	0.27
	C	Deep	9/21/2020	218.77	4493.74		
MW-26	A	Shallow	12/7/2020	190.90	4521.39	down	0.26
	C	Deep	12/7/2020	217.96	4494.55		
MW-26	A	Shallow	3/15/2021	189.92	4522.37	down	0.26
	C	Deep	3/15/2021	217.15	4495.36		
MW-29	A	Perched	7/20/2020	116.36	4562.10	down	0.72
	B	Shallow	7/20/2020	154.31	4524.14		
MW-29	A	Perched	9/21/2020	116.53	4561.93	down	0.75
	B	Shallow	9/21/2020	155.23	4523.22		
MW-29	A	Perched	12/8/2020	116.55	4561.91	down	0.75
	B	Shallow	12/8/2020	155.50	4522.95		
MW-29	B	Shallow	7/20/2020	154.31	4524.14	down	0.05
	C	Intermediate	7/20/2020	157.38	4521.30		
MW-29	B	Shallow	9/21/2020	155.23	4523.22	down	0.06
	C	Intermediate	9/21/2020	158.52	4520.16		
MW-29	B	Shallow	12/8/2020	155.50	4522.95	down	0.06
	C	Intermediate	12/8/2020	158.92	4519.76		
MW-29	B	Shallow	3/15/2021	155.28	4523.17	down	0.05
	C	Intermediate	3/15/2021	158.41	4520.27		
MW-30	RA	Deep	12/7/2020	227.47	4495.13	-	0.03
	C	Deep	12/7/2020	229.41	4492.51		
MW-30	RA	Deep	3/15/2021	226.83	4495.77	-	0.03
	C	Deep	3/15/2021	228.60	4493.32		

Table 4-3
Vertical Gradients

Location	Sample Interval	Aquifer Zone	Water Level Measurement Date and Time	Water Level Depth (ft btoc)	Water Level Elevation (ft amsl)[1]	Direction of Gradient[2]	Gradient[2]
MW-31	A	Shallow	7/20/2020	130.42	4523.85	down	0.22
	C	Deep	7/20/2020	147.99	4506.36		
MW-31	A	Shallow	9/21/2020	131.85	4522.42	down	0.23
	C	Deep	9/21/2020	148.99	4505.36		
MW-31	B	Shallow	12/7/2020	135.98	4518.41	down	0.22
	C	Deep	12/7/2020	148.53	4505.82		
MW-31	B	Shallow	3/15/2021	135.78	4518.61	down	0.21
	C	Deep	3/15/2021	148.06	4506.29		
MW-32	A	Shallow	9/21/2020	84.25	4481.42	-	0.00
	C	Deep	9/21/2020	83.18	4482.41		
MW-32	A	Shallow	12/8/2020	83.03	4482.64	-	0.00
	C	Deep	12/8/2020	81.84	4483.75		
MW-32	A	Shallow	3/15/2021	82.78	4482.89	-	0.00
	C	Deep	3/15/2021	81.51	4484.08		
MW-34	B	Shallow	7/20/2020	132.88	4489.83	-	0.03
	C	Deep	7/20/2020	130.33	4492.30		
MW-34	B	Shallow	9/21/2020	131.67	4491.04	-	0.00
	C	Deep	9/21/2020	131.22	4491.41		
MW-34	B	Shallow	12/7/2020	130.60	4492.11	-	0.01
	C	Deep	12/7/2020	129.87	4492.76		
MW-34	B	Shallow	3/15/2021	130.05	4492.66	-	0.01
	C	Deep	3/15/2021	129.29	4493.34		
MW-37S	-	-	12/7/2020	18.45	4329.55	down	0.91
MW-37D	-	-	12/7/2020	42.28	4305.69		
MW-37S	-	-	3/15/2021	17.76	4330.24	down	0.83
MW-37D	-	-	3/15/2021	40.36	4307.61		
MW-38S	-	Shallow	12/7/2020	19.59	4478.05	-	0.03
MW-38D	-	Shallow	12/7/2020	18.53	4479.27		
MW-38S	-	Shallow	3/15/2021	18.39	4479.25	-	0.02
MW-38D	-	Shallow	3/15/2021	19.45	4478.35		

Notes:

[1] Elevations measured using NAVD 88 vertical datum

[2] Direction and magnitude of vertical gradient is calculated between shallow and deep aquifers in paired/nested wells. Where both the shallow and deep aquifers are not present, the vertical gradient was still calculated. Direction of gradient was not determined if the vertical gradient was 0.03 or less.

Acronyms:

amsl = above mean sea level

btoc = below top of casing

ft = feet

- = not applicable

Table 4-4
Slug Test Results

Well ID	Sample Interval	Aquifer Zone	Lithology at Screened Interval	Aquifer Thickness (b) (feet)	Hydraulic Conductivity (K) (ft/day)	Transmissivity (T) (ft^2/day)	Hydraulic Gradient (i) (ft/foot)	Darcy Velocity (q) (ft/day)	Coincident?	Skin Effects?
MW-01S	-	Shallow	Silty clay with gravel, sandy clay, silty sand, clayey silt, sandy clay with gravel	69.02	12	828	0.014	0.2	N	Dynamic
MW-02	-	Shallow	Gravelly sand, sandy clay, sandy gravelly clay, sandy clayey gravel, sand	49.63	10 to 19	500	0.014	0.1 to 0.3	Y	Possible low-K skin
MW-03R	A	Shallow	Silty gravel with sand, clayey gravel with sand	51.77	5 to 48	241	0.014	0.07 to 0.7	Y	Possible low-K skin
	B	Deep	Sandy silty clay, silty clayey gravel with sand	141	0.75 to 21	106	0.002	0.002 to 0.04	Y	Possible low-K skin
	C	Deep	Silty gravel with sand, gravel with silt and sand	141	25	3,525	0.002	0.05	Y	Not detected
MW-04	-	Shallow	Gravel with clay	67.63	6 to 14	415	0.014	0.08 to 0.2	Y	Possible low-K skin
MW-08	A	Shallow	Clayey gravel with sand	79.29	103	8,167	0.012	1.2	N	Directional
	B	Deep	Clayey gravel with sand	177.02	51	9,028	0.013	0.7	N	Directional
	C	Deep	Silty gravel with sand	177.02	0.5 to 16	82	0.013	0.01 to 0.2	Y	Possible low-K skin
MW-13S	-	Shallow	Silty sand with gravel, clayey gravel with sand, sandy silt, clayey sand, lean clay	75.76	0.1	0.44	0.12	0.01	Y	Not detected
MW-13D	-	Shallow	Clayey sand with gravel, sand with silt, clayey gravel with sand	77.07	2	10	0.12	0.2	Y	Possible low-K skin
MW-13L		Deep	Sandy silt, silt with sand, gravel with sand and silt	205.79	34	6,997	0.013	0.4	N	Directional
MW-15D	-	Shallow	Silty gravel with sand	100	15	1,500	--	--	N	Directional
MW-18	-	Shallow	Silty gravel with sand, clayey gravel with sand, clayey sand	71.39	12	857	0.012	0.1	Y	Not detected
MW-19	-	Shallow	Gravelly clay with sand, clayey gravel with sand	71.1	30	2,133	0.012	0.4	Y	Not detected
MW-20S	-	Shallow	Clayey gravel with sand, silty sand with gravel, silty sand, sandy lean clay with gravel	67.2	10	672	0.012	0.1	N	Possible directional
MW-20D	-	Shallow	Clayey gravel with sand	67.09	165	11,069	0.012	2.0	N	Dynamic
MW-21	-	Shallow	Gravelly clay with sand, silty gravel with sand, clayey gravel with sand	77.17	54	4,167	0.012	0.6	N	Directional
MW-22	-	Shallow	Gravelly clay with sand, clayey gravel with sand, clayey sand with gravel	67.29	67	4,509	0.012	0.8	N	Dynamic
MW-26	B	Intermediate	Silty sand with gravel	194.32	18	3,498	--	--	Y	Not detected
	C	Deep	Sandy gravel, silty gravel, gravelly clay	141.74	10	1,417	0.002	0.02	Y	Not detected
	D	Deep	Gravelly sand, gravelly clay	141.74	39	5,528	0.002	0.08	Y	Not detected
MW-32	A	Shallow	Sandy clay, clayey gravel, sandy clay, sandy gravel with clay	71.48	200	14,296	0.012	2.4	N	Dynamic
MW-34	A	Shallow	Silty gravel, clayey silt	65.62	46	3,019	0.012	0.6	Y	Not detected
	B	Shallow	Silt, gravelly silt, clay	65.65	29	1,904	0.012	0.3	Y	Not detected
	C	Deep	Silty clay, silty gravel, silty clay	160.44	0.14 to 2	22	0.013	0.002 to 0.03	Y	Possible low-K skin
	D	Deep	Silty gravel, silty clay	160.44	20	3,209	0.013	0.26	Y	Not detected

Notes:
ft/day = feet per day
ft^2/day = square feet per day
ft/foot = feet per foot

Table 5-1
Tetrachloroethene and Trichloroethene in Soil

Location	Sample Identification	Sample Depth (ft bgs)	Sample Date	Tetrachloroethene		Trichloroethene	
				mg/kg	Q	mg/kg	Q
EPA Residential Soil Regional Screening Level (RSL) (mg/kg)[1]				24		5	
Soil/Sediment in the East Side Springs Area							
SW-09	A-SS-09_05032016	0	5/3/2016	*0.01*	*U*	*0.01*	*U*
SW-26	A-SS-26_05032016	0	5/3/2016	**0.022**		*0.01*	*U*
SW-01	A-SS-01_05042016	0	5/4/2016	*0.011*	*U*	*0.011*	*U*
Soil North of the VAMC							
SG-01	OU2-SB01	4.9	12/18/2018	*0.0043*	*U*	*0.0043*	*U*
SG-02	OU2-SB02	7	12/18/2018	*0.0044*	*U*	*0.0044*	*U*
MW-30	MW30-SB052220-15	15	5/22/2020	*0.0048*	*U*	*0.0048*	*U*
MW-30	MW30-SB052220-29	29	5/22/2020	*0.0049*	*U*	*0.0049*	*U*
MW-30	MW30-SB052220-48	48	5/22/2020	*0.0045*	*U*	*0.0045*	*U*
MW-30	MW30-SB052220-53	53	5/22/2020	*0.0046*	*U*	*0.0046*	*U*
MW-30	MW30-SB052220-74	74	5/22/2020	*0.0054*	*U*	*0.0054*	*U*
MW-30	MW30-SB052220-95	95	5/22/2020	*0.0042*	*U*	*0.0042*	*U*
MW-30	MW30-SB052220-102	102	5/22/2020	*0.0046*	*U*	*0.0046*	*U*
MW-30	MW30-SB060220-111	111	6/2/2020	*0.0048*	*U*	*0.0048*	*U*
MW-30	MW30-SB060220-135	135	6/2/2020	*0.0046*	*U*	*0.0046*	*U*
MW-30	MW30-SB060220-151	151	6/2/2020	*0.005*	*U*	*0.005*	*U*
MW-30	MW30-SB060220-169	169	6/2/2020	*0.0051*	*U*	*0.0051*	*U*
MW-30	MW30-SB060220-178	178	6/2/2020	*0.0047*	*U*	*0.0047*	*U*
MW-30	MW30-SB060320-204	204	6/3/2020	*0.005*	*U*	*0.005*	*U*
MW-30	MW30-SB060320-222	222	6/3/2020	*0.0049*	*U*	*0.0049*	*U*
MW-30	MW30-SB060320-237	237	6/3/2020	*0.0044*	*U*	*0.0044*	*U*
MW-30	MW30-SB060420-266	266	6/4/2020	*0.0046*	*U*	*0.0046*	*U*
MW-30	MW30-SB060520-286	286	6/5/2020	*0.0044*	*U*	*0.0044*	*U*
MW-30	MW30-SB060520-306	306	6/5/2020	*0.0045*	*U*	*0.0045*	*U*
MW-30	MW30-SB060520-316.5	316.5	6/5/2020	*0.0048*	*U*	*0.0048*	*U*
MW-30	MW30-SB060720-336	336	6/7/2020	*0.0041*	*U*	*0.0041*	*U*
MW-30	MW30-SB060820-342	342	6/8/2020	*0.005*	*U*	*0.005*	*U*
Soil in the VAMC Area							
SG-03	OU2-SB03	8.1	12/10/2018	**0.0017**	**J**	*0.005*	*U*
SG-04	OU2-SB04	5.8	12/10/2018	**0.002**	**J**	*0.005*	*U*
SG-05	OU2-SB05	6.3	12/11/2018	**0.0036**	**J**	*0.0051*	*U*
SG-06	OU2-SB06	6.1	12/10/2018	**0.0016**	**J**	*0.0053*	*U*
SG-07	OU2-SB07	5.5	12/4/2018	*0.0051*	*U*	*0.0051*	*U*
SG-08	OU2-SB08	3.4	12/13/2018	*0.0054*	*U*	*0.0054*	*U*
SG-09	OU2-SB09	2.7	12/13/2018	*0.0051*	*U*	*0.0051*	*U*
SG-10	OU2-SB10	6.8	12/14/2018	*0.0061*	*U*	*0.0061*	*U*
SG-11	OU2-SB11	5	12/12/2018	*0.0048*	*U*	*0.0048*	*U*
SG-12	OU2-SB12	5.2	12/12/2018	*0.0053*	*U*	*0.0053*	*U*
SG-13	OU2-SB13	6	12/11/2018	**0.00062**	**J**	*0.0059*	*U*
SG-14	OU2-SB14	7.8	12/14/2018	*0.0049*	*U*	*0.0049*	*U*
SG-15	OU2-SB15	8.3	12/4/2018	*0.0051*	*U*	*0.0051*	*U*
MW-23	MW23-SB040720-16	16	4/7/2020	*0.0056*	*U*	*0.0056*	*U*
MW-23	MW23-SB040720-24	24	4/7/2020	*0.0086*	*U*	*0.0086*	*U*
MW-23	MW23-SB040720-30	30	4/7/2020	**0.0038**	**J**	*0.005*	*U*
MW-23	MW23-SB040720-49	49	4/7/2020	*0.0073*	*U*	*0.0073*	*U*
MW-23	MW23-SB040720-54	54	4/7/2020	**0.0014**	**J**	*0.0054*	*U*
MW-23	MW23-SB040720-63	63	4/7/2020	**0.0025**	**J**	*0.0048*	*U*
MW-23	MW23-SB040720-75	75	4/7/2020	**0.0045**	**J**	*0.0053*	*U*

Table 5-1

Tetrachloroethene and Trichloroethene in Soil

Location	Sample Identification	Sample Depth (ft bgs)	Sample Date	Tetrachloroethene		Trichloroethene	
				mg/kg	Q	mg/kg	Q
MW-23	MW23-SB040720-85	85	4/7/2020	**0.005**	**J**	*0.0051*	*U*
MW-23	MW23-SB040720-93	93	4/7/2020	**0.0016**	**J**	*0.0059*	*U*
MW-23	MW23-SB040720-97	97	4/7/2020	*0.0054*	*U*	*0.0054*	*U*
MW-23	MW23-SB040720-107	107	4/7/2020	**0.0025**	**J**	*0.0053*	*U*
MW-23	MW23-SB040820-110	110	4/8/2020	*0.0057*	*U*	*0.0057*	*U*
MW-23	MW23-SB040820-124	124	4/8/2020	*0.007*	*U*	*0.007*	*U*
MW-23	MW23-SB040820-133	133	4/8/2020	**0.0015**	**J**	*0.0053*	*U*
MW-23	MW23-SB040820-143	143	4/8/2020	*0.0071*	*U*	*0.0071*	*U*
MW-23	MW23-SB040820-155	155	4/8/2020	*0.005*	*U*	*0.005*	*U*
MW-23	MW23-SB040920-169	169	4/9/2020	*0.0067*	*U*	*0.0067*	*U*
MW-23	MW23-SB040920-175	175	4/9/2020	*0.0053*	*U*	*0.0053*	*U*
MW-23	MW23-SB040920-184	184	4/9/2020	*0.0055*	*U*	*0.0055*	*U*
MW-23	MW23-SB040920-199	199	4/9/2020	*0.0045*	*U*	*0.0045*	*U*
MW-23	MW23-SB040920-208	208	4/9/2020	*0.0055*	*U*	*0.0055*	*U*
MW-23	MW23-SB040920-218	218	4/9/2020	*0.0053*	*U*	*0.0053*	*U*
MW-23	MW23-SB041020-226	226	4/10/2020	*0.0059*	*U*	*0.0059*	*U*
MW-23	MW23-SB041020-230	230	4/10/2020	*0.0049*	*U*	*0.0049*	*U*
MW-23	MW23-SB041020-244	244	4/10/2020	*0.0048*	*U*	*0.0048*	*U*
MW-23	MW23-SB041020-257	257	4/10/2020	*0.0055*	*U*	*0.0055*	*U*
MW-23	MW23-SB041220-261	261	4/12/2020	*0.0047*	*U*	*0.0047*	*U*
MW-23	MW23-SB041220-280	280	4/12/2020	*0.0049*	*U*	*0.0049*	*U*
MW-23	MW23-SB041220-307	307	4/12/2020	*0.0048*	*U*	*0.0048*	*U*
MW-23	MW23-SB041320-314	314	4/13/2020	*0.0048*	*U*	*0.0048*	*U*
MW-23	MW23-SB041320-324	324	4/13/2020	*0.0041*	*U*	*0.0041*	*U*
MW-23	MW23-SB041420-334	334	4/14/2020	*0.0047*	*U*	*0.0047*	*U*
MW-23	MW23-SB041420-340	340	4/14/2020	*0.0052*	*U*	*0.0052*	*U*
MW-23	MW23-SB041520-346	346	4/15/2020	*0.0042*	*U*	*0.0042*	*U*
MW-24	MW24-SB051120-14	14	5/11/2020	*0.0054*	*U*	*0.0054*	*U*
MW-24	MW24-SB051120-22	22	5/11/2020	*0.0057*	*U*	*0.0057*	*U*
MW-24	MW24-SB051120-34	34	5/11/2020	*0.0053*	*U*	*0.0053*	*U*
MW-24	MW24-SB051220-43	43	5/12/2020	*0.0065*	*U*	*0.0065*	*U*
MW-24	MW24-SB051220-56	56	5/12/2020	*0.0056*	*U*	*0.0056*	*U*
MW-24	MW24-SB051220-61	61	5/12/2020	*0.0054*	*U*	*0.0054*	*U*
MW-24	MW24-SB051220-71	71	5/12/2020	*0.0056*	*U*	*0.0056*	*U*
MW-24	MW24-SB051220-84	84	5/12/2020	*0.0062*	*U*	*0.0062*	*U*
MW-24	MW24-SB051220-104	104	5/12/2020	*0.0057*	*U*	*0.0057*	*U*
MW-24	MW24-SB051220-119	119	5/12/2020	*0.0056*	*U*	*0.0056*	*U*
MW-24	MW24-SB051320-132	132	5/13/2020	*0.0049*	*U*	*0.0049*	*U*
MW-24	MW24-SB051320-149	149	5/13/2020	*0.0046*	*U*	*0.0046*	*U*
MW-24	MW24-SB051320-152	152	5/13/2020	*0.0053*	*U*	*0.0053*	*U*
MW-24	MW24-SB051320-166	166	5/13/2020	*0.0062*	*U*	*0.0062*	*U*
MW-24	MW24-SB051320-170	170	5/13/2020	*0.0062*	*U*	*0.0062*	*U*
MW-24	MW24-SB051320-186	186	5/13/2020	*0.0052*	*U*	*0.0052*	*U*
MW-24	MW24-SB051420-192	192	5/14/2020	*0.0047*	*U*	*0.0047*	*U*
MW-24	MW24-SB051420-202	202	5/14/2020	*0.0057*	*U*	*0.0057*	*U*
MW-24	MW24-SB051420-215	215	5/14/2020	*0.0052*	*U*	*0.0052*	*U*
MW-24	MW24-SB051420-227	227	5/14/2020	*0.0056*	*U*	*0.0056*	*U*
MW-24	MW24-SB051520-239	239	5/15/2020	*0.0057*	*U*	*0.0057*	*U*
MW-24	MW24-SB051520-248	248	5/15/2020	*0.005*	*U*	*0.005*	*U*
MW-25	MW25-SB042920-14	14	4/29/2020	*0.0061*	*U*	*0.0061*	*U*

Table 5-1
Tetrachloroethene and Trichloroethene in Soil

Location	Sample Identification	Sample Depth (ft bgs)	Sample Date	Tetrachloroethene		Trichloroethene	
				mg/kg	Q	mg/kg	Q
MW-25	MW25-SB042920-29	29	4/29/2020	*0.005*	*U*	*0.005*	*U*
MW-25	MW25-SB042920-35	35	4/29/2020	*0.0059*	*U*	*0.0059*	*U*
MW-25	MW25-SB042920-46	46	4/29/2020	*0.0053*	*U*	*0.0053*	*U*
MW-25	MW25-SB042920-54	54	4/29/2020	*0.0046*	*U*	*0.0046*	*U*
MW-25	MW25-SB042920-70	70	4/29/2020	*0.0064*	*U*	*0.0064*	*U*
MW-25	MW25-SB042920-73	73	4/29/2020	*0.0062*	*U*	*0.0062*	*U*
MW-25	MW25-SB042920-82	82	4/29/2020	*0.0055*	*U*	*0.0055*	*U*
MW-25	MW25-SB042920-94	94	4/29/2020	*0.0063*	*U*	*0.0063*	*U*
MW-25	MW25-SB043020-103	103	4/30/2020	*0.0053*	*U*	*0.0053*	*U*
MW-25	MW25-SB043020-112	112	4/30/2020	*0.005*	*U*	*0.005*	*U*
MW-25	MW25-SB043020-120	120	4/30/2020	*0.0052*	*U*	*0.0052*	*U*
MW-25	MW25-SB043020-139	139	4/30/2020	*0.0051*	*U*	*0.0051*	*U*
MW-25	MW25-SB043020-150	150	4/30/2020	*0.0056*	*U*	*0.0056*	*U*
MW-25	MW25-SB050120-153	153	5/1/2020	*0.0048*	*U*	*0.0048*	*U*
MW-25	MW25-SB050120-164	164	5/1/2020	*0.0054*	*U*	*0.0054*	*U*
MW-25	MW25-SB050120-176	176	5/1/2020	*0.0053*	*U*	*0.0053*	*U*
MW-25	MW25-SB050120-187	187	5/1/2020	*0.0062*	*U*	*0.0062*	*U*
MW-25	MW25-SB050120-193	193	5/1/2020	*0.0047*	*U*	*0.0047*	*U*
MW-25	MW25-SB050120-205	205	5/1/2020	*0.0052*	*U*	*0.0052*	*U*
MW-25	MW25-SB050320-216	216	5/3/2020	*0.0044*	*U*	*0.0044*	*U*
MW-25	MW25-SB050320-223	223	5/3/2020	*0.0043*	*U*	*0.0043*	*U*
MW-25	MW25-SB050320-235	235	5/3/2020	*0.0053*	*U*	*0.0053*	*U*
MW-25	MW25-SB050320-246	246	5/3/2020	*0.0047*	*U*	*0.0047*	*U*
MW-25	MW25-SB050320-252	252	5/3/2020	*0.0049*	*U*	*0.0049*	*U*
MW-25	MW25-SB050420-264	264	5/4/2020	*0.0049*	*U*	*0.0049*	*U*
MW-25	MW25-SB050520-272	272	5/5/2020	*0.0047*	*U*	*0.0047*	*U*
MW-25	MW25-SB050520-281	281	5/5/2020	*0.0048*	*U*	*0.0048*	*U*
MW-25	MW25-SB050520-299	299	5/5/2020	*0.005*	*U*	*0.005*	*U*
MW-25	MW25-SB050520-301	301	5/5/2020	*0.0048*	*U*	*0.0048*	*U*
MW-25	MW25-SB050620-312	312	5/6/2020	*0.0041*	*U*	*0.0041*	*U*
MW-26	MW26-SB042220-20	20	4/22/2020	*0.0089*	*U*	*0.0089*	*U*
MW-26	MW26-SB042220-24	24	4/22/2020	*0.0052*	*U*	*0.0052*	*U*
MW-26	MW26-SB042220-39	39	4/22/2020	*0.007*	*U*	*0.007*	*U*
MW-26	MW26-SB042320-44	44	4/23/2020	*0.0066*	*U*	*0.0066*	*U*
MW-26	MW26-SB042320-56	56	4/23/2020	*0.0049*	*U*	*0.0049*	*U*
MW-26	MW26-SB042320-62	62	4/23/2020	*0.0056*	*U*	*0.0056*	*U*
MW-26	MW26-SB042320-77	77	4/23/2020	*0.0059*	*U*	*0.0059*	*U*
MW-26	MW26-SB042320-84	84	4/23/2020	*0.0074*	*U*	*0.0074*	*U*
MW-26	MW26-SB042320-97	97	4/23/2020	*0.0052*	*U*	*0.0052*	*U*
MW-26	MW26-SB050420-103	103	5/4/2020	*0.0046*	*U*	*0.0046*	*U*
MW-26	MW26-SB050420-116	116	5/4/2020	*0.0053*	*U*	*0.0053*	*U*
MW-26	MW26-SB050420-119	119	5/4/2020	*0.0056*	*U*	*0.0056*	*U*
MW-26	MW26-SB050420-129	129	5/4/2020	*0.0051*	*U*	*0.0051*	*U*
MW-26	MW26-SB050420-133	133	5/4/2020	*0.0049*	*U*	*0.0049*	*U*
MW-26	MW26-SB050420-145	145	5/4/2020	*0.0053*	*U*	*0.0053*	*U*
MW-26	MW26-SB050520-154	154	5/5/2020	*0.0051*	*U*	*0.0051*	*U*
MW-26	MW26-SB050520-168	168	5/5/2020	*0.0048*	*U*	*0.0048*	*U*
MW-26	MW26-SB050520-172	172	5/5/2020	*0.0056*	*U*	*0.0056*	*U*
MW-26	MW26-SB050520-188	188	5/5/2020	*0.006*	*U*	*0.006*	*U*
MW-26	MW26-SB050520-195	195	5/5/2020	*0.0045*	*U*	*0.0045*	*U*

Table 5-1
Tetrachloroethene and Trichloroethene in Soil

Location	Sample Identification	Sample Depth (ft bgs)	Sample Date	Tetrachloroethene		Trichloroethene	
				mg/kg	Q	mg/kg	Q
MW-26	MW26-SB050620-201	201	5/6/2020	*0.0041*	*U*	*0.0041*	*U*
MW-26	MW26-SB050620-215	215	5/6/2020	*0.0046*	*U*	*0.0046*	*U*
MW-26	MW26-SB050620-221	221	5/6/2020	*0.0049*	*U*	*0.0049*	*U*
MW-26	MW26-SB050620-234	234	5/6/2020	*0.0047*	*U*	*0.0047*	*U*
MW-26	MW26-SB050720-247	247	5/7/2020	*0.0048*	*U*	*0.0048*	*U*
MW-26	MW26-SB050720-251	251	5/7/2020	*0.0061*	*U*	*0.0061*	*U*
MW-26	MW26-SB050720-269	269	5/7/2020	*0.0051*	*U*	*0.0051*	*U*
MW-26	MW26-SB050820-274	274	5/8/2020	*0.0044*	*U*	*0.0044*	*U*
MW-26	MW26-SB050820-285	285	5/8/2020	*0.0047*	*U*	*0.0047*	*U*
MW-26	MW26-SB051020-299	299	5/10/2020	*0.0045*	*U*	*0.0045*	*U*
MW-26	MW26-SB051020-308	308	5/10/2020	*0.0046*	*U*	*0.0046*	*U*
MW-26	MW26-SB051020-314	314	5/10/2020	*0.0044*	*U*	*0.0044*	*U*
MW-26	MW26-SB051120-329	329	5/11/2020	*0.0049*	*U*	*0.0049*	*U*
MW-26	MW26-SB051120-334	334	5/11/2020	*0.0051*	*U*	*0.0051*	*U*
MW-26	MW26-SB051120-348	348	5/11/2020	*0.0051*	*U*	*0.0051*	*U*
MW-26	MW26-SB051220-355	355	5/12/2020	*0.0046*	*U*	*0.0046*	*U*
MW-27	MW27-SB032220-13	13	3/22/2020	*0.0057*	*U*	*0.0057*	*U*
MW-27	MW27-SB032220-16	16	3/22/2020	*0.0059*	*U*	*0.0059*	*U*
MW-27	MW27-SB032220-30	30	3/22/2020	*0.0063*	*U*	*0.0063*	*U*
MW-27	MW27-SB032220-40	40	3/22/2020	**0.0026**	**J**	*0.0067*	*U*
MW-27	MW27-SB032220-50	50	3/22/2020	*0.0095*	*U*	*0.0095*	*U*
MW-27	MW27-SB032220-54.5	54.5	3/22/2020	**0.0014**	**J**	*0.0059*	*U*
MW-27	MW27-SB032220-70	70	3/22/2020	*0.006*	*U*	*0.006*	*U*
MW-27	MW27-SB032220-75	75	3/22/2020	**0.0018**	**J**	*0.0049*	*U*
MW-27	MW27-SB032220-88	88	3/22/2020	**0.0011**	**J**	*0.0048*	*U*
MW-27	MW27-SB032220-96	96	3/22/2020	**0.0024**	**J**	*0.0052*	*U*
MW-27	MW27-SB032320-102	102	3/23/2020	*0.0057*	*U*	*0.0057*	*U*
MW-27	MW27-SB032320-114	114	3/23/2020	**0.0014**	**J**	*0.0062*	*U*
MW-27	MW27-SB032320-122	122	3/23/2020	**0.0016**	**J**	*0.0062*	*U*
MW-27	MW27-SB032320-130	130	3/23/2020	*0.0065*	*U*	*0.0065*	*U*
MW-27	MW27-SB032320-140	140	3/23/2020	*0.0046*	*U*	*0.0046*	*U*
MW-27	MW27-SB032320-150	150	3/23/2020	*0.0064*	*U*	*0.0064*	*U*
MW-27	MW27-SB032320-158	158	3/23/2020	*0.0064*	*U*	*0.0064*	*U*
MW-27	MW27-SB032320-166	166	3/23/2020	*0.0052*	*U*	*0.0052*	*U*
MW-27	MW27-SB032320-175	175	3/23/2020	*0.0052*	*U*	*0.0052*	*U*
MW-27	MW27-SB032420-185	185	3/24/2020	*0.0046*	*U*	*0.0046*	*U*
MW-27	MW27-SB032420-192.5	192.5	3/24/2020	*0.0046*	*U*	*0.0046*	*U*
MW-27	MW27-SB032420-205	205	3/24/2020	*0.0048*	*U*	*0.0048*	*U*
MW-27	MW27-SB032420-218	218	3/24/2020	*0.0057*	*U*	*0.0057*	*U*
MW-28	MW28-SB031220-16	16	3/12/2020	*0.0053*	*U*	*0.0053*	*U*
MW-28	MW28-SB031220-22	22	3/12/2020	*0.0052*	*U*	*0.0052*	*U*
MW-28	MW28-SB031220-35	35	3/12/2020	*0.0054*	*U*	*0.0054*	*U*
MW-28	MW28-SB031320-49	49	3/13/2020	*0.0071*	*U*	*0.0071*	*U*
MW-28	MW28-SB031320-59	59	3/13/2020	*0.0051*	*U*	*0.0051*	*U*
MW-28	MW28-SB031320-67	67	3/13/2020	*0.005*	*U*	*0.005*	*U*
MW-28	MW28-SB031320-86	86	3/13/2020	**0.0015**	**J**	*0.0046*	*U*
MW-28	MW28-SB031320-97	97	3/13/2020	*0.0052*	*U*	*0.0052*	*U*
MW-28	MW28-SB031520-107	107	3/15/2020	*0.006*	*U*	*0.006*	*U*
MW-28	MW28-SB031520-117	117	3/15/2020	*0.0061*	*U*	*0.0061*	*U*
MW-28	MW28-SB031620-121	121	3/16/2020	*0.0047*	*U*	*0.0047*	*U*

Table 5-1
Tetrachloroethene and Trichloroethene in Soil

Location	Sample Identification	Sample Depth (ft bgs)	Sample Date	Tetrachloroethene		Trichloroethene	
				mg/kg	Q	mg/kg	Q
MW-28	MW28-SB031620-139	139	3/16/2020	*0.0043*	*U*	*0.0043*	*U*
MW-28	MW28-SB031720-149	149	3/17/2020	*0.0059*	*U*	*0.0059*	*U*
MW-28	MW28-SB031720-156	156	3/17/2020	*0.0049*	*U*	*0.0049*	*U*
MW-28	MW28-SB031720-165	165	3/17/2020	*0.0048*	*U*	*0.0048*	*U*
MW-28	MW28-SB031720-171	171	3/17/2020	*0.0049*	*U*	*0.0049*	*U*
MW-28	MW28-SB031720-185	185	3/17/2020	*0.0059*	*U*	*0.0059*	*U*
MW-28	MW28-SB031720-199	199	3/17/2020	*0.0047*	*U*	*0.0047*	*U*
MW-28	MW28-SB031720-206	206	3/17/2020	*0.0053*	*U*	*0.0053*	*U*
Soil in Sunnyside Park/Along the Sewer Line							
SG-17	OU2-SB17	6.8	12/5/2018	*0.0049*	*U*	*0.0049*	*U*
SG-18	OU2-SB18	5.2	12/7/2018	*0.0047*	*U*	*0.0047*	*U*
SG-19	OU2-SB19	4.1	12/7/2018	*0.0047*	*U*	*0.0047*	*U*
SG-20	OU2-SB20	6.5	12/3/2018	*0.0048*	*U*	*0.0048*	*U*
SG-21	OU2-SB21	8.3	12/17/2018	*0.005*	*U*	*0.005*	*U*
SG-22	OU2-SB22	5.6	12/3/2018	*0.0058*	*U*	*0.0058*	*U*
SG-23	OU2-SB92	5.4	12/17/2018	*0.005*	*U*	*0.005*	*U*
SG-42	OU2-SB42-1	1.25	12/7/2018	*0.0046*	*U*	*0.0046*	*U*
	OU2-SB42-2	7.75	12/7/2018	*0.0051*	*U*	*0.0051*	*U*
	OU2-SB42-3	8.25	12/7/2018	*0.0052*	*U*	*0.0052*	*U*
	OU2-SB42-4	18.25	12/7/2018	*0.0054*	*U*	*0.0054*	*U*
	OU2-SB42-5	26.75	12/7/2018	*0.0047*	*U*	*0.0047*	*U*
SG-43	OU2-SB43-1	0.75	12/7/2018	*0.0046*	*U*	*0.0046*	*U*
	OU2-SB43-2	7.75	12/7/2018	*0.0044*	*U*	*0.0044*	*U*
	OU2-SB43-3	73.25	12/7/2018	*0.0051*	*U*	*0.0051*	*U*
	OU2-SB43-4	16.75	12/7/2018	*0.0046*	*U*	*0.0046*	*U*
SG-45	OU2-SB45_062619	7.25	6/26/2019	*0.0048*	*U*	*0.0048*	*U*
SG-46	OU2-SB46_062519	5	6/25/2019	*0.0055*	*U*	*0.0055*	*U*
SG-48	OU2-SB48_062619	5.25	6/26/2019	*0.0054*	*U*	*0.0054*	*U*
SG-49	OU2-SB49_062719	6.4	6/27/2019	*0.0051*	*U*	*0.0051*	*U*
SG-50	OU2-SB50_062719	7	6/27/2019	*0.0048*	*U*	*0.0048*	*U*
SG-51	OU2-SB51_062819	8.05	6/28/2019	*0.0048*	*U*	*0.0048*	*U*
SG-52	OU2-SB52_062719	4.85	6/27/2019	*0.0044*	*U*	*0.0044*	*U*
SG-55	OU2-SB55_070219	4.75	7/2/2019	*0.0048*	*U*	*0.0048*	*U*
SG-60	OU2-SB60_071119	4.05	7/11/2019	*0.005*	*U*	*0.005*	*U*
MW-29	MW29-SB052720-16	16	5/27/2020	*0.005*	*U*	*0.005*	*U*
MW-29	MW29-SB052720-24	24	5/27/2020	*0.0046*	*U*	*0.0046*	*U*
MW-29	MW29-SB052720-32	32	5/27/2020	*0.0046*	*U*	*0.0046*	*U*
MW-29	MW29-SB052720-42	42	5/27/2020	*0.0051*	*U*	*0.0051*	*U*
MW-29	MW29-SB052820-56	56	5/28/2020	*0.0046*	*U*	*0.0046*	*U*
MW-29	MW29-SB052820-67	67	5/28/2020	*0.0046*	*U*	*0.0046*	*U*
MW-29	MW29-SB052820-72	72	5/28/2020	*0.0044*	*U*	*0.0044*	*U*
MW-29	MW29-SB052820-82	82	5/28/2020	*0.0053*	*U*	*0.0053*	*U*
MW-29	MW29-SB052820-97	97	5/28/2020	*0.0052*	*U*	*0.0052*	*U*
MW-29	MW29-SB052820-104	104	5/28/2020	*0.0048*	*U*	*0.0048*	*U*
MW-29	MW29-SB052920-115	115	5/29/2020	*0.0044*	*U*	*0.0044*	*U*
MW-29	MW29-SB052920-122	122	5/29/2020	*0.0046*	*U*	*0.0046*	*U*
MW-29	MW29-SB052920-137	137	5/29/2020	*0.005*	*U*	*0.005*	*U*
MW-29	MW29-SB052920-144	144	5/29/2020	*0.0045*	*U*	*0.0045*	*U*
MW-29	MW29-SB052920-155	155	5/29/2020	*0.0043*	*U*	*0.0043*	*U*
MW-29	MW29-SB052920-167	167	5/29/2020	*0.0045*	*U*	*0.0045*	*U*

Table 5-1
Tetrachloroethene and Trichloroethene in Soil

Location	Sample Identification	Sample Depth (ft bgs)	Sample Date	Tetrachloroethene		Trichloroethene	
				mg/kg	Q	mg/kg	Q
MW-29	MW29-SB052920-178	178	5/29/2020	*0.0042*	*U*	*0.0042*	*U*
MW-29	MW29-SB052920-187	187	5/29/2020	*0.0049*	*U*	*0.0049*	*U*
MW-29	MW29-SB053120-198	198	5/31/2020	*0.0045*	*U*	*0.0045*	*U*
MW-29	MW29-SB053120-207	207	5/31/2020	*0.0044*	*U*	*0.0044*	*U*
MW-29	MW29-SB053120-217	217	5/31/2020	*0.0041*	*U*	*0.0041*	*U*
MW-29	MW29-SB053120-227	227	5/31/2020	*0.0042*	*U*	*0.0042*	*U*
MW-29	MW29-SB060120-240	240	6/1/2020	*0.0045*	*U*	*0.0045*	*U*
MW-29	MW29-SB060120-250	250	6/1/2020	*0.0047*	*U*	*0.0047*	*U*
MW-29	MW29-SB060120-256	256	6/1/2020	*0.005*	*U*	*0.005*	*U*
MW-29	MW29-SB060220-267	267	6/2/2020	*0.0048*	*U*	*0.0048*	*U*
MW-29	MW29-SB060320-273	273	6/3/2020	*0.0045*	*U*	*0.0045*	*U*
MW-29	MW29-SB060320-282	282	6/3/2020	*0.005*	*U*	*0.005*	*U*
MW-29	MW29-SB060320-292	292	6/3/2020	*0.005*	*U*	*0.005*	*U*
MW-29	MW29-SB060320-302	302	6/3/2020	*0.005*	*U*	*0.005*	*U*
MW-29	MW29-SB060320-314	314	6/3/2020	*0.0055*	*U*	*0.0055*	*U*
MW-29	MW29-SB060320-328	328	6/3/2020	*0.0047*	*U*	*0.0047*	*U*
MW-29	MW29-SB060420-337	337	6/4/2020	*0.0045*	*U*	*0.0045*	*U*
MW-31	MW31-SB060920-15	15	6/9/2020	*0.0048*	*U*	*0.0048*	*U*
MW-31	MW31-SB060920-23	23	6/9/2020	*0.005*	*U*	*0.005*	*U*
MW-31	MW31-SB060920-45	45	6/9/2020	*0.0051*	*U*	*0.0051*	*U*
MW-31	MW31-SB060920-62	62	6/9/2020	*0.0051*	*U*	*0.0051*	*U*
MW-31	MW31-SB060920-82	82	6/9/2020	*0.0053*	*U*	*0.0053*	*U*
MW-31	MW31-SB060920-94	94	6/9/2020	*0.0051*	*U*	*0.0051*	*U*
MW-31	MW31-SB060920-112	112	6/9/2020	*0.0044*	*U*	*0.0044*	*U*
MW-31	MW31-SB061020-133	133	6/10/2020	*0.0048*	*U*	*0.0048*	*U*
MW-31	MW31-SB061020-159	159	6/10/2020	*0.0047*	*U*	*0.0047*	*U*
MW-31	MW31-SB061020-176	176	6/10/2020	*0.0056*	*U*	*0.0056*	*U*
MW-31	MW31-SB061120-190	190	6/11/2020	*0.0052*	*U*	*0.0052*	*U*
MW-31	MW31-SB061120-215	215	6/11/2020	*0.0055*	*U*	*0.0055*	*U*
MW-31	MW31-SB061220-236	236	6/12/2020	*0.0048*	*U*	*0.0048*	*U*
MW-31	MW31-SB061220-252	252	6/12/2020	*0.0049*	*U*	*0.0049*	*U*
MW-31	MW31-SB061220-270	270	6/12/2020	*0.0047*	*U*	*0.0047*	*U*
MW-31	MW31-SB061220-289	289	6/12/2020	*0.0051*	*U*	*0.0051*	*U*
Soil Near the Mount Olivet Cemetery							
MW-32	MW32-SB062220-14	14	6/22/2020	*0.005*	*U*	*0.005*	*U*
MW-32	MW32-SB062220-27	27	6/22/2020	*0.0055*	*U*	*0.0055*	*U*
MW-32	MW32-SB062220-55	55	6/22/2020	*0.0049*	*U*	*0.0049*	*U*
MW-32	MW32-SB062320-84	84	6/23/2020	*0.0062*	*U*	*0.0062*	*U*
MW-32	MW32-SB062420-105	105	6/24/2020	*0.0057*	*U*	*0.0057*	*U*
MW-32	MW32-SB062420-127	127	6/24/2020	*0.0047*	*U*	*0.0047*	*U*
MW-32	MW32-SB062420-142	142	6/24/2020	*0.0043*	*U*	*0.0043*	*U*
MW-32	MW32-SB062520-165	165	6/25/2020	*0.0045*	*U*	*0.0045*	*U*
MW-32	MW32-SB062520-186	186	6/25/2020	*0.0043*	*U*	*0.0043*	*U*
MW-32	MW32-SB062520-203	203	6/25/2020	*0.0046*	*U*	*0.0046*	*U*
MW-32	MW32-SB062620-223	223	6/26/2020	*0.0046*	*U*	*0.0046*	*U*
MW-32	MW32-SB062620-250	250	6/26/2020	*0.0049*	*U*	*0.0049*	*U*
MW-34	MW34-SB070820-141	141	7/8/2020	*0.0048*	*U*	*0.0048*	*U*
MW-34	MW34-SB070820-165	165	7/8/2020	**0.0039**	**J**	*0.0051*	*U*
MW-34	MW34-SB070820-189	189	7/8/2020	**0.0014**	**J**	*0.0055*	*U*
MW-34	MW34-SB070820-205	205	7/8/2020	*0.0044*	*U*	*0.0044*	*U*

Table 5-1
Tetrachloroethene and Trichloroethene in Soil

Location	Sample Identification	Sample Depth (ft bgs)	Sample Date	Tetrachloroethene		Trichloroethene	
				mg/kg	Q	mg/kg	Q
MW-34	MW34-SB070920-226	226	7/9/2020	*0.0051*	*U*	*0.0051*	*U*
MW-34	MW34-SB070920-247	247	7/9/2020	*0.0049*	*U*	*0.0049*	*U*
MW-34	MW34-SB071020-264	264	7/10/2020	*0.0052*	*U*	*0.0052*	*U*
MW-34	MW34-SB071020-285	285	7/10/2020	*0.0044*	*U*	*0.0044*	*U*
MW-34	MW34-SB071020-300	300	7/10/2020	*0.0038*	*U*	*0.0038*	*U*
MW-34	MW34-SB071220-321	321	7/12/2020	*0.0048*	*U*	*0.0048*	*U*
MW-34	MW34-SB071220-349	349	7/12/2020	*0.0057*	*U*	*0.0057*	*U*

Notes:
[1] There were no exceedances of the EPA resident soil regional screening levels (corresponding to an excess lifetime cancer risk

Bold indicates detected values
Italics indicates nondetected values

mg/kg = milligrams per kilogram
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
PCE = tetrachloroethene
OU = operable unit
VAMC = Veteran Affairs Medical Center
Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit

Table 5-2
Preliminary Chemicals of Potential Concern in Source Area Soil Gas

Location	Sample Identification	Sample Date	Sample Method	Start Depth	End Depth	Depth Unit	PCE µg/m³	Q	TCE µg/m³	Q	cis-1,2-DCE µg/m³	Q	VC µg/m³	Q
Industrial/Commercial Soil Gas Risk Based Screening Level (RBSL) (µg/m³)[1]							1600		100		NA		93	
VAMC Buildings 6 and 7														
SG-01	OU2-SG-01	12/20/2018	HAPSITE	5.9	6.3	ft bgs	7.3		2.7	U	2	U	NS	
	OU2-SG-01-071219	7/12/2019	HAPSITE			ft bgs	19		2.7	U	NS		NS	
SG-02	OU2-SG-02	12/20/2018	HAPSITE	5.5	5.8	ft bgs	21.8		2.7	U	2	U	NS	
	OU2-SG-02-071219	7/12/2019	HAPSITE			ft bgs	41		2.7	U	NS		NS	
SG-03	OU2-SG-03	12/17/2018	HAPSITE	7.8	8.1	ft bgs	2887		27	U	20	U	NS	
	OU2-SG-03-071019	7/10/2019	HAPSITE			ft bgs	3800		27	U	NS		NS	
	SG03-SG032221	3/22/2021	SUMMA			ft bgs	2200		14		1.3	U	0.81	U
SG-04	OU2-SG-04	12/17/2018	HAPSITE	5.5	5.8	ft bgs	1045		6.3		4	U	NS	
	OU2-SG-04-071019	7/10/2019	HAPSITE			ft bgs	2400		23.76		NS		NS	
	SG04-SG032321	3/23/2021	SUMMA			ft bgs	480		13		0.13	J	0.18	U
SG-05	OU2-SG-05	12/17/2018	HAPSITE	5.9	6.3	ft bgs	3039		27	U	20	U	NS	
	OU2-SG-05-071019	7/10/2019	HAPSITE			ft bgs	5300		27	U	NS		NS	
	OU2-SG05-SC	12/17/2018	SUMMA			ft bgs	2900		11	J	25	U	25	UJ
	OU2-SG05-SC_071019	7/10/2019	SUMMA			ft bgs	4700		19		11	U	11	U
	SG05-SG032321	3/23/2021	SUMMA			ft bgs	1800		7.9		0.24	J	0.78	U
SG-06	OU2-SG-06	12/17/2018	HAPSITE	5.8	6.1	ft bgs	3129		31.3		20	U	NS	
	OU2-SG-06-071619	7/16/2019	HAPSITE			ft bgs	2000		29.5		NS		NS	
	SG06-SG032321	3/23/2021	SUMMA			ft bgs	1800		30		1.2	U	0.76	U
SG-07	OU2-SG-07	12/10/2018	HAPSITE	5.2	5.5	ft bgs	212		2.7	U	2	U	NS	
	OU2-SG-07-070919	7/9/2019	HAPSITE			ft bgs	240		2.7	U	NS		NS	
SG-08	OU2-SG-08	12/17/2018	HAPSITE	3	3.3	ft bgs	331		2.7	U	2	U	NS	
	OU2-SG-08-070919	7/9/2019	HAPSITE			ft bgs	1300		5.4	U	NS		NS	
	OU2-SG08-SC	12/17/2018	SUMMA			ft bgs	180		0.37	J	2.1	U	2.1	UJ
	SG08-SG032321	3/23/2021	SUMMA			ft bgs	460		0.23	J	0.4	U	0.26	U
SG-09	OU2-SG-09	12/17/2018	HAPSITE	2.3	2.7	ft bgs	114		2.7	U	2	U	NS	
	OU2-SG-09-070919	7/9/2019	HAPSITE			ft bgs	1100		5.4	U	NS		NS	
SG-10	OU2-SG-10	12/17/2018	HAPSITE	6.3	6.8	ft bgs	14.8		2.7	U	2	U	NS	
	OU2-SG-10-070919	7/9/2019	HAPSITE			ft bgs	9.5		2.7	U	NS		NS	
	SG10-SG032321	3/23/2021	SUMMA			ft bgs	3.2		0.16	U	0.12	U	0.077	U
SG-11	OU2-SG-11	12/17/2018	HAPSITE	4.7	5	ft bgs	345		2.7	U	2	U	NS	
	OU2-SG-11-070919	7/9/2019	HAPSITE			ft bgs	1200		5.4	U	NS		NS	
	OU2-SG11-SC	12/17/2018	SUMMA			ft bgs	240		0.43	J	2.3	U	2.3	UJ
	SG11-SG032321	3/23/2021	SUMMA			ft bgs	360		0.3	J	0.28	U	0.18	U
SG-12	OU2-SG-12	12/17/2018	HAPSITE	4.8	5.2	ft bgs	124		2.7	U	2	U	NS	
	OU2-SG-12-071219	7/12/2019	HAPSITE			ft bgs	380		2.7	U	NS		NS	
SG-13	OU2-SG-13	12/17/2018	HAPSITE	5.3	6	ft bgs	547		2.7	U	2	U	NS	
	OU2-SG-13-071219	7/12/2019	HAPSITE			ft bgs	1600		11	U	NS		NS	
	OU2-SG13-SC	12/17/2018	SUMMA			ft bgs	360		0.86	J	3.6	U	3.6	UJ
	SG13-SG032321	3/23/2021	SUMMA			ft bgs	20		0.057	J	0.035	J	0.077	U
SG-14	OU2-SG-14	12/17/2018	HAPSITE	7.4	7.8	ft bgs	339		2.7	U	2	U	NS	
	OU2-SG-14-071219	7/12/2019	HAPSITE			ft bgs	290		2.7	U	NS		NS	
SG-15	OU2-SG-15	12/10/2018	HAPSITE	8	8.3	ft bgs	41.8		2.7	U	2	U	NS	
	OU2-SG-15-071219	7/12/2019	HAPSITE			ft bgs	52		2.7	U	NS		NS	
SG-45	OU2-SG-45-070919	7/9/2019	HAPSITE	7	7.5	ft bgs	23		2.7	U	NS		NS	
SG-46	OU2-SG-46-070919	7/9/2019	HAPSITE	4.8	5.2	ft bgs	12		2.7	U	NS		NS	
SG-48	OU2-SG-48-070919	7/9/2019	HAPSITE	5	5.5	ft bgs	10		2.7	U	NS		NS	
SG-49	OU2-SG-49-070919	7/9/2019	HAPSITE	6.1	6.7	ft bgs	13		2.7	U	NS		NS	
	SG49-SG032421	3/24/2021	SUMMA			ft bgs	21		0.081	J	0.12	U	0.078	U
SG-50	OU2-SG-50-071019	7/10/2019	HAPSITE	6.7	7.3	ft bgs	420		2.916		NS		NS	
	SG50-SG032321	3/23/2021	SUMMA			ft bgs	320		1.7		0.19	U	0.12	U
SG-51	OU2-SG-51-071019	7/10/2019	HAPSITE	8.8	9.3	ft bgs	45		2.7	U	NS		NS	
	OU2-SG51-SC_071019	7/10/2019	SUMMA			ft bgs	33		1.4	J	0.88	J	2.5	U
SG-52	OU2-SG-52-070919	7/9/2019	HAPSITE	4.6	5.1	ft bgs	26		2.7	U	NS		NS	
	OU2-SG52-SC_070919	7/9/2019	SUMMA			ft bgs	11		2.5	U	2.5	U	2.5	U
SG-53	OU2-SG-53-071019	7/10/2019	HAPSITE	4.5	5	ft bgs	49		2.7	U	NS		NS	
SG-54	OU2-SG-54-071019	7/10/2019	HAPSITE	4.5	5.1	ft bgs	26		2.7	U	NS		NS	
	OU2-SG54-SC_071019	7/10/2019	SUMMA			ft bgs	25		2.6	U	2.6	U	2.6	U
SG-55	OU2-SG-55-070919	7/9/2019	HAPSITE	4.5	5	ft bgs	62		2.7	U	NS		NS	
	SG55-SG032321	3/23/2021	SUMMA			ft bgs	50		0.15	J	0.11	U	0.072	U
SG-60	OU2-SG-60-071619	7/16/2019	HAPSITE	3.8	4.3	ft bgs	450		20.4		NS		NS	
	SG60-SG032221	3/22/2021	SUMMA			ft bgs	56		0.017	J	0.12	U	0.077	U

Table 5-2
Preliminary Chemicals of Potential Concern in Source Area Soil Gas

Location	Sample Identification	Sample Date	Sample Method	Start Depth	End Depth	Depth Unit	PCE µg/m³	Q	TCE µg/m³	Q	cis-1,2-DCE µg/m³	Q	VC µg/m³	Q
Industrial/Commercial Soil Gas Risk Based Screening Level (RBSL) (µg/m³)[1]							1600		100		NA		93	
VP-01	OU2-VP-01-031919	3/19/2019	HAPSITE		subslab		19		2.69	U	1.98	U	NS	
	OU2-VP-01-071619	7/16/2019	HAPSITE		subslab		39		2.7	U	NS		NS	
	OU2-VP01-SG031919	3/19/2019	SUMMA		subslab		8.5		2.2	U	2.2	U	2.2	U
VP-02	OU2-VP-02-031919	3/19/2019	HAPSITE		subslab		258		2.69	U	1.98	U	NS	
	OU2-VP-02-071619	7/16/2019	HAPSITE		subslab		520		2.7	U	NS		NS	
	OU2-VP02-SG031919	3/19/2019	SUMMA		subslab		320		2.6	U	2.6	U	2.6	U
	VP02-SG032421	3/24/2021	SUMMA		subslab		340		0.084	J	0.3	U	0.19	U
VP-03	OU2-VP-03-031919	3/19/2019	HAPSITE		subslab		203.6		3.12		1.98	U	NS	
	OU2-VP-03-071619	7/16/2019	HAPSITE		subslab		330		2.7	U	NS		NS	
	OU2-VP03-SG031919	3/19/2019	SUMMA		subslab		230		3.1		2.5	U	2.5	U
VP-04	OU2-VP04_071619	7/16/2019	SUMMA		subslab		20000		35	J	110	U	110	U
	OU2-VP-04-031919	3/19/2019	HAPSITE		subslab		19641		52.1		1.98	U	NS	
	OU2-VP-04-071619	7/16/2019	HAPSITE		subslab		46000		53.7		NS		NS	
	OU2-VP04-SG031919	3/19/2019	SUMMA		subslab		33000		40	J	190	U	190	U
	VP04-SG032421	3/24/2021	SUMMA		subslab		30000		51	J	60	U	39	U
VP-05	OU2-VP-05-031919	3/19/2019	HAPSITE		subslab		322		2.69	U	1.98	U	NS	
	OU2-VP-05-071119	7/11/2019	HAPSITE		subslab		77		2.7	U	NS		NS	
	OU2-VP05-SG031919	3/19/2019	SUMMA		subslab		160		2.4	U	2.4	U	2.4	U
VP-06	OU2-VP-06-031919	3/19/2019	HAPSITE		subslab		122		2.69	U	1.98	U	NS	
	OU2-VP-06-071119	7/11/2019	HAPSITE		subslab		28		2.7	U	NS		NS	
	OU2-VP06-SG031919	3/19/2019	SUMMA		subslab		97		2.6	U	2.6	U	2.6	U
	VP06-SG032421	3/24/2021	SUMMA		subslab		33		0.073	J	0.11	U	0.073	U
VP-07	OU2-VP-07-031819	3/18/2019	HAPSITE		subslab		29.2		2.69	U	1.98	U	NS	
	OU2-VP-07-071119	7/11/2019	HAPSITE		subslab		47		2.7	U	NS		NS	
	OU2-VP07-SG031819	3/18/2019	SUMMA		subslab		31		2.4	U	2.4	U	2.4	U
VP-08	OU2-VP-08-031819	3/18/2019	HAPSITE		subslab		170		2.69	U	1.98	U	NS	
	OU2-VP-08-071119	7/11/2019	HAPSITE		subslab		190		2.7	U	NS		NS	
	OU2-VP08-SG031819	3/18/2019	SUMMA		subslab		180		2.5	U	2.5	U	2.5	U
	VP08-SG032421	3/24/2021	SUMMA		subslab		210		0.3	U	0.22	U	0.14	U
VP-09	OU2-VP-09-031819	3/18/2019	HAPSITE		subslab		319		2.69	U	1.98	U	NS	
	OU2-VP-09-071119	7/11/2019	HAPSITE		subslab		840		5.4	U	NS		NS	
	OU2-VP09-SG031819	3/18/2019	SUMMA		subslab		380		1.1	J	2.7	U	2.7	U
	VP09-SG032421	3/24/2021	SUMMA		subslab		470		1.8		0.41	U	0.27	U
VP-10	OU2-VP-10-031819	3/18/2019	HAPSITE		subslab		30.5		2.69	U	1.98	U	NS	
	OU2-VP-10-071119	7/11/2019	HAPSITE		subslab		29		2.7	U	NS		NS	
	OU2-VP10-SG031819	3/18/2019	SUMMA		subslab		20		2.7	U	2.7	U	2.7	U
	VP10-SG032421	3/24/2021	SUMMA		subslab		23		0.16	U	0.12	U	0.077	U
VP-11	OU2-VP11_071119	7/11/2019	SUMMA		subslab		440		3.4		2.5	U	2.5	U
	OU2-VP-11-031819	3/18/2019	HAPSITE		subslab		877		2.69	U	1.98	U	NS	
	OU2-VP-11-071119	7/11/2019	HAPSITE		subslab		580		2.7	U	NS		NS	
	OU2-VP11-SG031819	3/18/2019	SUMMA		subslab		890		2.2	J	2.5	U	2.5	U
	VP11-SG032421	3/24/2021	SUMMA		subslab		500		2.9		0.6	U	0.39	U
VP-12	OU2-VP-12-031819	3/18/2019	HAPSITE		subslab		10.2		2.69	U	1.98	U	NS	
	OU2-VP-12-071119	7/11/2019	HAPSITE		subslab		35		2.7	U	NS		NS	
	OU2-VP12-SG031819	3/18/2019	SUMMA		subslab		3.6		2.4	U	2.4	U	2.4	U
	VP12-SG032421	3/24/2021	SUMMA		subslab		3		0.13	J	0.12	U	0.08	U
VP-13	OU2-VP-13-031919	3/19/2019	HAPSITE		subslab		109		2.69	U	1.98	U	NS	
	OU2-VP-13-071119	7/11/2019	HAPSITE		subslab		640		2.7	U	NS		NS	
	OU2-VP13-SG031919	3/19/2019	SUMMA		subslab		150		0.44	J	2.5	U	2.5	U
	VP13-SG032421	3/24/2021	SUMMA		subslab		110		0.33	U	0.24	U	0.16	U
VP-14	OU2-VP-14-031919	3/19/2019	HAPSITE		subslab		217		2.69	U	1.98	U	NS	
	OU2-VP-14-071619	7/16/2019	HAPSITE		subslab		110		2.7	U	NS		NS	
	OU2-VP14-SG031919	3/19/2019	SUMMA		subslab		160		0.83	J	2.6	U	2.6	U
	VP14-SG032421	3/24/2021	SUMMA		subslab		49		0.73		0.12	U	0.013	J
VP-15	OU2-VP15_071619	7/16/2019	SUMMA		subslab		21000		160		100	U	100	U
	OU2-VP-15-071619	7/16/2019	HAPSITE		subslab		11000		180		NS		NS	
	VP15-SG032421	3/24/2021	SUMMA		subslab		23000		180		58	U	37	U
VP-16	OU2-VP16_071619	7/16/2019	SUMMA		subslab		3600		5.7	J	7.3	U	7.3	U
	OU2-VP-16-071619	7/16/2019	HAPSITE		subslab		5200		27	U	NS		NS	
VP-17	OU2-VP17_071619	7/16/2019	SUMMA		subslab		1400		2	J	2.7	U	2.7	U
	OU2-VP-17-071619	7/16/2019	HAPSITE		subslab		1800		11	U	NS		NS	
	VP17-SG032421	3/24/2021	SUMMA		subslab		680		1.2		0.61	U	0.4	U

Table 5-2
Preliminary Chemicals of Potential Concern in Source Area Soil Gas

Location	Sample Identification	Sample Date	Sample Method	Start Depth	End Depth	Depth Unit	PCE		TCE		cis-1,2-DCE		VC	
							$\mu g/m^3$	Q	$\mu g/m^3$	Q	$\mu g/m^3$	Q	$\mu g/m^3$	Q
Industrial/Commercial Soil Gas Risk Based Screening Level (RBSL) ($\mu g/m^3$)[1]							**1600**		**100**		**NA**		**93**	
VP-18	OU2-VP-18-071619	7/16/2019	HAPSITE	subslab			**46**		27	U	NS		NS	
VP-19	OU2-VP-19-071119	7/11/2019	HAPSITE	subslab			3.4	U	2.7	U	NS		NS	
	VP19-SG032421	3/24/2021	SUMMA	subslab			**0.58**		0.16	U	0.12	U	0.075	U
VP-20	OU2-VP20_071119	7/11/2019	SUMMA	subslab			**17**		**0.33**	**J**	2.3	U	2.3	U
	OU2-VP-20-071119	7/11/2019	HAPSITE	subslab			**22**		2.7	U	NS		NS	
VP-21	OU2-VP-21-070919	7/9/2019	HAPSITE	subslab			3.4	U	2.7	U	NS		NS	
VP-22	OU2-VP-22-071119	7/11/2019	HAPSITE	subslab			**22**		2.7	U	NS		NS	
MW-23	MW23-SG032321-135	3/23/2021	SUMMA	130	140	ft bgs	**16000**		**32**	**J**	**6.7**	**J**	19	U
MW-24	MW24-SG032521-104	3/25/2021	SUMMA	104	104	ft bgs	**23**		0.88	U	0.65	U	0.42	U
	MW24-SG032521-130	3/25/2021	SUMMA	130	130	ft bgs	**67**		0.75	U	0.56	U	0.36	U
	MW24-SG032521-60	3/25/2021	SUMMA	60	60	ft bgs	**120**		1.8	U	1.3	U	0.86	U
	MW24-SG032621-32	3/26/2021	SUMMA	32	32	ft bgs	**240**		1.5	U	1.1	U	**0.15**	**J**
MW-25	MW25-SG032421-100	3/24/2021	SUMMA	100	100	ft bgs	**0.2**	**J**	0.22	U	0.16	U	0.1	U
	MW25-SG032421-28	3/24/2021	SUMMA	28	28	ft bgs	**0.21**	**J**	0.32	U	0.24	U	**0.039**	**J**
MW-27	MW27-SG032221-113	3/22/2021	SUMMA	113	113	ft bgs	**17000**		**27**	**J**	**9**	**J**	19	U
	MW27-SG032221-28	3/22/2021	SUMMA	28	28	ft bgs	**39000**		**52**		30	U	19	U
MW-28	MW28-SG032321-118	3/23/2021	SUMMA	118	118	ft bgs	**3600**		**6.6**		1.3	U	0.83	U
	MW28-SG032321-24	3/23/2021	SUMMA	24	24	ft bgs	**1400**		**1.4**	**J**	1.1	U	0.72	U
	MW28-SG032321-48	3/23/2021	SUMMA	48	48	ft bgs	**2200**		**4.1**		1.1	U	0.72	U
Sunnyside Park														
SG-17	OU2-SG-17	12/10/2018	HAPSITE	6.3	6.7	ft bgs	**75.5**		2.7	U	2	U	NS	
	OU2-SG-17-071019	7/10/2019	HAPSITE			ft bgs	**190**		2.7	U	NS		NS	
SG-18	OU2-SG-18	12/10/2018	HAPSITE	4.7	5.2	ft bgs	**18**		2.7	U	2	U	NS	
	OU2-SG-18-071019	7/10/2019	HAPSITE			ft bgs	**49**		2.7	U	NS		NS	
SG-19	OU2-SG-19	12/10/2018	HAPSITE	3.8	4.1	ft bgs	**15.1**		2.7	U	2	U	NS	
	OU2-SG-19-071019	7/10/2019	HAPSITE			ft bgs	**110**		2.7	U	NS		NS	
SG-20	OU2-SG-20	12/10/2018	HAPSITE	6.1	6.5	ft bgs	**21.2**		2.7	U	2	U	NS	
	OU2-SG-20-071019	7/10/2019	HAPSITE			ft bgs	**42**		2.7	U	NS		NS	
SG-21	OU2-SG-21	12/20/2018	HAPSITE	7.8	8.1	ft bgs	**56.3**		2.7	U	2	U	NS	
	OU2-SG-21-071019	7/10/2019	HAPSITE			ft bgs	**30**		2.7	U	NS		NS	
SG-22	OU2-SG-22	12/10/2018	HAPSITE	5.3	5.6	ft bgs	**14**		2.7	U	2	U	NS	
	OU2-SG-22-071019	7/10/2019	HAPSITE			ft bgs	**14**		2.7	U	NS		NS	
SG-23	OU2-SG-23	12/20/2018	HAPSITE	5.8	6.1	ft bgs	**14.1**		2.7	U	2	U	NS	
	OU2-SG-23-071019	7/10/2019	HAPSITE			ft bgs	**10**		2.7	U	NS		NS	
SG-24	OU2-S24	12/3/2018	HAPSITE	14	14.5	ft bgs	**19**	**J**	2.7	U	**10.5**	**J**	NS	
SG-25	OU2-SG25	12/3/2018	HAPSITE	13.5	14.5	ft bgs	**187**	**J**	2.7	U	2	U	NS	
SG-26	OU2-SG26	12/3/2018	HAPSITE	14	15	ft bgs	**213**	**J**	2.7	U	2	U	NS	
SG-27	OU2-SG27	12/3/2018	HAPSITE	14	15	ft bgs	**181**	**J**	2.7	U	**3.2**	**J**	NS	
SG-28	OU2-SG28-2	12/3/2018	HAPSITE	14	15	ft bgs	**134**	**J**	2.7	U	2	U	NS	
	OU2-SG28-SC	12/3/2018	SUMMA			ft bgs	**9**		2.3	U	2.3	U	2.3	U
SG-29	OU2-SG29-2	12/4/2018	HAPSITE	14	15	ft bgs	**49.2**	**J**	2.7	U	**11.3**	**J**	NS	
SG-30	OU2-SG30-3	12/4/2018	HAPSITE	14	15	ft bgs	**160**	**J**	2.7	U	2	U	NS	
SG-31	OU2-SG31-2	12/4/2018	HAPSITE	14	15	ft bgs	**115**	**J**	2.7	U	**5.9**	**J**	NS	
SG-32	OU2-SG32-2	12/4/2018	HAPSITE	14	15	ft bgs	**310**		2.7	U	2	U	NS	
SG-33	OU2-SG33-2	12/4/2018	HAPSITE	14	15	ft bgs	**1281**		27	U	20	U	NS	
SG-34	OU2-SG34-2	12/4/2018	HAPSITE	14	15	ft bgs	**819**		8.1	U	**8.9**		NS	
	OU2-SG34-SC	12/4/2018	SUMMA			ft bgs	**550**		**1.1**	**J**	3.4	U	3.4	U
SG-35	OU2-SG35	12/5/2018	HAPSITE	14	15	ft bgs	**555**		5.4	U	4	U	NS	
	OU2-SG35-SC	12/5/2018	SUMMA			ft bgs	**330**		**1.3**	**J**	2.3	U	2.3	U
SG-36	OU2-SG-36	12/6/2018	HAPSITE	13	15	ft bgs	**462**		2.7	U	2	U	NS	
SG-37	OU2-SG37	12/5/2018	HAPSITE	14	15	ft bgs	**170**		2.7	U	2	U	NS	
SG-37	OU2-SG37-SC	12/5/2018	SUMMA	14	15	ft bgs	**91**		2.3	U	2.3	U	2.3	U
SG-38	OU2-SG-38	12/6/2018	HAPSITE	14	15	ft bgs	**10.4**		2.7	U	2	U	NS	
SG-39	OU2-SG-39	12/6/2018	HAPSITE	14	15	ft bgs	34	U	27	U	20	U	NS	
SG-40	OU2-SG-40	12/6/2018	HAPSITE	14	15	ft bgs	**306**		2.7	U	2	U	NS	
SG-41	OU2-SG-41	12/6/2018	HAPSITE	14	15	ft bgs	**1387**		8.1	U	6	U	NS	

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Preliminary Chemicals of Potential Concern in Source Area Soil Gas

Location	Sample Identification	Sample Date	Sample Method	Start Depth	End Depth	Depth Unit	PCE µg/m³	Q	TCE µg/m³	Q	cis-1,2-DCE µg/m³	Q	VC µg/m³	Q
Industrial/Commercial Soil Gas Risk Based Screening Level (RBSL) (µg/m³)[1]							1600		100		NA		93	
SG-42	OU2-SG-42-4	12/10/2018	HAPSITE	6	7	ft bgs	**145**		*2.7*	*U*	*2*	*U*	**NS**	
	OU2-SG-42A-071519	7/15/2019	HAPSITE			ft bgs	**330**		*2.7*	*U*	NS		NS	
	SB42-SG032521-7	3/25/2021	SUMMA			ft bgs	**100**		**0.27**		*0.12*	*U*	*0.077*	*U*
	OU2-SG-42-3	12/10/2018	HAPSITE	12	13	ft bgs	**514**		**5.4**		*2*	*U*	NS	
	OU2-SG42-3-SC	12/10/2018	SUMMA			ft bgs	**330**		**3.7**		*2.2*	*U*	*2.2*	*UJ*
	OU2-SG-42B-071519	7/15/2019	HAPSITE			ft bgs	**1100**		*27*	*U*	NS		NS	
	SB42-SG032521-13	3/25/2021	SUMMA			ft bgs	**360**		**3.6**		**0.21**	**J**	*0.27*	*U*
	OU2-SG-42-2	12/10/2018	HAPSITE	16	17	ft bgs	**819**		**9.5**		*4*	*U*	NS	
	OU2-SG-42C-071519	7/15/2019	HAPSITE			ft bgs	**210**		*2.7*	*U*	NS		NS	
	SB42-SG032521-17	3/25/2021	SUMMA			ft bgs	**520**		**6**		**0.55**	**J**	*0.38*	*U*
	OU2-SG-42-1	12/10/2018	HAPSITE	25	26	ft bgs	**1201**		**18.8**		**5.2**		NS	
	OU2-SG-42D-071519	7/15/2019	HAPSITE			ft bgs	**370**		*2.7*	*U*	NS		NS	
	SB42-SG032521-26	3/25/2021	SUMMA			ft bgs	**560**		**11**		**3**		*0.39*	*U*
SG-43	OU2-SG-43-2	12/10/2018	HAPSITE	7	8	ft bgs	**95**		*2.7*	*U*	*2*	*U*	NS	
	OU2-SG-43A-071519	7/15/2019	HAPSITE			ft bgs	**150**		*2.7*	*U*	NS		NS	
	SB43-SG032521-8	3/25/2021	SUMMA			ft bgs	**37**		*0.17*	*U*	*0.12*	*U*	*0.08*	*U*
	OU2-SG-43-1	12/10/2018	HAPSITE	15	16	ft bgs	**376**		*2.7*	*U*	*2*	*U*	NS	
	OU2-SG-43B-071519	7/15/2019	HAPSITE			ft bgs	**330**		*2.7*	*U*	NS		NS	
	SB43-SG032521-15	3/25/2021	SUMMA			ft bgs	**160**		**0.64**		**0.033**	**J**	*0.085*	*U*
SG-44	OU2-SG-44	12/6/2018	HAPSITE	14	15	ft bgs	**11.9**		*2.7*	*U*	*2*	*U*	NS	
	OU2-SG44-SC	12/6/2018	SUMMA	14	15	ft bgs	**8.9**		*2.2*	*U*	*2.2*	*U*	*2.2*	*U*
MW-29	MW29-SG032521-42	3/25/2021	SUMMA	42	42	ft bgs	**260**		**4.4**		**0.65**		**0.23**	**J**
	MW29-SG032521-66	3/25/2021	SUMMA	66	66	ft bgs	**250**		**4.7**		**0.49**		**0.073**	**J**
	MW29-SG032521-98	3/25/2021	SUMMA	98	98	ft bgs	**170**		**3.6**		**1.3**		**0.17**	**J**

Notes:
1 Soil gas RBSL is the EPA indoor air RSL corresponding to an excess lifetime cancer risk of 1 × 10-6 and a hazard quotient of 1 divided by an attenuation factor of 0.03
Highlight indicates values greater than screening level
Bold indicates detected values
Italics indicates nondetected values

µg/m³ = microgram per cubic meter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
NA = not applicable
NS = not sampled
OU = operable unit
PCE = tetrachloroethene
RBSL = risk based screening level
TCE = trichloroethene
VC = vinyl chloride

Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit
UJ = Analyte was not detected at the associated value, which is the reporting limit, and a QA/QC requirement has not been met

Table 5-3
Preliminary Chemicals of Potential Concern in Source Area Indoor Air

Location	Sample Identification	Indoor Air / Outdoor Air	Sample Method	Sample Location Description	Sample Date	PCE		TCE		cis-1,2-DCE		VC	
						µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q
Industrial/Commercial Indoor Air Risk Based Screening Level (RBSL) (µg/m3)[1]						47		3		NA		2.8	
Building 13	B13-IA-001-01	Indoor Air	HAPSITE	Hallway	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B13-IA-002-01	Indoor Air	HAPSITE	Hallway	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B13-IA-003-01	Indoor Air	HAPSITE	Hallway	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B13-IA-004-01	Indoor Air	HAPSITE	Office	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B13-IA-005-01	Indoor Air	HAPSITE	South End of Building	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B13-IA-006-01	Indoor Air	HAPSITE	Room	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B13-IA-007-01	Indoor Air	HAPSITE	Room	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
Building 20	B20-IA-001-01	Indoor Air	HAPSITE	Basement	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-002-01	Indoor Air	HAPSITE	Basement	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-003-01	Indoor Air	HAPSITE	Basement	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-004-01	Indoor Air	HAPSITE	Lobby	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-005-01	Indoor Air	HAPSITE	Hallway	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-006-01	Indoor Air	HAPSITE	Room	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-007-01	Indoor Air	HAPSITE	Hallway	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-008-01	Indoor Air	HAPSITE	Room	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-009-01	Indoor Air	HAPSITE	Hallway	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-010-01	Indoor Air	HAPSITE	Room	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-011-01	Indoor Air	HAPSITE	Hallway	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-012-01	Indoor Air	HAPSITE	Room	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA-013-01	Indoor Air	HAPSITE	Lobby	2/7/2019	0.68	U	0.54	U	0.4	U	NS	
	B20-IA01SC-031522	Indoor Air	SUMMA	Office	3/15/2022	0.069	J	0.17	U	0.13	U	0.081	U
	B20-IA02SC-031522	Indoor Air	SUMMA	Basement	3/15/2022	0.14	J	0.17	U	0.13	U	0.081	U
Building 32	B32-IA01SC-031522	Indoor Air	SUMMA	Office	3/15/2022	0.048	J	0.19	U	0.14	U	0.091	U
	B32-AA01SC-031522	Outdoor Air	SUMMA	Back Patio	3/15/2022	0.43		0.16	U	0.031	J	0.077	U
Building 6	B6-IA-001-01	Indoor Air	HAPSITE	Hallway	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-002-01	Indoor Air	HAPSITE	Hallway	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-003-01	Indoor Air	HAPSITE	Storage Room	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-004-01	Indoor Air	HAPSITE	Room	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-005-01	Indoor Air	HAPSITE	Room	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-006-01	Indoor Air	HAPSITE	Boiler Control Room	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-007-01	Indoor Air	HAPSITE	Annex	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-008-01	Indoor Air	HAPSITE	Annex	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-009-01	Indoor Air	HAPSITE	Annex	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-010-01	Indoor Air	HAPSITE	Annex	1/24/2019	0.68	U	0.54	U	0.4	U	NS	
	B6-IA-011-01	Indoor Air	HAPSITE	Office	1/24/2019	75		0.54	U	0.4	U	NS	
	B6-IA-011-02	Indoor Air	HAPSITE	Office	1/24/2019	129		1.88		0.4	U	NS	
	B6-IA-011-03	Indoor Air	HAPSITE	Office	1/24/2019	74		0.73		0.4	U	NS	
	B6-IA-011-04	Indoor Air	HAPSITE	Office	1/30/2019	2.5		0.54	U	0.4	U	NS	
	B6-IA-012-01	Indoor Air	HAPSITE	Break Room	1/24/2019	22		0.54	U	0.4	U	NS	
	B6-IA-012-02	Indoor Air	HAPSITE	Break Room	1/30/2019	3.28		0.54	U	0.4	U	NS	
	B6-IA-013-01	Indoor Air	HAPSITE	Wood Shop	1/24/2019	42		0.54	U	0.4	U	NS	
	B6-IA-013-02	Indoor Air	HAPSITE	Wood Shop	1/30/2019	2.61		0.54	U	0.4	U	NS	
	B6-IA-014-01	Indoor Air	HAPSITE	Plumbing Shop	1/24/2019	17.4		0.54	U	0.4	U	NS	
	B6-IA-014-02	Indoor Air	HAPSITE	Plumbing Shop	1/30/2019	2.76		0.54	U	0.4	U	NS	
	B6-IA-015-01	Indoor Air	HAPSITE	Electrician Shop	1/24/2019	916		7.13		0.4	U	NS	
	B6-IA-015-02	Indoor Air	HAPSITE	Electrician Shop	1/30/2019	25		2.54		0.4	U	NS	
	B6-IA-016-01	Indoor Air	HAPSITE	Basement Boiler Room	1/24/2019	4.88		0.54	U	0.4	U	NS	
	B6-IA-017-01	Indoor Air	HAPSITE	Basement	1/24/2019	4.67		0.54	U	0.4	U	NS	
	B6-IA-018-01	Indoor Air	HAPSITE	HVAC Shop	1/25/2019	1.02		0.54	U	0.4	U	NS	
	B6-IA01	Indoor Air	SUMMA	Office	9/6/2019	0.26	J	0.15	J	0.13	U	NS	
	B6-IA02	Indoor Air	SUMMA	Adjacent to receptionist cubicle	9/6/2019	0.3	J	0.12	U	0.13	U	NS	
	B6-IA03	Indoor Air	SUMMA	Not available	9/6/2019	0.39	J	0.12	U	0.13	U	NS	
	B6-IA04	Indoor Air	SUMMA	Not available	9/17/2019	0.11	U	0.12	U	0.12	U	NS	
	B6-IA05	Indoor Air	SUMMA	Annex	9/6/2019	0.24	J	0.13	U	0.14	U	NS	
	B6-IA06	Indoor Air	SUMMA	Control Room	9/6/2019	0.32	J	0.14	U	0.14	U	NS	
	B6-IA08	Indoor Air	SUMMA	Basement Boiler Room	9/6/2019	4.4		0.11	U	0.12	U	NS	
	B6-IA09	Indoor Air	SUMMA	Room outside of maintenance supervisor's office	9/7/2019	1.2		0.16	U	0.16	U	NS	
	B6-IA06-IA032521	Indoor Air	SUMMA	Control Room	3/25/2021	0.098	J	0.042	J	0.12	U	0.076	U
	B6-IA08-IA032521	Indoor Air	SUMMA	Basement	3/25/2021	2.4		0.18	U	0.13	U	0.083	U
	B6-NB-001-01	Indoor Source	HAPSITE	Office; Multi purpose Grease	1/24/2019	73		1.51		0.4	U	NS	
	B6-NB-002-01	Indoor Source	HAPSITE	Basement; Floor drain	1/24/2019	3.52		0.54	U	0.4	U	NS	
	B6-NB-003-01	Indoor Source	HAPSITE	Wood Shop; Flammables Cabinet	1/25/2019	6.78		0.96		0.4	U	NS	
	B6-NB-004-01	Indoor Source	HAPSITE	Wood Shop; Lubricant	1/30/2019	2		0.54	U	0.4	U	NS	
	B6-NB-005-01	Indoor Source	HAPSITE	Electrician Shop; moisture displacer	1/30/2019	2238		20		0.4	U	NS	
	B6-NB-006-01	Indoor Source	HAPSITE	Electrician Shop; Lektrikleen can	1/30/2019	102		2.16		0.4	U	NS	
	B6-NB-007-01	Indoor Source	HAPSITE	Electrician Shop; Break and Wheel Cleaner	1/30/2019	9358		1025		0.4	U	NS	

Table 5-3
Preliminary Chemicals of Potential Concern in Source Area Indoor Air

Location	Sample Identification	Indoor Air / Outdoor Air	Sample Method	Sample Location Description	Sample Date	PCE		TCE		cis-1,2-DCE		VC	
						$\mu g/m^3$	Q	$\mu g/m^3$	Q	$\mu g/m^3$	Q	$\mu g/m^3$	Q
Industrial/Commercial Indoor Air Risk Based Screening Level (RBSL) ($\mu g/m3$)[1]						47		3		NA		2.8	
Building 6	B6-NB-008-01	Indoor Source	HAPSITE	Electrician Shop; Graf-Coat Dry Graphite Lubricant	1/30/2019	216		276		0.4	U	NS	
Building 6	B6-NB-009-01	Indoor Source	HAPSITE	Electrician Shop; CAP Battery Cleaner	1/30/2019	181		1441		0.4	U	NS	
Building 6	B6-OA-001-01	Outdoor Air	HAPSITE	Outdoor near south end of Building 6	1/24/2019	8.31		0.54	U	0.4	U	NS	
Building 6	B6-OA-001-02	Outdoor Air	HAPSITE	Outdoor near south end of Building 6	1/30/2019	0.68	U	0.54	U	0.4	U	NS	
Building 6	B6-OA-002-01	Outdoor Air	HAPSITE	Outdoor near south end of Building 6	1/24/2019	5.46		0.54	U	0.4	U	NS	
Building 6	B6-OA-003-01	Outdoor Air	HAPSITE	Outdoor in between Building 6 and 7	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 6	B6-OA02	Outdoor Air	SUMMA	South of annex	9/9/2019	1.5		0.14	U	0.15	U	NS	
Building 6	B6-OA01-OA032521	Outdoor Air	SUMMA	Roof	3/25/2021	0.09	J	0.16	U	0.12	U	0.075	U
Building 7	B7-IA-001-01	Indoor Air	HAPSITE	NW Corner of Laundry Facility	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 7	B7-IA-002-01	Indoor Air	HAPSITE	Hallway	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 7	B7-IA-003-01	Indoor Air	HAPSITE	Basement	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 7	B7-IA-004-01	Indoor Air	HAPSITE	Basement	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 7	B7-IA-005-01	Indoor Air	HAPSITE	Laundry Room (east)	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 7	B7-IA-006-01	Indoor Air	HAPSITE	Laundry Facility (south)	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 7	B7-IA-007-01	Indoor Air	HAPSITE	Laundry Room (center)	1/25/2019	0.68	U	0.54	U	0.4	U	NS	
Building 7	B7-IA-008-01	Indoor Air	HAPSITE	Freight Room	1/25/2019	0.77		0.54	U	0.4	U	NS	
Building 7	B7-IA-009-01	Indoor Air	HAPSITE	Hallway	1/25/2019	0.82		0.54	U	0.4	U	NS	
Building 7	B7-IA-010-01	Indoor Air	HAPSITE	East Storage Room	1/25/2019	0.7		0.54	U	0.4	U	NS	
Building 7	B7-IA-011-01	Indoor Air	HAPSITE	West Storage Room	1/25/2019	0.72		0.54	U	0.4	U	NS	
Building 7	B7-IA-012-01	Indoor Air	HAPSITE	Hallway	1/25/2019	4.76		0.54	U	0.4	U	NS	
Building 7	B7-IA-013-01	Indoor Air	HAPSITE	Hallway	1/25/2019	0.95		0.54	U	0.4	U	NS	
Building 7	B7-IA-014-01	Indoor Air	HAPSITE	Hallway	1/25/2019	1.54		0.54	U	0.4	U	NS	
Building 7	B7-IA-015-01	Indoor Air	HAPSITE	Hallway	1/25/2019	1.23		0.54	U	0.4	U	NS	
Building 7	B7-IA-016-01	Indoor Air	HAPSITE	Hallway	1/25/2019	0.86		0.54	U	0.4	U	NS	
Building 7	B7-IA01	Indoor Air	SUMMA	Hallway	9/6/2019	0.35	J	0.11	U	0.11	U	NS	
Building 7	B7-IA02	Indoor Air	SUMMA	Office	9/6/2019	0.33	J	0.96		0.14	U	NS	
Building 7	B7-IA03	Indoor Air	SUMMA	East corner of loading dock area	9/17/2019	0.15	J	0.47	J	0.13	U	NS	
Building 7	B7-IA04	Indoor Air	SUMMA	Room	9/6/2019	0.23	U	0.83	J	0.26	U	NS	
Building 7	B7-IA04	Indoor Air	SUMMA	East corner of loading dock area	9/17/2019	0.12	U	0.44	J	0.13	U	NS	
Building 7	B7-IA05	Indoor Air	SUMMA	Basement	9/6/2019	0.5	J	8		1	J	NS	
Building 7	B7-IA06	Indoor Air	SUMMA	Not available	9/6/2019	0.47	J	0.21	J	0.11	U	NS	
Building 7	B7-IA07	Indoor Air	SUMMA	East corner of loading dock area	9/6/2019	0.38	J	0.26	J	0.23	U	NS	
Building 7	B7-IA07	Indoor Air	SUMMA	East corner of loading dock area	9/17/2019	0.19	J	0.13	U	0.13	U	NS	
Building 7	B7-IA02-IA032521	Indoor Air	SUMMA	Office	3/25/2021	2.3		0.13	J	0.12	U	0.078	U
Building 7	B7-IA05-IA032521	Indoor Air	SUMMA	Basement	3/25/2021	0.18	J	0.081	J	0.11	U	0.074	U
Building 7	B7-OA01	Outdoor Air	SUMMA	Loading Dock Area	9/17/2019	0.12	U	0.12	U	0.13	U	NS	

Notes:

[1] EPA indoor Air RSL corresponds to an excess lifetime cancer risk of 1 × 10-6 and a hazard quotient of 1 (May 2022 RSL table version).

