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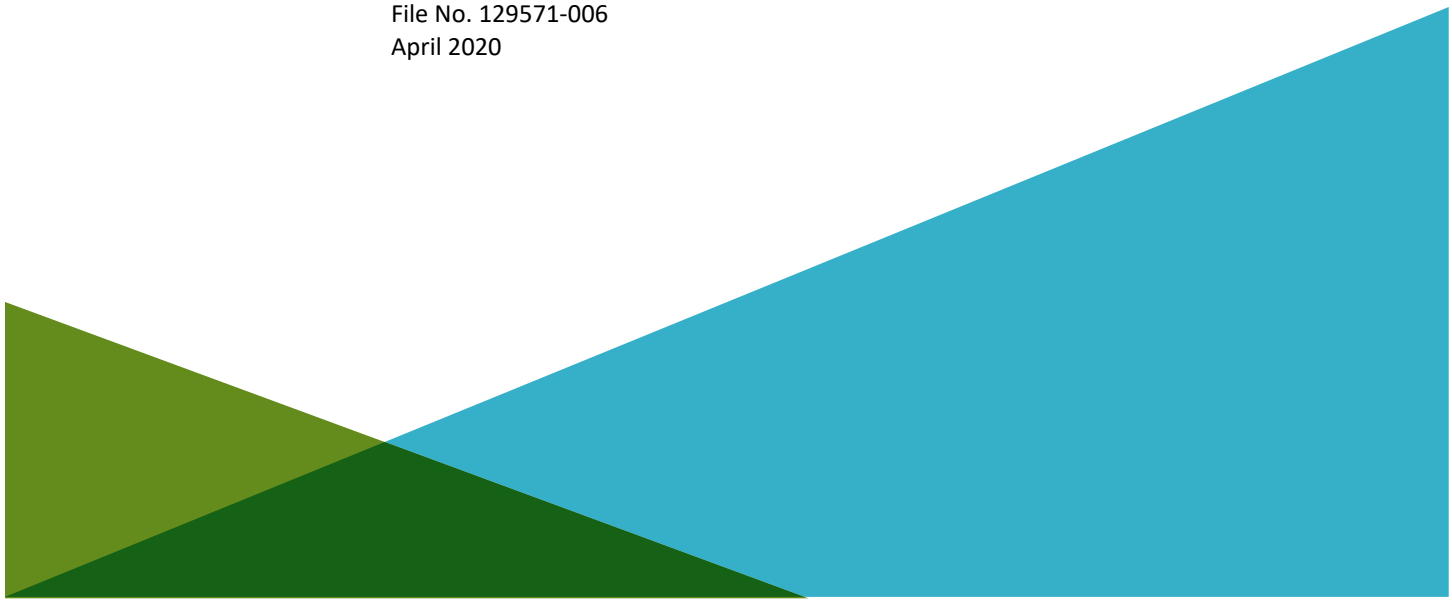
2019 ANNUAL PROGRESS REPORT
FORMER RAYTHEON FACILITIES
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

by
Haley & Aldrich, Inc.
San Jose, California

for
Raytheon Company
Tewksbury, Massachusetts

File No. 129571-006
April 2020



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15 April 2020

File No. 129571-006

U.S. Environmental Protection Agency Region 9
Superfund Division
75 Hawthorne Street, SFD-7-3
San Francisco, California 94105

Attention: Ms. Alana Lee
Project Manager, Superfund Division

Subject: 2019 Annual Progress Report
Former Raytheon Facilities
350 Ellis Street
Mountain View, California

Dear Ms. Lee:

Haley & Aldrich, Inc., prepared this 2019 Annual Progress Report (Report) on behalf of Raytheon Company (Raytheon) for the former Raytheon facilities located at 350 Ellis Street, in Mountain View, California. This report presents the results of the groundwater and air operations, maintenance, and monitoring activities conducted from 1 January through 31 December 2019.

Please do not hesitate to contact the undersigned if you have questions concerning this Report.