Highlight indicates values greater than screening level

Bold indicates detected values

Italics indicates nondetected values

$\mu g/m^3$ = microgram per cubic meter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
NA = not applicable
NS = Not sampled
OU = operable unit
PCE = tetrachloroethene
RBSL = risk based screening level
TCE = trichloroethene
VC = vinyl chloride

Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit
UJ = Analyte was not detected at the associated value, which is the reporting limit, and a QA/QC requirement has not been met

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			**5**		**5**		**70**		**2**		**NA**	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			**NA**		**NA**		**NA**		**NA**		**0.46**	
MW-01D	NR - See Loose Lab Data EPA 1999	6/30/1998	**2**		*1*	*U*	*1*	*U*	NR		NR	
	NR - See Loose Lab Data EPA 1999	7/1/1998	*1*	*U*	*1*	*U*	*1*	*U*	NR		NR	
	NR - See UDEQ 2000	11/10/1998	**1**	**J**	*10*	*U*	*10*	*U*	NR		NR	
	NR - See UDEQ 2012	10/4/2004	**8.3**		NR		NR		NR		NR	
	NR - See USGS 2005	2/22/2005	**0.2**		*0.1*	*U*	*0.1*	*U*	NR		NR	
	NR - See UDEQ 2012	10/5/2005	**0.33**		NR		NR		NR		NR	
	NR - See MWH 2012	12/21/2011	**9.9**		*0.1*	*U*	*0.1*	*U*	NR		NR	
	NR - See UDEQ 2012	12/21/2011	**12**		*5*	*U*	*5*	*U*	NR		NR	
	NR - See Sealy Env Svcs 2014	6/26/2014	**9**		*5*	*U*	*5*	*U*	NR		NR	
	MW-01D_04262016	4/26/2016	**9.1**		**0.16**	**J**	*0.5*	*U*	*0.5*	*U*	NS	
	A-GW-MW-01D_07/13/2016	7/13/2016	**2.8**		*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	**10**	*U*
	A-GW-MW-01D_09212016	9/21/2016	**1.6**		*0.5*	*U*	*0.5*	*UJ*	*0.5*	*U*	*2*	*UJ*
	OU2-MW01D-GW-121118	12/11/2018	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.49*	*U*
	OU2-MW01D-GW-031819	3/18/2019	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.49*	*U*
	OU2-MW01D-GW120619	12/6/2019	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW01D-GW061720	6/17/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.41*	*U*
	MW01D-GW092920	9/29/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW01D-GW121520	12/15/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW01D-GW032221	3/22/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-01S	NR - See Loose Lab Data EPA 1999	6/30/1998	**280**		**2**		**2.7**		NR		NR	
	NR - See Loose Lab Data EPA 1999	7/1/1998	**420**	**E**	**4**		**4.5**		NR		NR	
	NR - See UDEQ 2000; UDEQ 2012	11/11/1998	**320**	**D**	**4**	**J**	**5**	**J**	NR		NR	
	NR - See UDEQ 2012	11/11/1998	**310**		**4**	**J**	**3**	**J**	NR		NR	
	NR - See USGS 2005	2/25/2005	**278**		**2.3**		**1.4**		NR		NR	
	NR - See MWH 2012	11/14/2011	**160**		**1.8**		**1**		NR		NR	
	NR - See UDEQ 2012	11/14/2011	**150**		*5*	*U*	*5*	*U*	NR		NR	
	NR - See Sealy Env Svcs 2014	6/26/2014	**260**	**E**	**2.1**	**J**	**1.3**	**J**	NR		NR	
	MW-01S_04282016	4/28/2016	**98**		**1.3**		**0.79**		*0.5*	*U*	*2*	*UJ*
	A-GW-MW-01S_07/14/2016	7/14/2016	**60**		**1**		**0.63**		*0.5*	*U*	*2*	*U*
	A-GW-MW-01S_09222016	9/22/2016	**210**		**1.5**		**0.85**	**J**	*0.5*	*U*	*2*	*UJ*
	OU2-MW01S-GW-121118	12/11/2018	**190**		**1.2**		**0.6**	**J**	*1*	*U*	*0.52*	*U*
	OU2-MW01S-GW-031819	3/18/2019	**200**		**1.2**		**0.6**	**J**	*1*	*U*	*0.45*	*U*
	MW01S-GW062120	6/21/2020	**160**		**1**		**0.47**	**J**	*1*	*U*	*0.42*	*U*
	MW01S-GW092920	9/29/2020	**180**		**1.1**		**0.49**	**J**	*1*	*U*	NS	
	MW01S-GW121620	12/16/2020	**160**		**1.1**		**0.56**	**J**	*1*	*U*	NS	
	MW01S-GW032221	3/22/2021	**170**		**0.95**	**J**	**0.44**	**J**	*1*	*U*	NS	
MW-02	NR - See UDEQ 2000	11/11/1998	**290**		*50*	*U*	*50*	*U*	NR		NR	
	NR - See USGS 2005	2/24/2005	**296**		**2**		**1.1**		NR		NR	
	NR - See UDEQ 2012	10/5/2005	**160**		NR		NR		NR		NR	
	NR - See Sealy Env Svcs 2014	6/26/2014	**200**		**1.7**		**0.94**	**J**	NR		NR	
	MW-02_04272016	4/27/2016	**98**		**0.66**		**0.36**	**J**	*0.5*	*U*	*2*	*UJ*
	A-GW-MW-02_07/14/2016	7/14/2016	**72**		**0.56**		**0.4**	**J**	*0.5*	*U*	*2*	*U*
	A-GW-MW-02_09222016	9/22/2016	**130**		**0.56**		**0.32**	**J**	*0.5*	*U*	*2*	*UJ*
	OU2-MW02-GW-121818	12/18/2018	**160**		**0.52**	**J**	**0.32**	**J**	*1*	*U*	*0.46*	*U*
	OU2-MW02-GW-040919	4/9/2019	**180**		**0.58**	**J**	**0.38**	**J**	*1*	*U*	*0.5*	*U*
	OU2-MW02-GW120519	12/5/2019	**150**		**0.54**	**J**	**0.36**	**J**	*1*	*U*	*0.46*	*U*
	MW02-GW061720	6/17/2020	**190**	**J**	**0.56**	**J**	**0.39**	**J**	*1*	*U*	*0.41*	*U*
	MW02-GW092820	9/28/2020	**210**		**0.58**	**J**	**0.37**	**J**	*1*	*U*	NS	
	MW02-GW121620	12/16/2020	**220**		**0.55**	**J**	**0.43**	**J**	*1*	*U*	NS	
	MW02-GW032321	3/23/2021	**230**		**0.58**	**J**	**0.36**	**J**	*1*	*U*	NS	
MW-03	NR - See UDEQ 2000	11/11/1998	**11**		*10*	*U*	*10*	*U*	NR		**NR**	
	NR - See EPA 2000	9/21/1999	**7.1**		NR		NR		NR		**NR**	

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			**5**		**5**		**70**		**2**		**NA**	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			**NA**		**NA**		**NA**		**NA**		**0.46**	
MW-03RA	OU2-MW03RA-GW-121318	12/13/2018	**1.6**		*1*	*U*	*1*	*U*	*1*	*U*	*0.5*	*U*
	OU2-MW03RA-GW-032519	3/25/2019	**30**		**0.15**	**J**	*1*	*U*	*1*	*U*	*0.48*	*U*
	OU2-MW03RA-GW120719	12/7/2019	**32**		**0.18**	**J**	*1*	*U*	*1*	*U*	*0.43*	*U*
	MW03RA-GW061820	6/18/2020	**30**		**0.19**	**J**	*1*	*U*	*1*	*U*	*0.4*	*U*
	MW03RA-GW092920	9/29/2020	**28**		**0.17**	**J**	*1*	*U*	*1*	*U*	NS	
	MW03RA-GW121120	12/11/2020	**29**		**0.19**	**J**	*1*	*U*	*1*	*U*	NS	
	MW03RA-GW032121	3/21/2021	**25**		**0.13**	**J**	*1*	*U*	*1*	*U*	NS	
MW-03RB	OU2-MW03RB-GW-122718	12/27/2018	**220**		**2**		**1.5**		*1*	*U*	*0.54*	*U*
	OU2-MW03RB-GW-032519	3/25/2019	**230**		**2.1**		**1.5**		*1*	*U*	*0.5*	*U*
	OU2-MW03RB-GW120819	12/8/2019	**200**		**1.9**		**1.4**		*1*	*U*	*0.44*	*U*
	MW03RB-GW061820	6/18/2020	**210**		**1.8**		**1.3**		*1*	*U*	*0.42*	*U*
	MW03RB-GW092920	9/29/2020	**230**		**1.8**		**1.3**		*1*	*U*	NS	
	MW03RB-GW121120	12/11/2020	**170**		**1.9**		**1.2**		*1*	*U*	NS	
	MW03RB-GW032121	3/21/2021	**220**		**1.7**		**1.2**		*1*	*U*	NS	
MW-03RC	OU2-MW03RC-GW-121718	12/17/2018	**6.5**		*1*	*U*	*1*	*U*	*1*	*U*	*0.44*	*U*
	OU2-MW03RC-GW-032719	3/27/2019	**6.3**		*1*	*U*	*1*	*U*	*1*	*U*	*0.5*	*U*
	OU2-MW03RC-GW120719	12/7/2019	**5.6**		*1*	*U*	*1*	*U*	*1*	*U*	*0.46*	*U*
	MW03RC-GW061820	6/18/2020	**6.4**		*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW03RC-GW092920	9/29/2020	**6.4**		*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW03RC-GW121120	12/11/2020	**5.7**		*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW03RC-GW032121	3/21/2021	**6.1**		*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-03RD	OU2-MW03RD-GW-032719	3/27/2019	**0.18**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.5*	*U*
	OU2-MW03RD-GW120719	12/7/2019	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.48*	*U*
	MW03RD-GW061820	6/18/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.44*	*U*
	MW03RD-GW092920	9/29/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW03RD-GW121120	12/11/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW03RD-GW032121	3/21/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-04	NR - See UDEQ 2000	11/11/1998	**190**		**2**	**J**	**1**	**J**	NR		NR	
	NR - See USGS 2005	2/24/2005	**119**		**1.1**		**0.6**		NR		NR	
	NR - See UDEQ 2012	10/5/2005	**120**		NR		NR		NR		NR	
	NR - See Sealy Env Svcs 2014	6/26/2014	**79**		**0.54**	**J**	*5*	*U*	NR		NR	
	MW-04_04272016	4/27/2016	**56**		**0.44**	**J**	*0.5*	*U*	*0.5*	*U*	*2*	*UJ*
	A-GW-MW-04_07/13/2016	7/13/2016	**41**		**0.42**	**J**	*0.5*	*U*	*0.5*	*U*	*2*	*U*
	A-GW-MW-04_09212016	9/21/2016	**59**		**0.35**	**J**	**0.17**	**J**	*0.5*	*U*	*2*	*UJ*
	OU2-MW04-GW-121818	12/18/2018	**67**		**0.33**	**J**	**0.17**	**J**	*1*	*U*	*0.49*	*U*
	OU2-MW04-GW-031919	3/19/2019	**67**		**0.28**	**J**	*1*	*U*	*1*	*U*	*0.52*	*U*
	OU2-MW04-GW120519	12/5/2019	**55**		**0.28**	**J**	**0.1**	**J**	*1*	*U*	*0.44*	*U*
	MW04-GW062120	6/21/2020	**53**		**0.27**	**J**	**0.11**	**J**	*1*	*U*	*0.41*	*U*
	MW04-GW092920	9/29/2020	**47**		**0.23**	**J**	*1*	*U*	*1*	*U*	NS	
	MW04-GW121020	12/10/2020	**40**		**0.24**	**J**	**0.15**	**J**	*1*	*U*	NS	
	MW04-GW032221	3/22/2021	**42**		**0.19**	**J**	*1*	*U*	*1*	*U*	NS	
MW-05	NR - See UDEQ 2000	11/11/1998	*10*	*U*	*10*	*U*	*10*	*U*	NR		NR	
	NR - See UDEQ 2012	2/23/2005	*0.1*	*U*	*0.1*	*U*	*0.1*	*U*	NR		NR	
	NR - See UDEQ 2012	10/5/2005	*0.5*	*U*	NR		NR		NR		NR	
	NR - See UDEQ 2012; MWH 2012	11/11/2011	*5*	*U*	NR		NR		NR		NR	
	NR - See IHI Env 2012	11/16/2011	*5*	*U*	*5*	*U*	*5*	*U*	NR		NR	
	NR - See Sealy Env Svcs 2014	6/26/2014	*5*	*U*	*5*	*U*	*5*	*U*	NR		NR	
	MW-05_04252016	4/25/2016	*0.5*	*U*	**0.19**	**J**	*0.5*	*U*	*0.5*	*U*	*2*	*UJ*
MW-05R	OU2-MW05R-GW-121118	12/11/2018	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.46*	*U*
	OU2-MW05R-GW-032019	3/20/2019	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.5*	*U*
	OU2-MW05R-GW120819	12/8/2019	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW05R-GW061920	6/19/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.4*	*U*
	MW05R-GW102120	10/21/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW05R-GW120820	12/8/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			5		5		70		2		NA	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			NA		NA		NA		NA		0.46	
MW-06	NR - See EPA 2000	1/6/2000	10	U	10	U	10	U	NR		NR	
	NR- See USGS 2005	2/23/2005	0.8		0.1	U	0.1	U	NR		NR	
	NR - See Sealy Env Svcs 2014	6/26/2014	5	U	5	U	5	U	NR		NR	
	MW-06_04262016	4/26/2016	0.5	U	0.15	J	0.5	U	0.5	U	2	UJ
	A-GW-MW-06_07/13/2016	7/13/2016	0.48	J	0.5	U	0.5	U	0.5	U	2	U
	A-GW-MW-06_09212016	9/21/2016	0.39	J	0.5	U	0.5	U	0.5	U	2.1	UJ
	OU2-MW06-GW-121718	12/17/2018	0.29	J	1	U	1	U	1	U	0.49	U
	OU2-MW06-GW-031919	3/19/2019	0.36	J	1	U	1	U	1	U	0.5	U
	OU2-MW06-GW120619	12/6/2019	0.29	J	1	U	1	U	1	U	0.43	U
	MW06-GW062120	6/21/2020	0.23	J	1	U	1	U	1	U	0.46	U
	MW06-GW092420	9/24/2020	0.23	J	1	U	1	U	1	U	NS	
	MW06-GW121020	12/10/2020	1	U	1	U	1	U	1	U	NS	
	MW06-GW032221	3/22/2021	0.18	J	1	U	1	U	1	U	NS	
MW-08A	OU2-MW08A-GW-122718	12/27/2018	68	J	0.48	J	0.24	J	1	U	0.46	U
	OU2-MW08A-GW-032119	3/21/2019	67		0.46	J	1	U	1	U	0.49	U
	OU2-MW08A-GW120819	12/8/2019	56		0.39	J	0.17	J	1	U	0.4	U
	MW08A-GW062120	6/21/2020	55		0.4	J	0.17	J	1	U	0.41	U
	MW08A-GW092720	9/27/2020	59		0.44	J	0.19	J	1	U	NS	
	MW08A-GW120920	12/9/2020	52		0.42	J	0.23	J	1	U	NS	
	MW08A-GW031721	3/17/2021	58		0.37	J	0.19	J	1	U	NS	
MW-08B	OU2-MW08B-GW-122718	12/27/2018	5.5		1	U	1	U	1	U	0.49	U
	OU2-MW08B-GW-032119	3/21/2019	5		1	U	1	U	1	U	0.56	U
	OU2-MW08B-GW120819	12/8/2019	4.7		1	U	1	U	1	U	0.42	U
	MW08B-GW062220	6/22/2020	4.4		1	U	1	U	1	U	0.39	U
	MW08B-GW092720	9/27/2020	5.1		1	U	1	U	1	U	NS	
	MW08B-GW120920	12/9/2020	3.9		1	U	1	U	1	U	NS	
	MW08B-GW031721	3/17/2021	4.3		1	U	1	U	1	U	NS	
MW-08C	OU2-MW08C-GW-032019	3/20/2019	1	U	1	U	1	U	1	U	0.5	U
	OU2-MW08C-GW120819	12/8/2019	1	U	1	U	1	U	1	U	0.44	U
	MW08C-GW062220	6/22/2020	1	U	1	U	1	U	1	U	0.39	U
MW-08C	MW08C-GW092720	9/27/2020	1	U	1	U	1	U	1	U	NS	
	MW08C-GW120920	12/9/2020	1	U	1	U	1	U	1	U	NS	
	MW08C-GW031721	3/17/2021	1	U	1	U	1	U	1	U	NS	
MW-12D	OU2-MW12D-GW-092418	9/24/2018	1	U	1	U	1	U	1	U	0.49	U
	OU2-MW12D-GW-120618	12/6/2018	1	U	1	U	1	U	1	U	0.49	U
	OU2-MW12D-GW-031319	3/13/2019	1	U	1	U	1	U	1	U	0.5	U
	OU2-MW12D-GW120619	12/6/2019	1	U	1	U	1	U	1	U	0.44	U
	MW12D-GW061920	6/19/2020	1	U	1	U	1	U	1	U	0.39	U
	MW12D-GW092220	9/22/2020	1	U	1	U	1	U	1	U	NS	
	MW12D-GW120920	12/9/2020	1	U	1	U	1	U	1	U	NS	
	MW12D-GW031721	3/17/2021	1	U	1	U	1	U	1	U	NS	
MW-12S	OU2-MW12S-GW-092418	9/24/2018	0.86	J	1	U	1	U	1	U	0.48	U
	OU2-MW12S-GW-121018	12/10/2018	1.1		1	U	1	U	1	U	0.54	U
	OU2-MW12S-GW-031319	3/13/2019	1.3		1	U	1	U	1	U	0.49	U
	OU2-MW12S-GW120619	12/6/2019	1.4		0.13	J	1	U	1	U	0.44	U
	MW12S-GW061920	6/19/2020	2.2		0.24	J	1	U	1	U	0.46	U
MW-13D	OU2-MW13D-GW-091718	9/17/2018	69		0.5	J	0.39	J	1	U	0.5	U
	OU2-MW13D-GW-112918	11/29/2018	67		0.53	J	0.42	J	1	U	0.47	U
	OU2-MW13D-GW-030719	3/7/2019	60		0.48	J	0.36	J	1	U	0.45	U
	OU2-MW13D-GW120519	12/5/2019	62		0.56	J	0.38	J	1	U	0.41	U
	MW13D-GW061820	6/18/2020	62		0.53	J	0.36	J	1	U	0.44	U
	MW13D-GW092220	9/22/2020	75		0.6	J	0.38	J	1	U	NS	
	MW13D-GW121120	12/11/2020	51		0.47	J	0.27	J	1	U	NS	
	MW13D-GW032121	3/21/2021	55		0.44	J	0.26	J	1	U	NS	

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			5		5		70		2		NA	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			NA		NA		NA		NA		0.46	
MW-13L	MW13L-GW121620	12/16/2020	16		0.17	J	0.41	J	1	U	NS	
	MW13L-GW032221	3/22/2021	51		0.29	J	0.5	J	1	U	0.42	U
MW-13S	OU2-MW13S-GW-091918	9/19/2018	31		0.45	J	0.15	J	1	U	0.47	J
	OU2-MW13S-GW-112918	11/29/2018	22		0.73	J	0.15	J	1	U	0.49	U
	OU2-MW13S-GW-030619	3/6/2019	18		0.51	J	1	U	1	U	0.54	U
	OU2-MW13S-GW120519	12/5/2019	14		0.31	J	1	U	1	U	0.39	U
	MW13S-GW061820	6/18/2020	23		0.88	J	0.18	J	1	U	0.45	U
	MW13S-GW092320	9/23/2020	24		1.1		0.18	J	1	U	NS	
	MW13S-GW121120	12/11/2020	27		1.3		0.2	J	1	U	NS	
	MW13S-GW032221	3/22/2021	25		1.1		0.19	J	1	U	NS	
MW-14D	OU2-MW14D-GW-091918	9/19/2018	37		0.27	J	0.35	J	1	U	0.48	U
	OU2-MW14D-GW-120418	12/4/2018	30		0.23	J	0.32	J	1	U	0.3	J
	OU2-MW14D-GW-030719	3/7/2019	36		0.28	J	0.34	J	1	U	0.45	U
	OU2-MW14D-GW120719	12/7/2019	22		0.19	J	0.26	J	1	U	0.47	U
	MW14D-GW062320	6/23/2020	26		0.21	J	0.25	J	1	U	0.44	U
	MW14D-GW092520	9/25/2020	34		0.32	J	0.33	J	1	U	NS	
	MW14D-GW121420	12/14/2020	30		0.27	J	0.26	J	1	U	NS	
	MW14D-GW031821	3/18/2021	33		0.25	J	0.29	J	1	U	NS	
MW-14S	OU2-MW14S-GW-091918	9/19/2018	10		3.7		0.8	J	1	U	0.5	U
	OU2-MW14S-GW-120518	12/5/2018	3		4.3		1.1		1	U	0.51	U
	OU2-MW14S-GW-031119	3/11/2019	0.16	J	1	U	1	U	1	U	0.23	J
	OU2-MW14S-GW120719	12/7/2019	3.8		6		1.7		1	U	0.39	U
	MW14S-GW062320	6/23/2020	7.8		4.8		0.89	J	1	U	0.41	U
	MW14S-GW092520	9/25/2020	3.9		12		3.2		1	U	NS	
	MW14S-GW121420	12/14/2020	4.8		6.7		1.9		1	U	NS	
	MW14S-GW031821	3/18/2021	6		4.8		1.2		1	U	NS	
MW-15D	OU2-MW15D-GW-092518	9/25/2018	1	U	1	U	1	U	1	U	0.49	U
	OU2-MW15D-GW-120418	12/4/2018	1	U	1	U	1	U	1	U	0.51	U
	OU2-MW15D-GW-031119	3/11/2019	1	U	1	U	1	U	1	U	0.47	U
	OU2-MW15D-GW120719	12/7/2019	1	U	1	U	1	U	1	U	0.46	U
	MW15D-GW061920	6/19/2020	1	U	1	U	1	U	1	U	0.41	U
	MW15D-GW092820	9/28/2020	0.15	J	1	U	1	U	1	U	NS	
	MW15D-GW120920	12/9/2020	1	U	1	U	1	U	1	U	NS	
	MW15D-GW031621	3/16/2021	0.16	J	1	U	1	U	1	U	NS	
MW-15S	OU2-MW15S-GW-092518	9/25/2018	1	U	1	U	1	U	1	U	0.18	J
	OU2-MW15S-GW-120418	12/4/2018	1	U	1	U	1	U	1	U	0.21	J
	OU2-MW15S-GW-031119	3/11/2019	3.3		4.2		0.68	J	1	U	0.25	J
	OU2-MW15S-GW120719	12/7/2019	0.26	J	1	U	1	U	1	U	0.44	U
	MW15S-GW061920	6/19/2020	0.36	J	1	U	1	U	1	U	0.45	U
	MW15S-GW092820	9/28/2020	0.39	J	1	U	1	U	1	U	NS	
	MW15S-GW120920	12/9/2020	0.39	J	1	U	1	U	1	U	NS	
	MW15S-GW031621	3/16/2021	0.34	J	1	U	1	U	1	U	NS	
MW-16D	OU2-MW16D-GW-092018	9/20/2018	1	U	1	U	1	U	1	U	0.52	U
	OU2-MW16D-GW-120618	12/6/2018	1	U	1	U	1	U	1	U	0.55	U
	OU2-MW16D-GW-031419	3/14/2019	1	U	1	U	1	U	1	U	0.52	U
	OU2-MW16D-GW120619	12/6/2019	1	U	1	U	1	U	1	U	0.47	U
	MW16D-GW062120	6/21/2020	1	U	1	U	1	U	1	U	0.42	U
	MW16D-GW092520	9/25/2020	1	U	1	U	1	U	1	U	NS	
	MW16D-GW121020	12/10/2020	1	U	1	U	1	U	1	U	NS	
	MW16D-GW031721	3/17/2021	1	U	1	U	1	U	1	U	NS	
MW-16S	OU2-MW16S-GW-092018	9/20/2018	23		0.16	J	1	U	1	U	0.46	U
	OU2-MW16S-GW-120518	12/5/2018	20		0.15	J	1	U	1	U	0.5	U
	OU2-MW16S-GW-031419	3/14/2019	27		0.19	J	0.1	J	1	U	0.52	U
	OU2-MW16S-GW120619	12/6/2019	24		0.2	J	1	U	1	U	0.41	U

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			5		5		70		2		NA	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			NA		NA		NA		NA		0.46	
MW-16S	MW16S-GW062120	6/21/2020	25		0.18	J	1	U	1	U	0.44	U
	MW16S-GW092520	9/25/2020	28		0.24	J	0.12	J	1	U	NS	
	MW16S-GW121020	12/10/2020	24		0.21	J	0.15	J	1	U	NS	
	MW16S-GW031721	3/17/2021	23		0.16	J	1	U	1	U	NS	
MW-17D	OU2-MW17D-GW-092418	9/24/2018	2.1		1	U	1	U	1	U	0.2	J
	OU2-MW17D-GW-121018	12/10/2018	2		1	U	1	U	1	U	0.52	U
	OU2-MW17D-GW-031219	3/12/2019	2.7		1	U	1	U	1	U	0.5	U
	OU2-MW17D-GW120819	12/8/2019	1.8		1	U	1	U	1	U	0.42	U
	MW17D-GW062120	6/21/2020	2.5		1	U	1	U	1	U	0.42	U
	MW17D-GW093020	9/30/2020	2.4		1	U	1	U	1	U	NS	
	MW17D-GW121320	12/13/2020	2.3		1	U	1	U	1	U	NS	
	MW17D-GW031921	3/19/2021	2.8		0.1	J	1	U	1	U	NS	
MW-17S	OU2-MW17S-GW-092418	9/24/2018	0.44	J	1	U	1	U	1	U	0.5	U
	OU2-MW17S-GW-120318	12/3/2018	0.38	J	1	U	1	U	1	U	0.49	U
	OU2-MW17S-GW-031219	3/12/2019	0.58	J	1	U	1	U	1	U	0.46	U
	OU2-MW17S-GW120819	12/8/2019	0.65	J	1	U	1	U	1	U	0.46	U
	MW17S-GW062120	6/21/2020	0.91	J	1	U	1	U	1	U	0.42	U
	MW17S-GW093020	9/30/2020	0.9	J	1	U	1	U	1	U	NS	
	MW17S-GW121120	12/11/2020	0.7	J	1	U	1	U	1	U	NS	
	MW17S-GW031921	3/19/2021	0.88	J	1	U	1	U	1	U	NS	
MW-18	OU2-MW18-GW-091818	9/18/2018	96		0.65	J	0.27	J	1	U	0.53	U
	OU2-MW18-GW-112718	11/27/2018	82		0.48	J	0.24	J	1	U	0.52	U
MW-18	OU2-MW18-GW-030419	3/4/2019	83		0.55	J	0.25	J	1	U	0.46	U
	OU2-MW18-GW120519	12/5/2019	74		0.5	J	0.27	J	1	U	0.4	U
	MW18-GW061620	6/16/2020	70		0.48	J	0.25	J	1	U	0.41	U
	MW18-GW092320	9/23/2020	59		0.43	J	0.15	J	1	U	NS	
	MW18-GW121420	12/14/2020	53		0.44	J	0.23	J	1	U	NS	
	MW18-GW032121	3/21/2021	64		0.42	J	0.17	J	1	U	NS	
MW-19	OU2-MW19-GW-091818	9/18/2018	89		0.68	J	0.31	J	1	U	0.52	U
	OU2-MW19-GW-112718	11/27/2018	72		0.51	J	0.27	J	1	U	0.5	U
	OU2-MW19-GW-030419	3/4/2019	66		0.58	J	0.27	J	1	U	0.5	U
	OU2-MW19-GW120519	12/5/2019	64		0.52	J	0.27	J	1	U	0.48	U
	MW19-GW061620	6/16/2020	64		0.5	J	0.29	J	1	U	0.41	U
	MW19-GW092320	9/23/2020	56		0.45	J	0.19	J	1	U	NS	
	MW19-GW121420	12/14/2020	49		0.5	J	0.28	J	1	U	NS	
	MW19-GW032121	3/21/2021	56		0.43	J	0.19	J	1	U	NS	
MW-20D	OU2-MW20D-GW-091918	9/19/2018	12		0.29	J	0.15	J	1	U	0.49	U
	OU2-MW20D-GW-112618	11/26/2018	11		0.26	J	0.14	J	1	U	0.51	U
	OU2-MW20D-GW-030519	3/5/2019	12		0.29	J	0.15	J	1	U	0.51	U
	OU2-MW20D-GW120519	12/5/2019	9.8		0.25	J	0.12	J	1	U	0.44	U
	MW20D-GW061720	6/17/2020	9.9		0.23	J	0.12	J	1	U	0.4	U
	MW20D-GW092420	9/24/2020	10		0.22	J	1	U	1	U	NS	
	MW20D-GW121520	12/15/2020	9.1		0.26	J	0.15	J	1	U	NS	
	MW20D-GW031921	3/19/2021	11		0.26	J	0.12	J	1	U	NS	
MW-20S	OU2-MW20S-GW-091818	9/18/2018	5.2		0.13	J	1	U	1	U	0.52	U
	OU2-MW20S-GW-112818	11/28/2018	4.4		0.15	J	0.13	J	1	U	0.47	U
	OU2-MW20S-GW-030419	3/4/2019	4.5		0.12	J	1	U	1	U	0.52	U
	OU2-MW20S-GW120419	12/4/2019	3.7		0.1	J	1	U	1	U	0.42	U
	MW20S-GW061720	6/17/2020	3.9		1	U	1	U	1	U	0.42	U
	MW20S-GW092420	9/24/2020	4.9		1	U	1	U	1	U	NS	
	MW20S-GW121420	12/14/2020	4.3		0.13	J	1	U	1	U	NS	
	MW20S-GW031921	3/19/2021	5.4		0.12	J	1	U	1	U	NS	

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			5		5		70		2		NA	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			NA		NA		NA		NA		0.46	
MW-21	OU2-MW21-GW-092018	9/20/2018	**1.9**		1	U	1	U	1	U	0.53	U
	OU2-MW21-GW-112818	11/28/2018	**1.8**		1	U	1	U	1	U	0.48	U
	OU2-MW21-GW-030619	3/6/2019	**2**		1	U	1	U	1	U	0.49	U
	MW21-GW061820	6/18/2020	**2**		1	U	1	U	1	U	0.44	U
	MW21-GW092320	9/23/2020	**1.5**		1	U	1	U	1	U	NS	
	MW21-GW121420	12/14/2020	**1.1**		1	U	1	U	1	U	NS	
	MW21-GW031621	3/16/2021	**1.3**		1	U	1	U	1	U	NS	
MW-22	OU2-MW22-GW-092018	9/20/2018	**3**		**0.11**	**J**	1	U	1	U	0.47	U
	OU2-MW22-GW-112818	11/28/2018	**3**		**0.12**	**J**	1	U	1	U	0.5	U
	OU2-MW22-GW-030619	3/6/2019	**3.5**		**0.13**	**J**	1	U	1	U	0.54	U
	MW22-GW061720	6/17/2020	**2.9**		1	U	1	U	1	U	0.43	U
	MW22-GW092320	9/23/2020	**2.7**		1	U	1	U	1	U	NS	
	MW22-GW121420	12/14/2020	**2.5**		1	U	1	U	1	U	NS	
	MW22-GW032121	3/21/2021	**3**		**0.11**	**J**	1	U	1	U	NS	
MW-23A	MW23A-GW101920	10/19/2020	1	U	1	U	1	U	1	U	0.42	U
	MW23A-GW120920	12/9/2020	1	U	**0.11**	**J**	1	U	1	U	NS	
	MW23A-GW031621	3/16/2021	1	U	1	U	1	U	1	U	NS	
MW-23B	MW23B-GW102020	10/20/2020	1	U	1	U	1	U	1	U	0.42	U
	MW23B-GW121020	12/10/2020	1	U	1	U	1	U	1	U	NS	
	MW23B-GW031621	3/16/2021	1	U	1	U	1	U	1	U	NS	
MW-23C	MW23C-GW062320	6/23/2020	1	U	1	U	1	U	1	U	0.4	U
	MW23C-GW101920	10/19/2020	1	U	1	U	1	U	1	U	NS	
	MW23C-GW120920	12/9/2020	1	U	1	U	1	U	1	U	NS	
	MW23C-GW031621	3/16/2021	1	U	1	U	1	U	1	U	NS	
MW-24	MW24-GW102020	10/20/2020	**0.25**	**J**	1	U	1	U	1	U	0.44	U
	MW24-GW120820	12/8/2020	1	U	1	U	1	U	1	U	NS	
	MW24-GW032121	3/21/2021	1	U	1	U	1	U	1	U	NS	
MW-25A	MW25A-GW093020	9/30/2020	**1.6**		1	U	1	U	1	U	0.42	U
	MW25A-GW120920	12/9/2020	**1.3**		1	U	1	U	1	U	NS	
	MW25A-GW032121	3/21/2021	**1.6**		1	U	1	U	1	U	NS	
MW-25B	MW25B-GW093020	9/30/2020	1	U	1	U	1	U	1	U	0.43	U
	MW25B-GW121020	12/10/2020	1	U	1	U	1	U	1	U	NS	
	MW25B-GW032121	3/21/2021	1	U	1	U	1	U	1	U	NS	
MW-25C	MW25C-GW061920	6/19/2020	**0.97**	**J**	1	U	1	U	1	U	0.46	U
	MW25C-GW093020	9/30/2020	**0.86**	**J**	1	U	1	U	1	U	NS	
	MW25C-GW121020	12/10/2020	**0.76**	**J**	1	U	1	U	1	U	NS	
	MW25C-GW032121	3/21/2021	**1.1**		1	U	1	U	1	U	NS	
MW-26A	MW26A-GW092520	9/25/2020	1	U	**0.21**	**J**	1	U	1	U	0.44	U
	MW26A-GW121620	12/16/2020	1	U	**0.18**	**J**	1	U	1	U	NS	
	MW26A-GW031721	3/17/2021	1	U	**0.14**	**J**	1	U	1	U	NS	
MW-26B	MW26B-GW092520	9/25/2020	1	U	1	U	1	U	1	U	NS	
	MW26B-GW121620	12/16/2020	1	U	1	U	1	U	1	U	0.41	U
	MW26B-GW031721	3/17/2021	1	U	1	U	1	U	1	U	NS	
MW-26C	MW26C-GW121720	12/17/2020	**0.4**	**J**	1	U	1	U	1	U	NS	
	MW26C-GW031821	3/18/2021	**0.79**	**J**	1	U	1	U	1	U	0.44	U
MW-26D	MW26D-GW092520	9/25/2020	1	U	1	U	1	U	1	U	NS	
	MW26D-GW031821	3/18/2021	1	U	1	U	1	U	1	U	0.4	U
MW-27	MW27-GW062420	6/24/2020	1	U	**0.13**	**J**	1	U	1	U	0.38	U
	MW27-GW092420	9/24/2020	1	U	**0.11**	**J**	1	U	1	U	NS	
	MW27-GW120820	12/8/2020	1	U	**0.15**	**J**	1	U	1	U	NS	
	MW27-GW031621	3/16/2021	1	U	**0.11**	**J**	1	U	1	U	NS	
MW-28	MW28-GW062420	6/24/2020	1	U	**0.24**	**J**	1	U	1	U	0.46	U
	MW28-GW092420	9/24/2020	1	U	**0.17**	**J**	1	U	1	U	NS	

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			**5**		**5**		**70**		**2**		**NA**	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			**NA**		**NA**		**NA**		**NA**		**0.46**	
MW-28	MW28-GW120820	12/8/2020	*1*	*U*	**0.18**	**J**	*1*	*U*	*1*	*U*	NS	
	MW28-GW032121	3/21/2021	*1*	*U*	**0.18**	**J**	*1*	*U*	*1*	*U*	NS	
MW-29A	MW29A-GW092820	9/28/2020	**11**		**0.16**	**J**	*1*	*U*	*1*	*U*	*0.44*	*U*
	MW29A-GW121320	12/13/2020	**9.6**		**0.18**	**J**	*1*	*U*	*1*	*U*	NS	
	MW29A-GW031921	3/19/2021	**11**		**0.17**	**J**	*1*	*U*	*1*	*U*	NS	
MW-29B	MW29B-GW092820	9/28/2020	**0.56**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.39*	*U*
	MW29B-GW121120	12/11/2020	**0.47**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW29B-GW031921	3/19/2021	**0.55**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-29C	MW29C-GW092820	9/28/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.44*	*U*
	MW29C-GW121120	12/11/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW29C-GW031921	3/19/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-30C	MW30C-GW092120	9/21/2020	**0.35**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW30C-GW120920	12/9/2020	**0.4**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW30C-GW031621	3/16/2021	**0.35**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-30RA	MW30RA-GW120820	12/8/2020	**0.18**	**J**	**0.34**	**J**	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW30RA-GW031621	3/16/2021	**0.18**	**J**	**0.29**	**J**	*1*	*U*	*1*	*U*	NS	
MW-30RB	MW30RB-GW120820	12/8/2020	*1*	*U*	**0.19**	**J**	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW30RB-GW031621	3/16/2021	*1*	*U*	**0.18**	**J**	*1*	*U*	*1*	*U*	NS	
MW-31A	MW31A-GW092320	9/23/2020	**0.73**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.46*	*U*
	MW31A-GW121120	12/11/2020	**0.54**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW31A-GW031821	3/18/2021	**0.55**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-31B	MW31B-GW092320	9/23/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.46*	*U*
	MW31B-GW121120	12/11/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW31B-GW031821	3/18/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-31C	MW31C-GW092320	9/23/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.46*	*U*
	MW31C-GW121120	12/11/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW31C-GW031821	3/18/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-32A	MW32A-GW092220	9/22/2020	**0.64**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW32A-GW121020	12/10/2020	**0.46**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW32A-GW031721	3/17/2021	**0.44**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-32B	MW32B-GW092220	9/22/2020	**0.44**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.4*	*U*
	MW32B-GW121020	12/10/2020	**0.34**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW32B-GW031721	3/17/2021	**0.32**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-32C	MW32C-GW092220	9/22/2020	**0.26**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW32C-GW121020	12/10/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW32C-GW031721	3/17/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-34A	MW34A-GW100120	10/1/2020	**3.7**		**0.17**	**J**	*1*	*U*	*1*	*U*	NS	
	MW34A-GW121520	12/15/2020	**30**		**0.66**	**J**	**0.3**	**J**	*1*	*U*	*0.46*	*U*
	MW34A-GW031921	3/19/2021	**36**		**0.62**	**J**	**0.25**	**J**	*1*	*U*	NS	
MW-34B	MW34B-GW092720	9/27/2020	**14**		**0.41**	**J**	**0.36**	**J**	*1*	*U*	*0.4*	*U*
	MW34B-GW121720	12/17/2020	**5.8**		**0.39**	**J**	**0.5**	**J**	*1*	*U*	NS	
	MW34B-GW031921	3/19/2021	**16**		**0.49**	**J**	**0.49**	**J**	*1*	*U*	NS	
MW-34C	MW34C-GW092720	9/27/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.41*	*U*
	MW34C-GW121720	12/17/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW34C-GW031921	3/19/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-34D	MW34D-GW092720	9/27/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW34D-GW121320	12/13/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
	MW34D-GW031921	3/19/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-36	MW36-GW121420	12/14/2020	**0.28**	**J**	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*UJ*
	MW36-GW031621	3/16/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-37D	MW37D-GW121420	12/14/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.42*	*U*
	MW37D-GW031721	3/17/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	
MW-37S	MW37S-GW121420	12/14/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	*0.45*	*U*
	MW37S-GW031721	3/17/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*	NS	

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			5		5		70		2		NA	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			NA		NA		NA		NA		0.46	
MW-38D	MW38D-GW121620	12/16/2020	1	U	1	U	1	U	1	U	0.45	U
	MW38D-GW031821	3/18/2021	1	U	1	U	1	U	1	U	NS	
MW-38S	MW38S-GW121620	12/16/2020	1	U	1	U	1	U	1	U	0.42	U
	MW38S-GW031721	3/17/2021	1	U	1	U	1	U	1	U	NS	
GW-001	A-GW-001_03042016	3/4/2016	0.78		0.5	U	0.5	U	0.5	U	NS	
GW-003	A-GW-003_02/26/2016	2/26/2016	0.48	J	0.5	U	0.5	U	0.5	U	NS	
GW-004	A-GW-004_02/26/2016	2/26/2016	12		0.34	J	0.5	UJ	0.5	U	NS	
GW-005	A-GW-005_02/26/2016	2/26/2016	1.4		0.5	U	0.5	UJ	0.5	U	NS	
GW-006	A-GW-006_02/26/2016	2/26/2016	3.1		1		0.45	J	0.5	U	NS	
GW-007	A-GW-007_02282016	2/28/2016	33		0.59		0.5	U	0.5	U	NS	
GW-008	A-GW-008_02272016	2/27/2016	9.6		1.8		0.5	U	0.5	U	NS	
GW-009	A-GW-009_02/26/2016	2/26/2016	0.7		2.4		0.68		0.5	U	NS	
GW-010/ RG-01	A-GW-010_02272016	2/27/2016	0.99		0.5	U	0.5	U	0.5	U	NS	
	A-GW-10_07/12/2016	7/12/2016	1.1		0.5	U	0.5	U	0.5	U	2	U
	A-GW-10_09202016	9/20/2016	1.1		0.19	J	0.5	U	0.5	U	2	UJ
	RG01-GW041621	4/16/2021	7.3		0.17	J	1	U	1	U	NS	
GW-011/ RG-02	A-GW-011_02272016	2/27/2016	45		0.82		0.39	J	0.5	U	NS	
	A-GW-11_07/11/2016	7/11/2016	44		0.56		0.37	J	0.5	U	2	U
	A-GW-11_09192016	9/19/2016	35		0.62		0.43	J	0.5	U	2	UJ
	RG02-GW041621	4/16/2021	57		1.3		1.1		1	U	NS	
GW-012	A-GW-012_03/02/2016	3/2/2016	4.8		0.22	J	0.14	J	0.5	U	NS	
GW-013	A-GW-013_03042016	3/4/2016	22		0.18	J	0.11	J	0.5	U	NS	
GW-014	A-GW-014_03/02/2016	3/2/2016	3.2		1.9		0.24	J	0.5	U	NS	
GW-015	A-GW-015_02292016	2/29/2016	31		0.62	J	0.29	J	0.5	U	NS	
GW-016/ RG-03	A-GW-016_02282016	2/28/2016	20	J	0.61		0.26	J	0.5	U	NS	
	A-GW-16_07/11/2016	7/11/2016	13		0.53		0.5	U	0.5	U	2	U
	A-GW-16_09192016	9/19/2016	18		0.73		0.3	J	0.5	U	2	UJ
	RG03-GW041521	4/15/2021	60		0.67	J	0.41	J	1	U	NS	
GW-017	A-GW-017_03/02/2016	3/2/2016	1.1		0.56		0.5	U	0.5	U	NS	
GW-018	A-GW-018_03/02/2016	3/2/2016	10		2.1		0.27	J-	0.5	U	NS	
GW-020/ RG-04	A-GW-020_03012016	3/1/2016	2.7		1		0.5	U	0.5	U	NS	
	A-GW-20_07/11/2016	7/11/2016	8.3		0.4	J	0.5	U	0.5	U	2	U
	A-GW-20_09192016	9/19/2016	8.6		0.29	J	0.5	U	0.5	U	2.1	UJ
	RG04-GW041521	4/15/2021	6		0.99	J	1	U	1	U	NS	
GW-021	A-GW-021_03012016	3/1/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-022	A-GW-022_03012016	3/1/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-023	A-GW-023_02/22/2016	2/22/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-024	A-GW-024_02/25/2016	2/25/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-025	A-GW-025_02292016	2/29/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-026	A-GW-026_02282016	2/28/2016	0.27	J	0.5	U	0.5	U	0.5	U	NS	
GW-027/ RG-05	A-GW-027_03052016	3/5/2016	22		0.21	J	0.14	J	0.5	U	NS	
	RG05-GW041621	4/16/2021	7.8		1	U	1	U	1	U	NS	
GW-028	A-GW-028_03052016	3/5/2016	43		0.4	J	0.27	J	0.5	U	NS	
GW-031	A-GW-031_02282016	2/28/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-039	A-GW-039_02/23/2016	2/23/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-040	A-GW-040_03/03/2016	3/3/2016	0.13	J	0.5	U	0.5	UJ	0.5	U	NS	
GW-043	A-GW-043_03032016	3/3/2016	0.35	J	0.5	U	0.5	U	0.5	U	NS	
GW-046	A-GW-046_02/24/2016	2/24/2016	0.2	J	0.5	U	0.5	U	0.5	U	NS	
GW-048	A-GW-048_03/03/2016	3/3/2016	0.5	U	0.5	U	0.5	U	0.5	U	NS	
GW-049	A-GW-049_02/25/2016	2/25/2016	1.2		0.5	U	0.5	U	0.5	U	NS	
GW-049	A-GW-49_07/12/2016	7/12/2016	1.1		0.5	U	0.5	U	0.5	U	2	U
GW-049	A-GW-49_09202016	9/20/2016	1.1		0.5	U	0.5	U	0.5	U	2.1	UJ
GW-050/ RG-06	A-GW-050_02292016	2/29/2016	2.5		1.7		1.1		0.5	U	NS	
	A-GW-50_07/12/2016	7/12/2016	2.8		6.1		1.3		0.5	U	2	U

Table 5-4
Preliminary Chemicals of Potential Concern in Groundwater

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)			**5**		**5**		**70**		**2**		**NA**	
EPA Tap Water Regional Screening Level (RSL) (µg/L)[1]			**NA**		**NA**		**NA**		**NA**		**0.46**	
GW-050/ RG-06	A-GW-50_09202016	9/20/2016	**3**		**6.4**		**1.4**		*0.5*	*U*	*2*	*UJ*
	RG06-GW041621	4/16/2021	**1.5**		**7.4**		**2.2**		*1*	*U*	NS	
GW-051	A-GW-051_03042016	3/4/2016	**23**		**0.19**	**J**	*0.5*	*U*	*0.5*	*U*	NS	
GW-052/ RG-07	A-GW-052_03/03/2016	3/3/2016	**57**		**0.53**	**J**	**0.39**	**J**	*0.5*	*U*	NS	
	A-GW-52_07/12/2016	7/12/2016	**52**		**0.56**		**0.32**	**J**	*0.5*	*U*	**2.7**	
	A-GW-52_09202016	9/20/2016	**43**		**0.44**	**J**	**0.3**	**J**	*0.5*	*U*	*2*	*UJ*
	RG07-GW041621	4/16/2021	**43**		**0.32**	**J**	**0.11**	**J**	*1*	*U*	NS	
GW-053/ RG-08	A-GW-053_03/03/2016	3/3/2016	**37**		**0.83**		**0.31**	**J**	*0.5*	*U*	NS	
	A-GW-53_07/11/2016	7/11/2016	**40**		**0.84**		**0.21**	**J**	*0.5*	*U*	*2*	*U*
	A-GW-53_09192016	9/19/2016	**45**		**0.59**		**0.22**	**J**	*0.5*	*U*	*2*	*UJ*
	RG08-GW041521	4/15/2021	**56**		**0.42**	**J**	**0.15**	**J**	*1*	*U*	NS	
GW-055	A-GW-055_03052016	3/5/2016	**0.19**	**J**	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	NS	
GW-059/ RG-09	A-GW-059_03052016	3/5/2016	**0.17**	**J**	**7.7**		**3.9**		*0.5*	*U*	NS	
	A-GW-59_07/11/2016	7/11/2016	**2**		**6.1**		**2.5**		*0.5*	*U*	*2*	*U*
	A-GW-59_09192016	9/19/2016	**1**		**7.2**		**3**		*0.5*	*U*	*2*	*UJ*
	RG09-GW041621	4/16/2021	**13**		**1.2**		**0.49**	**J**	*1*	*U*	NS	
GW-060	A-GW-060_03/08/2016	3/8/2016	**10**		**1**		*0.5*	*U*	*0.5*	*U*	NS	
GW-061/ RG-10	A-GW-061_03052016	3/5/2016	**2.3**		*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	NS	
	A-GW-61_07/12/2016	7/12/2016	**2.9**		*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	*2*	*U*
	A-GW-61_09202016	9/20/2016	**3**		**0.15**	**J**	*0.5*	*U*	*0.5*	*U*	*2*	*UJ*
	RG10-GW041621	4/16/2021	**3**		**0.59**	**J**	*1*	*U*	*1*	*U*	NS	
GW-062	A-GW-062_03/08/2016	3/8/2016	**20**		**0.23**	**J**	**0.16**	**J**	*0.5*	*U*	NS	
RG-11	RG11-GW041621	4/16/2021	**6.5**		*1*	*U*	*1*	*U*	*1*	*U*	NS	

Notes:
[1] EPA Tap Water RSL based on target cancer risk 1 × 10-6 and hazard quotient = 1
Highlight indicates values greater than screening level
Bold indicates detected values
Italics indicates nondetected values

µg/L = microgram per liter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
MCL = maximum contaminant level
MWH = MWH Americas, Inc.
NA = not applicable
NR = not reported
NS = not sampled
OU = operable unit
PCE = tetrachloroethene
RSL = regional screening level
TCE = trichloroethene
UDEQ = Utah Department of Environmental Quality
USGS = U.S. Geological Survey
VC = vinyl chloride

Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit
UJ = Analyte was not detected at the associated value, which is the reporting limit, and a QA/QC requirement has not been met
D = Sample was diluted to bring analyte concentration(s) into the instrument calibration range
E = Estimated - reported concentration was above the instrument calibration range

Table 5-5
Preliminary Chemicals of Potential Concern in Push-Ahead Groundwater Samples

Location	Aquifer Zone	Sample Identification	Sample Type	Sample Depth (ft bgs)	Sample Date	PCE µg/L Q	TCE µg/L Q	cis-1,2-DCE µg/L Q	VC µg/L Q
EPA Maximum Contaminant Level (MCL) (µg/L)						**5**	**5**	**70**	**2**
MW-03R	Shallow	MW03R-GWA-1-187	Analytical	187	10/17/2018	1 U	1 U	1 U	NS
MW-03R	Shallow	MW03R-GWA-2-217	Analytical	217	10/18/2018	**6.6**	1 U	1 U	NS
MW-03R	Deep	MW03R-GWA-3-247	Analytical	247	10/19/2018	**6.5**	1 U	1 U	NS
MW-03R	Deep	MW03R-GWA-4-267	Analytical	267	10/20/2018	**81**	1 U	1 U	NS
MW-03R	Deep	MW03R-GWA-5-287	Analytical	287	10/20/2018	**8.1**	1 U	1 U	NS
MW-03R	Deep	MW03R-GWA-6-307	Analytical	307	10/21/2018	**23**	1 U	1 U	NS
MW-03R	Deep	MW03R-GWA-7-327	Analytical	327	10/22/2018	**1.99**	1 U	1 U	NS
MW-03R	Deep	MW03R-GWA-8-347	Analytical	347	10/25/2018	1 U	1 U	1 U	NS
MW-03R	Deep	MW03R-GWA-9-367	Analytical	367	10/26/2018	1 U	1 U	1 U	NS
MW-03R	Deep	MW-03R-GWA-11-387	Analytical	387	11/1/2018	1 U	1 U	1 U	NS
MW-03R	Deep	MW-03R-GWA-12-407	Analytical	407	11/1/2018	1 U	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-1-67	HAPSITE	67	11/16/2018	**4.8**	1 U	1 U	NS
MW-08	Shallow	MW08-GWH-2-97	HAPSITE	97	11/17/2018	**52**	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-3-117	HAPSITE	117	11/17/2018	**29**	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-4-137	HAPSITE	137	11/18/2018	1 U	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-5-157	HAPSITE	157	11/18/2018	**2.1**	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-6-177	HAPSITE	177	11/19/2018	**2.6**	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-7-197	HAPSITE	197	11/19/2018	**1.8**	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-8-217	HAPSITE	217	11/20/2018	1 U	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-9-237	HAPSITE	237	11/27/2018	1 U	1 U	1 U	NS
MW-08	Shallow	MW-08-GWH-10-257	HAPSITE	257	11/28/2018	1 U	1 U	1 U	NS
MW-08	Deep	MW-08-GWH-11-277	HAPSITE	277	11/29/2018	1 U	1 U	1 U	NS
MW-08	Deep	MW-08-GWH-12-297	HAPSITE	297	11/29/2018	1 U	1 U	1 U	NS
MW-08	Deep	MW-08-GWH-13-317	HAPSITE	317	11/30/2018	1 U	1 U	1 U	NS
MW-08	Deep	MW-08-GWH-14-377	HAPSITE	377	12/2/2018	1 U	1 U	1 U	NS
MW-08	Deep	MW-08-GWH-15-417	HAPSITE	417	12/3/2018	1 U	1 U	1 U	NS
MW-23	Perched	MW23-GW040820-150	Analytical	150	4/8/2020	**6.0**	1 U	1 U	1 U
MW-23	Shallow	MW23-GW040920-220	Analytical	220	4/9/2020	**0.2 J**	1 U	1 U	1 U
MW-23	Intermediate	MW23-GW041020-240	Analytical	240	4/10/2020	1 U	1 U	1 U	1 U
MW-23	Intermediate	MW23-GW041020-260	Analytical	260	4/10/2020	**0.22 J**	1 U	1 U	1 U
MW-23	Deep	MW23-GW041320-310	Analytical	310	4/13/2020	1 U	1 U	1 U	1 U
MW-23	Deep	MW23-GW041420-340	Analytical	340	4/14/2020	2 U	2 U	2 U	2 U
MW-24	Perched	MW24-GW051320-160	Analytical	160	5/13/2020	**1.2**	1 U	1 U	1 U
MW-24	Shallow	MW24-GW08182020-211	Passive Sampler	211	8/18/2020	**0.84 J**	1 U	1 U	1 U
MW-24	Shallow	MW24-GW08182020-217	Passive Sampler	217	8/18/2020	1 U	1 U	1 U	1 U
MW-24	Shallow	MW24-GW051420-220	Analytical	220	5/14/2020	**0.23 J**	1 U	1 U	1 U
MW-24	Shallow	MW24-GW08182020-231	Passive Sampler	231	8/18/2020	1 U	1 U	1 U	1 U
MW-24	Shallow	MW24-GW08182020-237.5	Passive Sampler	237.5	8/18/2020	1 U	1 U	1 U	1 U
MW-25	Perched	MW25-GW050120-164	Analytical	164	5/1/2020	1 U	1 U	1 U	1 U
MW-25	Shallow	MW25-GW050320-212	Analytical	212	5/3/2020	**0.83 J**	1 U	1 U	1 U
MW-25	Intermediate	MW25-GW050320-232	Analytical	232	5/3/2020	1 U	1 U	1 U	1 U
MW-25	Intermediate	MW25-GW050320-252	Analytical	252	5/3/2020	**0.18 J**	1 U	1 U	1 U
MW-25	Deep	MW25-GW050420-272	Analytical	272	5/4/2020	**0.22 J**	1 U	1 U	1 U
MW-25	Deep	MW25-GW050520-292	Analytical	292	5/5/2020	**0.56 J**	1 U	1 U	1 U
MW-25	Deep	MW25-GW050620-320	Analytical	320	5/6/2020	1 U	1 U	1 U	1 U
MW-26	Shallow	MW26-GW050620-210	Analytical	210	5/6/2020	1 U	1 U	1 U	1 U
MW-26	Intermediate	MW26-GW050720-240	Analytical	240	5/7/2020	1 U	1 U	1 U	1 U
MW-26	Intermediate	MW26-GW050720-250	Analytical	250	5/7/2020	1 U	1 U	1 U	1 U
MW-26	Deep	MW26-GW050820-270	Analytical	270	5/8/2020	5 U	5 U	5 U	5 U
MW-26	Deep	MW26-GW051120-320	Analytical	320	5/11/2020	1 U	1 U	1 U	1 U
MW-26	Deep	MW26-GW051220-360	Analytical	360	5/12/2020	1 U	1 U	1 U	1 U
MW-27	Perched	MW27-GW032320-168	Analytical	168	3/23/2020	**9.1**	1 U	**0.1 J**	1 U
MW-27	Shallow	MW27-GW032420-210	Analytical	210	3/24/2020	1 U	1 U	1 U	1 U
MW-27	Shallow	MW27-GW032420-220	Analytical	220	3/24/2020	1 U	1 U	1 U	1 U
MW-28	Shallow	MW28-GW031820-211	Analytical	211	3/18/2020	1 U	1 U	1 U	1 U
MW-29	Perched	MW29-GW052920-120	Analytical	120	5/29/2020	**9.2**	**0.17 J**	1 U	1 U
MW-29	Shallow	MW29-GW053120-191	Analytical	191	5/31/2020	**6.1**	**0.11 J**	1 U	1 U
MW-29	Intermediate	MW29-GW060120-230	Analytical	230	6/1/2020	1 U	1 U	1 U	1 U
MW-29	Intermediate	MW29-GW060220-260	Analytical	260	6/2/2020	1 U	1 U	1 U	1 U
MW-30	Deep	MW30-GW060420-237	Analytical	237	6/4/2020	1 U	1 U	1 U	1 U
MW-30	Deep	MW30-GW060520-280	Analytical	280	6/5/2020	1 U	**0.13 J**	1 U	1 U
MW-30	Deep	MW30-GW060520-298	Analytical	298	6/5/2020	1 U	1 U	1 U	1 U
MW-30	Deep	MW30-GW060720-320	Analytical	320	6/7/2020	**0.2 J**	1 U	1 U	1 U
MW-30	Deep	MW30-GW060720-340	Analytical	340	6/7/2020	**0.16 J**	1 U	1 U	1 U

Table 5-5
Preliminary Chemicals of Potential Concern in Push-Ahead Groundwater Samples

Location	Aquifer Zone	Sample Identification	Sample Type	Sample Depth (ft bgs)	Sample Date	PCE		TCE		cis-1,2-DCE		VC	
						µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)						**5**		**5**		**70**		**2**	
MW-31	Shallow	MW31-GW061020-138	Analytical	138	6/10/2020	**0.59**	**J**	*1*	*U*	*1*	*U*	*1*	*U*
MW-31	Shallow	MW31-GW061120-190	Analytical	190	6/11/2020	**0.2**	**J**	*1*	*U*	*1*	*U*	*1*	*U*
MW-31	Deep	MW31-GW061120-230	Analytical	230	6/11/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
MW-32	Shallow	MW32-GW062320-100	Analytical	100	6/23/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
MW-32	Shallow	MW32-GW062420-120	Analytical	120	6/24/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
MW-32	Shallow	MW32-GW062520-175	Analytical	175	6/25/2020	**0.2**	**J**	*1*	*U*	*1*	*U*	*1*	*U*
MW-32	Shallow	MW32-GW062620-210	Analytical	210	6/26/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
MW-32	Deep	MW32-GW062820-270	Analytical	270	6/28/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
MW-34	Shallow	MW34-GW070820-150	Analytical	150	7/8/2020	**6.7**		**0.12**	**J**	*1*	*U*	*1*	*U*
MW-34	Shallow	MW34-GW070820-180	Analytical	180	7/8/2020	**14**		**0.36**	**J**	**0.25**	**J**	*1*	*U*
MW-34	Shallow	MW34-GW070920-210	Analytical	210	7/9/2020	**1.5**		*1*	*U*	*1*	*U*	*1*	*U*
MW-34	Shallow	MW34-GW070920-230	Analytical	230	7/9/2020	**1.6**		*1*	*U*	*1*	*U*	*1*	*U*
MW-34	Deep	MW34-GW070920-260	Analytical	260	7/9/2020	**0.66**	**J**	*1*	*U*	*1*	*U*	*1*	*U*
MW-34	Deep	MW34-GW071020-300	Analytical	300	7/10/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
MW-34	Deep	MW34-GW071220-320	Analytical	320	7/12/2020	**0.43**	**J**	*1*	*U*	*1*	*U*	*1*	*U*
MW-37	-	MW37-GW111220-30	Analytical	30	11/12/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
MW-37	-	MW37-GW111320-70	Analytical	70	11/13/2020	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*

Notes:
[1] EPA Tap Water RSL based on target cancer risk 1 × 10-6 and hazard quotient = 1
Highlight indicates values greater than screening level
Bold indicates detected values
Italics indicates nondetected values

µg/L = microgram per liter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
MCL = maximum contaminant level
NS = Not sampled
OU = operable unit
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride

Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit
UJ = Analyte was not detected at the associated value, which is the reporting limit, and a QA/QC requirement has not been met

Table 5-6
Geochemical Parameters in Groundwater

Location	Sample Identification	Sample Date	Chloride	Sulfate	Nitrate/ Nitrite[1]	Alkalinity[2]	TDS	TOC	Methane	Ethane	Ethene	Ferrous Iron	Dissolved Oxygen	ORP	pH	Specific Conductance	Temperature	Turbidity
			mg/L Q	mg/L Q	µg/L Q	mg/L Q	mg/L Q	mg/L Q	µg/L Q	µg/L Q	µg/L Q	mg/L Q	mg/L Q	mV Q	su Q	mS/cm Q	deg C Q	NTU Q
MW-01D	OU2-MW01D-GW-121118	12/11/2018	120	178	NS	256	720	1 U	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW01D-GW-031819	3/18/2019	128	153	NS	245	2730	0.791 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW01D-GW120619	12/6/2019	106	151	2.89	261	708	0.383 J	2 U	2 U	2 U	0.02	7.21	118	6.97	1.097	12.38	0.17
	MW01D-GW061720	6/17/2020	107	149	0.905	254	680	0.278 J	2 U	2 U	2 U	0.06	5.62	117.3	6.95	1.083	14.3	0.77
	MW01D-GW092920	9/29/2020	107	146	3.63	280	667	0.315 J	2 U	2 U	2 U	0.05	7.33	270.6	6.93	1.079	14.4	0.89
	MW01D-GW121520	12/15/2020	101	152	3.88	271	NS	0.882 J	2 U	2 U	2 U	0.22	7.53	97.7	7.02	0.525	12.4	0.51
	MW01D-GW032221	3/22/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	6.51	85.3	7.12	1.107	12.1	0.43
MW-01S	OU2-MW01S-GW-121118	12/11/2018	287	115	NS	278 J	1070	1 U	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW01S-GW-031819	3/18/2019	250	101	NS	275	927	0.469 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	MW01S-GW062120	6/21/2020	270	49.7 J	2.04	267	984	0.472 J	2 U	2 U	2 U	0.03	6.12	133.8	7.03	1.575	13.6	1.04
	MW01S-GW092920	9/29/2020	262	103	2.66	291	877	0.562 J	2 U	2 U	2 U	0 U	7.66	245.3	6.84	1.526	16.2	0
	MW01S-GW121620	12/16/2020	270	101	2.68	274	NS	0.723 J	2 U	2 U	2 U	0.12	9.5	171.8	7.02	0.682	12.5	2.17
	MW01S-GW032221	3/22/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	7.96	157.9	6.93	1.575	12.8	1.3
MW-02	OU2-MW02-GW-121818	12/18/2018	120	91.2	NS	291 J	1260	0.852 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW02-GW-040919	4/9/2019	514	92.6	NS	292	1290	0.862 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW02-GW120519	12/5/2019	705	112	3.13 J	295	1560	0.576 J	0.18 J	2 U	2 U	0.4	8.41	110.2	6.97	2.917	12.27	0
	MW02-GW061720	6/17/2020	402	101 J-	2.4	298	1320	0.524 J	0.28 J	2 U	2 U	0 U	5.65	114.1	6.81	2.128	13.4	0.03
	MW02-GW092820	9/28/2020	407 J+	97	2.54	303	1200	1 U	2 U	2 U	2 U	0.03	8.18	117.7	6.87	1.927	14	0
	MW02-GW121620	12/16/2020	437	88.8	3.38	294	NS	0.855 J	2 U	2 U	2 U	0.08	9.59	80.9	6.98	0.912	12.5	0
	MW02-GW032321	3/23/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	5.26	185.8	6.84	2.105	12.2	0.19
MW-03RA	OU2-MW03RA-GW-121318	12/13/2018	437	144	NS	249	1140	2.14	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW03RA-GW-032519	3/25/2019	401	93	NS	279	1040	1.92	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW03RA-GW120719	12/7/2019	440	100	2.31	274	1200	1.68	0.19 J	2 U	2 U	0.02	7.2	155.9	6.89	1.989	11.32	8.8
	MW03RA-GW061820	6/18/2020	371	97.7	0.811	273	1120	0.897 J	0.24 J	2 U	2 U	0.08	4.94	50.5	6.88	1.895	14.9	1.48
	MW03RA-GW092920	9/29/2020	367	93.1	2.28	290	1020	2.14	2 U	2 U	2 U	0 U	7.55	29.2	6.68	1.8	13.8	1.81
	MW03RA-GW121120	12/11/2020	329	94.8	2.44	285	NS	2.32	2 U	2 U	2 U	0.88	6.67	69.1	6.73	1.488	10.9	6.78
	MW03RA-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.31	5.43	59.1	6.98	1.389	10.4	7.05
MW-03RB	OU2-MW03RB-GW-122718	12/27/2018	199	128	NS	224	704	2.67	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW03RB-GW-032519	3/25/2019	165	103	NS	234	676	1.34	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW03RB-GW120819	12/8/2019	194	111	2.36	231	812	1.02	0.32 J	2 U	2 U	0.02	5.56	113.5	7.14	1.192	11.59	9.23
	MW03RB-GW061820	6/18/2020	166	111	1.14	229	731	1.79	0.2 J	2 U	2 U	0.06	4.73	-80.7	7	1.202	14.9	6.35
	MW03RB-GW092920	9/29/2020	182	104	2.53	253	739	1.65	0.19 J	2 U	2 U	0.05	7.99	102.5	7.3	1.161	15.8	28.6
	MW03RB-GW121120	12/11/2020	158	107	2.56	239	NS	2.28	2 U	2 U	2 U	0 U	3.38	-24.8	7.16	0.954	11.2	64.2
	MW03RB-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.05	6.52	71.7	7.06	1.055	10.9	61.7
MW-03RC	OU2-MW03RC-GW-121718	12/17/2018	73.8	160	NS	234	614	5.01	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW03RC-GW-032719	3/27/2019	70.5	147	NS	238	627	1.75	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW03RC-GW120719	12/7/2019	90.1	168	2.03	228	650	7.22	0.31 J	2 U	2 U	0.03	8.53	101.3	7.2	0.982	12.16	0
	MW03RC-GW061820	6/18/2020	72.6	157	0.905	227	677	2.15	2 U	2 U	2 U	0.04	5.66	77.5	7.05	1	14.5	2.26
	MW03RC-GW092920	9/29/2020	80.4	159	2.29	239	587	8.36	0.21 J	2 U	2 U	0 U	8.22	125.5	7.04	0.898	13.9	0.89
	MW03RC-GW121120	12/11/2020	77.9	158	2.46	226	NS	3.2	2 U	2 U	2 U	0 U	6.88	83.9	6.99	0.786	11.6	31
	MW03RC-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.25	5.68	93	7.18	0.766	11.8	7.2
MW-03RD	OU2-MW03RD-GW-032719	3/27/2019	82.7	219	NS	257	728	9.06	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW03RD-GW120719	12/7/2019	86.5	212	2.43	253	706	5.34	0.43 J	2 U	2 U	0.17	4.19	-22.7	7.13	1.186	12.08	6.5
	MW03RD-GW061820	6/18/2020	83.4	199	0.884	257	691	7.95	0.47 J	2 U	0.31 J	0.07	3.72	-85.4	7.09	1.111	13.8	0.55
	MW03RD-GW092920	9/29/2020	87	202	2.24	260	704	4.75	0.25 J	2 U	2 U	0 U	5	44	7.05	1.002	14.8	7.88
	MW03RD-GW121120	12/11/2020	80.2	197	2.05	264	NS	9.06	0.49 J	2 U	0.52 J	0.13	0.72	-88.4	7.3	0.868	11.9	31.6
	MW03RD-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.21	4.43	16.7	7.11	0.941	11.7	9.04
MW-04	OU2-MW04-GW-121818	12/18/2018	236	106	NS	293	822	0.849 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW04-GW-031919	3/19/2019	232	105	NS	299	802	0.671 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW04-GW120519	12/5/2019	246 J	103	1.45	293	919	0.472 J	2 U	2 U	2 U	0 U	9.19	50.4	7.12	1.47	10.92	0.7
	MW04-GW062120	6/21/2020	250	49.3	1.73	284	909	0.519 J	2 U	2 U	2 U	0.12	6.87	-20.2	7.09	1.515	12	0.59
	MW04-GW092920	9/29/2020	281	94.7	2.38	297	886	0.532 J	2 U	2 U	2 U	0 U	8.65	242.3	6.9	1.473	11.9	0
	MW04-GW121020	12/10/2020	241	96.2	2.4	298	NS	1 U	2 U	2 U	2 U	0 U	6.79	127.5	7.16	1.57	11	2.31
	MW04-GW032221	3/22/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	7.68	148.8	7.16	1.502	11.2	0.49

Location	Sample Identification	Sample Date	Chloride mg/L Q	Sulfate mg/L Q	Nitrate/ Nitrite[1] µg/L Q	Alkalinity[2] mg/L Q	TDS mg/L Q	TOC mg/L Q	Methane µg/L Q	Ethane µg/L Q	Ethene µg/L Q	Ferrous Iron mg/L Q	Dissolved Oxygen mg/L Q	ORP mV Q	pH su Q	Specific Conductance mS/cm Q	Temperature deg C Q	Turbidity NTU Q
MW-05R	OU2-MW05R-GW-121118	12/11/2018	317	110	NS	311	1020	1 U	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW05R-GW-032019	3/20/2019	250	106	NS	320	858	0.824 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW05R-GW120819	12/8/2019	319	94.4	3.31	306	1060	0.351 J	2 U	2 U	2 U	0.31	7.8	136.9	6.97	1.724	12.74	35.6
	MW05R-GW061920	6/19/2020	275	98.5	2.4	315	996	0.479 J	2 U	2 U	2 U	0 U	5.33	-40.9	6.96	1.614	14.1	0.54
	MW05R-GW102120	10/21/2020	248	106	3.33	311	1110	0.402 J	2 U	2 U	2 U	0 U	3.67	-37	6.88	1.58	14.7	1.35
	MW05R-GW120820	12/8/2020	307	121	3.71	293	NS	1.06	0.46 J	2 U	2 U	1.02	5.66	-3.5	7.04	1.52	13.9	0.2
MW-06	OU2-MW06-GW-121718	12/17/2018	187	99.1	NS	277	725	0.761 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW06-GW-031919	3/19/2019	156	106	NS	273	756	0.782 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW06-GW120619	12/6/2019	170 J	104	0.849	278	656	0.498 J	2 U	2 U	2 U	0 U	5.16	91.5	7.1	1.122	10.63	0.35
	MW06-GW062120	6/21/2020	154	95.3	0.966	266	690	0.523 J	2 U	2 U	2 U	0 U	3.35	-42.8	7.31	1.136	12.5	0.32
	MW06-GW092420	9/24/2020	179	111	1.58	279	717	0.483 J	2 U	2 U	2 U	0.14	6.07	94.7	7.51	1.168	12.3	1.04
	MW06-GW121020	12/10/2020	142	107	1.33	277	NS	1 U	2 U	2 U	2 U	0.43	3.04	115.1	7.46	1.223	10.9	3.26
	MW06-GW032221	3/22/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	3.76	144.9	7.28	0.772	11	1.09
MW-08A	OU2-MW08A-GW-122718	12/27/2018	363 J	97.2 J	NS	260	1070 J	1.07	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW08A-GW-032119	3/21/2019	414	95.9	NS	265	1020	0.654 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW08A-GW120819	12/8/2019	385	105	4.23	261	1100	0.385 J	0.69 J	2 U	2 U	0 U	8.04	89.8	6.99	1.835	12.12	4.83
	MW08A-GW062120	6/21/2020	383	97.3	2	267	1130	0.456 J	0.45 J	2 U	2 U	0.5	6.43	108.5	6.95	1.855	14.4	24.6
	MW08A-GW092720	9/27/2020	375 J+	94.6	3.74	271	1190	1 U	0.4 J	2 U	2 U	0.05	8.04	231.5	6.81	1.782	13.2	4.87
	MW08A-GW120920	12/9/2020	462	102	4.58	219	NS	0.588 J	0.34 J	2 U	2 U	0.02	3.99	-72.5	6.89	2.248	12.2	6.03
	MW08A-GW031721	3/17/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	5.02	75.7	7.03	1.576	12.3	4.19
MW-08B	OU2-MW08B-GW-122718	12/27/2018	106	150	NS	246	689	0.675 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW08B-GW-032119	3/21/2019	114	152	NS	247	636	0.501 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW08B-GW120819	12/8/2019	114	139	2.67	249	695	0.4 J	0.28 J	2 U	2 U	0.01	7.9	69.4	7.12	1.097	12.17	1.17
	MW08B-GW062220	6/22/2020	114	144	1.75	238	758	0.333 J	2 U	2 U	2 U	0.03	5.51	-43	7.09	1.084	13.9	0.47
	MW08B-GW092720	9/27/2020	116 J+	147	2.37	253	771	1 U	2 U	2 U	2 U	0 U	7.76	249.6	7.08	1.041	13.3	0.47
	MW08B-GW120920	12/9/2020	165	149	2.86	225	NS	0.67 J	2 U	2 U	2 U	0 U	2.66	-77.2	7.15	1.307	12.3	2.49
	MW08B-GW031721	3/17/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	7.23	108.4	7.23	0.938	12.4	4.38
MW-08C	OU2-MW08C-GW-032019	3/20/2019	53.7	173	NS	232	624	2.63	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW08C-GW120819	12/8/2019	54.6	163	1.88	242	611	3.87	1 J	0.44 J	2 U	0.37	4.4	-16.4	7.22	0.93	11.79	0
	MW08C-GW062220	6/22/2020	26	78.7	1.22	242	602	6.64	0.83 J	2 U	0.33 J	0.35	2	-87.5	7.24	0.914	14.9	4.11
	MW08C-GW092720	9/27/2020	53.6 J+	166	1.43	259	634	10.4	0.75 J	2 U	0.41 J	0.26	3.29	34.7	7.3	0.861	15.2	3.11
	MW08C-GW120920	12/9/2020	70.6	191	2.03	228	NS	3.98	0.4 J	2 U	2 U	0.58	1.58	-113.5	7.28	1.071	12	27.2
	MW08C-GW031721	3/17/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.3	4.38	-128.3	7.47	0.906	12.7	11.1
MW-12D	OU2-MW12D-GW-092418	9/24/2018	206	183	NS	284	1000	0.652 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW12D-GW-120618	12/6/2018	198	182	NS	290	910	18.7	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW12D-GW-031319	3/13/2019	192	161	NS	294	835	0.466 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW12D-GW120619	12/6/2019	189 J	163	2.27	282	915	0.531 J	0.22 J	2 U	2 U	0 U	6.75	91.7	7.07	1.396	14.1	1.87
	MW12D-GW061920	6/19/2020	196	160	2.25	276	905	0.41 J	2 U	2 U	2 U	0 U	4.76	110.2	7.31	1.432	15	2.13
	MW12D-GW092220	9/22/2020	195	165	1.41	289	900	0.4 J	2 U	2 U	2 U	0.02	6.93	286.8	7	1.424	16.1	1.05
	MW12D-GW120920	12/9/2020	294	174	3.15	255	NS	0.928 J	2 U	2 U	2 U	0 U	4.97	7.9	7.09	1.42	13.9	3.62
	MW12D-GW031721	3/17/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	5.18	-37.4	6.95	1.396	14	2.84
MW-12S	OU2-MW12S-GW-092418	9/24/2018	201	115	NS	320	929	0.858 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW12S-GW-121018	12/10/2018	102	101	NS	375	719	25.3	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW12S-GW-031319	3/13/2019	105	77.7	NS	372	624	0.657 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW12S-GW120619	12/6/2019	259 J	110	2.34	352	1000	0.673 J	0.2 J	2 U	2 U	0.18	6.37	32.7	6.98	1.668	15.34	8.68
	MW12S-GW061920	6/19/2020	281	114	2.35	341	1090	0.678 J	2 U	2 U	2 U	0.03	3.72	58.4	7.14	1.766	19.8	1.71
MW-13D	OU2-MW13D-GW-091718	9/17/2018	198	105	NS	244	768	0.97 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW13D-GW-112918	11/29/2018	205	112	NS	245	708	0.761 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW13D-GW-030719	3/7/2019	192	102	NS	255	737	0.739 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW13D-GW120519	12/5/2019	218 J	118	3.18	241	917	0.382 J	2 U	2 U	2 U	0 U	7.58	20.3	6.99	1.347	12.86	5.09
	MW13D-GW061820	6/18/2020	210	100	3.1	241	858	0.399 J	2 U	2 U	2 U	0 U	5.23	81.9	7	1.349	14.4	4.08
	MW13D-GW092220	9/22/2020	222	107	1.46	270	973	0.443 J	2 U	2 U	2 U	0.04	7.67	297.7	7	1.37	15	3.26
	MW13D-GW121120	12/11/2020	202	100	4.55	251	NS	0.758 J	2 U	2 U	2 U	0 U	5.5	21.1	7.07	1.38	12.7	6.27
	MW13D-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.12	1.12	-55.2	7.12	1.405	12.8	1.25

Table 5-6
Geochemical Parameters in Groundwater

Location	Sample Identification	Sample Date	Chloride	Sulfate	Nitrate/ Nitrite[1]	Alkalinity[2]	TDS	TOC	Methane	Ethane	Ethene	Ferrous Iron	Dissolved Oxygen	ORP	pH	Specific Conductance	Temperature	Turbidity
			mg/L Q	mg/L Q	µg/L Q	mg/L Q	mg/L Q	mg/L Q	µg/L Q	µg/L Q	µg/L Q	mg/L Q	mg/L Q	mV Q	su Q	mS/cm Q	deg C Q	NTU Q
MW-13L	MW13L-GW032221	3/22/2021	182 J-	90.9	1.22 J	216	NS	0.735 J	0.28 J	2 U	2 U	0.21	7.3	62.7	6.94	1.112	12.9	40.1
MW-13S	OU2-MW13S-GW-091918	9/19/2018	415	116	NS	287	1250	4.3	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW13S-GW-112918	11/29/2018	416	104	NS	333	1210	5.3	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW13S-GW-030619	3/6/2019	376	117	NS	325	1100	1.96	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
MW-13S	OU2-MW13S-GW120519	12/5/2019	426 J	102	0.678	348	1270	1.13	0.65 J	2 U	2 U	0.31	1.83	18.8	6.96	2.007	12.7	15.4
	MW13S-GW061820	6/18/2020	415	219	1.12	332	1270	1.1	3	2 U	2 U	0.03	2.62	104	7.01	2.036	16.5	3.07
	MW13S-GW092320	9/23/2020	429	110	1.84	337	1220	1.07	14	2 U	2 U	0.19	4.5	152.9	6.97	2.136	17.3	39.2
	MW13S-GW121120	12/11/2020	369	107	2.25	359	NS	1.35	3.6	2 U	2 U	0.59	8.16	136.6	7.05	2.1	13.5	48.9
	MW13S-GW032221	3/22/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.31	3.41	64.5	6.92	1.889	11.4	20.03
MW-14D	OU2-MW14D-GW-091918	9/19/2018	201	103	NS	248	753	0.725 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW14D-GW-120418	12/4/2018	205	112	NS	248	749	0.843 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW14D-GW-030719	3/7/2019	189	103	NS	251	757	0.578 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW14D-GW120719	12/7/2019	213	104	3.41	246	827	0.344 J	0.38 J	2 U	2 U	0.02	3.26	80.5	7.14	1.305	12.16	0.03
	MW14D-GW062320	6/23/2020	213	105	0.916	248	872	0.443 J	0.3 J	2 U	2 U	0.11	3.4	88	7.24	1.331	18.2	0.59
	MW14D-GW092520	9/25/2020	208	112	0.988	262	840	0.518 J	0.28 J	2 U	2 U	0.04	7.85	163.6	7.33	1.265	18.3	1.02
	MW14D-GW121420	12/14/2020	193	102	4.14	255	NS	0.684 J	0.19 J	2 U	2 U	0.34	6.19	200.4	7.13	1.379	11.9	2.77
	MW14D-GW031821	3/18/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.09	3.23	-36.9	7.17	1.35	12.8	0.16
MW-14S	OU2-MW14S-GW-091918	9/19/2018	232	117	NS	279	879	1.38	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW14S-GW-120518	12/5/2018	289	120	NS	268	946	7.84	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW14S-GW-031119	3/11/2019	364	140	NS	384	1180	1.06	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW14S-GW120719	12/7/2019	303	109	0.197	257	930	0.869 J	0.22 J	2 U	2 U	0.06	1.69	21.5	7.1	1.724	11.46	4.15
	MW14S-GW062320	6/23/2020	251	127	1.86	253	960	0.913 J	0.26 J	2 U	2 U	1	0.41	11.1	7.05	1.803	20.2	21.8
	MW14S-GW092520	9/25/2020	252	124	1.4	270	968	0.948 J	0.49 J	2 U	2 U	0.94	2.46	-23.1	7.03	1.46	23.9	5.88
	MW14S-GW121420	12/14/2020	253	118	0.948	278	NS	1.75	0.28 J	2 U	2 U	0.14	0.92	83.4	6.97	1.25	9.3	11.6
	MW14S-GW031821	3/18/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	0.97	-111	7.21	1.64	11.4	32.2
MW-15D	OU2-MW15D-GW-092518	9/25/2018	299	143	NS	351	1090	0.928 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW15D-GW-120418	12/4/2018	318	147	NS	363	1150	0.958 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW15D-GW-031119	3/11/2019	281	128	NS	359	1090	0.831 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW15D-GW120719	12/7/2019	316	150	7.94	357	1220	0.665 J	2 U	2 U	2 U	0.58	5.48	172.2	6.89	1.988	13.58	8.6
	MW15D-GW061920	6/19/2020	310	147	3.11	350	1230	0.594 J	2 U	2 U	2 U	0.05	4.17	-62.1	6.94	1.919	14.3	18.1
	MW15D-GW092820	9/28/2020	318 J+	151	4.8	366	1050	1 U	2 U	2 U	2 U	0.04	5.47	143.2	6.86	1.754	14.4	2.1
	MW15D-GW120920	12/9/2020	380	162	7.28	300	NS	1.45	0.51 J	2 U	2 U	0.78	4.06	22.8	6.94	1.9	13.4	17.2
	MW15D-GW031621	3/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	3.45	-97.5	6.96	1.893	13.8	8.17
MW-15S	OU2-MW15S-GW-092518	9/25/2018	417	129	NS	380	1150	0.92 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW15S-GW-120418	12/4/2018	439	140	NS	384	1250	1.11	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW15S-GW-031119	3/11/2019	277	121	NS	263	953	1.49	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW15S-GW120719	12/7/2019	451	152	6.97	393	1430	0.682 J	2 U	2 U	2 U	0.04	6.4	58	6.89	2.39	13.76	1.87
	MW15S-GW061920	6/19/2020	378	139	3.24	368	1240	0.637 J	2 U	2 U	2 U	0 U	4.79	114	6.97	2.14	14.4	3.97
	MW15S-GW092820	9/28/2020	375 J+	149	4.44	388	1180	1 U	2 U	2 U	2 U	0 U	7.11	211.8	6.71	2.037	14.5	2.16
	MW15S-GW120920	12/9/2020	412	167	7.04	326	NS	1.66	2 U	2 U	2 U	0 U	4.87	78.6	6.88	2.047	13.4	7.58
	MW15S-GW031621	3/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	5.49	-41.6	6.94	2.079	13.9	3.67
MW-16D	OU2-MW16D-GW-092018	9/20/2018	107	147	NS	233	594	0.557 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW16D-GW-120618	12/6/2018	101	139	NS	237	636	13.1	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW16D-GW-031419	3/14/2019	96.9	140	NS	237	570	0.486 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW16D-GW120619	12/6/2019	143 J	146	3.25	233	641	0.71 J	2.3	2 U	2 U	0 U	8.54	111.4	7.18	1.044	12.39	2.75
	MW16D-GW062120	6/21/2020	98.2	144	2.11	229	689	0.294 J	2 U	2 U	2 U	0 U	6.32	111.8	7.12	1.062	14	1.24
	MW16D-GW092520	9/25/2020	107	156	1.03	246	670	0.396 J	2 U	2 U	2 U	0.02	9.26	141.6	6.98	1.015	13.6	0.89
MW-16S	MW16D-GW121020	12/10/2020	98.5	137	2.85	242	NS	2.88	2 U	2 U	2 U	0.49	6.29	111.1	7.31	1.093	11.9	5.5
	MW16D-GW031721	3/17/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.21	2.74	-37.4	7.2	1.058	13	1.85
	OU2-MW16S-GW-092018	9/20/2018	249	104	NS	279	832	0.682 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW16S-GW-120518	12/5/2018	253	101	NS	291	878	18.8	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW16S-GW-031419	3/14/2019	235	94.6	NS	287	868	0.583 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW16S-GW120619	12/6/2019	263 J	94.7	2.97	284	862	0.561 J	2 U	2 U	2 U	0.08	5.79	85	6.99	1.476	13.2	1.09
	MW16S-GW062120	6/21/2020	255	87.6	1.95	265	939	0.478 J	2 U	2 U	2 U	0.03	5.35	72.6	6.94	1.505	13.6	4.23
	MW16S-GW092520	9/25/2020	261	97.9	1.64	288	856	0.465 J	2 U	2 U	2 U	0.01	6.83	175.7	7.01	1.379	13.7	5.62
	MW16S-GW121020	12/10/2020	239	90.7	2.16	275	NS	1 U	2 U	2 U	2 U	0.37	5.07	195.1	7.1	1.531	12	5.72
	MW16S-GW031721	3/17/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.06	4.01	-41.4	7.08	1.486	13	8.8

Table 5-6
Geochemical Parameters in Groundwater

Location	Sample Identification	Sample Date	Chloride	Sulfate	Nitrate/ Nitrite[1]	Alkalinity[2]	TDS	TOC	Methane	Ethane	Ethene	Ferrous Iron	Dissolved Oxygen	ORP	pH	Specific Conductance	Temperature	Turbidity
			mg/L Q	mg/L Q	µg/L Q	mg/L Q	mg/L Q	mg/L Q	µg/L Q	µg/L Q	µg/L Q	mg/L Q	mg/L Q	mV Q	su Q	mS/cm Q	deg C Q	NTU Q
MW-17D	OU2-MW17D-GW-092418	9/24/2018	272	118	NS	296	916	0.827 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW17D-GW-121018	12/10/2018	268	123	NS	295	926	17.7 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW17D-GW-031219	3/12/2019	248	122	NS	295	940	0.802 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW17D-GW120819	12/8/2019	292	111	4.63	298	1020	0.606 J	2 U	2 U	2 U	0.02	6.99	122.9	7	1.732	12.16	0.7
	MW17D-GW062120	6/21/2020	269	108	3	286	971	0.52 J	0.2 J	2 U	2 U	0.28	4.94	109.3	7.07	1.618	17	47.6
MW-17D	MW17D-GW093020	9/30/2020	271	120	2.22	308	940	0.513 J	2 U	2 U	2 U	0.34	8.11	157.4	7.09	1.565	14.5	11.1
	MW17D-GW121320	12/13/2020	240	114	4.92	310	NS	1.08	0.18 J	2 U	2 U	0.11	4.77	117.8	6.99	1.628	11.7	37.1
	MW17D-GW031921	3/19/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	1.78	-66.3	7	1.58	12.8	30.7
MW-17S	OU2-MW17S-GW-092418	9/24/2018	371	136	NS	315	1040	2.19	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW17S-GW-120318	12/3/2018	350	126	NS	319	1200	1.76	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW17S-GW-031219	3/12/2019	357	123	NS	318	1140	1.37	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW17S-GW120819	12/8/2019	357	122	1.32	331	1190	1.35	0.25 J	2 U	2 U	0 U	3.53	12.2	7.02	2.045	8.32	11.7
	MW17S-GW062120	6/21/2020	322	121	2.09	310	1130	0.86 J	0.25 J	2 U	2 U	0.01	0.6	35.3	7.12	1.91	19.8	17.3
	MW17S-GW093020	9/30/2020	371	133	2.84	334	1090	0.801 J	2 U	2 U	2 U	0.24	3.33	120.8	6.85	1.807	15.9	1.69
	MW17S-GW121120	12/11/2020	299	122	2.62	329	NS	1.35	2 U	2 U	2 U	0.61	1.32	-3	7.08	1.89	9.5	14.4
	MW17S-GW031921	3/19/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.04	2.53	-82.7	7.04	1.804	12	16.2
MW-18	OU2-MW18-GW-091818	9/18/2018	357	108	NS	272	1010	0.839 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW18-GW-112718	11/27/2018	355	108	NS	272	1050	0.907 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW18-GW-030419	3/4/2019	327	116	NS	274	1060	0.873 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW18-GW120519	12/5/2019	342	110	3.64	276	1170	0.478 J	2 U	2 U	2 U	0.07	8.53	193.9	6.93	1.831	11.62	1.69
	MW18-GW061620	6/16/2020	358	106	3.78	279	1120	0.552 J	2 U	2 U	2 U	0.01	6.71	53	6.94	1.984	13.1	2.97
	MW18-GW092320	9/23/2020	392	111	0.908	286	1090	0.745 J	2 U	2 U	2 U	0 U	8.37	111.6	6.98	1.792	13.9	6.61
	MW18-GW121420	12/14/2020	370	104	5.04	281	NS	0.577 J	2 U	2 U	2 U	0 U	6.65	60.6	6.87	1.517	11.3	6.56
	MW18-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.36	5.26	-28.5	6.94	1.896	12.1	5.35
MW-19	OU2-MW19-GW-091818	9/18/2018	320	110	NS	259	962	0.788 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW19-GW-112718	11/27/2018	335	105	NS	263	961	0.869 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW19-GW-030419	3/4/2019	292	111	NS	261	975	0.738 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW19-GW120519	12/5/2019	302	99.3	3.21	263	962	0.539 J	2 U	2 U	2 U	0.32	8.36	47.5	7.02	1.615	12.38	0.97
	MW19-GW061620	6/16/2020	311	103	3.52	261	1020	0.521 J	0.18 J	2 U	2 U	0.04	6.49	69.2	7.03	1.779	13.6	10.37
	MW19-GW092320	9/23/2020	329	104	1.63 J	265	1090	0.507 J	2 U	2 U	2 U	0 U	7.94	111.1	7.03	1.605	14.1	6.16
	MW19-GW121420	12/14/2020	330	103	3.84	263	NS	1 U	2 U	2 U	2 U	0.12	6.18	14.6	6.9	1.439	12.3	13.2
	MW19-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.16	1.91	-32.7	7.08	1.764	12.6	4.44
MW-20D	OU2-MW20D-GW-091918	9/19/2018	112	90.5	NS	233 J	570	0.738 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW20D-GW-112618	11/26/2018	119	98.7	NS	235	547	0.722 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW20D-GW-030519	3/5/2019	109	82.8	NS	239	617	0.627 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW20D-GW120519	12/5/2019	137	87.2	3.1	248	593	0.406 J	0.2 J	2 U	2 U	0 U	7.54	179.7	7.08	1	12.3	1.54
	MW20D-GW061720	6/17/2020	126	96.6 J-	3.25	242	666	0.405 J	2 U	2 U	2 U	0 U	5.12	18.4	7.16	0.988	13.6	1.45
	MW20D-GW092420	9/24/2020	120	103	1.64 J	259	590	0.388 J	2 U	2 U	2 U	0 U	7.59	183.3	7.1	1.01	14.9	1.46
	MW20D-GW121520	12/15/2020	111	87.5	5.39	243	NS	0.361 J	2 U	2 U	2 U	0.04	8.76	16.4	7.17	0.475	11.9	8.52
	MW20D-GW031921	3/19/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.24	3.01	-35.7	7.1	0.996	13	3.64
MW-20S	OU2-MW20S-GW-091818	9/18/2018	110	102	NS	307	591	0.832 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW20S-GW-112818	11/28/2018	106	107	NS	308	622	0.796 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW20S-GW-030419	3/4/2019	110	98.8	NS	307	655	0.854 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW20S-GW120419	12/4/2019	111	101	4.65	351	713	0.643 J	0.19 J	2 U	2 U	0.02	4.13	97.3	7.01	1.182	13.01	1.51
	MW20S-GW061720	6/17/2020	115	89.7 J-	2.55	285	599	2.11	0.52 J	2 U	2 U	0 U	4.22	-29.7	7.35	0.969	13.7	1.3
	MW20S-GW092420	9/24/2020	107	94.4	1.07	289	612	0.771 J	2 U	2 U	2 U	0 U	6.81	177.6	7.19	1.016	14	0.75
	MW20S-GW121420	12/14/2020	106	88.8	4.54	290	NS	0.539 J	2 U	2 U	2 U	0.22	4.35	67.9	6.99	0.881	11.3	3.07
	MW20S-GW031921	3/19/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.05	4.13	-16.1	7.06	1.071	12.9	1.52
MW-21	OU2-MW21-GW-092018	9/20/2018	386	78.7	NS	271	1110	0.778 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW21-GW-112818	11/28/2018	349	73.5	NS	274	931	0.898 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW21-GW-030619	3/6/2019	321	69	NS	282	972	0.791 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	MW21-GW061820	6/18/2020	363	80.3	3.21	279	1080	0.716 J	2 U	2 U	2 U	0 U	6.23	92.1	6.85	1.841	14.6	2.61
	MW21-GW092320	9/23/2020	424	70.9	0.492	292	1030	0.571 J	2 U	2 U	2 U	0.02	8.88	91.3	7.04	1.801	17.3	4.66
	MW21-GW121420	12/14/2020	322	74.2	3.99	268	NS	1.01	2 U	2 U	2 U	0.16	7.69	50.8	6.97	1.804	12.5	8.51
	MW21-GW031621	3/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0 U	3.16	-79.2	7.07	1.807	13.5	3.16

Table 5-6
Geochemical Parameters in Groundwater

Location	Sample Identification	Sample Date	Chloride	Sulfate	Nitrate/ Nitrite[1]	Alkalinity[2]	TDS	TOC	Methane	Ethane	Ethene	Ferrous Iron	Dissolved Oxygen	ORP	pH	Specific Conductance	Temperature	Turbidity
			mg/L Q	mg/L Q	µg/L Q	mg/L Q	mg/L Q	mg/L Q	µg/L Q	µg/L Q	µg/L Q	mg/L Q	mg/L Q	mV Q	su Q	mS/cm Q	deg C Q	NTU Q
MW-22	OU2-MW22-GW-092018	9/20/2018	294	128	NS	280	946	0.824 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW22-GW-112818	11/28/2018	289	127	NS	284 J	929	0.88 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	OU2-MW22-GW-030619	3/6/2019	284	123	NS	286	1010	0.841 J	NS	NS	NS	NS	NR	NR	NR	NR	NR	NR
	MW22-GW061720	6/17/2020	266	121	3.44	288	934	0.478 J	2 U	2 U	2 U	0.08	5.89	-18.1	6.96	1.625	13.4	4.34
	MW22-GW092320	9/23/2020	293	125	1.8	295	966	0.733 J	2 U	2 U	2 U	0.02	8.21	178.5	6.97	1.581	13.5	5.22
	MW22-GW121420	12/14/2020	282	128	1.47	297	NS	1.05	2 U	2 U	2 U	0.24	6.78	86	6.92	1.718	12.2	7.75
	MW22-GW032121	3/21/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.47	2.67	-28.3	7.05	1.084	12.5	7.78
MW-23A	MW23A-GW101920	10/19/2020	317	107	0.698	278	1390	0.891 J	9.3	4.5	2.7	1.35	1.67	-127.3	7.39	1.542	20.2	4
	MW23A-GW120920	12/9/2020	314	104	0.953	295	NS	1.3	1.7 J	0.69 J	0.88 J	1.32	3.82	-65.3	6.98	1.758	11.5	33.6
	MW23A-GW031621	3/16/2021	329 J	90.9	1.02	285	NS	1.13	1.1 J	0.37 J	0.78 J	1.36	2.87	-55.9	7.08	1.738	12.9	11.6
MW-23B	MW23B-GW102020	10/20/2020	185	97.6	2.49	309	848	0.415 J	0.32 J	2 U	2 U	0.12	3.03	-67.1	7.11	1.288	19	18.6
	MW23B-GW121020	12/10/2020	208	92.9	2.22	273	NS	0.916 J	0.33 J	2 U	0.32 J	0.11	3.63	74.8	7.07	1.13	14	36.2
	MW23B-GW031621	3/16/2021	184 J	81.9	2.58	258	NS	0.82 J	0.42 J	2 U	0.52 J	0.45	4.01	74	7.07	1.306	14.6	38.3
MW-23C	MW23C-GW062320	6/23/2020	63.4	232	3.59	288	1410	0.971 J	7.4	4.5	1.7 J	0.23	0.31	-156.7	7.32	1.071	24.2	0.8
	MW23C-GW101920	10/19/2020	60.5	226	1.47	236	735	0.323 J	6.8	3.2	14	0.03	1.45	-121.6	7.54	0.91	19.1	12.7
	MW23C-GW120920	12/9/2020	53.7	202	1.22	240	NS	1 U	0.89 J	0.33 J	0.77 J	0 U	3.76	15.1	7.25	0.646	9.4	19.7
	MW23C-GW031621	3/16/2021	62.9 J	206	1.6	224	NS	0.772 J	1.4 J	0.6 J	2	0.03	2.37	9.4	7.21	1.017	13.5	7.5
MW-24	MW24-GW102020	10/20/2020	312	96.6	1.96	286	1050	0.404 J	2 U	2 U	2 U	0 U	6.41	-86.8	7.01	1.666	15.2	0.31
	MW24-GW120820	12/8/2020	346	109	2.3	271	NS	1.2	2 U	2 U	2 U	0.04	5.3	-2.8	7.04	1.66	14.1	1.16
	MW24-GW032121	3/21/2021	311 J-	87.1	1.85	268	NS	0.385 J	2 U	2 U	2 U	0 U	6.07	22.5	7.05	1.498	13.2	4.7
MW-25A	MW25A-GW093020	9/30/2020	333	102	2.03	297	967	0.389 J	2 U	2 U	2 U	0.13	7.48	311.2	6.78	1.701	18.6	29.1
	MW25A-GW120920	12/9/2020	307	110	1.78	289	NS	1 U	2 U	2 U	2 U	0.08	2.01	-71.1	7.01	2.016	10.9	52.4
	MW25A-GW032121	3/21/2021	322 J-	87	2.02	276	NS	0.84 J	2 U	2 U	2 U	0.02	5.87	76.2	7.33	1.728	9.1	19.3
MW-25B	MW25B-GW093020	9/30/2020	198	99.8	2.45	282	807	0.311 J	2 U	2 U	2 U	0 U	5.23	251.1	6.82	1295	15.7	3.06
	MW25B-GW121020	12/10/2020	183	94.9	2.26	276	NS	0.982 J	2 U	2 U	2 U	0 U	2.2	-83.5	7.11	1.045	9.6	18.2
	MW25B-GW032121	3/21/2021	187 J-	84.3	2.76	259	NS	0.722 J	2 U	2 U	0.33 J	0.06	5.53	169.4	6.97	1.313	10.8	5.9
MW-25C	MW25C-GW061920	6/19/2020	86.7	133	1.98	236	620	0.332 J	1.2 J	0.39 J	2 U	0.03	4.46	-80.7	7.21	0.948	15.4	0
	MW25C-GW093020	9/30/2020	90.4	126	2.61	250	599	0.373 J	0.71 J	2 U	0.62 J	0.01	6.76	128.8	6.99	943	16.7	1.29
	MW25C-GW121020	12/10/2020	77.2	120	2.68	249	NS	0.941 J	0.61 J	2 U	0.76 J	0.04	4.24	-77.8	7.24	0.752	11.2	23.1
	MW25C-GW032121	3/21/2021	86.5 J-	108	3.08	228	NS	0.711 J	0.4 J	2 U	0.49 J	0.62	6.84	145.9	7.08	0.952	12.1	11.4
MW-26A	MW26A-GW092520	9/25/2020	402	116	1.47	NS	NS	0.767 J	0.22 J	2 U	2 U	1.49	6.25	95.4	6.97	1873	22.8	11.1
	MW26A-GW121620	12/16/2020	369	95.7	2	302	NS	1.53	0.17 J	2 U	2 U	0 U	4.46	14.2	6.92	1.97	12.7	7.7
	MW26A-GW031721	3/17/2021	352 J	92.7	2.18	287	NS	1.03	2 U	2 U	2 U	0.02	4.25	93.1	6.92	1.917	15.5	3.44
MW-26B	MW26B-GW121620	12/16/2020	211	89.4	2.37	278	NS	1.16	0.25 J	2 U	2 U	0.28	3.47	185.1	7.01	0.622	14.9	4.69
	MW26B-GW031721	3/17/2021	189 J	83.1	2.48	262	NS	0.754 J	0.2 J	2 U	2 U	0.02	2.81	93.7	6.91	1.359	16.4	1.16
MW-26C	MW26C-GW031821	3/18/2021	81.2 J	110	2.94	233	NS	0.948 J	0.23 J	2 U	2 U	0.8	2.61	132.2	7.06	0.943	15.9	3.51
MW-26D	MW26D-GW031821	3/18/2021	59.3 J	191	1.68	226	NS	0.774 J	0.34 J	2 U	2 U	0.2	3.12	5.6	7.3	1.023	15.8	1.79
MW-27	MW27-GW062420	6/24/2020	338	106	1.56	288	1160	0.45 J	2 U	2 U	2 U	0.28	4.89	91.8	6.82	1.889	17.1	0.42
	MW27-GW092420	9/24/2020	368	104	1.85	305	1110	0.452 J	2 U	2 U	2 U	0.03	8.23	65.6	7.12	1.758	17.5	0.67
	MW27-GW120820	12/8/2020	459	115	2.05	294	NS	0.762 J	2 U	2 U	2 U	0.12	5.32	-0.1	7.07	1.83	15.4	0.8
	MW27-GW031621	3/16/2021	309 J	91.8	2.19	278	NS	1.57	0.22 J	2 U	2 U	0 U	4.76	46.9	7.05	2.087	15.1	0.71
MW-28	MW28-GW062420	6/24/2020	373	110	2.52	297	1230	0.491 J	0.21 J	2 U	2 U	0.07	4.76	30.7	6.9	2.016	15.4	3.91
	MW28-GW092420	9/24/2020	417	105	1.17	315	1180	0.475 J	2 U	2 U	2 U	0.03	8.3	143.2	7.12	1.866	16.8	1.09
	MW28-GW120820	12/8/2020	455	113	2.47	286	NS	0.832 J	2 U	2 U	2 U	0.05	5.6	-16.4	7.12	1.91	13.8	0.52
	MW28-GW032121	3/21/2021	385 J-	86.8	2.32	277	NS	0.512 J	2 U	2 U	2 U	0.12	7.16	17.2	6.97	1.703	12.9	4.11
MW-29A	MW29A-GW092820	9/28/2020	235 J+	115	1.88	306	897	1 U	2 U	2 U	2 U	0 U	8.57	68.8	7.05	1.356	17.3	0.32
	MW29A-GW121320	12/13/2020	195	96.9	3.99	302	NS	0.743 J	2 U	2 U	2 U	0.02	7.6	142.9	6.96	0.958	5.1	0.84
	MW29A-GW031921	3/19/2021	203 J	91.3	2.03	292	NS	0.846 J	0.18 J	2 U	2 U	0 U	5.42	164.7	7.17	1.19	10.1	0.35
MW-29B	MW29B-GW092820	9/28/2020	212 J+	127	1.67	265	873	1 U	0.87 J	0.37 J	2 U	0.11	5.87	132.1	6.87	1.315	12.2	20.7
	MW29B-GW121120	12/11/2020	198	120	2.11	266	NS	0.672 J	0.33 J	2 U	2 U	0.2	1	-61.4	7.1	1.059	8.5	35.2
	MW29B-GW031921	3/19/2021	372 J	106	2.08	250	NS	0.638 J	0.3 J	2 U	2 U	0 U	4.75	143.8	7.08	1.292	10.9	9.53
MW-29C	MW29C-GW092820	9/28/2020	170	114	2.79	272	785	0.395 J	2 U	2 U	2 U	0.02	7.95	50.3	7.2	1.184	13.8	4.21
	MW29C-GW121120	12/11/2020	143	113	4.01	268	NS	0.6 J	2 U	2 U	2 U	0.22	5.15	85.9	6.89	0.978	10	6.64
	MW29C-GW031921	3/19/2021	147 J	100	2.99	252	NS	0.733 J	0.26 J	2 U	2 U	0 U	4.18	44.7	6.94	1.197	12.3	7.34
MW-30C	MW30C-GW092120	9/21/2020	268	89.9	0.906	295	890	0.998 J	1.8 J	0.76 J	0.57 J	0.45	1.46	-82.5	7.1	1.471	20.7	2.77
	MW30C-GW120920	12/9/2020	324	93.8	2.22	265	NS	1.42	0.86 J	2 U	0.44 J	0.64	2.92	-50	7.08	1.028	13.6	7.27
	MW30C-GW031621	3/16/2021	249 J	73.4	2.55	265	NS	1.36	0.77 J	2 U	0.65 J	0.09	1.67	-16.5	7.19	1.641	12.8	8.78

Table 5-6
Geochemical Parameters in Groundwater

Location	Sample Identification	Sample Date	Chloride	Sulfate	Nitrate/ Nitrite[1]	Alkalinity[2]	TDS	TOC	Methane	Ethane	Ethene	Ferrous Iron	Dissolved Oxygen	ORP	pH	Specific Conductance	Temperature	Turbidity
			mg/L Q	mg/L Q	µg/L Q	mg/L Q	mg/L Q	mg/L Q	µg/L Q	µg/L Q	µg/L Q	mg/L Q	mg/L Q	mV Q	su Q	mS/cm Q	deg C Q	NTU Q
MW-30RA	MW30RA-GW120820	12/8/2020	352	88.9	3.12	245	NS	0.764 J	0.18 J	2 U	2 U	0 U	6.43	70.5	7.01	1.568	13.6	7.15
	MW30RA-GW031621	3/16/2021	301 J	73.9	2.95	283	NS	1.02	2 U	2 U	2 U	0 U	4.99	89.3	7.03	1.847	13.5	1.14
MW-30RB	MW30RB-GW120820	12/8/2020	350	93	3.42	265	NS	0.662 J	0.96 J	2 U	2 U	0.06	6.22	35.7	7	1.508	13.6	4.47
	MW30RB-GW031621	3/16/2021	276 J	72.9	3.32	261	NS	0.818 J	0.19 J	2 U	2 U	0 U	5.14	115.3	7.06	1.556	13.1	1.68
MW-31A	MW31A-GW092320	9/23/2020	156	107	0.691	NS	NS	0.656 J	2 U	2 U	2 U	0.05	8.85	137.3	7.48	1.148	20.4	1.36
	MW31A-GW121120	12/11/2020	154	111	1.33	287	NS	1.03	2 U	2 U	2 U	0.07	6.13	120.7	7.07	0.904	6.8	3.4
	MW31A-GW031821	3/18/2021	190 J-	88.7	2.04	261	NS	0.855 J	2 U	2 U	2 U	0.04	6.14	75.2	7.14	1.267	12.7	8.18
MW-31B	MW31B-GW092320	9/23/2020	142	151	1.42	262	750	0.48 J	2 U	2 U	2 U	0.05	7.61	273.4	7	1.09	13	17.1
	MW31B-GW121120	12/11/2020	124	157	1.92	257	NS	0.996 J	2 U	2 U	2 U	0.03	6.69	65	6.94	1.237	10.7	22.1
	MW31B-GW031821	3/18/2021	129 J-	146	2.46	242	NS	0.71 J	2 U	2 U	2 U	0 U	7.52	103.9	7.08	1.122	10.7	3.98
MW-31C	MW31C-GW092320	9/23/2020	85.3	214	0.496	211	649	1.05	15	8.8	1.5 J	1.02	3.5	-110.1	7.61	0.972	13.1	5.64
	MW31C-GW121120	12/11/2020	82.8	216	1.61	224	NS	1.75	4.6	2.9	0.59 J	1.14	1.05	-121.1	7.12	1.109	10.5	4.49
	MW31C-GW031821	3/18/2021	85.5 J-	178	1.64	212	NS	1.29	3.8	2.7	1 J	0.48	0.82	-72.9	7.23	0.797	11.1	7.81
MW-32A	MW32A-GW092220	9/22/2020	210	101	0.923	272	755	0.354 J	0.35 J	2 U	2 U	0.05	8.28	128.3	7.47	1.32	15.1	22
	MW32A-GW121020	12/10/2020	247	107	2.34	275	NS	0.587 J	0.18 J	2 U	2 U	0.27	7	26.2	7.01	1.495	12.2	11.2
	MW32A-GW031721	3/17/2021	198 J	93.7	2.21	276	NS	0.918 J	2 U	2 U	2 U	0.03	7.06	110.9	7.27	1.128	13.2	7.06
MW-32B	MW32B-GW092220	9/22/2020	101	156	1.52	255	590	0.26 J	0.21 J	2 U	2 U	0.06	7	-48.3	7.14	1.016	17.4	3.68
	MW32B-GW121020	12/10/2020	101	142	2.67	246	NS	0.474 J	0.18 J	2 U	2 U	0 U	5.6	-49.5	7.02	1.083	12.4	1.52
	MW32B-GW031721	3/17/2021	106 J	132	3.44	238	NS	0.777 J	0.22 J	2 U	2 U	0.02	6.67	34.8	7.26	0.93	12.7	2.88
MW-32C	MW32C-GW092220	9/22/2020	66.1	173	1.51	245	621	0.285 J	0.32 J	2 U	2 U	0.03	6.6	-137.2	7.36	0.934	20.7	1.24
	MW32C-GW121020	12/10/2020	59.4	164	2.84	238	NS	0.42 J	0.3 J	2 U	0.67 J	0.06	5.64	-10.5	7.14	0.706	8	3.57
	MW32C-GW031721	3/17/2021	61.3 J	153	2.89	226	NS	0.371 J	0.24 J	2 U	2 U	0.19	6.08	-18.4	7.31	1.068	12.8	0.56
MW-34A	MW34A-GW121520	12/15/2020	171	98.3	4.39	252	NS	0.837 J	2 U	2 U	2 U	0.17	6.17	-4.9	7.16	1.33	10.6	1.03
	MW34A-GW031921	3/19/2021	157 J	86.6	1.78	233	NS	0.766 J	0.18 J	2 U	2 U	0.01	6	131.1	7.19	1.131	12.9	1.04
MW-34B	MW34B-GW092720	9/27/2020	154 J+	107	2.22	237	722	1 U	6.2	2.9	0.57 J	0 U	6.71	86.4	7.27	1.074	16.5	48
	MW34B-GW031921	3/19/2021	132 J	98.4	2	225	NS	0.79 J	0.39 J	2 U	2 U	0.04	3.5	28.3	7.14	1.083	16.7	3.69
MW-34C	MW34C-GW092720	9/27/2020	39.3 J+	144	0.419	244	516	1 U	1.9 J	0.73 J	2 U	0.06	1.63	121.1	7.3	0.772	16.1	12.3
	MW34C-GW031921	3/19/2021	30.7 J	115	0.709	228	NS	0.753 J	0.44 J	2 U	2 U	0 U	2.99	53	7.4	0.717	14.2	7.29
MW-34D	MW34D-GW092720	9/27/2020	48.2 J+	158	2.02	256	652	1 U	0.73 J	2 U	2 U	0.07	4.29	160.8	7.18	0.87	15.5	5.88
	MW34D-GW121320	12/13/2020	47.9	148	2.06	252	NS	0.925 J	0.34 J	2 U	0.35 J	0 U	5.05	76.6	7.08	0.909	12.8	6.04
	MW34D-GW031921	3/19/2021	44.6 J	132	2.54	235	NS	0.558 J	0.5 J	2 U	0.88 J	0.46	4.41	69.1	7.09	0.87	12.9	2
MW-36	MW36-GW121420	12/14/2020	225	132	1.58	339	NS	1 U	0.47 J	2 U	2 U	0.12	0.87	-80.5	7.23	0.913	12.3	6.87
	MW36-GW031621	3/16/2021	186 J	129	0.695	330	NS	1 U	2 U	2 U	2 U	0.07	3.8	-174.4	6.94	1.535	13.1	4.39
MW-37D	MW37D-GW121420	12/14/2020	295	199	3.07	343	NS	1.36	1.1 J	2 U	2 U	0 U	4.28	-36.7	7.02	1.14	13.8	6.94
	MW37D-GW031721	3/17/2021	272 J	191	1.92	318	NS	1.06	0.19 J	2 U	2 U	0 U	2.71	-56.5	6.97	1.948	15.2	2.66
MW-37S	MW37S-GW121420	12/14/2020	451	199	6.42	405	NS	1.74	2 U	2 U	2 U	0 U	5.53	52.8	6.82	1.477	12.4	2.96
	MW37S-GW031721	3/17/2021	360 J	198	2.09	380	NS	1 U	2 U	2 U	2 U	0 U	0.05	-57.6	6.95	2.358	15.5	0.73
MW-38D	MW38D-GW121620	12/16/2020	173	136	3.51	255	NS	0.35 J	0.25 J	2 U	2 U	0.14	7.69	147.8	6.96	1.281	12.5	13.6
	MW38D-GW031821	3/18/2021	156 J	128	3.88	236	NS	0.726 J	2 U	2 U	2 U	0 U	3.31	-30.1	7.11	1.27	13.2	2.57
MW-38S	MW38S-GW121620	12/16/2020	257	104	4.21	271	NS	0.89 J	2 U	2 U	2 U	0.12	5.98	56.2	6.93	1.63	13.4	15.9
	MW38S-GW031721	3/17/2021	235 J	97.9	4.43	262	NS	0.888 J	2 U	2 U	2 U	0.29	2.43	-37.4	7.08	1.536	13.6	14.7
GW-010/ RG-01	A-GW-10_07/12/2016	7/12/2016	689	122	NS	NS	1840	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-10_09/20/2016	9/20/2016	824	155	NS	NS	1890	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	RG01-GW041621	4/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.06	4.95	150.1	6.92	2.084	12.7	3.41
GW-011/ RG-02	A-GW-11_07/11/2016	7/11/2016	257	100	NS	NS	976	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-11_09/19/2016	9/19/2016	261	103	NS	NS	1010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	RG02-GW041621	4/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.1	7.17	150.6	6.83	1.4	12.2	6.23
GW-014	A-GW-014_03022016	3/2/2016	299	162	NS	430	1200	NS	NS	NS	NS	NS	NS	NS	6.25	NS	NS	NS
GW-015	A-GW-015_02292016	2/29/2016	230	101	NS	290	896	NS	NS	NS	NS	NS	NS	NS	6.36	NS	NS	NS
GW-016/ RG-03	A-GW-16_07/11/2016	7/11/2016	289	101	NS	NS	996	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-16_09/19/2016	9/19/2016	283	101	NS	NS	1060	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GW-020/ RG-04	A-GW-020_03012016	3/1/2016	217	126	NS	460	936	NS	NS	NS	NS	NS	NS	NS	6.55	NS	NS	NS
	A-GW-20_07/11/2016	7/11/2016	172	112	NS	NS	746	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-20_09/19/2016	9/19/2016	176	111	NS	NS	820	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GW-049	A-GW-049_02252016	2/25/2016	275	126	NS	320 J	1180	NS	NS	NS	NS	NS	NS	NS	6.62	NS	NS	NS
	A-GW-49_07/12/2016	7/12/2016	258	121	NS	NS	930	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-49_09/20/2016	9/20/2016	190	97.1	NS	NS	944	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 5-6
Geochemical Parameters in Groundwater

Location	Sample Identification	Sample Date	Chloride	Sulfate	Nitrate/ Nitrite[1]	Alkalinity[2]	TDS	TOC	Methane	Ethane	Ethene	Ferrous Iron	Dissolved Oxygen	ORP	pH	Specific Conductance	Temperature	Turbidity
			mg/L Q	mg/L Q	µg/L Q	mg/L Q	mg/L Q	mg/L Q	µg/L Q	µg/L Q	µg/L Q	mg/L Q	mg/L Q	mV Q	su Q	mS/cm Q	deg C Q	NTU Q
GW-050	A-GW-050_02292016	2/29/2016	**281**	**113**	NS	**310**	**964**	NS	NS	NS	NS	NS	NS	NS	**6.63**	NS	NS	NS
	A-GW-50_07/12/2016	7/12/2016	**177**	**110**	NS	NS	**750**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-50_09/20/2016	9/20/2016	**133**	**87.1**	NS	NS	**750**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GW-052/ RG-07	A-GW-52_07/12/2016	7/12/2016	**290**	**94.5**	NS	NS	**1070**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-52_09/20/2016	9/20/2016	**222**	**74.5**	NS	NS	**1100**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	RG07-GW041621	4/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	**0.02**	**8.9**	**169.2**	**6.88**	**2.223**	**11.5**	**10.28**
GW-053	A-GW-53_07/11/2016	7/11/2016	**303**	**114**	NS	NS	**1070**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-53_09/19/2016	9/19/2016	**302**	**119**	NS	NS	**1160**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GW-059/ RG-09	A-GW-59_07/11/2016	7/11/2016	**432**	**107**	NS	NS	**1510**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-59_09/19/2016	9/19/2016	**374**	**119**	NS	NS	**1310**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	RG09-GW041621	4/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	**0.11**	**7.97**	**172.9**	**6.96**	**1.596**	**11.5**	**2.39**
GW-061	A-GW-61_07/12/2016	7/12/2016	**297**	**126**	NS	NS	**1090**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	A-GW-61_09/20/2016	9/20/2016	**380**	**163**	NS	NS	**1170**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RG-05	RG05-GW041621	4/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**6.07**	**127.1**	**7.2**	**2.977**	**13**	**44.7**
RG-11	RG11-GW041621	4/16/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	**0.07**	**5.1**	**147.3**	**7.7**	**0.2982**	**10.4**	**45.18**

Notes:
Bold indicates detected values
Italics indicates nondetected values
[1] Nitrate and Nitrite as total Nitrogen
[2] Total Alkalinity as calcium carbonate ($CaCO_3$)

deg C = degrees Celsius
ORP = oxidation reduction potential
OU = operable unit
mg/L = milligram per liter
µg/L = microgram per liter
mS/cm = millisiemens per centimeter
mV = millivolts
NR = not recorded
NTU = nephelometric turbidity unit
NS = not sampled
PCE = tetrachloroethene
su = standard units
TOC = total organic carbon
TDS = total dissolved solids

Q = qualifier
J = Result is estimated
J+ = Result is estimated, biased high
J- = Result is estimated, biased low
U = Analyte was not detected at the associated value, which is the reporting limit

Table 5-7
Dissolved and Total Metals in Groundwater

Location	Sample Identification	Sample Date	Sample Type	Aluminum µg/L Q	Antimony µg/L Q	Arsenic µg/L Q	Barium µg/L Q	Beryllium µg/L Q	Cadmium µg/L Q	Calcium µg/L Q	Chromium µg/L Q	Cobalt µg/L Q	Copper µg/L Q	Iron µg/L Q	Lead µg/L Q	Magnesium µg/L Q	Manganese µg/L Q	Mercury µg/L Q	Nickel µg/L Q	Potassium µg/L Q	Selenium µg/L Q	Silver µg/L Q	Sodium µg/L Q	Thallium µg/L Q	Vanadium µg/L Q	Zinc µg/L Q
MW-01D	A-GW-MW-01D_04262016M	4/26/2016	Total	142	2 U	0.57 J	29.4	1 U	1 U	130000	10.7	0.59 J	2 U	341	2.1	36800	12.9	0.2 U	10.2	3740	5 U	1 U	182000	1 U	1.8 J	60
	A-GW-MW-01D_04262016M-DISSOLVED		Dissolved	1.7 J	2 U	0.37 J	28	1 U	1 U	129000	1.5 J	0.34 J	1.4 J	31.1 J	1 U	36100	3.1	0.2 U	8.7	3620	5 U	0.07 J	177000	1 U	1.3 J	38.9
	A-GW-MW-01D_07/13/2016M	7/13/2016	Total	20 U	2 U	1 U	24.4	1 U	1 U	128000	34.2 J	1 UJ	2 U	685	1 U	39400	9.5	0.2 U	31.5	2040	0.61 J	1.1	53000	1 U	5 U	19.5
	A-GW-MW-01D_07/13/2016M-F		Dissolved	20 U	2 U	1 U	24	1 U	1 U	129000	2 U	1 U	2 U	408	1 U	38200	6	0.2 U	19.8	2170	0.93 J	1 J	51200	1 U	0.37 J	14.4
	A-GW-MW-01D_09212016M	9/21/2016	Total	88.5	4 U	2 U	25	2 U	2 U	146000	5.8	0.45 J	5.8	149 J	2 U	35100	7.1	0.2 U	5.2	2210	10 U	2 U	37100	2 U	10 U	21.7
	A-GW-MW-01D_09212016M-F		Dissolved	20 U	2 U	0.68 J	52.9	1 U	1 U	142000	2.7	0.31 J	0.96 J	200 U	0.75 J	41600	0.8 J	0.2 U	4.2	1920	0.95 J	1 U	74000	1 U	1.5 J	5.6
	OU2-MW01D-GW-121118	12/11/2018	Total	500 U	5 U	5 U	26	5 U	5 U	146000	0.777 J	0.598 J	2.95 J	500 U	5 U	40600	2.85 J	0.5 U	5 U	2380	1.29 J	5 U	41500	5 U	1.71 J	100 U
	OU2-MW01D-GW-031819	3/18/2019	Total	100 U	1 U	0.672 J	85.6	1 U	1 U	138000	9.68	0.255 J	1.85	15.5 J	0.422 J	36100	1.35	0.5 U	0.31 J	8800	1.13	1 U	792000	1 U	1.85	7.66 J
	OU2-MW01D-GW120619	12/6/2019	Total	100 U	1 U	0.56 J	23.1	1 U	1 U	124000 J	3.99	0.381 J	2 U	100 U	1 U	34600	0.895 J	0.5 U	3.96	2110	1.18	1 U	37500	1 U	1.16	20 U
	MW01D-GW061720	6/17/2020	Total	238	1 U	0.359 J	23.3	1 U	1 U	136000	4.26	0.133 J	2 U	100 U	1 U	37900	1 U	0.5 U	1.98	2280	1.22	1 U	38700	1 U	1.44	20 U
	MW01D-GW092920	9/29/2020	Total	100 U	1 U	0.344 J	23.6	1 U	1 U	144000	0.943 J	1 U	2 U	100 U	1 U	39000	1 U	0.5 U	0.567 J	2310	1.25	1 U	40800	1 U	1.62	20 U
	MW01D-GW121520	12/15/2020	Total	36.6 J	1 U	1 U	24	1 U	1 U	134000	1.29	0.269 J	2 U	100 U	1 U	35500	1 U	0.5 U	1 U	2230	1.28	1 U	37900	1 U	1.32	20 U
MW-01S	A-GW-MW-01S_04282016M	4/28/2016	Total	210 J	2 U	0.8 J	56.8	1 U	1 U	141000	18.1	39.1	2 U	316	0.26 J	47500	14.6	0.2 U	15.7	2100	1.7 J	1 U	72400	1 U	2.6 J	2 U
	A-GW-MW-01S_04282016M-DISSOLVED		Dissolved	2.5 J	2 U	0.62 J	55.6	1 U	1 U	145000	2	20.3	1.3 J	38.6 J	0.43 J	49200	3.4	0.2 U	8.9	2100	5 U	0.06 J	74500	1 U	2.1 J	24.9
	A-GW-MW-01S_07/14/2016M	7/14/2016	Total	2920	2 U	1 U	97.2	1 U	1 U	147000	94.7 J	1 UJ	2 U	3450	1 U	56200	77.3	0.2 U	69.8	2640	5 U	1 U	77700	1 U	5 U	45.5
	A-GW-MW-01S_07/14/2016M-F		Dissolved	20 U	2 U	1 U	53.5	1 U	1 U	137000	2 U	1 U	2 U	373	1 U	51100	6.6	0.2 U	14.8	2030	5 U	1 U	73200	1 U	0.92 J	13.6
	A-GW-MW-01S_09222016M	9/22/2016	Total	55.9	4 U	0.76 J	55.3	2 U	2 U	151000	7.7	0.31 J	1.1 J	64.6 J	2 U	46300	2.3	0.2 U	5.7	2170	10 U	2 U	71400	2 U	10 U	5.8
	A-GW-MW-01S_09222016M-F		Dissolved	20 U	2 U	0.37 J	25.1	1 U	1 U	141000	1.4 J	0.33 J	1.2 J	200 U	0.34 J	32300	1.9	0.2 U	4.3	1990	1.4 J	1 U	34900	1 U	1.2 J	12.7
	OU2-MW01S-GW-121118	12/11/2018	Total	500 U	5 U	0.908 J	67.3	5 U	5 U	160000	5 U	0.633 J	1.77 J	500 U	5 U	56300	0.57 J	0.5 U	5 U	2530	1.01 J	5 U	93900	5 U	2.36 J	100 U
	OU2-MW01S-GW-031819	3/18/2019	Total	100 U	1 U	0.774 J	59	1 U	1 U	165000	1.49	0.256 J	0.428 J	18.2 J	0.393 J	53900	0.772 J	0.5 U	1.61	2300	0.934 J	1 U	87600	1 U	1.93	20 U
	MW01S-GW062120	6/21/2020	Total	100 U	1 U	0.686 J	54	1 U	1 U	152000	0.745 J	0.11 J	2 U	100 U	1 U	52900	1 U	0.5 U	1 U	2280	0.826 J	1 U	84800	1 U	2.17	20 U
	MW01S-GW092920	9/29/2020	Total	100 U	1 U	0.723 J	56.2	1 U	1 U	163000	1.83	0.141 J	2 U	100 U	1 U	56300	1 U	0.5 U	1.1	2330	0.95 J	1 U	87500	1 U	2.44	20 U
	MW01S-GW121620	12/16/2020	Total	100 U	1 U	1 U	57.9	1 U	1 U	152000	1 U	0.317 J	2 U	100 U	1 U	52600	1.05	0.5 U	1 U	2340	1 U	1 U	79700	1 U	2	21.3
MW-02	A-GW-MW-02_04272016M	4/27/2016	Total	20 UJ	2 U	1.1	87.8	1 U	1 U	172000	10.2	2.3	2 U	86.8 J	1 U	60400	1.4	0.2 U	6.6	2410	5 U	1 U	118000	1 U	2.6 J	2 U
	A-GW-MW-02_04272016M-DISSOLVED		Dissolved	20 U	2 U	1	85.3	1 U	1 U	171000	2.8	1.5	1.3 J	50.5 J	0.16 J	59800	1.2	0.2 U	5.7	2370	5 U	0.06 J	118000	1 U	2.4 J	6.2
	A-GW-MW-02_07/14/2016M	7/14/2016	Total	20 U	2 U	1 U	80.2	1 U	1 U	163000	21 J	1 UJ	2 U	557	1 U	65000	1 U	0.2 U	18.4	2150	5 U	1 U	115000	1 U	5 U	2 U
	A-GW-MW-02_07/14/2016M-F		Dissolved	20 U	2 U	1 U	24.8	1 U	1 U	171000	2 U	1 U	2 U	362	1 U	57700	2.7	0.2 U	11.1	1810	1 U	1 U	32200	1 U	5 U	123
	A-GW-MW-02_09222016M	9/22/2016	Total	40 U	4 U	0.86 J	79.5	2 U	2 U	175000	4.7	0.43 J	1.5 J	400 U	2 U	54000	0.97 J	0.2 U	3.7	2370	10 U	2 U	112000	2 U	2.2 J	10.6
	A-GW-MW-02_09222016M-F		Dissolved	20 U	2 U	1.1	82.7	1 U	1 U	174000	2.1	0.39 J	1.6 J	200 U	0.35 J	60400	1.4	0.2 U	3.4	2340	0.99 J	1 U	118000	1 U	2.2 J	12
	OU2-MW02-GW-121818	12/18/2018	Total	100 U	1 U	1.2	99.9	1 U	1 U	199000	1.17	0.533 J	3.64	100 U	3.13	73300	0.423 J	0.5 U	0.185 J	2870	0.729 J	1 U	145000	1 U	2.31	9.59 J
	OU2-MW02-GW-040919	4/9/2019	Total	500 U	5 U	1.14 J	88.6	5 U	5 U	201000	1.67 J	0.654 J	10.1	32.4 J	1.31 J	73000	0.721 J	0.5 U	2.35 J	4000	5 U	5 U	178000	5 U	2.4 J	55.8 J
	OU2-MW02-GW120519	12/5/2019	Total	100 U	1 U	0.999 J	77.8	1 U	1 U	189000	0.859 J	0.168 J	2 U	25.6 J	1 U	72100	1 U	0.5 U	0.781 J	3040 J	0.704 J	1 U	255000	1 U	1.96	20 U
	MW02-GW061720	6/17/2020	Total	100 U	1 U	1.08	80.9	1 U	1 U	179000	1.83	0.162 J	2 U	100 U	1 U	64200	1 U	0.5 U	0.823 J	2730	0.679 J	0.113 J	152000	1 U	2.54	20 U
	MW02-GW092820	9/28/2020	Total	100 U	1 U	1.13	84.9	1 U	1 U	188000	2.69	0.149 J	0.884 J	30.4 J	1 U	67100	1 U	0.5 U	1.53	2810	0.786 J	1 U	160000	1 U	2.77	20 U
	MW02-GW121620	12/16/2020	Total	100 U	1 U	1.44	86.4	1 U	1 U	172000	3.08	0.414 J	0.749 J	100 U	1 U	60100	1 U	0.5 U	1.5	2740	1 U	1 U	147000	1 U	2.36	20 U
MW-03RA	OU2-MW03RA-GW-121318	12/13/2018	Total	82.1 J	1 U	0.345 J	93.3	1 U	1 U	189000	0.401 J	2.32	0.253 J	107	0.159 J	70000	818	0.5 U	4.26	3060	0.861 J	1 U	119000	1 U	0.352 J	20 U
	OU2-MW03RA-GW-032519	3/25/2019	Total	201	1 U	0.711 J	78.9	1 U	1 U	183000	1.52	1.29	1	237	0.337 J	68300	263	0.5 U	3.35	2720	0.844 J	1 U	96600	1 U	1.14	6.1 J
	OU2-MW03RA-GW120719	12/7/2019	Total	100 U	1 U	0.955 J	75.8	1 U	1 U	176000 J	0.638 J	0.684 J	2 U	42 J	0.0621 J	64500	77.3	0.5 U	1.14	2560	0.769 J	1 U	89400	1 U	1.4	20 U
	MW03RA-GW061820	6/18/2020	Total	100 U	1 U	0.64 J	73.2	1 U	1 U	184000	1.83	0.315 J	0.727 J	38.3 J	1 U	62800	59.7	0.5 U	3.43	2620	0.844 J	1 U	93700	1 U	1.67	20 U
	MW03RA-GW092920	9/29/2020	Total	100 U	1 U	0.687 J	78.2	1 U	1 U	196000	1.92	0.283 J	2 U	60 J	1 U	67800	28.1	0.5 U	6.79	2670	0.811 J	1 U	107000	1 U	2.06	20 U
	MW03RA-GW121120	12/11/2020	Total	100 U	1 U	0.72 J	71.7	1 U	1 U	182000	1.83	0.189 J	2 U	67.9 J	1 U	62900	20	0.5 U	4.29	2620	0.81 J	1 U	99300	1 U	1.7	20 U
MW-03RB	OU2-MW03RB-GW-122718	12/27/2018	Total	40 J	1 U	0.37 J	84.8	1 U	1 U	128000	0.245 J	1.67	2.65	275	0.463 J	42900	1450	0.5 U	3.2	2390	0.68 J	1 U	46500	1 U	0.257 J	20 U
	OU2-MW03RB-GW-032519	3/25/2019	Total	41.5 J	1 U	0.522 J	46.2	1 U	1 U	136000	0.386 J	0.9 J	1 U	45.6 J	1 U	45600	253	0.5 U	2.07	2100	0.984 J	1 U	33100	1 U	0.951 J	20 U
	OU2-MW03RB-GW120819	12/8/2019	Total	39.6 J	1 U	0.641 J	40.1	1 U	1 U	122000 J	0.513 J	0.567 J	2 U	46.8 J	0.0835 J	43100	115	0.5 U	1.1	1950	0.942 J	1 U	33100	1 U	1.13	5.8 J
	MW03RB-GW061820	6/18/2020	Total	40.5 J	1 U	0.437 J	36.6	1 U	1 U	135000	0.655 J	0.155 J	2 U	43.2 J	1 U	45100	32.5	0.5 U	1.01	1920	0.985 J	1 U	33500	1 U	1.45	5.64 J
	MW03RB-GW092920	9/29/2020	Total	207	1 U	0.608 J	42.7	1 U	1 U	147000	1.42	0.435 J	0.698 J	269	1 U	49500	116	0.5 U	4.28	2040	1.04	1 U	36900	1 U	2.38	7.66 J
	MW03RB-GW121120	12/11/2020	Total	234	1 U	0.656 J	41.1	1 U	1 U	144000	1.56	0.334 J	2 U	329	1 U	49700	85.6	0.5 U	1.85	2030	1.06	1 U	35000	1 U	2.1	5.04 J
MW-03RC	OU2-MW03RC-GW-121718	12/17/2018	Total	54.8 J	1 U	0.284 J	33	1 U	1 U	124000	0.594 J	0.58 J	1 U	100 U	0.0998 J	35500	103	0.5 U	1.74	1910	1.17	1 U	26800	1 U	0.862 J	20 U
	OU2-MW03RC-GW-032719	3/27/2019	Total	26.8 J	1 U	0.395 J	27.4	1 U	1 U	127000	0.75 J	0.271 J	1 U	33 J	0.0651 J	34700	23.7	0.5 U	0.908 J	1840	1.16	1 U	26000	1 U	1.35	20 U
	OU2-MW03RC-GW120719	12/7/2019	Total	100 U	1 U	0.675 J	25.2	1 U	1 U	104000 J	0.758 J	0.265 J	2 U	100 U	0.0517 J	34900	4.51	0.5 U	1.41	1800	1.1	1 U	24600	1 U	1.57	5.4 J
	MW03RC-GW061820	6/18/2020	Total	100 U	1 U	0.504 J	24.8	1 U	1 U	119000	0.724 J	1 U	2 U	100 U	1 U	37500	4.17	0.5 U	0.774 J	1850	1.13	1 U	25900	1 U	1.89	20 U
	MW03RC-GW092920	9/29/2020	Total	100 U	1 U	0.504 J	25.9	1 U	1 U	123000	0.872 J	1 U	2 U	100 U	1 U	37900	1.97	0.5 U	1.13	1900	1.1	1 U	27800	1 U	2.1	20 U
	MW03RC-GW121120	12/11/2020	Total	70.3 J	1 U	0.603 J	26.5	1 U	1 U	125000	1.25	1 U	2 U	134	1 U	38800	7.57	0.5 U	0.753 J	1940	1.08	1 U	26900	1 U	2	6.31 J
MW-03RD	OU2-MW03RD-GW-032719	3/27/2019	Total	14.6 J	1 U	0.576 J	34.7	1 U	1 U	128000	0.198 J	1.37	1 U	1190	1 U	36100	747	0.5 U	3.52	2290	0.743 J	1 U	69400	1 U	1 U	20 U
	OU2-MW03RD-GW120719	12/7/2019	Total	100 U	1 U	0.603 J	29.9	1 U	1 U	114000 J	0.373 J	1.1	4.24	134	0.0706 J	34900	418	0.5 U	3.72	2150	0.891 J	1 U	50000	1 U	0.353 J	7.74 J
	MW03RD-GW061820	6/18/2020	Total	100 U	1 U	0.323 J	27.8	1 U	1 U	126000	0.527 J	0.629 J	2 U	56 J	1 U	38400	261	0.5 U	3.92	2190	0.964 J	1 U	49600	1 U	0.589 J	20 U
	MW03RD-GW092920	9/29/2020	Total	32.6 J	1 U	0.243 J	28	1 U	1 U	135000	0.976 J	0.541 J	2 U	76.9 J	1 U	39200	178	0.5 U	3.98	2240	0.998 J	1 U	49000	1 U	1 U	20 U
	MW03RD-GW121120	12/11/2020	Total	114	1 U	0.341 J	32.3	1 U	1 U	134000	1.03	0.569 J	2 U	273	1 U	40100	214	0.5 U	8.98	2200	0.879 J	1 U	52000	1 U	0.669 J	12.5 J
MW-04	A-GW-MW-04_04272016M	4/27/2016	Total	20 UJ	2 U	1.1	47.6	1 U	1 U	120000	8.5	2.7	2 U	77.5 J	1 U	41400	2.4	0.2 U	6.8	2120	1.5 J	1 U	101000	1 U	2.8 J	80.4
	A-GW-MW-04_04272016M-DISSOLVED		Dissolved	20 U	2 U	1.1	47.3	1 U	1 U	120000	3.5	1.7	1.3 J	43.8 J	1 U	40800	2.5	0.2 U	7.7	2110	5 U	0.05 J	102000	1 U	2.7 J	80.8
	A-GW-MW-04_07/13/2016M	7/13/2016	Total	20 J	2 U	1 U	44.6	1 U	1 U	116000	18.9 J	1 UJ	2 U	387	1 U	45100	1 U	0.2 U	15.4	1720	5 U	1 U	93700	1 U	5 U	2 U
	A-GW-MW-04_07/13/2016M-F		Dissolved	20 U	2 U	1 U	44.6	1 U	1 U	122000	2 U	1 U	2 U	293	1 U	43500	1 U	0.2 U	8.9	1890	5 U	1 U	91100	1 U	0.93 J	1.4 J
	A-GW-MW-04_09212016M	9/21/2016	Total	40 U	4 U	1.2 J	47.5	2 U	2 U	131000	2.9 J	2 U	1 J	400 U	2 U	39900	1.1 J	0.2 U	2.4	2120	10 U	2 U	88800	2 U	2.1 J	8.5
	A-GW-MW-04_09212016M-F		Dissolved	20 U	2 U	1.1	47.2	1 U	1 U	129000	1.7 J	0.21 J	0.99 J	200 U	0.38 J	37200	0.6 J	0.2 U	2.2	1920	0.81 J	1 U	95900	1 U	2.3 J	5.4
	OU2-MW04-GW-121818	12/18/2018	Total	100 U	1 U	1.22	53.3	1 U	1 U	134000	1	0.377 J	0.597 J	100 U	2.98	46600	0.301 J	0.5 U	0.186 J	2360	0.648 J	1 U	106000	1 U	2.59	5.38 J
	OU2-MW04-GW-031919	3/19/2019	Total	500 U	5 U	1.52 J	51.2	5 U	5 U	142000	2.6 J	5 U	5 U	500 U	1.11 J	46900	5 U	0.5 U	2.38 J	2450	5 U	5 U	112000	5 U	2.45 J	100 U
	OU2-MW04-GW120519	12/5/2019	Total	100 U	1 U	1.02	45.6	1 U	1 U	113000	4	0.141 J	1.54 J	28.1 J	0.419 J	44300	1 U	0.5 U	2.32	2310	0.596 J	1 U	96400	1 U	2.2	20 U
	MW04-GW062120	6/21/2020	Total	100 U	1 U	1.07	47.9	1 U	1 U	135000	3.46	0.139 J	1.72 J	100 U	1 U	47600	1 U	0.5 U	2.32	2320	0.664 J	1 U	114000	1 U	2.63	20 U
	MW04-GW092920	9/29/2020	Total	100 U	1 U	1.12	49.1	1 U	1 U	145000	2.2	0.136 J	1.63 J	100 U	1 U	50400	0.379 J	0.5 U	1.86	2390	0.64 J	1 U	118000	1 U	2.84	20 U
	MW04-GW121020	12/10/2020	Total	100 U	1 U	1.3	50	1 U	1 U	142000	2	0.496 J	2.97	100 U	0.254 J	47200	1 UJ	0.5 U	2.15	2320	0.655 J	1 U	112000	1 U	2.66	11 J
MW-05	A-GW-MW-05_04252016M	4/25/2016	Total	103 J	2 U	0.96 J	68.7	1 U	0.08 J	156000	28.6	28.8	2 U	312	0.38 J	52900	6.2	0.2 U	18.2	2030	5 U	1 U	48400	1 U	5 U	2 U
	A-GW-MW-05_04252016M-DISSOLVED		Dissolved	1.6 J	2 U	0.67 J	65.3	1 U	1 U	160000	0.33 J	16.6	2	26.3 J	1.1	54600	3.2	0.2 U	16.9	2010	5 U	0.08 J	49700	1 U	1.9 J	7.7
MW-05R	OU2-MW05R-GW-121118	12/11/2018	Total	500 U	5 U	0.956 J	80.9	5 U	5 U	179000	109	3.47 J	13.7	481 J	5 U	65800	12	0.5 U	79.2	2850	1.06 J	5 U	61200	5 U	2.58 J	100 U
	OU2-MW05R-GW-032019	3/20/2019	Total	72.2 J	1 U	1.14	74.1	1 U	1 U	165000	36.9	0.735 J	4.02	267	0.104 J	61100	8.55	0.5 U	14.4	3090	0.932 J	1.06	62400	1 U	2.38	7.56 J
	OU2-MW05R-GW120819	12/8/2019	Total	100 U	1 U	1.12	75.6	1 U	1 U	172000 J	5.63	0.561 J	0.575 J	28.8 J	1 U	65100	1.1	0.5 U	3.75	2810	0.816 J	1 U	64700	1 U	1.9	20 U
	MW05R-GW061920	6/19/2020	Total	93.3 J	1 U	0.754 J	72.8	1 U	1 U	169000	4.85	0.213 J	0.604 J	42.8 J	1 U	62300	1.8	0.5 U	2.79	2890	0.779 J	1 U	63800	1 U	1.98	20 U
	MW05R-GW102120	10/21/2020	Total	100 U	1 U	0.854 J	70.3 J	1 U	1 U	154000	1.04	0.167 J	0.823 J	100 U	1 U	54800	1 U	0.5 U	0.968 J	2840	0.809 J	1 U	55900	1 U	2.36	6.95 J
	MW05R-GW120820	12/8/2020	Total	59.7 J	1 U	1.05	73	1 U	0.171 J	165000	0.646 J	0.635 J	2.16	100 U	1 U	63800	1.56	0.5 U	0.438 J	2710	1 U	1 U	60900	1 U	2.04	20 U
MW-06	A-GW-MW-06_04262016M	4/26/2016	Total	20 UJ	2 U	1.6	58.2	1 U	1 U	111000	3	0.95 J	2 U	28.6 J	0.07 J	35200	1.6	0.2 U	2.1	1810	5 U	1 U	60200	1 U	2.7 J	2 U
	A-GW-MW-06_04262016M-DISSOLVED		Dissolved	2.8 J	2 U	1.6	57.7	1 U	1 U	114000	0.31 J	0.06 J	1 J	13.7 J	1 U	36200	0.21 J	0.2 U	0.2 J	1850	5 U	0.06 J	62000	1 U	2.7 J	5
	A-GW-MW-06_07/13/2016M	7/13/2016	Total	328	2 U	1 U	62.5	1 U	1 U	127000	98.6 J	1 UJ	2 U	1280	1 U	44900	22.7	0.2 U	91.8	1700	5 U	1 U	57700	1 U	5 U	2 U
	A-GW-MW-06_07/13/2016M-F		Dissolved	20 U	2 U	1 U	60.5	1 U	1 U	132000	2 U	1 U	2 U	363	1 U	43700	7.5	0.2 U	25.4	1760	5 U	1 U	56700	1 U	0.89 J	2.3
	A-GW-MW-06_09212016M	9/21/2016	Total	40 U	4 U	1.6 J	69.7	2 U	2 U	129000	1.1 J	2 U	0.83 J	400 U	2 U	37400	0.31 J	0.2 U	1.2 J	1970	10 U	2 U	57000	2 U	10 U	6.5
	A-GW-MW-06_09212016M-F		Dissolved	20 U	2 U	1.5	61.8	1 U	1 U	130000	1 J	0.21 J	1.2 J	200 U	0.78 J	35400	0.63 J	0.2 U	1.2	1820	0.77 J	1 U	61800	1 U	2.1 J	8.3
	OU2-MW06-GW-121718	12/17/2018	Total	100 U	1 U	1.59	68.1	1 U	1 U	139000	0.655 J	0.344 J	0.991 J	5.73 J	1.57	43300	0.69 J	0.5 U	0.182 J	2210	0.659 J	1 U	57700	1 U	2.56	5.72 J
MW-06	OU2-MW06-GW-031919	3/19/2019	Total	500 U	5 U	1.69 J	61.4	5 U	5 U	132000	0.574 J	5 U	1.39 J	500 U	0.623 J	39900	5 U	0.5 U	5 U	2140	5 U	5 U	66500	5 U	2.37 J	100 U
	OU2-MW06-GW120619	12/6/2019	Total	100 U	1 U	1.4	50.7	1 U	1 U	98100	0.954 J	1 U	0.728 J	100 U	1 U	36300	1 U	0.5 U	0.31 J	1970	0.637 J	1 U	59700	1 U	2.16	20 U
	MW06-GW062120	6/21/2020	Total	100 U	1 U	1.46	53.2	1 U	1 U	119000	0.711 J	1 U	1.01 J	100 U	1 U	36500	1 U	0.5 U	1 U	1960	0.677 J	1 U	69800	1 U	2.56	20 U
	MW06-GW092420	9/24/2020	Total	100 U	1 U	1.51	58.8	1 U	1 U	128000	1.03	1 U	0.827 J	100 U	1 U	41000	0.561 J	0.5 U	1 U	2070	0.717 J	0.25 J	68900	1 U	3.09	20 U
	MW06-GW121020	12/10/2020	Total	100 U	1 U	1.8	61.3	1 U	1 U	126000	1.45	0.608 J	1.5 J	27.8 J	0.197 J	40200	1.83	0.5 U	6.56	2060	0.761 J	0.19 J	70900	1 U	2.87	8.22 J

Table 5-7

Dissolved and Total Metals in Groundwater

Location	Sample Identification	Sample Date	Sample Type	Aluminum µg/L Q	Antimony µg/L Q	Arsenic µg/L Q	Barium µg/L Q	Beryllium µg/L Q	Cadmium µg/L Q	Calcium µg/L Q	Chromium µg/L Q	Cobalt µg/L Q	Copper µg/L Q	Iron µg/L Q	Lead µg/L Q	Magnesium µg/L Q	Manganese µg/L Q	Mercury µg/L Q	Nickel µg/L Q	Potassium µg/L Q	Selenium µg/L Q	Silver µg/L Q	Sodium µg/L Q	Thallium µg/L Q	Vanadium µg/L Q	Zinc µg/L Q
MW-08A	OU2-MW08A-GW-122718	12/27/2018	Total	948 J	1 U	1.17 J	92.7 J	0.0794 J	1 U	190000 J	3.25	1.61	1.71	1290 J	0.963 J	67400 J	274 J	0.5 U	2.47	2990 J	0.943 J	1 U	83900 J	1 U	2.95	7.16 J
	OU2-MW08A-GW-122718		Dissolved	23.9 J	1 U	0.519 J	86.3	1 U	1 U	193000	0.67 J	1.1	0.754 J	51.2 J	0.1 J	68600	201	0.5 U	1.37	2880	0.936 J	1 U	85300	1 U	1.14	20 U
	OU2-MW08A-GW-032119	3/21/2019	Total	59.5 J	5 U	0.749 J	78.4	5 U	5 U	184000	0.907 J	0.703 J	5 U	91.2 J	5 U	62400	74.2	0.5 U	0.874 J	2780	0.833 J	5 U	82100	5 U	1.36 J	100 U
	OU2-MW08A-GW120819	12/8/2019	Total	61.4 J	1 U	1.05	77	1 U	1 U	170000 J	1.1	0.552 J	2 U	119	0.09 J	62400	24.7	0.5 U	1 U	2740	0.92 J	1 U	79500	1 U	1.66	8.81 J
	MW08A-GW062120	6/21/2020	Total	209	1 U	0.712 J	77.2	1 U	1 U	182000	1.27	0.216 J	2 U	195	1 U	65400	20	0.5 U	0.425 J	2830	0.923 J	1 U	89500	1 U	2.17	20 U
	MW08A-GW092720	9/27/2020	Total	137	1 U	0.642 J	78.7	1 U	1 U	197000	1.19	0.177 J	2 U	68.4 J	1 U	70500	13.3	0.5 U	0.706 J	2920	0.969 J	1 U	97600	1 U	2.05	20 U
	MW08A-GW120920	12/9/2020	Total	58.2 J	1 U	1 U	86.1	1 U	1 U	188000	0.948 J	0.599 J	2 U	100 U	1 U	72500	9.14	0.5 U	0.599 J	2830	1 U	1 U	93500	1 U	1.79	20 U
MW-08B	OU2-MW08B-GW-122718	12/27/2018	Total	117	1 U	0.463 J	37.8	1 U	1 U	131000	1.72	0.671 J	0.698 J	189	0.231 J	43100	82.5	0.5 U	1.36	2120	1.09	1 U	32500	1 U	1.5	20 U
	OU2-MW08B-GW-032119	3/21/2019	Total	500 U	5 U	0.57 J	32.5	5 U	5 U	132000	1.03 J	5 U	5 U	33.8 J	5 U	42900	18.9	0.071 J	0.543 J	2080	1.2 J	5 U	35000	5 U	1.55 J	100 U
	OU2-MW08B-GW120819	12/8/2019	Total	100 U	1 U	0.72 J	31.5	1 U	1 U	112000 J	1.19	0.351 J	2 U	100 U	1 U	39900	7.15	0.5 U	1 U	1990	0.921 J	1 U	32300	1 U	1.53	33.1
	MW08B-GW062220	6/22/2020	Total	100 U	1 U	0.452 J	30.6	1 U	1 U	128000	1.02	1 U	2 U	100 U	1 U	43500	2.43	0.5 U	1 U	2020	1.03	1 U	34200	1 U	1.8	20 U
	MW08B-GW092720	9/27/2020	Total	29.2 J	1 U	0.48 J	32.4	1 U	1 U	141000	1.18	0.102 J	2 U	100 U	1 U	44400	2.33	0.5 U	0.254 J	2090	1.06	1 U	36400	1 U	2.05	20 U
	MW08B-GW120920	12/9/2020	Total	57.7 J	1 U	1 U	34.4	1 U	1 U	135000	1.12	0.427 J	2 U	100 U	1 U	43400	2.81	0.5 U	0.308 J	2030	1.07	1 U	34500	1 U	1.79	20 U
MW-08C	OU2-MW08C-GW-032019	3/20/2019	Total	39.7 J	1 U	0.48 J	59	1 U	1 U	103000	0.249 J	1.24	1 U	396	1 U	39400	865	0.5 U	2.55	2740	0.824 J	1 U	43000	1 U	0.275 J	20 U
	OU2-MW08C-GW120819	12/8/2019	Total	100 U	1 U	0.645 J	49.9	1 U	1 U	95200 J	0.314 J	1.04	2 U	173	1 U	35000	465	0.5 U	2.55	2310	0.93 J	1 U	31200	1 U	0.323 J	7.31 J
	MW08C-GW062220	6/22/2020	Total	100 U	1 U	0.507 J	45.8	1 U	1 U	109000	0.254 J	0.844 J	2 U	288	1 U	38500	511	0.5 U	3.48	2330	1.01	1 U	31600	1 U	0.672 J	17.3 J
	MW08C-GW092720	9/27/2020	Total	28.1 J	1 U	0.495 J	46.1	1 U	1 U	117000	0.395 J	0.772 J	2 U	444	1 U	39400	441	0.5 U	4.9	2380	1.02	1 U	27900	1 U	1 U	20 U
	MW08C-GW120920	12/9/2020	Total	78.9 J	1 U	1 U	45	1 U	1 U	113000	0.834 J	0.784 J	2 U	345	1 U	38000	212	0.5 U	2.55	2140	1.02	1 U	29000	1 U	0.598 J	6.03 J
MW-12D	OU2-MW12D-GW-092418	9/24/2018	Total	66.1 J	1 U	1.09	56.9	1 U	1 U	154000	1.71	0.561 J	1 U	68.9 J	0.203 J	57200	20.4	0.5 U	0.707 J	3260	1.88	1 U	82400	1 U	1.96	20 U
	OU2-MW12D-GW-120618	12/6/2018	Total	62.3 J	5 U	0.726 J	54.9	5 U	5 U	156000	1.71 J	0.554 J	5 U	60.3 J	5 U	53800	12.6	0.5 U	5 U	3190	1.76 J	5 U	81400	5 U	2.19 J	100 U
	OU2-MW12D-GW-031319	3/13/2019	Total	19.4 J	1 U	0.736 J	52.8	1 U	1 U	152000	1.69	0.229 J	1 U	28.9 J	0.0719 J	55400	4.73	0.5 U	0.195 J	2940	1.97	1 U	75900	1 U	1.63	20 U
	OU2-MW12D-GW120619	12/6/2019	Total	100 U	1 U	0.579 J	46	1 U	1 U	118000	2.04	0.133 J	2 U	100 U	1 U	47300	4.09	0.5 U	0.273 J	2910	1.71	1 U	64100	1 U	1.38	20 U
	MW12D-GW061920	6/19/2020	Total	100 U	1 U	0.693 J	49.7	1 U	1 U	144000	1.88	0.164 J	2 U	26.2 J	0.0991 J	52900	5.8	0.5 U	0.331 J	3020	1.74	1 U	77800	1 U	1.91	20 U
	MW12D-GW092220	9/22/2020	Total	64.8 J	1 U	0.762 J	50.5	1 U	1 U	144000	2.58	0.132 J	2 U	95.5 J	1 U	53800	0.908 J	0.5 U	0.364 J	3070	1.81	0.108 J	79800	1 U	2.3	20 U
	MW12D-GW120920	12/9/2020	Total	230	1 U	1 U	55.6	1 U	1 U	148000	2.8	0.424 J	2 U	100 U	1 U	49600	2.02	0.5 U	1.15	2860	1.77	0.113 J	82000	1 U	1.91	20 U
MW-12S	OU2-MW12S-GW-092418	9/24/2018	Total	18.5 J	1 U	0.898 J	55.5	1 U	1 U	136000	0.674 J	0.534 J	1 U	20.2 J	1 U	55200	34	0.5 U	1.2	3860	2.03	1 U	66200	1 U	1.5	20 U
	OU2-MW12S-GW-121018	12/10/2018	Total	24.3 J	1.38	0.739 J	54.8	1 U	1 U	123000	0.819 J	0.64 J	1.71	100 U	0.0937 J	49500	24.4	0.5 U	15.5	3880	1.73	1 U	58900	1 U	1.65	33.2
	OU2-MW12S-GW-031319	3/13/2019	Total	37.7 J	1 U	0.651 J	56.7	1 U	1 U	128000	10.9	0.356 J	0.349 J	92.7 J	0.0753 J	45400	19.5	0.5 U	8.09	3540	1.64	1 U	61000	1 U	1.54	20 U
	OU2-MW12S-GW120619	12/6/2019	Total	100 U	1 U	0.568 J	63.9	1 U	1 U	140000	14.2	0.928 J	0.784 J	360	1 U	69400	12.5	0.5 U	15.6	3940	1.85	1 U	74600	1 U	1.38	20 U
	MW12S-GW061920	6/19/2020	Total	81.2 J	1 U	0.635 J	68.2	1 U	1 U	161000	3.43	0.39 J	0.587 J	73.8 J	1 U	74600	3.08	0.5 U	4.2	3950	1.84	1 U	88200	1 U	1.85	20 U
MW-13D	OU2-MW13D-GW-091718	9/17/2018	Total	96.8 J	1 U	0.982 J	50.9	1 U	1 U	140000	1.38	0.652 J	0.287 J	77.1 J	0.0838 J	46400	94.1	0.5 U	1.27	2740	0.99 J	1 U	62800	1 U	1.85	20 U
	OU2-MW13D-GW-112918	11/29/2018	Total	169	1 U	0.803 J	46.3	1 U	1 U	146000	2.12 J	0.564 J	0.25 J	163	0.107 J	44800	33.1	0.5 U	1.25	2570	0.93 J	1 U	54500	1 U	1.86	20 U
	OU2-MW13D-GW-030719	3/7/2019	Total	36 J	1 U	0.906 J	48.1	1 U	1 U	143000	1.62	0.301 J	1 U	51.7 J	1 U	44500	16.1	0.5 U	1.22	2530	0.863 J	1 U	54100	1 U	1.78	20 U
	OU2-MW13D-GW120519	12/5/2019	Total	100 U	1 U	0.581 J	43.5	1 U	1 U	143000	115	6.5	5.74	640	1 U	49900	35.8	0.5 U	198	2550	0.828 J	1 U	52900	1 U	2.12	20 U
	MW13D-GW061820	6/18/2020	Total	78.7 J	1 U	0.746 J	46.8	1 U	1 U	146000	17.7	1.52	1.1 J	192	1 U	51900	12.3	0.5 U	50.8	2490	0.835 J	0.365 J	57100	1 U	1.97	20 U
	MW13D-GW092220	9/22/2020	Total	47.4 J	1 U	0.767 J	46.8	1 U	1 U	147000	11.7	0.584 J	2 U	190	1 U	51800	5.13	0.5 U	19.8	2560	0.867 J	0.157 J	56900	1 U	2.51	20 U
	MW13D-GW121120	12/11/2020	Total	54.1 J	1 U	0.728 J	45.4	1 U	1 U	144000	5.47	0.185 J	2 U	132	1 U	53200	1.37	0.5 U	3.85	2550	0.869 J	0.101 J	56700	1 U	1.88	20 U
MW-13L	MW13L-GW032221	3/22/2021	Total	143	1 U	0.747 J	48.2	1 U	1 U	144000	1.24	0.593 J	2 U	284	1 U	52800	175	0.5 U	1.54	2310	0.884 J	1 U	37700	1 U	1.67	75.3
MW-13S	OU2-MW13S-GW-091918	9/19/2018	Total	21.8 J	0.273 J	7.13	106	1 U	1 U	168000	0.838 J	1.77	0.571 J	2810	0.23 J	70500	1320	0.5 U	23.7	7460	0.376 J	1 U	123000	1 U	0.565 J	9.09 J
	OU2-MW13S-GW-112918	11/29/2018	Total	593	1 U	10.5	89	1 U	1 U	166000	9.09	1.6	0.948 J	4780	1.06	68400	1440	0.5 U	9.9	6300	0.233 J	1 U	138000	1 U	1.55	5.33 J
	OU2-MW13S-GW-030619	3/6/2019	Total	203	1 U	2.69	85.8	1 U	1 U	164000	17.3	2.24	1.62	852	0.665 J	67300	862	0.1 J	176	5680	0.153 J	1 U	121000	1 U	0.72 J	6.52 J
	OU2-MW13S-GW120519	12/5/2019	Total	100 U	1 U	1.67	71.4	1 U	1 U	168000	4.98	1.84	0.525 J	325	1 U	73200	678	0.5 U	147	4620	0.251 J	1 U	121000	1 U	1 U	20 U
	MW13S-GW061820	6/18/2020	Total	39.2 J	1 U	0.557 J	71.9	1 U	1 U	179000	5.7	6.33	0.543 J	135	1 U	77200	772	0.5 U	239	4380	0.297 J	0.15 J	127000	1 U	0.509 J	20 U
	MW13S-GW092320	9/23/2020	Total	444	1 U	0.692 J	86.6	1 U	1 U	195000	4.36	5.22	1.68 J	327	1 U	81100	1110	0.5 U	109	4620	0.341 J	0.166 J	135000	1 U	1 U	16.1 J
	MW13S-GW121120	12/11/2020	Total	948	1 U	1.59	83.9	1 U	1 U	192000	6.74	3.46	3.81	925	3.09	83400	987	0.5 U	78.6	4310	0.416 J	0.213 J	127000	1 U	1.28	15.7 J
MW-14D	OU2-MW14D-GW-091918	9/19/2018	Total	40.3 J	1 U	1.11	51.9	1 U	1 U	138000	1.03	0.447 J	0.726 J	46.1 J	0.307 J	44000	84.1	0.5 U	0.584 J	2570	0.895 J	1 U	53600	1 U	2.2	14.5 J
	OU2-MW14D-GW-120418	12/4/2018	Total	41.3 J	1 U	0.749 J	49.6	1 U	1 U	143000	1.02	0.499 J	0.651 J	100 U	0.343 J	42900	37.9	0.5 U	0.301 J	2460	1 U	1 U	54600	1 U	1.79	20.8
	OU2-MW14D-GW-030719	3/7/2019	Total	17.2 J	1 U	0.932 J	51.8	1 U	1 U	146000	0.922 J	0.262 J	0.994 J	56.4 J	0.464 J	44900	17.3	0.5 U	0.208 J	2570	0.889 J	1 U	58400	1 U	1.88	10.5 J
	OU2-MW14D-GW120719	12/7/2019	Total	25.9 J	0.296 J	0.872 J	47.2	0.222 J	0.139 J	114000 J	1.05	0.543 J	1.61 J	51.3 J	1.13	43600	3.49	0.5 U	1.42	2380	1.07	0.211 J	48800	0.249 J	1.43	133
	MW14D-GW062320	6/23/2020	Total	100 U	1 U	0.582 J	47.2	1 U	1 U	135000	0.93 J	1 U	0.877 J	100 U	1 U	46800	0.571 J	0.5 U	1.41	2500	0.869 J	1 U	54900	1 U	1.69	46
	MW14D-GW092520	9/25/2020	Total	100 U	1 U	0.803 J	48.3	1 U	1 U	141000	2.33	0.109 J	0.58 J	100 U	1 U	49000	1.24	0.5 U	1 U	2620	0.916 J	1 U	57000	1 U	2.62	15.2 J
	MW14D-GW121420	12/14/2020	Total	100 U	1 U	0.705 J	46.6	1 U	1 U	145000	0.949 J	1 U	2 U	29.5 J	1 U	53200	1.93	0.5 U	0.363 J	2530	0.91 J	1 U	60300	1 U	1.79	20.4
MW-14S	OU2-MW14S-GW-091918	9/19/2018	Total	235	1 U	3.27	243	0.0693 J	1 U	149000	0.641 J	4.58	0.698 J	216	0.618 J	45800	1530	0.5 U	3.81	4850	0.336 J	1 U	66800	0.131 J	1.27	20 U
	OU2-MW14S-GW-091918		Dissolved	10 U	1 U	3.82	175	1 U	1 U	149000	0.181 J	3.83	1.08	53.1 J	1 U	45100	969	0.5 U	3.22	4320	0.212 J	1 U	66700	1 U	0.428 J	20 U
	OU2-MW14S-GW-120518	12/5/2018	Total	510	5 U	1.13 J	119	5 U	5 U	164000	4.75 J	3.6 J	5 U	337 J	0.265 J	52700	483	0.5 U	24.1	3670	1.14 J	5 U	88200	5 U	5 U	100 U
	OU2-MW14S-GW-031119	3/11/2019	Total	100 U	1 U	0.467 J	59.9	1 U	1 U	161000	0.993 J	0.209 J	1 U	100 U	1 U	72700	2.46	5 U	0.364 J	4510	2.44	1 U	178000	1 U	1.33	20 U
	OU2-MW14S-GW120719	12/7/2019	Total	147	1 U	2.7	86.1	1 U	1 U	139000 J	3.82	5	2 U	876	0.201 J	48600	383	0.5 U	6.48	2990	0.923 J	1 U	74300	1 U	0.428 J	20 U
	MW14S-GW062320	6/23/2020	Total	160	1 U	2.28	76.7	1 U	1 U	145000	2.99	2.51	2 U	740	1 U	48900	201	0.5 U	4.39	3260	0.585 J	0.137 J	70500	1 U	1	20 U
	MW14S-GW092520	9/25/2020	Total	166	1 U	1.76	82.6	1 U	1 U	156000	1.82	1.45	2 U	658	1 U	52800	171	0.5 U	2.71	3730	0.366 J	1 U	72700	1 U	1 U	20 U
	MW14S-GW121420	12/14/2020	Total	730	1 U	0.537 J	73.7	1 U	1 U	155000	1.28	0.649 J	2 U	283	1 U	54400	90	0.5 U	1.47	3340	1.98	1 U	94400	1 U	0.577 J	20 U
MW-15D	OU2-MW15D-GW-092518	9/25/2018	Total	242	1 U	1.25	68	0.0547 J	1 U	170000	1.1	2.16	1	326	0.873 J	58700	348	0.5 U	2.67	4590	2.33	1 U	134000	1 U	1.72	6.22 J
	OU2-MW15D-GW-092518		Dissolved	75.9 J	1 U	0.991 J	60.4	1 U	1 U	162000	0.714 J	1.79	1.12	69.6 J	0.145 J	59600	300	0.5 U	2.34	4550	2.3	1 U	138000	1 U	1.26	20 U
	OU2-MW15D-GW-120418	12/4/2018	Total	600	0.331 J	0.61 J	55.6	1 U	1 U	169000	1.42	1.39	0.675 J	434	0.415 J	58500	196	0.5 U	2.23	4310	2.4	1 U	135000	1 U	1.68	8.08 J
	OU2-MW15D-GW-031119	3/11/2019	Total	247	1 U	0.509 J	50.1	1 U	1 U	166000	1.03	0.799 J	1 U	161	0.161 J	64800	133	0.5 U	1.62	4100	2.55	1 U	136000	1 U	1.23	20 U
	OU2-MW15D-GW120719	12/7/2019	Total	87.6 J	1 U	0.748 J	48.8	1 U	1 U	168000 J	2.82 J	0.618 J	0.702 J	164	0.169 J	65600	7.96	0.5 U	6.12	3980	2.73	1 U	136000	1 U	1.18	20 U
	MW15D-GW061920	6/19/2020	Total	88.2 J	1 U	0.513 J	46.4	1 U	1 U	167000	1.74	0.215 J	2 U	103	0.13 J	65400	6.73	0.5 U	2.26	4040	2.61	1 U	140000	1 U	1.37	20 U
	MW15D-GW092820	9/28/2020	Total	116	1 U	0.464 J	45	1 U	1 U	176000	1.68	0.179 J	2 U	36.6 J	1 U	68300	3.34	0.5 U	1.38	4100	2.8	1 U	149000	1 U	1.54	20 U
	MW15D-GW120920	12/9/2020	Total	118	1 U	1 U	47.6	1 U	0.14 J	168000	1.74	0.641 J	0.525 J	100 U	1 U	67300	5.26	0.5 U	1.22	3920	2.64	1 U	138000	1 U	1.42	6.72 J
MW-15S	OU2-MW15S-GW-092518	9/25/2018	Total	13.4 J	1 U	0.899 J	62.7	1 U	1 U	156000	1.12	0.492 J	0.576 J	22.2 J	0.828 J	65000	10.2	0.5 U	0.761 J	4850	1.9	1 U	175000	1 U	1.62	20 U
	OU2-MW15S-GW-120418	12/4/2018	Total	500 U	5 U	5 U	62	5 U	5 U	156000	1.57 J	0.514 J	5 U	500 U	5 U	68600	5.31	0.5 U	3.94 J	4640	2.07 J	5 U	188000	5 U	1.31 J	100 U
	OU2-MW15S-GW-031119	3/11/2019	Total	1390	1 U	0.998 J	91.7	0.0783 J	1 U	159000	15.4	2.44	1.52	974	0.653 J	56100	176	0.5 U	26.4	3250	2.59	0.278 J	92000	1 U	1.68	7.45 J
	OU2-MW15S-GW120719	12/7/2019	Total	100 U	1 U	0.701 J	69.1	1 U	1 U	153000 J	11.4	0.769 J	1.2 J	127	0.0542 J	76100	2.94	0.5 U	14.7	4870	2.37	1 U	194000	1 U	1.31	20 U
	MW15S-GW061920	6/19/2020	Total	29.8 J	1 U	0.581 J	65.5	1 U	1 U	167000	6.23	0.309 J	2 U	107	0.0864 J	76600	3.33	0.5 U	2.8	4930	2.45	1 U	180000	1 U	1.57	20 U
	MW15S-GW092820	9/28/2020	Total	163	1 U	0.513 J	60.4	1 U	1 U	167000	3.09	0.23 J	0.533 J	76 J	1 U	72800	1.48	0.5 U	2.68	4630	2.46	1 U	181000	1 U	1.78	20 U
	MW15S-GW120920	12/9/2020	Total	233	1 U	1 U	63.8	1 U	1 U	169000	4.98	0.523 J	0.54 J	100 U	1 U	76000	1.67	0.5 U	2.36	4440	2.46	1 U	174000	1 U	1.56	20 U
MW-16D	OU2-MW16D-GW-092018	9/20/2018	Total	69.7 J	1 U	0.849 J	33.5	1 U	1 U	119000	1.58	0.93 J	0.47 J	78.5 J	0.301 J	42800	66.5	0.5 U	1.17	2170	1.07	1 U	33000	1 U	1.64	20 U
	OU2-MW16D-GW-120618	12/6/2018	Total	132 J	5 U	0.693 J	31.5	5 U	5 U	134000	2.75 J	0.695 J	5 U	143 J	5 U	43400	28.4	0.5 U	1.04 J	2160	1.05 J	5 U	35200	5 U	2.2 J	100 U
	OU2-MW16D-GW-031419	3/14/2019	Total	100 U	1 U	0.56 J	30.8	1 U	1 U	124000	1.44	0.239 J	1 U	10.8 J	1 U	40800	11.4	0.5 U	0.562 J	2010	1.03	1 U	30600	1 U	1.41	20 U
	OU2-MW16D-GW120619	12/6/2019	Total	100 U	1 U	0.454 J	28	1 U	1 U	104000	1.46	0.18 J	2 U	38.2 J	1 U	40900	10.8	0.5 U	1.89	2060	0.872 J	1 U	30500	1 U	1.19	20 U
	MW16D-GW062120	6/21/2020	Total	52.6 J	1 U	0.495 J	29.7	1 U	1 U	123000	5.75	0.493 J	0.743 J	53.5 J	1 U	43100	5.46	0.5 U	19.6	2110	1.01	1 U	33300	1 U	1.66	20 U
MW-16D	MW16D-GW092520	9/25/2020	Total	58.3 J	1 U	0.623 J	30	1 U	1 U	124000	4.7	0.344 J	2 U	37.9 J	1 U	45200	4.69	0.5 U	13.7	2150	0.989 J	1 U	33400	1 U	2.1	20 U
	MW16D-GW121020	12/10/2020	Total	92.2 J	1 U	0.743 J	31.7	1 U	1 U	123000	2.49	0.408 J	0.761 J	117	0.14 J	43600	1.2	0.5 U	0.717 J	2100	1.06	1 U	32000	1 U	1.76	20 U
MW-16S	OU2-MW16S-GW-092018	9/20/2018	Total	21.4 J	1 U	0.733 J	63	1 U	1 U	146000	0.839 J	0.725 J	1 U	25.6 J	0.065 J	59100	30	0.5 U	1 U	2690	0.895 J	1 U	73600	1 U	1.17	20 U
	OU2-MW16S-GW-120518	12/5/2018	Total	79.3 J	5 U	5 U	63.8	5 U	5 U	157000	1.08 J	0.59 J	5 U	76.4 J	5 U	54800	8.47	0.5 U	5 U	2820	5 U	5 U	74700	5 U	1.62 J	100 U
	OU2-MW16S-GW-031419	3/14/2019	Total	16.1 J	1 U	0.432 J	61.4	1 U	1 U	154000	0.935 J	0.236 J	1 U	21.4 J	1 U	55500	2.66	0.5 U	0.28 J	2630	0.88 J	1 U	68200	1 U	1.17	20 U
	OU2-MW16S-GW120619	12/6/2019	Total	100 U	1 U	0.386 J	55.9	1 U	1 U	133000	3.18	0.233 J	2 U	47.3 J	1 U	52100	1.86	0.5 U	3.67	2690	0.79 J	1 U	66000	1 U	1.01	20 U
	MW16S-GW062120	6/21/2020	Total	505	1 U	0.592 J	56	1 U	1 U	145000	3	0.124 J	2 U	85.7 J	1 U	54900	1.23	0.5 U	0.659 J	2580	0.824 J	1 U	73500	1 U	1.5	20 U
	MW16S-GW092520	9/25/2020	Total	683	1 U	0.821 J	58.7	1 U	1 U	150000	3.89	0.121 J	2 U	94.2 J	1 U	57100	1.48	0.5 U	1 U	2680	0.883 J	1 U	75200	1 U	2.03	20 U
	MW16S-GW121020	12/10/2020	Total	221	1 U	1.18	61.8	1 U	1 U	152000	3.12	0.494 J	0.863 J	85.6 J	0.12 J	59100	1.2	0.5 U	0.76 J	2670	0.829 J	1 U	75900	1 U	1.91	20 U