Sincerely yours,

HALEY & ALDRICH, INC.

Elie Haddad, P.E.
Principal Consultant
CA P.E. #C51534

Jennifer Boyer
Project Manager

Enclosures

c: Raytheon Company; Attn: Robert Luhrs
MEW Distribution List

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SIGNATURE PAGE FOR

2019 ANNUAL PROGRESS REPORT
FORMER RAYTHEON FACILITIES
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MOUNTAIN VIEW, CALIFORNIA

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List of Acronyms and Abbreviations

Acronym	Description
µg/L	micrograms per liter
APUs	air purification units
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
COCs	chemicals of concern
EPA	United States Environmental Protection Agency
Field Solutions	Field Solutions, Inc.
Haley & Aldrich	Haley & Aldrich, Inc.
gpd/ft	gallons per day per foot
gpm	gallons per minute
HiPOx™	high-pressure oxidation
HVAC	heating, ventilation, and air conditioning
LGAC	liquid-phase granular activated carbon
Locus	Locus Technologies
MAEL	Monthly Average Effluent Limitation
MDEL	Maximum Daily Effluent Limitation
MEW	Middlefield-Ellis-Whisman
NPDES	National Pollutant Discharge Elimination System
OM&M	operations, monitoring, and maintenance
OM&M Plan	"Property-specific Long-term Vapor Intrusion Operations, Maintenance, and Monitoring Plan"
Permit	National Pollutant Discharge Elimination System Permit
QA/QC	quality assurance/quality control
Raytheon	Raytheon Company
Report	2019 Annual Progress Report
ROD	Record of Decision
RWQCB	San Francisco Bay Regional Water Quality Control Board
Site	the Raytheon Company facilities located at 350 Ellis Street in Mountain View, California
SSD	sub-slab depressurization
treatment system	Groundwater extraction treatment system
TCE	trichloroethene
VGAC	vapor-phase granular activated carbon
VOCs	volatile organic compounds

1. Introduction

Haley & Aldrich, Inc., (Haley & Aldrich) prepared this 2019 Annual Progress Report (Report) for the former Raytheon Company (Raytheon) facilities at 350 Ellis Street in Mountain View, California (the "Site").[1] The Site is located within the Middlefield-Ellis-Whisman (MEW) Superfund Study Area (Figure 1). This Report summarizes the Site operations, maintenance, and monitoring (OM&M) activities and data collected from 1 January through 31 December 2019. Haley & Aldrich prepared the Report on behalf of Raytheon in accordance with the following documents:

- The U.S. Environmental Protection Agency's (EPA) Consent Decree for the MEW Site Section XI (EPA, 1991);
- EPA's 16 August 2010 "Record of Decision (ROD) Amendment for the Vapor Intrusion Pathway, Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View and Moffett Field, California" (EPA, 2010);
- EPA's requirements for annual progress report contents at MEW (EPA, 2005, 2011a, 2014);
- EPA's "Statement of Work (SOW), Remedial Design and Remedial Action to Address the Vapor Intrusion Pathway," Section 2.6.2, (EPA, 2011b); and
- San Francisco Bay Regional Water Quality Control Board (RWQCB) Order No. R2-2017-0048,[2] amended by Order No. R2-2018-0050 (Order), National Pollutant Discharge Elimination System (NPDES) Permit No. CAG912002 (Permit).). [3,4]

[1] Work status for 401/415 East Middlefield Road is included in the 2019 Annual Report that Weiss Associates submitted to EPA.

[2] San Francisco Bay Regional Water Quality Control Board, 2017, "Order No. R2-2017-0048, NPDES permit No. CAG912002, General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOCs), Fuel Leaks, Fuel Additives, and Other Related Wastes (VOC and Fuel General Permit)," 18 December.

[3] San Francisco Bay Regional Water Quality Control Board, 2018, "Order No. R2-2018-0050, Amendment of Order No. R2-2017-0048 (NPDES No. CAG912002) for General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOCs), Fuel Leaks, Fuel Additives, and Other Related Wastes (VOC and Fuel General Permit)," 16 November.