Table 5-7
Dissolved and Total Metals in Groundwater

Location	Sample Identification	Sample Date	Sample Type	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
				μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q	μg/L Q
MW-17D	OU2-MW17D-GW-092418	9/24/2018	Total	236	1 U	0.981 J	77.8	1 U	1 U	150000	1.28	0.811 J	0.318 J	187	0.286 J	47300	123	0.5 U	1.94	2960	0.83 J	1 U	100000	1 U	1.77	20 U
	OU2-MW17D-GW-121018	12/10/2018	Total	23.3 J	1 U	0.502 J	79.2	1 U	1 U	158000	0.958 J	0.77 J	0.494 J	100 U	0.0556 J	53900	74.6	0.5 U	0.675 J	2920	0.92 J	1 U	103000	1 U	1.36	20 U
	OU2-MW17D-GW-031219	3/12/2019	Total	111	1 U	0.632 J	69.3	1 U	1 U	155000	1.24	0.365 J	0.274 J	112	0.281 J	48400	58.4	0.5 U	0.963 J	2610	0.876 J	1 U	101000	1 U	1.64	20 U
	OU2-MW17D-GW120819	12/8/2019	Total	100 U	1 U	0.835 J	62.9	1 U	1 U	132000 J	0.893 J	0.386 J	2 U	100 U	1 U	46100	5.6	0.5 U	1 U	2440	0.797 J	1 U	89900	1 U	1.5	20 U
	MW17D-GW062120	6/21/2020	Total	229	1 U	1.01	72.7	1 U	1 U	165000	1.55	0.344 J	0.581 J	323	1 U	56400	30.7	0.5 U	0.475 J	2740	0.814 J	1 U	109000	1 U	2.75	20 U
	MW17D-GW093020	9/30/2020	Total	163	1 U	0.792 J	72.5	1 U	1 U	168000	1.4	0.252 J	2 U	179	1 U	53900	19.9	0.5 U	0.523 J	2830	0.934 J	1 U	116000	1 U	2.3	20 U
	MW17D-GW121320	12/13/2020	Total	94.1 J	1 U	0.728 J	69.3	1 U	1 U	156000	1.14	0.205 J	2 U	111	1 U	55900	22	0.5 U	0.456 J	2800	0.879 J	1 U	107000	1 U	1.68	6.54 J
MW-17S	OU2-MW17S-GW-092418	9/24/2018	Total	84.7 J	0.305 J	0.701 J	278	1 U	0.117 J	149000	0.739 J	2.16	0.601 J	101	0.174 J	46800	524	0.5 U	15.8	7280	0.758 J	1 U	166000	0.123 J	0.641 J	9.24 J
	OU2-MW17S-GW-120318	12/3/2018	Total	4570	5 U	1.22 J	253	0.328 J	5 U	159000	6.8	2.03 J	1.87 J	2260	2.28 J	52000	347	0.5 U	20.1	6550	5 U	5 U	154000	5 U	3.81 J	100 U
	OU2-MW17S-GW-120318	12/3/2018	Dissolved	50 U	5 U	5 U	214	5 U	5 U	156000	1.42 J	0.843 J	1.39 J	50 U	5 U	51500	347	0.5 U	11.7	5110	5 U	5 U	151000	5 U	5 U	100 U
	OU2-MW17S-GW-031219	3/12/2019	Total	223	1 U	0.296 J	176	1 U	1 U	160000	3.29	0.34 J	1.1	140	0.202 J	57800	28.1	0.5 U	10.5	4170	0.495 J	0.117 J	162000	1 U	0.459 J	20 U
	OU2-MW17S-GW120819	12/8/2019	Total	159	1 U	0.482 J	130	1 U	1 U	129000 J	3.28	1.51	0.9 J	312	0.272 J	49800	62.3	0.5 U	84.4	3830	0.391 J	0.169 J	138000	1 U	0.479 J	11.2 J
	MW17S-GW062120	6/21/2020	Total	102	1 U	0.226 J	120	1 U	1 U	161000	5.55	1.08	0.611 J	210	1 U	60700	26.6	0.5 U	33.5	4200	0.789 J	0.169 J	170000	1 U	0.551 J	20 U
	MW17S-GW093020	9/30/2020	Total	102	1 U	0.181 J	122	1 U	1 U	158000	2.74	0.731 J	2 U	122	1 U	58400	20.6	0.5 U	14.6	4420	0.72 J	1 U	164000	1 U	0.825 J	20 U
	MW17S-GW121120	12/11/2020	Total	89.5 J	1 U	0.181 J	99.4	1 U	1 U	153000	1.77	0.355 J	2 U	63.5 J	1 U	58200	14.7	0.5 U	5.36	3760	0.792 J	1 U	152000	1 U	0.367 J	20 U
MW-18	OU2-MW18-GW-091818	9/18/2018	Total	100 U	1 U	1.03	97.6	1 U	1 U	172000	1.11	0.662 J	0.262 J	16.1 J	1 U	67100	88.6	0.5 U	1.29	3370	0.973 J	1 U	82400	1 U	1.71	20 U
	OU2-MW18-GW-112718	11/27/2018	Total	100 U	1 U	0.721 J	99.4	1 U	1 U	172000	1.24	0.586 J	1 U	100 U	1 U	66900	38.1	0.5 U	0.771 J	3150	1 U	1 U	83000	1 U	1.56	20 U
	OU2-MW18-GW-030419	3/4/2019	Total	100 U	1 U	0.973 J	97	1 U	1 U	171000	1.32	0.329 J	1 U	27.3 J	1 U	64600	17.4	0.5 U	0.489 J	3300	0.955 J	1 U	87800	1 U	1.66	20 U
	OU2-MW18-GW120519	12/5/2019	Total	100 U	1 U	0.648 J	89.5	1 U	1 U	165000	0.935 J	0.202 J	2 U	27.5 J	1 U	68700	12	0.234 J	1.17	3200 J	0.963 J	1 U	89200	1 U	1.38	20 U
	MW18-GW061620	6/16/2020	Total	56.6 J	1 U	0.699 J	97.8	1 U	1 U	180000	1.09	0.195 J	2 U	152	1 U	73100	7.47	0.5 U	0.385 J	3300	0.935 J	1 U	100000	1 U	1.84	20 U
	MW18-GW092320	9/23/2020	Total	75.6 J	1 U	1.25	99.1	1 U	1 U	188000	2.24	0.206 J	2 U	598	1 U	70500	8.05	0.5 U	0.535 J	3400	1.03	1 U	106000	1 U	2.65	7.19 J
	MW18-GW121420	12/14/2020	Total	100 U	1 U	1.16	96.3	1 U	1 U	165000	1.41	0.383 J	2 U	207	1 U	64000	5.89	0.5 U	1 U	3220	1 U	1 U	98600	1 U	1.97	20 U
MW-19	OU2-MW19-GW-091818	9/18/2018	Total	13.7 J	1 U	0.93 J	75.5	1 U	1 U	158000	1.05	0.683 J	1 U	31.8 J	1 U	56200	130	0.5 U	1.17	3240	0.867 J	1 U	74900	1 U	1.49	20 U
	OU2-MW19-GW-112718	11/27/2018	Total	100 U	1 U	0.568 J	78.4	1 U	1 U	162000	5.4	0.626 J	1 U	100 U	1 U	57800	60.5	0.5 U	2.37	3000	1 U	1 U	77500	1 U	1.43	20 U
	OU2-MW19-GW-030419	3/4/2019	Total	100 U	1 U	0.892 J	77.2	1 U	1 U	160000	1.28	0.358 J	1 U	13.8 J	1 U	57300	40	0.5 U	0.486 J	3170	0.859 J	1 U	81300	1 U	1.5	20 U
	OU2-MW19-GW120519	12/5/2019	Total	100 U	1 U	0.511 J	70.8	1 U	1 U	148000	2.41	0.378 J	2 U	31.2 J	1 U	56300	13.5	0.5 U	7.35	3040 J	0.89 J	1 U	79000	1 U	1.31	20 U
	MW19-GW061620	6/16/2020	Total	56.6 J	1 U	0.812 J	76.3	1 U	1 U	165000	3.21	0.218 J	2 U	398	1 U	63200	10.2	0.5 U	1.67	3230	0.868 J	0.207 J	89500	1 U	2.17	8.68 J
	MW19-GW092320	9/23/2020	Total	100 U	1 U	0.863 J	75.5	1 U	1 U	168000	5.53 J	0.229 J	2 U	304	1 U	58900	7.12	0.5 U	2.86	3260	0.887 J	0.138 J	91300	1 U	1.91	20 U
	MW19-GW121420	12/14/2020	Total	48.6 J	1 U	1.76	79.9	1 U	1 U	167000	6.99	0.758 J	1.04 J	1050	0.0708 J	64500	8.33	0.5 U	7.34	3140	0.862 J	0.287 J	94000	1 U	3.1	6.56 J
MW-20D	OU2-MW20D-GW-091918	9/19/2018	Total	18.4 J	1 U	0.992 J	43.3	1 U	1 U	106000	1.7	0.364 J	1 U	16 J	1 U	33400	33.6	0.5 U	1.87	2240	0.733 J	1 U	40400	1 U	2.01	20 U
	OU2-MW20D-GW-112618	11/26/2018	Total	20.2 J	1 U	0.787 J	43.3	1 U	1 U	111000	6.14	0.517 J	1 U	118	1 U	32900	22.3	0.5 U	8.91	2110	0.82 J	1 U	41700	1 U	1.9	20 U
	OU2-MW20D-GW-030519	3/5/2019	Total	22.1 J	1 U	0.805 J	43.2	1 U	1 U	109000	8.15	0.23 J	0.701 J	59.5 J	1 U	35900	10.7	0.5 U	2.08	2180	0.775 J	1 U	42900	1 U	1.92	20 U
	OU2-MW20D-GW120519	12/5/2019	Total	100 U	1 U	0.704 J	40	1 U	1 U	94600	2.19	0.109 J	2 U	100 U	1 U	35800	2.21	0.5 U	0.495 J	2190 J	0.723 J	1 U	41600	1 U	1.53	20 U
	MW20D-GW061720	6/17/2020	Total	100 U	1 U	0.685 J	42.3	1 U	1 U	109000	1.64	0.115 J	2 U	68.6 J	1 U	36500	2.24	0.5 U	0.464 J	2240	0.776 J	1 U	46300	1 U	2.05	20 U
	MW20D-GW092420	9/24/2020	Total	100 U	1 U	0.749 J	43.3	1 U	1 U	113000	2.18	0.121 J	2 U	105	1 U	36700	1.28	0.5 U	0.358 J	2280	0.802 J	1 U	47500	1 U	1.98	20 U
	MW20D-GW121520	12/15/2020	Total	67.2 J	1 U	1.49	43.1	1 U	1 U	105000	5.05	0.422 J	2 U	414	1 U	35000	8.25	0.5 U	5.64	2140	1 U	1 U	44600	1 U	2.59	5.06 J
MW-20S	OU2-MW20S-GW-091818	9/18/2018	Total	16.5 J	1 U	1.08	51.6	1 U	1 U	106000	1.59	0.306 J	0.285 J	15.2 J	1 U	33200	18.6	0.5 U	1.05	2460	0.746 J	1 U	80500	1 U	1.98	5.02 J
	OU2-MW20S-GW-112818	11/28/2018	Total	44.3 J	1 U	0.85 J	52.6	1 U	1 U	111000	2.99	0.35 J	0.394 J	100 U	1 U	33100	6.75	0.5 U	1.32	2250	0.688 J	1 U	78000	1 U	1.75	20 U
	OU2-MW20S-GW-030419	3/4/2019	Total	100 U	1 U	0.936 J	49.4	1 U	1 U	110000	1.62	0.468 J	0.279 J	30.2 J	1 U	33100	2.77	0.5 U	13.1	2340	0.805 J	1 U	75700	1 U	1.74	20 U
	OU2-MW20S-GW120419	12/4/2019	Total	100 U	1 U	0.777 J	48	1 U	1 U	96000	1.47	0.13 J	2 U	100 U	1 U	33200	2.04	0.5 U	1.4	2450 J	0.803 J	1 U	96200	1 U	1.61	20 U
	MW20S-GW061720	6/17/2020	Total	100 U	1 U	0.878 J	47.4	1 U	1 U	94000	1.41	0.113 J	1.22 J	100 U	1 U	29300	1.5	0.5 U	3.39	3500	0.576 J	0.146 J	75300	1 U	1.93	15.9 J
	MW20S-GW092420	9/24/2020	Total	100 U	1 U	0.718 J	45.5	1 U	1 U	107000	1.56	1 U	2 U	100 U	1 U	33400	1	0.5 U	3.18	2340	0.673 J	0.109 J	71600	1 U	1.73	6.67 J
	MW20S-GW121420	12/14/2020	Total	100 U	1 U	1.01	46.6	1 U	1 U	107000	1.4	0.218 J	2 U	100 U	1 U	34800	1.19	0.5 U	1.08	2210	1 U	1 U	67200	1 U	1.84	20 U
MW-21	OU2-MW21-GW-092018	9/20/2018	Total	20.3 J	1 U	1.35	133	1 U	1 U	145000	1.32	0.52 J	0.322 J	18.6 J	1 U	56100	19.7	0.5 U	1 U	3040	0.667 J	1 U	155000	1 U	2.51	20 U
	OU2-MW21-GW-112818	11/28/2018	Total	12.8 J	1 U	1.01	119	1 U	1 U	141000	1.66	0.466 J	0.422 J	100 U	1 U	44800	9.27	0.5 U	0.543 J	2790	1 U	1 U	155000	1 U	2.36	20 U
	OU2-MW21-GW-030619	3/6/2019	Total	19.2 J	1 U	1.2	121	1 U	1 U	135000	1.31	0.233 J	0.61 J	20.4 J	0.102 J	43000	4.29	0.5 U	0.272 J	2890	0.648 J	1 U	144000	1 U	2.45	20 U
	MW21-GW061820	6/18/2020	Total	702	1 U	0.997 J	129	1 U	1 U	150000	1.63	0.148 J	2 U	60.4 J	1 U	53300	2.11	0.5 U	0.57 J	2970	0.814 J	1 U	158000	1 U	2.83	20 U
	MW21-GW092320	9/23/2020	Total	361	1 U	0.968 J	125	1 U	1 U	146000	9.17	0.495 J	0.693 J	267	1 U	49200	2.91	0.5 U	17.2	3080	0.609 J	1 U	170000	1 U	2.58	20 U
	MW21-GW121420	12/14/2020	Total	153	1 U	1.16	115	1 U	1 U	128000	16.7	0.314 J	2 U	277	1 U	48100	2.11	0.5 U	12.3	2800	0.641 J	0.104 J	156000	1 U	2.93	20 U
MW-22	OU2-MW22-GW-092018	9/20/2018	Total	34.4 J	1 U	0.913 J	79.5	1 U	1 U	154000	0.762 J	1.05	0.296 J	53.2 J	0.0551 J	57700	183	0.5 U	2.12	2940	0.813 J	1 U	111000	1 U	1.51	20 U
	OU2-MW22-GW-112818	11/28/2018	Total	60.1 J	1 U	0.659 J	73.4	1 U	1 U	158000	6.3	0.854 J	1 U	68.9 J	0.072 J	52400	106	0.5 U	3.24	2730	1 U	1 U	110000	1 U	1.69	20 U
	OU2-MW22-GW-030619	3/6/2019	Total	132 J	1 U	0.998 J	75.6	1 U	1 U	156000	3.61	0.849 J	1 U	147	0.173 J	51500	77.9	0.5 U	12.4	2880	0.735 J	1 U	109000	1 U	1.85	20 U
	MW22-GW061720	6/17/2020	Total	54.3 J	1 U	0.719 J	67.6	1 U	1 U	152000	1.69	0.174 J	2 U	149	1 U	52600	7.54	0.5 U	1.37	2690	0.856 J	1 U	110000	1 U	2.1	20 U
	MW22-GW092320	9/23/2020	Total	57.9 J	1 U	0.774 J	70.4	1 U	1 U	158000	4.18	0.149 J	0.884 J	190	1 U	52400	4.33	0.5 U	0.474 J	2690	0.858 J	1 U	109000	1 U	2.02	20 U
	MW22-GW121420	12/14/2020	Total	25.8 J	1 U	0.828 J	66	1 U	1 U	156000	1.51	1 U	2 U	88.8 J	1 U	56500	2.57	0.5 U	0.349 J	2730	0.875 J	1 U	108000	1 U	2.05	20 U
MW-23A	MW23A-GW101920	10/19/2020	Total	100 U	1 U	0.905 J	94.5 J	1 U	1 U	134000	0.314 J	0.916 J	2 U	2330	1 U	44300	910	0.5 U	8.97	3780	0.367 J	1 U	135000	1 U	1 U	20 U
	MW23A-GW120920	12/9/2020	Total	94.7 J	1 U	1	93.1	1 U	1 U	157000	0.666 J	1.17	2 U	1190	1 U	56400	867	0.5 U	9.17	3410	0.587 J	1 U	126000	1 U	1.15	5.71 J
	MW23A-GW031621	3/16/2021	Total	56.9 J	1 U	0.698 J	82.3	1 U	1 U	171000	0.255 J	0.793 J	2 U	1490	1 U	58700	691	0.5 U	9.23	3240	0.436 J	1 U	125000	1 U	0.728 J	20 U
MW-23B	MW23B-GW102020	10/20/2020	Total	40.4 J	1 U	0.576 J	48.4 J	1 U	1 U	143000	0.523 J	0.337 J	2 U	62.9 J	0.0774 J	44400	89.8	0.5 U	1.67	1770	0.728 J	1 U	35200	1 U	1.46	11.7 J
	MW23B-GW121020	12/10/2020	Total	142	1 U	0.785 J	53	1 U	1 U	149000	0.915 J	0.307 J	2 U	226	1 U	51700	107	0.5 U	3.46	2010	0.83 J	1 U	42400	1 U	1.97	25.6
	MW23B-GW031621	3/16/2021	Total	80.9 J	1 U	0.84 J	49.4	1 U	1 U	148000	0.689 J	0.163 J	2 U	176	1 U	53300	22.2	0.5 U	1.91	1990	0.77 J	1 U	40600	1 U	1.97	19.2 J
MW-23C	MW23C-GW062320	6/23/2020	Total	100 U	1 U	0.344 J	30.6	1 U	1 U	133000	0.184 J	0.862 J	2 U	183	1 U	39400	325	0.5 U	6.97	2510	0.933 J	0.103 J	27200	1 U	0.657 J	20 U
	MW23C-GW101920	10/19/2020	Total	100 U	1 U	0.361 J	24.4 J	1 U	1 U	131000	0.586 J	0.388 J	2 U	30.1 J	1 U	38200	151	0.5 U	5.44	2090	1.03	1 U	26900	1 U	1.47	8.64 J
	MW23C-GW120920	12/9/2020	Total	35.7 J	1 U	0.374 J	25.7	1 U	1 U	135000	0.722 J	0.618 J	2 U	102	1 U	42700	252	0.5 U	6.18	2150	1.08	1 U	28600	1 U	1.26	10 J
	MW23C-GW031621	3/16/2021	Total	100 U	1 U	0.358 J	22.7	1 U	1 U	138000	0.452 J	0.389 J	2 U	41.1 J	1 U	40300	166	0.5 U	4.34	2170	1.09	1 U	28100	1 U	1.23	6.25 J
MW-24	MW24-GW102020	10/20/2020	Total	100 U	1 U	1.23	68.6 J	1 U	1 U	169000	0.738 J	0.148 J	2 U	100 U	1 U	52100	6.06	0.5 U	1 U	2490	0.855 J	1 U	118000	1 U	2.86	20 U
	MW24-GW120820	12/8/2020	Total	57.4 J	1 U	1.26	72	1 U	1 U	160000	12.8	0.515 J	2 U	100 U	1 U	58200	23.5	0.5 U	3.44	2440	1 U	1 U	113000	1 U	2.47	13.1 J
	MW24-GW032121	3/21/2021	Total	64.1 J	1 U	0.989 J	64.9	1 U	1 U	159000	15.3	0.336 J	2 U	96.8 J	1 U	56800	42.5	0.5 U	3.87	2420	0.714 J	0.509 J	113000	1 U	2.3	8.52 J
MW-25A	MW25A-GW093020	9/30/2020	Total	596	1 U	1.2	73.7	1 U	1 U	175000	2.43	0.466 J	1.01 J	624	1 U	57700	75.8	0.5 U	18.7	2970	0.774 J	1 U	107000	1 U	3.75	6.57 J
	MW25A-GW120920	12/9/2020	Total	165	1 U	1.28	74	1 U	1 U	164000	1.57	0.3 J	0.91 J	273	1 U	59500	23.7	0.5 U	23.8	2580	0.922 J	1 U	103000	1 U	2.99	15.2 J
	MW25A-GW032121	3/21/2021	Total	90.9 J	1 U	1.07	65.2	1 U	1 U	171000	0.983 J	0.192 J	1.47 J	122	1 U	60600	9.45	0.5 U	13	2420	0.791 J	1 U	110000	1 U	2.4	18.7 J
MW-25B	MW25B-GW093020	9/30/2020	Total	40.3 J	1 U	0.576 J	56.6	1 U	1 U	158000	0.758 J	0.409 J	2 U	64.1 J	1 U	53900	170	0.5 U	1.85	2120	0.912 J	1 U	41300	1 U	1.68	20 U
	MW25B-GW121020	12/10/2020	Total	74.1 J	1 U	0.738 J	53.1	1 U	1 U	150000	0.885 J	0.289 J	2 U	98.9 J	1 U	52500	94.9	0.5 U	1.44	2100	0.852 J	1 U	38000	1 U	1.9	20 U
	MW25B-GW032121	3/21/2021	Total	100 U	1 U	0.704 J	48.9	1 U	1 U	156000	0.488 J	0.145 J	2 U	100 U	1 U	54400	40.9	0.5 U	1.08	2010	0.889 J	1 U	39400	1 U	1.57	20 U
MW-25C	MW25C-GW061920	6/19/2020	Total	100 U	1 U	0.356 J	40.6	1 U	1 U	118000	0.407 J	0.52 J	2 U	100 U	1 U	37500	110	0.5 U	1.52	2110	1	1 U	25500	1 U	1.08	20 U
	MW25C-GW093020	9/30/2020	Total	100 U	1 U	0.489 J	31.7	1 U	1 U	124000	0.883 J	0.181 J	2 U	100 U	1 U	38700	40.4	0.5 U	1.54	2170	1.15	1 U	26200	1 U	2.02	20 U
	MW25C-GW121020	12/10/2020	Total	154	1 U	0.71 J	30.1	1 U	1 U	115000	1.19	0.202 J	2 U	203	1 U	38500	32.5	0.5 U	4.53	2010	1.09	1 U	24900	1 U	2.34	20 U
	MW25C-GW032121	3/21/2021	Total	93.6 J	1 U	0.589 J	27.8	1 U	1 U	120000	0.808 J	0.124 J	2 U	127	1 U	39100	13	0.5 U	1.84	1890	1.23	1 U	25500	1 U	1.94	20 U
MW-26A	MW26A-GW092520	9/25/2020	Total	25.5 J	1 U	0.373 J	71.8	1 U	1 U	167000	1.01	0.813 J	2 U	48.4 J	1 U	56500	221	0.5 U	16.8	2750	0.762 J	1 U	132000	1 U	1.04	9.77 J
	MW26A-GW121620	12/16/2020	Total	100 U	1 U	1 U	77	1 U	1 U	165000	1 U	0.983 J	2.08	52 J	0.17 J	55100	211	0.5 U	24.5	2710	1 U	1 U	138000	1 U	1 U	53.1
	MW26A-GW031721	3/17/2021	Total	100 U	1 U	0.853 J	73.6	1 U	1 U	161000	0.646 J	0.254 J	2.27	100 U	0.236 J	56900	43.8	0.5 U	9.6	2640	0.74 J	1 U	131000	1 U	1.9	81.5
MW-26B	MW26B-GW121620	12/16/2020	Total	100 U	1 U	1 U	59.2	1 U	1 U	147000	1 U	0.763 J	0.601 J	100 U	1 U	49000	132	0.5 U	2.29	2160	1 U	1 U	44200	1 U	1.27	8.07 J
	MW26B-GW031721	3/17/2021	Total	100 U	1 U	0.759 J	52.7	1 U	1 U	154000	0.458 J	0.184 J	2 U	100 U	0.0704 J	52200	34.7	0.5 U	1.65	2080	0.794 J	1 U	46700	1 U	1.81	20 U
MW-26C	MW26C-GW031821	3/18/2021	Total	100 U	1 U	0.48 J	29.7	1 U	1 U	116000	0.397 J	0.37 J	2 U	100 U	1 U	37700	91.6	0.5 U	2.36	1950	0.958 J	1 U	27100	1 U	1.6	20 U
MW-26D	MW26D-GW031821	3/18/2021	Total	100 U	1 U	0.302 J	30.8	1 U	1 U	133000	0.579 J	0.432 J	2 U	58.7 J	1 U	39600	91	0.5 U	2.53	2160	0.78 J	1 U	29100	1 U	0.983 J	6.41 J
MW-27	MW27-GW062420	6/24/2020	Total	100 U	1 U	1.2	69.8	1 U	1 U	158000	0.786 J	0.174 J	2 U	100 U	1 U	53200	20.9	0.5 U	0.682 J	2610	0.789 J	1 U	122000	1 U	2.64	20 U
	MW27-GW092420	9/24/2020	Total	100 U	1 U	1.2	70.8	1 U	1 U	176000	11.6	0.366 J	0.527 J	76.8 J	1 U	56900	5.9	0.5 U	10.8	2670	0.853 J	1 U	138000	1 U	2.52	20 U
	MW27-GW120820	12/8/2020	Total	100 U	1 U	1.54	73.9	1 U	1 U	163000	8.3	0.547 J	2 U	100 U	1 U	58000	3.08	0.5 U	5.52	2530	1 U	1 U	133000	1 U	2.6	20 U
	MW27-GW031621	3/16/2021	Total	100 U	1 U	1.22	65.2	1 U	1 U	165000	4.42	0.164 J	0.551 J	100 U	1 U	56900	1.45	0.5 U	2.47	2590	0.742 J	1 U	139000	1 U	2.36	20 U

Table 5-7
Dissolved and Total Metals in Groundwater

Location	Sample Identification	Sample Date	Sample Type	Aluminum µg/L Q	Antimony µg/L Q	Arsenic µg/L Q	Barium µg/L Q	Beryllium µg/L Q	Cadmium µg/L Q	Calcium µg/L Q	Chromium µg/L Q	Cobalt µg/L Q	Copper µg/L Q	Iron µg/L Q	Lead µg/L Q	Magnesium µg/L Q	Manganese µg/L Q	Mercury µg/L Q	Nickel µg/L Q	Potassium µg/L Q	Selenium µg/L Q	Silver µg/L Q	Sodium µg/L Q	Thallium µg/L Q	Vanadium µg/L Q	Zinc µg/L Q
MW-28	MW28-GW062420	6/24/2020	Total	100 U	1 U	0.822 J	86.7	1 U	1 U	163000	0.524 J	0.718 J	2 U	63.8 J	1 U	53800	162	0.5 U	2.75	2770	0.774 J	1 U	143000	1 U	1.76	7.01 J
	MW28-GW092420	9/24/2020	Total	100 U	1 U	1.26	86.6	1 U	1 U	172000	0.93 J	0.214 J	2 U	40.8 J	1 U	54800	27.9	0.5 U	0.54 J	2750	0.796 J	1 U	149000	1 U	2.05	20 U
	MW28-GW120820	12/8/2020	Total	36.4 J	1 U	1.58	92.9	1 U	1 U	176000	1.75	0.687 J	2 U	199	1 U	62200	17.8	0.5 U	4.93	2610	1 U	1 U	162000	1 U	2.28	5.94 J
	MW28-GW032121	3/21/2021	Total	100 U	1 U	1.29	82.4	1 U	1 U	167000	14.4	0.254 J	2 U	73.6 J	1 U	58400	17.4	0.5 U	4.94	2680	0.751 J	1 U	160000	1 U	2.09	20 U
MW-29A	MW29A-GW092820	9/28/2020	Total	100 U	1 U	1.53	70.6	1 U	1 U	136000	0.825 J	0.126 J	2 U	100 U	1 U	43300	1.9	0.5 U	27	2210	0.718 J	1 U	104000	1 U	2.91	5.83 J
	MW29A-GW121320	12/13/2020	Total	100 U	1 U	1.7	69.7	1 U	1 U	131000	0.908 J	0.164 J	0.519 J	100 U	1 U	45400	2.2	0.5 U	5.82	2290	0.654 J	1 U	96800	1 U	3.05	12.1 J
	MW29A-GW031921	3/19/2021	Total	100 U	1 U	1.49	68	1 U	1 U	131000	1 U	0.114 J	0.58 J	100 U	0.101 J	43900	0.384 J	0.5 U	2.85	2050	0.664 J	1 U	95200	1 U	2.5	6.67 J
MW-29B	MW29B-GW092820	9/28/2020	Total	100 U	1 U	0.498 J	54.1	1 U	1 U	159000	0.449 J	0.614 J	2 U	116	1 U	53600	315	0.5 U	2.8	2600	0.948 J	1 U	52500	1 U	1.55	20 U
	MW29B-GW121120	12/11/2020	Total	134	1 U	0.637 J	54.1	1 U	1 U	157000	0.883 J	0.86 J	2 U	303	1 U	54800	320	0.5 U	2.86	2430	0.899 J	1 U	42900	1 U	1.53	5.6 J
	MW29B-GW031921	3/19/2021	Total	39 J	1 U	0.477 J	46.9	1 U	1 U	157000	1 U	0.831 J	2 U	71.1 J	0.0707 J	52200	200	0.5 U	2.35	2140	0.885 J	1 U	38900	1 U	1.25	9.46 J
MW-29C	MW29C-GW092820	9/28/2020	Total	28 J	1 U	0.927 J	35.3	1 U	1 U	156000	0.61 J	0.119 J	2 U	27.2 J	1 U	52400	12.1	0.5 U	0.736 J	2140	1.11	1 U	34100	1 U	2.55	24.8
	MW29C-GW121120	12/11/2020	Total	25.9 J	1 U	1.1	34.4	1 U	1 U	143000	0.664 J	0.127 J	1.92 J	29.8 J	1 U	51400	5.38	0.5 U	1.16	2030	1.12	1 U	32700	1 U	2.53	11.5 J
	MW29C-GW031921	3/19/2021	Total	55.5 J	1 U	1.02	34.8	1 U	1 U	146000	1 U	0.12 J	2 U	67.8 J	0.0807 J	49400	1.79	0.5 U	0.591 J	1960	1.07	1 U	33400	1 U	2.33	27
MW-30RA	MW30RA-GW120820	12/8/2020	Total	100 U	1 U	1 U	90.6	1 U	1 U	176000	0.553 J	0.677 J	2 U	100 U	1 U	69400	98.9	0.5 U	1.39	2830	1 U	1 U	68000	1 U	0.758 J	14.3 J
	MW30RA-GW031621	3/16/2021	Total	100 U	1 U	0.522 J	81.8	1 U	1 U	176000	0.788 J	0.177 J	2 U	100 U	1 U	66900	26.6	0.5 U	0.623 J	2800	0.643 J	1 U	66600	1 U	1.31	20 U
MW-30RB	MW30RB-GW120820	12/8/2020	Total	100 U	1 U	1 U	73.3	1 U	1 U	176000	0.587 J	0.821 J	0.552 J	100 U	1 U	68100	112	0.5 U	1.28	2660	1 U	1 U	58300	1 U	1.18	13.9 J
	MW30RB-GW031621	3/16/2021	Total	100 U	1 U	0.536 J	60.5	1 U	1 U	164000	0.766 J	0.161 J	2 U	100 U	1 U	66100	15.7	0.5 U	0.627 J	2520	0.669 J	1 U	53100	1 U	1.54	20 U
MW-30C	MW30C-GW092120	9/21/2020	Total	100 U	1 U	0.476 J	79.7	1 U	1 U	164000	0.299 J	1.45	2 U	1110	1 U	58000	578	0.5 U	4.06	3450	0.499 J	1 U	66900	1 U	0.616 J	20 U
	MW30C-GW120920	12/9/2020	Total	100 U	1 U	1 U	81.9	1 U	1 U	168000	0.319 J	1.51	2 U	938	1 U	60900	414	0.5 U	2.78	2940	1 U	1 U	61200	1 U	0.405 J	8.32 J
	MW30C-GW031621	3/16/2021	Total	100 U	1 U	0.289 J	75.4	1 U	1 U	161000	0.305 J	1.16	0.508 J	205	1 U	58100	367	0.5 U	3.26	4120	0.537 J	1 U	66600	1 U	0.526 J	12.1 J
MW-31A	MW31A-GW092320	9/23/2020	Total	43.2 J	1 U	0.612 J	55.8	1 U	1 U	128000	2.61	0.478 J	1.76 J	91.4 J	1 U	39400	87.5	0.5 U	4.36	2180	0.655 J	1 U	75400	1 U	1.01	5.88 J
	MW31A-GW121120	12/11/2020	Total	100 U	1 U	0.932 J	50.7	1 U	1 U	121000	0.685 J	0.208 J	2.4	25.1 J	1 U	43000	31.1	0.5 U	2.16	2110	0.654 J	1 U	75700	1 U	1.91	18.5 J
	MW31A-GW031821	3/18/2021	Total	35.3 J	1 U	1.04	50.5	1 U	1 U	133000	0.592 J	0.129 J	4.05	42.8 J	1 U	48400	13.3	0.5 U	1.43	2140	0.633 J	1 U	79200	1 U	1.93	31.1
MW-31B	MW31B-GW092320	9/23/2020	Total	36 J	1 U	0.398 J	31.9	1 U	1 U	154000	0.481 J	0.381 J	0.846 J	57.7 J	1 U	46700	45	0.5 U	2.19	2100	1.17	1 U	32800	1 U	1.03	20 U
	MW31B-GW121120	12/11/2020	Total	95.5 J	1 U	0.71 J	29.7	1 U	1 U	145000	0.743 J	0.257 J	0.576 J	137	1 U	49000	25.9	0.5 U	1.33	2030	1.22	1 U	33100	1 U	1.93	20 U
	MW31B-GW031821	3/18/2021	Total	27.4 J	1 U	0.664 J	28.3	1 U	1 U	149000	0.435 J	0.158 J	2 U	32.1 J	1 U	52100	19.1	0.5 U	0.93 J	2000	1.01	1 U	32200	1 U	1.62	20 U
MW-31C	MW31C-GW092320	9/23/2020	Total	100 U	1 U	1.04	35.9	1 U	1 U	126000	0.205 J	1.09	0.555 J	1190	1 U	37200	541	0.5 U	1.94	2170	0.585 J	1 U	44500	1 U	1 U	20 U
	MW31C-GW121120	12/11/2020	Total	100 U	1 U	0.667 J	37	1 U	1 U	132000	1 U	1.22	2 U	819	1 U	41900	526	0.5 U	1.93	2190	0.788 J	1 U	34900	1 U	1 U	20 U
	MW31C-GW031821	3/18/2021	Total	28.5 J	1 U	0.703 J	33.8	1 U	0.314 J	133000	0.13 J	1.05	0.624 J	853	1 U	41900	507	0.5 U	1.51	2030	0.598 J	1 U	36300	1 U	0.26 J	20 U
MW-32A	MW32A-GW092220	9/22/2020	Total	114	1 U	0.653 J	61.2	1 U	1 U	144000	1.34	0.294 J	2 U	212	1 U	52000	64.9	0.5 U	1.05	2880	0.618 J	1 U	57500	1 U	2.06	8.27 J
	MW32A-GW121020	12/10/2020	Total	37.1 J	1 U	0.911 J	67.7	1 U	1 U	142000	1.38	0.651 J	2 U	384	0.0504 J	54800	92	0.845	1.37	2810	0.833 J	1 U	82300	1 U	1.73	20 U
	MW32A-GW031721	3/17/2021	Total	41.4 J	1 U	0.965 J	59.4	1 U	1 U	124000	1.44	0.25 J	2 U	148	1 U	47600	77.9	0.5 U	0.529 J	2680	0.61 J	1 U	85300	1 U	1.92	20 U
MW-32B	MW32B-GW092220	9/22/2020	Total	100 U	1 U	0.376 J	31.8	1 U	1 U	128000	0.952 J	0.338 J	2 U	100 U	1 U	43100	73.3	0.5 U	2.26	2150	0.993 J	1 U	31500	1 U	1.48	20 U
	MW32B-GW121020	12/10/2020	Total	100 U	1 U	0.412 J	27.8	1 U	1 U	124000	1.13	0.199 J	2 U	100 U	1 U	44400	27.7	0.5 U	3.58	2060	1.03	1 U	31900	1 U	1.4	6.19 J
	MW32B-GW031721	3/17/2021	Total	100 U	1 U	0.387 J	27.1	1 U	1 U	129000	0.904 J	0.129 J	2 U	100 U	0.151 J	44200	9.59	0.5 U	3.92	2050	0.937 J	1 U	31300	1 U	1.26	6.61 J
MW-32C	MW32C-GW092220	9/22/2020	Total	100 U	1 U	0.393 J	23.1	1 U	1 U	118000	1.29	0.173 J	2 U	100 U	1 U	40700	38.9	0.5 U	3.51	2070	1.1	1 U	28600	1 U	1.69	20 U
	MW32C-GW121020	12/10/2020	Total	100 U	1 U	0.409 J	21.2	1 U	1 U	113000	1.46	0.144 J	2 U	28.6 J	1 U	42200	24.7	0.5 U	5.72	2000	1.12	1 U	28500	1 U	1.46	20 U
	MW32C-GW031721	3/17/2021	Total	100 U	1 U	0.367 J	20.6	1 U	1 U	115000	1.17	0.106 J	2 U	100 U	1 U	39600	16.3	0.5 U	1.76	1950	1.02	0.123 J	27900	1 U	1.23	20 U
MW-34A	MW34A-GW121520	12/15/2020	Total	100 U	1 U	1 U	50.3	1 U	1 U	123000	1.82	0.288 J	2 U	100 U	0.3 J	42000	28.5	0.5 U	1.38	2160	1 U	1 U	54400	1 U	1.59	20 U
	MW34A-GW031921	3/19/2021	Total	100 U	1 U	0.609 J	46.1	1 U	1 U	126000	1.76	0.111 J	2 U	100 U	0.108 J	43000	8.54	0.5 U	4.01	2020	0.842 J	1 U	54300	1 U	1.76	8.88 J
MW-34B	MW34B-GW092720	9/27/2020	Total	34.1 J	1 U	0.217 J	64.5	1 U	1 U	116000	0.472 J	0.691 J	0.609 J	77.5 J	1 U	36900	589	0.5 U	19.1	2550	0.597 J	1 U	62500	1 U	1 U	8.93 J
	MW34B-GW031921	3/19/2021	Total	100 U	1 U	0.473 J	45.5	1 U	1 U	127000	1 U	0.247 J	0.591 J	100 U	0.108 J	40800	92.6	0.5 U	7.56	2000	0.801 J	1 U	41200	1 U	1.28	24.5
MW-34C	MW34C-GW092720	9/27/2020	Total	36.8 J	1 U	0.18 J	46.7	1 U	1 U	92400	0.325 J	0.932 J	2 U	77.1 J	1 U	36000	677	0.5 U	22.7	2180	0.537 J	1 U	31600	1 U	1 U	20 U
	MW34C-GW031921	3/19/2021	Total	100 U	1 U	0.26 J	35	1 U	1 U	86700	1 U	0.549 J	2 U	47.8 J	0.0631 J	36800	303	0.5 U	6.69	1680	0.703 J	1 U	23900	1 U	0.756 J	5.86 J
MW-34D	MW34D-GW092720	9/27/2020	Total	100 U	1 U	0.163 J	33.1	1 U	1 U	121000	0.743 J	0.486 J	2 U	38.3 J	1 U	35600	267	0.5 U	6.66	2000	1.06	1 U	27000	1 U	1 U	20 U
	MW34D-GW121320	12/13/2020	Total	100 U	1 U	0.307 J	27.1	1 U	1 U	115000	0.78 J	0.295 J	2 U	100 U	1 U	37100	148	0.5 U	2.56	1850	1.03	1 U	26700	1 U	1.06	20 U
	MW34D-GW031921	3/19/2021	Total	100 U	1 U	0.26 J	23.2	1 U	1 U	113000	1 U	0.189 J	2 U	100 U	1 U	36200	79.3	0.5 U	1.46	1640	0.964 J	1 U	24900	1 U	0.979 J	20 U
MW-36	MW36-GW121420	12/14/2020	Total	100 U	1 U	0.71 J	135	1 U	1 U	150000	0.26 J	2.46	2 U	105	0.104 J	45900	778	0.5 U	8.74	3480	0.798 J	1 U	118000	1 U	0.963 J	225
	MW36-GW031621	3/16/2021	Total	100 U	1 U	0.541 J	103	1 U	1 U	160000	0.533 J	0.504 J	2 U	172	1 U	50400	178	0.5 U	1.85	3010	0.745 J	1 U	94700	1 U	0.601 J	8.18 J
MW-37D	MW37D-GW121420	12/14/2020	Total	100 U	1 U	1 U	59.3	1 U	1 U	183000	1 U	1.08	2 U	61.1 J	1 U	70200	175	0.5 U	2.72	4150	2.14	1 U	108000	1 U	1.15	423
	MW37D-GW031721	3/17/2021	Total	100 U	1 U	0.59 J	48	1 U	1 U	190000	1.28	0.219 J	2 U	37.4 J	1 U	76100	28.1	0.5 U	0.445 J	3990	2.04	1 U	112000	1 U	1.66	20 U
MW-37S	MW37S-GW121420	12/14/2020	Total	100 U	1 U	1 U	48.4	1 U	1 U	176000	1 U	0.463 J	2 U	67.7 J	1 U	82700	17	0.5 U	1 U	4250	2.43	1 U	205000	1 U	1.44	5.05 J
	MW37S-GW031721	3/17/2021	Total	100 U	1 U	0.537 J	41.2	1 U	1 U	186000	0.732 J	0.152 J	2 U	100 U	1 U	85700	4.1	0.5 U	0.283 J	4100	2.47	1 U	208000	1 U	1.5	20 U
MW-38D	MW38D-GW121620	12/16/2020	Total	29.4 J	1 U	1 U	45.6	1 U	1 U	132000	1.68	1.03	0.689 J	59.5 J	0.144 J	49400	106	0.5 U	1 U	2590	1 U	1 U	50000	1 U	1.47	5.34 J
	MW38D-GW031821	3/18/2021	Total	51.1 J	1 U	0.578 J	38.9	1 U	1 U	131000	1.68	0.252 J	2 U	100 U	1 U	50100	33.8	0.5 U	1 U	2430	0.96 J	1 U	48700	1 U	1.62	20 U
MW-38S	MW38S-GW121620	12/16/2020	Total	44.9 J	1 U	1 U	67.5	1 U	1 U	141000	1.75	0.65 J	2 U	112	0.107 J	55000	71.1	0.5 U	1.49	3010	1 U	1 U	89000	1 U	1.47	9.37 J
	MW38S-GW031721	3/17/2021	Total	63.5 J	1 U	1.27	56.6	1 U	1 U	140000	4.04	0.17 J	2 U	304	0.177 J	55800	10.3	0.5 U	1 U	2810	0.872 J	1 U	85200	1 U	2.52	20 U
GW-010	A-GW-10_07/12/2016M	7/12/2016	Total	21900	2 U	5.2	430	1 U	1 U	295000	31.9 J	8.1 J	18	19700	21.4	89000	613	0.2 U	22.7	11900	1.6 J	1 U	326000	1 U	36.5	60.5
	A-GW-10_07/12/2016M-F		Dissolved	20 U	2 U	1 U	135	1 U	1 U	172000	2 U	1 U	2 U	474	1 U	73800	4.7	0.2 U	3.2	7480	1.2 J	1 U	317000	1 U	0.92 J	2 U
	A-GW-10_09202016M	9/20/2016	Total	579	2 U	2.2	166	0.2 J	0.41 J	270000	4.6	1.8	5.1	963	1 U	70800	462	0.2 U	4.2	6880	2.9 J	1 U	308000	1 U	6.9	9.1
	A-GW-10_09202016M-F		Dissolved	40 U	4 U	0.92 J	145	2 U	2 U	197000	4 U	0.77 J	1.9 J	400 U	2 U	61700	8.4	0.2 U	2.6	8560	10 U	2 U	324000	2 U	3 J	3.7 J
GW-011	A-GW-11_07/11/2016M	7/11/2016	Total	15300	2 U	13.3	146	1 U	1 U	221000	33.5 J	6.3 J	13.7	15400	13.2	65500	166	0.2 U	15.3	5990	3.9 J	1 U	58500	1 U	33.3	43
	A-GW-11_07/11/2016M-F		Dissolved	20 U	2 U	1 U	58.7	1 U	1 U	160000	2 U	1 U	2 U	348	1 U	57200	3	0.2 U	2.5	2170	2 J	1 U	57700	1 U	0.7 J	2 U
	A-GW-11_09192016M	9/19/2016	Total	950	2 U	7.2	86.1	0.27 J	0.38 J	217000	6.4	3.2	8.5	2760	9.8	43700	125	0.2 U	4.5	2960	2.9 J	1 U	45900	1 U	14.5	14.4
	A-GW-11_09192016M-F		Dissolved	20 U	2 U	0.75 J	56.4	1 U	1 U	147000	0.81 J	0.75 J	0.64 J	200 U	1 U	43300	4	0.2 U	1.9	1960	5 U	1 U	57700	1 U	1.7 J	0.96 J
GW-014	A-GW-014_03022016M	3/2/2016	Total	5270 J	2 U	7.7	135	0.38 J	1 U	275000	8.8	4.6	8.6	9710 J	4.3	94200	335	0.2 U	10	3910 J	3 J	1 U	89300	0.08 J	19.6	29.3 J
	A-GW-014-F_03022016M		Dissolved	6.6 J	2 U	0.45 J	95	1 U	1 U	226000	0.1 J	0.45 J	2 U	100 U	1 U	86900	38.7 J	0.053 J	1	2420 J	5 U	1 U	86900	1 U	1.3 J	5.5
GW-015	A-GW-015_02292016M	2/29/2016	Total	12800 J	2 U	7.7	153 J	0.88 J	1 U	177000	21.8 J	9.9 J	19.3	19000 J	15	49800	169 J	0.2 U	21.2 J	7000 J	5.1	1 U	169000 J	0.16 J	40.7 J	66.9 J
	A-GW-015-F_02292016M		Dissolved	169 J	2 U	4.5	91.3	1 U	1 U	139000	0.31 J	0.77 J	2 U	792	1 U	40800 J	58.2 J	0.05 J	0.78 J	3380 J	1.8 J	1 U	148000 J	1 U	3.7 J	8.9
GW-016	A-GW-16_07/11/2016M	7/11/2016	Total	982	2 U	3.9	82.1	1 U	1 U	164000	2 UJ	1 UJ	2 U	1850	1 U	67700	28	0.2 U	1 U	2550	1.1 J	1 U	67800	1 U	9.6	7.6
	A-GW-16_07/11/2016M-F		Dissolved	20 U	2 U	1 U	76.1	1 U	1 U	161000	2 U	1 U	2 U	363	1 U	64900	1 U	0.2 U	2.2	2250	1.4 J	1 U	66100	1 U	4.4 J	1 J
	A-GW-16_09192016M	9/19/2016	Total	206	2 U	4.3	94.1	1 U	1 U	182000	1.1 J	1.4	2.2	553	1 U	66600	61.2	0.2 U	2.6	2400	1.6 J	1 U	70000	1 U	7.8	8.6
	A-GW-16_09192016M-F		Dissolved	20 U	2 U	1.7	77.9	1 U	1 U	161000	0.58 J	0.33 J	87 J	200 U	1 U	64600	0.85 J	0.2 U	1.5	2220	5 U	1 U	71800	1 U	4.3 J	2.5
GW-020	A-GW-020_03012016M	3/1/2016	Total	21300 J	2 U	13.8	233	1.8	1 U	384000	66.3	15.7	58.7	29900 J	45.7	99100	1190	0.88	43.6	5890	3 J	1 U	79000	0.35 J	56.4	142 J
	A-GW-020-F_03012016M		Dissolved	6.3 J	2 U	0.78 J	79.3	1 U	1 U	174000	0.87 J	1.1	2 U	100 U	1 U	63700	191 J	0.053 J	2.7	1780 J	2 J	1 U	78100	1 U	1.9 J	7.4
	A-GW-20_07/11/2016M	7/11/2016	Total	1390	2 U	1 U	51.6	1 U	1 U	144000	2 UJ	1 UJ	2 U	1600	1 U	55300	34.7	0.2 U	1 U	1900	1.2 J	1 U	55900	1 U	5 U	2 U
	A-GW-20_07/11/2016M-F		Dissolved	20 U	2 U	1 U	45.5	1 U	1 U	141000	2 U	1 U	2 U	394	1 U	52500	43.4	0.2 U	1.9	1550	1.3 J	1 U	53800	1 U	0.91 J	2 U
	A-GW-20_09192016M	9/19/2016	Total	133	2 U	0.84 J	50.6	1 U	1 U	147000	1.2 J	0.42 J	1.1 J	129 J	1 U	43500	19	0.2 U	1.4	1930	1.8 J	1 U	48100	1 U	2.2 J	1.3 J
	A-GW-20_09192016M-F		Dissolved	20 U	2 U	0.72 J	44.8	1 U	1 U	131000	0.83 J	0.2 J	0.83 J	200 U	0.21 J	40900	0.61 J	0.2 U	1.4	1710	5 U	1 U	47600	1 U	2.1 J	2 U
GW-049	A-GW-049_02252016M	2/25/2016	Total	215 J	2 U	0.48 J	72.9	1 U	0.08 J	146000	0.99 J	0.37 J	2 U	968 J	1 U	53600	20.8	0.2 U	0.85 J	2720 J	1.9 J	1 U	136000	1 U	4.8 J	7 J
	A-GW-049-F_02252016M		Dissolved	6.2 J	2 U	0.43 J	75.4	1 U	1 U	149000	0.76 J	0.37 J	2 U	100 U	1 U	54000	19.9 J	0.2 U	0.64 J	2420 J	2.2 J	1 U	138000	1 U	4.5 J	24.2
	A-GW-49_07/12/2016M	7/12/2016	Total	315	2 U	1 U	69.4	1 U	1 U	142000	2 UJ	1 UJ	2 U	621	1 U	55700	4.7	0.2 U	1 U	3020	0.89 J	1 U	116000	1 U	5 U	2 U
	A-GW-49_07/12/2016M-F		Dissolved	20 U	2 U	1 U	65.4	1 U	1 U	142000	2 U	1 U	2 U	333	1 U	52900	1 U	0.2 U	2.1	2920	1.2 J	1 U	109000	1 U	4.8 J	2 U
	A-GW-49_09202016M	9/20/2016	Total	2240	2 U	2.4	123	0.97 J	0.86 J	151000	5.2	4.8	15.7	1260	9.3	41200	132	0.2 U	9.3	2940	1.9 J	1 U	106000	1 U	16.3	17.4
	A-GW-49_09202016M-F		Dissolved	20 U	2 U	0.3 J	59.8	1 U	1 U	138000	0.85 J	0.44 J	0.72 J	200 U	1 U	40500	8	0.2 U	1.4	2460	5 U	1 U	108000	1 U	5.6	1.4 J

Table 5-7
Dissolved and Total Metals in Groundwater

Location	Sample Identification	Sample Date	Sample Type	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
				µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q	µg/L Q
GW-050	A-GW-050_02292016M	2/29/2016	Total	**574** J	*2* U	**2.9**	**80.3**	**0.06** J	*1* U	**160000**	**1.8** J	**0.58** J	*2* U	**721** J	*1* U	**61400**	**10.3**	*0.2* U	**1.6**	**1830** J	**3.7** J	*1* U	**65800**	*1* U	**14.7**	**12** J
	A-GW-050-F_02292016M		Dissolved	**1.9** J	*2* U	**2.3**	**73.9**	*1* U	*1* U	**152000**	**0.29** J	**0.09** J	*2* U	*100* U	*1* U	**59800**	**6.1** J	**0.051** J	**0.4** J	**1750** J	**3.3** J	*1* U	**64000**	*1* U	**11**	**7.3**
	A-GW-50_07/12/2016M	7/12/2016	Total	**5160**	*2* U	*1* U	**94.2**	*1* U	*1* U	**120000**	**7** J	*1* UJ	*2* U	**5430**	*1* U	**41500**	**54.9**	*0.2* U	**6.5**	**4510**	**0.75** J	*1* U	**90100**	*1* U	**12.7**	**14.3**
	A-GW-50_07/12/2016M-F		Dissolved	*20* U	*2* U	*1* U	**65.2**	*1* U	*1* U	**118000**	*2* U	*1* U	*2* U	**712**	*1* U	**37600**	**18.9**	*0.2* U	**1.6**	**3100**	*5* U	*1* U	**87200**	*1* U	**1.8** J	*2* U
	A-GW-50_09202016M	9/20/2016	Total	**452**	*2* U	**2.5**	**72.5**	*1* U	*1* U	**124000**	**1.2** J	**1**	**2.3**	**983**	*1* U	**30600**	**34.6**	*0.2* U	**2.4**	**2790**	*5* U	*1* U	**83400**	*1* U	**5.6**	**4**
	A-GW-50_09202016M-F		Dissolved	*20* U	*2* U	**1.6**	**64.1**	*1* U	*1* U	**119000**	*2* U	**0.31** J	**0.48** J	**326**	**0.6** J	**30500**	**16.7**	*0.2* U	**1.1**	**2670**	*5* U	*1* U	**86200**	*1* U	**2.1** J	*2* U
GW-052	A-GW-52_07/12/2016M	7/12/2016	Total	**334**	*2* U	*1* U	**71**	*1* U	*1* U	**147000**	*2* UJ	*1* UJ	*2* U	**1000**	*1* U	**64200**	**217** J	*0.2* U	*1* U	**3010**	**0.76** J	*1* U	**76200**	*1* U	*5* U	*2* U
	A-GW-52_07/12/2016M-F		Dissolved	*20* U	*2* U	*1* U	**60.1**	*1* U	*1* U	**142000**	*2* U	*1* U	*2* U	**364**	*1* U	**63100**	*1* U	*0.2* U	**1.8**	**2910**	**0.9** J	*1* U	**74800**	*1* U	*5* U	*2* U
	A-GW-52_09202016M	9/20/2016	Total	**108** J	*4* U	**1.1** J	**70.6**	*2* U	*2* U	**155000**	**1.6** J	*2* U	**1.2** J	**167** J	*2* U	**57900**	**49.8** J	*0.2* U	**1.4** J	**3050**	*10* U	*2* U	**73300**	*2* U	**2.1** J	**2.2** J
	A-GW-52_09202016M-F		Dissolved	*20* U	*2* U	**0.67** J	**65**	*1* U	*1* U	**149000**	**1.4** J	**0.27** J	**0.73** J	*200* U	**0.24** J	**60600**	**0.71** J	*0.2* U	**1.1**	**2680**	**1.9** J	*1* U	**76400**	*1* U	**1.7** J	**1.7** J
GW-053	A-GW-53_07/11/2016M	7/11/2016	Total	**65600**	*2* U	**12.1**	**641**	**4.8**	*1* U	**940000**	**130** J	**23** J	**53.6**	**57500**	**91.2**	**124000**	**2770**	**0.034** J	**74.5**	**12300**	*5* U	*1* U	**75100**	*1* U	**78**	**184**
	A-GW-53_07/11/2016M-F		Dissolved	*20* U	*2* U	*1* U	**74.5**	*1* U	*1* U	**165000**	*2* U	*1* U	*2* U	**425**	*1* U	**56700**	**46**	*0.2* U	**2.9**	**2650**	**0.59** J	*1* U	**85500**	*1* U	**0.55** J	*2* U
	A-GW-53_09192016M	9/19/2016	Total	*40* U	*4* U	*2* U	**82**	*2* U	*2* U	**178000**	**0.84** J	**0.35** J	**0.98** J	*400* U	*2* U	**53200**	**7.5**	*0.2* U	**1.6** J	**2780**	*10* U	*2* U	**73700**	*2* U	*10* U	**2.3** J
	A-GW-53_09192016M-F		Dissolved	**298**	*2* U	**0.91** J	**91.1**	*1* U	*1* U	**190000**	**1.9** J	**0.58** J	**1.7** J	**307**	**1.5**	**49100**	**67.5**	*0.2* U	**1.9**	**2320**	**1.3** J	*1* U	**81200**	*1* U	**3.2** J	**3.5**
GW-059	A-GW-59_07/11/2016M	7/11/2016	Total	**130**	*2* U	*1* U	**103**	*1* U	*1* U	**180000**	*2* UJ	*1* UJ	*2* U	**1350**	*1* U	**61400**	**48.2**	*0.2* U	*1* U	**3660**	*5* U	*1* U	**117000**	*1* U	*5* U	*2* U
	A-GW-59_07/11/2016M-F		Dissolved	*20* U	*2* U	*1* U	**103**	*1* U	*1* U	**147000**	*2* U	*1* U	*2* U	**1040**	*1* U	**63100**	**48**	*0.2* U	**2.5**	**3570**	*5* U	*1* U	**99600**	*1* U	*5* U	*2* U
	A-GW-59_09192016M	9/19/2016	Total	**54.7**	*4* U	**2.1**	**107**	*2* U	*2* U	**185000**	*4* U	**0.42** J	**1** J	**676**	*2* U	**52600**	**48.9**	*0.2* U	**1.6** J	**3830**	*10* U	*2* U	**126000**	*2* U	*10* U	**2.8** J
	A-GW-59_09192016M-F		Dissolved	*20* U	*2* U	**1.9**	**107**	*1* U	*1* U	**180000**	**0.32** J	**0.43** J	**0.63** J	**610**	**0.59** J	**58300**	**51.5**	*0.2* U	**1.4**	**3290**	*5* U	*1* U	**130000**	*1* U	*5* U	*2* U
GW-061	A-GW-61_07/12/2016M	7/12/2016	Total	**11600**	*2* U	**4.5**	**156**	*1* U	*1* U	**192000**	**15.2** J	**5.1** J	**12.6**	**12800**	**9.2**	**66800**	**118**	*0.2* U	**13.3**	**7110**	**2** J	*1* U	**126000**	*1* U	**25.9**	**33.1**
	A-GW-61_07/12/2016M-F		Dissolved	*20* U	*2* U	*1* U	**79.1**	*1* U	*1* U	**123000**	*2* U	*1* U	*2* U	**401**	*1* U	**61400**	*1* U	*0.2* U	**2.5**	**4190**	**2.3** J	*1* U	**104000**	*1* U	*5* U	*2* U
	A-GW-61_09202016M	9/20/2016	Total	**3930**	*4* U	**4.6**	**191**	**0.37** J	**0.77** J	**411000**	**8.3**	**7**	**6.5**	**4910**	**7.3**	**47000**	**458**	*0.2* U	**7.7**	**5290**	**2.9** J	*2* U	**94100**	*2* U	**14.5**	**19.3**
	A-GW-61_09202016M-F		Dissolved	*20* U	*2* U	**0.31** J	**93.7**	*1* U	*1* U	**169000**	**0.64** J	**0.58** J	**1.4** J	*200* U	**0.26** J	**61300**	**1.1**	*0.2* U	**2**	**4030**	**3** J	*1* U	**135000**	*1* U	**1.3** J	**1.4** J

Notes:
Bold indicates detected values
Italics indicates nondetected values

Acronyms:
µg/L = microgram per liter
Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit

Table 5-8
Preliminary Chemicals of Potential Concern in Surface Water

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)[1]			5		5		70		2	
SW-01	A-SW-01_05042016	5/4/2016	**0.13**	**J**	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-02	A-SW-02_05112016	5/11/2016	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-03	A-SW-03_05112016	5/11/2016	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-04	A-SW-04_05022016	5/2/2016	**27**		**0.34**	**J**	**0.19**	**J**	*0.5*	*U*
	0146-H-SW01-030520	3/5/2020	**0.46**	**J**	*1*	*U*	*1*	*U*	*1*	*U*
SW-05	A-SW-05_05112016	5/11/2016	**0.38**	**J**	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-06	A-SW-06_05042016	5/4/2016	**74**		**0.96**		**0.58**		*0.5*	*U*
	OU2-SW06-SW-032519	3/25/2019	**48**		**1.2**		**0.4**	**J**	*1*	*U*
	OU2-SW06-SW-092718	9/27/2018	**15**		**1.1**		**0.5**	**J**	*1*	*U*
	OU2-SW06-SW-121818	12/18/2018	**38**		**1.6**		**0.58**	**J**	*1*	*U*
SW-07	A-SW-07_05042016	5/4/2016	**2.9**		*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-08	A-SW-08_05042016	5/4/2016	**7.5**		**0.13**	**J**	*0.5*	*U*	*0.5*	*U*
	SW08-SW041521	4/15/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
SW-09	A-SW-09_05032016	5/3/2016	**19**		**0.88**		**0.11**	**J**	*0.5*	*U*
SW-10	A-SW-10_05112016	5/11/2016	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-11	A-SW-11_05032016	5/3/2016	**20**		**0.61**		**0.6**		*0.5*	*U*
SW-12	A-SW-12_05032016	5/3/2016	**23**		**0.39**	**J**	**0.12**	**J**	*0.5*	*U*
	SW12-SW041521	4/15/2021	**27**		**0.35**	**J**	**0.12**	**J**	*1*	*U*
SW-13	A-SW-13_05032016	5/3/2016	**1.8**		**0.37**	**J**	*0.5*	*U*	*0.5*	*U*
SW-14	A-SW-14_05042016	5/4/2016	**18**		**0.53**		*0.5*	*U*	*0.5*	*U*
SW-15	A-SW-15_05042016	5/4/2016	**14**		**0.32**	**J**	*0.5*	*U*	*0.5*	*U*
	0026-H-SW01-030620	3/6/2020	**6.2**		**1**	**J**	**0.55**	**J**	*1*	*U*
	0026-H-SW02-030620	3/6/2020	**0.99**	**J**	*1*	*U*	*1*	*U*	*1*	*U*
SW-16	A-SW-16_05042016	5/4/2016	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-16E	SW16E-SW041521	4/15/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
SW-16I	SW16I-SW041521	4/15/2021	*1*	*U*	*1*	*U*	*1*	*U*	*1*	*U*
SW-17	A-SW-17_05112016	5/11/2016	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-18	A-SW-18_05052016	5/5/2016	**17**		**0.43**	**J**	**0.35**	**J**	*0.5*	*U*
SW-19	A-SW-19_05042016	5/4/2016	**0.18**	**J**	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-20	A-SW-20_05052016	5/5/2016	**0.23**	**J**	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-21	A-SW-21_05032016	5/3/2016	**6.5**		**0.62**	**J**	**0.44**	**J**	*0.5*	*U*
SW-22	A-SW-22_05032016	5/3/2016	**2.9**		**0.47**	**J**	**0.13**	**J**	*0.5*	*U*
SW-23	A-SW-23_05032016	5/3/2016	**25**		**0.46**	**J**	**0.15**	**J**	*0.5*	*U*
	OU2-SW23-SW-092718	9/27/2018	**15**		**1.1**		**0.54**	**J**	*1*	*U*
SW-24	A-SW-24_05112016	5/11/2016	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-25	A-SW-25_05052016	5/5/2016	**1.4**		*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-26	A-SW-26_05032016	5/3/2016	**23**		**0.3**	**J**	*0.5*	*U*	*0.5*	*U*
SW-27	A-SW-27_05032016	5/3/2016	**19**		**0.61**	**J**	**0.57**	**J**	*0.5*	*U*
SW-28	A-SW-28_05032016	5/3/2016	**16**		**0.66**		**0.56**		*0.5*	*U*
SW-29	A-SW-29_05112016	5/11/2016	**26**		**0.28**	**J**	*0.5*	*U*	*0.5*	*U*
SW-30	A-SW-30_05032016	5/3/2016	**0.5**		**0.09**	**J**	*0.5*	*U*	*0.5*	*U*
SW-31	A-SW-31_05022016	5/2/2016	**20**		**0.48**	**J**	**0.27**	**J**	*0.5*	*U*
SW-32	A-SW-32_05052016	5/5/2016	**0.46**	**J**	*0.5*	*U*	*0.5*	*U*	*0.5*	*U*
SW-33	A-SW-33_05022016	5/2/2016	**35**		**0.78**		**0.15**	**J**	*0.5*	*U*

Table 5-8
Preliminary Chemicals of Potential Concern in Surface Water

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)[1]			5		5		70		2	
SW-34	A-SW-34_05022016	5/2/2016	13		0.27	J	0.13	J	0.5	U
	OU2-SW34-SW-101018	10/10/2018	2.3		1	U	1	U	1	U
	OU2-SW34-SW-121818	12/18/2018	4.9		0.12	J	1	U	1	U
	OU2-SW34-SW-032719	3/27/2019	5.1		0.13	J	1	U	1	U
	SW34-SW041421	4/14/2021	6.1		1	U	1	U	1	U
SW-35	A-SW-35_05042016	5/4/2016	82		0.67		0.54		0.5	U
	OU2-SW35-SW-101018	10/10/2018	13		0.87	J	0.5	J	1	U
	OU2-SW35-SW-122718	12/27/2018	30		0.6	J	0.26	J	1	U
	OU2-SW35-SW-032719	3/27/2019	8.6		0.26	J	1	U	1	U
	SW35-SW041321	4/13/2021	50		0.99	J	0.56	J	1	U
SW-36	A-SW-36_05032016	5/3/2016	1.2		2.3		0.69		0.5	U
SW-37	A-SW-37_05052016	5/5/2016	15		0.39	J	0.24	J	0.5	U
SW-38	A-SW-38_05112016	5/11/2016	6		0.22	J	0.5	U	0.5	U
SW-39	A-SW-39_05032016	5/3/2016	31		0.5		0.31	J	0.5	U
	OU2-SW39-SW-092718	9/27/2018	14		0.71	J	0.31	J	1	U
	OU2-SW39-SW-121818	12/18/2018	18		0.83	J	0.33	J	1	U
	OU2-SW39-SW-032519	3/25/2019	19		0.83	J	0.27	J	1	U
	0018H-SW01-010720	1/7/2020	22		1.3		0.47	J	1	U
	SW39-SW041321	4/13/2021	23		1.6		0.63	J	1	U
SW-40	A-SW-40_05052016	5/5/2016	28		0.38	J	0.18	J	0.5	U
SW-41	A-SW-41_05052016	5/5/2016	0.49	J	0.5	U	0.5	U	0.5	U
SW-42	A-SW-42_05022016	5/2/2016	16		0.19	J	0.5	U	0.5	U
SW-43	A-SW-43_05022016	5/2/2016	4.1		0.1	J	0.5	U	0.5	U
SW-44	A-SW-44_05042016	5/4/2016	2.2		0.5	U	0.5	U	0.5	U
	0071-H-SW01-030420	3/4/2020	0.41	J	1	U	1	U	1	U
SW-45	A-SW-45_05052016	5/5/2016	3.1		0.11	J	0.11	J	0.5	U
SW-46	A-SW-46_05052016	5/5/2016	2.4		0.5	U	0.5	U	0.5	U
SW-47	A-SW-47_05042016	5/4/2016	0.5	U	0.5	U	0.5	U	0.5	U
	OU2-SW47-SW-101018	10/10/2018	1	U	1	U	1	U	1	U
	OU2-SW47-SW-122718	12/27/2018	0.18	J	1	U	1	U	1	U
	OU2-SW47-SW-032619	3/26/2019	1	U	1	U	1	U	1	U
SW-48	A-SW-48_05042016	5/4/2016	0.5	U	0.5	U	0.5	U	0.5	U
	OU2-SW48-SW-092718	9/27/2018	1	U	1	U	1	U	1	U
	OU2-SW48-SW-121818	12/18/2018	1	U	1	U	1	U	1	U
	OU2-SW48-SW-032519	3/25/2019	1	U	1	U	1	U	1	U
SW-49	A-SW-49_05052016	5/5/2016	0.21	J	0.5	U	0.5	U	0.5	U
SW-50	A-SW-001_02/26/2016	2/26/2016	6.3		0.13	J	0.5	UJ	0.5	U
	0051H-SW01-121819	12/18/2019	1.8		1	U	1	U	1	U
	0098-H-SW01-030220	3/2/2020	1.1		1	U	1	U	1	U
SW-51	OU2-SW51-SW-101018	10/10/2018	1	U	1	U	1	U	1	U
	OU2-SW51-SW-122718	12/27/2018	1	U	1	U	1	U	1	U
	OU2-SW51-SW-032619	3/26/2019	1	U	1	U	1	U	1	U
SW-52	OU2-SW52-SW-101018	10/10/2018	1	U	1	U	1	U	1	U
	OU2-SW52-SW-122718	12/27/2018	1	U	1	U	1	U	1	U
	OU2-SW52-SW-032619	3/26/2019	1	U	1	U	1	U	1	U

Table 5-8
Preliminary Chemicals of Potential Concern in Surface Water

Location	Sample Identification	Sample Date	PCE		TCE		cis-1,2-DCE		VC	
			µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
EPA Maximum Contaminant Level (MCL) (µg/L)[1]			**5**		**5**		**70**		**2**	
SW-53	OU2-SW53-SW-101018	10/10/2018	**17**		**2**		**0.68**	**J**	*1*	*U*
	OU2-SW53-SW-121818	12/18/2018	**26**		**2.9**		**0.79**	**J**	*1*	*U*
	OU2-SW53-SW-032519	3/25/2019	**28**		**2.8**		**0.7**	**J**	*1*	*U*
	SW53-SW041321	4/13/2021	**36**		**4.6**		**1.3**		*1*	*U*
SW-54	SW54-SW041521	4/15/2021	**5.7**		*1*	*U*	*1*	*U*	*1*	*U*
SW-166	0166-H-SW01-030720	3/7/2020	**77**		**1.1**		**0.85**	**J**	*1*	*U*
	SW166-SW041321	4/13/2021	**59**		**0.75**	**J**	**0.49**	**J**	*1*	*U*

Notes:
1 EPA Tap Water RSL based on target cancer risk 1 × 10-6 and hazard quotient = 1.
Highlight indicates values grater than screening level
Bold indicates detected values
Italics indicates nondetected values

µg/L = microgram per liter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
MCL = maximum contaminant level
OU = operable unit
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride

Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit
UJ = Analyte was not detected at the associated value, which is the reporting limit, and a QA/QC requirement has not been met

Table 5-9
Geochemical Parameters in Surface Water

Location	Sample Identification	Sample Date	Chloride		Sulfate		Nitrate/ Nitrite[1]		Alkalinity[2]		TDS		TOC		Methane[3]		Ferrous Iron		ORP		pH		Specific Conductance		Temperature		Turbidity	
			mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	µg/L	Q	mg/L	Q	mV	Q	su	Q	mS/cm	Q	deg C	Q	NTU	Q
SW-06	OU2-SW06-SW-092718	9/27/2018	**369**		**131**		NS		**337**		**1190**		**1.24**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW06-SW-121818	12/18/2018	**302**		**124**		NS		**304**		**1070**		**1.12**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW06-SW-032519	3/25/2019	**302**		**111**		NS		**283**		**946**		**1.42**		NS		NS		NS		NS		NS		NS		NS	
SW-07	A-SW-007_05/04/2016	5/4/2016	**184**		**124**		NS		NS		**786**		NS		NS		NS		NS		NS		NS		NS		NS	
SW-08	SW08-SW041521	4/15/2021	**121**		**153**		**1.73**		**224**		NS		**0.64**	J	**0.28**	J	*0*	U	**97.3**		**7.28**		NS		**11.7**		**0.1**	
SW-12	A-SW-012_05/03/2016	5/3/2016	**246**		**95.2**		NS		NS		**898**		NS		NS		NS		NS		NS		NS		NS		NS	
	SW12-SW041521	4/15/2021	**323**		**101**		**2.85**		**284**		NS		**1.16**		**0.25**	J	**0.02**		**129.3**		**6.89**		**1.281**		**11.6**		**7.88**	
SW-15	A-SW-015_05/04/2016	5/4/2016	**242**		**122**		NS		NS		**948**		NS		NS		NS		NS		NS		NS		NS		NS	
SW-16	A-SW-016_05/04/2016	5/4/2016	**190**		**150**		NS		NS		**780**		NS		NS		NS		NS		NS		NS		NS		NS	
SW-166	SW166-SW041321	4/13/2021	**365**		**103**		**4**		**254**		NS		**1.05**		**1.1**	J	**0.11**		**162**		**7.25**		**1.618**		**10.7**		**7.02**	
SW-16E	SW16E-SW041521	4/15/2021	**194**		**147**		**3.23**		**219**		NS		**0.976**	J	**0.23**	J	**0.03**		**85.7**		**7.79**		**0.987**		**13.1**		**0.1**	
SW-16I	SW16I-SW041521	4/15/2021	**231**		**175**		**3.91**		**241**		NS		**0.873**	J	*2*	U	*0*	U	**141.1**		**7.47**		**1.081**		**15**		**0.24**	
SW-21	A-SW-021_05/03/2016	5/3/2016	**208**		**93.4**		NS		**NS**		**802**		NS		NS		NS		NS		NS		NS		NS		NS	
SW-23	A-SW-023_05/03/2016	5/3/2016	**259**		**92.1**		NS		**NS**		**984**		NS		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW23-SW-092718	9/27/2018	**379**		**132**		NS		**326**		**1220**		**1.37**		NS		NS		NS		NS		NS		NS		NS	
SW-26	A-SW-026_05/03/2016	5/3/2016	**272**		**91.5**		NS		**NS**		**1030**		**NS**		NS		NS		NS		NS		NS		NS		NS	
SW-27	A-SW-027_05/03/2016	5/3/2016	**246**		**93.7**		NS		**NS**		**940**		**NS**		NS		NS		NS		NS		NS		NS		NS	
SW-28	A-SW-028_05/03/2016	5/3/2016	**237**		**95.5**		NS		**NS**		**860**		**NS**		NS		NS		NS		NS		NS		NS		NS	
SW-34	OU2-SW34-SW-101018	10/10/2018	**174**		**89.1**		NS		**222**		**567**		**2.26**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW34-SW-121818	12/18/2018	**223**		**129**		NS		**281**		**921**		**0.861**	J	NS		NS		NS		NS		NS		NS		NS	
	OU2-SW34-SW-032719	3/27/2019	**229**		**116**		NS		**282**		**798**		**0.875**	J	NS		NS		NS		NS		NS		NS		NS	
	SW34-SW041421	4/14/2021	**293**		**121**		**4.07**		**278**		NS		**1.41**		**0.29**	J	**0.01**		**120.1**		**7.41**		**1.242**		**12.1**		**0.27**	
SW-35	OU2-SW35-SW-101018	10/10/2018	**351**		**132**		NS		**366**	J	**1100**		**1.46**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW35-SW-122718	12/27/2018	**258**		**107**		NS		**294**		**999**		**1.25**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW35-SW-032719	3/27/2019	**269**		**104**		NS		**266**		**908**		**2.09**		NS		NS		NS		NS		NS		NS		NS	
	SW35-SW041321	4/13/2021	**325**		**102**		**3.3**		**262**		NS		**0.614**	J	**0.24**	J	*0*	U	**101**		**7.83**		**1.479**		**10.5**		**21.88**	
SW-39	OU2-SW39-SW-092718	9/27/2018	**402**		**131**		NS		**318**	J	**1140**		**1.32**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW39-SW-121818	12/18/2018	**325**		**156**		NS		**317**		**1100**		**1.27**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW39-SW-032519	3/25/2019	**340**		**119**		NS		**298**		**965**		**1.29**		NS		NS		NS		NS		NS		NS		NS	
	SW39-SW041321	4/13/2021	**404**		**118**		**2.58**		**278**		NS		**0.865**	J	**0.18**	J	*0*	U	**68.4**		**7.67**		**1.689**		**11.3**		**55**	
SW-47	A-SW-047_05/04/2016	5/4/2016	**35.2**		**85.7**		NS		NS		**414**		NS		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW47-SW-101018	10/10/2018	**47.2**		**21.6**		NS		**72.6**		**175**		**4.49**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW47-SW-122718	12/27/2018	**291**		**127**		NS		**256**	J	**992**		**1.45**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW47-SW-032619	3/26/2019	**74.1**		**141**		NS		**248**		**520**		**1.53**		NS		NS		NS		NS		NS		NS		NS	
SW-48	OU2-SW48-SW-092718	9/27/2018	**119**		**150**		NS		**236**		**617**		**0.545**	J	NS		NS		NS		NS		NS		NS		NS	
	OU2-SW48-SW-121818	12/18/2018	**131**		**201**		NS		**234**		**696**		**0.604**	J	NS		NS		NS		NS		NS		NS		NS	
	OU2-SW48-SW-032519	3/25/2019	**110**		**140**		NS		**241**		**636**		**0.506**	J	NS		NS		NS		NS		NS		NS		NS	
SW-51	OU2-SW51-SW-101018	10/10/2018	**41.5**		**20.6**		NS		**69.9**		**150**		**4.41**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW51-SW-122718	12/27/2018	**419**		**129**		NS		**260**		**1110**		**1.51**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW51-SW-032619	3/26/2019	**76.6**		**141**		NS		**246**		**548**		**1.6**		NS		NS		NS		NS		NS		NS		NS	
SW-52	OU2-SW52-SW-101018	10/10/2018	**38.6**		**19.5**		NS		**66.8**		**163**		**4.33**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW52-SW-122718	12/27/2018	**419**		**126**		NS		**255**		**1150**		**1.65**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW52-SW-032619	3/26/2019	**78.3**		**139**		NS		**246**		**552**		**1.76**		NS		NS		NS		NS		NS		NS		NS	

Table 5-9
Geochemical Parameters in Surface Water

Location	Sample Identification	Sample Date	Chloride		Sulfate		Nitrate/ Nitrite[1]		Alkalinity[2]		TDS		TOC		Methane[3]		Ferrous Iron		ORP		pH		Specific Conductance		Temperature		Turbidity	
			mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	µg/L	Q	mg/L	Q	mV	Q	su	Q	mS/cm	Q	deg C	Q	NTU	Q
SW-53	OU2-SW53-SW-101018	10/10/2018	**473**		**174**		NS		**351**		**1320**		**3.78**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW53-SW-121818	12/18/2018	**363**		**341**		NS		**338**	J	**1090**		**1.42**		NS		NS		NS		NS		NS		NS		NS	
	OU2-SW53-SW-032519	3/25/2019	**308**		**118**		NS		**332**		**1040**		**1.58**		NS		NS		NS		NS		NS		NS		NS	
	SW53-SW041321	4/13/2021	**358**		**119**		**1.73**		**306**		NS		**1.16**		**0.32**	J	**0.02**		**101.3**		**7.15**		**1.64**		**11.7**		**3.44**	
SW-54	SW54-SW041521	4/15/2021	**224**		**102**		**3.09**		**262**		NS		**0.493**	J	*2*	U	**0.25**		**122.1**		**7.01**		**1.052**		**11.9**		**0.42**	

Notes:
Bold indicates detected values
Italics indicates nondetected values
[1] Nitrate and Nitrite as total Nitrogen
[2] Total Alkalinity as calcium carbonate
[3] Dissolved gases methane, ethene, and ethane were analyzed, only methane was detected

deg C = degrees Celsius
ORP = oxidation reduction potential
OU = operable unit
mg/L = milligram per liter
µg/L = microgram per liter
mS/cm = millisiemens per centimeter
mV = millivolts
NTU = nephelometric turbidity unit
NS = not sampled
PCE = tetrachloroethene
su = standard units
TOC = total organic carbon
TDS = total dissolved solids

Q = qualifier
J = Result is estimated
J+ = Result is estimated, biased high
J- = Result is estimated, biased low
U = Analyte was not detected at the associated value, which is the reporting limit

Table 5-10
Total Metals in Surface Water

Location	Sample Identification	Sample Date	Aluminum µg/L Q	Antimony µg/L Q	Arsenic µg/L Q	Barium µg/L Q	Beryllium µg/L Q	Cadmium µg/L Q	Calcium µg/L Q	Chromium µg/L Q	Cobalt µg/L Q	Copper µg/L Q	Iron µg/L Q	Lead µg/L Q
SW-06	OU2-SW06-SW-092718	9/27/2018	100 U	0.252 J	2.66	81.6	1 U	1 U	183000	0.661 J	0.576 J	0.703 J	5.42 J	0.0761 J
	OU2-SW06-SW-121818	12/18/2018	100 U	0.287 J	2.42	72.3	1 U	1 U	161000	0.557 J	0.419 J	0.714 J	8.13 J	1 U
SW-06	OU2-SW06-SW-032519	3/25/2019	100 U	1 U	2.52	67.1	1 U	1 U	167000	0.615 J	0.475 J	1 U	6.89 J	0.108 J
SW-07	A-SW-07_05042016M	5/4/2016	36.8 J	2 U	0.91 J	61.4	1 U	1 U	139000	0.94 J	0.06 J	4.8	140 J	2
	A-SW-07-D_05042016M	5/4/2016	23.2 J	2 U	0.9 J	58.8	1 U	1 U	133000	0.8 J	1 U	2.6	89.1 J	0.8 J
SW-08	SW08-SW041521	4/15/2021	100 U	1 U	0.408 J	27.3	1 U	1 U	124000	1.03	1 U	2 U	100 U	1 U
SW-12	A-SW-12_05032016M	5/3/2016	30.8	2 U	1.4	72.6	1 U	0.06 J	148000	2 U	0.06 J	1.5 J	75 J	0.4 J
SW-12	SW12-SW041521	4/15/2021	58.6 J	1 U	1.61	68.6	1 U	1 U	157000	0.349 J	0.126 J	0.857 J	63.5 J	1.21
SW-15	A-SW-15_05042016M	5/4/2016	8230 J	3	66.2	206	1.9	2.5	179000	54.5	15.7	102	13200 J	127
SW-16	A-SW-16_05042016M	5/4/2016	38.7 J	2 U	0.68 J	64.7	1 U	1 U	134000	1.3 J	1 U	1.4 J	77.2 J	0.6 J
SW-16E	SW16E-SW041521	4/15/2021	100 U	1 U	0.582 J	56.6	1 U	1 U	131000	1.12	1 U	0.658 J	100 U	0.224 J
SW-16I	SW16I-SW041521	4/15/2021	100 U	1 U	0.746 J	51.2	1 U	1 U	145000	1.05	1 U	2 U	100 U	1 U
SW-21	A-SW-21_05032016M	5/3/2016	64.2	2 U	3.5	59.3	1 U	1 U	139000	2 U	0.07 J	1.6 J	140 J	1.3
SW-23	A-SW-23_05032016M	5/3/2016	33.2	2 U	1.8	73.3	1 U	0.08 J	148000	2 U	0.1 J	1.6 J	70.6 J	0.31 J
SW-23	OU2-SW23-SW-092718	9/27/2018	74.1 J	4.16 J	2.62	81.8	1 U	1 U	184000	0.612 J	0.575 J	0.698 J	8 J	0.0943 J
SW-26	A-SW-26_05032016M	5/3/2016	164	2 U	1.2	106	1 U	0.13 J	159000	2 U	0.2 J	3.2 J	314	7.4
SW-27	A-SW-27_05032016M	5/3/2016	20 U	2 U	2	71.8	1 U	1 U	145000	2 U	1 U	1.2 J	38.7 J	1 U
SW-28	A-SW-28_05032016M	5/3/2016	20 U	2 U	2.5	70.7	1 U	1 U	151000	2 U	0.06 J	1.4 J	40 J	0.11 J
SW-34	OU2-SW34-SW-101018	10/10/2018	19 J	1 U	1.28	40.6	1 U	1 U	107000	0.741 J	0.462 J	49.9	37.3 J	1.72
	OU2-SW34-SW-121818	12/18/2018	100 U	1 U	0.871 J	53.7	1 U	1 U	138000	0.87 J	0.371 J	1 U	13.8 J	1 U
	OU2-SW34-SW-032719	3/27/2019	43.2 J	1 U	1.35	52.3	1 U	1 U	147000	0.922 J	0.49 J	1.42	229	2.65
SW-34	SW34-SW041421	4/14/2021	100 U	1 U	1.02	52.3	1 U	1 U	141000	0.753 J	0.111 J	0.883 J	29.5 J	0.31 J
SW-35	OU2-SW35-SW-101018	10/10/2018	20.4 J	0.308 J	13.9	102	1 U	1 U	197000	0.36 J	0.792 J	1 U	28.5 J	0.617 J
	OU2-SW35-SW-122718	12/27/2018	24.4 J	0.329 J	3.31	70.3	1 U	1 U	175000	0.576 J	0.476 J	0.308 J	100 U	0.929 J
	OU2-SW35-SW-032719	3/27/2019	67.5 J	1 U	4.11	57	1 U	1 U	161000	0.544 J	0.308 J	1.2	61.6 J	1.72
SW-35	SW35-SW041321	4/13/2021	38.3 J	1 U	2.21	65	1 U	1 U	167000	0.591 J	0.114 J	0.752 J	53.2 J	2.67
SW-39	OU2-SW39-SW-092718	9/27/2018	100 U	0.256 J	2.62	79.1	1 U	1 U	175000	0.438 J	0.56 J	0.306 J	100 U	1 U
	OU2-SW39-SW-121818	12/18/2018	100 U	0.3 J	2.69	73.4	1 U	1 U	161000	0.753 J	0.487 J	3.62	10.4 J	0.643 J
	OU2-SW39-SW-032519	3/25/2019	22.7 J	0.336 J	3.35	73.8	1 U	1 U	185000	0.52 J	0.526 J	0.471 J	31.8 J	0.549 J
SW-39	SW39-SW041321	4/13/2021	100 U	1 U	1.97	72.8	1 U	1 U	172000	0.222 J	1 U	2 U	100 U	1 U
SW-47	A-SW-47_05042016M	5/4/2016	509 J	2 U	1	58.1	1 U	1 U	85200	0.86 J	0.31 J	3.7	506 J	0.99 J
	A-SW-47-D_05042016M	5/4/2016	566	0.3 J	1	58.4	1 U	1 U	86100	0.9 J	0.32 J	3.9	560	1
SW-47	OU2-SW47-SW-101018	10/10/2018	340	0.93 J	1.5	24.8	1 U	1 U	30800	3.38	0.417 J	5.7	265	1.99
	OU2-SW47-SW-122718	12/27/2018	23.3 J	1 U	0.995 J	56.7	1 U	1 U	125000	0.643 J	0.372 J	1.03	100 U	0.228 J
SW-47	OU2-SW47-SW-032619	3/26/2019	35.1 J	1 U	0.737 J	52.5	1 U	1 U	114000	0.402 J	0.201 J	0.712 J	31.3 J	0.113 J
SW-48	OU2-SW48-SW-092718	9/27/2018	100 U	2.21	0.959 J	28.7	1 U	1 U	126000	1.5	0.379 J	0.352 J	100 U	1 U
	OU2-SW48-SW-121818	12/18/2018	100 U	1 U	0.543 J	29.7	1 U	1 U	120000	1.72	0.3 J	1 U	6.63 J	1 U
SW-48	OU2-SW48-SW-032519	3/25/2019	100 U	1 U	0.663 J	28	1 U	1 U	131000	1.61	0.332 J	1 U	6.45 J	1 U
SW-51	OU2-SW51-SW-101018	10/10/2018	487	0.795 J	1.75	24.2	1 U	1 U	28300	4.31	0.457 J	6.29	376	2.11
	OU2-SW51-SW-122718	12/27/2018	19.7 J	1 U	1.09	64.7	1 U	1 U	132000	1.01	0.412 J	1.55	100 U	0.356 J
SW-51	OU2-SW51-SW-032619	3/26/2019	38.3 J	1 U	0.907 J	54.3	1 U	1 U	117000	0.434 J	0.361 J	0.556 J	29.8 J	0.117 J
	OU2-SW81-SW-032619	3/26/2019	34.4 J	1 U	0.85 J	51.9	1 U	1 U	114000	0.411 J	0.206 J	0.616 J	39.8 J	0.108 J
	OU2-SW81-SW-122718	12/27/2018	18.4 J	1 U	1.01	65.6	1 U	1 U	137000	1.12	0.407 J	1.03	100 U	0.137 J
SW-52	OU2-SW52-SW-032619	3/26/2019	28.4 J	1 U	0.811 J	52	1 U	1 U	116000	0.426 J	0.212 J	0.712 J	26.4 J	0.0979 J
	OU2-SW52-SW-101018	10/10/2018	692	0.756 J	1.84	25.9	1 U	1 U	27900	5.88	0.569 J	7.11	560	2.89
SW-52	OU2-SW52-SW-122718	12/27/2018	18.4 J	0.446 J	1.01	63.4	1 U	1 U	129000	1.18	0.399 J	1.05	100 U	0.474 J
SW-53	OU2-SW53-SW-101018	10/10/2018	28.4 J	0.693 J	29.7	138	1 U	1 U	232000	0.252 J	0.924 J	1.67	29.1 J	0.336 J
	OU2-SW53-SW-121818	12/18/2018	100 U	0.51 J	10.9	89.2	1 U	1 U	170000	0.27 J	0.466 J	0.823 J	7.19 J	1 U
	OU2-SW53-SW-032519	3/25/2019	100 U	0.406 J	11.1	88.4	1 U	1 U	185000	0.254 J	0.541 J	0.448 J	100 U	0.114 J
SW-53	SW53-SW041321	4/13/2021	100 U	0.293 J	8.85	85	1 U	1 U	180000	1 U	0.127 J	2 U	100 U	0.0914 J
SW-54	FD01-SW041521	4/15/2021	100 U	1 U	0.646 J	58.7	1 U	1 U	140000	0.614 J	1 U	2 U	100 U	1 U
SW-54	SW54-SW041521	4/15/2021	100 U	1 U	0.641 J	58.7	1 U	1 U	141000	0.66 J	1 U	2 U	100 U	1 U
SW-166	SW166-SW041321	4/13/2021	94 J	1 U	3.54	72.5	1 U	1 U	183000	0.859 J	0.359 J	1.41 J	322	3.52

Location	Sample Identification	Sample Date	Magnesium µg/L Q	Manganese µg/L Q	Mercury µg/L Q	Nickel µg/L Q	Potassium µg/L Q	Selenium µg/L Q	Silver µg/L Q	Sodium µg/L Q	Thallium µg/L Q	Vanadium µg/L Q	Zinc µg/L Q
SW-06	OU2-SW06-SW-092718	9/27/2018	60400	0.318 J	0.5 U	0.616 J	3380	1.43	1 U	127000	1 U	2.63	20 U
	OU2-SW06-SW-121818	12/18/2018	57300	0.237 J	0.5 U	0.232 J	3140	1.66	1 U	106000	1 U	2.1	20 U
SW-06	OU2-SW06-SW-032519	3/25/2019	58900	0.181 J	0.5 U	0.281 J	3000	2.06	1 U	92200	1 U	2.12	20 U
SW-07	A-SW-07_05042016M	5/4/2016	54900	4.8	0.2 U	1 U	4100	1.6 J	0.14 J	60900	1 U	2.5 J	21.7 J
	A-SW-07-D_05042016M	5/4/2016	53800	2.4	0.2 U	1 U	3890	5 U	0.15 J	59200	1 U	2 J	12.2 J
SW-08	SW08-SW041521	4/15/2021	43100	1 U	0.5 U	1 U	2090	0.983 J	1 U	34200	1 U	1.21	20 U
SW-12	A-SW-12_05032016M	5/3/2016	57600	1.7	0.2 U	0.57 J	2110	4.2 J	0.09 J	64200	1 U	5.9	6 J
SW-12	SW12-SW041521	4/15/2021	61100	4.34	0.5 U	0.433 J	2740	1.34	1 U	85700	1 U	3.49	20 U
SW-15	A-SW-15_05042016M	5/4/2016	40800	351	0.86	25.9	2560	3.3 J	3	33400	1.5	32.4 J	757
SW-16	A-SW-16_05042016M	5/4/2016	50800	3.1	0.2 U	1 U	2300	2 J	0.12 J	68800	1 U	2.4 J	5.7
SW-16E	SW16E-SW041521	4/15/2021	45900	0.307 J	0.5 U	1 U	2160	1.19	1 U	64700	1 U	1.68	20 U
SW-16I	SW16I-SW041521	4/15/2021	52200	1 U	0.5 U	1 U	2470	1.67	1 U	67500	1 U	2.03	20 U
SW-21	A-SW-21_05032016M	5/3/2016	49900	16.6	0.2 U	0.35 J	1750	1.9 J	0.09 J	51000	1 U	2.2 J	8 J
SW-23	A-SW-23_05032016M	5/3/2016	60900	11.5	0.2 U	0.68 J	2630	1.8 J	0.14 J	67700	1 U	5.1	8.8 J
SW-23	OU2-SW23-SW-092718	9/27/2018	62200	0.927 J	0.5 U	0.554 J	3430	1.38	1 U	124000	1 U	2.6	20 U
SW-26	A-SW-26_05032016M	5/3/2016	61100	9.4	0.2 U	0.72 J	2120	2.2 J	0.13 J	71200	1 U	5.6	15.1 J
SW-27	A-SW-27_05032016M	5/3/2016	58300	6.4	0.2 U	0.44 J	2320	2.6 J	0.08 J	63800	1 U	5.1	4.3 J
SW-28	A-SW-28_05032016M	5/3/2016	58400	6	0.2 U	0.49 J	2290	3 J	0.08 J	64600	1 U	5.2	5.6 J
SW-34	OU2-SW34-SW-101018	10/10/2018	30300	3.45	0.5 U	0.615 J	2820	1.03	1 U	76600	1 U	2.49	29.9
	OU2-SW34-SW-121818	12/18/2018	47900	1.24	0.5 U	0.166 J	2960	1.2	1 U	88500	1 U	3	20 U
	OU2-SW34-SW-032719	3/27/2019	46300	26	0.5 U	0.487 J	2720	1.33	1 U	95500	1 U	3.87	20 U
SW-34	SW34-SW041421	4/14/2021	50200	3.12	0.5 U	0.254 J	2920	0.999 J	1 U	89100	1 U	2.79	20 U
SW-35	OU2-SW35-SW-101018	10/10/2018	78100	27.4	0.5 U	0.365 J	2260	1.29	1 U	98000	1 U	2.82	20 U
	OU2-SW35-SW-122718	12/27/2018	65800	4.54	0.5 U	0.273 J	2110	1.49	1 U	71700	1 U	1.92	5.2 J
	OU2-SW35-SW-032719	3/27/2019	60800	15.3	0.5 U	0.393 J	1750	1.95	1 U	72900	1 U	1.86	20 U
SW-35	SW35-SW041321	4/13/2021	59600	9.86	0.5 U	1 U	2300	1.09	1 U	66500	1 U	1.73	20 U
SW-39	OU2-SW39-SW-092718	9/27/2018	60500	0.26 J	0.5 U	0.511 J	3350	1.35	1 U	115000	1 U	2.64	20 U
	OU2-SW39-SW-121818	12/18/2018	56900	0.409 J	0.5 U	0.321 J	3200	1.75	1 U	107000	1 U	2.1	20 U
	OU2-SW39-SW-032519	3/25/2019	65100	4.72	0.5 U	0.412 J	3280	2.58	1 U	117000	1 U	2.36	20 U
SW-39	SW39-SW041321	4/13/2021	61600	0.291 J	0.5 U	0.32 J	3050	1.91	1 U	106000	1 U	1.89	20 U
SW-47	A-SW-47_05042016M	5/4/2016	25200	32.6	0.2 U	1 U	1290	5 U	1 U	23600	1 U	2.3 J	7.9
	A-SW-47-D_05042016M	5/4/2016	25200	33.7	0.2 U	0.54 J	1290	2.3 J	0.11 J	23600	1 U	2.4 J	7.8
SW-47	OU2-SW47-SW-101018	10/10/2018	6720	17	0.5 U	0.618 J	1760	0.273 J	1 U	26100	1 U	1.66	19.3 J
	OU2-SW47-SW-122718	12/27/2018	36100	3.05	0.5 U	0.259 J	2660	0.638 J	1 U	164000	1 U	1.43	6.53 J
SW-47	OU2-SW47-SW-032619	3/26/2019	30000	3.24	0.5 U	0.219 J	1470	0.97 J	1 U	44600	1 U	1.16	20 U
SW-48	OU2-SW48-SW-092718	9/27/2018	41600	0.198 J	0.5 U	0.197 J	2230	0.97 J	1 U	33000	1 U	1.84	20 U
	OU2-SW48-SW-121818	12/18/2018	43300	0.315 J	0.5 U	1 U	2200	1.03	1 U	34300	1 U	1.5	20 U
SW-48	OU2-SW48-SW-032519	3/25/2019	43000	0.166 J	0.5 U	1 U	2130	1.04	1 U	33600	1 U	1.46	20 U
SW-51	OU2-SW51-SW-101018	10/10/2018	6280	19.2	0.5 U	0.752 J	1850	0.263 J	1 U	24200	1 U	1.91	19.5 J
	OU2-SW51-SW-122718	12/27/2018	38500	4.16	0.5 U	0.205 J	3100	0.666 J	1 U	229000	1 U	1.47	20 U
SW-51	OU2-SW51-SW-032619	3/26/2019	32700	3.96	0.5 U	0.193 J	1630	0.905 J	1 U	45700	1 U	1	20 U
	OU2-SW81-SW-032619	3/26/2019	30500	3.48	0.5 U	0.227 J	1510	0.933 J	1 U	45600	1 U	1.13	20 U
	OU2-SW81-SW-122718	12/27/2018	38600	4.19	0.5 U	0.191 J	3110	0.647 J	1 U	240000	1 U	1.51	5.38 J
SW-52	OU2-SW52-SW-032619	3/26/2019	30500	3.32	0.092 J	0.183 J	1510	0.943 J	1 U	45700	1 U	1.14	20 U
	OU2-SW52-SW-101018	10/10/2018	5960	27.6	0.5 U	0.897 J	1930	0.249 J	1 U	22300	1 U	2.22	23.3
SW-52	OU2-SW52-SW-122718	12/27/2018	37400	4.13	0.5 U	0.213 J	3050	0.702 J	1 U	233000	1 U	1.44	5.53 J
SW-53	OU2-SW53-SW-101018	10/10/2018	79700	6.43	0.5 U	0.612 J	7030	1.9	1 U	139000	1 U	3.04	7 J
	OU2-SW53-SW-121818	12/18/2018	55700	7.88	0.5 U	0.373 J	4200	1.91	1 U	97300	1 U	1.95	20 U
	OU2-SW53-SW-032519	3/25/2019	62000	3.69	0.5 U	0.482 J	4230	2.3	1 U	103000	1 U	2.12	20 U
SW-53	SW53-SW041321	4/13/2021	60100	6.78	0.5 U	0.354 J	3840	2.12	1 U	97400	1 U	1.88	20 U
SW-54	FD01-SW041521	4/15/2021	48900	0.29 J	0.5 U	1 U	2540	0.726 J	1 U	61800	1 U	1.46	20 U
SW-54	SW54-SW041521	4/15/2021	48600	0.432 J	0.5 U	1 U	2580	0.784 J	1 U	62300	1 U	1.45	20 U
SW-166	SW166-SW041321	4/13/2021	65200	76	0.5 U	0.402 J	2880	0.991 J	1 U	75200	1 U	2.27	20 U

Notes:
Bold indicates detected values
Italics indicates nondetected values

Acronyms:
µg/L = microgram per liter
Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit

Table 5-11
Preliminary Chemicals of Potential Concern in East Side Springs Soil Gas

Location	Sample Identification	Sample Date	Sample Method	Depth (ft bgs)	PCE µg/m³	Q	TCE µg/m³	Q	cis-1,2-DCE µg/m³	Q	VC µg/m³	Q
Residential Soil Gas Risk Based Screening Level (RBSL) (µg/m³)[1]					**360**		**16**		**NA**		**5.6**	
0001-H-SG	A-0001H-012715-IA-SG-001-4'	1/27/2015	HAPSITE	4	0.1	U	0.1	NR	0.1	U	NS	
0002-H-SG	A-0002H-022415-SG-001-4'	2/24/2015	HAPSITE	4	**0.80**		0.1	U	0.1	NR	NS	
0002-H-SG	A-0002H-022415-SG-001-8'	2/24/2015	HAPSITE	8	0.1	U	0.1	U	0.1	NR	NS	
0003-H-SG	A-0003H-011915-SG-001-8'	1/19/2015	HAPSITE	8	**2**		0.1	U	**0.48**		NS	
	A-0003H-040915-SG-001-4	4/9/2015	SUMMA	4	3.4	U	2.7	U	2	U	1.3	U
0004-H-SG	A-0004H-011315-SG001-04'	1/13/2015	HAPSITE	4	0.1	U	0.1	U	**0.51**		NS	
	A-0004H-011315-SG-001-07'	1/13/2015	HAPSITE	7	**0.75**		0.1	U	**0.58**		NS	
0005-H-SG	A-0005H-041015-SG-001-4'	4/10/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
0006-H-SG	A-0006H-030615-SG-001-4'	3/6/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
0007-H-SG	A-0007H-012815-SG-001-4'	1/28/2015	HAPSITE	4	0.1	U	0.1	NR	0.1	U	NS	
0008-H-SG	A-0008H-020615-SG-001-4'	2/6/2015	HAPSITE	4	**1**		0.1	NR	0.1	NR	NS	
	A-0008H-041015-SG-001A-4	4/10/2015	SUMMA	4	3.4	U	2.7	U	2	U	1.3	U
	A-0008H-041015-SG-001B-4	4/10/2015	SUMMA	4	**3**	**J**	2.7	U	2	U	1.3	U
0009-H-SG	A-0009H-021015-SG-001-4'	2/10/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
0010-H-SG	A-0010H-012715-SG-001-4'	1/27/2015	HAPSITE	4	**1.6**		0.1	NR	**0.69**		NS	
0011-H-SG	A-0011H-022715-SG-003-4'	2/27/2015	HAPSITE	4	**358**		**1.6**		0.1	NR	NS	
	A-0011H-041315-SG-001	4/11/2015	SUMMA	4	3.4	R	2.7	R	2	R	1.3	R
	A-0011H-041415-SG-001A8	4/11/2015	SUMMA	4	3.4	R	2.7	R	2	R	1.3	R
0012-H-SG	A-0012H-022315-SG-001-4'	2/23/2015	HAPSITE	4	**2.2**		0.1	NR	0.1	NR	NS	
	A-0012H-022315-SG-001-8'	2/23/2015	HAPSITE	8	**1.3**		0.1	U	**0.44**		NS	
0013-H-SG	A-0013H-011615-SG001_08'	1/16/2015	HAPSITE	8	**2.2**		0.1	U	0.1	NR	NS	
0014-H-SG	A-0014H-030215-SG-001-4'	3/2/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
0015-H-SG	A-0015H-033015-SG-001-4'	3/30/2015	HAPSITE	4	**1.4**		0.1	U	0.1	NR	NS	
0016-H-SG	A-0016H-012215-SG-001-04'	1/22/2015	HAPSITE	4	**1**		0.1	U	0.1	U	NS	
	A-0016H-012215-SG-001-06'	1/22/2015	HAPSITE	6	**0.69**		0.1	U	0.1	U	NS	
0017-H-SG	A-0017H-011415-SG-001_04'	1/14/2015	HAPSITE	4	**431**		**4.5**		0.1	U	NS	
0018-H-SG	A-0018H-021815-SG-001-4' (DILUTED 1:5)	2/18/2015	HAPSITE	4	0.1	U	0.1	U	0.1	NR	NS	
	A-0018H-021815-SG-002-4' (DILUTED 1:5)	2/18/2015	HAPSITE	4	**3**		0.1	U	0.1	NR	NS	
	A-0018H-021815-SG-002-4' (UNDILUTED)	2/18/2015	HAPSITE	4	**47**		0.1	U	**0.82**		NS	
0019-B-SG	A-0019B-020215-SG-001-4'	2/2/2015	HAPSITE	4	0.1	U	0.1	NR	0.1	U	NS	
	A-0019B-020215-SG-001-8'	2/2/2015	HAPSITE	8	0.1	U	0.1	NR	0.1	NR	NS	
	A-0019B-020215-SG-002A-4'	2/2/2015	HAPSITE	4	0.1	U	0.1	NR	0.1	NR	NS	
	A-0019B-020215-SG-002A-8'	2/2/2015	HAPSITE	8	0.1	U	0.1	NR	0.1	U	NS	
	A-0019B-020215-SG-003-4'	2/2/2015	HAPSITE	4	0.1	U	0.1	NR	0.1	U	NS	
	A-0019B-020215-SG-003-8'	2/2/2015	HAPSITE	8	0.1	U	0.1	NR	0.1	U	NS	
	A-0019B-020315-SG-002B-4'	2/3/2015	HAPSITE	4	**1.3**		0.1	NR	**0.51**		NS	
	A-0019B-020315-SG-002B-8'	2/3/2015	HAPSITE	8	**1.1**		0.1	NR	0.1	NR	NS	
0020-C-SG	A-0020C-022515-SG-001-4'	2/25/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
	A-0020C-022515-SG-001-6'	2/25/2015	HAPSITE	6	0.1	U	0.1	U	0.1	U	NS	
0021-S-SG	A-0021S-021915-SG-001-4'	2/19/2015	HAPSITE	4	**0.75**		0.1	U	0.1	U	NS	
	A-0021S-021915-SG-002-4'	2/19/2015	HAPSITE	4	**1.4**		0.1	U	0.1	U	NS	
0022-S-SG	A-0022S-040715-SG-001-4'	4/7/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
	A-0022S-040715-SG-002-4'	4/7/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
	A-0022S-040715-SG-002-8.5'	4/7/2015	HAPSITE	8.5	**0.75**		0.1	U	0.1	NR	NS	
0023-H-SG	A-0023H-031015-SG-001-4'	3/10/2015	HAPSITE	4	**4.5**		0.1	U	0.1	U	NS	
	A-0023H-031015-SG-001-6.5'	3/10/2015	HAPSITE	6.5	**9**		0.1	U	0.1	U	NS	
0024-H-SG	A-0024H-021115-SG-001-4'	2/11/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
0025-H-SG	A-0025H-020915-SG-001-4'	2/9/2015	HAPSITE	4	**0.75**		0.1	NR	0.1	NR	NS	
	A-0025H-020915-SG-001-8'	2/9/2015	HAPSITE	8	**1**		0.1	NR	0.1	NR	NS	
0026-H-SG	A-0026H-030615-SG-001-4'	3/6/2015	HAPSITE	4	**154**		**2.6**		0.1	NR	NS	
	A-0026H-040715-SG-001A-4'	4/7/2015	HAPSITE	4	0.1	U	0.1	U	0.1	NR	NS	
	A-0026H-040715-SG-002-4'	4/7/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
	A-0026H-040815-SG-003-4	4/8/2015	SUMMA	4	3.4	U	2.7	U	2	U	1.3	U
	A-0026H-040815-SG-001-4	4/8/2015	SUMMA	4	3.4	R	2.7	R	2	R	1.3	R
0027-H-SG	A-0027H-021215-0027H-SG-001-4'	2/12/2015	HAPSITE	4	0.1	U	0.1	U	0.1	NR	NS	
	A-0027H-021215-0027H-SG-001-5.5'	2/12/2015	HAPSITE	5.5	0.1	U	0.1	U	0.1	U	NS	
0028-S-SG	A-0028S-033115-SG-001-4'	3/31/2015	HAPSITE	4	0.1	U	0.1	U	0.1	U	NS	
	A-0028S-033115-SG-001-8'	3/31/2015	HAPSITE	8	**2.3**		0.1	U	0.1	U	NS	

Table 5-11
Preliminary Chemicals of Potential Concern in East Side Springs Soil Gas

Location	Sample Identification	Sample Date	Sample Method	Depth (ft bgs)	PCE µg/m³	Q	TCE µg/m³	Q	cis-1,2-DCE µg/m³	Q	VC µg/m³	Q
Residential Soil Gas Risk Based Screening Level (RBSL) (µg/m³)[1]					**360**		**16**		**NA**		**5.6**	
0029-H-SG	A-0029H-031115-SG-001-4'	3/11/2015	HAPSITE	4	*0.1*	*U*	*0.1*	*U*	*0.1*	*U*	NS	
	A-0029H-031115-SG-001-6'	3/11/2015	HAPSITE	6	*0.1*	*U*	*0.1*	*U*	*0.1*	*U*	NS	
	A-0029H-031115-SG-002-4'	3/11/2015	HAPSITE	4	**3.7**		*0.1*	*U*	0.1	NR	NS	
0030-H-SG	A-0030H-031715-SG-001-4'	3/17/2015	HAPSITE	4	**0.98**		*0.1*	*U*	0.1	NR	NS	
	A-0030H-031715-SG-001-6'	3/17/2015	HAPSITE	6	**1**		*0.1*	*U*	0.1	NR	NS	
	A-0030H-041115-SG-001A-6	4/11/2015	SUMMA	6	**1.5**	**J**	**17**		**2.8**		*1.3*	*U*
0031-S-SG	A-0031S-031615-SG-001-3.5'	3/16/2015	HAPSITE	3.5	*0.1*	*U*	*0.1*	*U*	*0.1*	*U*	NS	
	A-0031S-031615-SG-002-4'	3/16/2015	HAPSITE	4	**0.87**		*0.1*	*U*	0.1	NR	NS	
	A-0031S-031615-SG-003-3.5'	3/16/2015	HAPSITE	3.5	**1.6**		*0.1*	*U*	*0.1*	*U*	NS	
	A-0031S-031615-SG-004-4'	3/16/2015	HAPSITE	4	**0.75**		*0.1*	*U*	*0.1*	*U*	NS	
	A-0031S-031615-SG-005-4'	3/16/2015	HAPSITE	4	**0.74**		*0.1*	*U*	*0.1*	*U*	NS	
	A-0031S-031615-SG-006-3'	3/16/2015	HAPSITE	3	*0.1*	*U*	*0.1*	*U*	*0.1*	*U*	NS	
	A-0031S-031615-SG-007-3.5'	3/16/2015	HAPSITE	3.5	**0.97**		0.1	NR	0.1	NR	NS	
	A-0031S-031615-SG-008-4'	3/16/2015	HAPSITE	4	*0.1*	*U*	*0.1*	*U*	*0.1*	*U*	NS	
	A-0031-S-041515-SG-001A 4	4/11/2015	SUMMA	4	*3.4*	*R*	*2.7*	*R*	*2*	*R*	*1.3*	*R*
0033-H-SG	A-0033H-040815-SG-001-4'	4/8/2015	HAPSITE	4	*0.1*	*U*	*0.1*	*U*	*0.1*	*U*	NS	
0036-H-SG	A-0036H-040315-SG-001-4'	4/3/2015	HAPSITE	4	**1.7**		**2.1**		0.1	NR	NS	
	A-0036H-040315-SG-001-8'	4/3/2015	HAPSITE	8	**1.5**		**2**		*0.1*	*U*	NS	
0037-H-SG	A-0037H-040215-SG-001-4'	4/2/2015	HAPSITE	4	**2.2**		*0.1*	*U*	0.1	NR	NS	
	A-0037H-040305-SG-001-4'	4/2/2015	SUMMA	4	*1.7*	*R*	*2.7*	*R*	*2*	*R*	*1.3*	*R*
	A-0037H-SG-002	4/2/2015	SUMMA	4	*3.2*	*R*	*2.7*	*R*	*2*	*R*	*1*	*R*
0040-H-SG	0040H-SG-SG1-20160310-039-6'	3/10/2016	HAPSITE	6	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	0040H-SG-SG1-20160310-040-6'	3/10/2016	HAPSITE	6	**1.4**		*0.5*	*U*	*0.4*	*U*	NS	
	0040H-SG-SG2-20160310-041-4'	3/10/2016	HAPSITE	4	**4.6**		*0.5*	*U*	*0.4*	*U*	NS	
0041-H-SG	0041H-SG-SG1-20160308-038-7'	3/8/2016	HAPSITE	7	*0.7*	*U*	*0.5*	*U*	**0.59**		NS	
0045-S-SG	0045S-SG-SG1-20160322-042-4'	3/22/2016	HAPSITE	4	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	0045S-SG-SG1-20160322-043-4'	3/22/2016	HAPSITE	4	**2.6**		*0.5*	*U*	*0.4*	*U*	NS	
0047-H-SG	0047H-SG-SG1-20160226-028-4.5'	2/26/2016	HAPSITE	4.5	**27**		*0.5*	*U*	*0.4*	*U*	NS	
0050-H-SG	0050H-SG-SG1-20160323-016-5'	3/23/2016	HAPSITE	5	**13**		**3.6**		*0.4*	*U*	NS	
	0050H-SG-SG1-20160323-016-5'	3/23/2016	HAPSITE	5	**13**		**3.6**		*0.4*	*U*	NS	
0051-H-SG	0051H-SG-SG1-20160226-028-4.5'	2/26/2016	HAPSITE	4.5	**27**		*0.5*	*U*	*0.4*	*U*	NS	
	0051H-SG-SG1-20160226-029-7.5'	2/26/2016	HAPSITE	7.5	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	0051H-SG-SG1-20160226-030-7.5'	2/26/2016	HAPSITE	7.5	*0.7*	*U*	*0.5*	*U*	**0.59**		NS	
	0051H-SG-SG2-20160226-032-7.5'	2/26/2016	HAPSITE	7.5	**3**		*0.5*	*U*	*0.4*	*U*	NS	
	0051H-SG-SG2-20160226-031-8.5'	2/26/2016	HAPSITE	8.5	**10.3**		*0.5*	*U*	*0.4*	*U*	NS	
0052-H-SG	0052H-SG-SG1-20160311-032-4.5'	3/11/2016	HAPSITE	4.5	**10.3**		*0.5*	*U*	*0.4*	*U*	NS	
0053-H-SG	A-0053H-052316-SG-001-6'(0037)	5/23/2016	SUMMA	6	**2000**	**J**	**18**		*2*	*U*	*1.3*	*U*
	A-0053H-052316-SG-001-6'(0050)	5/23/2016	SUMMA	6	**1500**	**J**	**21**		*2*	*U*	*1.3*	*U*
	0053H-SG-SG1-20160502-056-6.5'	5/2/2016	HAPSITE	6.5	**628**		**4.5**		*0.4*	*U*	NS	
	0053H-SG-SG1-20160502-058-6.5'	5/2/2016	HAPSITE	6.5	**510**		*0.5*	*U*	*0.4*	*U*	NS	
0054-H-SG	0054H-SG-SG1-20160603-042-7'	6/3/2016	HAPSITE	7	**5.7**		*0.5*	*U*	*0.4*	*U*	NS	
	0054H-SG-SG1-20160603-043-7'	6/3/2016	HAPSITE	7	**61**		*0.5*	*U*	*0.4*	*U*	NS	
0055-H-SG	0055H-SG-SG1-20160513--038	5/13/2016	HAPSITE	5	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	0055H-SG-SG1-20160513--039	5/13/2016	HAPSITE	5	*0.7*	*U*	*0.5*	*U*	**0.48**		NS	
0056-H-SG	0056H-SG-SG1-20160503-031-5.5'	5/3/2016	HAPSITE	5.5	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	0056H-SG-SG1-20160503-032-5.5'	5/3/2016	HAPSITE	5.5	**3.2**		*0.5*	*U*	*0.4*	*U*	NS	
0057-H-SG	A-0057H-04052017-SG-022-2'	4/5/2017	HAPSITE	2	**2.1**		*0.5*	*U*	*0.4*	*U*	NS	
0058-H-SG	A-0058H-030617-SG-025-4'	3/6/2017	HAPSITE	4	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	A-0058H-030617-SG-026-4'	3/6/2017	HAPSITE	4	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	A-0058H-030617-SG-027-6'	3/6/2017	HAPSITE	6	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
0059-H-SG	A-0059H-031717-SG-039-1.8'	3/17/2017	HAPSITE	1.8	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	A-0059H-031717-SG-040-5'	3/17/2017	HAPSITE	5	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
0060-H-SG	A-0060H-030717-SG-037-4.8'	3/7/2017	HAPSITE	4.8	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	A-0060H-030717-SG-038-4.8'	3/7/2017	HAPSITE	4.8	**4.8**		*0.5*	*U*	*0.4*	*U*	NS	
0061-H-SG	A-0061H-030817-SG-029-4.7'	3/8/2017	HAPSITE	4.7	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	A-0061H-030817-SG-030-4.7'	3/8/2017	HAPSITE	4.7	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
	A-0061H-030817-SG-031-6.1'	3/8/2017	HAPSITE	6.1	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	

Table 5-11
Preliminary Chemicals of Potential Concern in East Side Springs Soil Gas

Location	Sample Identification	Sample Date	Sample Method	Depth (ft bgs)	PCE		TCE		cis-1,2-DCE		VC	
					µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q
Residential Soil Gas Risk Based Screening Level (RBSL) (µg/m³)[1]					**360**		**16**		**NA**		**5.6**	
0062-H-SG	A-0062H-032917-SG-025-6.5'	3/29/2017	HAPSITE	6.5	*0.7*	*U*	*0.5*	*U*	*0.4*	*U*	NS	
0063-H-SG	A-0063H-032117-6'-SG-041-SG1	3/21/2017	HAPSITE	6	NS		*0.5*	*U*	*0.4*	*U*	NS	
MW-32	MW32-SG032621	3/26/2021	SUMMA	20	**0.41**		*0.16*	*U*	*0.11*	*U*	*0.074*	*U*
MW-34	MW34-SG032621	3/26/2021	SUMMA	20	**6.7**		*0.14*	*U*	**0.026**	**J**	**0.13**	
MW-37	MW37-SG032621	3/26/2021	SUMMA	8	**68**		*0.15*	*U*	*0.11*	*U*	**0.073**	
MW-38	MW38-SG032621	3/26/2021	SUMMA	8	**0.84**		*0.17*	*U*	*0.12*	*U*	**0.097**	
RG-01	RG01-SG041421	4/14/2021	SUMMA	4.5	**49**		**0.76**		*0.12*	*U*	**0.1**	
	RG01-SG082721	8/27/2021	SUMMA	4.5	**320**		**0.84**		*0.35*	*U*	*0.22*	*U*
RG-04	RG04-SG041321	4/13/2021	SUMMA	5	**46**		**1.8**		**0.14**		**0.12**	
	RG04-SG082721	8/27/2021	SUMMA	5	**100**		**0.54**		*0.12*	*U*	*0.08*	*U*
RG-05	RG05-SG041421	4/14/2021	SUMMA	5	**15**		**0.19**		*0.12*	*U*	*0.079*	*U*
RG-07	RG07-SG041421	4/14/2021	SUMMA	5	**33**		**0.5**		*0.12*	*U*	*0.075*	*U*
	RG07-SG082721	8/27/2021	SUMMA	5	**81**		*0.18*	*U*	*0.14*	*U*	*0.088*	*U*
RG-08	RG08-SG041321	4/13/2021	SUMMA	4.5	**570**		**4**		**0.52**		*0.28*	*U*
	RG08-SG083021	8/30/2021	SUMMA	4.5	**4400**		**12**	**J**	*9.5*	*U*	*6.1*	*U*
RG-10	RG10-SG041421	4/14/2021	SUMMA	5	**2.8**		**0.11**	**J**	*0.12*	*U*	**0.13**	
RG-11	RG11-SG041321	4/13/2021	SUMMA	5	**1.8**		**0.33**		*0.13*	*U*	**0.076**	**J**

Notes
[1] EPA soil gas RSL corresponds to an excess lifetime cancer risk of 1 × 10-6 and a hazard quotient of 1 divided by an attenuation factor of 0.03 (May 2022 RSL table version).

Data was qualified during data validation because field data collection was not completed in compliance with the QAPP. This data is not usable for the risk assessment, but can still be used to support the data collected in 2016–2020 in defining the extent of vapor intrusion.

Highlight indicates values greater than screening level
Bold indicates detected values
Italics indicates nondetected values

µg/L = microgram per liter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
MCL = maximum contaminant level
NA = not applicable
NS = Not sampled
PCE = tetrachloroethene
RSL = regional screening level
TCE = trichloroethene
VC = vinyl chloride

Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit
UJ = Analyte was not detected at the associated value, which is the reporting limit, and a QA/QC requirement has not been met
NR= Not reported, rejected during data quality validation
R = Rejected during data quality validation

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
								µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11		0.48		NA		0.17		0.56	
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41		2.1		NA		1.7		5.6	
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120		6.3		NA		17		56	
0001-H	0001H-IA-BA1	A-0001H-012715-IA-005-BA1	Basement Bathroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-BA2	A-0001H-012715-IA-011-BA2	Basement Bathroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-BR1	A-0001H-012715-IA-003-BR1	Bedroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-BR2	A-0001H-012715-IA-008-BR2	Bedroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-CLO	A-0001H-012715-IA-006-CLO	Closet	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-FAM	A-0001H-012715-IA-007-FAM	Living Room	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-KIT	A-0001H-012715-IA-002-KIT	Kitchen	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LAU	A-0001H-012715-IA-009-LAU	Laundry Room	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-001-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	No Pressure	**1.3**		0.1	NR	**0.43**		NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013A-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013B-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013C-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013D-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013E-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013F-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013G-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013H-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013I-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013J-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013K-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-013L-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-014A-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-014B-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-014C-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-014D-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-014E-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-014F-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0001H-IA-LIV	A-0001H-012715-IA-014G-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-MBR	A-0001H-012715-IA-004-MBR	Bedroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-OUT	A-0001H-012715-IA-012-OUT	Outdoor	HAPSITE	Outdoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-IA-STO	A-0001H-012715-IA-010-STO	Storage	HAPSITE	Indoor Air	1/27/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0001H-OA-OUT1	A-0001H-031517-OA-003-OUT1	Outdoor (west side)	HAPSITE	Outdoor Air	3/15/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0001H-IA-LIV1	A-0001H-031517-IA-004-LIV1	Living Room	HAPSITE	Indoor Air	3/15/2017	No Pressure	**5.0**		0.5	U	0.4	U	NS		NS	
	0001H-IA-BAS1	A-0001H-031517-IA-005-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/15/2017	No Pressure	**2.2**		0.5	U	0.4	U	NS		NS	
	0001H-IA-SUM1	A-0001H-031517-IA-006-SUM1	Sump Room	HAPSITE	Indoor Air	3/15/2017	No Pressure	**2.3**		0.5	U	0.4	U	NS		NS	
	0001H-IA-BED1	A-0001H-031517-IA-007-BED1	Bedroom	HAPSITE	Indoor Air	3/15/2017	No Pressure	**1.7**		0.5	U	0.4	U	NS		NS	
	0001H-IA-WBED1	A-0001H-031517-IA-008-WBED1	Bedroom	HAPSITE	Indoor Air	3/15/2017	No Pressure	**2.4**		0.5	U	0.4	U	NS		NS	
	0001H-IA-MBED1	A-0001H-031517-IA-009-MBED1	Bedroom	HAPSITE	Indoor Air	3/15/2017	No Pressure	**5.2**		0.5	U	0.4	U	NS		NS	
	0001H-IA-BAT1	A-0001H-031517-IA-010-BAT1	Bathroom	HAPSITE	Indoor Air	3/15/2017	No Pressure	**4.8**		0.5	U	0.4	U	NS		NS	
	0001H-IA-LIV1	A-0001H-031517-IA-010-LIV1	Living Room	HAPSITE	Indoor Air	3/22/2017	No Pressure	**1.9**		0.5	U	0.4	U	NS		NS	
	0001H-OA-OUT1	A-0001H-031517-OA-011-OUT1	Outdoor (west side)	HAPSITE	Outdoor Air	3/22/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0001H-IA-BAS1	A-0001H-031517-IA-012-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/22/2017	No Pressure	**1.4**		0.5	U	0.4	U	NS		NS	
	0001H-TO-BAS	A-0001H-032317-TO-001-BAS	Basement Living Room	SUMMA	Indoor Air	3/23/2017	No Pressure	**1.1**		0.27	U	0.2	U	**0.17**		0.18	U
0002-H	0002H-IA-BA1	A-0002H-022415-IA-004-BA1	Bathroom	HAPSITE	Indoor Air	2/24/2015	No Pressure	**1.8**		0.1	U	0.1	NR	NS		NS	
	0002H-IA-BA2	A-0002H-022415-IA-009-BA2	Bathroom	HAPSITE	Indoor Air	2/24/2015	No Pressure	**2.3**		0.1	U	**0.42**		NS		NS	
	0002H-IA-BR1	A-0002H-022415-IA-010-BR1	Bedroom	HAPSITE	Indoor Air	2/24/2015	No Pressure	**2.1**		0.1	U	**0.48**		NS		NS	
	0002H-IA-KIT	A-0002H-022415-IA-005-KIT	Kitchen	HAPSITE	Indoor Air	2/24/2015	No Pressure	**1.7**		0.1	U	0.1	NR	NS		NS	
	0002H-IA-LIV	A-0002H-022415-IA-002-LIV	Living Room	HAPSITE	Indoor Air	2/24/2015	No Pressure	**1.7**		0.1	U	**0.54**		NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-008-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	No Pressure	**2.1**		0.1	U	**0.42**		NS		NS	
	0002H-IA-MBR	A-0002H-022415-IA-003-MBR	Bedroom	HAPSITE	Indoor Air	2/24/2015	No Pressure	**1.8**		0.1	U	0.1	NR	NS		NS	
	0002H-IA-MUD	A-0002H-022415-IA-006-MUD	Mud Room	HAPSITE	Indoor Air	2/24/2015	No Pressure	**1.6**		0.1	U	0.1	NR	NS		NS	
	0002H-IA-OUT	A-0002H-022415-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	2/24/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0002H-IA-STO	A-0002H-022415-IA-007-STO	Storage	HAPSITE	Indoor Air	2/24/2015	No Pressure	**0.92**		0.1	U	0.1	NR	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011A-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**1.3**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011B-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**1.7**		0.1	U	0.1	NR	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011C-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**2.0**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011D-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**2.3**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011E-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**2.6**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011F-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**2.3**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011G-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**2.4**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-011H-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Negative Pressure	**2.6**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012A-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	**2.5**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012B-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	**1.1**		0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012C-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	**0.70**		0.1	U	0.1	NR	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012D-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012E-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	0.1	U	0.1	U	0.1	NR	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012F-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012G-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0002H-IA-LLL	A-0002H-022415-IA-012H-LLL	Basement Living Room	HAPSITE	Indoor Air	2/24/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0002H-IA-LIV1	A-0002H-032217-IA-013-LIV1	Living Room	HAPSITE	Indoor Air	3/22/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0002H-OA-OUT1	A-0002H-032217-OA-014-OUT1	Outdoor (north side)	HAPSITE	Outdoor Air	3/22/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0002H-IA-BAS1	A-0002H-032217-IA-015-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/22/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0002H-IA-STO1	A-0002H-032217-IA-016-STO1	Storage	HAPSITE	Indoor Air	3/22/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0002H-IA-KIT1	A-0002H-032217-IA-018-KIT1	Basement Kitchen	HAPSITE	Indoor Air	3/22/2017	No Pressure	**0.88**		0.5	U	0.4	U	NS		NS	
	0002H-IA-FLD1	A-0002H-032217-IA-019-FLD1	Floor Drain	HAPSITE	Indoor Air	3/22/2017	No Pressure	**1.0**		0.5	U	0.4	U	NS		NS	
	0002H-TO-BAS	A-0002H-032317-TO-001-BAS	Basement Living Room	SUMMA	Indoor Air	3/23/2017	No Pressure	**1.4**		**0.29**		0.2	U	0.13	U	0.18	U
0003-H	0003H-IA-BA1	A-0003H-011915-IA-003-BA1	Bathroom	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.2**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-BA2	A-0003H-011915-IA-013-BA2	Bathroom	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.8**		0.1	U	**2.2**		NS		NS	
	0003H-IA-BR1	A-0003H-011915-IA-007-BR1	Bedroom	HAPSITE	Indoor Air	1/19/2015	No Pressure	**0.98**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-BR2	A-0003H-011915-IA-010-BR2	Bedroom	HAPSITE	Indoor Air	1/19/2015	No Pressure	**3.9**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-BR3	A-0003H-011915-IA-015-BR3	Bedroom	HAPSITE	Indoor Air	1/19/2015	No Pressure	**2.2**		0.1	U	**1.4**		NS		NS	
	0003H-IA-ENT	A-0003H-011915-IA-008-ENT	Entry Way	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.1**		0.1	U	**0.75**		NS		NS	
	0003H-IA-FUR	A-0003H-011915-IA-012-FUR	Furnace Room	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.1**		0.1	U	0.1	U	NS		NS	
	0003H-IA-GAR	A-0003H-011915-IA-016-GAR	Garage	HAPSITE	Indoor Air	1/19/2015	No Pressure	**0.75**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-KIT	A-0003H-011915-IA-002-KIT	Kitchen	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.2**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-LIV	A-0003H-011915-IA-001-LIV	Living Room	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.5**		**0.66**		0.1	NR	NS		NS	
	0003H-IA-MBA	A-0003H-011915-IA-005-MBA	Bathroom	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.2**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-MBR	A-0003H-011915-IA-004-MBR	Bedroom	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.1**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-OCL	A-0003H-011915-IA-009-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.8**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-OF1	A-0003H-011915-IA-006-OF1	Office	HAPSITE	Indoor Air	1/19/2015	No Pressure	**1.1**		0.1	U	**0.79**		NS		NS	
	0003H-IA-OF2	A-0003H-011915-IA-011-OF2	Basement Office	HAPSITE	Indoor Air	1/19/2015	No Pressure	**3.1**		0.1	U	**1.4**		NS		NS	
	0003H-IA-OUT	A-0003H-011915-IA-019-OUT	Outdoor	HAPSITE	Outdoor Air	1/19/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0003H-IA-OCL	A-0003H-011915-IA-018A-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Negative Pressure	**1.9**		0.1	U	**0.97**		NS		NS	
	0003H-IA-OCL	A-0003H-011915-IA-018B-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Negative Pressure	**1.5**		0.1	U	0.1	NR	NS		NS	
	0003H-IA-OCL	A-0003H-011915-IA-018C-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Negative Pressure	**1.3**		0.1	U	**0.59**		NS		NS	
	0003H-IA-OCL	A-0003H-011915-IA-018D-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Negative Pressure	**1.1**		0.1	U	**0.56**		NS		NS	

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE	TCE	cis-1,2-DCE	VC	1,4-Dioxane
								$\mu g/m^3$ Q	$\mu g/m^3$ Q	$\mu g/m^3$ Q	$\mu g/m^3$ Q	$\mu g/m^3$ Q
Indoor Air Risk Based Screening Level (RBSL) ($\mu g/m^3$)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) ($\mu g/m^3$)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) ($\mu g/m^3$)[3]								**120**	**6.3**	**NA**	**17**	**56**
0003-H	0003H-IA-OCL	A-0003H-011915-IA-018E-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Negative Pressure	**1.0**	0.1 NR	**0.5**	NS	NS
	0003H-IA-OCL	A-0003H-011915-IA-018F-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Negative Pressure	**0.85**	0.1 U	**0.49**	NS	NS
	0003H-IA-OCL	A-0003H-011915-IA-020A-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0003H-IA-OCL	A-0003H-011915-IA-020B-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Positive Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0003H-IA-OCL	A-0003H-011915-IA-020C-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Positive Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0003H-IA-OCL	A-0003H-011915-IA-020D-OCL	Basement Living Room	HAPSITE	Indoor Air	1/19/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0003H-TO-BAS	A-0003H-040915-TO-002-BAS	Basement	SUMMA	Indoor Air	4/9/2015	No Pressure	**1.5 J**	2.7 U	2 U	1.3 U	NS
	0003H-TO-BBB	A-0003H-040915-TO-003-BBB	Bedroom	SUMMA	Indoor Air	4/9/2015	No Pressure	**1.7 J**	2.7 U	2 U	1.3 U	NS
	0003H-TO-LIV	A-0003H-040915-TO-001-LIV	Living Room	SUMMA	Indoor Air	4/9/2015	No Pressure	**17**	2.7 U	2 U	1.3 U	NS
	0003H-TO-BAS	A-0003H-120415-TO-002-BAS	Outdoor	SUMMA	Outdoor Air	12/3/2015	No Pressure	0.82 R	0.27 R	0.2 R	0.13 R	0.18 R
	0003H-TO-DIN	A-0003H-120415-TO-001-DIN	Dining Room	SUMMA	Indoor Air	12/3/2015	No Pressure	0.53 R	0.27 R	0.2 R	0.13 R	0.18 R
	0003H-IA-BAS	A-0003H-030316-IA-BAS	Basement Living Room	SUMMA	Indoor Air	3/3/2016	No Pressure	**1.3**	0.27 U	0.2 U	0.13 U	0.18 U
	0003H	0003-H-IA01HS	Living Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	0.1 U	0.1 U	**2.1**	NS	NS
	0003H	0003-H-IA02HS	Basement Bathroom	HAPSITE	Indoor Air	12/16/2019	No Pressure	0.1 U	0.1 U	**2.4**	NS	NS
	0003H	0003-H-IA03HS	Basement Kitchen	HAPSITE	Indoor Air	12/16/2019	No Pressure	0.1 U	0.1 U	**2.5**	NS	NS
	0003H	0003-H-IA04HS	Basement Bedroom	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3.2**	0.1 U	0.1 U	NS	NS
	0003H	0003H-IA01SC-121719	Basement Bedroom	SUMMA	Indoor Air	12/17/2019	No Pressure	**1.1**	**0.041 J**	0.15 U	0.098 U	0.69 U
	0003H	0003H-IA02SC-121719	Basement bathroom drain	SUMMA	Indoor Air	12/17/2019	No Pressure	**0.64**	**0.025 J**	0.15 U	0.096 U	0.67 U
	0003H	0003H-IA03SC-121719	Basement living area	SUMMA	Indoor Air	12/17/2019	No Pressure	**0.65**	**0.026 J**	0.15 U	0.098 U	0.69 U
	0003H	0003H-IA04SC-121719	Main level living area	SUMMA	Indoor Air	12/17/2019	No Pressure	**0.28**	0.22 U	0.16 U	0.1 U	0.72 U
	0003H	0003H-AA01SC-121719	Outdoor	SUMMA	Outdoor Air	12/17/2019	No Pressure	**0.11 J**	**0.029 J**	0.15 U	**0.038 J**	0.67 U
	0003H	0003H-IA01PS-010620	Basement bedroom	PASSIVE	Indoor Air	1/6/2020	No Pressure	**0.80**	**0.028 J**	NS	NS	NS
	0003H	0003H-IA02PS-010620	Basement bathroom drain	PASSIVE	Indoor Air	1/6/2020	No Pressure	**0.64**	**0.031 J**	NS	NS	NS
	0003H	0003H-IA03PS-010620	Basement living area	PASSIVE	Indoor Air	1/6/2020	No Pressure	**0.58**	**0.026 J**	NS	NS	NS
	0003H	0003H-IA04PS-010620	Main level living area	PASSIVE	Indoor Air	1/6/2020	No Pressure	**0.25**	0.048 U	NS	NS	NS
	0003H	0003H-IA01SC-082421	Basement Bedroom	SUMMA	Indoor Air	8/24/2021	No Pressure	**0.19 J**	0.18 U	0.13 U	0.085 U	0.6 U
0004-H	0004H-IA-BA1	A-0004H-011315-IA004_BA1	Bathroom	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-BAS	A-0004H-011315-IA007_BAS	Basement	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-BR1	A-0004H-011315-IA003_BR1	Bedroom	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	**0.83**	NS	NS
	0004H-IA-BR2	A-0004H-011315-IA005_BR2	Bedroom	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-CRA	A-0004H-011315-IA008_CRA	Crawl Space	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA002_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-LIV	A-0004H-011315-IA001_LIV	Living Room	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	**0.70**	NS	NS
	0004H-IA-MUD	A-0004H-011315-IA006_MUD	Mud Room	HAPSITE	Indoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	**0.63**	NS	NS
	0004H-OU-OUT	A-0004H-011315-OU-001-OUT	Outdoor (north side)	HAPSITE	Outdoor Air	1/13/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009A_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009B_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009C_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009D_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009E_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	**0.67**	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009F_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009G_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009H_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA009I_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010A_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	**0.45**	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010B_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010C_KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010D-KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010E-KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010F-KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010G-KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010H-KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-IA-KIT	A-0004H-011315-IA010I-KIT	Kitchen	HAPSITE	Indoor Air	1/13/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0004H-OA-OUT1	A-0004H-031317-OA-006-OUT1	Outdoor (north side)	HAPSITE	Outdoor Air	3/13/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0004H-IA-LIV1	A-0004H-031317-IA-007-LIV1	Living Room	HAPSITE	Indoor Air	3/13/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0004H-IA-BAS1	A-0004H-031317-IA-008-BAS1	Basement	HAPSITE	Indoor Air	3/13/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0004H-TO-BAS	A-0004H-031417-TO-001-BAS	Basement	SUMMA	Indoor Air	3/14/2017	No Pressure	0.34 U	0.27 U	0.2 U	0.13 U	0.18 U
0005-H	0005H-IA-ATT	A-0005H-041015-IA-007-ATT	Attic	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-BA1	A-0005H-041015-IA-004-BA1	Bathroom	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0005H-IA-BR1	A-0005H-041015-IA-003-BR1	Bedroom	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0005H-IA-BR2	A-0005H-041015-IA-005-BR2	Bedroom	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0005H-IA-COA	A-0005H-041015-IA-011-COA	Coal Bin Storage	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0005H-IA-GAR	A-0005H-041015-IA-010-GAR	Garage	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0005H-IA-KIT	A-0005H-041015-IA-006-KIT	Kitchen	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-008-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-OCL	A-0005H-041015-IA-002-OCL	Living Room	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-OUT	A-0005H-041015-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-STO	A-0005H-041015-IA-009-STO	Storage	HAPSITE	Indoor Air	4/10/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012A-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012B-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012C-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012D-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012E-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012F-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012G-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-012H-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-013A-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-013B-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-013C-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-013D-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-013E-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0005H-IA-LAU	A-0005H-041015-IA-013F-LAU	Laundry Room	HAPSITE	Indoor Air	4/10/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
0006-H	0006H-IA-BA1	A-0006H-030615-IA-003-BA1	Bathroom	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0006H-IA-BA2	A-0006H-030615-IA-007-BA2	Bathroom	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-BR1	A-0006H-030615-IA-002-BR1	Bedroom	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0006H-IA-FUR	A-0006H-030615-IA-008-FUR	Furnace Room	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-LAU	A-0006H-030615-IA-009-LAU	Laundry Room	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-006-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-MBR	A-0006H-030615-IA-004-MBR	Bedroom	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0006H-IA-OCL	A-0006H-030615-IA-001-OCL	Living Room	HAPSITE	Indoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-OUT	A-0006H-030615-IA-005-OUT	Outdoor	HAPSITE	Outdoor Air	3/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-010B-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-010C-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-010D-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-010E-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-010F-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE $\mu g/m^3$ Q	TCE $\mu g/m^3$ Q	cis-1,2-DCE $\mu g/m^3$ Q	VC $\mu g/m^3$ Q	1,4-Dioxane $\mu g/m^3$ Q
Indoor Air Risk Based Screening Level (RBSL) ($\mu g/m^3$)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) ($\mu g/m^3$)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) ($\mu g/m^3$)[3]								**120**	**6.3**	**NA**	**17**	**56**
0006-H	0006H-IA-LLL	A-0006H-030615-IA-010G-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-010H-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-011A-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-011B-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-011C-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-011D-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-011E-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-011F-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0006H-IA-LLL	A-0006H-030615-IA-011G-LLL	Basement Living Room	HAPSITE	Indoor Air	3/6/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
0007-H	0007H-IA- CLO	A-0007H-012815-IA-010- CLO	Closet	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0007H-IA-BA1	A-0007H-012815-IA-002-BA1	Bathroom	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0007H-IA-BA2	A-0007H-012815-IA-012-BA2	Bathroom	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-BA3	A-0007H-012815-IA-014-BA3	Bathroom	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-BR1	A-0007H-012815-IA-008-BR1	Bedroom	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0007H-IA-BR2	A-0007H-012815-IA-009-BR2	Bedroom	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-CLO	A-0007H-012815-IA-013-CLO	Closet	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-KIT	A-0007H-012815-IA-006-KIT	Kitchen	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LAU	A-0007H-012815-IA-003-LAU	Laundry Room	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LIV	A-0007H-012815-IA-005-LIV	Living Room	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-001-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-MBR	A-0007H-012815-IA-011-MBR	Bedroom	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-STO	A-0007H-012815-IA-004-STO	Storage	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-SUN	A-0007H-012815-IA-007-SUN	Sun Room	HAPSITE	Indoor Air	1/28/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015A-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015B-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015C-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015D-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015E-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015F-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015G-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015H-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-015I-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Negative Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-016A-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Positive Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-016B-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-016C-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Positive Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-016D-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Positive Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-016E-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Positive Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0007H-IA-LLL	A-0007H-012815-IA-016F-LLL	Basement Living Room	HAPSITE	Indoor Air	1/28/2015	Positive Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0007H-TO-LLL	A-0007H-031915-TO-001-LLL	Basement Living Room	SUMMA	Indoor Air	3/19/2015	No Pressure	*4.8 R*	*2.7 R*	*2 R*	*1.3 R*	NS
0008-H	0008H-IA-BA1	A-0008H-020515-IA-003-BA1	Bathroom	HAPSITE	Indoor Air	2/5/2015	No Pressure	**5.2**	*0.1 NR*	*0.1 NR*	NS	NS
	0008H-IA-BA2	A-0008H-020515-IA-009-BA2	Bathroom	HAPSITE	Indoor Air	2/5/2015	No Pressure	**4.2**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-BR1	A-0008H-020515-IA-002-BR1	Bedroom	HAPSITE	Indoor Air	2/5/2015	No Pressure	**6.8**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-KIT	A-0008H-020515-IA-006-KIT	Kitchen	HAPSITE	Indoor Air	2/5/2015	No Pressure	**3.1**	*0.1 NR*	*0.1 NR*	NS	NS
	0008H-IA-LAU	A-0008H-020515-IA-001-LAU	Laundry Room	HAPSITE	Indoor Air	2/5/2015	No Pressure	**6.2**	*0.1 NR*	**0.61**	NS	NS
	0008H-IA-OCL	A-0008H-020515-IA-007-OCL	Living Room	HAPSITE	Indoor Air	2/5/2015	No Pressure	**3.2**	*0.1 NR*	*0.1 NR*	NS	NS
	0008H-IA-OFC	A-0008H-020515-IA-008-OFC	Office	HAPSITE	Indoor Air	2/5/2015	No Pressure	**3.5**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-STO1	A-0008H-020515-IA-004-STO1	Storage	HAPSITE	Indoor Air	2/5/2015	No Pressure	**7.3**	*0.1 NR*	*0.1 NR*	NS	NS
	0008H-IA-STO2	A-0008H-020515-IA-005-STO2	Storage	HAPSITE	Indoor Air	2/5/2015	No Pressure	**6.6**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-OUT	A-0008H-020615-IA-010-OUT	Outdoor	HAPSITE	Outdoor Air	2/6/2015	No Pressure	**0.91**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-011A-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Negative Pressure	**4.8**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-011B-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Negative Pressure	**3.7**	*0.1 NR*	*0.1 NR*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-011C-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Negative Pressure	**3.6**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-011D-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Negative Pressure	**3.2**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-011E-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Negative Pressure	**2.9**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-012A-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Positive Pressure	**2.1**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-012B-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Positive Pressure	**1.5**	*0.1 NR*	*0.1 U*	NS	NS
	0008H-IA-LAU	A-0008H-020615-IA-012C-LAU	Laundry Room	HAPSITE	Indoor Air	2/6/2015	Positive Pressure	**0.75**	*0.1 NR*	*0.1 NR*	NS	NS
	0008H-TO-BAS	A-0008H-041015-TO-001-BAS	Basement	SUMMA	Indoor Air	4/10/2015	No Pressure	**2.9 J**	*2.7 U*	*2 U*	*1.3 U*	NS
0009-H	0009H-A-BR1	IA-0009H-021015-A-003-BR1	Bedroom	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-2LL	A-0009H-021015-IA-002-2LL	Living Room	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-BA1	A-0009H-021015-IA-004-BA1	Bathroom	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0009H-IA-BA2	A-0009H-021015-IA-009-BA2	Bathroom	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-BR2	A-0009H-021015-IA-011-BR2	Bedroom	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-GAR	A-0009H-021015-IA-013-GAR	Garage	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-KIT	A-0009H-021015-IA-006-KIT	Kitchen	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-008-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LLL	A-0009H-021015-IA-010-LLL	Basement Living Room	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-MBR	A-0009H-021015-IA-005-MBR	Bedroom	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-OUT	A-0009H-021015-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-STO1	A-0009H-021015-IA-007-STO1	Storage	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-STO2	A-0009H-021015-IA-012-STO2	Storage	HAPSITE	Indoor Air	2/10/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014A-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014B-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014C-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014D-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014E-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014F-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014G-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014H-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-014I-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015A-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015B-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015C-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015D-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015E-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015F-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015G-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0009H-IA-LAU	A-0009H-021015-IA-015H-LAU	Laundry Room	HAPSITE	Indoor Air	2/10/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
0010-H	0010H-IA-BA1	A-0010H-012715-IA-012-BA1	Bathroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	**2.2**	*0.1 U*	**1.9**	NS	NS
	0010H-IA-BR1	A-0010H-012715-IA-006-BR1	Bedroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	**3.9**	*0.1 U*	*0.1 NR*	NS	NS
	0010H-IA-BR2	A-0010H-012715-IA-008-BR2	Bedroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	**3.1**	*0.1 U*	*0.1 NR*	NS	NS
	0010H-IA-BR3	A-0010H-012715-IA-010-BR3	Bedroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	**3.4**	*0.1 U*	*0.1 NR*	NS	NS
	0010H-IA-KIT	A-0010H-012715-IA-003-KIT	Kitchen	HAPSITE	Indoor Air	1/27/2015	No Pressure	**4.9**	*0.1 U*	*0.1 NR*	NS	NS
	0010H-IA-KIT2	A-0010H-012715-IA-007-KIT2	Kitchen	HAPSITE	Indoor Air	1/27/2015	No Pressure	**4.6**	*0.1 U*	*0.1 NR*	NS	NS
	0010H-IA-LIV	A-0010H-012715-IA-002-LIV	Living Room	HAPSITE	Indoor Air	1/27/2015	No Pressure	**4.7**	*0.1 U*	*0.1 NR*	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-009-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	No Pressure	**4.7**	*0.1 U*	*0.1 NR*	NS	NS

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120	6.3	NA	17	56
0010-H	0010H-IA-MBA	A-0010H-012715-IA-005-MBA	Bathroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	5.5	0.1 U	0.1 NR	NS	NS
	0010H-IA-MBR	A-0010H-012715-IA-004-MBR	Bedroom	HAPSITE	Indoor Air	1/27/2015	No Pressure	4.4	0.1 U	0.1 NR	NS	NS
	0010H-IA-OUT	A-0010H-012715-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	1/27/2015	No Pressure	1.1	0.1 U	1.0	NS	NS
	0010H-IA-STO	A-0010H-012715-IA-011-STO	Storage	HAPSITE	Indoor Air	1/27/2015	No Pressure	5.9	0.1 U	0.1 NR	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015A-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.9	0.1 U	0.1 U	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015D-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015E-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.8	0.1 U	0.49	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015F-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	3.3	0.1 U	0.1 NR	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015G-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.8	0.1 U	0.1 NR	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015H-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.7	0.1 U	0.1 NR	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015I-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.4	0.1 U	0.1 NR	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015J-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.4	0.1 U	0.1 U	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015K-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.7	0.1 U	0.1 U	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA-015L-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Negative Pressure	2.5	0.1 U	0.53	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA016A-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	1.2	0.1 U	0.1 NR	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA016B-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	1.3	0.1 U	1.8	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA016C-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA016D-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA016E-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0010H-IA-LLL	A-0010H-012715-IA016F-LLL	Basement Living Room	HAPSITE	Indoor Air	1/27/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
0011-H	0011H-IA-BA1	A-0011H-022715-IA-004-BA1	Bathroom	HAPSITE	Indoor Air	2/27/2015	No Pressure	7.4	0.1 U	0.1 NR	NS	NS
	0011H-IA-BA2	A-0011H-022715-IA-009-BA2	Basement Bathroom	HAPSITE	Indoor Air	2/27/2015	No Pressure	20	0.1 U	0.1 NR	NS	NS
	0011H-IA-BR1	A-0011H-022715-IA-003-BR1	Bedroom	HAPSITE	Indoor Air	2/27/2015	No Pressure	7.3	0.1 U	0.1 NR	NS	NS
	0011H-IA-BR2	A-0011H-022715-IA-005-BR2	Bedroom	HAPSITE	Indoor Air	2/27/2015	No Pressure	7.5	0.1 U	0.1 NR	NS	NS
	0011H-IA-FUR	A-0011H-022715-IA-011-FUR	Furnace Room	HAPSITE	Indoor Air	2/27/2015	No Pressure	1.9	0.1 U	0.1 U	NS	NS
	0011H-IA-LAU	A-0011H-022715-IA-006-LAU	Laundry Room	HAPSITE	Indoor Air	2/27/2015	No Pressure	6.5	0.1 U	0.1 NR	NS	NS
	0011H-IA-LIV	A-0011H-022715-IA-002-LIV	Living Room	HAPSITE	Indoor Air	2/27/2015	No Pressure	6.9	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-008-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	No Pressure	9.6	0.1 U	0.1 U	NS	NS
	0011H-IA-MBR	A-0011H-022715-IA-007-MBR	Bedroom	HAPSITE	Indoor Air	2/27/2015	No Pressure	6.8	0.1 U	0.1 NR	NS	NS
	0011H-IA-OUT	A-0011H-022715-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	2/27/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0011H-IA-STO	A-0011H-022715-IA-010-STO	Storage	HAPSITE	Indoor Air	2/27/2015	No Pressure	26	0.1 U	0.1 NR	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012A-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	12	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012B-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	6.7	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012C-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	5.9	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012D-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	5.4	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012E-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	5.2	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012F-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	5.4	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012G-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	5.1	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012H-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	5.3	0.1 U	0.1 NR	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-012I-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Negative Pressure	5.2	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-013A-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Positive Pressure	5.1	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-013B-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Positive Pressure	2.6	0.1 U	0.1 NR	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-013C-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Positive Pressure	0.80	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-013D-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0011H-IA-LLL	A-0011H-022715-IA-013E-LLL	Basement Living Room	HAPSITE	Indoor Air	2/27/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0011H-TO	A-0011-H-030315-TO-001	Not available	SUMMA	Indoor Air	3/2/2015	No Pressure	17 R	2.7 R	2 R	1.3 R	NS
	0011H-TO	A-0011-H-030315-TO-002	Not available	SUMMA	Indoor Air	3/2/2015	No Pressure	6.1 R	2.7 R	2 R	1.3 R	NS
	0011H-TO	A-0011-H-030315-TO-003	Not available	SUMMA	Indoor Air	3/2/2015	No Pressure	3.4 R	2.7 R	2 R	1.3 R	NS
	0011H-TO	A-0011-H-030315-TO-004	Not available	SUMMA	Indoor Air	3/2/2015	No Pressure	17 R	2.7 R	2 R	1.3 R	NS
	0011H-IA-LLL	A-0011H-030116-IA-012A-LLL	Basement Living Room	SUMMA	Indoor Air	3/1/2016	No Pressure	12 J	0.27 U	0.2 U	0.13 U	0.18 U
	0011H	0011-H-IA01HS	Basement Storage	HAPSITE	Indoor Air	1/7/2020	No Pressure	0.1 U	0.1 U	11	NS	NS
	0011H	0011-H-IA05HS	Basement Stairwell	HAPSITE	Indoor Air	1/7/2020	No Pressure	0.1 U	0.1 U	6.0	NS	NS
	0011H	0011-H-IA03HS	Furnace Room	HAPSITE	Indoor Air	1/7/2020	No Pressure	0.1 U	0.1 U	7.2	NS	NS
	0011H	0011-H-IA06HS	Living Room	HAPSITE	Indoor Air	1/7/2020	No Pressure	0.1 U	0.1 U	7.2	NS	NS
	0011H	0011-H-IA04HS	Bathroom	HAPSITE	Indoor Air	1/7/2020	No Pressure	0.1 U	0.1 U	7.9	NS	NS
	0011H	0011-H-IA02HS	Basement Living Room	HAPSITE	Indoor Air	1/7/2020	No Pressure	0.1 U	0.1 U	8.3	NS	NS
	0011H	0011H-IA01SC-010820	Basement Storage	SUMMA	Indoor Air	1/8/2020	No Pressure	19	0.23 U	0.17 U	0.11 U	0.78 U
	0011H	0011H-IA02SC-010820	Basement Living Room	SUMMA	Indoor Air	1/8/2020	No Pressure	11	0.17 U	0.12 U	0.081 U	0.57 U
	0011H	0011H-IA03SC-010820	Furnace Room	SUMMA	Indoor Air	1/8/2020	No Pressure	6.6	0.23 U	0.17 U	0.11 U	0.76 U
	0011H	0011H-IA04SC-010820	Living Room	SUMMA	Indoor Air	1/8/2020	No Pressure	9	0.23 U	0.17 U	0.11 U	0.78 U
	0011H	0011H-AA01SC-010820	Outdoor	SUMMA	Outdoor Air	1/8/2020	No Pressure	0.58	0.29	0.17 U	0.14	0.78 U
	0011H	0011H-IA04PS-012920	Living Room	PASSIVE	Indoor Air	1/29/2020	No Pressure	7.2	0.039 J	NS	NS	NS
	0011H	0011H-IA02PS-012920	Basement Living Room	PASSIVE	Indoor Air	1/29/2020	No Pressure	7.6	0.040 J	NS	NS	NS
	0011H	0011H-IA03PS-012920	Furnace Room	PASSIVE	Indoor Air	1/29/2020	No Pressure	3.1	0.023 J	NS	NS	NS
	0011H	0011H-IA01PS-012920	Basement Storage	PASSIVE	Indoor Air	1/29/2020	No Pressure	16	0.058	NS	NS	NS
	0011H	0011H-IA01SC-082521	Basement Storage	SUMMA	Indoor Air	8/25/2021	No Pressure	19	0.18 U	0.13 U	0.086 U	0.17 J
	0011H	0011H-AA02SC-082521	Outdoor (backyard)	SUMMA	Outdoor Air	8/25/2021	No Pressure	0.10 J	0.18 U	0.14 U	0.087 U	0.18 J
0012-H	0012H-IA-BA1	A-0012H-022315IA-004-BA1	Bathroom	HAPSITE	Indoor Air	2/23/2015	No Pressure	0.71	0.1 U	0.1 NR	NS	NS
	0012H-IA-BA2	A-0012H-022315IA-008-BA2	Basement Bathroom	HAPSITE	Indoor Air	2/23/2015	No Pressure	4.0	0.1 U	0.1 NR	NS	NS
	0012H-IA-BR1	A-0012H-022315IA-005-BR1	Bedroom	HAPSITE	Indoor Air	2/23/2015	No Pressure	1.1	0.1 U	0.1 NR	NS	NS
	0012H-IA-BR2	A-0012H-022315IA-007-BR2	Bedroom	HAPSITE	Indoor Air	2/23/2015	No Pressure	3.1	0.1 U	0.1 NR	NS	NS
	0012H-IA-EXR	A-0012H-022315-IA-011-EXR	Exercise room	HAPSITE	Indoor Air	2/23/2015	No Pressure	2.3	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315IA-006-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	No Pressure	2.7	0.1 U	0.1 NR	NS	NS
	0012H-IA-KIT	A-0012H-022315-IA-001-KIT	Kitchen	HAPSITE	Indoor Air	2/23/2015	No Pressure	1.6	0.1 U	0.1 NR	NS	NS
	0012H-IA-LIV	A-0012H-022315IA-002-LIV	Living Room	HAPSITE	Indoor Air	2/23/2015	No Pressure	1.6	0.1 U	0.1 NR	NS	NS
	0012H-IA-MBR	A-0012H-022315IA-003-MBR	Bedroom	HAPSITE	Indoor Air	2/23/2015	No Pressure	1.3	0.1 U	0.1 NR	NS	NS
	0012H-IA-OFC	A-0012H-022315IA-009-OFC	Basement Office	HAPSITE	Indoor Air	2/23/2015	No Pressure	3.8	0.1 NR	0.1 NR	NS	NS
	0012H-IA-OUT	A-0012H-022315-IA-015-OUT	Outdoor	HAPSITE	Outdoor Air	2/23/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0012H-LAU	A-0012H-022315IA-010-LAU	Laundry Room	HAPSITE	Indoor Air	2/23/2015	No Pressure	2.1	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315IA-012A-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	2.3	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315IA-012B-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	2.1	0.1 NR	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315IA-012C-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	1.8	0.1 U	0.1 U	NS	NS
	0012H-IA-FAM	A-0012H-022315IA-012D-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	2.0	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-012E-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	1.7	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-012F-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	1.3	0.1 NR	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-012G-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	1.2	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-012H-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	1.0	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-012I-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Negative Pressure	0.94	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-013A-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Positive Pressure	1.4	0.1 U	0.1 U	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-013B-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Positive Pressure	0.73	0.1 U	0.1 NR	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-013C-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-013D-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-013E-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0012H-IA-FAM	A-0012H-022315-IA-013F-FAM	Basement Family Room	HAPSITE	Indoor Air	2/23/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								**120**	**6.3**	**NA**	**17**	**56**
0012-H	0012H-IA-LIV1	A-0012H-031317-IA-014-LIV1	Living Room	HAPSITE	Indoor Air	3/13/2017	No Pressure	**1.2**	*0.5 U*	*0.4 U*	NS	NS
	0012H-OA-OUT1	A-0012H-031317-OA-015-OUT1	Outdoor (west side)	HAPSITE	Outdoor Air	3/13/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0012H-IA-BAS1	A-0012H-031317-IA-016-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/13/2017	No Pressure	**1.9**	*0.5 U*	*0.4 U*	NS	NS
	0012H-IA-OFF1	A-0012H-031317-IA-017-OFF1	Office	HAPSITE	Indoor Air	3/13/2017	No Pressure	**2.6**	*0.5 U*	*0.4 U*	NS	NS
	0012H-IA-BAT1	A-0012H-031317-IA-018-BAT1	Basement Bathroom	HAPSITE	Indoor Air	3/13/2017	No Pressure	**2.0**	*0.5 U*	*0.4 U*	NS	NS
	0012H-IA-LAU1	A-0012H-031317-IA-019-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/13/2017	No Pressure	**2.0**	*0.5 U*	*0.4 U*	NS	NS
	0012H-IA-FDR1	A-0012H-031317-IA-020-FDR1	Front Door	HAPSITE	Indoor Air	3/13/2017	No Pressure	**2.2**	*0.5 U*	*0.4 U*	NS	NS
	0012H-TO-BAS	A-0012H-031417-TO-001-BAS	Basement Living Room	SUMMA	Indoor Air	3/14/2017	No Pressure	**2.3**	*0.27 U*	*0.2 U*	*0.13 U*	*0.18 U*
0013-H	0013H-IA-BA1	A-0013H-011615-IA006_BA1	Bathroom	HAPSITE	Indoor Air	1/16/2015	No Pressure	**0.71**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-BA2	A-0013H-011615-IA014_BA2	Basement Bathroom	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-BR1	A-0013H-011615-IA004_BR1	Bedroom	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-BR2	A-0013H-011615-IA005_BR2	Bedroom	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-COM	A-0013H-011615-IA008_COM	Computer Room	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA003_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-FAM	A-0013H-011615-IA010_FAM	Family Room	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-FUR	A-0013H-011615-IA011_FUR	Furnace Room	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-KIT	A-0013H-011615-IA002_KIT	Kitchen	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-LAU	A-0013H-011615-IA013_LAU	Laundry Room	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-LIB	A-0013H-011615-IA012_LIB	Library	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-LIV	A-0013H-011615-IA001_LIV	Living Room	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-PAR	A-0013H-011615-IA007_PAR	Parlor	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-STO	A-0013H-011615-IA009_STO	Storage	HAPSITE	Indoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-OA-OUT	A-0013H-011615-OA001_OUT	Outdoor (front porch)	HAPSITE	Outdoor Air	1/16/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015A_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015B_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015C_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015D_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.83**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015E_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.81**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015F_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.80**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015G_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.83**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015H_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.78**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015I_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.79**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015J_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.80**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015K_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.78**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA015L_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Negative Pressure	**0.82**	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA016A_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0013H-IA-ENT	A-0013H-011615-IA016B_ENT	Entrance	HAPSITE	Indoor Air	1/16/2015	Positive Pressure	**3.7**	*0.1 U*	*0.1 U*	NS	NS
	0013H-OA-OUT1	A-0013H-030917-OA-017-OUT1	Outdoor (south side)	HAPSITE	Outdoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0013H-IA-HAL1	A-0013H-030917-IA-018-HAL1	Hallway	HAPSITE	Indoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0013H-IA-LAN1	A-0013H-030917-IA-019-LAN1	Landing	HAPSITE	Indoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0013H-IA-BAS1	A-0013H-030917-IA-020-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0013H-TO-BAS	A-0013H-031017-TO-001-BAS	Basement Living Room	SUMMA	Indoor Air	3/10/2017	No Pressure	*0.34 U*	*0.27 U*	*0.2 U*	*0.13 U*	*0.18 U*
	0013H	0013H-IA01SC-030822	Basement Laundry Room	SUMMA	Indoor Air	3/8/2022	No Pressure	**0.07 J**	*0.2 U*	*0.14 U*	*0.093 U*	*0.66 U*
0014-H	0014H-IA-BA1	A-0014H-030215-IA-003-BA1	Bathroom	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0014H-IA-BA2	A-0014H-030215-IA-008-BA2	Basement Bathroom	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-BR1	A-0014H-030215-IA-004-BR1	Bedroom	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 NR*	**0.40**	NS	NS
	0014H-IA-BR2	A-0014H-030215-IA-007-BR2	Basement Bedroom	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-CLO	A-0014H-030215-IA-011-CLO	Basement Closet	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-009-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-KIT	A-0014H-030215-IA-005-KIT	Kitchen	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 NR*	**0.42**	NS	NS
	0014H-IA-LIV	A-0014H-030215-IA-001-LIV	Living Room	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 NR*	**0.44**	NS	NS
	0014H-IA-MBR	A-0014H-030215-IA-002-MBR	Bedroom	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-OFC	A-0014H-030215IA-010-OFC	Basement Office	HAPSITE	Indoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-OUT	A-0014H-030215-IA-006-OUT	Outdoor	HAPSITE	Outdoor Air	3/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012A-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	**0.44**	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012B-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012C-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012D-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012E-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012F-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012G-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012H-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012I-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-012J-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013A-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013B-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013C-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013D-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013E-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013F-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013G-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0014H-IA-FUR	A-0014H-030215-IA-013H-FUR	Furnace Room	HAPSITE	Indoor Air	3/2/2015	Positive Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
0015-H	0015H-IA-2LL	A-0015H-033015-IA-009-2LL	Landing	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-BA1	A-0015H-033015-IA-007-BA1	Bathroom	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-BA2	A-0015H-033015-IA-010-BA2	Bathroom	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-BA3	A-0015H-033015-IA-013-BA3	Basement Bathroom	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0015H-IA-BR1	A-0015H-033015-IA-014-BR1	Basement Bedroom	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-CRA	A-0015H-033015-IA-015-CRA	Crawl Space	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-KIT	A-0015H-033015-IA-003-KIT	Kitchen	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-012-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OFC1	A-0015H-033015-IA-004-OFC1	Office	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OFC2	A-0015H-033015-IA-005-OFC2	Office	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OFC3	A-0015H-033015-IA-006-OFC3	Office	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OFC4	A-0015H-033015-IA-008-OFC4	Office	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OFC5	A-0015H-033015-IA-011-OFC5	Office	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OUT	A-0015H-033015-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0015H-IA-STO	A-0015H-033015-IA-016-STO	Storage	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 NR*	NS	NS
	0015H-IA-SUN	A-0015H-033015-IA-002-SUN	Sun Room	HAPSITE	Indoor Air	3/30/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-017A-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-017B-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-017C-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-017D-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Negative Pressure	*0.1 U*	*0.1 U*	**0.47**	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-017E-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-018A-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-018B-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-018C-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0015H-IA-OCL	A-0015H-033015-IA-018D-OCL	Basement Living Room	HAPSITE	Indoor Air	3/30/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE	TCE	cis-1,2-DCE	VC	1,4-Dioxane
								$\mu g/m^3$ Q	$\mu g/m^3$ Q	$\mu g/m^3$ Q	$\mu g/m^3$ Q	$\mu g/m^3$ Q
Indoor Air Risk Based Screening Level (RBSL) ($\mu g/m^3$)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) ($\mu g/m^3$)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) ($\mu g/m^3$)[3]								**120**	**6.3**	**NA**	**17**	**56**
0016-H	0016H-IA-2LL-E	A-0016H-012215-IA-011-2LL-E	Hallway	HAPSITE	Indoor Air	1/22/2015	No Pressure	**0.82**	0.1 U	0.1 U	NS	NS
	0016H-IA-2LL-W	A-0016H-012215-IA-010-2LL-W	Hallway	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-BA1	A-0016H-012215-IA-007-BA1	Bathroom	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-BA2	A-0016H-012215-IA-009-BA2	Bathroom	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-BAS	A-0016H-012215-IA-001-BAS-SOUTH	Basement	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-BAS	A-0016H-012215-IA-003-BAS-NORTH	Basement	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0016H-IA-COA	A-0016H-012215-IA-002-COA	Coal Bin Storage	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-DRF	A-0016H-012215-IA-005-DRF	Dining Room	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-KIT	A-0016H-012215-IA-004-KIT	Kitchen	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LAU	A-0016H-012215-IA-008-LAU	Laundry Room	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-006-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-OA-OUT	A-0016H-012215-OA-014-OUT	Outdoor (east side)	HAPSITE	Outdoor Air	1/22/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-012A-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-012B-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-012C-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-012D-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-012E-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-012F-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-013A-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-013B-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0016H-IA-LIV	A-0016H-012215-IA-013C-LIV	Living Room	HAPSITE	Indoor Air	1/22/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
0017-H	0017H-IA-BA1	A-0017H-011415-IA006_BA1	Bathroom	HAPSITE	Indoor Air	1/14/2015	No Pressure	**4.9**	0.1 U	**0.86**	NS	NS
	0017H-IA-BR1	A-0017H-011415-IA004_BR1	Bedroom	HAPSITE	Indoor Air	1/14/2015	No Pressure	**4.8**	0.1 U	**0.87**	NS	NS
	0017H-IA-CAV	A-0017H-011415-IA012_CAV	Wall Cavity	HAPSITE	Indoor Air	1/14/2015	No Pressure	**1.3**	0.1 U	0.1 U	NS	NS
	0017H-IA-KIT	A-0017H-011415-IA003_KIT	Kitchen	HAPSITE	Indoor Air	1/14/2015	No Pressure	**5.0**	0.1 U	**0.76**	NS	NS
	0017H-IA-LIV	A-0017H-011415-IA002_LIV	Living Room	HAPSITE	Indoor Air	1/14/2015	No Pressure	**4.7**	0.1 U	**0.77**	NS	NS
	0017H-IA-MBR	A-0017H-011415-IA005_MBR	Bedroom	HAPSITE	Indoor Air	1/14/2015	No Pressure	**4.9**	0.1 U	0.1 NR	NS	NS
	0017H-IA-MUD	A-0017H-011415-IA007_MUD	Mud Room	HAPSITE	Indoor Air	1/14/2015	No Pressure	**4.9**	0.1 U	**0.62**	NS	NS
	0017H-IA-PLA	A-0017H-011415-IA008_PLA	Basement Playroom	HAPSITE	Indoor Air	1/14/2015	No Pressure	**6.1**	0.1 U	0.1 U	NS	NS
	0017H-IA-STO	A-0017H-011415-IA011_STO	Storage	HAPSITE	Indoor Air	1/14/2015	No Pressure	**5.4**	0.1 U	0.1 U	NS	NS
	0017H-IA-SUMP	A-0017H-011415-IA009_SUMP	Sump Room	HAPSITE	Indoor Air	1/14/2015	No Pressure	**20**	**11**	**0.43**	NS	NS
	0017H-IA-WIC	A-0017H-011415-IA010_WIC	Utility Room	HAPSITE	Indoor Air	1/14/2015	No Pressure	**6.3**	0.1 U	0.1 U	NS	NS
	0017H-OA-OUT	A-0017H-011415-OA001_OUT	Outdoor (east side)	HAPSITE	Outdoor Air	1/14/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013A_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**5.2**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013B_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**5.1**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013C_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**4.8**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013D_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**4.4**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013E_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**4.2**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013F_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**4.6**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013G_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**4.3**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013H_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**4.1**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013I_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**4.4**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA013J_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Negative Pressure	**3.9**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014A_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**4.6**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014B_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**2.5**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014C_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**1.7**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014D_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**1.9**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014E_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**1.2**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014G_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**0.93**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014H_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**0.80**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014I_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014J_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**0.73**	0.1 U	0.1 U	NS	NS
	0017H-IA-BAS	A-0017H-011415-IA014F_BAS	Basement	HAPSITE	Indoor Air	1/14/2015	Positive Pressure	**0.87**	0.1 U	0.1 U	NS	NS
	0017H-TO-BAS	A-0017H-TO-001-BAS-012115	Basement	SUMMA	Indoor Air	1/21/2015	No Pressure	6.8 R	0.27 R	0.2 R	0.13 R	NS
	0017H-TO-GAS	A-0017H-TO-003-GAS-012115	Garage	SUMMA	Indoor Air	1/21/2015	No Pressure	2.7 R	2.7 R	2 R	1.3 R	NS
	0017H-TO-OUT	A-0017H-TO-002-OUT-012115	Outdoor	SUMMA	Outdoor Air	1/21/2015	No Pressure	1 R	0.29 R	0.2 R	0.13 R	NS
	0017H-IA-BAS	A-0017H-031616-IA-BAS	Basement Living Room	SUMMA	Indoor Air	3/16/2016	No Pressure	**10 J**	**0.39**	0.2 U	0.13 U	0.18 U
0018-H	0018H-TO	A-0018H-020615-TO-001	Not available	SUMMA	Indoor Air	2/5/2015	No Pressure	23 R	0.37 R	0.2 R	0.13 R	NS
	0018H-TO	A-0018H-020615-TO-002	Not available	SUMMA	Indoor Air	2/5/2015	No Pressure	0.34 R	0.27 R	0.2 R	0.13 R	NS
	0018H-IA-BA1	A-0018H-021815-IA-003-BA1	Bathroom	HAPSITE	Indoor Air	2/18/2015	No Pressure	**16**	0.1 U	0.1 U	NS	NS
	0018H-IA-BR2	A-0018H-021815-IA-012-BR2	Bedroom	HAPSITE	Indoor Air	2/18/2015	No Pressure	**4.0**	0.1 U	0.1 U	NS	NS
	0018H-IA-BR5	A-0018H-021815-IA-004-BR5	Bedroom	HAPSITE	Indoor Air	2/18/2015	No Pressure	**16**	0.1 U	0.1 U	NS	NS
	0018H-IA-DRF	A-0018H-021815-IA-009-DRF	Dining Room	HAPSITE	Indoor Air	2/18/2015	No Pressure	**4.6**	0.1 U	0.1 U	NS	NS
	0018H-IA-GAR	A-0018H-021815-IA-007-GAR	Garage	HAPSITE	Indoor Air	2/18/2015	No Pressure	**1.9**	0.1 U	0.1 U	NS	NS
	0018H-IA-HAL1	A-0018H-021815-IA-015-HAL1	Hallway	HAPSITE	Indoor Air	2/18/2015	No Pressure	**4.1**	0.1 U	0.1 U	NS	NS
	0018H-IA-KIT	A-0018H-021815-IA-008-KIT	Kitchen	HAPSITE	Indoor Air	2/18/2015	No Pressure	**4.9**	0.1 U	0.1 U	NS	NS
	0018H-IA-LAU	A-0018H-021815-IA-005-LAU	Laundry Room	HAPSITE	Indoor Air	2/18/2015	No Pressure	**2.8**	0.1 U	0.1 U	NS	NS
	0018H-IA-LIV	A-0018H-021815-IA-011-LIV	Living Room	HAPSITE	Indoor Air	2/18/2015	No Pressure	**4.8**	0.1 U	0.1 U	NS	NS
	0018H-IA-LLL	A-0018H-021815-IA-002-LLL	Basement Living Room	HAPSITE	Indoor Air	2/18/2015	No Pressure	**8.1**	0.1 U	0.1 U	NS	NS
	0018H-IA-MBR	A-0018H-021815-IA-010-MBR	Bedroom	HAPSITE	Indoor Air	2/18/2015	No Pressure	**2.9**	0.1 U	0.1 U	NS	NS
	0018H-IA-OUT	A-0018H-021815-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	2/18/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0018H-IA-UTL	A-0018H-021815-IA-006-UTL	Utility Room	HAPSITE	Indoor Air	2/18/2015	No Pressure	**2.0**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019A-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.7**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019B-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.3**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019C-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.2**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019D-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.1**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019E-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.0**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019F-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.2**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019G-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.1**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019H-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**2.0**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-019I-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Negative Pressure	**1.9**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020A-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	**2.7**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020B-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	**1.3**	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020C-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020D-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020E-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020F-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020G-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020H-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0018H-IA-BAS	A-0018H-021815-IA-020I-BAS	Basement	HAPSITE	Indoor Air	2/18/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0018H-TO	A-0018H-021915-TO-001	Not available	SUMMA	Not available	2/18/2015	No Pressure	18 R	2.7 R	2 R	1.3 R	NS
	0018H-TO	A-0018H-021915-TO-002	Not available	SUMMA	Not available	2/18/2015	No Pressure	5.8 R	2.7 R	2 R	1.3 R	NS
	0018H-TO	A-0018H-021915-TO-003	Not available	SUMMA	Not available	2/18/2015	No Pressure	2.5 R	2.7 R	2 R	1.3 R	NS
	0018H-IA-BAS	A-0018H-031616-IA-BAS	Basement Living Room	SUMMA	Indoor Air	3/16/2016	No Pressure	**12 J**	**0.83**	0.2 U	0.13 U	0.18 U
	0018H	0018-H-IA01HS	Living Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3.1**	0.1 U	**1.4**	NS	NS
	0018H	0018-H-IA02HS	Basement	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3.3**	0.1 U	1 U	NS	NS

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120	6.3	NA	17	56
0018-H	0018H	0018-H-IA03HS	Garage	HAPSITE	Indoor Air	12/16/2019	No Pressure	1.4	0.1 U	0.1 U	NS	NS
	0018H	0018-H-IA04HS	Living Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	3.3	0.1 U	0.1 U	NS	NS
	0018H	0018-H-IA05HS	Bathroom	HAPSITE	Indoor Air	12/16/2019	No Pressure	2.3	0.1 U	0.1 U	NS	NS
	0018H	0018H-IA03SC-010820	Garage	SUMMA	Indoor Air	1/8/2020	No Pressure	2.6	0.23 U	0.17 U	0.11 U	0.76 U
	0018H	0018H-IA02SC-010820	Basement Workout Room	SUMMA	Indoor Air	1/8/2020	No Pressure	14	0.46	0.10 J	0.11 U	0.49 J
	0018H	0018H-IA01SC-010820	Basement Living Room	SUMMA	Indoor Air	1/8/2020	No Pressure	13	0.68	0.13 J	0.2 U	1.4 U
	0018H	0018H-IA04SC-010820	Living Room	SUMMA	Indoor Air	1/8/2020	No Pressure	7.6	0.33	0.077 J	0.14 U	0.96 U
	0018H	0018H-IA05SC-010820	Bathroom	SUMMA	Indoor Air	1/8/2020	No Pressure	8	0.35	0.087 J	0.11 U	0.8 U
	0018H	0018H-IA05PS-010820	Bathroom	PASSIVE	Indoor Air	1/8/2020	No Pressure	7.4	0.33	NS	NS	NS
	0018H	0018H-IA04PS-010820	Living Room	PASSIVE	Indoor Air	1/8/2020	No Pressure	7.6	0.34	NS	NS	NS
	0018H	0018H-IA01PS-010820	Basement Living Room	PASSIVE	Indoor Air	1/8/2020	No Pressure	12	0.48	NS	NS	NS
	0018H	0018H-IA02PS-010820	Basement Workout Room	PASSIVE	Indoor Air	1/8/2020	No Pressure	10	0.38	NS	NS	NS
	0037H	0037H-AA01SC-010820	Outdoor	SUMMA	Outdoor Air	1/8/2020	No Pressure	0.53	0.15 J	0.16 U	0.1 U	0.74 U
	0018H	0018H-IA03PS-010820	Garage	PASSIVE	Indoor Air	1/8/2020	No Pressure	2.2	0.059	NS	NS	NS
	0018H	0018H-IA01SC-082421	Basement Living Room	SUMMA	Indoor Air	8/24/2021	No Pressure	14	0.75	0.20	0.085 U	0.29 J
0019-B	0019B-IA-BA1	A-0019B-020215-IA-007-BA1	Bathroom	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.6	0.1 NR	0.1 U	NS	NS
	0019B-IA-BR1	A-0019B-020215-IA-018-BR1	Bedroom	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-BR2	A-0019B-020215-IA-027-BR2	Bedroom	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-COA	A-0019B-020215-IA-012-COA	Coal Bin Storage	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.85	0.1 NR	0.1 NR	NS	NS
	0019B-IA-DRF	A-0019B-020215-IA-025-DRF	Dining Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-ELE	A-0019B-020215-IA-013-ELE	Electric	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0019B-IA-FUR1	A-0019B-020215-IA-004-FUR1	Basement Furnace Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.8	0.1 NR	0.1 U	NS	NS
	0019B-IA-FUR2	A-0019B-020215-IA-010-FUR2	Basement Boiler Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-FUR2	A-0019B-020215-IA-029-FUR2	Basement Boiler Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-HAL1	A-0019B-020215-IA-003-HAL1	Hallway	HAPSITE	Indoor Air	2/2/2015	No Pressure	2.2	0.1 NR	0.1 U	NS	NS
	0019B-IA-HAL2	A-0019B-020215-IA-017-HAL2	Hallway	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0019B-IA-HAL3	A-0019B-020215-IA-019-HAL3	Hallway	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-HAL4	A-0019B-020215-IA-020-HAL4	Hallway	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-HAL5	A-0019B-020215-IA-026-HAL5	Hallway	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0019B-IA-HAL6	A-0019B-020215-IA-030-HAL6	Hallway	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-HAL7	A-0019B-020215-IA-031-HAL7	Hallway	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-KIT1	A-0019B-020215-IA-021-KIT1	Kitchen	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0019B-IA-KIT2	A-0019B-020215-IA-024-KIT2	Kitchen	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0019B-IA-LAU	A-0019B-020215-IA-006-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	2.0	0.1 NR	0.1 U	NS	NS
	0019B-IA-LAU	A-0019B-020215-IA-028-LAU2	Laundry Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-LL1	A-0019B-020215-IA-014-LL1	Living Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-LL2	A-0019B-020215-IA-016-LL2	Living Room	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-OFC	A-0019B-020215-IA-032-OFC	Office	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-OUT	A-0019B-020215-IA-023-OUT	Outdoor	HAPSITE	Outdoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0019B-IA-SAL	A-0019B-020215-IA-015-SAL	Salon	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.4	0.1 NR	0.1 U	NS	NS
	0019B-IA-STO1	A-0019B-020215-IA-001-STO1	Basement Storage	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.5	0.1 NR	0.1 U	NS	NS
	0019B-IA-STO2	A-0019B-020215-IA-002-STO2	Basement Storage	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.6	0.1 NR	0.1 U	NS	NS
	0019B-IA-STO3	A-0019B-020215-IA-008-STO3	Basement Storage	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.4	0.1 NR	0.1 NR	NS	NS
	0019B-IA-STO4	A-0019B-020215-IA-009-STO4	Basement Storage	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.5	0.1 NR	0.1 U	NS	NS
	0019B-IA-STO5	A-0019B-020215-IA-022-STO5	Basement Storage	HAPSITE	Indoor Air	2/2/2015	No Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0019B-IA-WOR1	A-0019B-020215-IA-005-WOR1	Basement Wood Working Shop	HAPSITE	Indoor Air	2/2/2015	No Pressure	1.9	0.1 NR	0.1 U	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-033A-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Negative Pressure	1.9	0.1 NR	0.1 NR	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-033B-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Negative Pressure	1.9	0.1 NR	0.1 NR	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-033C-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Negative Pressure	1.9	0.1 NR	0.73	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-033D-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Negative Pressure	2.0	0.1 NR	0.1 NR	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-034A-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Positive Pressure	2.0	0.1 NR	0.51	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-034B-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Positive Pressure	1.9	0.1 NR	0.49	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-034C-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Positive Pressure	1.9	0.1 NR	0.40	NS	NS
	0019B-IA-STO4	A-0019B-020315-IA-034D-STO4	Basement Storage	HAPSITE	Indoor Air	2/3/2015	Positive Pressure	1.8	0.1 NR	0.1 NR	NS	NS
	0019H-TO-B2	A-0019H-020415-TO-002-B2	Not available	SUMMA	Indoor Air	2/3/2015	No Pressure	0.34 R	0.27 R	0.2 R	0.13 R	NS
	0019H-TO-HAL	A-0019H-020415-TO-001-HAL	Hallway	SUMMA	Indoor Air	2/3/2015	No Pressure	0.45 R	0.27 R	0.2 R	0.13 R	NS
	0019H-TO-STO	A-0019H-020415-TO-003-STO	Storage	SUMMA	Indoor Air	2/3/2015	No Pressure	2.2 R	0.52 R	0.2 R	0.13 R	NS
0020-C	0020C-A-LLK	A-0020C-A-0020C-022515-LLK	Basement Kitchen	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-BA1	A-0020C-022515-IA-008-BA1	Basement Bathroom	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-BA2	A-0020C-022515-IA-014-BA2	Bathroom	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-BOI	A-0020C-022515-IA-015-BOI	Basement Boiler Room	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-CAF	A-0020C-022515-IA-013-CAF	Cafeteria	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-CKC	A-0020C-022515-IA-010-CKC	Classroom	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-CLO	A-0020C-022515-IA-006-CLO	Closet	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-HAL1	A-0020C-022515-IA-004-HAL1	Hallway	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-HAL2	A-0020C-022515-IA-007-HAL2	Hallway	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-OFC1	A-0020C-022515-IA-003-OFC1	Office	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-OFC2	A-0020C-022515-IA-011-OFC2	Office	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-OUT	A-0020C-022515-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-R102	A-0020C-022515-IA-009-R102	Room	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0020C-IA-R109	A-0020C-022515-IA-005-R109	Room	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0020C-IA-SAN	A-0020C-022515-IA-012-SAN	Sanctuary	HAPSITE	Indoor Air	2/25/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-CKC	A-0020C-022515-IA-016A-CKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-CKC	A-0020C-022515-IA-016B-CKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0020C-IA-CKC	A-0020C-022515-IA-016C-CKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-CKC	A-0020C-022515-IA-016D-CKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0020C-IA-CKC	A-0020C-022515-IA-016E-CKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Negative Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0020C-IA-SKC	A-0020C-022515-IA-017A-SKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-SKC	A-0020C-022515-IA-017B-SKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-SKC	A-0020C-022515-IA-017C-SKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0020C-IA-SKC	A-0020C-022515-IA-017D-SKC	Classroom	HAPSITE	Indoor Air	2/25/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
0021-S	0021S-IA-4THWest	A-0021S-021915-IA-003-4THWEST	Classroom	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0021S-IA-8THWest	A-0021S-021915-IA-001-8THWEST	Classroom	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0021S-IA-BOI	A-0021S-021915-IA-002-BOI	Boiler Room	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-BR1	A-0021S-021915-IA-018-BR1	Bedroom	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-DIN	A-0021S-021915-IA-016-DIN	Dining Room	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-FAM	A-0021S-021915-IA-017-FAM	Open Room	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-GYM	A-0021S-021915-IA-008-GYM	Gym	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-HAL	A-0021S-021915-IA-015-HAL	Hallway	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-HAL2	A-0021S-021915-IA-020-HAL2	Hallway	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-KIND	A-0021S-021915-IA-006-KIND	Classroom	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-KIT	A-0021S-021915-IA-003-KIT	Kitchen	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-KIT	A-0021S-021915IA-012-KIT	Kitchen	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-019-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0021S-IA-LIB	A-0021S-021915-IA-014-LIB	Library	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.81	0.1 U	0.1 U	NS	NS
	0021S-IA-MAN	A-0021S-021915-IA-004-MAN	Manhole	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-OUT	A-0021S-021915-IA-004-OUT	Outdoor	HAPSITE	Outdoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) ($\mu g/m^3$)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) ($\mu g/m^3$)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) ($\mu g/m^3$)[3]								**120**	**6.3**	**NA**	**17**	**56**
0021-S	0021S-IA-OUT	A-0021S-021915-IA-005-OUT	Outdoor	HAPSITE	Outdoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-STEM	A-0021S-021915-IA-013-STEM	Classroom	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0021S-IA-STO	A-0021S-021915-IA-005-STO	Storage	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-STO2	A-0021S-021915-IA-007-STO2	Basement Storage	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-STO3	A-0021S-021915-IA-009-STO3	Storage	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0021S-IA-STO4	A-0021S-021915-IA-011-STO4	Storage	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-UTL	A-0021S-021915-IA-010-UTL	Utility Room	HAPSITE	Indoor Air	2/19/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-006A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-006B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-006C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-006D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-006E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-007A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-007B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-LAU	A-0021S-021915-IA-007C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/19/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0021S-IA-FEL	A-0021S-022015-IA-001-FEL	Open Room	HAPSITE	Indoor Air	2/20/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
0022-S	0022S-IA-AUD	A-0022S-040615-IA-028-AUD	Auditorium	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-BOI1	A-0022S-040615-IA-002-BOI1	Boiler Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-BOI2	A-0022S-040615-IA-026-BOI2	Boiler Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-CAFÉ	A-0022S-040615-IA-005-CAFÉ	Cafeteria	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.5**	**1.3**	0.1 U	NS	NS
	0022S-IA-CR102	A-0022S-040615-IA-007-CR102	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0022S-IA-CR126	A-0022S-040615-IA-003-CR126	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-CR148	A-0022S-040615-IA-032-CR148	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-CR206	A-0022S-040615-IA-012-CR206	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-CR226	A-0022S-040615-IA-009-CR226	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-CR231	A-0022S-040615-IA-034-CR231	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	**8.4**	0.1 U	0.1 U	NS	NS
	0022S-IA-CR235	A-0022S-040615-IA-035-CR235	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	**7.1**	0.1 U	0.1 U	NS	NS
	0022S-IA-CR300	A-0022S-040615-IA-020-CR300	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	**0.82**	0.1 U	0.1 U	NS	NS
	0022S-IA-CR318	A-0022S-040615-IA-017-CR318	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.1**	0.1 U	0.1 U	NS	NS
	0022S-IA-CR324	A-0022S-040615-IA-015-CR324	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	**2.3**	0.1 U	0.1 U	NS	NS
	0022S-IA-CR330	A-0022S-040615-IA-016-CR330	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	**2.7**	0.1 U	0.1 U	NS	NS
	0022S-IA-CR406	A-0022S-040615-IA-024-CR406	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-CR422	A-0022S-040615-IA-021-CR422	Classroom	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.5**	0.1 U	0.1 U	NS	NS
	0022S-IA-DAN	A-0022S-040615-IA-025-DAN	Open Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.6**	0.1 U	0.1 U	NS	NS
	0022S-IA-GYM	A-0022S-040615-IA-033-GYM	Gym	HAPSITE	Indoor Air	4/6/2015	No Pressure	**5.2**	0.1 NR	0.1 U	NS	NS
	0022S-IA-HAL1	A-0022S-040615-IA-013-HAL1	Hallway	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-HAL2	A-0022S-040615-IA-019-HAL2	Hallway	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.7**	0.1 U	0.1 U	NS	NS
	0022S-IA-OUT	A-0022S-040615-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-RM108	A-0022S-040615-IA-006-RM108	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-RM122	A-0022S-040615-IA-004-RM122	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	**0.70**	0.1 U	0.1 U	NS	NS
	0022S-IA-RM141A	A-0022S-040615-IA-027-RM141A	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-RM149	A-0022S-040615-IA-031-RM149	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-RM205	A-0022S-040615-IA-011-RM205	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.2**	**0.67**	0.1 U	NS	NS
	0022S-IA-RM216	A-0022S-040615-IA-010-RM216	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	**0.94**	0.1 U	0.1 U	NS	NS
	0022S-IA-RM248	A-0022S-040615-IA-029-RM248	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0022S-IA-RM309	A-0022S-040615-IA-018-RM309	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.7**	0.1 U	0.1 U	NS	NS
	0022S-IA-RM414	A-0022S-040615-IA-022-RM414	Room	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.3**	0.1 U	0.1 U	NS	NS
	0022S-IA-STO1	A-0022S-040615-IA-008-STO1	Storage	HAPSITE	Indoor Air	4/6/2015	No Pressure	**11**	0.1 U	0.1 U	NS	NS
	0022S-IA-STO2	A-0022S-040615-IA-014-STO2	Storage	HAPSITE	Indoor Air	4/6/2015	No Pressure	**3.1**	0.1 U	0.1 U	NS	NS
	0022S-IA-STO3	A-0022S-040615-IA-023-STO3	Storage	HAPSITE	Indoor Air	4/6/2015	No Pressure	**1.2**	0.1 U	0.1 U	NS	NS
	0022S-TO-CAFE	A0022S-040715-TO-001-CAFE	Not available	SUMMA	Indoor Air	4/7/2015	No Pressure	3.9 R	2 R	2 R	1.3 R	NS
	0022S-TO-CR330	A0022S-040715-TO-002-CR330	Not available	SUMMA	Indoor Air	4/7/2015	No Pressure	1.9 R	2.7 R	2 R	1.3 R	NS
0023-H	0023H-IA-BA1	A-0023H-030915-IA-007-BA1	Bathroom	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.0**	0.1 U	0.1 U	NS	NS
	0023H-IA-BA2	A-0023H-030915-IA-010-BA2	Bathroom	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.0**	0.1 U	0.1 U	NS	NS
	0023H-IA-BA3	A-0023H-030915-IA-014-BA3	Bathroom	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.0**	0.1 U	0.1 NR	NS	NS
	0023H-IA-BR1	A-0023H-030915-IA-012-BR1	Bedroom	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.1**	0.1 U	0.1 U	NS	NS
	0023H-IA-BR2	A-0023H-030915-IA-013-BR2	Bedroom	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.1**	0.1 U	0.1 NR	NS	NS
	0023H-IA-FUR	A-0023H-030915-IA-001-FUR	Furnace Room	HAPSITE	Indoor Air	3/9/2015	No Pressure	**0.78**	0.1 U	0.1 U	NS	NS
	0023H-IA-GAR	A-0023H-030915-IA-003-GAR	Garage	HAPSITE	Indoor Air	3/9/2015	No Pressure	**0.82**	0.1 U	0.1 U	NS	NS
	0023H-IA-LAU	A-0023H-030915-IA-008-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.2**	0.1 U	0.1 U	NS	NS
	0023H-IA-LLL	A-0023H-030915-IA-005-LLL	Basement Living Room	HAPSITE	Indoor Air	3/9/2015	No Pressure	**0.99**	0.1 U	0.1 U	NS	NS
	0023H-IA-MBR	A-0023H-030915-IA-015-MBR	Bedroom	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.1**	0.1 U	0.1 U	NS	NS
	0023H-IA-OCL1	A-0023H-030915-IA-009-OCL1	Open Room	HAPSITE	Indoor Air	3/9/2015	No Pressure	**0.99**	0.1 U	0.1 U	NS	NS
	0023H-IA-OCL2	A-0023H-030915-IA-011-OCL2	Open Room	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.0**	0.1 U	0.1 U	NS	NS
	0023H-IA-OUT	A-0023H-030915-IA-004-OUT	Outdoor	HAPSITE	Outdoor Air	3/9/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-006-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	No Pressure	**1.01**	0.1 U	0.1 U	NS	NS
	0023H-IA-SUMP	A-0023H-030915-IA-002-SUMP	Sump Room	HAPSITE	Indoor Air	3/9/2015	No Pressure	**132**	**3.5**	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016A-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	**0.76**	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016B-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	**0.70**	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016C-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	**0.73**	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016D-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	**0.73**	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016E-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	**0.74**	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016F-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	**0.71**	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016G-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016H-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-016I-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017A-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	**0.73**	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017B-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017C-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017D-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017E-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017F-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017G-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023H-IA-PLA	A-0023H-030915-IA-017H-PLA	Basement Playroom	HAPSITE	Indoor Air	3/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0023-IA-BA1	A-0023-031616-IA-BA1	Storage Room	SUMMA	Indoor Air	3/16/2016	No Pressure	**1.4**	0.27 U	0.2 U	0.13 U	0.18 U
0024-H	0024H-IA-BA1	A-0024H-021115-IA-003-BA1	Basement Bathroom	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0024H-IA-BA2	A-0024H-021115-IA-011-BA2	Bathroom	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0024H-IA-BR1	A-0024H-021115-IA-010-BR1	Bedroom	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0024H-IA-BR2	A-0024H-021115-IA-015-BR2	Bedroom	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0024H-IA-BR3	A-0024H-021115-IA-016-BR3	Bedroom	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0024H-IA-CRA	A-0024H-021115-IA-007-CRA	Crawl Space	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0024H-IA-FAM	A-0024H-021115-IA-009-FAM	Family Room	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0024H-IA-HAL	A-0024H-021115-IA-013-HAL	Hallway	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0024H-IA-LAU	A-0024H-021115-IA-002-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0024H-IA-MBR	A-0024H-021115-IA-014-MBR	Bedroom	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0024H-IA-OCL	A-0024H-021115-IA-008-OCL	Open Room	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
								µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11		0.48		NA		0.17		0.56	
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41		2.1		NA		1.7		5.6	
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120		6.3		NA		17		56	
0024-H	0024H-IA-OFC	A-0024H-021115-IA-012-OFC	Office	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-OUT	A-0024H-021115-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	2/11/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-STO1	A-0024H-021115-IA-004-STO1	Basement Storage	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-STO2	A-0024H-021115-IA-005-STO2	Basement Storage	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1	U	0.1	U	0.1	NR	NS		NS	
	0024H-IA-STO3	A-0024H-021115-IA-006-STO3	Basement Storage	HAPSITE	Indoor Air	2/11/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	NR	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017G-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017H-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	NR	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017I-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017J-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017K-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	NR	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017L-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-017M-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018G-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018H-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018I-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018J-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0024H-IA-LAU	A-0024H-021115-IA-018K-LAU	Basement Laundry Room	HAPSITE	Indoor Air	2/11/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
0025-H	0025H-IA-BA1	A-0025H-020915-IA-002-BA1	Bathroom	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BA2	A-0025H-020915-IA-011-BA2	Basement Bathroom	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	0.1	NR	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-001-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	No Pressure	**1.3**		0.1	NR	**0.50**		NS		NS	
	0025H-IA-BR2	A-0025H-020915-IA-003-BR2	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	0.1	NR	NS		NS	
	0025H-IA-BR3	A-0025H-020915-IA-010-BR3	Bedroom	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	0.1	NR	NS		NS	
	0025H-IA-FAM	A-0025H-020915-IA-007-FAM	Family Room	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	**0.54**		NS		NS	
	0025H-IA-FUR	A-0025H-020915-IA-005-FUR	Furnace Room	HAPSITE	Indoor Air	2/9/2015	No Pressure	**1.6**		0.1	NR	**0.48**		NS		NS	
	0025H-IA-KIT	A-0025H-020915-IA-008-KIT	Kitchen	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	**0.49**		NS		NS	
	0025H-IA-LAU	A-0025H-020915-IA-004-LAU	Laundry Room	HAPSITE	Indoor Air	2/9/2015	No Pressure	**0.70**		0.1	NR	**0.51**		NS		NS	
	0025H-IA-LIV	A-0025H-020915-IA-009-LIV	Living Room	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	0.1	NR	NS		NS	
	0025H-IA-OFC	A-0025H-020915-IA-012-OFC	Office	HAPSITE	Indoor Air	2/9/2015	No Pressure	**0.70**		0.1	NR	0.1	NR	NS		NS	
	0025H-IA-OUT	A-0025H-020915-IA-015-OUT	Outdoor	HAPSITE	Outdoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-STO-1	A-0025H-020915-IA-006-STO-1	Storage	HAPSITE	Indoor Air	2/9/2015	No Pressure	0.1	U	0.1	NR	**0.42**		NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013A-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013B-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013C-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	NR	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013D-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013E-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	NR	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013F-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013G-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	NR	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013H-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-013I-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Negative Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-014A-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-014B-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-014C-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-014D-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-014E-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Positive Pressure	0.1	U	0.1	NR	0.1	U	NS		NS	
	0025H-IA-BR1	A-0025H-020915-IA-014F-BR1	Basement Bedroom	HAPSITE	Indoor Air	2/9/2015	Positive Pressure	**2.8**		0.1	NR	0.1	U	NS		NS	
	0025H-OA-OUT1	A-0025H-031317-OA-003-OUT1	Outdoor (east side)	HAPSITE	Outdoor Air	3/13/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0025H-IA-LIV1	A-0025H-031317-IA-004-LIV1	Living Room	HAPSITE	Indoor Air	3/13/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0025H-IA-BAS1	A-0025H-031317-IA-005-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/13/2017	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0025H-TO-BAS	A-0025H-031417-TO-001-BAS	Basement Living Room	SUMMA	Indoor Air	3/14/2017	No Pressure	**0.37**		0.27	U	0.2	U	0.13	U	**2.3**	
	0025H	0025-H-IA01HS	Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0025H	0025-H-IA02HS	Basement Bedroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0025H	0025-H-IA03HS	Basement Bathroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0025H	0025-H-IA04HS	Office	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0025H	0025H-IA01SC-030620	Crawl Space	SUMMA	Indoor Air	3/6/2020	No Pressure	**0.38**		0.19	U	0.14	U	0.089	U	0.63	U
	0025H	0025H-IA02SC-030620	Basement Bedroom	SUMMA	Indoor Air	3/6/2020	No Pressure	**0.44**		0.2	U	0.15	U	0.098	U	0.69	U
	0025H	0025H-IA03SC-030620	Office	SUMMA	Indoor Air	3/6/2020	No Pressure	**0.41**		0.2	U	0.14	U	0.094	U	0.66	U
	0174H	0174H-AA01SC-030620	Outdoor	SUMMA	Outdoor Air	3/6/2020	No Pressure	0.24	U	0.19	U	0.14	U	0.089	U	0.63	U
	0025H	0025H-IA01PS-03252020	Crawl Space	PASSIVE	Indoor Air	3/25/2020	No Pressure	**0.32**		0.051	U	NS		NS		NS	
	0025H	0025H-IA02PS-03252020	Basement Bedroom	PASSIVE	Indoor Air	3/25/2020	No Pressure	**0.23**		0.051	U	NS		NS		NS	
	0025H	0025H-IA03PS-03252020	Office	PASSIVE	Indoor Air	3/25/2020	No Pressure	**0.28**		0.051	U	NS		NS		NS	
0026-H	0026H-IA-BA1	A-0026H-030315-IA-005-BA1	Basement Bathroom	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-BA2	A-0026H-030315-IA-011-BA2	Bathroom	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	NR	NS		NS	
	0026H-IA-BA3	A-0026H-030315-IA-014-BA3	Bathroom	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-BR1	A-0026H-030315-IA-002-BR1	Basement Bedroom	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-DRF	A-0026H-030315-IA-008-DRF	Dining Room	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-FAM	A-0026H-030315-IA-001-FAM	Family Room	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-HAL	A-0026H-030315-IA-013-HAL	Hallway	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-KIT	A-0026H-030315-IA-012-KIT	Kitchen	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-003-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LIB	A-0026H-030315-IA-009-LIB	Library	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LIV	A-0026H-030315-IA-007-LIV	Living Room	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-MBR	A-0026H-030315-IA-010-MBR	Bedroom	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-OUT	A-0026H-030315-IA-017-OUT	Outdoor	HAPSITE	Outdoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-PAN	A-0026H-030315-IA-004-PAN	Pantry	HAPSITE	Indoor Air	3/3/2015	No Pressure	**1.7**		0.1	U	0.1	U	NS		NS	
	0026H-IA-STO	A-0026H-030315-IA-006-STO	Basement Storage	HAPSITE	Indoor Air	3/3/2015	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-015A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-015B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-015C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-015D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-015E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-015F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-015G-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Negative Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-016A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-016B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Positive Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0026H-IA-LAU	A-0026H-030315-IA-016C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Positive Pressure	0.1	U	0.1	U	0.1	NR	NS		NS	

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m^3 Q	TCE µg/m^3 Q	cis-1,2-DCE µg/m^3 Q	VC µg/m^3 Q	1,4-Dioxane µg/m^3 Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m^3)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m^3)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m^3)[3]								**120**	**6.3**	**NA**	**17**	**56**
0026-H	0026H-IA-LAU	A-0026H-030315-IA-016E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0026H-IA-LAU	A-0026H-030315-IA-016F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0026H-TO-OUT	A-0026H-040815-TO-003-OUT	Outdoor	SUMMA	Outdoor Air	4/8/2015	No Pressure	*3.4 U*	*2.7 U*	*2 U*	*1.3 U*	NS
	0026H-TO-PAN	A-0026H-040815-TO-001-PAN	Pantry	SUMMA	Indoor Air	4/8/2015	No Pressure	**2.1 J**	*2.7 U*	*2 U*	*1.3 U*	NS
	0026H-OA-OUT1	A-0026H-030917-OA-006-OUT1	Outdoor (north side)	HAPSITE	Outdoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0026H-IA-BAS1	A-0026H-030917-IA-007-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/9/2017	No Pressure	**1.3**	*0.5 U*	*0.4 U*	NS	NS
	0026H-IA-LAU1	A-0026H-030917-IA-008-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/9/2017	No Pressure	**1.1**	*0.5 U*	*0.4 U*	NS	NS
	0026H-IA-LIV1	A-0026H-030917-IA-009-LIV1	Living Room	HAPSITE	Indoor Air	3/9/2017	No Pressure	**0.88**	*0.5 U*	**0.48**	NS	NS
	0026H-IA-HAL1	A-0026H-030917-IA-010-HAL1	Hallway	HAPSITE	Indoor Air	3/9/2017	No Pressure	**0.88**	*0.5 U*	*0.4 U*	NS	NS
	0026H-IA-LAN1	A-0026H-030917-IA-011-LAN1	Landing	HAPSITE	Indoor Air	3/9/2017	No Pressure	**0.95**	*0.5 U*	*0.4 U*	NS	NS
	0026H-IA-UTI1	A-0026H-030917-IA-012-UTI1	Utility Room	HAPSITE	Indoor Air	3/9/2017	No Pressure	**1.1**	*0.5 U*	*0.4 U*	NS	NS
	0026H-TO-LIV	A-0026H-031617-TO-001-LIV	Living Room	SUMMA	Indoor Air	3/16/2017	No Pressure	**2**	*0.27 U*	*0.2 U*	*0.13 U*	*0.18 U*
	0026H	0026-H-IA01HS	Basement Chemical Storage	HAPSITE	Indoor Air	3/6/2020	No Pressure	**0.1**	*0.1 U*	*0.1 U*	NS	NS
	0026H	0026-H-IA02HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0026H	0026-H-IA03HS	Basement Stairwell	HAPSITE	Indoor Air	3/6/2020	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0026H	0026-H-IA04HS	Parlor	HAPSITE	Indoor Air	3/6/2020	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0026H	0026H-IA01SC-030720	Basement Laundry Room	SUMMA	Indoor Air	3/7/2020	No Pressure	**1.4**	**0.25**	*0.15 U*	*0.096 U*	*0.67 U*
	0026H	0026H-IA02SC-030720	Basement Stairwell	SUMMA	Indoor Air	3/7/2020	No Pressure	**1.4**	**0.084 J**	*0.15 U*	*0.096 U*	*0.67 U*
	0026H	0026H-IA03SC-030720	Living Room	SUMMA	Indoor Air	3/7/2020	No Pressure	**3.1**	**0.083 J**	*0.15 U*	**0.016 J**	**0.26 J**
	0026H	0026H-IA04SC-030720	Laundry Chute	SUMMA	Indoor Air	3/7/2020	No Pressure	**12**	**0.092 J**	*0.16 U*	*0.1 U*	**0.18 J**
	0026H	0026H-AA01SC-030720	Outdoor	SUMMA	Outdoor Air	3/7/2020	No Pressure	**0.1 J**	*0.21 U*	*0.16 U*	*0.1 U*	**0.14 J**
	0026H	0026H-IA02PS-03242020	Basement Stairwell	PASSIVE	Indoor Air	3/24/2020	No Pressure	**1.1**	**0.05 J**	NS	NS	NS
	0026H	0026H-IA03PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	**3**	**0.056**	NS	NS	NS
	0026H	0026H-IA04PS-03242020	Laundry Chute	PASSIVE	Indoor Air	3/24/2020	No Pressure	**9.5**	**0.072**	NS	NS	NS
	0026H	0026H-IA01PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	**1.4**	**0.093**	NS	NS	NS
	0026H	0026H-IA01SC-082521	Basement Laundry Room	SUMMA	Indoor Air	8/25/2021	No Pressure	**7.2**	*0.17 U*	*0.13 U*	**0.016 J**	**0.26 J**
0027-H	0027H-IA-BA1	A-0027H-021215-IA-006-BA1	Bathroom	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0027H-IA-BA2	A-0027H-021215-IA-011-BA2	Basement Bathroom	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-BR1	A-0027H-021215-IA-004-BR1	Bedroom	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-BR2	A-0027H-021215-IA-012-BR2	Basement Bedroom	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-DRF	A-0027H-021215-IA-003-DRF	Dining Room	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-FUR	A-0027H-021215-IA-014-FUR	Furnace Room	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-KIT	A-0027H-021215-IA-008-KIT	Kitchen	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-LAU	A-0027H-021215-IA-010-LAU	Laundry Room	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-LIV	A-0027H-021215-IA-002-LIV	Living Room	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-MBA	A-0027H-021215-IA-007-MBA	Bathroom	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0027H-IA-MBR	A-0027H-021215-IA-005-MBR	Bedroom	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-OUT	A-0027H-021215-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-STO	A-0027H-021215-IA-009-STO	Storage	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-STO2	A-0027H-021215-IA-013-STO2	Basement Storage	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-STO3	A-0027H-021215-IA-015-STO3	Basement Storage	HAPSITE	Indoor Air	2/12/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017A-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017B-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017C-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017D-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017E-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017F-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017G-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017H-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017I-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-017J-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018A-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018B-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018C-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018D-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018E-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018F-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018G-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-IA-HAL	A-0027H-021215-IA-018H-HAL	Basement Hallway	HAPSITE	Indoor Air	2/12/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0027H-TO	A-0027H-031915-TO-010	Not available	SUMMA	Indoor Air	3/19/2015	No Pressure	*5.1 R*	*2.7 R*	*2 R*	*1.3 R*	NS
	0027H-TO-BAS	A-0027H-031915-TO-001-BAS	basement	SUMMA	Indoor Air	3/19/2015	No Pressure	*3.4 R*	*2.7 R*	*2 R*	*1.3 R*	NS
	0027H-TO-OUT	A-0027H-031915-TO-002-OUT	Outdoor	SUMMA	Outdoor Air	3/19/2015	No Pressure	*3.4 R*	*2.7 R*	*2 R*	*1.3 R*	NS
	0027H-OA-OUT1	A-0027H-030917-OA-013-OUT1	Outdoor (north side)	HAPSITE	Outdoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0027H-IA-LIV1	A-0027H-030917-IA-014-LIV1	Living Room	HAPSITE	Indoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0027H-IA-BAS1	A-0027H-030917-IA-015-BAS1	Basement	HAPSITE	Indoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0027H-IA-MEC1	A-0027H-030917-IA-016-MEC1	Mechanical Room	HAPSITE	Indoor Air	3/9/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0027H-TO-BAS	A-0027H-031017-TO-001-BAS	Basement	SUMMA	Indoor Air	3/10/2017	No Pressure	*0.34 U*	*0.27 U*	*0.2 U*	*0.13 U*	*0.18 U*
0028-S	0028S-IA-BA1	A-0028S-033115-IA-022-BA1	Bathroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-CR106	A-0028S-033115-IA-003-CR106	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-CR119	A-0028S-033115-IA-012-CR119	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-CR122	A-0028S-033115-IA-011-CR122	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-CR124	A-0028S-033115-IA-010-CR124	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-CR128	A-0028S-033115-IA-009-CR128	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-CR133	A-0028S-033115-IA-008-CR133	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-CR137	A-0028S-033115-IA-007-CR137	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-CR139	A-0028S-033115-IA-006-CR139	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-CR227	A-0028S-033115-IA-025-CR227	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-CR228	A-0028S-033115-IA-023-CR228	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-CR232	A-0028S-033115-IA-027-CR232	Classroom	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-HAL	A-0028S-033115-IA-001-HAL	Hallway	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-OUT	A-0028S-033115-IA-016-OUT	Outdoor	HAPSITE	Outdoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-RM102	A-0028S-033115-IA-005-RM102	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-RM104	A-0028S-033115-IA-004-RM104	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-RM113	A-0028S-033115-IA-014-RM113	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-RM116	A-0028S-033115-IA-013-RM116	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-RM118	A-0028S-033115-IA-015-RM118	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-RM119A	A-0028S-033115-IA-002-RM119A	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-RM201	A-0028S-033115-IA-017-RM201	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-RM203	A-0028S-033115-IA-018-RM203	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-RM210	A-0028S-033115-IA-019-RM210	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-RM213	A-0028S-033115-IA-020-RM213	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-RM217	A-0028S-033115-IA-021-RM217	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-RM218	A-0028S-033115-IA-028-RM218	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0028S-IA-RM224	A-0028S-033115-IA-024-RM224	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0028S-IA-RM230	A-0028S-033115-IA-026-RM230	Room	HAPSITE	Indoor Air	3/31/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029A-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								**120**	**6.3**	**NA**	**17**	**56**
0028-S	0028S-IA-RM118	A-0028S-040115-IA-029B-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029C-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029D-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029E-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029F-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029G-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029H-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029I-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029J-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029K-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-029L-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Negative Pressure	0.1 U	0.1 NR	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-030A-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-030B-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-030C-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-IA-RM118	A-0028S-040115-IA-030D-RM118	Room	HAPSITE	Indoor Air	4/1/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0028S-TO	A-0028-S-040215-TO-001	Not available	SUMMA	Indoor Air	4/2/2015	No Pressure	3.4 R	2.7 R	2 R	1.3 R	NS
0029-H	0029H-A-OCL	A-0029H-031115-A-002-OCL	Open Room	HAPSITE	Indoor Air	3/11/2015	No Pressure	**2.0**	0.1 U	0.1 U	NS	NS
	0029H-IA-BA1	A-0029H-031115-IA-009-BA1	Bathroom	HAPSITE	Indoor Air	3/11/2015	No Pressure	**1.7**	0.1 U	0.1 U	NS	NS
	0029H-IA-BA2	A-0029H-031115-IA-013-BA2	Basement Bathroom	HAPSITE	Indoor Air	3/11/2015	No Pressure	**1.6**	0.1 U	0.1 U	NS	NS
	0029H-IA-BR1	A-0029H-031115-IA-005-BR1	Bedroom	HAPSITE	Indoor Air	3/11/2015	No Pressure	**0.96**	0.1 U	0.1 U	NS	NS
	0029H-IA-BR2	A-0029H-031115-IA-006-BR2	Bedroom	HAPSITE	Indoor Air	3/11/2015	No Pressure	**2.0**	0.1 U	0.1 NR	NS	NS
	0029H-IA-BR3	A-0029H-031115-IA-007-BR3	Bedroom	HAPSITE	Indoor Air	3/11/2015	No Pressure	**1.9**	0.1 U	0.1 NR	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-010-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	No Pressure	**1.9**	0.1 U	0.1 U	NS	NS
	0029H-IA-FUR	A-0029H-031115-IA-012-FUR	Furnace Room	HAPSITE	Indoor Air	3/11/2015	No Pressure	**2.0**	0.1 U	0.1 U	NS	NS
	0029H-IA-KIT	A-0029H-031115-IA-004-KIT	Kitchen	HAPSITE	Indoor Air	3/11/2015	No Pressure	**2.2**	0.1 U	**0.40**	NS	NS
	0029H-IA-LAU	A-0029H-031115-IA-011-LAU	Laundry Room	HAPSITE	Indoor Air	3/11/2015	No Pressure	**0.83**	0.1 U	0.1 U	NS	NS
	0029H-IA-MBR	A-0029H-031115-IA-008-MBR	Bedroom	HAPSITE	Indoor Air	3/11/2015	No Pressure	**1.9**	0.1 U	0.1 U	NS	NS
	0029H-IA-OFC	A-0029H-031115-IA-003-OFC	Office	HAPSITE	Indoor Air	3/11/2015	No Pressure	**1.9**	0.1 NR	0.1 U	NS	NS
	0029H-IA-OUT	A-0029H-031115-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	3/11/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-014B-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Negative Pressure	**0.68**	0.1 U	0.1 U	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-014C-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-014D-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-014E-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-015A-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-015B-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-015C-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-015D-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0029H-IA-FAM	A-0029H-031115-IA-015E-FAM	Basement Family Room	HAPSITE	Indoor Air	3/11/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0029H-IA-LIV1	A-0029H-033017-IA-002-LIV1	Living Room	HAPSITE	Indoor Air	3/30/2017	No Pressure	**5.3**	0.5 U	0.4 U	NS	NS
	0029H-OA-OUT1	A-0029H-033017-OA-003-OUT1	Outdoor (south side)	HAPSITE	Outdoor Air	3/30/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0029H-IA-BAS1	A-0029H-033017-IA-004-BAS1	Basement	HAPSITE	Indoor Air	3/30/2017	No Pressure	**1.2**	0.5 U	0.4 U	NS	NS
	0029H-IA-LAN1	A-0029H-033017-IA-005-LAN1	Landing	HAPSITE	Indoor Air	3/30/2017	No Pressure	**6.6**	0.5 U	0.4 U	NS	NS
	0029H-TO-BAS	A-0029H-033117-TO-001-BAS	Basement	SUMMA	Indoor Air	3/31/2017	No Pressure	**2.0**	0.27 U	0.2 U	0.13 U	0.18 U
	0029H	0029H-IA01SC-031822	Basement Living Room	SUMMA	Indoor Air	3/18/2022	No Pressure	**0.6**	**0.037 J**	0.13 U	0.081 U	**0.28 J**
0030-H	0030H-IA-BA1	A-0030H-031715-IA-004-BA1	Bathroom	HAPSITE	Indoor Air	3/17/2015	No Pressure	**3.5**	0.1 U	0.1 NR	NS	NS
	0030H-IA-BR1	A-0030H-031715-IA-005-BR1	Bedroom	HAPSITE	Indoor Air	3/17/2015	No Pressure	**3.0**	0.1 U	0.1 NR	NS	NS
	0030H-IA-CRA	A-0030H-031715-IA-011-CRA	Basement Crawl Space	HAPSITE	Indoor Air	3/17/2015	No Pressure	**5.0**	0.1 U	0.1 NR	NS	NS
	0030H-IA-FAM	A-0030H-031715-IA-006-FAM	Family Room	HAPSITE	Indoor Air	3/17/2015	No Pressure	**2.7**	0.1 U	0.1 NR	NS	NS
	0030H-IA-KIT	A-0030H-031715-IA-003-KIT	Kitchen	HAPSITE	Indoor Air	3/17/2015	No Pressure	**2.7**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-009-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	No Pressure	**8.0**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LIV	A-0030H-031715-IA-002-LIV	Living Room	HAPSITE	Indoor Air	3/17/2015	No Pressure	**2.7**	0.1 U	0.1 NR	NS	NS
	0030H-IA-MBR	A-0030H-031715-IA-008-MBR	Bedroom	HAPSITE	Indoor Air	3/17/2015	No Pressure	**3.2**	0.1 U	0.1 NR	NS	NS
	0030H-IA-OFC	A-0030H-031715-IA-007-OFC	Office	HAPSITE	Indoor Air	3/17/2015	No Pressure	**3.0**	0.1 U	0.1 NR	NS	NS
	0030H-IA-OUT	A-0030H-031715-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	3/17/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0030H-IA-STO	A-0030H-031715-IA-010-STO	Basement Storage	HAPSITE	Indoor Air	3/17/2015	No Pressure	**5.7**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**6.8**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**5.4**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**4.6**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**3.3**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**2.3**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**1.8**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012G-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**1.2**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012H-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**1.0**	0.1 NR	0.1 U	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-012I-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Negative Pressure	**0.77**	0.1 U	0.1 U	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-013A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Positive Pressure	**1.1**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-013B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Positive Pressure	**1.1**	0.1 U	0.1 NR	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-013C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Positive Pressure	**1.0**	0.1 U	0.1 U	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-013D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Positive Pressure	**0.94**	0.1 U	0.1 U	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-013E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Positive Pressure	**0.79**	0.1 U	0.1 U	NS	NS
	0030H-IA-LAU	A-0030H-031715-IA-013F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2015	Positive Pressure	**0.82**	0.1 U	0.1 NR	NS	NS
	0030H-TO-BAS	A-0030H-041115-TO-001-BAS	Basement	SUMMA	Indoor Air	4/11/2015	No Pressure	**5.9**	2.7 U	2 U	1.3 U	NS
	0030H-TO-OUT	A-0030H-041115-TO-002-OUT	Outdoor	SUMMA	Outdoor Air	4/11/2015	No Pressure	3.4 U	2.7 U	2 U	1.3 U	NS
0032-H	0032H-IA-BA1	A-0032H-031215-IA-006-BA1	Bathroom	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-BA2	A-0032H-031215-IA-008-BA2	Basement Bathroom	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-BR1	A-0032H-031215-IA-004-BR1	Bedroom	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-BR2	A-0032H-031215-IA-010-BR2	Basement Bedroom	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0032H-IA-FAM	A-0032H-031215-IA-009-FAM	Basement Family Room	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0032H-IA-KIT	A-0032H-031215-IA-003-KIT	Kitchen	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-007-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-MBR	A-0032H-031215-IA-005-MBR	Bedroom	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-OCL	A-0032H-031215-IA-002-OCL	Open Room	HAPSITE	Indoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-OUT	A-0032H-031215-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	3/12/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011G-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-011H-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-012A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-012B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-012C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-012D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-012E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0032H-IA-LAU	A-0032H-031215-IA-012F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	3/12/2015	Positive Pressure	0.1 U	0.1 NR	0.1 U	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								**120**	**6.3**	**NA**	**17**	**56**
0033-H	0033H-IA-BA1	A-0033H-040815-IA-004-BA1	Bathroom	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.1**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-BA2	A-0033H-040815-IA-006-BA2	Bathroom	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.3**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-BA3	A-0033H-040815-IA-010-BA3	Basement Bathroom	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.6**	*0.1 U*	**0.52**	NS	NS
	0033H-IA-BR1	A-0033H-040815-IA-008-BR1	Bedroom	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.2**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-BR2	A-0033H-040815-IA-009-BR2	Bedroom	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.2**	*0.1 U*	**0.54**	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-011-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	No Pressure	**5.2**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-GAR	A-0033H-040815-IA-014-GAR	Garage	HAPSITE	Indoor Air	4/8/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0033H-IA-KIT	A-0033H-040815-IA-003-KIT	Kitchen	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.5**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-LAU	A-0033H-040815-IA-012-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/8/2015	No Pressure	**5.0**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-MBR	A-0033H-040815-IA-007-MBR	Bedroom	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.7**	*0.1 NR*	*0.1 NR*	NS	NS
	0033H-IA-OCL	A-0033H-040815-IA-002-OCL	Open Room	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.4**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-OFC	A-0033H-040815-IA-013-OFC	Basement Office	HAPSITE	Indoor Air	4/8/2015	No Pressure	**2.3**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-OUT	A-0033H-040815-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	4/8/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0033H-IA-PLA	A-0033H-040815-IA-005-PLA	Play Room	HAPSITE	Indoor Air	4/8/2015	No Pressure	**1.4**	*0.1 U*	**0.50**	NS	NS
	0033H-IA-STO	A-0033H-040815-IA-015-STO	Storage	HAPSITE	Indoor Air	4/8/2015	No Pressure	*0.1 U*	*0.1 NR*	*0.1 U*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-016A-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Negative Pressure	**2.3**	*0.1 U*	*0.1 U*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-016B-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Negative Pressure	**1.8**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-016C-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Negative Pressure	**1.7**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-016D-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Negative Pressure	**1.7**	*0.1 NR*	*0.1 NR*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-016E-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Negative Pressure	**1.8**	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-017A-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Positive Pressure	**0.87**	*0.1 U*	*0.1 U*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-017B-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-017C-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-017D-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 NR*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-017E-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0033H-IA-CRA	A-0033H-040815-IA-017F-CRA	Crawl Space	HAPSITE	Indoor Air	4/8/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
0036-H	0036H-TO-BAS	A-0036H-040415-TO-001-BAS	Basement	SUMMA	Indoor Air	4/2/2015	No Pressure	**3.6**	*2.7 U*	*2 U*	*1.3 U*	NS
	0036H-IA-BA1	A-0036H-040315-IA-003-BA1	Bathroom	HAPSITE	Indoor Air	4/3/2015	No Pressure	**0.91**	*0.1 U*	*0.1 NR*	NS	NS
	0036H-IA-BR1	A-0036H-040315-IA-004-BR1	Bedroom	HAPSITE	Indoor Air	4/3/2015	No Pressure	**0.93**	*0.1 U*	**0.40**	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-008-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	No Pressure	**1.58**	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-MBR	A-0036H-040315-IA-005-MBR	Bedroom	HAPSITE	Indoor Air	4/3/2015	No Pressure	**1.0**	*0.1 U*	*0.1 NR*	NS	NS
	0036H-IA-OCL	A-0036H-040315-IA-002-OCL	Open Room	HAPSITE	Indoor Air	4/3/2015	No Pressure	**0.78**	*0.1 U*	**0.46**	NS	NS
	0036H-IA-OUT	A-0036H-040315-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	4/3/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-STO	A-0036H-040315-IA-007-STO	Storage	HAPSITE	Indoor Air	4/3/2015	No Pressure	**3.0**	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-009A-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Negative Pressure	**1.4**	*0.1 NR*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-009B-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Negative Pressure	**2.1**	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-009C-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Negative Pressure	**1.9**	*0.1 U*	*0.1 NR*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-009D-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Negative Pressure	**1.7**	*0.1 NR*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-009E-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Negative Pressure	**1.5**	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-009F-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Negative Pressure	**2.1**	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036G-040315-IA-009G-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Negative Pressure	**2.1**	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-010A-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Positive Pressure	**2.0**	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-010B-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-010C-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-010D-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-010E-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-010F-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0036H-IA-FUR	A-0036H-040315-IA-010G-FUR	Furnace Room	HAPSITE	Indoor Air	4/3/2015	Positive Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
0037-H	0037H-IA-BA1	A-0037H-040215-IA-004-BA1	Bathroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-BA2	A-0037H-040215-IA-009-BA2	Bathroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**6.5**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-BA3	A-0037H-040215-IA-011-BA3	Basement Bathroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**3.8**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-BR1	A-0037H-040215-IA-005-BR1	Bedroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**2.3**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-BR2	A-0037H-040215-IA-006-BR2	Bedroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**6.1**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-BR2	A-0037H-040215-IA-022-BR2A	Bedroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**0.71**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-BR3	A-0037H-040215-IA-012-BR3	Basement Bedroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**3.4**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-CLO1	A-0037H-040215-IA-008-CLO1	Closet	HAPSITE	Indoor Air	4/2/2015	No Pressure	**1.3**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-CLO2	A-0037H-040215-IA-010-CLO2	Closet	HAPSITE	Indoor Air	4/2/2015	No Pressure	**4.2**	*0.1 U*	**0.42**	NS	NS
	0037H-IA-CLO3	A-0037H-040215-IA-013-CLO3	Basement Closet	HAPSITE	Indoor Air	4/2/2015	No Pressure	**3.7**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-FUR1	A-0037H-040215-IA-017-FUR1	Furnace Room	HAPSITE	Indoor Air	4/2/2015	No Pressure	**6.4**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-FUR2	A-0037H-040215-IA-018-FUR2	Furnace Room	HAPSITE	Indoor Air	4/2/2015	No Pressure	**2.9**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-FUR3	A-0037H-040215-IA-019-FUR3	Furnace Room	HAPSITE	Indoor Air	4/2/2015	No Pressure	**88**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-KIT	A-0037H-040215-IA-003-KIT	Kitchen	HAPSITE	Indoor Air	4/2/2015	No Pressure	**1.2**	*0.1 NR*	*0.1 NR*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-015-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	No Pressure	**1.9**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LIV	A-0037H-040215-IA-002-LIV	Living Room	HAPSITE	Indoor Air	4/2/2015	No Pressure	**0.83**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-MBR	A-0037H-040215-IA-007-MBR	Bedroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**4.6**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-OUT	A-0037H-040215-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	4/2/2015	No Pressure	*0.1 U*	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-PLA	A-0037H-040215-IA-016-PLA	Basement Playroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**3.0**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-STO	A-0037H-040215-IA-014-STO	Storage	HAPSITE	Indoor Air	4/2/2015	No Pressure	**2.7**	*0.1 U*	*0.1 U*	NS	NS
	0037H-I-MBR	A-0037H-040215-IA-023-MBRA	Bedroom	HAPSITE	Indoor Air	4/2/2015	No Pressure	**0.83**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-020A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Negative Pressure	**14**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-020B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Negative Pressure	**12**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-020C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Negative Pressure	**14**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-020D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Negative Pressure	**14**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-020E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Negative Pressure	**4.5**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-020F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Negative Pressure	**15**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-020G-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Negative Pressure	**13**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-021A-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Positive Pressure	**2.6**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-021B-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Positive Pressure	**1.9**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-021C-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Positive Pressure	**1.4**	*0.1 U*	*0.1 NR*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-021D-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Positive Pressure	**1.0**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-021E-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Positive Pressure	**0.87**	*0.1 U*	*0.1 U*	NS	NS
	0037H-IA-LAU	A-0037H-040215-IA-021F-LAU	Basement Laundry Room	HAPSITE	Indoor Air	4/2/2015	Positive Pressure	**0.75**	*0.1 U*	*0.1 U*	NS	NS
	0037H-TO-BAS	A0037H-040715-TO-003-BAS	Basement	SUMMA	Indoor Air	4/7/2015	No Pressure	*4.4 R*	*2.7 R*	*2 R*	*1.3 R*	NS
	0037H-TO-BR2	A0037H-040715-TO-002-BR2	Bedroom	SUMMA	Indoor Air	4/7/2015	No Pressure	*6.4 R*	*2.7 R*	*2 R*	*1.3 R*	NS
	0037H-TO-LAU	A0037H-040715-TO-001-LAU	Laundry	SUMMA	Indoor Air	4/7/2015	No Pressure	*3.1 R*	*2.7 R*	*2 R*	*1.3 R*	NS
	0037H-IA-LAU	A-0037H-030816-IA-LAU	Basement Laundry Room	SUMMA	Indoor Air	3/8/2016	No Pressure	**4.0**	*0.27 U*	*0.2 U*	*0.13 U*	**0.18**
	0037H	0037-H-IA01HS	Basement Bedroom	HAPSITE	Indoor Air	12/16/2019	No Pressure	**2.7**	*0.1 U*	*0.1 U*	NS	NS
	0037H	0037-H-IA02HS	Basement	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3.4**	*0.1 U*	*0.1 U*	NS	NS
	0037H	0037-H-IA03HS	Basement Utility Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3.1**	*0.1 U*	*0.1 U*	NS	NS
	0037H	0037-H-IA04HS	Living Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3.3**	*0.1 U*	*0.1 U*	NS	NS
	0037H	0037H-IA01PS-010820	Basement Bedroom	PASSIVE	Indoor Air	1/8/2020	No Pressure	**7.1**	**0.083**	NS	NS	NS
	0037H	0037H-IA02PS-010820	Basement	PASSIVE	Indoor Air	1/8/2020	No Pressure	**8.7**	**0.091**	NS	NS	NS
	0037H	0037H-IA03SC-010820	Basement Utility Room	SUMMA	Indoor Air	1/8/2020	No Pressure	**7.9**	*0.25 U*	*0.18 U*	*0.12 U*	*0.83 U*
	0037H	0037H-IA02SC-010820	Basement	SUMMA	Indoor Air	1/8/2020	No Pressure	**8.2**	*0.23 U*	*0.17 U*	*0.11 U*	*0.78 U*
	0037H	0037H-IA01SC-010820	Basement Bedroom	SUMMA	Indoor Air	1/8/2020	No Pressure	**8.2**	*0.23 U*	*0.17 U*	*0.11 U*	*0.78 U*
	0037H	0037H-IA03PS-010820	Basement Utility Room	PASSIVE	Indoor Air	1/8/2020	No Pressure	**6.7**	**0.081**	NS	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE μg/m³ Q	TCE μg/m³ Q	cis-1,2-DCE μg/m³ Q	VC μg/m³ Q	1,4-Dioxane μg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (μg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (μg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (μg/m³)[3]								120	6.3	NA	17	56
0037-H	0037H	0037H-IA04SC-010820	Living Room	SUMMA	Indoor Air	1/8/2020	No Pressure	6.9	0.25 U	0.19 U	0.12 U	0.85 U
	0037H	0037H-AA01SC-010820	Outdoor	SUMMA	Outdoor Air	1/8/2020	No Pressure	0.53	0.15 J	0.16 U	0.1 U	0.74 U
	0037H	0037H-IA04PS-010820	Living Room	PASSIVE	Indoor Air	1/8/2020	No Pressure	6.9	0.1	NS	NS	NS
	0037H	0037H-IA02SC-082721	Basement	SUMMA	Indoor Air	8/27/2021	No Pressure	4.2	0.17 U	0.12 U	0.08 U	1.7 J
0038-H	0038H-IA-BA1	A-0038H-040915-IA-005-BA1	Bathroom	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-BA2	A-0038H-040915-IA-007-BA2	Basement Bathroom	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-BR1	A-0038H-040915-IA-004-BR1	Bedroom	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-BR2	A-0038H-040915-IA-006-BR2	Bedroom	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-DRF	A-0038H-040915-IA-003-DRF	Dining Room	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-009-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FUR	A-0038H-040915-IA-011-FUR	Furnace Room	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-LAU	A-0038H-040915-IA-008-LAU	Laundry Room	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-MBR	A-0038H-040915-IA-010-MBR	Basement Bedroom	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-OCL	A-0038H-040915-IA-002-OCL	Open Room	HAPSITE	Indoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-OUT	A-0038H-040915-IA-001-OUT	Outdoor	HAPSITE	Outdoor Air	4/9/2015	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-012A-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-012B-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-012C-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-012D-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-012E-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Negative Pressure	0.1 U	0.1 NR	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-012F-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-012G-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Negative Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-013A-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-013B-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-013C-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-013D-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-013E-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-013F-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 NR	NS	NS
	0038H-IA-FAM	A-0038H-040915-IA-013G-FAM	Basement Family Room	HAPSITE	Indoor Air	4/9/2015	Positive Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0038H-IA-LIV1	A-0038H-041017-IA-002-LIV1	Living Room	HAPSITE	Indoor Air	4/10/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0038H-IA-BAS1	A-0038H-041017-IA-003-BAS1	Basement Living Room	HAPSITE	Indoor Air	4/10/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0038H-TO-BAS	A-0038H-041117-TO-001-BAS	Basement Living Room	SUMMA	Indoor Air	4/11/2017	No Pressure	0.34 U	0.27 U	0.2 U	0.13 U	0.18 U
0040-H	0040H-OA-OA1	0040H-OA-OA1-20160310-BL-004	Outdoor (west side)	HAPSITE	Outdoor Air	3/10/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-BL-005	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	No Pressure	32	2.1	0.52	NS	NS
	0040H-IA-MR1	0040H-IA-MR1-20160310-BL-006	Living Room	HAPSITE	Indoor Air	3/10/2016	No Pressure	43	2.8	0.75	NS	NS
	0040H-IA-UBED	0040H-IA-UBED-20160310-BL-007	Bedroom	HAPSITE	Indoor Air	3/10/2016	No Pressure	39	2.6	0.67	NS	NS
	0040H-IA-MEC	0040H-IA-MEC-20160310-BL-009	Mechanical Room	HAPSITE	Indoor Air	3/10/2016	No Pressure	23	1.5	0.39	NS	NS
	0040H-IA-MR2	0040H-IA-MR2-20160310-BL-008	Dining Room	HAPSITE	Indoor Air	3/10/2016	No Pressure	20	1.3	0.55	NS	NS
	0040H-IA-GAR	0040H-IA-GAR-20160310-BL-011	Garage	HAPSITE	Indoor Air	3/10/2016	No Pressure	7.6	0.5 U	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-BL-012	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	No Pressure	52	3	0.55	NS	NS
	0040H-IA-MR1	0040H-IA-MR1-20160310-BL-013	Living Room	HAPSITE	Indoor Air	3/10/2016	No Pressure	35	2	0.48	NS	NS
	0040H-IA-BBBED	0040H-IA-BBED-20160310-BL-014	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	No Pressure	28	1.7	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-N5-015	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	30	1.5	0.4 U	NS	NS
	0040H-IA-HAL	0040H-IA-HAL-20160310-N5-016	Hallway	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	28	0.9	0.4 U	NS	NS
	0040H-IA-STA	0040H-IA-STA-20160310-N5-017	Stairwell	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	19	0.8	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-N5-018	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	41	2.2	0.4 U	NS	NS
	0040H-IA-HALL	0040H-IA-HALL-20160310-N5-019	Hallway	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	15	0.6	0.4 U	NS	NS
	0040H-IA-STA	0040H-IA-STA-20160310-N5-020	Stairwell	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	11	0.5 U	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-N5-021	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	32	1.7	0.4 U	NS	NS
	0040H-IA-HALL	0040H-IA-HALL-20160310-N5-022	Hallway	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	16	0.7	0.4 U	NS	NS
	0040H-IA-STA	0040H-IA-STA-20160310-N5-023	Stairwell	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	7.6	0.5 U	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-N10-024	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	25	1.4	0.4 U	NS	NS
	0040H-IA-HALL	0040H-IA-HALL-20160310-N10-025	Hallway	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	21	0.9	0.4 U	NS	NS
	0040H-IA-STA	0040H-IA-STA-20160310-N10-026	Stairwell	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	4.3	0.5 U	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-N10-027	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	26	1.5	0.4 U	NS	NS
	0040H-IA-HALL	0040H-IA-HALL-20160310-N10-028	Hallway	HAPSITE	Indoor Air	3/10/2016	Negative Pressure	12	0.5 U	0.4 U	NS	NS
	0040H-IA-SUM	0040H-IA-SUM-20160310-BL-029	Laundry (sump) Room	HAPSITE	Indoor Air	3/10/2016	No Pressure	153	13	0.52	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-P5-030	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	2.6	0.5 U	0.4 U	NS	NS
	0040H-IA-HALL	0040H-IA-HALL-20160310-P5-031	Hallway	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	1.1	0.5 U	0.4 U	NS	NS
	0040H-IA-STA	0040H-IA-STA-20160310-P5-032	Stairwell	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	1.1	0.5 U	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-P5-033	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	1.1	0.5 U	0.4 U	NS	NS
	0040H-IA-HALL	0040H-IA-HALL-20160310-P5-034	Hallway	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	0.8	0.5 U	0.4 U	NS	NS
	0040H-IA-STA	0040H-IA-STA-20160310-P5-035	Stairwell	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	0.8	0.5 U	0.4 U	NS	NS
	0040H-IA-BBED	0040H-IA-BBED-20160310-P5-036	Basement Bedroom	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0040H-IA-HALL	0040H-IA-HALL-20160310-P5-037	Hallway	HAPSITE	Indoor Air	3/10/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0040H-OA-OA1	0040H-OA-OA1-20160310-BL-038	Outdoor (west side)	HAPSITE	Outdoor Air	3/10/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0040H-IA-BAS	A-0040H-031216-IA-BAS	Basement Bedroom	SUMMA	Indoor Air	3/12/2016	No Pressure	74 J	5.2	0.55	0.13 U	0.18 U
	0040H-IA-KIT	A-0040H-031216-IA-KIT	Kitchen	SUMMA	Indoor Air	3/12/2016	No Pressure	59 J	4.3	0.39	0.13 U	0.18 U
	0040H	0040H-IA01SC-031522	Laundry Room	SUMMA	Indoor Air	3/15/2022	No Pressure	59.7	2.08	0.484 J	0.0511 U	0.721 U
	0040H	0040H-IA02SC-031522	Basement Bedroom	SUMMA	Indoor Air	3/15/2022	No Pressure	88.9	2.87	0.69 J	0.0511 U	0.721 U
0041-H	0041H-IA-OA1	0041H-IA-OA1-20160308-BL-001	Outdoor	HAPSITE	Outdoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0041H-IA-LIV	0041H-IA-LIV-20160308-BL-002	Living Room	HAPSITE	Indoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.95	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-BL-003	Hallway	HAPSITE	Indoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.75	NS	NS
	0041H-IA-BAS	0041H-IA-BAS-20160308-BL-004	Basement	HAPSITE	Indoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.59	NS	NS
	0041H-IA-UBED	0041H-IA-UBED-20160308-BL-005	Bedroom	HAPSITE	Indoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.87	NS	NS
	0041H-IA-KBED	0041H-IA-KBED-20160308-BL-007	Bedroom	HAPSITE	Indoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.87	NS	NS
	0041H-IA-KIT	0041H-IA-KIT-20160308-BL-008	Kitchen	HAPSITE	Indoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.75	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-N5-009	Hallway	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	0.7 U	0.5 U	0.52	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-N5-010	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	2.3	0.5 U	0.4 U	NS	NS
	0041H-IA-STA	0041H-IA-STA-20160308-N5-011	Stairwell	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	0.7 U	0.5 U	0.71	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-N5-012	Hallway	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	1.8	0.5 U	0.4 U	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-N5-013	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	1.5	0.5 U	0.4 U	NS	NS
	0041H-IA-STA	0041H-IA-STA-20160308-N5-014	Stairwell	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	0.7 U	0.5 U	0.52	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-N5-015	Hallway	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	1.7	0.5 U	0.4 U	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-N5-016	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	2.4	0.5 U	0.4 U	NS	NS
	0041H-IA-STA	0041H-IA-STA-20160308-N5-017	Stairwell	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	0.7 U	0.5 U	0.67	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-N5-018	Hallway	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	2.6	0.5 U	0.4 U	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-N5-019	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	2.6	0.5 U	0.4 U	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-N10-020	Hallway	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	2	0.5 U	0.4 U	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-N10-021	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	4.6	0.5 U	0.4 U	NS	NS
	0041H-IA-STA	0041H-IA-STA-20160308-N10-022	Stairwell	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	0.7 U	0.5 U	0.48	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-N10-023	Hallway	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	1.9	0.5 U	0.4 U	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-N10-025	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	3.7	0.5 U	0.4 U	NS	NS
	0041H-IA-STA	0041H-IA-STA-20160308-N10-026	Stairwell	HAPSITE	Indoor Air	3/8/2016	Negative Pressure	0.7 U	0.5 U	0.4	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-P5-028	Hallway	HAPSITE	Indoor Air	3/8/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-P5-029	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								**120**	**6.3**	**NA**	**17**	**56**
0041-H	0041H-IA-STA	0041H-IA-STA-20160308-P5-033	Stairwell	HAPSITE	Indoor Air	3/8/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0041H-IA-HAL	0041H-IA-HAL-20160308-P5-034	Hallway	HAPSITE	Indoor Air	3/8/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0041H-IA-LAU	0041H-IA-LAU-20160308-P5-035	Laundry Room	HAPSITE	Indoor Air	3/8/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0041H-IA-STA	0041H-IA-STA-20160308-P5-036	Stairwell	HAPSITE	Indoor Air	3/8/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0041H	0041H-IA01SC-031222	Basement Storage	SUMMA	Indoor Air	3/12/2022	No Pressure	**0.18 J**	0.16 U	0.12 U	0.079 U	0.55 U
	0041H-OA-OA1	0041H-OA-OA1-20160308-BL-037	Outdoor (north side)	HAPSITE	Outdoor Air	3/8/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
0045-S	0045S-OA-OA1	0045S-OA-OA1-20160304-BL-003	Outdoor (west side)	HAPSITE	Outdoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CAF-A	0045S-IA-CAF-A-20160304-BL-004	Classroom	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-A404-A	0045S-IA-A404-A-20160304-BL-005	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-A315-A	0045S-IA-A315-A-20160304-BL-006	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-A322-A	0045S-IA-A322-A-20160304-BL-007	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-A312-A	0045S-IA-A312-A-20160304-BL-008	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-A204-A	0045S-IA-A204-A-20160304-BL-009	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-A219-A	0045S-IA-A219-A-20160304-BL-010	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-HTHE-A	0045S-IA-HTHE-A-20160304-BL-011	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-THEA-A	0045S-IA-THEA-A-20160304-BL-012	Theatre	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-AUTO-A	0045S-IA-AUTO-A-20160304-BL-013	Autoshop	HAPSITE	Indoor Air	3/4/2016	No Pressure	**0.8**	0.5 U	0.4 U	NS	NS
	0045S-IA-CHEM-A	0045S-IA-CHEM-A-20160304-BL-014	Chemical Storage	HAPSITE	Indoor Air	3/4/2016	No Pressure	**40**	0.5 U	0.4 U	NS	NS
	0045S-IA-AUDI-B	0045S-IA-AUDI-B-20160304-BL-017	Auditorium	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-B215-B	0045S-IA-B215-B-20160304-BL-029	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-B208-B	0045S-IA-B208-B-20160304-BL-030	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-MENT-B	0045S-IA-MENT-B-20160304-BL-033	Hallway Entrance	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-B325-B	0045S-IA-B325-B-20160304-BL-034	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-LGYM-B	0045S-IA-LGYM-B-20160304-BL-035	Gym	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-D210-D	0045S-IA-D210-D-20160304-BL-036	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-D202-D	0045S-IA-D202-D-20160304-BL-037	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-D305-D	0045S-IA-D305-D-20160304-BL-038	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-D311-D	0045S-IA-D311-D-20160304-BL-039	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-C406-C	0045S-IA-C406-C-20160304-BL-040	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-C317-C	0045S-IA-C317-C-20160304-BL-041	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-C305-C	0045S-IA-C305-C-20160304-BL-042	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-OA-OA2	0045S-OA-OA2-20160304-BL-045	Outdoor (outside of autoshop)	HAPSITE	Outdoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-AUTO-A	0045S-IA-AUTO-A-20160304-BL-046	Autoshop	HAPSITE	Indoor Air	3/4/2016	No Pressure	**1.4**	0.5 U	0.4 U	NS	NS
	0045S-IA-B215-B	0045S-IA-B215-B-20160304-BL-047	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-C216-C	0045S-IA-C216-C-20160304-BL-048	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-C213-C	0045S-IA-C213-C-20160304-BL-049	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-C107-C	0045S-IA-C107-C-20160304-BL-050	Hallway	HAPSITE	Indoor Air	3/4/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-BL-003	Classroom	HAPSITE	Indoor Air	3/21/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-OA-OA1	0045S-OA-OA1-20160321-BL-004	Outdoor (west side)	HAPSITE	Outdoor Air	3/21/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-FLOB	0045S-IA-FLOB-20160321-BL-005	Lobby	HAPSITE	Indoor Air	3/21/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SHAL	0045S-IA-SHAL-20160321-BL-006	Hallway	HAPSITE	Indoor Air	3/21/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SA203	0045S-IA-SA203-20160321-N5-007	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-N5-008	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N5-009	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SA203	0045S-IA-SA203-20160321-N5-010	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-N5-011	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N5-012	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SA203	0045S-IA-SA203-20160321-N5-013	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-N5-014	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N5-015	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SA203	0045S-IA-SA203-20160321-N10-016	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-N10-017	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N10-018	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SA203	0045S-IA-SA203-20160321-N10-019	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-N10-020	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N10-021	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SA203	0045S-IA-SA203-20160321-P5-022	Classroom	HAPSITE	Indoor Air	3/21/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-P5-023	Classroom	HAPSITE	Indoor Air	3/21/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-P5-024	Blower Door	HAPSITE	Indoor Air	3/21/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-SA203	0045S-IA-SA203-20160321-P5-025	Classroom	HAPSITE	Indoor Air	3/21/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA203	0045S-IA-CA203-20160321-P5-026	Classroom	HAPSITE	Indoor Air	3/21/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-P5-027	Blower Door	HAPSITE	Indoor Air	3/21/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-A215	0045S-IA-A215-20160321-028	Hallway	HAPSITE	Indoor Air	3/21/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA213	0045S-IA-CA213-20160321-BL-029	Classroom	HAPSITE	Indoor Air	3/21/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-HA215	0045S-IA-HA215-20160321-BL-030	Hallway	HAPSITE	Indoor Air	3/21/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N5-031	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA213	0045S-IA-CA213-20160321-N5-032	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N5-033	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA213	0045S-IA-CA213-20160321-N5-034	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N10-035	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA213	0045S-IA-CA213-20160321-N10-036	Classroom	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO	0045S-IA-BLO-20160321-N10-037	Blower Door	HAPSITE	Indoor Air	3/21/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-OA-OA1	0045S-OA-OA1-20160322-NA-002	Outdoor (west side)	HAPSITE	Outdoor Air	3/22/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-MLOB	0045S-IA-MLOB-20160322-BL-003	Lobby	HAPSITE	Indoor Air	3/22/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA215	0045S-IA-CA215-20160322-BL-004	Classroom	HAPSITE	Indoor Air	3/22/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-CA219	0045S-IA-CA219-20160322-BL-005	Classroom	HAPSITE	Indoor Air	3/22/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-HAL	0045S-IA-HAL-20160322-BL-006	Hallway	HAPSITE	Indoor Air	3/22/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N10-007	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N10-008	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**1.8**	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-N10-009	Blower Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N10-010	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N10-011	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**2.2**	0.5 U	0.4 U	NS	NS
	0045S-IA-STOR	0045S-IA-STOR-20160322-N10-014	Storage	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**1.8**	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-N10-015	Blower Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.79**	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N10-016	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.69**	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N10-017	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**2.3**	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-N10-018	Blower Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.76**	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N10-019	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.83**	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N10-020	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**2.1**	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-N10-021	Blower Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.83**	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N15-022	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**1.5**	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N15-023	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-N15-024	Blower Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N15-025	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.69**	0.5 U	0.4 U	NS	NS
	0045S-IA-UA219	0045S-IA-UA219-20160322-N15-026	Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N15-027	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120	6.3	NA	17	56
0045-S	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-N15-028	Blower Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N15-029	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.69**	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N15-030	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.76**	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-N15-031	Blower Door	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.76**	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-N15-032	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.83**	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-N15-033	Classroom	HAPSITE	Indoor Air	3/22/2016	Negative Pressure	**0.69**	0.5 U	0.4 U	NS	NS
	0045S-IA-WA215	0045S-IA-WA215-20160322-P5-034	Classroom	HAPSITE	Indoor Air	3/22/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-BLO-A215	0045S-IA-BLO-20160322-P5-035	Blower Door	HAPSITE	Indoor Air	3/22/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-EA215	0045S-IA-EA215-20160322-P5-038	Classroom	HAPSITE	Indoor Air	3/22/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-HEXIT	0045S-IA-HEXIT-20160322-BL-039	Hallway	HAPSITE	Indoor Air	3/22/2016	No Pressure	0.7 U	**1.3**	0.4 U	NS	NS
	0045S-IA-TSTOR	0045S-IA-TSTOR-20160322-BL-040	Theatre	HAPSITE	Indoor Air	3/22/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S-IA-RB211	0045S-IA-RB211-20160322- BL-041	Classroom	HAPSITE	Indoor Air	3/22/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0045S	0045S-IAC1HS-120419	Chemical Storage Cabinet	HAPSITE	Indoor Air	12/4/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAC2HS-120419	Chemistry Laboratory Classroom	HAPSITE	Indoor Air	12/4/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAB1HS-120419	Elevator	HAPSITE	Indoor Air	12/4/2019	No Pressure	**0.91**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAB2HS-120419	ronics Laboratory Chemical Storage C	HAPSITE	Indoor Air	12/4/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAB3HS-120419	Daycare Room	HAPSITE	Indoor Air	12/4/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA1HS-120419	Boiler Room	HAPSITE	Indoor Air	12/4/2019	No Pressure	**11**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA2HS-120419	HVAC Area	HAPSITE	Indoor Air	12/4/2019	No Pressure	**9.4**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA3HS-120419	Autoshop Chemical Storage Closet	HAPSITE	Indoor Air	12/4/2019	No Pressure	**8.6**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA4HS-120419	Autoshop Chemical Waste Area	HAPSITE	Indoor Air	12/4/2019	No Pressure	**3.1**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA5HS-120419	Elevator	HAPSITE	Indoor Air	12/4/2019	No Pressure	**4.8**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA6HS-120419	Storage	HAPSITE	Indoor Air	12/4/2019	No Pressure	**2.4**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA7HS-120419	Paint Storage Closet	HAPSITE	Indoor Air	12/4/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA8HS-120519	Classroom	HAPSITE	Indoor Air	12/5/2019	No Pressure	**0.86**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA1BHS-120519	Boiler Room	HAPSITE	Indoor Air	12/5/2019	No Pressure	**5.4**	0.5 U	0.5 U	**0.53**	NS
	0045S	0045S-IAA9HS-120519	Boiler Room	HAPSITE	Indoor Air	12/5/2019	No Pressure	**0.89**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA2BHS-120519	Sump Room	HAPSITE	Indoor Air	12/5/2019	No Pressure	**4.0**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA10HS-120519	Locker Room	HAPSITE	Indoor Air	12/5/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA11HS-120519	Office	HAPSITE	Indoor Air	12/5/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA12HS-120519	Bathroom	HAPSITE	Indoor Air	12/5/2019	No Pressure	**0.41 J**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA13HS-120519	Chemistry Laboratory Classroom	HAPSITE	Indoor Air	12/5/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA14HS-120519	Autoshop Classroom	HAPSITE	Indoor Air	12/5/2019	No Pressure	**0.63**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA5BHS-120519	Elevator	HAPSITE	Indoor Air	12/5/2019	No Pressure	**0.91**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAA15HS-120519	Electrical Closet	HAPSITE	Indoor Air	12/5/2019	No Pressure	**0.51**	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAB4HS-120519	Stairwell	HAPSITE	Indoor Air	12/5/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
	0045S	0045S-IAB5HS-120519	Stairwell	HAPSITE	Indoor Air	12/5/2019	No Pressure	0.5 U	0.5 U	0.5 U	0.5 U	NS
0047-H	0047H-OA-OA1	0047H-OA-OA1-20160225-BL-001	Outdoor (south side)	HAPSITE	Outdoor Air	2/25/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0047H-IA-LIV	0047H-IA-LIV-20160225-BL-002	Living Room	HAPSITE	Indoor Air	2/25/2016	No Pressure	**6.2**	0.5 U	0.4 U	NS	NS
	0047H-IA-LAU	0047H-IA-LAU-20160225-BL-003	Basement Laundry Room	HAPSITE	Indoor Air	2/25/2016	No Pressure	**3.9**	0.5 U	**0.38**	NS	NS
	0047H-IA-UOFF	0047H-IA-UOFF-20160225-BL-004	Office	HAPSITE	Indoor Air	2/25/2016	No Pressure	**5.3**	0.5 U	**0.87**	NS	NS
	0047H-IA-REST	0047H-IA-REST-20160225-BL-005	Bathroom	HAPSITE	Indoor Air	2/25/2016	No Pressure	**6.8**	0.5 U	**1.2**	NS	NS
	0047H-IA-UBED	0047H-IA-UBED-20160225-BL-006	Bedroom	HAPSITE	Indoor Air	2/25/2016	No Pressure	**6.7**	0.5 U	**2.1**	NS	NS
	0047H-IA-BOFF	0047H-IA-BOFF-20160225-BL-008	Basement Office	HAPSITE	Indoor Air	2/25/2016	No Pressure	**7.6**	0.5 U	0.4 U	NS	NS
	0047H-IA-MEC	0047H-IA-MEC-20160225-BL-010	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	No Pressure	**9.0**	0.5 U	**0.36**	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-BL-011	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	No Pressure	**8.3**	0.5 U	**0.36**	NS	NS
	0047H-IA-MECS	0047H-IA-MEC-20160225-BL-012	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	No Pressure	**8.3**	0.5 U	**0.36**	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-N5-013	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**4.7**	0.5 U	**0.59**	NS	NS
	0047H-IA-BLO	0047H-IA-BLO-20160225-N5-014	Back Door	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**5.0**	0.5 U	0.4 U	NS	NS
	0047H-IA-LIV	0047H-IA-LIV-20160225-N5-015	Living Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**3.2**	0.5 U	**0.63**	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-N5-016	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**4.4**	0.5 U	0.4 U	NS	NS
	0047H-IA-BLO	0047H-IA-BLO-20160225-N5-017	Back Door	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**5.4**	0.5 U	0.4 U	NS	NS
	0047H-IA-LIV	0047H-IA-LIV-20160225-N5-018	Living Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**2.1**	0.5 U	0.4 U	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-N5-019	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**4.0**	0.5 U	0.4 U	NS	NS
	0047H-IA-BLO	0047H-IA-BLO-20160225-N5-020	Back Door	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**5.0**	0.5 U	0.4 U	NS	NS
	0047H-IA-LIV	0047H-IA-LIV-20160225-N5-021	Living Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**1.7**	0.5 U	0.4 U	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-N10-022	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**5.4**	0.5 U	0.4 U	NS	NS
	0047H-IA-BLO	0047H-IA-BLO-20160225-N10-023	Back Door	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**4.6**	0.5 U	0.4 U	NS	NS
	0047H-IA-LIV	0047H-IA-LIV-20160225-N10-024	Living Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**1.2**	0.5 U	0.4 U	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-N10-025	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**7.6**	0.5 U	0.4 U	NS	NS
	0047H-IA-BLO	0047H-IA-BLO-20160225-N10-026	Back Door	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**5.8**	0.5 U	0.4 U	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-N10-027	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Negative Pressure	**9.0**	0.5 U	0.4 U	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-P5-028	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Positive Pressure	**3.4**	0.5 U	0.4 U	NS	NS
	0047H-IA-BLO	0047H-IA-BLO-20160225-P5-029	Back Door	HAPSITE	Indoor Air	2/25/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0047H-IA-LIV	0047H-IA-LIV-20160225-P5-030	Living Room	HAPSITE	Indoor Air	2/25/2016	Positive Pressure	**0.70**	0.5 U	0.4 U	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-P5-031	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Positive Pressure	**1.3**	0.5 U	0.4 U	NS	NS
	0047H-IA-BLO	0047H-IA-BLO-20160225-P5-032	Back Door	HAPSITE	Indoor Air	2/25/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0047H-IA-LIV	0047H-IA-LIV-20160225-P5-033	Living Room	HAPSITE	Indoor Air	2/25/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0047H-IA-MECC	0047H-IA-MEC-20160225-P5-034	Mechanical Room	HAPSITE	Indoor Air	2/25/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
0050-H	0050H-OA-OA1	0050H-OA-OA1-20160323-BL-001	Outdoor	HAPSITE	Outdoor Air	3/23/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-ULIV	0050H-IA-ULIV-20160323-BL-002	Living Room	HAPSITE	Indoor Air	3/23/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-BAS	0050H-IA-BAS-20160323-BL-003	Basement	HAPSITE	Indoor Air	3/23/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-BLO	0050H-IA-BLO-20160323-N5-004	Blower Door	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-NBAS	0050H-IA-NBAS-20160323-N5-005	Basement	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-BLO	0050H-IA-BLO-20160323-N5-006	Blower Door	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-NBAS	0050H-IA-NBAS-20160323-N5-007	Basement	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-BLO	0050H-IA-BLO-20160323-N10-008	Blower Door	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-NBAS	0050H-IA-NBAS-20160323-N10-009	Basement	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-BLO	0050H-IA-BLO-20160323-N10-010	Blower Door	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-NBAS	0050H-IA-NBAS-20160323-N10-011	Basement	HAPSITE	Indoor Air	3/23/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-BLO	0050H-IA-BLO-20160323-P5-012	Blower Door	HAPSITE	Indoor Air	3/23/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-NBAS	0050H-IA-NBAS-20160323-P5-013	Basement	HAPSITE	Indoor Air	3/23/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-BLO	0050H-IA-BLO-20160323-P5-014	Blower Door	HAPSITE	Indoor Air	3/23/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0050H-IA-NBAS	0050H-IA-NBAS-20160323-P5-015	Basement	HAPSITE	Indoor Air	3/23/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
0051-H	0051H-OA-OA1	0051H-OA-OA1-20160226-BL-002	Outdoor	HAPSITE	Outdoor Air	2/26/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-MULIV	0051H-IA-ULIV-20160226-BL-003	Living Room	HAPSITE	Indoor Air	2/26/2016	No Pressure	**2.2**	0.5 U	0.4 U	NS	NS
	0051H-IA-BLIV	0051H-IA-BLIV-20160226-BL-004	Basement Living Room	HAPSITE	Indoor Air	2/26/2016	No Pressure	**2.4**	0.5 U	0.4 U	NS	NS
	0051H-IA-UBED	0051H-IA-UBED-20160226-BL-005	Bedroom	HAPSITE	Indoor Air	2/26/2016	No Pressure	**2.4**	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-BL-006	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	No Pressure	**3.8**	0.5 U	0.4 U	NS	NS
	0051H-IA-BLIV	0051H-IA-BLIV-20160226-BL-007	Basement Living Room	HAPSITE	Indoor Air	2/26/2016	No Pressure	**2.1**	0.5 U	0.4 U	NS	NS
	0051H-IA-BLIV	0051H-IA-BLIV-20160226-N5-008	Basement Living Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**2.1**	0.5 U	0.4 U	NS	NS
	0051H-IA-BLO	0051H-IA-BLO-20160226-N5-009	Blower Door	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**1.3**	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-N5-010	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**6.9**	0.5 U	0.4 U	NS	NS
	0051H-IA-SULIV	0051H-IA-ULIV-20160226-N5-011	Living Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**1**	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-N5-012	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**1.6**	0.5 U	0.4 U	NS	NS
	0051H-IA-BLO	0051H-IA-BLO-20160226-N5-013	Blower Door	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**0.8**	0.5 U	0.4 U	NS	NS

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120	6.3	NA	17	56
0051-H	0051H-IA-MEC	0051H-IA-MEC-20160226-N5-014	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**14**	0.5 U	0.4 U	NS	NS
	0051H-IA-SULIV	0051H-IA-ULIV-20160226-N5-015	Living Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-N10-016	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**24**	0.5 U	0.4 U	NS	NS
	0051H-IA-BLO	0051H-IA-BLO-20160226-N10-017	Blower Door	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-FLC	0051H-IA-FLC-20160226-N10-018	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**402**	0.5 U	0.4 U	NS	NS
	0051H-IA-BLO	0051H-IA-BLO-20160226-N10-020	Blower Door	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-N10-019	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**13**	0.5 U	0.4 U	NS	NS
	0051H-IA-SULIV	0051H-IA-ULIV-20160226-N10-021	Living Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-N10-022	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Negative Pressure	**1.2**	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-P5-023	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-SULIV	0051H-IA-ULIV-20160226-P5-024	Living Room	HAPSITE	Indoor Air	2/26/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-MEC	0051H-IA-MEC-20160226-P5-025	Mechanical Room	HAPSITE	Indoor Air	2/26/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051H-IA-STA	0051H-IA-STA-20160226-P5-026	Stairwell	HAPSITE	Indoor Air	2/26/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0051-IA-BAS	A-0051-031616-IA-BAS	Basement	SUMMA	Indoor Air	3/16/2016	No Pressure	**1.8**	0.27 U	0.2 U	0.13 U	0.18 U
	0051H	0051-H-IA01HS_20191216	Utility Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	**1.2**	0.1 U	**1.1**	NS	NS
	0051H	0051-H-IA02HS_20191216	Living Room	Hapsite	Indoor Air	12/16/2019	No Pressure	**1.2**	0.1 U	**2.1**	NS	NS
	0051H	0051-H-IA03HS_20191216	Basement Computer Room	Hapsite	Indoor Air	12/16/2019	No Pressure	**1.3**	0.1 U	**1.2**	NS	NS
	0051H	0051-H-IA03HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0051H	0051-H-IA02HS	Basement Computer Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	**0.12**	0.1 U	0.1 U	NS	NS
	0051H	0051-H-IA01HS_20200306	Utility Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	**0.16**	0.1 U	0.1 U	NS	NS
	0051H	0051H-IA01SC-030720	Basement Laundry Room	SUMMA	Indoor Air	3/7/2020	No Pressure	**3.7**	**0.060 J**	0.15 U	0.098 U	**0.22 J**
	0051H	0051H-IA02SC-030720	Basement Computer Room	SUMMA	Indoor Air	3/7/2020	No Pressure	**3.4**	**0.055 J**	0.14 U	0.087 U	**0.18 J**
	0051H	0051H-IA03SC-030720	Living Room	SUMMA	Indoor Air	3/7/2020	No Pressure	**2.7**	0.2 U	0.15 U	0.098 U	0.69 U
	0051H	0051H-AA01SC-030720	Outdoor	SUMMA	Outdoor Air	3/7/2020	No Pressure	**0.2 J**	0.2 U	0.14 U	0.094 U	0.66 U
	0051H	0051H-IA02PS-03242020	Basement Computer Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	**2.1**	**0.028 J**	NS	NS	NS
	0051H	0051H-IA03PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	**1.5**	**0.027 J**	NS	NS	NS
	0051H	0051H-IA01PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	**2.1**	**0.035 J**	NS	NS	NS
	0051H	0051H-IA01SC-082421	Basement Laundry Room	SUMMA	Indoor Air	8/24/2021	No Pressure	**1.6**	0.2 U	0.15 U	0.098 U	**0.20 J**
	0051H	0051H-AA02SC-082421	Outdoor (backyard)	SUMMA	Outdoor Air	8/24/2021	No Pressure	**0.13 J**	0.18 U	0.14 U	0.088 U	**0.42 J**
0052-H	0052H-OA-OA1	0052H-OA-OA1-20160311-NA-003	Outdoor (north side)	HAPSITE	Outdoor Air	3/11/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-ENT	0052H-IA-ENT-20160311-BL-004	Entrance	HAPSITE	Indoor Air	3/11/2016	No Pressure	0.7 U	0.5 U	**0.79**	NS	NS
	0052H-IA-UHAL	0052H-IA-UHAL-20160311-BL-005	Hallway	HAPSITE	Indoor Air	3/11/2016	No Pressure	**1.0**	0.5 U	**1.7**	NS	NS
	0052H-IA-BLIV	0052H-IA-BLIV-20160311-BL-007	Basement Living Room	HAPSITE	Indoor Air	3/11/2016	No Pressure	0.7 U	0.5 U	**0.44**	NS	NS
	0052H-IA-UBEDN	0052H-IA-UBEDN-20160311-BL-008	Bedroom	HAPSITE	Indoor Air	3/11/2016	No Pressure	**1.9**	0.5 U	**0.95**	NS	NS
	0052H-IA-UDIN	0052H-IA-UDIN-20160311-BL-009	Dining Room	HAPSITE	Indoor Air	3/11/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-UBEDS	0052H-IA-UBEDS-20160311-BL-010	Bedroom	HAPSITE	Indoor Air	3/11/2016	No Pressure	**1.4**	0.5 U	**1.07**	NS	NS
	0052H-IA-LAU	0052H-IA-LAU-20160311-BL-011	Laundry Room	HAPSITE	Indoor Air	3/11/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-OFF	0052H-IA-OFF-20160311-BL-012	Office	HAPSITE	Indoor Air	3/11/2016	No Pressure	**1.0**	0.5 U	**0.83**	NS	NS
	0052H-IA-BAT	0052H-IA-BAT-20160311-BL-013	Bathroom	HAPSITE	Indoor Air	3/11/2016	No Pressure	**1.9**	0.5 U	**0.91**	NS	NS
	0052H-IA-BSTA	0052H-IA-BSTA-20160311-N5-014	Basement Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BLO	0052H-IA-BLO-20160311-N5-015	Blower Door	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-TSTA	0052H-IA-TSTA-20160311-N5-016	Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	**0.80**	0.5 U	**0.40**	NS	NS
	0052H-IA-BSTA	0052H-IA-BSTA-20160311-N5-019	Basement Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-TSTA	0052H-IA-TSTA-20160311-N5-020	Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BSTA	0052H-IA-BSTA-20160311-N10-021	Basement Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BLO	0052H-IA-BLO-20160311-N10-022	Blower Door	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-TSTA	0052H-IA-TSTA-20160311-N10-023	Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BSTA	0052H-IA-BSTA-20160311-N10-024	Basement Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-TSTA	0052H-IA-TSTA-20160311-N10-025	Stairwell	HAPSITE	Indoor Air	3/11/2016	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BSTA	0052H-IA-BSTA-20160311-P5-026	Basement Stairwell	HAPSITE	Indoor Air	3/11/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BLO	0052H-IA-BLO-20160311-P5-027	Blower Door	HAPSITE	Indoor Air	3/11/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-TSTA	0052H-IA-TSTA-20160311-P5-028	Stairwell	HAPSITE	Indoor Air	3/11/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BSTA	0052H-IA-BSTA-20160311-P5-029	Basement Stairwell	HAPSITE	Indoor Air	3/11/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-BLO	0052H-IA-BLO-20160311-P5-030	Blower Door	HAPSITE	Indoor Air	3/11/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0052H-IA-TSTA	0052H-IA-TSTA-20160311-P5-031	Stairwell	HAPSITE	Indoor Air	3/11/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
0053-H	0053H-OA-OA1	0053H-OA-OA1-20160502-BL-018	Outdoor (south side)	HAPSITE	Outdoor Air	5/2/2016	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-BL-019	Kitchen	HAPSITE	Indoor Air	5/2/2016	No Pressure	**9.7**	0.5 U	**0.71**	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-BL-020	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	No Pressure	**11**	0.5 U	**0.52**	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-BL-021	Kitchen	HAPSITE	Indoor Air	5/2/2016	No Pressure	**9.0**	0.5 U	**0.67**	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-BL-022	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	No Pressure	**11**	0.5 U	**0.55**	NS	NS
	0053H-IA-CRWL	0053H-IA-CRWL-20160502-BL-023	Crawl Space	HAPSITE	Indoor Air	5/2/2016	No Pressure	**13**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-N5-024	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**9.7**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-N5-025	Blower Door	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**8.3**	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-N5-026	Kitchen	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**4.8**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-N5-027	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**13**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-N5-028	Blower Door	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**7.6**	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-N5-029	Kitchen	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**3.0**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-N5-030	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**13**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-N5-032	Blower Door	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**2.8**	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-N5-034	Kitchen	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**3.4**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-N5-035	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**19**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-N10-036	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**22**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-N10-037	Blower Door	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**12**	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-N10-038	Kitchen	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**3.6**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-N10-039	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**21**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-N10-040	Blower Door	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**9.0**	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-N10-041	Kitchen	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**3.7**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-N10-042	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**24**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-N10-043	Blower Door	HAPSITE	Indoor Air	5/2/2016	Negative Pressure	**8.6**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-P5-044	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	**21**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-P5-045	Blower Door	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-P5-046	Kitchen	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-P5-047	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	**5.7**	0.5 U	0.4 U	NS	NS
	0053H-IA-BLO	0053H-IA-BLO-20160502-P5-048	Blower Door	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0053H-IA-KIT	0053H-IA-KIT-20160502-P5-049	Kitchen	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-P5-053	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	**2.6**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-P5-054	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	**2.0**	0.5 U	0.4 U	NS	NS
	0053H-IA-LIV	0053H-IA-LIV-20160502-P5-055	Basement Living Room	HAPSITE	Indoor Air	5/2/2016	Positive Pressure	**2.6**	0.5 U	0.4 U	NS	NS
	0053H-IA-BAS	A-0053H-052416-IA-BAS	Basement	SUMMA	Indoor Air	5/24/2016	No Pressure	**13 J**	0.27 U	0.2 U	0.13 U	0.18 U
	0053H	0053-H-IA01HS	Basement Storage	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3.3**	0.1 U	0.1 U	NS	NS
	0053H	0053-H-IA02HS	Basement Bathroom	HAPSITE	Indoor Air	12/16/2019	No Pressure	**3**	0.1 U	0.1 U	NS	NS
	0053H	0053-H-IA03HS	Kitchen	HAPSITE	Indoor Air	12/16/2019	No Pressure	**2.2**	0.1 U	0.1 U	NS	NS
	0011H	0011H-AA01SC-010820	Outdoor	SUMMA	Outdoor Air	1/8/2020	No Pressure	**0.58**	**0.29**	0.17 U	**0.14**	0.78 U
	0053H	0053H-IA01SC-010820	Basement Storage	SUMMA	Indoor Air	1/8/2020	No Pressure	**10**	0.22 U	0.16 U	0.1 U	0.74 U
	0053H	0053H-IA01PS-010820	Basement Storage	PASSIVE	Indoor Air	1/8/2020	No Pressure	**9.1**	**0.056**	NS	NS	NS
	0053H	0053H-IA02SC-010820	Basement Bathroom	SUMMA	Indoor Air	1/8/2020	No Pressure	**13**	0.23 U	0.17 U	0.11 U	0.78 U

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³	PCE Q	TCE µg/m³	TCE Q	cis-1,2-DCE µg/m³	cis-1,2-DCE Q	VC µg/m³	VC Q	1,4-Dioxane µg/m³	1,4-Dioxane Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11		0.48		NA		0.17		0.56	
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41		2.1		NA		1.7		5.6	
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120		6.3		NA		17		56	
0053-H	0053H	0053H-IA02PS-010820	Basement Bathroom	PASSIVE	Indoor Air	1/8/2020	No Pressure	11		0.069		NS		NS		NS	
	0053H	0053H-IA03SC-010820	Kitchen	SUMMA	Indoor Air	1/8/2020	No Pressure	11		0.23	U	0.17	U	0.11	U	0.78	U
	0053H	0053H-IA03PS-010820	Kitchen	PASSIVE	Indoor Air	1/8/2020	No Pressure	8.7		0.060		NS		NS		NS	
	0053H	0053H-IA04SC-010820	Bedroom	SUMMA	Indoor Air	1/8/2020	No Pressure	11		0.47		0.17	U	0.11	U	0.78	U
	0053H	0053H-IA04PS-010820	Bedroom	PASSIVE	Indoor Air	1/8/2020	No Pressure	8.1		0.050		NS		NS		NS	
0054-H	0054H-OA-OA1	0054H-OA-OA1-20160509-NA-008	Outdoor (east side)	HAPSITE	Outdoor Air	5/9/2016	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160509-BL-009	Living Room	HAPSITE	Indoor Air	5/9/2016	No Pressure	6.0		5.4		0.4	U	NS		NS	
	0054H-IA-LAU	0054H-IA-LAU-20160509-BL-010	Laundry Room	HAPSITE	Indoor Air	5/9/2016	No Pressure	5.0		4.5		0.4	U	NS		NS	
	0054H-IA-GAR	0054H-IA-GAR-20160509-BL-012	Garage	HAPSITE	Indoor Air	5/9/2016	No Pressure	0.7	U	0.7		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160509-BL-014	Basement Shop Room	HAPSITE	Indoor Air	5/9/2016	No Pressure	14		8.7		0.4	U	NS		NS	
	0054H-IA-BAT	0054H-IA-BAT-20160509-BL-015	Basement Bathroom	HAPSITE	Indoor Air	5/9/2016	No Pressure	6.7		5.2		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160509-BL-016	Basement TV Room	HAPSITE	Indoor Air	5/9/2016	No Pressure	5.2		5.1		0.4	U	NS		NS	
	0054H-IA-LAU	0054H-IA-LAU-20160509-BL-017	Laundry Room	HAPSITE	Indoor Air	5/9/2016	No Pressure	5.8		4.8		0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160509-BL-018	Living Room	HAPSITE	Indoor Air	5/9/2016	No Pressure	5.7		5.2		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160509-BL-019	Basement Shop Room	HAPSITE	Indoor Air	5/9/2016	No Pressure	10		9.3		0.4	U	NS		NS	
	0054H-IA-SBED	0054H-IA-SBED-20160509-BL-020	Basement Bedroom	HAPSITE	Indoor Air	5/9/2016	No Pressure	6.9		5.4		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160509-N5-021	Basement Shop Room	HAPSITE	Indoor Air	5/9/2016	Negative Pressure	21		8.7		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160509-N5-022	Basement TV Room	HAPSITE	Indoor Air	5/9/2016	Negative Pressure	5.4		5.5		0.4	U	NS		NS	
	0054H-IA-BLO	0054H-IA-BLO-20160509-N5-023	Blower Door	HAPSITE	Indoor Air	5/9/2016	Negative Pressure	4.1		3.7		0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160509-N5-024	Living Room	HAPSITE	Indoor Air	5/9/2016	Negative Pressure	3.1		3.2		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160509-N5-025	Basement Shop Room	HAPSITE	Indoor Air	5/9/2016	Negative Pressure	6.3		6.0		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160509-N5-026	Basement TV Room	HAPSITE	Indoor Air	5/9/2016	Negative Pressure	5.0		4.3		0.4	U	NS		NS	
	0054H-IA-BLO	0054H-IA-BLO-20160509-N5-027	Blower Door	HAPSITE	Indoor Air	5/9/2016	Negative Pressure	2.6		1.4		0.4	U	NS		NS	
	0054H-OA-FOA1	0054H-OA-OA1-20160603-BL-001	Outdoor (front porch)	HAPSITE	Outdoor Air	6/3/2016	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160603-BL-002	Living Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	0.7	U	1		0.4	U	NS		NS	
	0054H-IA-LAU	0054H-IA-LAU-20160603-BL-003	Laundry Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	0.7	U	0.7		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-BL-004	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	1.0		1.6		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-BL-005	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	0.7	U	1.4		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-BL-006	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	1.7		2.9		0.4	U	NS		NS	
	0054H-IA-SUM	0054H-IA-SUM-20160603-BL-007	Sump Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	1.7		3.5		0.4	U	NS		NS	
	0054H-IA-LAU	0054H-IA-LAU-20160603-BL-008	Laundry Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	1.3		1.7		0.4	U	NS		NS	
	0054H-IA-GAR	0054H-IA-GAR-20160603-BL-009	Garage	HAPSITE	Indoor Air	6/3/2016	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-BL-010	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	1.1		1.6		0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160603-BL-011	Living Room	HAPSITE	Indoor Air	6/3/2016	No Pressure	0.8		1.9		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-N5-012	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	1.7		2.8		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-N5-013	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	1.2		1.8		0.4	U	NS		NS	
	0054H-IA-BLO	0054H-IA-BLO-20160603-N5-014	Blower Door	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.7	U	1.1		0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160603-N5-015	Living Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.6		1.3		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-N5-016	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	1.7		1.2		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-N5-017	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	1.6		1.5		0.4	U	NS		NS	
	0054H-IA-BLO	0054H-IA-BLO-20160603-N5-018	Blower Door	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.7	U	0.70		0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160603-N5-019	Living Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.7	U	0.70		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-N5-020	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	2.3		0.80		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-N5-021	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	1.7		1.0		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-N10-022	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	2.8		0.80		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-N10-023	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	1.9		0.90		0.4	U	NS		NS	
	0054H-IA-BLO	0054H-IA-BLO-20160603-N10-024	Blower Door	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160603-N10-026	Living Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-N10-027	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	2.5		0.5	U	0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-N10-028	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	2.1		0.70		0.4	U	NS		NS	
	0054H-IA-BLO	0054H-IA-BLO-20160603-N10-029	Blower Door	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160603-N10-030	Living Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-N10-031	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	2.4		0.5	U	0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-N10-032	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Negative Pressure	2.1		0.50		0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-P5-033	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	2.7		0.70		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-P5-034	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	1.4		0.5	U	0.4	U	NS		NS	
	0054H-IA-BLO	0054H-IA-BLO-20160603-P5-035	Blower Door	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-LIV	0054H-IA-LIV-20160603-P5-036	Living Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-P5-037	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	0.90		0.70		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-P5-038	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-P5-039	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	0.70		0.80		0.4	U	NS		NS	
	0054H-IA-TVR	0054H-IA-TVR-20160603-P5-040	Basement TV Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0054H-IA-SHOP	0054H-IA-SHOP-20160603-P5-041	Basement Shop Room	HAPSITE	Indoor Air	6/3/2016	Positive Pressure	0.7	U	0.80		0.4	U	NS		NS	
	0054H-IA-CONT	0054H-IA-CONT-20160603-BL-044	Container	HAPSITE	Indoor Air	6/3/2016	No Pressure	3.0		4.0		0.4	U	NS		NS	
0055-H	0055H-OA-OA1	0055H-OA-OA1-20160513-BL-013	Outdoor (east side)	HAPSITE	Outdoor Air	5/13/2016	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-KIT	0055H-IA-KIT-20160513-BL-014	Kitchen	HAPSITE	Indoor Air	5/13/2016	No Pressure	0.80		0.5	U	0.67		NS		NS	
	0055H-IA-UHAL	0055H-IA-UHAL-20160513-BL-015	Basement Hallway	HAPSITE	Indoor Air	5/13/2016	No Pressure	0.90		0.5	U	0.52		NS		NS	
	0055H-IA-BBHAL	0055H-IA-BHAL-20160513-BL-016	Hallway	HAPSITE	Indoor Air	5/13/2016	No Pressure	0.70		0.5	U	0.4	U	NS		NS	
	0055H-IA-LAU	0055H-IA-LAU-20160513-BL-017	Laundry Room	HAPSITE	Indoor Air	5/13/2016	No Pressure	0.70		0.5	U	0.55		NS		NS	
	0055H-IA-KIT	0055H-IA-KIT-20160513-N5-018	Kitchen	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	1.1		0.5	U	0.79		NS		NS	
	0055H-IA-LBHAL	0055H-IA-BHAL-20160513-N5-019	Basement Hallway	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	1.4		0.5	U	0.55		NS		NS	
	0055H-IA-BLO	0055H-IA-BLO-20160513-N5-022	Blower Door	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.90		0.5	U	0.4	U	NS		NS	
	0055H-IA-KIT	0055H-IA-KIT-20160513-N5-023	Kitchen	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-LBHAL	0055H-IA-BHAL-20160513-N5-024	Basement Hallway	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	1.5		0.5	U	0.4	U	NS		NS	
	0055H-IA-BLO	0055H-IA-BLO-20160513-N5-025	Blower Door	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.80		0.5	U	0.4	U	NS		NS	
	0055H-IA-LBHAL	0055H-IA-BHAL-20160513-N10-026	Basement Hallway	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-BLO	0055H-IA-BLO-20160513-N10-027	Blower Door	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	1.2		0.5	U	0.4	U	NS		NS	
	0055H-IA-KIT	0055H-IA-KIT-20160513-N10-028	Kitchen	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-LBHAL	0055H-IA-BHAL-20160513-N10-029	Basement Hallway	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.80		0.5	U	0.4	U	NS		NS	
	0055H-IA-BLO	0055H-IA-BLO-20160513-N10-030	Blower Door	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.90		0.5	U	0.4	U	NS		NS	
	0055H-IA-KIT	0055H-IA-KIT-20160513-N10-031	Kitchen	HAPSITE	Indoor Air	5/13/2016	Negative Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-LBHAL	0055H-IA-BHAL-20160513-P5-032	Basement Hallway	HAPSITE	Indoor Air	5/13/2016	Positive Pressure	1.5		0.5	U	0.4	U	NS		NS	
	0055H-IA-BLO	0055H-IA-BLO-20160513-P5-033	Blower Door	HAPSITE	Indoor Air	5/13/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-KIT	0055H-IA-KIT-20160513-P5-034	Kitchen	HAPSITE	Indoor Air	5/13/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-LBHAL	0055H-IA-BHAL-20160513-P5-035	Basement Hallway	HAPSITE	Indoor Air	5/13/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-BLO	0055H-IA-BLO-20160513-P5-036	Blower Door	HAPSITE	Indoor Air	5/13/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0055H-IA-KIT	0055H-IA-KIT-20160513-P5-037	Kitchen	HAPSITE	Indoor Air	5/13/2016	Positive Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
0056-H	0056H-OA-OA1	0056H-OA-OA1-20160503-NA-002	Outdoor	HAPSITE	Outdoor Air	5/3/2016	No Pressure	0.7	U	0.5	U	0.4	U	NS		NS	
	0056H-IA-FRM	0056H-IA-FRM-20160503-NA-003	Front Room	HAPSITE	Indoor Air	5/3/2016	No Pressure	2.1		0.5	U	3.1		NS		NS	
	0056H-IA-BAS	0056H-IA-BAS-20160503-NA-004	Basement	HAPSITE	Indoor Air	5/3/2016	No Pressure	4.0		0.5	U	1.7		NS		NS	
	0056H-IA-CRWL	0056H-IA-CRWL-20160503-NA-005	Crawl Space	HAPSITE	Indoor Air	5/3/2016	No Pressure	4.9		0.5	U	1.7		NS		NS	
	0056H-IA-BBED	0056H-IA-BBED-20160503-NA-006	Basement Bedroom	HAPSITE	Indoor Air	5/3/2016	No Pressure	4.1		0.5	U	1.9		NS		NS	
	0056H-IA-BLIV	0056H-IA-BLIV-20160503-N5-007	Basement Living Room	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	3.3		0.5	U	1.2		NS		NS	
	0056H-IA-BLO	0056H-IA-BLO-20160503-N5-008	Blower Door	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	3.5		0.5	U	1.4		NS		NS	
	0056H-IA-FRM	0056H-IA-FRM-20160503-N5-009	Front Room	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	1.0		0.5	U	1.3		NS		NS	
	0056H-IA-BLIV	0056H-IA-BLIV-20160503-N5-010	Basement Living Room	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	2.4		0.5	U	0.48		NS		NS	

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE	TCE	cis-1,2-DCE	VC	1,4-Dioxane
								µg/m^3 Q	µg/m^3 Q	µg/m^3 Q	µg/m^3 Q	µg/m^3 Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m^3)[1]								**11**	**0.48**	**NA**	**0.17**	**0.56**
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m^3)[2]								**41**	**2.1**	**NA**	**1.7**	**5.6**
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m^3)[3]								**120**	**6.3**	**NA**	**17**	**56**
0056-H	0056H-IA-BLO	0056H-IA-BLO-20160503-N5-011	Blower Door	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**2.9**	*0.5 U*	**0.71**	NS	NS
	0056H-IA-FRM	0056H-IA-FRM-20160503-N5-012	Front Room	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	*0.7 U*	*0.5 U*	**0.67**	NS	NS
	0056H-IA-BSTA	0056H-IA-BSTA-20160503-N5-013	Basement Stairwell	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**5.8**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-CRWL	0056H-IA-CRWL-20160503-N5-014	Crawl Space	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**5.0**	*0.5 U*	**0.44**	NS	NS
	0056H-IA-BLIV	0056H-IA-BLIV-20160503-N10-015	Basement Living Room	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**2.3**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BSTA	0056H-IA-BSTA-20160503-N10-016	Basement Stairwell	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**6.9**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BLO	0056H-IA-BLO-20160503-N10-017	Blower Door	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**3.8**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-FRM	0056H-IA-FRM-20160503-N10-018	Front Room	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BLIV	0056H-IA-BLIV-20160503-N10-019	Basement Living Room	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**2.4**	*0.5 U*	**0.71**	NS	NS
	0056H-IA-BSTA	0056H-IA-BSTA-20160503-N10-020	Basement Stairwell	HAPSITE	Indoor Air	5/3/2016	Negative Pressure	**3.0**	*0.5 U*	**0.75**	NS	NS
	0056H-IA-BLIV	0056H-IA-BLIV-20160503-P5-023	Basement Living Room	HAPSITE	Indoor Air	5/3/2016	Positive Pressure	**2.1**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BSTA	0056H-IA-BSTA-20160503-P5-024	Basement Stairwell	HAPSITE	Indoor Air	5/3/2016	Positive Pressure	**1.6**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BLO	0056H-IA-BLO-20160503-P5-025	Blower Door	HAPSITE	Indoor Air	5/3/2016	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-FRM	0056H-IA-FRM-20160503-P5-026	Front Room	HAPSITE	Indoor Air	5/3/2016	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BLIV	0056H-IA-BLIV-20160503-P5-027	Basement Living Room	HAPSITE	Indoor Air	5/3/2016	Positive Pressure	**1.2**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BSTA	0056H-IA-BSTA-20160503-P5-028	Basement Stairwell	HAPSITE	Indoor Air	5/3/2016	Positive Pressure	**1.1**	*0.5 U*	*0.4 U*	NS	NS
	0056H-IA-BLIV	0056H-IA-BLIV-20160503-P5-029	Basement Living Room	HAPSITE	Indoor Air	5/3/2016	Positive Pressure	**1.1**	*0.5 U*	*0.4 U*	NS	NS
0057-H	0057H-IA-LIV1	A-0057H-04052017-IA-002-LIV1	Living Room	HAPSITE	Indoor Air	4/5/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-HAL1	A-0057H-04052017-IA-003-HAL1	Hallway	HAPSITE	Indoor Air	4/5/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LLIV1	A-0057H-04052017-IA-004-LLIV1	Basement Living Room	HAPSITE	Indoor Air	4/5/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LHAL1	A-0057H-04052017-IA-005-LHAL1	Basement Hallway	HAPSITE	Indoor Air	4/5/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-STO1	A-0057H-04052017-IA-006-STO1	Storage	HAPSITE	Indoor Air	4/5/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LHAL1	A-0057H-04052017-IA-007-LHAL1	Basement Hallway	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LLIV1	A-0057H-04052017-IA-008-LLIV1	Basement Living Room	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LBLO1	A-0057H-04052017-IA-009-LBLO1	Blower Door	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LHAL1	A-0057H-04052017-IA-010-LHAL1	Basement Hallway	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LBLO1	A-0057H-04052017-IA-011-LBLO1	Blower Door	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LHAL1	A-0057H-04052017-IA-012-LHAL1	Basement Hallway	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LLIV1	A-0057H-04052017-IA-013-LLIV1	Basement Living Room	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LBLO1	A-0057H-04052017-IA-014-LBLO1	Blower Door	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LHAL1	A-0057H-04052017-IA-015-LHAL1	Basement Hallway	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LLIV1	A-0057H-04052017-IA-016-LLIV1	Basement Living Room	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LBLO1	A-0057H-04052017-IA-017-LBLO1	Blower Door	HAPSITE	Indoor Air	4/5/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LHAL1	A-0057H-04052017-IA-018-LHAL1	Basement Hallway	HAPSITE	Indoor Air	4/5/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LLIV1	A-0057H-04052017-IA-019-LLIV1	Basement Living Room	HAPSITE	Indoor Air	4/5/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LBLO1	A-0057H-04052017-IA-020-LBLO1	Blower Door	HAPSITE	Indoor Air	4/5/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0057H-IA-LLIV1	A-0057H-04052017-IA-021-LLIV1	Basement Living Room	HAPSITE	Indoor Air	4/5/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
0058-H	0058H-OA-OUT1	A-0058H-030617-OA-004-OUT1	Outdoor (east side)	HAPSITE	Outdoor Air	3/6/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-LIV1	A-0058H-030617-IA-005-LIV1	Living Room	HAPSITE	Indoor Air	3/6/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS1	A-0058H-030617-IA-006-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS2	A-0058H-030617-IA-007-BAS2	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-STA1	A-0058H-030617-IA-008-STA1	Stairwell	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-DIN1	A-0058H-030617-IA-009-DIN1	Dining Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS2	A-0058H-030617-IA-010-BAS2	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-STA1	A-0058H-030617-IA-011-STA1	Stairwell	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-DIN1	A-0058H-030617-IA-012-DIN1	Dining Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS2	A-0058H-030617-IA-013-BAS2	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-STA1	A-0058H-030617-IA-014-STA1	Stairwell	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS2	A-0058H-030617-IA-015-BAS2	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-STA1	A-0058H-030617-IA-016-STA1	Stairwell	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-DIN1	A-0058H-030617-IA-017-DIN1	Dining Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS2	A-0058H-030617-IA-018-BAS2	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-STA1	A-0058H-030617-IA-019-STA1	Stairwell	HAPSITE	Indoor Air	3/6/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS1	A-0058H-030617-IA-020-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-STA1	A-0058H-030617-IA-021-STA1	Stairwell	HAPSITE	Indoor Air	3/6/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-DIN1	A-0058H-030617-IA-022-DIN1	Dining Room	HAPSITE	Indoor Air	3/6/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-BAS1	A-0058H-030617-IA-023-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/6/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0058H-IA-STA1	A-0058H-030617-IA-024-STA1	Stairwell	HAPSITE	Indoor Air	3/6/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
0059-H	0059H-OA-OUT1	A-0059H-031717-OA-015-OUT1	Outdoor (east side)	HAPSITE	Outdoor Air	3/17/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-HAL1	A-0059H-031717-IA-016-HAL1	Hallway	HAPSITE	Indoor Air	3/17/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAN1	A-0059H-031717-IA-017-LAN1	Landing	HAPSITE	Indoor Air	3/17/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-BAS1	A-0059H-031717-IA-018-BAS1	Basement	HAPSITE	Indoor Air	3/17/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-STO1	A-0059H-031717-IA-019-STO1	Basement Storage	HAPSITE	Indoor Air	3/17/2017	No Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAU1	A-0059H-031717-IA-020-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	**2.4**	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-STO1	A-0059H-031717-IA-021-STO1	Basement Storage	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-BLO1	A-0059H-031717-IA-022-BLO1	Blower Door	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	**12**	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-HAL1	A-0059H-031717-IA-023-HAL1	Hallway	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAN1	A-0059H-031717-IA-024-LAN1	Landing	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAU1	A-0059H-031717-IA-025-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	**1.2**	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-BLO1	A-0059H-031717-IA-026-BLO1	Blower Door	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	**1.2**	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-STO1	A-0059H-031717-IA-027-STO1	Basement Storage	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-HAL1	A-0059H-031717-IA-028-HAL1	Hallway	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAU2	A-0059H-031717-IA-029-LAU2	Basement Laundry Room Floor Drain	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	*1071 NR*	**12**	**2.2**	NS	NS
	0059H-IA-LAU1	A-0059H-031717-IA-030-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	**0.47**	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-BLO1	A-0059H-031717-IA-031-BLO1	Blower Door	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAU1	A-0059H-031717-IA-032-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	**0.95**	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAU2	A-0059H-031717-IA-033-LAU2	Basement Laundry Room Floor Drain	HAPSITE	Indoor Air	3/17/2017	Negative Pressure	**220**	**0.39**	*0.4 U*	NS	NS
	0059H-IA-LAU1	A-0059H-031717-IA-034-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-BLO1	A-0059H-031717-IA-035-BLO1	Blower Door	HAPSITE	Indoor Air	3/17/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-HAL1	A-0059H-031717-IA-036-HAL1	Hallway	HAPSITE	Indoor Air	3/17/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAN1	A-0059H-031717-IA-037-LAN1	Landing	HAPSITE	Indoor Air	3/17/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H-IA-LAU1	A-0059H-031717-IA-038-LAU1	Basement Laundry Room	HAPSITE	Indoor Air	3/17/2017	Positive Pressure	*0.7 U*	*0.5 U*	*0.4 U*	NS	NS
	0059H	0059-H-IA01HS	Basement Kitchen	HAPSITE	Indoor Air	1/8/2020	No Pressure	*0.1 U*	*0.1 U*	**11**	NS	NS
	0059H	0059-H-IA05HS	Living Room	HAPSITE	Indoor Air	1/8/2020	No Pressure	*0.1 U*	*0.1 U*	**6.1**	NS	NS
	0059H	0059-H-IA02HS	Basement Utility Room	HAPSITE	Indoor Air	1/8/2020	No Pressure	*0.1 U*	*0.1 U*	**8.6**	NS	NS
	0059H	0059-H-IA04HS	Dining Room	HAPSITE	Indoor Air	1/8/2020	No Pressure	*0.1 U*	*0.1 U*	**9.2**	NS	NS
	0059H	0059-H-IA03HS	Basement Workout Room	HAPSITE	Indoor Air	1/8/2020	No Pressure	*0.1 U*	*0.1 U*	**9.8**	NS	NS
	0059H	0059H-IA01SC-010920	Basement Kitchen	SUMMA	Indoor Air	1/9/2020	No Pressure	**0.20 J**	*0.24 U*	*0.17 U*	*0.11 U*	*0.79 U*
	0059H	0059H-IA02SC-010920	Basement Utility Room	SUMMA	Indoor Air	1/9/2020	No Pressure	**0.68**	*0.32 U*	*0.24 U*	*0.15 U*	**4.7**
	0059H	0059H-IA03SC-010920	Basement Workout Room	SUMMA	Indoor Air	1/9/2020	No Pressure	**0.21 J**	*0.23 U*	*0.17 U*	*0.11 U*	**0.59 J**
	0059H	0059H-IA04SC-010920	Dining Room	SUMMA	Indoor Air	1/9/2020	No Pressure	**0.20 J**	*0.24 U*	*0.18 U*	*0.11 U*	*0.8 U*
	0059H	0059H-IA05SC-010920	Living Room	SUMMA	Indoor Air	1/9/2020	No Pressure	**0.40**	*0.25 U*	*0.19 U*	*0.12 U*	*0.85 U*
	0059H	0059H-AA01SC-010920	Outdoor	SUMMA	Outdoor Air	1/9/2020	No Pressure	**0.35**	*0.22 U*	*0.16 U*	**0.072 J**	*0.72 U*
	0059H	0059H-IA04PS-012920	Dining Room	PASSIVE	Indoor Air	1/29/2020	No Pressure	**0.15**	**0.026 J**	NS	NS	NS
	0059H	0059H-IA05PS-012920	Living Room	PASSIVE	Indoor Air	1/29/2020	No Pressure	**0.14**	**0.025 J**	NS	NS	NS
	0059H	0059H-IA01PS-012920	Basement Kitchen	PASSIVE	Indoor Air	1/29/2020	No Pressure	**0.16**	*0.048 U*	NS	NS	NS

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120	6.3	NA	17	56
0059-H	0059H	0059H-IA02PS-012920	Basement Utility Room	PASSIVE	Indoor Air	1/29/2020	No Pressure	**0.14**	0.048 U	NS	NS	NS
	0059H	0059H-IA03PS-012920	Basement Workout Room	PASSIVE	Indoor Air	1/29/2020	No Pressure	**0.13**	0.048 U	NS	NS	NS
	0059H	0059H-IA02SC-082521	Basement Utility Room	SUMMA	Indoor Air	8/25/2021	No Pressure	0.23 U	0.18 U	0.13 U	0.086 U	**0.76**
0060-H	0060H-OA-OUT1	A-0060H-030717-OA-005-OUT1	Outdoor (south side)	HAPSITE	Outdoor Air	3/7/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-ENT1	A-0060H-030717-IA-006-ENT1	Entrance	HAPSITE	Indoor Air	3/7/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STA1	A-0060H-030717-IA-007-STA1	Stairwell	HAPSITE	Indoor Air	3/7/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAS1	A-0060H-030717-IA-008-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/7/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-009-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO2	A-0060H-030717-IA-010-STO2	Basement Storage	HAPSITE	Indoor Air	3/7/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-011-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAS1	A-0060H-030717-IA-012-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAC1	A-0060H-030717-IA-013-BAC1	Blower Door	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-014-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAS1	A-0060H-030717-IA-015-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAC1	A-0060H-030717-IA-016-BAC1	Blower Door	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-017-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAS1	A-0060H-030717-IA-018-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAC1	A-0060H-030717-IA-019-BAC1	Blower Door	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-020-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-021-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAS1	A-0060H-030717-IA-022-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAC1	A-0060H-030717-IA-023-BAC1	Blower Door	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-024-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAS1	A-0060H-030717-IA-025-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAC1	A-0060H-030717-IA-026-BAC1	Blower Door	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STA1	A-0060H-030717-IA-027-STA1	Stairwell	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-ENT1	A-0060H-030717-IA-028-ENT1	Entrance	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO2	A-0060H-030717-IA-029-STO2	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-030-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAS1	A-0060H-030717-IA-031-BAS1	Basement Living Room	HAPSITE	Indoor Air	3/7/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-BAC1	A-0060H-030717-IA-032-BAC1	Blower Door	HAPSITE	Indoor Air	3/7/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO2	A-0060H-030717-IA-033-STO2	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-ENT1	A-0060H-030717-IA-034-ENT1	Entrance	HAPSITE	Indoor Air	3/7/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STA1	A-0060H-030717-IA-035-STA1	Stairwell	HAPSITE	Indoor Air	3/7/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0060H-IA-STO1	A-0060H-030717-IA-036-STO1	Basement Storage	HAPSITE	Indoor Air	3/7/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
0061-H	0061H-OA-OUT1	A-0061H-030817-OA-002-OUT1	Outdoor (north side)	HAPSITE	Outdoor Air	3/8/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LIV1	A-0061H-030817-IA-003-LIV1	Living Room	HAPSITE	Indoor Air	3/8/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BAS1	A-0061H-030817-IA-004-BAS1	Basement	HAPSITE	Indoor Air	3/8/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BED1	A-0061H-030817-IA-006-BED1	Bedroom	HAPSITE	Indoor Air	3/8/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-KIT1	A-0061H-030817-IA-007-KIT1	Kitchen	HAPSITE	Indoor Air	3/8/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BAS1	A-0061H-030817-IA-009-BAS1	Basement	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-KIT1	A-0061H-030817-IA-010-KIT1	Kitchen	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LIV1	A-0061H-030817-IA-011-LIV1	Living Room	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BED1	A-0061H-030817-IA-012-BED1	Bedroom	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LAU1	A-0061H-030817-IA-013-LAU1	Laundry Room	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BAS1	A-0061H-030817-IA-014-BAS1	Basement	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-KIT1	A-0061H-030817-IA-015-KIT1	Kitchen	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LAU1	A-0061H-030817-IA-016-LAU1	Laundry Room	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BAS1	A-0061H-030817-IA-017-BAS1	Basement	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-KIT1	A-0061H-030817-IA-018-KIT1	Kitchen	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LIV1	A-0061H-030817-IA-021-LIV1	Living Room	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LAU1	A-0061H-030817-IA-022-LAU1	Laundry Room	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BED1	A-0061H-030817-IA-023-BED1	Bedroom	HAPSITE	Indoor Air	3/8/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BAS1	A-0061H-030817-IA-024-BAS1	Basement	HAPSITE	Indoor Air	3/8/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-KIT1	A-0061H-030817-IA-025-KIT1	Kitchen	HAPSITE	Indoor Air	3/8/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LAU1	A-0061H-030817-IA-026-LAU1	Laundry Room	HAPSITE	Indoor Air	3/8/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-BED1	A-0061H-030817-IA-027-BED1	Bedroom	HAPSITE	Indoor Air	3/8/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0061H-IA-LIV1	A-0061H-030817-IA-028-LIV1	Living Room	HAPSITE	Indoor Air	3/8/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
0062-H	0062H-OA-OUT1	A-0062H-032917-OA-004-OUT1	Outdoor (north side)	HAPSITE	Outdoor Air	3/29/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-KIT1	A-0062H-032917-IA-005-KIT1	Kitchen	HAPSITE	Indoor Air	3/29/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-BAS1	A-0062H-032917-IA-006-BAS1	Basement	HAPSITE	Indoor Air	3/29/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-LAN1	A-0062H-032917-IA-009-LAN1	Landing	HAPSITE	Indoor Air	3/29/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-GAR1	A-0062H-032917-IA-010-GAR1	Garage	HAPSITE	Indoor Air	3/29/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-KIT1	A-0062H-032917-IA-011-KIT1	Kitchen	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-BAS1	A-0062H-032917-IA-012-BAS1	Basement	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-LAN1	A-0062H-032917-IA-013-LAN1	Landing	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-KIT1	A-0062H-032917-IA-014-KIT1	Kitchen	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-BAS1	A-0062H-032917-IA-015-BAS1	Basement	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-KIT1	A-0062H-032917-IA-016-KIT1	Kitchen	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-LAN1	A-0062H-032917-IA-017-LAN1	Landing	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-BAS1	A-0062H-032917-IA-018-BAS1	Basement	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-KIT1	A-0062H-032917-IA-019-KIT1	Kitchen	HAPSITE	Indoor Air	3/29/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-KIT1	A-0062H-032917-IA-021-KIT1	Kitchen	HAPSITE	Indoor Air	3/29/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-BAS1	A-0062H-032917-IA-022-BAS1	Basement	HAPSITE	Indoor Air	3/29/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-LAN1	A-0062H-032917-IA-023-LAN1	Landing	HAPSITE	Indoor Air	3/29/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H-IA-BAS1	A-0062H-032917-IA-024-BAS1	Basement	HAPSITE	Indoor Air	3/29/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0062H	0062H-IA01SC-031222	Dining Room	SUMMA	Indoor Air	3/12/2022	No Pressure	**0.05 J**	0.17 U	0.12 U	0.079 U	0.56 U
0063-H	0063H-OA-OUT1	A-0063H-032117-OA-010-OUT1	Outdoor (south side)	HAPSITE	Outdoor Air	3/21/2017	No Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0063H-IA-DIN1	A-0063H-032117-IA-011-DIN1	Dining Room	HAPSITE	Indoor Air	3/21/2017	No Pressure	**2.3**	0.5 U	0.4 U	NS	NS
	0063H-IA-LAN1	A-0063H-032117-IA-012-LAN1	Landing	HAPSITE	Indoor Air	3/21/2017	No Pressure	**2.6**	0.5 U	0.4 U	NS	NS
	0063H-IA-BAS1	A-0063H-032117-IA-013-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	No Pressure	**2.9**	0.5 U	0.4 U	NS	NS
	0063H-IA-BAT1	A-0063H-032117-IA-014-BAT1	Basement Bathroom	HAPSITE	Indoor Air	3/21/2017	No Pressure	**3.3**	0.5 U	0.4 U	NS	NS
	0063H-IA-STO1	A-0063H-032117-IA-015-STO1	Basement Storage	HAPSITE	Indoor Air	3/21/2017	No Pressure	**4.0**	0.5 U	0.4 U	NS	NS
	0063H-IA-GAR1	A-0063H-032117-IA-016-GAR1	Garage	HAPSITE	Indoor Air	3/21/2017	No Pressure	**2.0**	0.5 U	0.4 U	NS	NS
	0063H-IA-BAS1	A-0063H-032117-IA-017-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**2.2**	0.5 U	0.4 U	NS	NS
	0063H-IA-BLO1	A-0063H-032117-IA-018-BLO1	Blower Door	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.9**	0.5 U	0.4 U	NS	NS
	0063H-IA-DIN1	A-0063H-032117-IA-019-DIN1	Dining Room	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.6**	0.5 U	0.4 U	NS	NS
	0063H-IA-LAN1	A-0063H-032117-IA-020-LAN1	Landing	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.3**	0.5 U	0.4 U	NS	NS
	0063H-IA-BAS1	A-0063H-032117-IA-021-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.8**	0.5 U	0.4 U	NS	NS
	0063H-IA-BLO1	A-0063H-032117-IA-022-BLO1	Blower Door	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**2.2**	0.5 U	0.4 U	NS	NS
	0063H-IA-DIN1	A-0063H-032117-IA-023-DIN1	Dining Room	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.4**	0.5 U	0.4 U	NS	NS
	0063H-IA-LAN1	A-0063H-032117-IA-024-LAN1	Landing	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.0**	0.5 U	0.4 U	NS	NS
	0063H-IA-BAS1	A-0063H-032117-IA-025-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**2.0**	0.5 U	0.4 U	NS	NS
	0063H-IA-BLO1	A-0063H-032117-IA-026-BLO1	Blower Door	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.8**	0.5 U	0.4 U	NS	NS
	0063H-IA-DIN1	A-0063H-032117-IA-027-DIN1	Dining Room	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**1.1**	0.5 U	0.4 U	NS	NS
	0063H-IA-LAN1	A-0063H-032117-IA-028-LAN1	Landing	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	**0.75**	0.5 U	0.4 U	NS	NS

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³ Q	TCE µg/m³ Q	cis-1,2-DCE µg/m³ Q	VC µg/m³ Q	1,4-Dioxane µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120	6.3	NA	17	56
0063-H	0063H-IA-BAS1	A-0063H-032117-IA-029-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	2.8	0.5 U	0.4 U	NS	NS
	0063H-IA-BAS1	A-0063H-032117-IA-030-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	0.95	0.5 U	0.4 U	NS	NS
	0063H-IA-BLO1	A-0063H-032117-IA-031-BLO1	Blower Door	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	1.4	0.5 U	0.4 U	NS	NS
	0063H-IA-DIN1	A-0063H-032117-IA-032-DIN1	Dining Room	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	0.81	0.5 U	0.4 U	NS	NS
	0063H-IA-LAN1	A-0063H-032117-IA-033-LAN1	Landing	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0063H-IA-BAS1	A-0063H-032117-IA-034-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0063H-IA-BLO1	A-0063H-032117-IA-035-BLO1	Blower Door	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	1.7	0.5 U	0.4 U	NS	NS
	0063H-IA-BLO1	A-0063H-032117-IA-036-BLO1	Blower Door	HAPSITE	Indoor Air	3/21/2017	Negative Pressure	0.17	0.5 U	0.4 U	NS	NS
	0063H-IA-BAS1	A-0063H-032117-IA-037-BAS1	Basement	HAPSITE	Indoor Air	3/21/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0063H-IA-BLO1	A-0063H-032117-IA-038-BLO1	Blower Door	HAPSITE	Indoor Air	3/21/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0063H-IA-DIN1	A-0063H-032117-IA-039-DIN1	Dining Room	HAPSITE	Indoor Air	3/21/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
	0063H-IA-LAN1	A-0063H-032117-IA-040-LAN1	Landing	HAPSITE	Indoor Air	3/21/2017	Positive Pressure	0.7 U	0.5 U	0.4 U	NS	NS
0064-H	0064H-IA-LIV1	A-0064H-041317-IA-002-LIV1	Living Room	HAPSITE	Indoor Air	4/13/2017	No Pressure	2.5	0.5 U	0.4 U	NS	NS
	0064H-TO-LIV	A-0064H-041417-TO-001-LIV	Living Room	SUMMA	Indoor Air	4/14/2017	No Pressure	1.9 J	0.27 UJ	0.2 UJ	0.13 UJ	0.18 UJ
	0064H	0064H-AA01SC-030822	Backyard	SUMMA	Outdoor Air	3/8/2022	No Pressure	0.51	0.034 J	0.096 J	0.08 U	0.56 U
	0064H	0064H-IA01SC-030822	Living Room	SUMMA	Indoor Air	3/8/2022	No Pressure	13	0.15 J	0.12 U	0.08 U	0.51 J
0065-H	0065H	0065-H-IA01HS	Living Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0065H	0065-H-IA02HS	Basement Crawl Space	HAPSITE	Indoor Air	12/16/2019	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0065H	0065-H-IA03HS	Basement Family Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0065H	0065-H-IA04HS	Basement Laundry Room	HAPSITE	Indoor Air	12/16/2019	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0065H	0065H-IA04PS-010920	Basement Laundry Room	PASSIVE	Indoor Air	1/9/2020	No Pressure	0.12	0.044 U	NS	NS	NS
	0065H	0065H-IA04SC-010920	Basement Laundry Room	SUMMA	Indoor Air	1/9/2020	No Pressure	0.12 J	0.22 U	0.16 U	0.1 U	0.74 U
	0065H	0065H-IA03SC-010920	Basement Family Room	SUMMA	Indoor Air	1/9/2020	No Pressure	0.16 J	0.25 U	0.18 U	0.12 U	0.83 U
	0065H	0065H-IA03PS-010920	Basement Family Room	PASSIVE	Indoor Air	1/9/2020	No Pressure	0.12	0.044 U	NS	NS	NS
	0065H	0065H-IA02SC-010920	Basement Crawl Space	SUMMA	Indoor Air	1/9/2020	No Pressure	0.12 J	0.22 U	0.16 U	0.1 U	0.74 U
	0065H	0065H-IA02PS-010920	Basement Crawl Space	PASSIVE	Indoor Air	1/9/2020	No Pressure	0.11	0.044 U	NS	NS	NS
	0065H	0065H-IA01SC-010920	Living Room	SUMMA	Indoor Air	1/9/2020	No Pressure	0.092 J	0.26 U	0.19 U	0.12 U	0.88 U
	0065H	0065H-IA01PS-010920	Living Room	PASSIVE	Indoor Air	1/9/2020	No Pressure	0.082	0.044 U	NS	NS	NS
	0065H	0065H-AA01SC-010920	Outdoor	SUMMA	Outdoor Air	1/9/2020	No Pressure	0.083 J	0.21 U	0.16 U	0.1 U	0.71 U
0066-H	0066H	0066H-IA01SC-030320	Basement Bathroom	SUMMA	Indoor Air	3/3/2020	No Pressure	0.079 J	0.21 U	0.16 U	0.1 U	0.71 U
	0066H	0066H-IA02SC-030320	Basement Utility Room	SUMMA	Indoor Air	3/3/2020	No Pressure	0.080 J	0.21 U	0.16 U	0.1 U	0.71 U
	0066H	0066H-IA03SC-030320	Basement TV Room	SUMMA	Indoor Air	3/3/2020	No Pressure	0.081 J	0.14 J	0.16 U	0.1 U	0.43 J
	0066H	0066H-IA04SC-030320	Dining Room	SUMMA	Indoor Air	3/3/2020	No Pressure	0.094 J	0.2 U	0.15 U	0.098 U	0.11 J
	0066H	0066H-AA01SC-030320	Outdoor	SUMMA	Outdoor Air	3/3/2020	No Pressure	0.099 J	0.19 U	0.14 U	0.089 U	0.63 U
	0066H	0066-H-IA01HS	Basement Bathroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0066H	0066-H-IA02HS	Basement Utility Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0066H	0066-H-IA03HS	Basement TV Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0066H	0066-H-IA04HS	Dining Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0066H	0066H-IA01PS-03242020	Basement Bathroom	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.048 J	0.12	NS	NS	NS
	0066H	0066H-IA02PS-03242020	Basement Utility Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.054 J	0.02 J	NS	NS	NS
	0066H	0066H-IA03PS-03242020	Basement TV Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.068	0.19	NS	NS	NS
	0066H	0066H-IA04PS-03242020	Dining Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.067	0.05	NS	NS	NS
0069-H	0069H	0069H-IA02PS-03252020	Basement Bedroom	PASSIVE	Indoor Air	3/2/2020	No Pressure	0.12	0.049 U	NS	NS	NS
	0069H	0069H-IA01SC-030520	Basement Crawl Space	SUMMA	Indoor Air	3/5/2020	No Pressure	0.15 J	0.2 U	0.15 U	0.098 U	0.12 J
	0069H	0069H-IA02SC-030520	Basement Bedroom	SUMMA	Indoor Air	3/5/2020	No Pressure	0.20 J	0.13 J	0.22 UJ	0.14 UJ	1 UJ
	0069H	0069H-IA03SC-030520	Basement Bathroom	SUMMA	Indoor Air	3/5/2020	No Pressure	0.34	0.2 U	0.15 U	0.098 U	0.69 U
	0069H	0069H-IA04SC-030520	Bedroom	SUMMA	Indoor Air	3/5/2020	No Pressure	0.19 J	0.2 U	0.15 U	0.098 U	0.29 J
	0069H	0069H-IA05SC-030520	Living Room	SUMMA	Indoor Air	3/5/2020	No Pressure	0.20 J	0.2 U	0.15 U	0.098 U	0.69 U
	0071H	0071H-AA01SC-030520	Outdoor	SUMMA	Outdoor Air	3/5/2020	No Pressure	0.17 J	0.22 U	0.16 U	0.1 U	0.74 U
	0069H	0069-H-IA01HS	Basement Bedroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0069H	0069-H-IA02HS	Basement Bathroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0069H	0069-H-IA03HS	Closet	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0069H	0069-H-IA04HS	Basement Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0069H	0069-H-IA05HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0069H	0069H-IA01PS-03252020	Basement Crawl Space	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.09	0.049 U	NS	NS	NS
	0069H	0069H-IA03PS-03252020	Basement Bathroom	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.12	0.049 U	NS	NS	NS
	0069H	0069H-IA04PS-03252020	Bedroom	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.11	0.049 U	NS	NS	NS
	0069H	0069H-IA05PS-03252020	Living Room	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.10	0.049 U	NS	NS	NS
0071-H	0071H	0071H-IA02SC-030520	Basement Bedroom	SUMMA	Indoor Air	3/5/2020	No Pressure	0.31	0.21 U	0.16 U	0.1 U	0.71 U
	0071H	0071H-IA01SC-030520	Basement Living Room	SUMMA	Indoor Air	3/5/2020	No Pressure	0.33	0.2 U	0.14 U	0.094 U	0.66 U
	0071H	0071H-AA01SC-030520	Outdoor	SUMMA	Outdoor Air	3/5/2020	No Pressure	0.17 J	0.22 U	0.16 U	0.1 U	0.74 U
	0071H	0071H-IA03SC-030520	Main Floor	SUMMA	Indoor Air	3/5/2020	No Pressure	0.28	0.2 U	0.15 U	0.098 U	0.69 U
	0071H	0071-H-IA01HS	Basement Laundry	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0071H	0071-H-IA02HS	Basement Utility Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0071H	0071-H-IA03HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0071H	0071H-IA01PS-03242020	Basement Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.17	0.05 U	NS	NS	NS
	0071H	0071H-IA02PS-03242020	Basement Bedroom	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.20	0.05 U	NS	NS	NS
	0071H	0071H-IA03PS-03242020	Main Floor	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.18	0.05 U	NS	NS	NS
0072-H	0072H	0072H-IA01SC-030822	Basement Laundry Room	SUMMA	Indoor Air	3/8/2022	No Pressure	0.24 J	0.028 J	0.15 U	0.098 U	0.69 U
0076-H	0076H	0076-H-IA01HS	Basement Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0076H	0076-H-IA02HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0076H	0076-H-IA03HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0076H	0076-H-IA04HS	Not available	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0076H	0076-H-IA05HS	Not available	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0076H	0076H-IA01SC-030720	Basement Crawl Space	SUMMA	Indoor Air	3/7/2020	No Pressure	0.24 U	0.19 U	0.14 U	0.089 U	0.63 U
	0076H	0076H-IA02SC-030720	Basement Laundry Room	SUMMA	Indoor Air	3/7/2020	No Pressure	0.28 U	0.22 U	0.16 U	0.1 U	0.25 J
	0076H	0076H-IA03SC-030720	Living Room	SUMMA	Indoor Air	3/7/2020	No Pressure	0.26 U	0.2 U	0.15 U	0.098 U	0.12 J
	0076H	0076H-AA01SC-030720	Outdoor	SUMMA	Outdoor Air	3/7/2020	No Pressure	0.25 U	0.2 U	0.14 U	0.094 U	0.66 U
	0076H	0076H-IA01PS-03252020	Basement Crawl Space	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.049 J	0.053 U	NS	NS	NS
	0076H	0076H-IA02PS-03252020	Basement Laundry Room	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.044 J	0.053 U	NS	NS	NS
	0076H	0076H-IA03PS-03252020	Living Room	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.043 J	0.053 U	NS	NS	NS
0091-H	0091H	0091H-IA01SC-030520	Living Room	SUMMA	Indoor Air	3/5/2020	No Pressure	16	0.37	0.14 U	0.094 U	0.66 U
	0091H	0091H-IA02SC-030520	Basement Bathroom	SUMMA	Indoor Air	3/5/2020	No Pressure	17	0.38	0.15 U	0.096 U	0.67 U
	0091H	0091H-IA03SC-030520	Basement Bedroom	SUMMA	Indoor Air	3/5/2020	No Pressure	18	0.43	0.15 U	0.096 U	0.25 J
	0091H	0091H-IA04SC-030520	Basement Utility Room	SUMMA	Indoor Air	3/5/2020	No Pressure	18	0.41	0.16 U	0.1 U	0.72 U
	0091H	0091H-AA01SC-030520	Outdoor	SUMMA	Outdoor Air	3/5/2020	No Pressure	0.19 J	0.2 U	0.15 U	0.096 U	0.16 J
	0091H	0091-H-IA01HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.80	NS	NS
	0091H	0091-H-IA02HS	Basement Bathroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.97	NS	NS
	0091H	0091-H-IA05HS	Basement Stairway	HAPSITE	Indoor Air	3/6/2020	No Pressure	12	0.1 U	1.4	NS	NS
	0091H	0091-H-IA04HS	Basement Utility Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	17	0.1 U	0.54	NS	NS
	0091H	0091-H-IA03HS	Basement Bathroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	18	0.1 U	0.60	NS	NS
	0091H	0091H-IA01PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	14	0.29	NS	NS	NS
	0091H	0091H-IA02PS-03242020	Basement Bathroom	PASSIVE	Indoor Air	3/24/2020	No Pressure	15	0.32	NS	NS	NS
	0091H	0091H-IA03PS-03242020	Basement Bedroom	PASSIVE	Indoor Air	3/24/2020	No Pressure	17	0.36	NS	NS	NS
	0091H	0091H-IA04PS-03242020	Basement Utility Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	17	0.35	NS	NS	NS
	0091H	0091H-IA04SC-083121	Basement Utility Room	SUMMA	Indoor Air	8/31/2021	No Pressure	16	0.38	0.13 U	0.083 U	0.28 J
	0091H	0091H-AA01SC-083121	Outdoor	SUMMA	Outdoor Air	8/31/2021	No Pressure	0.18 J	0.19 U	0.14 U	0.089 U	0.44 J

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE µg/m³	Q	TCE µg/m³	Q	cis-1,2-DCE µg/m³	Q	VC µg/m³	Q	1,4-Dioxane µg/m³	Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11		0.48		NA		0.17		0.56	
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41		2.1		NA		1.7		5.6	
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120		6.3		NA		17		56	
0098-H	0098H	0098H-IA01SC-030320	Basement Utility Chemical Storage	SUMMA	Indoor Air	3/3/2020	No Pressure	1.2		0.2	U	0.15	U	0.097	U	0.68	U
	0098H	0098H-IA02SC-030320	Basement Living Room	SUMMA	Indoor Air	3/3/2020	No Pressure	0.97		0.2	U	0.15	U	0.096	U	0.68	U
	0098H	0098H-IA03SC-030320	Basement Bathroom	SUMMA	Indoor Air	3/3/2020	No Pressure	0.75		0.78		0.15	U	0.098	U	0.13	J
	0098H	0098H-IA04SC-030320	Kitchen	SUMMA	Indoor Air	3/3/2020	No Pressure	0.70		0.55		0.16	U	0.1	U	0.18	J
	0098H	0098-H-AA01SC-030320	Outdoor	SUMMA	Outdoor Air	3/3/2020	No Pressure	0.13	J	0.2	U	0.15	U	0.098	U	0.69	U
	0098H	0098-H-IA01HS	Kitchen	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0098H	0098-H-IA02HS	Basement Utility Chemical Storage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0098H	0098-H-IA03HS	Basement Storage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0098H	0098-H-IA04HS	Basement Bathroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0098H	0098-H-IA05HS	Basement Bedroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0098H	0098H-IA01PS-03242020	Basement Utility Chemical Storage	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.30		0.035	J	NS		NS		NS	
	0098H	0098H-IA02PS-03242020	Basement Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.21		0.024	J	NS		NS		NS	
	0098H	0098H-IA03PS-03242020	Basement Bathroom	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.22		0.026	J	NS		NS		NS	
	0098H	0098H-IA04PS-03242020	Kitchen	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.19		0.023	J	NS		NS		NS	
0102-H	0102H	0102H-IA01SC-082421	Laundry Room	SUMMA	Indoor Air	8/24/2021	No Pressure	0.47		0.020	J	0.13	U	0.087	U	0.42	J
	0102H	0102H-AA01SC-082421	Outdoor	SUMMA	Outdoor Air	8/24/2021	No Pressure	0.23	U	0.18	U	0.13	U	0.086	U	0.6	U
0118-H	0118H	0118H-AA01SC-030520	Outdoor	SUMMA	Outdoor Air	3/5/2020	No Pressure	0.14	J	0.2	U	0.15	U	0.098	U	0.69	U
	0118H	0118H-IA02SC-030520	Crawl Space	SUMMA	Indoor Air	3/5/2020	No Pressure	4.1		0.98	U	0.72	U	0.47	U	3.3	U
	0118H	0118H-IA01SC-030520	Basement Laundry Room	SUMMA	Indoor Air	3/5/2020	No Pressure	4.9		0.66	U	0.48	U	0.31	U	2.2	U
	0118H	0118H-IA03SC-030520	Dining Room	SUMMA	Indoor Air	3/5/2020	No Pressure	3.3		0.2	U	0.15	U	0.098	U	0.12	J
	0118H	0118-H-IA01HS	Garage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0118H	0118-H-IA02HS	Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0118H	0118-H-IA03HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0118H	0118-H-IA04HS	Bathroom	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0118H	0118H-IA01PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	4.4		0.031	J	NS		NS		NS	
	0118H	0118H-IA02PS-03242020	Crawl Space	PASSIVE	Indoor Air	3/24/2020	No Pressure	1.9		0.05	U	NS		NS		NS	
	0118H	0118H-IA03PS-03242020	Dining Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	2.5		0.028	J	NS		NS		NS	
0121-H	0121H	0121H-IA01SC-030320	Crawl Space	SUMMA	Indoor Air	3/3/2020	No Pressure	3.9		0.2	U	0.15	U	0.021	J	0.20	J
	0121H	0121H-IA02SC-030320	Basement Storage	SUMMA	Indoor Air	3/3/2020	No Pressure	2.5		0.2	U	0.15	U	0.022	J	0.68	U
	0121H	0121H-IA04SC-030320	Kitchen	SUMMA	Indoor Air	3/3/2020	No Pressure	1.1		0.2	U	0.14	U	0.024	J	0.66	U
	0121H	0121H-IA03SC-030320	Living Room	SUMMA	Indoor Air	3/3/2020	No Pressure	1.2		0.059	J	0.14	U	0.053	J	0.63	U
	0121H	0121H-AA01SC-030320	Outdoor	SUMMA	Outdoor Air	3/3/2020	No Pressure	0.14	J	0.19	U	0.14	U	0.089	U	0.63	U
	0121H	0121-H-IA01HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0121H	0121-H-IA02HS	Kitchen	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0121H	0121-H-IA03HS	Basement Storage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0121H	0121-H-IA04HS	Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0121H	0121H-IA01PS-03242020	Crawl Space	PASSIVE	Indoor Air	3/24/2020	No Pressure	3.3		0.046	U	NS		NS		NS	
	0121H	0121H-IA02PS-03242020	Basement Storage	PASSIVE	Indoor Air	3/24/2020	No Pressure	1.6		0.021	J	NS		NS		NS	
	0121H	0121H-IA03PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.73		0.037	J	NS		NS		NS	
	0121H	0121H-IA04PS-03242020	Kitchen	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.68		0.024	J	NS		NS		NS	
0122-H	0122H	0122H-IA01SC-030520	Crawl Space	SUMMA	Indoor Air	3/5/2020	No Pressure	4.8		0.18	U	0.14	U	0.088	U	0.62	U
	0122H	0122H-IA02SC-030520	Basement Laundry Room	SUMMA	Indoor Air	3/5/2020	No Pressure	4.7		0.19	U	0.14	U	0.091	U	0.64	U
	0122H	0122H-IA03SC-030520	Basement Living Room	SUMMA	Indoor Air	3/5/2020	No Pressure	3.0		0.2	U	0.15	U	0.094	U	0.67	U
	0122H	0122H-IA04SC-030520	Office	SUMMA	Indoor Air	3/5/2020	No Pressure	2.6		0.2	U	0.14	U	0.094	U	0.17	J
	0122H	0122H-AA01SC-030520	Outdoor	SUMMA	Outdoor Air	3/5/2020	No Pressure	0.18	J	0.2	U	0.14	U	0.094	U	0.66	U
	0122H	0122H-IA05SC-030520	Living Room	SUMMA	Indoor Air	3/5/2020	No Pressure	3.2		0.19	U	0.14	U	0.092	U	0.64	U
	0122H	0122-H-IA03HS	Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0122H	0122-H-IA04HS	Office	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0122H	0122-H-IA05HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0122H	0122-H-IA01HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.12		NS		NS	
	0122H	0122-H-IA02HS	Basement Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.13		NS		NS	
	0122H	0122H-IA01PS-03242020	Crawl Space	PASSIVE	Indoor Air	3/24/2020	No Pressure	3.6		0.02	J	NS		NS		NS	
	0122H	0122H-IA02PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	3.2		0.05	U	NS		NS		NS	
	0122H	0122H-IA03PS-03242020	Basement Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	2.5		0.05	U	NS		NS		NS	
	0122H	0122H-IA04PS-03242020	Office	PASSIVE	Indoor Air	3/24/2020	No Pressure	1.9		0.05	U	NS		NS		NS	
	0122H	0122H-IA05PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	2.4		0.05	U	NS		NS		NS	
0133-H	0133H	0133H-IA01SC-030420	Crawl Space	SUMMA	Indoor Air	3/4/2020	No Pressure	0.34		0.21	U	0.16	U	0.1	U	0.71	U
	0133H	0133H-IA02SC-030420	Basement Office	SUMMA	Indoor Air	3/4/2020	No Pressure	0.39		0.21	U	0.15	U	0.099	U	0.7	U
	0133H	0133H-IA03SC-030420	Living Room	SUMMA	Indoor Air	3/4/2020	No Pressure	0.37		0.21	U	0.16	U	0.1	U	0.15	J
	0135H	0135H-AA01SC-030420	Outdoor	SUMMA	Outdoor Air	3/4/2020	No Pressure	0.15	J	0.18	U	0.14	U	0.088	U	0.62	U
	0133H	0133-H-IA01HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0133H	0133-H-IA02HS	Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0133H	0133-H-IA03HS	Furnace Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0133H	0133-H-IA04HS	Basement Office	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0133H	0133H-IA01PS-03242020	Crawl Space	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.2		0.048	U	NS		NS		NS	
	0133H	0133H-IA02PS-03242020	Basement Office	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.28		0.022	J	NS		NS		NS	
	0133H	0133H-IA03PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.22		0.024	J	NS		NS		NS	
0135-H	0135H	0135H-IA01SC-030420	Basement Laundry Room	SUMMA	Indoor Air	3/4/2020	No Pressure	0.34		0.18	U	0.13	U	0.086	U	0.6	U
	0135H	0135H-IA03SC-030420	Dining Room	SUMMA	Indoor Air	3/4/2020	No Pressure	0.37		0.2	U	0.15	U	0.097	U	0.68	U
	0135H	0135H-IA02SC-030420	Basement	SUMMA	Indoor Air	3/4/2020	No Pressure	0.45	J	0.4	U	0.29	U	0.19	U	1.3	U
	0135H	0135H-AA01SC-030420	Outdoor	SUMMA	Outdoor Air	3/4/2020	No Pressure	0.15	J	0.18	U	0.14	U	0.088	U	0.62	U
	0135H	0135-H-IA01HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0135H	0135-H-IA02HS	Basement	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0135H	0135-H-IA03HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0135H	0135H-IA01PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.23		0.048	U	NS		NS		NS	
	0135H	0135H-IA02PS-03242020	Basement	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.38		0.048	U	NS		NS		NS	
	0135H	0135H-IA03PS-03242020	Dining Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.28		0.048	U	NS		NS		NS	
0137-H	0137H	0137-H-IA01HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0137H	0137-H-IA02HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0137H	0137-H-IA03HS	Garage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0137H	0137-H-IA04HS	Basement Shop Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0137H	0137-H-IA05HS	Not available	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0137H	0137H-IA01SC-030620	Basement Laundry Room	SUMMA	Indoor Air	3/6/2020	No Pressure	0.75		0.13	J	0.16	U	0.1	U	0.71	U
	0137H	0137H-IA02SC-030620	Living Room	SUMMA	Indoor Air	3/6/2020	No Pressure	1.2		0.2	U	0.15	U	0.013	J	0.18	J
	0137H	0137H-IA01PS-03252020	Basement Laundry Room	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.30		0.05	U	NS		NS		NS	
	0135H	0135H-AA01SC-030420	Outdoor	SUMMA	Outdoor Air	3/4/2020	No Pressure	0.15	J	0.18	U	0.14	U	0.088	U	0.62	U
	0137H	0137H-IA02PS-03252020	Living Room	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.46		0.024	J	NS		NS		NS	
0139-H	0139H	0139-H-IA01HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0139H	0139-H-IA02HS	Basement Storage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0139H	0139-H-IA03HS	Kitchen	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1	U	0.1	U	0.1	U	NS		NS	
	0139H	0139H-IA01SC-030720	Basement Storage	SUMMA	Indoor Air	3/7/2020	No Pressure	0.12	J	0.23	U	0.17	U	0.11	U	0.22	J
	0139H	0139H-IA02SC-030720	Basement Living Room	SUMMA	Indoor Air	3/7/2020	No Pressure	0.13	J	0.2	U	0.14	U	0.094	U	0.21	J
	0139H	0139H-IA03SC-030720	Dining Room	SUMMA	Indoor Air	3/7/2020	No Pressure	0.15	J	0.21	U	0.16	U	0.1	U	0.12	J
	0139H	0139H-AA01SC-030720	Outdoor	SUMMA	Outdoor Air	3/7/2020	No Pressure	0.28	U	0.22	U	0.16	U	0.1	U	0.74	U
	0139H	0139H-IA01PS-03242020	Basement Storage	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.12		0.055	U	NS		NS		NS	
	0139H	0139H-IA02PS-03242020	Basement Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.12		0.055	U	NS		NS		NS	
	0139H	0139H-IA03PS-03242020	Dining Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.13		0.055	U	NS		NS		NS	

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE	TCE	cis-1,2-DCE	VC	1,4-Dioxane
								µg/m³ Q	µg/m³ Q	µg/m³ Q	µg/m³ Q	µg/m³ Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								11	0.48	NA	0.17	0.56
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								41	2.1	NA	1.7	5.6
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								120	6.3	NA	17	56
0145-H	0145H	0145H-IA01SC-031222	Basement Laundry Room	SUMMA	Indoor Air	3/12/2022	No Pressure	4.7	0.045 J	0.12 U	0.08 U	0.56 U
0146-H	0146H	0146-H-IA01HS	Garage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0146H	0146-H-IA02HS	Utility Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0146H	0146-H-IA03HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0146H	0146H-IA01SC-030620	Utility Room	SUMMA	Indoor Air	3/6/2020	No Pressure	10	0.22 U	0.16 U	0.1 U	0.23 J
	0146H	0146H-IA02SC-030620	Living Room	SUMMA	Indoor Air	3/6/2020	No Pressure	10	0.21 U	0.16 U	0.1 U	0.71 U
	0146H	0146H-IA03SC-030620	Living Room	SUMMA	Indoor Air	3/6/2020	No Pressure	9.8	0.2 U	0.15 U	0.098 U	0.13 J
	0146H	0146H-AA01SC-030620	Outdoor	SUMMA	Outdoor Air	3/6/2020	No Pressure	0.24 U	0.19 U	0.14 U	0.089 U	0.18 J
	0146H	0146H-IA01PS-03242020	Utility Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	2.7	0.03 J	NS	NS	NS
	0146H	0146H-IA02PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	3.1	0.052 U	NS	NS	NS
	0146H	0146H-IA03PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	3	0.052 U	NS	NS	NS
	0146H	0146H-IA01SC-031122	Living Room	SUMMA	Indoor Air	3/11/2022	No Pressure	2	0.34 U	0.25 U	0.16 U	1.1 U
0148-H	0148H	0148H-IA01SC-030420	Basement Utility Crawl Space	SUMMA	Indoor Air	3/4/2020	No Pressure	1.4	0.2 U	0.15 U	0.096 U	0.67 U
	0148H	0148H-IA02SC-030420	Basement Room	SUMMA	Indoor Air	3/4/2020	No Pressure	2.2	0.19 U	0.14 U	0.092 U	0.15 J
	0148H	0148H-IA03SC-030420	Dining Room	SUMMA	Indoor Air	3/4/2020	No Pressure	1.3	0.22 U	0.16 U	0.1 U	0.16 J
	0148H	0148H-AA01SC-030420	Outdoor	SUMMA	Outdoor Air	3/4/2020	No Pressure	0.15 J	0.2 U	0.14 U	0.094 U	0.26 J
	0148H	0148-H-IA01HS	Dining Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0148H	0148-H-IA02HS	Basement Utility Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0148H	0148-H-IA03HS	Basement Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0148H	0148-H-IA04HS	Basement Chemical Storage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0148H	0148H-IA01PS-03252020	Basement Utility Crawl Space	PASSIVE	Indoor Air	3/25/2020	No Pressure	1.4	0.046 U	NS	NS	NS
	0148H	0148H-IA02PS-03252020	Basement Room	PASSIVE	Indoor Air	3/25/2020	No Pressure	1.6	0.046 U	NS	NS	NS
	0148H	0148H-IA03PS-03252020	Dining Room	PASSIVE	Indoor Air	3/25/2020	No Pressure	0.9	0.046 U	NS	NS	NS
0153-H	0153H	0153H-IA01SC-030520	Basement TV Room	SUMMA	Indoor Air	3/5/2020	No Pressure	0.59	0.2 U	0.15 U	0.096 U	0.67 U
	0153H	0153H-IA02SC-030520	Basement Laundry Room	SUMMA	Indoor Air	3/5/2020	No Pressure	0.82	0.2 U	0.14 U	0.094 U	0.19 J
	0153H	0153H-IA03SC-030520	Dining Room	SUMMA	Indoor Air	3/5/2020	No Pressure	0.50	0.2 U	0.15 U	0.096 U	0.67 U
	0153H	0153H-AA01SC-030520	Outdoor	SUMMA	Outdoor Air	3/5/2020	No Pressure	0.20 J	0.2 U	0.15 U	0.096 U	0.11 J
	0153H	0153-H-IA01HS	Dining Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0153H	0153-H-IA02HS	Basement Storage	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0153H	0153-H-IA03HS	Basement Furnace Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0153H	0153H-IA01PS-03242020	Basement TV Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.36	0.05 U	NS	NS	NS
	0153H	0153H-IA02PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.42	0.05 U	NS	NS	NS
	0153H	0153H-IA03PS-03242020	Dining Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.33	0.05 U	NS	NS	NS
0162-H	0162H	0162H-IA01SC-030520	Basement Crawl Space	SUMMA	Indoor Air	3/5/2020	No Pressure	0.52	0.21 U	0.16 U	0.1 U	0.72 U
	0162H	0162H-IA02SC-030520	Basement Laundry Room	SUMMA	Indoor Air	3/5/2020	No Pressure	0.47	0.2 U	0.15 U	0.097 U	0.14 J
	0162H	0162H-IA-03SC-030520	Living Room	SUMMA	Indoor Air	3/5/2020	No Pressure	0.39	0.25 U	0.18 U	0.12 U	0.20 J
	0162H	0162H-AA01SC-030520	Outdoor	SUMMA	Outdoor Air	3/5/2020	No Pressure	0.27	0.18 U	0.14 U	0.087 U	0.62 U
	0162H	0162-H-IA01HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0162H	0162-H-IA02HS	Basement Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0162H	0162-H-IA03HS	Basement Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0162H	0162H-IA01PS-03242020	Basement Crawl Space	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.28	0.029 J	NS	NS	NS
	0162H	0162H-IA02PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.21	0.023 J	NS	NS	NS
	0162H	0162H-IA03PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.23	0.022 J	NS	NS	NS
0166-H	0166H	0166-H-IA02HS	Utility Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0166H	0166-H-IA03HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0166H	0166-H-IA01HS	Crawl Space	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.13	0.1 U	0.1 U	NS	NS
	0166H	0166H-IA01SC-030620	Crawl Space	SUMMA	Indoor Air	3/6/2020	No Pressure	5.7	0.98	0.034 J	0.084 U	0.59 U
	0166H	0166H-IA02SC-030620	Living Room	SUMMA	Indoor Air	3/6/2020	No Pressure	5.5	0.37	0.14 U	0.094 U	0.15 J
	0173H	0173H-AA01SC-030620	Outdoor	SUMMA	Outdoor Air	3/6/2020	No Pressure	0.25 U	0.2 U	0.14 U	0.094 U	0.66 U
	0166H	0166H-IA01PS-03242020	Crawl Space	PASSIVE	Indoor Air	3/24/2020	No Pressure	3	0.75	NS	NS	NS
	0166H	0166H-IA02PS-03242020	Living Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	2.2	0.4	NS	NS	NS
	0166H	0166H-IA02SC-082421	Living Room	SUMMA	Indoor Air	8/24/2021	No Pressure	0.24 U	0.022 J	0.14 U	0.089 U	0.63 U
0172-H	0172H	0172H-IA01SC-030822	Basement	SUMMA	Indoor Air	3/8/2022	No Pressure	4.3	0.028 J	0.12 U	0.078 U	0.55 U
0173-H	0173H	0173-H-IA01HS	Utility Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0173H	0173-H-IA02HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0173H	0173H-IA01SC-030620	Utility Room	SUMMA	Indoor Air	3/6/2020	No Pressure	4.6	0.12 J	0.15 U	0.096 U	0.68 U
	0173H	0173H-IA02SC-030620	Kitchen	SUMMA	Indoor Air	3/6/2020	No Pressure	1.7	0.22 U	0.16 U	0.1 U	0.14 J
	0173H	0173H-AA01SC-030620	Outdoor	SUMMA	Outdoor Air	3/6/2020	No Pressure	0.25 U	0.2 U	0.14 U	0.094 U	0.66 U
	0173H	0173H-IA01PS-03242020	Utility Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	5.1	0.052 U	NS	NS	NS
	0173H	0173H-IA02PS-03242020	Kitchen	PASSIVE	Indoor Air	3/24/2020	No Pressure	1.4	0.052 U	NS	NS	NS
0174-H	0174H	0174-H-IA01HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0174H	0174-H-IA02HS	Living Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0174H	0174-H-IA03HS	Basement Laundry Room	HAPSITE	Indoor Air	3/6/2020	No Pressure	0.1 U	0.1 U	0.1 U	NS	NS
	0174H	0174H-IA01SC-030620	Basement Laundry Room	SUMMA	Indoor Air	3/6/2020	No Pressure	0.17 J	0.19 U	0.14 U	0.089 U	0.26 J
	0174H	0174H-IA02SC-030620	Dining Room	SUMMA	Indoor Air	3/6/2020	No Pressure	0.16 J	0.19 U	0.14 U	0.092 U	0.64 U
	0174H	0174H-IA03SC-030620	Basement Laundry Room	SUMMA	Indoor Air	3/6/2020	No Pressure	1.7	0.2 U	0.14 U	0.10	0.55 J
	0174H	0174H-AA01SC-030620	Outdoor	SUMMA	Outdoor Air	3/6/2020	No Pressure	0.24 U	0.19 U	0.14 U	0.089 U	0.63 U
	0174H	0174H-IA01PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.10	0.053 U	NS	NS	NS
	0174H	0174H-IA02PS-03242020	Dining Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	0.09	0.053 U	NS	NS	NS
	0174H	0174H-IA03PS-03242020	Basement Laundry Room	PASSIVE	Indoor Air	3/24/2020	No Pressure	1.2	0.052 U	NS	NS	NS
0180-H	0180H	0180H-IA01SC-030822	Basement Utility Room	SUMMA	Indoor Air	3/8/2022	No Pressure	0.044 J	0.18 U	0.14 U	0.088 U	0.62 U
0189-H	0189H	0189H-IA01SC-031122	Basement Storage Area	SUMMA	Indoor Air	3/11/2022	No Pressure	2.6	0.19	0.037 J	0.079 U	0.56 U
0192-H	0192H	0192H-IA01SC-031122	Living Room	SUMMA	Indoor Air	3/11/2022	No Pressure	16	0.43	0.13	0.083 U	0.59 U
0193-H	0193H	0193H-IA01SC-031022	Bathroom	SUMMA	Indoor Air	3/10/2022	No Pressure	3.8	0.72 J	0.16	0.051 U	0.72 U
0194-H	0194H	0194H-IA01SC-030922	Basement	SUMMA	Indoor Air	3/9/2022	No Pressure	10.6	0.72 J	0.079 U	0.051 U	0.72 U
0195-H	0195H	0195H-IA01SC-031022	Living Room	SUMMA	Indoor Air	3/10/2022	No Pressure	2.3	0.06 J	0.079 U	0.051 U	0.72 U
0197-H	0197H	0197H-IA01SC-030822	Basement Laundry Room	SUMMA	Indoor Air	3/8/2022	No Pressure	23	5.8	0.13 U	0.084 U	0.59 U
	0197H	0197H-IA01SC-042922	Storage	SUMMA	Indoor Air	4/29/2022	No Pressure	9.6	4.8	0.14 U	0.089 U	0.63 U
	0197H	0197H-IA02SC-042922	Laundry Room	SUMMA	Indoor Air	4/29/2022	No Pressure	9.7	5.8	0.14 U	0.089 U	0.63 U
	0197H	0197H-IA03SC-042922	Downstairs bedroom	SUMMA	Indoor Air	4/29/2022	No Pressure	9.1	9.7	0.14 U	0.089 U	0.63 U
	0197H	0197H-IA04SC-042922	Upstairs bedroom	SUMMA	Indoor Air	4/29/2022	No Pressure	8.4	43	0.14 U	0.094 U	0.66 U
0225-H	0225H	0225H-IA01SC-030922	Basement Living Room	SUMMA	Indoor Air	3/9/2022	No Pressure	0.26	0.065 J	0.079 U	0.051 U	0.72 U
0230-H	0230H	0230H-IA01SC-031222	Basement Central Hallway	SUMMA	Indoor Air	3/12/2022	No Pressure	0.048 J	0.17 U	0.12 U	0.079 U	0.56 U
0255-H	0255H	0255H-IA01SC-031022	Basement Laundry Room	SUMMA	Indoor Air	3/10/2022	No Pressure	2.7	0.19	0.079 U	0.051 U	0.72 U
0256-H	0256H	0256H-IA01SC-030922	Basement Laundry Room	SUMMA	Indoor Air	3/9/2022	No Pressure	0.18	0.062 J	0.37 J	0.051 U	0.72 U
0263-H	0263H	0263H-IA01SC-031022	Basement Bedroom	SUMMA	Indoor Air	3/10/2022	No Pressure	12.6	0.58 J	0.079 U	0.051 U	0.72 U
0273-H	0273H	0273H-IA01SC-031222	Basement Living Room	SUMMA	Indoor Air	3/12/2022	No Pressure	2.7	0.18 U	0.13 U	0.085 U	0.6 U
0274-H	0274H	0274H-IA01SC-030822	Basement Living Room	SUMMA	Indoor Air	3/8/2022	No Pressure	12	0.035 J	0.12 U	0.081 U	0.57 U
0277-H	0277H	0277H-IA01SC-031222	Living Room	SUMMA	Indoor Air	3/12/2022	No Pressure	5	0.18 U	0.13 U	0.084 U	0.59 U
0302-H	0302H	0302H-AA01SC-031222	Backyard	SUMMA	Outdoor Air	3/12/2022	No Pressure	0.37	0.16 U	0.058 J	0.077 U	0.54 U
	0302H	0302H-IA01SC-031222	Basement Living Area	SUMMA	Indoor Air	3/12/2022	No Pressure	0.34	0.16 U	0.12 U	0.075 U	0.53 U
0315-H	0315H	0315H-IA01SC-031222	Basement Bedroom	SUMMA	Indoor Air	3/12/2022	No Pressure	2.3	0.29	0.051 J	0.082 U	0.58 U
0329-H	0329H	0329H-IA01SC-030822	Ground Floor Living Room	SUMMA	Indoor Air	3/8/2022	No Pressure	0.092 J	0.17 U	0.12 U	0.081 U	0.57 U

Table 5-12
Preliminary Chemicals of Potential Concern in East Side Springs Indoor Air

Structure Identification[4]	Location ID	Sample Identification	Location in Structure	Sample Type	Indoor Air / Outdoor Air	Sample Date	Pressurization Conditions	PCE		TCE		cis-1,2-DCE		VC		1,4-Dioxane	
								µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q
Indoor Air Risk Based Screening Level (RBSL) (µg/m³)[1]								**11**		**0.48**		**NA**		**0.17**		**0.56**	
Indoor Air Tier 1 Removal Action Level (RAL) (µg/m³)[2]								**41**		**2.1**		**NA**		**1.7**		**5.6**	
Indoor Air Tier 2 Removal Action Level (RAL) (µg/m³)[3]								**120**		**6.3**		**NA**		**17**		**56**	
0334-H	0334H	0334H-AA01SC-031022	Backyard porch	SUMMA	Outdoor Air	3/10/2022	No Pressure	**0.37**		**0.14**		**0.11**		*0.051*	*U*	*0.72*	*U*
	0334H	0334H-IA01SC-031022	Basement Laundry Room	SUMMA	Indoor Air	3/10/2022	No Pressure	**0.096**	**J**	*0.11*	*U*	*0.079*	*U*	*0.051*	*U*	*0.72*	*U*
0336-H	0336H	0336H-IA01SC-030822	Basement Storage	SUMMA	Indoor Air	3/8/2022	No Pressure	**16**		**0.018**	**J**	*0.12*	*U*	*0.08*	*U*	*0.56*	*U*
0347-H	0347H	0347H-IA01SC-030922	Basement Hallway	SUMMA	Indoor Air	3/9/2022	No Pressure	**0.09**	**J**	**0.027**	**J**	*0.13*	*U*	*0.086*	*U*	*0.6*	*U*
0365-S	0365S	0365S-AA01SC-031822	Atrium	SUMMA	Outdoor Air	3/18/2022	No Pressure	**0.21**	**J**	*0.19*	*U*	*0.14*	*U*	*0.089*	*U*	*0.63*	*U*
	0365S	0365S-IA01SC-031822	Administration Office	SUMMA	Indoor Air	3/18/2022	No Pressure	**0.24**		*0.17*	*U*	*0.13*	*U*	*0.083*	*U*	*0.58*	*U*
	0365S	0365S-IA02SC-031822	Rear Elevator	SUMMA	Indoor Air	3/18/2022	No Pressure	**0.31**		*0.2*	*U*	*0.14*	*U*	*0.094*	*U*	*0.66*	*U*
	0365S	0365S-IA03SC-031822	SW Storage	SUMMA	Indoor Air	3/18/2022	No Pressure	**0.28**		*0.2*	*U*	*0.15*	*U*	*0.097*	*U*	*0.68*	*U*
0366-C	0366C	0366C-IA01SC-031022	Basement Bathroom	SUMMA	Indoor Air	3/10/2022	No Pressure	**1.07**	**J**	**0.066**	**J**	*0.079*	*U*	*0.051*	*U*	*0.72*	*U*
	0366C	0366C-IA02SC-031022	Classroom	SUMMA	Indoor Air	3/10/2022	No Pressure	**0.091**	**J**	**0.041**	**J**	*0.079*	*U*	*0.051*	*U*	*0.72*	*U*
	0366C	0366C-IA03SC-031022	Administration Office	SUMMA	Indoor Air	3/10/2022	No Pressure	**0.13**	**J**	**0.044**	**J**	*0.079*	*U*	*0.051*	*U*	*0.72*	*U*
0381-H	0381H	0381H-AA01SC-031122	Backyard	SUMMA	Outdoor Air	3/11/2022	No Pressure	**0.19**	**J**	*0.16*	*U*	**0.03**	**J**	*0.076*	*U*	**0.15**	**J**
	0381H	0381H-IA01SC-031122	Basement Living Room	SUMMA	Indoor Air	3/11/2022	No Pressure	**0.062**	**J**	*0.18*	*U*	*0.13*	*U*	*0.087*	*U*	**0.43**	**J**
0392-H	0392H	0392H-IA01SC-031222	Ground Floor Living Room	SUMMA	Indoor Air	3/12/2022	No Pressure	**0.074**	**J**	*0.36*	*U*	*0.27*	*U*	*0.17*	*U*	*1.2*	*U*
0395-H	0395H	0395H-IA01SC-031022	Basement Living Room	SUMMA	Indoor Air	3/10/2022	No Pressure	**0.27**		**0.22**		*0.079*	*U*	*0.051*	*U*	*0.72*	*U*

Notes:

[1] EPA indoor air RSL corresponds to an excess lifetime cancer risk of 1 × 10-6 and a hazard quotient of 1 (May 2022 RSL table version).

[2] Indoor Air Tier 1 RAL provided in memorandum (CH2M 2015). Tier 1 RAL corresponding to an excess lifetime cancer risk of 1 × 10-5 and a hazard quotient of 1.

[3] Indoor Air Tier 2 RAL provided in memorandum (CH2M 2015). Tier 2 RAL corresponding to an excess lifetime cancer risk of 1 × 10-4 and a hazard quotient of 3.

[4] Some outdoor air samples collected in 2019/2020 have sample IDs associated with multiple locations and are included in that location

Data was qualified during data validation because field data collection was not completed in compliance with the QAPP. This data is not usable for the risk assessment, but can still be used to support the data collected in 2016–2020 in defining the extent of vapor intrusion.

Highlight indicates values greater than RBSL, underline indicates values greater than Tier 1 RAL*

Bold indicates detected values

Italics indicates nondetected values

*although not all structures are residential, all structures are screened against the residential RBSL and RAL

µg/m³ = microgram per cubic meter
cis-1,2-DCE = cis-1,2-dichloroethene
EPA = U.S. Environmental Protection Agency
ft bgs = feet below ground surface
NA = not applicable
NS = Not sampled
PCE = tetrachloroethene
RBSL = risk-based screening level
RSL = regional screening level
TCE = trichloroethene
VC = vinyl chloride

Q = qualifier
J = Result is estimated
U = Analyte was not detected at the associated value, which is the reporting limit
UJ = Analyte was not detected at the associated value, which is the reporting limit, and a QA/QC requirement has not been met
NR= Rejected during data quality validation
R= Rejected during data quality validation

Table 6-1
Physical and Chemical Properties of Preliminary Chemicals of Potential Concern

Contaminant	Molecular Weight (g/mol)	Henry's Law Constant (K_h) (atm-m^3/mol)[1]	Vapor Pressure (mm Hg)[1]	Density (g/cm^3)[1]	K_{oc} (L/kg)	log K_{ow} (unitless)	Water Solubility (mg/L)[1]
Tetrachloroethene	166	1.77E-02	19	1.6	95	3.4	206
Trichloroethene	131	9.85E-03	69	1.5	61	2.4	1280
cis-1,2-Dichloroethene	97	1.67E-01	200	1.3	40	1.9	6410
Vinyl Chloride	62	2.78E-02	2980	0.9	22	1.4	2700
1,4-Dioxane	88	4.80E-06	38	1.0	3	-0.3	1000000

Notes

1. Parameter is temperature dependent. Shown values assume a standard temperature of 25 degrees Celsius

atm-m^3/mol = atmospheres-cubic meters per mole

g/cm^3 = grams per cubic centimeter

g/mol = grams per mole

K_h = Henry's Law Constant

L/kg = liters per kilogram

mg/L = milligrams per liter

mm Hg = millimeter of mercury

K_{oc} = Organic Carbon/Water Partitioning Coefficient

K_{ow} = Octanol/Water Partition Coefficient

Reference: Environmental Protection Agency. 2021. *Regional Screening Levels - Generic Tables: Chemical Specific Parameters Table.* Accessed July 8, 2021, https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

Table 6-2
Simulated Water Budget, September 2020

Water Budget Component	Inflows (million gallons per day)	Outflows (million gallons per day)	Volume In - Out (million gallons per day)
Extraction from Pumping Wells	0	0.7	-0.7
Precipitation Recharge	1.0	0	1.00
Return Flow Recharge	0.6	0	0.6
Infiltration from Red Butte Creek	0.4	0	0.4
Mountain-Block Recharge	7.1	0	7.1
Discharge to Seeps and Springs	0	1.3	-1.3
Boundary Flux	0	7.7	-7.7
Change in Storage	0.6	0	0.6
Total	9.7	9.7	0

Table 6-3
Groundwater Modeling Scenario Pumping

Scenario	SLC-18 Pumping (gpm)	University of Utah Well #1 Pumping (gpm)	Mount Olivet Cemetery Pumping (gpm)
Baseline	0	162	85
Scenario 1	566	162	85
Scenario 2	2,169	162	85
Scenario 3	0	545	85
Scenario 4	2,169	545	85

Acronyms:
gpm = gallons per minute

Table 6-4
Oxygen and Hydrogen Stable Isotope Results

Location	Sample Name	Sample Date	δ^2H (‰, VSMOW)	$\delta^{18}O$ (‰, VSMOW)
Groundwater				
MW-01D	A-GW-MW-01D	4/26/2016	-119.8	-15.7
	A-GW-MW-01D-D	4/26/2016	-120.3	-15.9
	OU2-MW01D2	12/11/2018	-119.9	-15.7
	OU2-MW01D-3	3/18/2019	-123.1	-16.2
MW-01S	A-GW-MW-01S	4/28/2016	-120.0	-15.7
	OU2-MW01S2	12/11/2018	-118.0	-15.6
	OU2-MW01S-3	3/18/2019	-120.0	-15.9
MW-02	OU2-MW0202	12/18/2018	-116.7	-15.4
	OU2-MW02-3	4/9/2019	-118.1	-15.6
MW-03RA	OU2-MW03RA2	12/13/2018	-117.5	-15.4
	OU2-MW03R-A3	3/25/2019	-121.2	-16.0
MW-03RB	OU2-MW03R2	12/27/2018	-119.6	-15.8
	OU2-MW03R-B3	3/25/2019	-121.3	-16.0
MW-03RC	OU2-MW03RC2	12/17/2018	-120.8	-15.9
	OU2-MW03R-C3	3/27/2019	-122.6	-16.1
MW-03RD	OU2-MW03R-D3	3/27/2019	-122.8	-16.1
MW-04	OU2-MW04-2	12/18/2018	-117.1	-15.4
	OU2-MW04-3	3/19/2019	-118.6	-15.6
MW-05R	OU2-MW05R2	12/11/2018	-118.0	-15.6
	OU2-MW05R-3	3/20/2019	-120.2	-15.9
MW-06	OU2-MW062	12/17/2018	-117.7	-15.6
	OU2-MW06-3	3/19/2019	-119.9	-15.9
MW-08A	OU2-MW08A2	12/27/2018	-117.8	-15.5
	OU2-MW08A-3	3/21/2019	-119.1	-15.7
MW-08B	OU2-MW08B2	12/27/2018	-120.3	-15.8
	OU2-MW08B-3	3/21/2019	-122.4	-16.1
MW-08C	OU2-MW08C-3	3/20/2019	-124.2	-16.3
MW-12D	OU2-MW 12D	9/24/2018	-120.0	-15.8
	OU2-MW12D2	12/6/2018	-119.3	-15.7
	OU2-MW12D-3	3/13/2019	-121.6	-16.0
MW-12S	OU2-MW 12S	9/24/2018	-116.7	-15.4
	OU2-MW12S2	12/10/2018	-114.9	-15.2
	OU2-MW12S-3	3/13/2019	-117.0	-15.5
MW-13D	OU2-MW13D	9/17/2018	-117.6	-15.4
	OU2-MW13D2	11/29/2018	-117.4	-15.4
	OU2-MW13D-3	3/7/2019	-118.8	-15.6
MW-13S	OU2-MW13S	9/19/2018	-116.4	-15.3
	OU2-MW13S2	11/29/2018	-116.1	-15.2
	OU2-MW13S-3	3/6/2019	-118.0	-15.4
MW-14D	OU2-MW14D	9/19/2018	-117.5	-15.4
	OU2-MW14D2	12/4/2018	-117.5	-15.4
	OU2-MW14D-3	3/7/2019	-118.9	-15.6
MW-14S	OU2-MW14S	9/19/2018	-117.4	-15.3
	OU2-MW14S2	12/5/2018	-116.9	-15.3
	OU2-MW14S-3	3/11/2019	-118.8	-15.6
MW-15D	OU2-MW15D	9/25/2018	-117.9	-15.5
	OU2-MW15D2	12/4/2018	-117.7	-15.5
	OU2-MW15D-3	3/11/2019	-119.6	-15.8
MW-15S	OU2-MW15S	9/25/2018	-116.8	-15.4
	OU2-MW15S2	12/4/2018	-116.7	-15.4
	OU2-MW15S-3	3/11/2019	-118.5	-15.6

Table 6-4
Oxygen and Hydrogen Stable Isotope Results

Location	Sample Name	Sample Date	δ²H	δ¹⁸O
			(‰, VSMOW)	(‰, VSMOW)
MW-16D	OU2-MW16D	9/20/2018	-120.8	-15.9
	OU2-MW16D2	12/6/2018	-120.7	-15.8
	OU2-MW16D-3	3/14/2019	-122.4	-16.1
MW-16S	OU2-MW16S	9/20/2018	-117.1	-15.4
	OU2-MW16S2	12/5/2018	-117.3	-15.4
	OU2-MW16S-3	3/14/2019	-119.3	-15.7
MW-17D	OU2-MW17D	9/24/2018	-117.3	-15.5
	OU2-MW17D2	12/10/2018	-117.6	-15.5
	OU2-MW17D-3	3/12/2019	-118.8	-15.7
MW-17S	OU2-MW17S	9/24/2018	-117.5	-15.5
	OU2-MW17S2	12/3/2018	-117.3	-15.5
	OU2-MW17S-3	3/12/2019	-118.7	-15.6
MW-18	OU2-MW18	9/18/2018	-115.9	-15.2
	OU2-MW182	11/27/2018	-115.7	-15.1
	OU2-MW18-3	3/4/2019	-117.3	-15.3
MW-19	OU2-MW19	9/18/2018	-116.3	-15.3
	OU2-MW192	11/27/2018	-116.0	-15.2
	OU2-MW19-3	3/4/2019	-117.0	-15.3
MW-20D	OU2-MW20D	9/19/2018	-116.8	-15.3
	OU2-MW20D2	11/26/2018	-116.9	-15.3
	OU2-MW20D-3	3/5/2019	-118.4	-15.6
MW-20S	OU2-MW20S	9/18/2018	-116.6	-15.3
	OU2-MW20S2	11/28/2018	-116.7	-15.3
	OU2-MW20S-3	3/4/2019	-117.8	-15.4
MW-21	OU2-MW21	9/20/2018	-116.1	-15.3
	OU2-MW212	11/28/2018	-116.8	-15.4
	OU2-MW21-3	3/6/2019	-115.9	-15.3
MW-22	OU2-MW22	9/20/2018	-117.7	-15.6
	OU2-MW222	11/28/2018	-118.0	-15.5
	OU2-MW22-3	3/6/2019	-117.9	-15.6
GW-011	A-GW-11	2/27/2016	-119.3	-15.5
GW-020	A-GW-20	3/2/2016	-118.1	-15.1
Mt. Olivet	A-GW-MTO	5/2/2016	-117.4	-15.2
SLC-18	A-GW-SLC-18	4/28/2016	-121.1	-15.8
Surface Water				
SW-06	OU2-SW06	9/27/2018	-116.9	-15.4
	OU2-SW06-R2	12/18/2018	-116.8	-15.3
	OU2-SW06-R3	3/25/2019	-118.4	-15.5
SW-09	A-SW-009	5/3/2016	-119.2	-15.6
SW-15	A-SW-015	5/4/2016	-117.0	-14.8
SW-34	OU2-SW34	10/10/2018	-126.2	-16.7
	OU2-SW34R2	12/18/2018	-118.3	-15.5
	OU2-SW34-R3	3/27/2019	-119.8	-15.8
SW-35	OU2-SW35	10/10/2018	-117.3	-15.5
	OU2-SW35R2	12/27/2018	-117.0	-15.3
	OU2-SW35-R3	3/27/2019	-118.0	-15.5
SW-39	OU2-SW39	9/27/2018	-117.1	-15.4
	OU2-SW39R2	12/18/2018	-116.8	-15.3
	OU2-SW39-R3	3/25/2019	-117.4	-15.4
SW-48	OU2-SW48	9/27/2018	-120.9	-16.0
	OU2-SW48R2	12/18/2018	-120.8	-15.9
	OU2-SW48-R3	3/25/2019	-122.3	-16.1

Table 6-4
Oxygen and Hydrogen Stable Isotope Results

Location	Sample Name	Sample Date	δ^2H (‰, VSMOW)	$\delta^{18}O$ (‰, VSMOW)
SW-53	OU2-SW53	10/10/2018	-118.3	-15.5
	OU2-SW53R2	12/18/2018	-117.1	-15.3
	OU2-SW53-R3	3/25/2019	-118.5	-15.5
Red Butte Creek				
SW-47	OU2-SW47	10/10/2018	-143.0	-19.0
	OU2-SW47-R3	3/26/2019	-121.8	-16.2
SW-51	OU2-SW51	10/10/2018	-143.9	-19.1
	OU2-SW51R2	12/27/2018	-119.3	-15.7
	OU2-SW51-R3	3/26/2019	-122.2	-16.2
SW-52	OU2-SW52	10/10/2018	-144.6	-19.2
	OU2-SW52R2	12/27/2018	-119.1	-15.7
	OU2-SSW52-R3	3/26/2019	-123.2	-16.3

Notes:
‰ = per mil
δ^2H = isotopic composition of hydrogen ($^2H/^1H$)
$\delta^{18}O$ = isotopic composition of oxygen ($^{18}O/^{16}O$)
VSMOW = Vienna Standard Mean Ocean Water

Table 6-5
Statistical Trends Overview

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC
MW-01D	Trend[1]	NO TREND	NO TREND, >50% ND	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND
	MK CL	88.4%	77.4%	56.2%	98.9%	98.9%	98.9%
MW-01S	Trend[1]	DECREASING	DECREASING	DECREASING	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND
	MK CL	99.3%	100.0%	100.0%	52.3%	98.6%	98.6%
MW-02	Trend[1]	NO TREND	DECREASING	PROBABLY DECREASING	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND
	MK CL	76.2%	97.9%	92.2%	72.8%	98.9%	98.9%
MW-03RA	Trend[1]	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	67.6%	77.6%	50.0%	50.0%	50.0%	50.0%
MW-03RB	Trend[1]	STABLE	DECREASING	DECREASING	STABLE	STABLE, >50% ND	STABLE, >50% ND
	MK CL	62.1%	96.7%	99.6%	83.0%	50.0%	50.0%
MW-03RC	Trend[1]	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	77.6%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-03RD	Trend[1]	NO TREND, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	87.9%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-04	Trend[1]	DECREASING	DECREASING	DECREASING	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND
	MK CL	100.0%	100.0%	95.8%	72.8%	98.9%	98.9%
MW-05R	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-06	Trend[1]	DECREASING	NO TREND, >50% ND	NO TREND, >50% ND	PROBABLY INCREASING, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND
	MK CL	99.7%	76.9%	72.8%	94.9%	98.9%	98.9%
MW-08A	Trend[1]	PROBABLY DECREASING	PROBABLY DECREASING	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND
	MK CL	93.3%	93.3%	62.1%	85.6%	50.0%	50.0%
MW-08B	Trend[1]	DECREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	96.4%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-08C	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%

Table 6-5
Statistical Trends Overview

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC
MW-12D	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-13D	Trend[1]	STABLE	STABLE	DECREASING	DECREASING	STABLE, >50% ND	STABLE, >50% ND
	MK CL	89.4%	69.1%	98.4%	96.8%	50.0%	50.0%
MW-13S	Trend[1]	NO TREND	INCREASING	NO TREND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	73.2%	97.7%	77.6%	50.0%	50.0%	50.0%
MW-14D	Trend[1]	STABLE	NO TREND	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND
	MK CL	69.1%	50.0%	89.4%	74.0%	50.0%	50.0%
MW-14S	Trend[1]	NO TREND	PROBABLY INCREASING	PROBABLY INCREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	73.2%	93.3%	91.3%	50.0%	50.0%	50.0%
MW-15D	Trend[1]	PROBABLY DECREASING, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	90.6%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-15S	Trend[1]	NO TREND	NO TREND, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	87.1%	66.9%	66.9%	50.0%	50.0%	50.0%
MW-16D	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-16S	Trend[1]	NO TREND	NO TREND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	64.7%	84.1%	55.7%	56.6%	50.0%	50.0%
MW-17D	Trend[1]	NO TREND	PROBABLY DECREASING, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	80.7%	90.5%	50.0%	50.0%	50.0%	50.0%
MW-17S	Trend[1]	INCREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	96.8%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-18	Trend[1]	DECREASING	DECREASING	PROBABLY DECREASING	PROBABLY DECREASING	STABLE, >50% ND	STABLE, >50% ND
	MK CL	99.5%	99.4%	94.9%	91.3%	50.0%	50.0%
MW-19	Trend[1]	DECREASING	DECREASING	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND
	MK CL	99.8%	99.4%	87.6%	55.0%	50.0%	50.0%

Table 6-5
Statistical Trends Overview

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC
MW-20D	Trend[1]	STABLE	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	87.1%	87.6%	65.3%	50.0%	50.0%	50.0%
MW-20S	Trend[1]	NO TREND	STABLE	NO TREND, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	54.9%	50.0%	80.9%	50.0%	50.0%	50.0%
MW-21	Trend[1]	PROBABLY DECREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	91.4%	50.0%	50.0%	50.0%	50.0%	50.0%
MW-22	Trend[1]	STABLE	NO TREND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND
	MK CL	86.4%	83.0%	50.0%	50.0%	50.0%	50.0%

Notes and Abbreviations

1,1-DCE - 1,1-Dichloroethene
cis-1,2-DCE - Cis-1,2-Dichloroethene
MK CL = Mann-Kendall Confidence Level.
ND - non-detect
PCE - Tetrachloroethene
TCE - Trichloroethene
trans-1,2-DCE - Trans-1,2-Dichloroethene
VC = Vinyl Chloride

[1]Trend was analyzed with the MK statistical test for datasets containing 6 or more data points. The trend result is based on the Mann-Kendall S, CF, and COV as follows:

- *Increasing (S greater than 0, CF > 95%)*
- *Probably Increasing (S greater than 0, CF between or equal to 95% and 90%)*
- *No Trend (S greater than 0, CF less than 90%)*
- *Stable (if S is less than or equal to zero and COV less than 1)*
- *Probably Decreasing (S less than 0, CF between or equal to 95% and 90%)*
- *Decreasing (S less than 0, CF greater than 95%*)

Wells MW-12S, -13L, and -23A through -38D are not presented in this table due to insufficient statistical analyses data.
Statistical analysis trends where more than 50% of results were non-detects are in black font.
Statistical analysis trends with the majority of the results analyzed above the detection limit are in white font.

Table 6-6
MW-02 Statistical Trends

COC	PCE All data	PCE 11/11/98-07/14/16	PCE 07/14/16-03/23/21	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride
Trend[1]	NO TREND	DECREASING	INCREASING	DECREASING	PROBABLY DECREASING	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND
Mann-Kendall Confidence Level	76.2%	97.0%	99.9%	97.9%	92.2%	72.8%	98.9%	98.9%
Max Concentration (µg/L)	296.0	296.0	230.0	25.0	25.0	25.0	0.5	0.5
Results in dataset (total)	14	6	9	13	13	13	10	10
Start Date	11/11/1998	11/11/1998	7/14/2016	11/11/1998	11/11/1998	11/11/1998	4/27/2016	4/27/2016
End Date	3/23/2021	7/14/2016	3/23/2021	3/23/2021	3/23/2021	3/23/2021	3/23/2021	3/23/2021
Dataset Mean (µg/L)	185	186	171	2.65	2.36	2.45	0.43	0.43
COV	0.35	0.51	0.29	2.55	2.88	2.78	0.28	0.28
Mann-Kendall S	14.00	-11.00	32.00	-34.00	-24.00	10.00	21.00	21.00
Mann-Kendall Var(S)	332.7	28.3	92.0	261.3	264.0	220.7	77.0	77.0
Mann-Kendall p-value	0.238	0.030	0.001	0.021	0.078	0.272	0.011	0.011

Abbreviations

1,1-DCE - 1,1-Dichloroethene
µg/L - microgram per liter
µmol/L - micromole per liter
cis-1,2-DCE - Cis-1,2-Dichloroethene
COC - chemical of concern
COV - coefficient of variation
Mann-Kendall S - MK test statistic
MCL - maximum contaminant level
MK - Mann-Kendall
ND - non-detect
PCE - Tetrachloroethene
p-value - the probability of S
TCE - Trichloroethene
trans-1,2-DCE - Trans-1,2-Dichloroethene
Var - variance

Notes

[1]Trend was analyzed with the Mann-Kendall statistical test for datasets containing 6 or more data points. The trend result is based on the Mann-Kendall S, CF, and COV as follows:

- *Increasing (S greater than 0, CF > 95%)*
- *Probably Increasing (S greater than 0, CF between or equal to 95% and 90%)*
- *No Trend (S greater than 0, CF less than 90%)*
- *Stable (if S is less than or equal to zero and COV less than 1)*
- *Probably Decreasing (S less than 0, CF between or equal to 95% and 90%)*
- *Decreasing (S less than 0, CF greater than 95%)*

Statistical analysis trends where more than 50% of results were non-detects are in black font.
Statistical analysis trends with the majority of the results analyzed above the detection limit are in white font.

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-01D	Trend[1]	NO TREND	NO TREND, >50% ND	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND	NO TREND
	Mann-Kendall Confidence Level	88.4%	77.4%	56.2%	98.9%	98.9%	98.9%	70.4%
	Max Concentration (µg/L)	9.90	5.00	5.00	0.50	0.50	0.50	0.06
	Results in dataset (total)	18	16	16	10	10	10	10
	Start Date	6/30/1998	6/30/1998	6/30/1998	4/26/2016	4/26/2016	4/26/2016	6/30/1998
	End Date	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	9/21/2016
	Dataset Mean (µg/L)	2.68	0.80	0.83	0.43	0.43	0.43	0.03
	COV	1.34	1.57	1.49	0.28	0.28	0.28	0.93
	Mann-Kendall S	-31.00	16.00	4.00	21.00	21.00	21.00	7.00
	Mann-Kendall Var(S)	631.67	399.33	364.67	77.00	77.00	77.00	125.00
	Mann-Kendall p-value	0.116	0.226	0.438	0.011	0.011	0.011	0.296
MW-01S	Trend[1]	DECREASING	DECREASING	DECREASING	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND	DECREASING
	Mann-Kendall Confidence Level	99.3%	100.0%	100.0%	52.3%	98.6%	98.6%	99.3%
	Max Concentration (µg/L)	420	4.00	5.00	5.00	0.50	0.50	2.61
	Results in dataset (total)	15	15	15	15	9	9	15
	Start Date	6/30/1998	6/30/1998	6/30/1998	6/30/1998	4/28/2016	4/28/2016	6/30/1998
	End Date	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021
	Dataset Mean (µg/L)	209.73	1.77	1.42	0.86	0.42	0.42	1.29
	COV	0.43	0.57	1.03	1.49	0.30	0.30	0.44
	Mann-Kendall S	-50.00	-75.00	-86.00	2.00	18.00	18.00	-51.00
	Mann-Kendall Var(S)	404.67	404.33	407.33	312.67	60.00	60.00	408.33
	Mann-Kendall p-value	0.007	0.000	0.000	0.477	0.014	0.014	0.007

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-02	Trend[1]	NO TREND	DECREASING	PROBABLY DECREASING	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND	NO TREND
	Mann-Kendall Confidence Level	76.2%	97.9%	92.2%	72.8%	98.9%	98.9%	77.8%
	Max Concentration (µg/L)	296	25.0	25.0	25.0	0.50	0.50	1.81
	Results in dataset (total)	14	13	13	13	10	10	14
	Start Date	11/11/1998	11/11/1998	11/11/1998	11/11/1998	4/27/2016	4/27/2016	11/11/1998
	End Date	3/23/2021	3/23/2021	3/23/2021	3/23/2021	3/23/2021	3/23/2021	3/23/2021
	Dataset Mean (µg/L)	184.71	2.65	2.36	2.45	0.43	0.43	1.12
	COV	0.35	2.55	2.88	2.78	0.28	0.28	0.35
	Mann-Kendall S	14.00	-34.00	-24.00	10.00	21.00	21.00	15.00
	Mann-Kendall Var(S)	332.67	261.33	264.00	220.67	77.00	77.00	333.67
	Mann-Kendall p-value	0.238	0.021	0.078	0.272	0.011	0.011	0.222
MW-03RA	Trend[1]	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE
	Mann-Kendall Confidence Level	67.6%	77.6%	50.0%	50.0%	50.0%	50.0%	61.8%
	Max Concentration (µg/L)	32	0.50	0.50	0.50	0.50	0.50	0.19
	Results in dataset (total)	7	7	7	7	7	7	7
	Start Date	12/13/2018	12/13/2018	12/13/2018	12/13/2018	12/13/2018	12/13/2018	12/13/2018
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021
	Dataset Mean (µg/L)	25.09	0.22	0.50	0.50	0.50	0.50	0.15
	COV	0.42	0.59	0.00	0.00	0.00	0.00	0.42
	Mann-Kendall S	-4.00	-6.00	0.00	0.00	0.00	0.00	-3.00
	Mann-Kendall Var(S)	43.33	43.33	0.00	0.00	0.00	0.00	44.33
	Mann-Kendall p-value	0.324	0.224	0.500	0.500	0.500	0.500	0.382

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-03RB	Trend[1]	STABLE	DECREASING	DECREASING	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE
	Mann-Kendall Confidence Level	62.1%	96.7%	99.6%	83.0%	50.0%	50.0%	72.6%
	Max Concentration (µg/L)	230	2.10	1.50	0.14	0.50	0.50	1.42
	Results in dataset (total)	7	7	7	7	7	7	7
	Start Date	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021
	Dataset Mean (µg/L)	211.43	1.89	1.34	0.12	0.50	0.50	1.30
	COV	0.10	0.07	0.09	0.11	0.00	0.00	0.10
	Mann-Kendall S	-3.00	-13.00	-18.00	-7.00	0.00	0.00	-5.00
	Mann-Kendall Var(S)	42.33	42.33	41.33	39.67	0.00	0.00	44.33
	Mann-Kendall p-value	0.379	0.033	0.004	0.170	0.500	0.500	0.274
MW-03RC	Trend[1]	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE
	Mann-Kendall Confidence Level	77.6%	50.0%	50.0%	50.0%	50.0%	50.0%	77.6%
	Max Concentration (µg/L)	6.50	0.50	0.50	0.50	0.50	0.50	0.04
	Results in dataset (total)	7	7	7	7	7	7	7
	Start Date	12/17/2018	12/17/2018	12/17/2018	12/17/2018	12/17/2018	12/17/2018	12/17/2018
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021
	Dataset Mean (µg/L)	6.14	0.50	0.50	0.50	0.50	0.50	0.04
	COV	0.06	0.00	0.00	0.00	0.00	0.00	0.06
	Mann-Kendall S	-6.00	0.00	0.00	0.00	0.00	0.00	-6.00
	Mann-Kendall Var(S)	43.33	0.00	0.00	0.00	0.00	0.00	43.33
	Mann-Kendall p-value	0.224	0.500	0.500	0.500	0.500	0.500	0.224

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-03RD	Trend[1]	NO TREND, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	INSUFFICIENT DATA
	Mann-Kendall Confidence Level	87.9%	50.0%	50.0%	50.0%	50.0%	50.0%	-
	Max Concentration (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	0.02
	Results in dataset (total)	6	6	6	6	6	6	3
	Start Date	3/27/2019	3/27/2019	3/27/2019	3/27/2019	3/27/2019	3/27/2019	3/27/2019
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	12/11/2020
	Dataset Mean (µg/L)	0.45	0.50	0.50	0.50	0.50	0.50	0.01
	COV	0.29	0.00	0.00	0.00	0.00	0.00	0.86
	Mann-Kendall S	5.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall Var(S)	11.67	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall p-value	0.121	0.500	0.500	0.500	0.500	0.500	-
MW-04	Trend[1]	DECREASING	DECREASING	DECREASING	NO TREND, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND	DECREASING
	Mann-Kendall Confidence Level	100.0%	100.0%	95.8%	72.8%	98.9%	98.9%	100.0%
	Max Concentration (µg/L)	190	2.00	2.50	5.00	0.50	0.50	1.17
	Results in dataset (total)	14	13	13	13	10	10	14
	Start Date	11/11/1998	11/11/1998	11/11/1998	11/11/1998	4/27/2016	4/27/2016	11/11/1998
	End Date	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021
	Dataset Mean (µg/L)	73.93	0.51	0.52	0.91	0.43	0.43	0.45
	COV	0.57	0.98	1.24	1.50	0.28	0.28	0.58
	Mann-Kendall S	-62.00	-75.00	-29.00	10.00	21.00	21.00	-65.00
	Mann-Kendall Var(S)	333	268	263	221	77	77	334
	Mann-Kendall p-value	0.000	0.000	0.042	0.272	0.011	0.011	0.000

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-05R	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	INSUFFICIENT DATA
	Mann-Kendall Confidence Level	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	-
	Max Concentration (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	0.00
	Results in dataset (total)	6	6	6	6	6	6	0
	Start Date	12/11/2018	12/11/2018	12/11/2018	12/11/2018	12/11/2018	12/11/2018	1/0/1900
	End Date	12/8/2020	12/8/2020	12/8/2020	12/8/2020	12/8/2020	12/8/2020	1/0/1900
	Dataset Mean (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	
	COV	0.00	0.00	0.00	0.00	0.00	0.00	
	Mann-Kendall S	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall Var(S)	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall p-value	0.500	0.500	0.500	0.500	0.500	0.500	-
MW-06	Trend[1]	DECREASING	NO TREND, >50% ND	NO TREND, >50% ND	PROBABLY INCREASING, >50% ND	INCREASING, >50% ND	INCREASING, >50% ND	DECREASING
	Mann-Kendall Confidence Level	99.7%	76.9%	72.8%	94.9%	98.9%	98.9%	99.0%
	Max Concentration (µg/L)	5.00	5.00	5.00	2.50	0.50	0.50	0.01
	Results in dataset (total)	13	13	13	12	10	10	10
	Start Date	1/6/2000	1/6/2000	1/6/2000	2/23/2005	4/26/2016	4/26/2016	2/23/2005
	End Date	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021
	Dataset Mean (µg/L)	0.88	0.90	0.91	0.58	0.43	0.43	0.00
	COV	1.56	1.53	1.51	1.07	0.28	0.28	0.75
	Mann-Kendall S	-46.00	12.00	10.00	22.00	21.00	21.00	-27.00
	Mann-Kendall Var(S)	266.67	223.33	220.67	164.67	77.00	77.00	123.00
	Mann-Kendall p-value	0.003	0.231	0.272	0.051	0.011	0.011	0.010

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-08A	Trend[1]	PROBABLY DECREASING	PROBABLY DECREASING	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND	PROBABLY DECREASING
	Mann-Kendall Confidence Level	93.3%	93.3%	62.1%	85.6%	50.0%	50.0%	93.3%
	Max Concentration (µg/L)	68.00	0.48	0.50	0.50	0.50	0.50	0.42
	Results in dataset (total)	7	7	7	7	7	7	7
	Start Date	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018
	End Date	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021
	Dataset Mean (µg/L)	59.29	0.42	0.24	0.28	0.50	0.50	0.36
	COV	0.10	0.09	0.49	0.55	0.00	0.00	0.10
	Mann-Kendall S	-11.00	-11.00	-3.00	-8.00	0.00	0.00	-11.00
	Mann-Kendall Var(S)	44.33	44.33	42.33	43.33	0.00	0.00	44.33
	Mann-Kendall p-value	0.067	0.067	0.379	0.144	0.500	0.500	0.067
MW-08B	Trend[1]	DECREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	DECREASING
	Mann-Kendall Confidence Level	96.4%	50.0%	50.0%	50.0%	50.0%	50.0%	96.4%
	Max Concentration (µg/L)	5.50	0.50	0.50	0.50	0.50	0.50	0.03
	Results in dataset (total)	7	7	7	7	7	7	7
	Start Date	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018	12/27/2018
	End Date	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021
	Dataset Mean (µg/L)	4.70	0.50	0.50	0.50	0.50	0.50	0.03
	COV	0.12	0.00	0.00	0.00	0.00	0.00	0.12
	Mann-Kendall S	-13.00	0.00	0.00	0.00	0.00	0.00	-13.00
	Mann-Kendall Var(S)	44.33	0.00	0.00	0.00	0.00	0.00	44.33
	Mann-Kendall p-value	0.036	0.500	0.500	0.500	0.500	0.500	0.036

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-08C	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	INSUFFICIENT DATA
	Mann-Kendall Confidence Level	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	-
	Max Concentration (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	0.01
	Results in dataset (total)	6	6	6	6	6	6	3
	Start Date	3/20/2019	3/20/2019	3/20/2019	3/20/2019	3/20/2019	3/20/2019	12/8/2019
	End Date	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	9/27/2020
	Dataset Mean (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	0.01
	COV	0.00	0.00	0.00	0.00	0.00	0.00	0.12
	Mann-Kendall S	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall Var(S)	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall p-value	0.500	0.500	0.500	0.500	0.500	0.500	-
MW-12D	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	INSUFFICIENT DATA
	Mann-Kendall Confidence Level	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	-
	Max Concentration (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	0.00
	Results in dataset (total)	8	8	8	8	8	8	0
	Start Date	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018	1/0/1900
	End Date	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	1/0/1900
	Dataset Mean (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	
	COV	0.00	0.00	0.00	0.00	0.00	0.00	
	Mann-Kendall S	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall Var(S)	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall p-value	0.500	0.500	0.500	0.500	0.500	0.500	-

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-13D	Trend[1]	STABLE	STABLE	DECREASING	DECREASING	STABLE, >50% ND	STABLE, >50% ND	PROBABLY DECREASING
	Mann-Kendall Confidence Level	89.4%	69.1%	98.4%	96.8%	50.0%	50.0%	91.3%
	Max Concentration (µg/L)	75.00	0.60	0.42	0.28	0.50	0.50	0.46
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/17/2018	9/17/2018	9/17/2018	9/17/2018	9/17/2018	9/17/2018	9/17/2018
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021
	Dataset Mean (µg/L)	62.63	0.51	0.35	0.21	0.50	0.50	0.39
	COV	0.12	0.10	0.16	0.22	0.00	0.00	0.12
	Mann-Kendall S	-11.00	-5.00	-18.00	-16.00	0.00	0.00	-12.00
	Mann-Kendall Var(S)	64.33	64.33	63.33	65.33	0.00	0.00	65.33
	Mann-Kendall p-value	0.106	0.309	0.016	0.032	0.500	0.500	0.087
MW-13S	Trend[1]	NO TREND	INCREASING	NO TREND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	NO TREND
	Mann-Kendall Confidence Level	73.2%	97.7%	77.6%	50.0%	50.0%	50.0%	73.2%
	Max Concentration (µg/L)	31	1.30	0.50	0.50	0.50	0.50	0.19
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018
	End Date	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021	3/22/2021
	Dataset Mean (µg/L)	23.00	0.80	0.26	0.50	0.50	0.50	0.15
	COV	0.23	0.45	0.59	0.00	0.00	0.00	0.23
	Mann-Kendall S	6.00	17.00	7.00	0.00	0.00	0.00	6.00
	Mann-Kendall Var(S)	65.33	64.33	62.33	0.00	0.00	0.00	65.33
	Mann-Kendall p-value	0.268	0.023	0.224	0.500	0.500	0.500	0.268

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-14D	Trend[1]	STABLE	NO TREND	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE
	Mann-Kendall Confidence Level	69.1%	50.0%	89.4%	74.0%	50.0%	50.0%	73.2%
	Max Concentration (µg/L)	37	0.32	0.35	0.22	0.50	0.50	0.23
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018
	End Date	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021
	Dataset Mean (µg/L)	31.00	0.25	0.30	0.18	0.50	0.50	0.19
	COV	0.16	0.16	0.13	0.21	0.00	0.00	0.16
	Mann-Kendall S	-5.00	1.00	-11.00	-6.00	0.00	0.00	-6.00
	Mann-Kendall Var(S)	64.33	64.33	64.33	60.67	0.00	0.00	65.33
	Mann-Kendall p-value	0.309	0.500	0.106	0.260	0.500	0.500	0.268
MW-14S	Trend[1]	NO TREND	PROBABLY INCREASING	PROBABLY INCREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	NO TREND
	Mann-Kendall Confidence Level	73.2%	93.3%	91.3%	50.0%	50.0%	50.0%	73.2%
	Max Concentration (µg/L)	10	12.00	3.20	0.50	0.50	0.50	0.15
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018
	End Date	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021
	Dataset Mean (µg/L)	4.93	5.35	1.41	0.50	0.46	0.50	0.08
	COV	0.61	0.61	0.61	0.00	0.23	0.00	0.50
	Mann-Kendall S	6.00	13.00	12.00	0.00	0.00	0.00	6.00
	Mann-Kendall Var(S)	65.33	64.33	65.33	0.00	0.00	0.00	65.33
	Mann-Kendall p-value	0.268	0.067	0.087	0.500	0.500	0.500	0.268

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-15D	Trend[1]	PROBABLY DECREASING, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	INSUFFICIENT DATA
	Mann-Kendall Confidence Level	90.6%	50.0%	50.0%	50.0%	50.0%	50.0%	-
	Max Concentration (µg/L)	1	0.50	0.50	0.50	0.50	0.50	0.00
	Results in dataset (total)	8	8	8	8	8	8	2
	Start Date	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/28/2020
	End Date	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021
	Dataset Mean (µg/L)	0.41	0.50	0.50	0.50	0.50	0.50	0.00
	COV	0.39	0.00	0.00	0.00	0.00	0.00	0.05
	Mann-Kendall S	-9.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall Var(S)	37.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall p-value	0.094	0.500	0.500	0.500	0.500	0.500	-
MW-15S	Trend[1]	NO TREND	NO TREND, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	NO TREND
	Mann-Kendall Confidence Level	87.1%	66.9%	66.9%	50.0%	50.0%	50.0%	57.6%
	Max Concentration (µg/L)	3	4	0.68	0.50	0.50	0.50	0.06
	Results in dataset (total)	8	8	8	8	8	8	6
	Start Date	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	3/11/2019
	End Date	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021
	Dataset Mean (µg/L)	0.76	0.96	0.52	0.50	0.50	0.50	0.01
	COV	1.37	1.36	0.12	0.00	0.00	0.00	2.01
	Mann-Kendall S	-10.00	-3.00	-3.00	0.00	0.00	0.00	-2.00
	Mann-Kendall Var(S)	63.33	21.00	21.00	0.00	0.00	0.00	27.33
	Mann-Kendall p-value	0.129	0.331	0.331	0.500	0.500	0.500	0.424

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-16D	Trend[1]	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	INSUFFICIENT DATA
	Mann-Kendall Confidence Level	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	-
	Max Concentration (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	0.00
	Results in dataset (total)	8	8	8	8	8	8	0
	Start Date	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	1/0/1900
	End Date	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	1/0/1900
	Dataset Mean (µg/L)	0.50	0.50	0.50	0.50	0.50	0.50	
	COV	0.00	0.00	0.00	0.00	0.00	0.00	
	Mann-Kendall S	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall Var(S)	0.00	0.00	0.00	0.00	0.00	0.00	-
	Mann-Kendall p-value	0.500	0.500	0.500	0.500	0.500	0.500	-
MW-16S	Trend[1]	NO TREND	NO TREND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	NO TREND
	Mann-Kendall Confidence Level	64.7%	84.1%	55.7%	56.6%	50.0%	50.0%	69.1%
	Max Concentration (µg/L)	28.00	0.24	0.50	0.50	0.50	0.50	0.17
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018
	End Date	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021	3/17/2021
	Dataset Mean (µg/L)	24.25	0.19	0.36	0.40	0.50	0.50	0.15
	COV	0.10	0.16	0.54	0.45	0.00	0.00	0.11
	Mann-Kendall S	4.00	9.00	-2.00	-2.00	0.00	0.00	5.00
	Mann-Kendall Var(S)	63.33	64.33	48.67	36.00	0.00	0.00	64.33
	Mann-Kendall p-value	0.353	0.159	0.443	0.434	0.500	0.500	0.309

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-17D	Trend[1]	NO TREND	PROBABLY DECREASING, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	NO TREND
	Mann-Kendall Confidence Level	80.7%	90.5%	50.0%	50.0%	50.0%	50.0%	80.7%
	Max Concentration (µg/L)	2.80	0.50	0.50	0.50	0.50	0.50	0.02
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018
	End Date	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021
	Dataset Mean (µg/L)	2.33	0.45	0.50	0.50	0.50	0.50	0.01
	COV	0.15	0.31	0.00	0.00	0.00	0.00	0.16
	Mann-Kendall S	8.00	-7.00	0.00	0.00	0.00	0.00	8.00
	Mann-Kendall Var(S)	65.33	21.00	0.00	0.00	0.00	0.00	65.33
	Mann-Kendall p-value	0.193	0.095	0.500	0.500	0.500	0.500	0.193
MW-17S	Trend[1]	INCREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	INCREASING
	Mann-Kendall Confidence Level	96.8%	50.0%	50.0%	50.0%	50.0%	50.0%	96.8%
	Max Concentration (µg/L)	0.91	0.50	0.50	0.50	0.50	0.50	0.01
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018
	End Date	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021
	Dataset Mean (µg/L)	0.68	0.50	0.50	0.50	0.50	0.50	0.00
	COV	0.30	0.00	0.00	0.00	0.00	0.00	0.30
	Mann-Kendall S	16.00	0.00	0.00	0.00	0.00	0.00	16.00
	Mann-Kendall Var(S)	65.33	0.00	0.00	0.00	0.00	0.00	65.33
	Mann-Kendall p-value	0.032	0.500	0.500	0.500	0.500	0.500	0.032

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-18	Trend[1]	DECREASING	DECREASING	PROBABLY DECREASING	PROBABLY DECREASING	STABLE, >50% ND	STABLE, >50% ND	DECREASING
	Mann-Kendall Confidence Level	99.5%	99.4%	94.9%	91.3%	50.0%	50.0%	99.5%
	Max Concentration (µg/L)	96.00	0.65	0.27	0.50	0.50	0.50	0.59
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021
	Dataset Mean (µg/L)	72.63	0.49	0.23	0.25	0.50	0.50	0.45
	COV	0.19	0.15	0.20	0.46	0.00	0.00	0.19
	Mann-Kendall S	-22.00	-21.00	-14.00	-12.00	0.00	0.00	-22.00
	Mann-Kendall Var(S)	65.33	64.33	63.33	65.33	0.00	0.00	65.33
	Mann-Kendall p-value	0.005	0.006	0.051	0.087	0.500	0.500	0.005
MW-19	Trend[1]	DECREASING	DECREASING	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND	DECREASING
	Mann-Kendall Confidence Level	99.8%	99.4%	87.6%	55.0%	50.0%	50.0%	99.5%
	Max Concentration (µg/L)	89.00	0.68	0.31	0.50	0.50	0.50	0.55
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021
	Dataset Mean (µg/L)	64.50	0.52	0.26	0.25	0.50	0.50	0.40
	COV	0.19	0.15	0.17	0.42	0.00	0.00	0.19
	Mann-Kendall S	-24.00	-21.00	-10.00	-2.00	0.00	0.00	-22.00
	Mann-Kendall Var(S)	63.33	64.33	60.67	63.33	0.00	0.00	65.33
	Mann-Kendall p-value	0.002	0.006	0.124	0.450	0.500	0.500	0.005

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-20D	Trend[1]	STABLE	STABLE	STABLE	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	DECREASING
	Mann-Kendall Confidence Level	87.1%	87.6%	65.3%	50.0%	50.0%	50.0%	96.0%
	Max Concentration (µg/L)	12	0.29	0.50	0.50	0.50	0.50	0.08
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018	9/19/2018
	End Date	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021
	Dataset Mean (µg/L)	10.60	0.26	0.18	0.50	0.50	0.50	0.07
	COV	0.10	0.10	0.71	0.00	0.00	0.00	0.10
	Mann-Kendall S	-10.00	-10.00	-4.00	0.00	0.00	0.00	-15.00
	Mann-Kendall Var(S)	63.33	60.67	58.00	0.00	0.00	0.00	64.33
	Mann-Kendall p-value	0.129	0.124	0.347	0.500	0.500	0.500	0.040
MW-20S	Trend[1]	NO TREND	STABLE	NO TREND, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE
	Mann-Kendall Confidence Level	54.9%	50.0%	80.9%	50.0%	50.0%	50.0%	50.0%
	Max Concentration (µg/L)	5.4	0.50	0.50	0.50	0.50	0.50	0.03
	Results in dataset (total)	8	8	8	8	8	8	8
	Start Date	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018	9/18/2018
	End Date	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021	3/19/2021
	Dataset Mean (µg/L)	4.54	0.22	0.45	0.50	0.50	0.50	0.03
	COV	0.13	0.80	0.29	0.00	0.00	0.00	0.13
	Mann-Kendall S	2.00	-1.00	5.00	0.00	0.00	0.00	0.00
	Mann-Kendall Var(S)	65.33	62.33	21.00	0.00	0.00	0.00	65.33
	Mann-Kendall p-value	0.451	0.500	0.191	0.500	0.500	0.500	0.500

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-21	Trend[1]	PROBABLY DECREASING	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	PROBABLY DECREASING
	Mann-Kendall Confidence Level	91.4%	50.0%	50.0%	50.0%	50.0%	50.0%	91.4%
	Max Concentration (µg/L)	2.0	0.50	0.50	0.50	0.50	0.50	0.01
	Results in dataset (total)	7	7	7	7	7	7	7
	Start Date	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018
	End Date	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021	3/16/2021
	Dataset Mean (µg/L)	1.66	0.50	0.50	0.50	0.50	0.50	0.01
	COV	0.22	0.00	0.00	0.00	0.00	0.00	0.22
	Mann-Kendall S	-10.00	0.00	0.00	0.00	0.00	0.00	-10.00
	Mann-Kendall Var(S)	43.33	0.00	0.00	0.00	0.00	0.00	43.33
	Mann-Kendall p-value	0.086	0.500	0.500	0.500	0.500	0.500	0.086

Table 6-7
Statistical Trends Summary

Well	COC	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	Vinyl Chloride	Total Molar Concentration (µmol/L)
MW-22	Trend[1]	STABLE	NO TREND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE, >50% ND	STABLE
	Mann-Kendall Confidence Level	86.4%	83.0%	50.0%	50.0%	50.0%	50.0%	85.6%
	Max Concentration (µg/L)	3.5	0.50	0.50	0.50	0.50	0.50	0.02
	Results in dataset (total)	7	7	7	7	7	7	7
	Start Date	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018	9/20/2018
	End Date	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021	3/21/2021
	Dataset Mean (µg/L)	2.94	0.28	0.50	0.50	0.50	0.50	0.02
	COV	0.11	0.73	0.00	0.00	0.00	0.00	0.12
	Mann-Kendall S	-8.00	7.00	0.00	0.00	0.00	0.00	-8.00
	Mann-Kendall Var(S)	40.67	39.67	0.00	0.00	0.00	0.00	43.33
	Mann-Kendall p-value	0.136	0.170	0.500	0.500	0.500	0.500	0.144

Abbreviations

1,1-DCE - 1,1-Dichloroethene
µg/L - microgram per liter
µmol/L - micromole per liter
cis-1,2-DCE - Cis-1,2-Dichloroethene
COC - chemical of concern
COV - coefficient of variation
Mann-Kendall S - MK test statistic

MCL - maximum contaminant level
MK - Mann-Kendall
ND - non-detect
PCE - Tetrachloroethene
p-value - the probability of S
TCE - Trichloroethene
trans-1,2-DCE - Trans-1,2-Dichloroethene
Var - variance

Notes

[1]Trend was analyzed with the MK statistical test for datasets containing 6 or more data points. The trend result is based on the Mann-Kendall S, CF, and COV as follows:

- *Increasing (S greater than 0, CF > 95%)*
- *Probably Increasing (S greater than 0, CF between or equal to 95% and 90%)*
- *No Trend (S greater than 0, CF less than 90%)*
- *Stable (if S is less than or equal to zero and COV less than 1)*
- *Probably Decreasing (S less than 0, CF between or equal to 95% and 90%)*
- *Decreasing (S less than 0, CF greater than 95%)*

Wells 12S, 13L, and MW-23A through MW-38D are not presented in this table due to insufficient data for statistical analyses.
Statistical analysis trends where more than 50% of results were non-detects are in black font.
Statistical analysis trends with the majority of the results analyzed above the detection limit are in white font.

Table 6-8
Mass Discharge Calculations

Transect	Sampling Location	Distance Along Transect (ft)	Top of Screened Interval (ft bgs)	Bottom of Screened Interval (ft bgs)	Plume Top (ft bgs)	Plume Bottom (ft bgs)	Hydraulic Conductivity (ft/day)	Hydraulic Gradient (ft/ft)	PCE (µg/L)
Guardsman Way Transect	MW-31A	200	138	148	132	200	5	0.014	0.73
	MW-04	632	143	173	137	204	6	0.014	42
	MW-02	1370	176	203	171	221	10	0.014	230
	MW-03RA	1942	215	220	189	241	5	0.014	25
	MW-30RA	2822	240	250	158	258	5	0.014	0.18
1400 East Transect	MW-21	201	62	72	65.4	142.6	54	0.012	1.3
	MW-20S	720	79.5	89.5	83.6	150.8	10	0.012	5.4
	MW-20D	720	119	129	83.6	150.4	165	0.012	11
	MW-19	1040	84	94	81	152.4	30	0.012	56
	MW-18	1267	80	90	82	153.3	12	0.012	64
	MW-8A	1714	91	106	61	140	103	0.012	56
	MW-38S	2632	27	37	24	116	50	0.012	1
	MW-38D	2632	60	70	24	116	50	0.012	1
East Side Springs Transect	MW-17S	5	6	21	7	57	5	0.12	0.88
	RG-07	324	20	30	21	96	5	0.12	43
	MW-13S	469	15.5	20.5	15	91	0.1	0.12	25
	MW-13D	469	79	84	15	91	2	0.12	55
	RG-08	800	8	18	6	90	5	0.12	56
	RG-02	1160	5	15	3	79	5	0.12	57
	RG-03	1400	3	8	3	68	5	0.12	60
	MW-16S	1978	9	19	12	32	50	0.12	23
	RG-04	2347	10	20	10	24	5	0.12	6

Notes:
ft = feet
ft bgs = feet below ground surface
ft/day = feet per day
ft/ft = feet per foot
µg/L = microgram per liter

Table 6-9
Soil Ferrous Iron Content Results

Well ID	Sample Depth (ft bgs)	Field Classification	Date Collected	Ferrous Iron	
				mg/kg	Q
MW-23	199	Silty gravel with sand	4/9/2020	*0.04*	*U*
	336	Silty gravel	4/14/2020	**0.33**	
MW-24	222	Gravelly silt	5/15/2020	*0.04*	*U*
MW-25	216	Clayey gravel with sand	5/3/2020	**0.11**	
MW-26	247	Silty clay	5/7/2020	**0.12**	
MW-27	218	Clayey gravel with sand	3/24/2020	**0.02**	**J**
MW-28	211	Gravelly sand	3/17/2020	**0.06**	
MW-29	190	Clay with sand	5/31/2020	**0.02**	
	261	Clay with sand and gravel	6/2/2020	*0.04*	*U*
MW-30	343	Gravelly clay with silt	6/8/2020	*0.04*	*U*
MW-31	190	Gravelly clay with sand	6/11/2020	*0.04*	*U*
	230	Gravelly silt	6/12/2020	*0.04*	*U*
MW-32	223	Clay with sand	6/26/2020	*0.04*	*U*
MW-34	230	Silty clay with sand	7/8/2020	*0.04*	*U*
	255	Silty clay	7/9/2020	*0.04*	*U*
	295	Silty clay with gravel	7/10/2020	**0.75**	

Notes:

Bold indicates detected values

Italics indicates nondetected values

mg/kg = milligrams per kilogram

ft bgs = feet below ground surface

Q = qualifier

J = Result is estimated

U = Analyte was not detected at the associated value, which is the reporting limit

Table 6-10
Soil Magnetic Susceptibility Results

Well ID	Sample Depth (ft bgs)	Field Classification[1]	Average Magnetic Susceptibility (m^3/kg)
MW-03R[2]	185-195	Clayey Gravel with Sand	1.7E-07
	205-215	-	3.3E-07
	267-277	Silty, Clayey Gravel with Sand	1.5E-07
	357-367	-	9.0E-08
MW-08[2]	90-97	Clayey Gravel with Sand	1.6E-07
	147-153	Silty Gravel with Sand	1.1E-07
	171-175	Clayey Gravel with Sand	1.1E-07
	238-247	Clayey Gravel with Sand	1.6E-07
	401-406	Silty Gravel with Sand	1.3E-07
MW12D[2]	88.5-93.5	Clayey Gravel with Sand	4.5E-07
MW12S[2]	59-60	Silty Gravel with Sand	1.4E-07
MW13D[2]	50-60	Clayey Gravel with Sand	3.4E-07
	80-82.5	Poorly Graded Sand with Silt	1.0E-07
MW13S[2]	15-20	-	1.1E-07
MW14D[2]	49-54	Clayey Gravel with Sand	2.5E-07
MW14S[2]	7-15	Silt with Sand	4.5E-08
MW15S[2]	52-55	Silty Gravel with Sand	1.6E-07
MW-20D[2]	82-87	Silty Sand with Gravel	2.3E-07
	113-114	Silty Sand with Gravel	9.2E-08
	129-130	Lean Clay	2.4E-07
MW-23[3]	14-354	-	2.5E-07
MW-24[3]	10-249.5	-	1.9E-07
MW-25[3]	10-319	-	3.2E-07
MW-26[3]	10-359	-	2.8E-07
MW-27[3]	13-219	-	7.4E-07
MW-28[3]	98-198	-	4.8E-07
MW-29[3]	10-338	-	1.4E-06
MW-30[3]	10-318	-	3.4E-07
MW-30R[3]	10-295	-	7.6E-08
MW-32[3]	11-269	-	3.6E-07
MW-34[3]	9-349	-	3.1E-07
MW-13L[3]	6-158	-	3.5E-06
MW-36[3]	7-110	-	5.3E-07
MW-37[3]	7-69	-	1.7E-07
MW-38[3]	9-79	-	3.4E-07

Notes
1. Sample intervals that cover multiple field classifications are not shown
2. Samples were analyzed by Microbial Insights using Barrington Magnetic Susceptibility System
3. Samples were analyzed in the field with KT-10 magnetic susceptibility meter

- = not applicable
ft bgs = feet below ground surface
ID = identification
m^3/kg = cubic meters per kilogram

Table 6-11
Compound Specific Isotope Analysis Results

	Location	MW-02		MW-04		MW-08A		MW-14D		MW-16S	
	Sample Name	MW02-GW092820		MW04-GW092920		MW08A-GW092720		MW14D-GW092520		MW16S-GW092520	
	Sample Date	9/28/2020		9/29/2020		9/27/2020		9/25/2020		9/25/2020	
Analyte	Unit	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PCE $\delta^{13}C$	(‰, VPDB)	**-26.4**		**-26.8**		**-26.1**		**-25.0**		**-26.1**	

Acronyms:

‰ = per mil

$\delta^{13}C$ = isotopic composition of carbon ($^{13}C/^{12}C$)

PCE = tetrachloroethene

VPDB = Vienna Pee Dee Belemnite

Table 7-1
Human Health Receptor COPCs Selected for Quantitative Assessment

Chemical	CAS Number	Groundwater	Soil Gas	Indoor Air	Outdoor Air	Soil/ Sediment	Surface Water
1,1,2,2-TETRACHLOROETHANE	79-34-5	Qual.1		Quant.	Qual.1		Qual.1
1,1,2-TRICHLOROETHANE	79-00-5	Qual.1		Quant.	Qual.1		Qual.1
1,2,4-TRICHLOROBENZENE	120-82-1		Qual.1	Quant.	Qual.1		
1,2,4-TRIMETHYLBENZENE	95-63-6			Quant.			
1,2-DIBROMOETHANE	106-93-4	Qual.1	Qual.1	Quant.	Qual.1		Qual.1
1,2-DICHLOROETHANE	107-06-2			Quant.	Quant.		
1,2-DICHLOROPROPANE	78-87-5			Quant.			
1,3,5-TRIMETHYLBENZENE	108-67-8			Quant.			
1,3-BUTADIENE	106-99-0		Quant.	Quant.	Quant.		
1,4-DICHLOROBENZENE	106-46-7			Quant.			
1,4-DIOXANE	**123-91-1**	**Quant.**		**Quant.**	**Quant.**		
2-HEXANONE	591-78-6	Quant.					
ALUMINUM	7429-90-5	Quant.					Quant.
ANTIMONY	7440-36-0	Quant.					Quant.
ARSENIC	7440-38-2	Quant.				Quant.	Quant.
BARIUM	7440-39-3	Quant.					
BENZENE	71-43-2	Quant.	Quant.	Quant.	Quant.		Quant.
BENZYL CHLORIDE	100-44-7			Quant.	Qual.1		
BERYLLIUM	7440-41-7	Quant.					
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Quant.					Quant.
BROMODICHLOROMETHANE	75-27-4	Quant.	Quant.	Quant.	Qual.1		Quant.
BROMOMETHANE	74-83-9			Quant.	Qual.1		
CADMIUM	7440-43-9	Quant.				Quant.	Quant.
CARBON TETRACHLORIDE	56-23-5			Quant.	Quant.		
CHLOROFORM	67-66-3	Quant.	Quant.	Quant.	Quant.		Quant.
CIS-1,2-DICHLOROETHENE	**156-59-2**	**Quant.**	**Bkg.**	**Bkg.**			
COBALT	7440-48-4	Quant.				Quant.	Quant.
COPPER	7440-50-8	Quant.					Quant.
DIBROMOCHLOROMETHANE	124-48-1	Quant.	Bkg.	Bkg.			
ETHYL ACETATE	141-78-6		Quant.	Quant.	Quant.		
ETHYLBENZENE	100-41-4	Quant.		Quant.	Quant.		
HEXACHLORO-1,3-BUTADIENE	87-68-3	Qual.1	Qual.1	Quant.	Qual.1		Qual.1
IRON	7439-89-6	Quant.					Quant.
ISOPROPYL ALCOHOL	67-63-0			Quant.			
LEAD	7439-92-1	Quant.					Quant.
M,P-XYLENE	108-38-3			Quant.	Quant.		
MANGANESE	7439-96-5	Quant.				Quant.	Quant.
METHYLENE CHLORIDE	75-09-2			Quant.			
NAPHTHALENE	91-20-3	Qual.1		Quant.			Qual.1
NICKEL	7440-02-0	Quant.					
O-XYLENE	95-47-6			Quant.			
TETRACHLOROETHENE	**127-18-4**	**Quant.**	**Quant.**	**Quant.**	**Quant.**		**Quant.**
THALLIUM	7440-28-0	Quant.				Quant.	Quant.
TRICHLOROETHENE	**79-01-6**	**Quant.**	**Quant.**	**Quant.**	**Quant.**		**Quant.**
VANADIUM	7440-62-2	Quant.					Quant.
VINYL ACETATE	108-05-4			Quant.			
VINYL CHLORIDE	**75-01-4**	**Qual.1**		**Quant.**			**Qual.1**
ZINC	7440-66-6	Quant.					Quant.

Notes:
Site-related COPCs are shown in **bold** text.
Shaded cells indicate COPCs retained for further quantitative evaluation.
COPC - chemical of potential concern

COPC Outcome:
Null - no further evaluation necessary
Bkg. - background analysis for detected analytes with no screening levels
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative analysis for detected analytes with screening levels

Table 7-2
Overall Human Health Risk Assessment Conclusions for Site-related COCs

Receptor	Exposure Medium	Risk Conclusion
Resident	Potable Water	Potential unacceptable risk (future)
	Indoor Air	Potential unacceptable risk (within ESS area)
	Outdoor Ambient Air	Within EPA's acceptable risk range
	Shallow Groundwater	Risks are negligible
	Deep Groundwater as Irrigation Water	Assumed to be minor
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Homegrown Produce	PCE risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Students	Potable Water	Assumed potential unacceptable risk (future; based on residential)
	Indoor Air	Within EPA's acceptable risk range
	Outdoor Ambient Air	Within EPA's acceptable risk range
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Daycare Children	Potable Water	Assumed potential unacceptable risk (future; based on residential)
	Indoor Air	Potential unacceptable risk (future home daycares within ESS area)
	Outdoor Ambient Air	Within EPA's acceptable risk range
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Indoor Worker	Potable Water	Assumed potential unacceptable risk (future; based on residential)
	Indoor Air	Potential unacceptable risk (within ESS area)
Outdoor Worker	Outdoor Ambient Air	Within EPA's acceptable risk range
	Shallow Groundwater	Risks are negligible
	Deep Groundwater as Irrigation Water	Assumed to be minor
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Construction Worker	Outdoor Ambient Air	Assumed to be minor (given no unacceptable risk based on outdoor worker)
	Shallow Groundwater	Within EPA's acceptable risk range
	Trench Air	Within EPA's acceptable risk range
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible

Notes:
Only pathways considered to be potentially complete in Figure H.2-1 are presented.
Pathways with potential unacceptable risk are shaded in orange.

COPC = chemicals of potential concern
EPA = U.S. Environmental Protection Agency
ESS area = East Side Springs area

Table 7-3
Risk Summary for Hypothetical Future Residential Exposures to Groundwater

Receptor	Well	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**MW-01D**	Based on Detects only	3E-01	2E-01	4E-06		Ingestion: BIS(2-ETHYLHEXYL)PHTHALATE
		Site-related only	4E-01	3E-01	1E-05		none [c]
Residential	**MW-03RB**	Based on Detects only	6E+00	5E+00	5E-05	Ingestion, Dermal, and Inhalation: **PCE**	Ingestion: CHLOROFORM; **PCE; TCE** Dermal: **PCE** Inhalation: BROMODICHLOROMETHANE; CHLOROFORM; **PCE; TCE**
		Site-related only	6E+00	5E+00	3E-05		
Residential	**MW-03RC**	Based on Detects only	2E-01	1E-01	9E-06		Inhalation: CHLOROFORM
		Site-related only	4E-01	3E-01	2E-06		none
Residential	**MW-03RD**	Based on Detects only	8E-03	6E-03	1E-06		
		Site-related only	2E-01	2E-01	2E-06		none
Residential	**MW-08C**	Based on Detects only	6E-03	5E-03	1E-06		
		Site-related only	2E-01	2E-01	2E-06		none
Residential	**MW-13L**	Based on Detects only	1E+00	1E+00	2E-05		Inhalation: CHLOROFORM; **PCE**
		Site-related only	1E+00	1E+00	6E-06		
Residential	**MW-34C**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	2E-01	2E-01	1E-06		none
Residential	**MW-34D**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	2E-01	2E-01	2E-06		none

(green) Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
(orange) Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.
[c] 1,4-dioxane was not detected in groundwater, but the achieved detection limits were not adequate relative to a cancer risk threshold of 1E-06.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table 7-4
Risk Summary for Residential Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME) HI$_{child}$	HI$_{adult}$	Risk$_{lifetime}$	Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
Residential Properties							
Residential	**0001-H**	Based on Detects only	8E-01	8E-01	3E-05		1,2-DICHLOROETHANE; BENZENE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE
		Site-related only	2E-01	2E-01	2E-06		
Residential	**0002-H**	Based on Detects only	5E-01	5E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0003-H**	Based on Detects only	4E+00	4E+00	5E-04	none	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; 1,2-DICHLOROETHANE; BENZENE; CHLOROFORM; ETHYLBENZENE; **PCE**
		Site-related only	4E-01	4E-01	3E-06		
Residential	**0004-H**	Based on Detects only	6E-02	6E-02	9E-06		BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0008-H**	Based on Detects only	3E+00	3E+00	1E-04	BENZENE; M,P-XYLENE	BENZENE; ETHYLBENZENE
		Site-related only	3E-01	3E-01	2E-06		
Residential	**0011-H**	Based on Detects only	7E-01	7E-01	1E-05		BENZENE; CHLOROFORM; **PCE**
		Site-related only	5E-01	5E-01	2E-06		
Residential	**0012-H**	Based on Detects only	2E-01	2E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0013-H**	Based on Detects only	2E-01	2E-01	7E-06		BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0017-H**	Based on Detects only	6E-01	6E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0018-H**	Based on Detects only	8E+00	8E+00	2E-04	1,2,4-TRICHLOROBENZENE; BENZYL CHLORIDE; NAPHTHALENE	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; 1,2-DIBROMOETHANE; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; BENZYL CHLORIDE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE; HEXACHLORO-1,3-BUTADIENE; NAPHTHALENE; **TCE**
		Site-related only	7E-01	7E-01	4E-06		
Residential	**0023-H**	Based on Detects only	1E-01	1E-01	4E-06		BENZENE
		Site-related only	1E-01	1E-01	9E-07		
Residential	**0025-H**	Based on Detects only	3E-01	3E-01	4E-05		**1,4-DIOXANE**; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	5E-06		
Residential	**0026-H**	Based on Detects only	5E+00	5E+00	7E-05	1,1,2-TRICHLOROETHANE	1,1,2-TRICHLOROETHANE; 1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0027-H**	Based on Detects only	5E-01	5E-01	4E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0029-H**	Based on Detects only	4E-01	4E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0030-H**	Based on Detects only	5E-01	5E-01	1E-05		1,2-DICHLOROETHANE; BENZENE
		Site-related only	3E-01	3E-01	2E-06		
Residential	**0036-H**	Based on Detects only	2E-01	2E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	3E-01	3E-01	2E-06		
Residential	**0037-H**	Based on Detects only	2E+00	2E+00	1E-04	1,2-DICHLOROETHANE	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; **1,4-DIOXANE**; 1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE
		Site-related only	3E-01	3E-01	4E-06		
Residential	**0038-H**	Based on Detects only	5E-02	5E-02	1E-05		CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0040-H [c]**	Based on Detects only	1E+01	1E+01	1E-04	METHYLENE CHLORIDE; **PCE; TCE**	1,3-BUTADIENE; BENZENE; CHLOROFORM; ETHYLBENZENE; METHYLENE CHLORIDE; **PCE; TCE**
		Site-related only	1E+01	1E+01	4E-05		
Residential	**0041-H**	Based on Detects only	3E-01	3E-01	1E-05		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0047-H**	Based on Detects only	2E-01	2E-01	8E-07		
		Site-related only	3E-01	3E-01	1E-06		
Residential	**0050-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		

Table 7-4
Risk Summary for Residential Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME) HI_{child}	HI_{adult}	$Risk_{lifetime}$	Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
Residential	**0051-H [d]**	Based on Detects only	1E+01	1E+01	7E-05	ISOPROPYL ALCOHOL; **PCE**	BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; **PCE**
		Site-related only	1E+01	1E+01	4E-05		
Residential	**0052-H**	Based on Detects only	5E-02	5E-02	2E-07		
		Site-related only	2E-01	2E-01	7E-07		
Residential	**0053-H**	Based on Detects only	1E+00	1E+00	2E-05		1,3-BUTADIENE; BENZENE; CHLOROFORM; ETHYLBENZENE; **PCE**
		Site-related only	8E-01	8E-01	4E-06		
Residential	**0054-H [e]**	Based on Detects only	5E+00	5E+00	2E-05	**TCE**	**PCE; TCE**
		Site-related only	5E+00	5E+00	2E-05		
Residential	**0055-H**	Based on Detects only	4E-02	4E-02	1E-07		
		Site-related only	2E-01	2E-01	7E-07		
Residential	**0056-H**	Based on Detects only	2E-01	2E-01	6E-07		
		Site-related only	3E-01	3E-01	1E-06		
Residential	**0057-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0058-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0059-H [f]**	Based on Detects only	1E+01	1E+01	1E-04	1,2,4-TRICHLOROBENZENE; **PCE; TCE**	1,3-BUTADIENE; **1,4-DIOXANE**; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; **PCE; TCE**
		Site-related only	1E+01	1E+01	5E-05		
Residential	**0060-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0061-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0062-H**	Based on Detects only	2E-01	2E-01	8E-06		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	**0063-H**	Based on Detects only	1E-01	1E-01	4E-07		
		Site-related only	2E-01	2E-01	9E-07		
Residential	**0064-H**	Based on Detects only	6E-01	6E-01	1E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	4E-01	4E-01	3E-06		
Residential	**0065-H**	Based on Detects only	2E-01	2E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	7E-07		
Residential	**0066-H**	Based on Detects only	4E-01	4E-01	1E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0069-H**	Based on Detects only	4E-01	4E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	8E-02	8E-02	9E-07		
Residential	**0071-H**	Based on Detects only	5E-01	5E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	3E-02	3E-02	3E-07		
Residential	**0072-H**	Based on Detects only	2E-01	2E-01	6E-06		CHLOROFORM
		Site-related only	2E-02	2E-02	3E-07		
Residential	**0076-H**	Based on Detects only	4E-01	4E-01	2E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	3E-02	3E-02	6E-07		
Residential	**0091-H**	Based on Detects only	1E+00	1E+00	5E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; **PCE**
		Site-related only	6E-01	6E-01	3E-06		
Residential	**0098-H**	Based on Detects only	8E-01	8E-01	3E-05		1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM; ETHYLBENZENE; TCE
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0102-H**	Based on Detects only	1E+00	1E+00	4E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE
		Site-related only	3E-02	3E-02	8E-07		
Residential	**0118-H**	Based on Detects only	1E+00	1E+00	3E-05		BENZENE; CHLOROFORM; METHYLENE CHLORIDE
		Site-related only	1E-01	1E-01	9E-07		
Residential	**0121-H**	Based on Detects only	6E-01	6E-01	2E-05		BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; NAPHTHALENE
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0122-H**	Based on Detects only	5E-01	5E-01	1E-05		1,3-BUTADIENE; BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	8E-07		
Residential	**0133-H**	Based on Detects only	4E-01	4E-01	6E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	3E-02	3E-02	4E-07		

Table 7-4
Risk Summary for Residential Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	0135-H	Based on Detects only	1E+00	1E+00	3E-05		BENZENE; CHLOROFORM; ETHYLBENZENE; NAPHTHALENE
		Site-related only	4E-02	4E-02	4E-07		
Residential	0137-H	Based on Detects only	5E-01	5E-01	3E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	1E-01	1E-01	8E-07		
Residential	0139-H	Based on Detects only	3E+00	3E+00	3E-04	ISOPROPYL ALCOHOL	1,3-BUTADIENE; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM
		Site-related only	3E-02	3E-02	5E-07		
Residential	0145-H	Based on Detects only	3E-01	3E-01	2E-05		1,4-DICHLOROBENZENE; CARBON TETRACHLORIDE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	0146-H	Based on Detects only	8E-01	8E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	3E-01	3E-01	1E-06		
Residential	0148-H	Based on Detects only	7E-01	7E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	8E-02	8E-02	6E-07		
Residential	0153-H	Based on Detects only	5E-01	5E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	5E-07		
Residential	0162-H	Based on Detects only	4E-01	4E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	3E-02	3E-02	5E-07		
Residential	0166-H	Based on Detects only	3E+00	3E+00	2E-05	ISOPROPYL ALCOHOL	BENZENE; CHLOROFORM; **TCE**
		Site-related only	6E-01	6E-01	3E-06		
Residential	0172-H	Based on Detects only	2E-01	2E-01	4E-06		none
		Site-related only	1E-01	1E-01	6E-07		
Residential	0173-H	Based on Detects only	5E-01	5E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	0174-H	Based on Detects only	8E-01	8E-01	8E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE
		Site-related only	8E-02	8E-02	2E-06		
Residential	0180-H	Based on Detects only	9E-02	9E-02	4E-06		none
		Site-related only	8E-03	8E-03	2E-07		
Residential	0189-H	Based on Detects only	1E+00	1E+00	1E-05		CHLOROFORM
		Site-related only	2E-01	2E-01	8E-07		
Residential	0192-H	Based on Detects only	7E-01	7E-01	2E-05		none
		Site-related only	6E-01	6E-01	3E-06		
Residential	0193-H	Based on Detects only	5E-01	5E-01	2E-05		CHLOROFORM; **TCE**
		Site-related only	4E-01	4E-01	3E-06		
Residential	0194-H	Based on Detects only	7E-01	7E-01	1E-05		BENZENE; CHLOROFORM; **TCE**
		Site-related only	6E-01	6E-01	3E-06		
Residential	0195-H	Based on Detects only	4E-01	4E-01	9E-06		BENZENE; CHLOROFORM
		Site-related only	9E-02	9E-02	1E-06		
Residential	0197-H [g]	Based on Detects only	4E+00	4E+00	3E-05	**TCE**	CHLOROFORM; **PCE; TCE**
		Site-related only	3E+00	3E+00	1E-05		
Residential	0225-H	Based on Detects only	2E-01	2E-01	1E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	9E-07		
Residential	0230-H	Based on Detects only	3E-01	3E-01	1E-05		CHLOROFORM
		Site-related only	1E-02	1E-02	2E-07		
Residential	0255-H	Based on Detects only	2E-01	2E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	0256-H	Based on Detects only	9E-02	9E-02	7E-06		BENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	9E-07		
Residential	0263-H	Based on Detects only	7E-01	7E-01	1E-05		1,2-DICHLOROETHANE; BENZENE
		Site-related only	6E-01	6E-01	3E-06		
Residential	0273-H	Based on Detects only	2E-01	2E-01	8E-06		CHLOROFORM
		Site-related only	8E-02	8E-02	5E-07		
Residential	0274-H	Based on Detects only	6E-01	6E-01	1E-05		CHLOROFORM
		Site-related only	3E-01	3E-01	1E-06		
Residential	0277-H	Based on Detects only	2E-01	2E-01	9E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	0302-H	Based on Detects only	1E-01	1E-01	6E-06		CHLOROFORM
		Site-related only	2E-02	2E-02	2E-07		
Residential	0315-H	Based on Detects only	3E-01	3E-01	7E-06		CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		

Table 7-4
Risk Summary for Residential Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0329-H**	Based on Detects only	1E-01	1E-01	3E-06		none
		Site-related only	9E-03	9E-03	2E-07		
Residential	**0334-H**	Based on Detects only	1E-01	1E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	4E-02	4E-02	9E-07		
Residential	**0336-H**	Based on Detects only	5E-01	5E-01	7E-06		BENZENE; CHLOROFORM
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0347-H**	Based on Detects only	3E-01	3E-01	2E-05		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	2E-02	2E-02	2E-07		
Residential	**0381-H**	Based on Detects only	3E-01	3E-01	1E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	2E-02	2E-02	8E-07		
Residential	**0392-H**	Based on Detects only	2E-01	2E-01	6E-06		BENZENE; CHLOROFORM
		Site-related only	2E-02	2E-02	4E-07		
Residential	**0395-H**	Based on Detects only	3E-01	3E-01	1E-05		CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
VAMC Building 20 (Valor House) and Building 32 (Fisher House)							
Residential	**B20-I**	Based on Detects only	5E-01	5E-01	2E-05		1,3-BUTADIENE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	**B32**	Based on Detects only	3E-01	3E-01	9E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	1E-02	1E-02	2E-07		

See **Attachment H.6** for detailed risk estimates for each COPC.

(green)	Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
(orange)	Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.

[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.

[e] For property 0054-H, pressure cycling results indicate indoor sources were the primary contributors to overall exposures; the VI pathway is incomplete.

[f] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.

[g] For property 0197-H, interim measures were taken (i.e., portable air filters provided) while the TCE source was investigated further.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table 7-5
Risk Summary for Daycare Children Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
School Daycares						
Daycare children	**0045-S**	Based on Detects only	2E-01	3E-07		
		Site-related only	2E-01	3E-07		
VAMC Building 13						
Daycare children	**B13-I**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Churches						
Daycare children	**0366-C**	Based on Detects only	4E-02	5E-07		
		Site-related only	9E-03	3E-08		
Hypothetical Residential Daycares						
Daycare children	**0001-H**	Based on Detects only	9E-02	9E-07		
		Site-related only	3E-02	8E-08		
Daycare children	**0002-H**	Based on Detects only	7E-02	4E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0003-H**	Based on Detects only	4E-01	2E-05		1,1,2,2-TETRACHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	5E-02	1E-07		
Daycare children	**0004-H**	Based on Detects only	8E-03	3E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0008-H**	Based on Detects only	4E-01	4E-06		BENZENE
		Site-related only	3E-02	9E-08		
Daycare children	**0011-H**	Based on Detects only	9E-02	4E-07		
		Site-related only	6E-02	8E-08		
Daycare children	**0012-H**	Based on Detects only	3E-02	4E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0013-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0017-H**	Based on Detects only	7E-02	5E-07		
		Site-related only	5E-02	8E-08		
Daycare children	**0018-H**	Based on Detects only	1E+00	7E-06		NAPHTHALENE
		Site-related only	9E-02	2E-07		
Daycare children	**0023-H**	Based on Detects only	1E-02	1E-07		
		Site-related only	1E-02	4E-08		
Daycare children	**0025-H**	Based on Detects only	4E-02	1E-06		
		Site-related only	3E-02	2E-07		
Daycare children	**0026-H**	Based on Detects only	7E-01	2E-06		none
		Site-related only	5E-02	7E-08		
Daycare children	**0027-H**	Based on Detects only	6E-02	1E-06		
		Site-related only	2E-02	4E-08		
Daycare children	**0029-H**	Based on Detects only	5E-02	4E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0030-H**	Based on Detects only	6E-02	4E-07		
		Site-related only	4E-02	1E-07		
Daycare children	**0036-H**	Based on Detects only	3E-02	4E-07		
		Site-related only	4E-02	9E-08		
Daycare children	**0037-H**	Based on Detects only	3E-01	4E-06		1,2-DICHLOROETHANE
		Site-related only	4E-02	1E-07		
Daycare children	**0038-H**	Based on Detects only	6E-03	4E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0040-H [c]**	Based on Detects only	2E+00	5E-06	none	CHLOROFORM (none for site-related)
		Site-related only	1E+00	2E-06		
Daycare children	**0041-H**	Based on Detects only	4E-02	4E-07		
		Site-related only	3E-02	4E-08		

Table 7-5
Risk Summary for Daycare Children Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME) HI		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0047-H**	Based on Detects only	3E-02	2E-08		
		Site-related only	4E-02	5E-08		
Daycare children	**0050-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0051-H [d]**	Based on Detects only	2E+00	2E-06	none	none
		Site-related only	1E+00	1E-06		
Daycare children	**0052-H**	Based on Detects only	6E-03	5E-09		
		Site-related only	2E-02	3E-08		
Daycare children	**0053-H**	Based on Detects only	1E-01	6E-07		
		Site-related only	1E-01	1E-07		
Daycare children	**0054-H**	Based on Detects only	6E-01	9E-07		
		Site-related only	6E-01	9E-07		
Daycare children	**0055-H**	Based on Detects only	5E-03	4E-09		
		Site-related only	2E-02	3E-08		
Daycare children	**0056-H**	Based on Detects only	2E-02	2E-08		
		Site-related only	4E-02	4E-08		
Daycare children	**0057-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0058-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0059-H [e]**	Based on Detects only	2E+00	4E-06	none	none
		Site-related only	1E+00	2E-06		
Daycare children	**0060-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0061-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0062-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0063-H**	Based on Detects only	1E-02	1E-08		
		Site-related only	3E-02	3E-08		
Daycare children	**0064-H**	Based on Detects only	8E-02	4E-07		
		Site-related only	5E-02	9E-08		
Daycare children	**0065-H**	Based on Detects only	2E-02	3E-07		
		Site-related only	7E-03	3E-08		
Daycare children	**0066-H**	Based on Detects only	5E-02	4E-07		
		Site-related only	1E-02	4E-08		
Daycare children	**0069-H**	Based on Detects only	5E-02	7E-07		
		Site-related only	1E-02	3E-08		
Daycare children	**0071-H**	Based on Detects only	7E-02	7E-07		
		Site-related only	4E-03	1E-08		
Daycare children	**0072-H**	Based on Detects only	3E-02	2E-07		
		Site-related only	3E-03	9E-09		
Daycare children	**0076-H**	Based on Detects only	5E-02	6E-07		
		Site-related only	4E-03	2E-08		
Daycare children	**0091-H**	Based on Detects only	2E-01	2E-06		none
		Site-related only	8E-02	1E-07		
Daycare children	**0098-H**	Based on Detects only	1E-01	9E-07		
		Site-related only	5E-02	8E-08		
Daycare children	**0102-H**	Based on Detects only	2E-01	1E-06		
		Site-related only	4E-03	3E-08		
Daycare children	**0118-H**	Based on Detects only	2E-01	9E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0121-H**	Based on Detects only	7E-02	5E-07		
		Site-related only	2E-02	4E-08		

Table 7-5
Risk Summary for Daycare Children Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0122-H**	Based on Detects only	6E-02	4E-07		
		Site-related only	2E-02	2E-08		
Daycare children	**0133-H**	Based on Detects only	5E-02	2E-06		none
		Site-related only	3E-03	1E-08		
Daycare children	**0135-H**	Based on Detects only	1E-01	9E-07		
		Site-related only	5E-03	1E-08		
Daycare children	**0137-H**	Based on Detects only	6E-02	7E-07		
		Site-related only	1E-02	3E-08		
Daycare children	**0139-H**	Based on Detects only	4E-01	7E-06		1,4-DICHLOROBENZENE
		Site-related only	4E-03	2E-08		
Daycare children	**0145-H**	Based on Detects only	3E-02	5E-07		
		Site-related only	2E-02	2E-08		
Daycare children	**0146-H**	Based on Detects only	1E-01	5E-07		
		Site-related only	3E-02	5E-08		
Daycare children	**0148-H**	Based on Detects only	9E-02	6E-07		
		Site-related only	1E-02	2E-08		
Daycare children	**0153-H**	Based on Detects only	7E-02	4E-07		
		Site-related only	6E-03	2E-08		
Daycare children	**0162-H**	Based on Detects only	5E-02	7E-07		
		Site-related only	4E-03	2E-08		
Daycare children	**0166-H**	Based on Detects only	3E-01	6E-07		
		Site-related only	8E-02	1E-07		
Daycare children	**0172-H**	Based on Detects only	3E-02	1E-07		
		Site-related only	1E-02	2E-08		
Daycare children	**0173-H**	Based on Detects only	6E-02	6E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0174-H**	Based on Detects only	1E-01	2E-06		none
		Site-related only	1E-02	6E-08		
Daycare children	**0180-H**	Based on Detects only	1E-02	1E-07		
		Site-related only	1E-03	7E-09		
Daycare children	**0189-H**	Based on Detects only	2E-01	3E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0192-H**	Based on Detects only	9E-02	5E-07		
		Site-related only	7E-02	9E-08		
Daycare children	**0193-H**	Based on Detects only	7E-02	5E-07		
		Site-related only	6E-02	1E-07		
Daycare children	**0194-H**	Based on Detects only	9E-02	4E-07		
		Site-related only	8E-02	1E-07		
Daycare children	**0195-H**	Based on Detects only	5E-02	3E-07		
		Site-related only	1E-02	4E-08		
Daycare children	**0197-H**	Based on Detects only	4E-01	9E-07		
		Site-related only	4E-01	6E-07		
Daycare children	**0225-H**	Based on Detects only	2E-02	4E-07		
		Site-related only	6E-03	3E-08		
Daycare children	**0230-H**	Based on Detects only	4E-02	3E-07		
		Site-related only	1E-03	7E-09		
Daycare children	**0255-H**	Based on Detects only	3E-02	5E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0256-H**	Based on Detects only	1E-02	2E-07		
		Site-related only	6E-03	3E-08		
Daycare children	**0263-H**	Based on Detects only	9E-02	3E-07		
		Site-related only	7E-02	1E-07		
Daycare children	**0273-H**	Based on Detects only	3E-02	2E-07		
		Site-related only	9E-03	1E-08		

Table 7-5
Risk Summary for Daycare Children Exposures to Indoor Air Based on Measured Indoor Air Data

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME) HI$_{child}$	Reasonable Maximum Exposure (RME) Risk$_{lifetime}$	Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
Daycare children	**0274-H**	Based on Detects only	8E-02	3E-07		
		Site-related only	4E-02	4E-08		
Daycare children	**0277-H**	Based on Detects only	3E-02	3E-07		
		Site-related only	2E-02	2E-08		
Daycare children	**0302-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	2E-03	8E-09		
Daycare children	**0315-H**	Based on Detects only	4E-02	2E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0329-H**	Based on Detects only	1E-02	1E-07		
		Site-related only	1E-03	6E-09		
Daycare children	**0334-H**	Based on Detects only	1E-02	5E-07		
		Site-related only	5E-03	3E-08		
Daycare children	**0336-H**	Based on Detects only	7E-02	2E-07		
		Site-related only	5E-02	5E-08		
Daycare children	**0347-H**	Based on Detects only	4E-02	6E-07		
		Site-related only	2E-03	8E-09		
Daycare children	**0381-H**	Based on Detects only	4E-02	4E-07		
		Site-related only	3E-03	3E-08		
Daycare children	**0392-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	3E-03	2E-08		
Daycare children	**0395-H**	Based on Detects only	4E-02	3E-07		
		Site-related only	2E-02	4E-08		

See **Attachment H.6** for detailed risk estimates for each COPC.

(green)	Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
(orange)	Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.

[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.

[e] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table 7-6
Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**Building 6 [c]**	Based on Detects only	7E+00	3E-05	**PCE**	CHLOROFORM; **PCE; TCE**
		Site-related only	6E+00	2E-05		
Indoor Worker	**Building 7**	Based on Detects only	3E+00	8E-06	ETHYL ACETATE	BENZENE; **TCE**
		Site-related only	9E-01	3E-06		
Indoor Worker	**Building 13**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Indoor Worker	**Building 20**	Based on Detects only	1E-01	4E-06		1,3-BUTADIENE
		Site-related only	3E-02	1E-07		
Indoor Worker	**Building 32**	Based on Detects only	8E-02	2E-06		none
		Site-related only	3E-03	4E-08		

(green)	Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
(orange)	Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] Indoor sources were present and removed from Building 6. If risk estimates were based on the most recent sampling (collected after sources were removed), no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene
VAMC = Veterans Affairs Medical Center