[4] San Francisco Bay Regional Water Quality Control Board, 2018, "Authorization to Discharge under VOC and Fuel General Permit, Order No. R2-2017-0048, NPDES Permit No. CAG912002," 18 December.

1.1 SITE BACKGROUND

The 18-acre Site is in the MEW Study Area (Figure 1). The former facilities at 350 Ellis Street were constructed circa 1959. Raytheon occupied the Site from 1961 until it sold the property to Fairchild Semiconductor Corporation in 1997. In 2000, Veritas purchased the property, demolished the facilities, and constructed five new buildings (A, B, C, D, and E) and a multi-level parking garage. The five buildings have the following addresses:

Building	Address
A	370 Ellis Street
B	
C (C West and C East)	380 Ellis Street
D	
E	350 Ellis Street

In 2005, Symantec acquired Veritas and now owns the three properties listed in the table above. Broadcom acquired Symantec[5] in 2019 and intends to sell the properties.

1.2 LOCAL HYDROGEOLOGY

An upper and a lower water-bearing formation are present beneath the Site and separated by a regional continuous aquitard. The upper formation is subdivided into the A, B1, B2, and B3 Zones. The lower formation includes the C and Deep Zones. The naming configuration for the aquitards is such that the aquitard separating the A and B1 Zones is the A/B1 Aquitard, the one separating the B3 and C Zones is the B3/C Aquitard, etc. The zones at the Site can be summarized as follows:

Zone	Depth Below Ground Surface (feet bgs*)
A	0 to 45
B1	50 to 75
B2	75 to 110
B3	120 to 160
C	200 to 240
Deep	> 200

***bgs = below ground surface**

The groundwater, which is not used for drinking water at the Site or within the MEW Study Area, generally flows north in the A, B1, and upper B2 Zones. It flows northwest in the lower B2 Zone and northeast in the B3 Zone. The presence of an underground slurry wall and operating groundwater

[5] Symantec is now NortonLifeLock.

extraction wells alter the local direction of the groundwater flow at the Site in the A, B1, and upper B2 Zones.

1.3 SUMMARY OF SITE REMEDIAL ACTIONS

Remediation at the Site has included mitigation measures to address the chemicals of concern (COCs)[6] in the groundwater, soils, and air. Implementation and results of the prior mitigation measures for the site have been documented in previous reports (Golder Associates Inc., 1988; Groundwater Technology, Inc., 1995 and 1996; IT Corporation, 2000; Locus Technologies (Locus), 2000, 2001, 2002, 2003a, 2003b, 2004, 2008a, 2008b, 2008c, and 2008d; RWQCB, 2009; Haley & Aldrich, 2014, 2015a, 2016, 2017, 2018a, and 2019c). Sections 2 and 3 describe the progress of the current remedial actions. Appendix A, the Annual Report Remedy Performance Checklist, includes a summary of past and current Site remedial actions.

1.3.1 Soil

Raytheon installed a soil vapor extraction system in 1996 that operated until 2000, when it was shut down and decommissioned with EPA's approval. The soil vapor extraction system removed and treated approximately 3,000 pounds of volatile organic compounds (VOCs) from the vadose zone.

1.3.2 Groundwater

In 1987, Raytheon installed a slurry wall around the Site to a depth of approximately 100 feet bgs to physically contain VOCs on Site. The slurry wall isolates the A and B1 Zones as well as the upper portions of the B2 Zone. Raytheon began groundwater extraction activities in 1982. The current system includes eight extraction wells and an ozone oxidation system supplemented with activated carbon. To date, Raytheon has removed and treated approximately 19,400 pounds of VOCs from the groundwater.

1.3.3 Vapor Intrusion

When Veritas constructed the current facilities at the Site in 2000, they installed a passive sub-slab ventilation system and a vapor barrier under Buildings A through E. Raytheon installed and continues to operate air purification units (APUs) in five utility rooms: A1034 in April 2004; A1015, B1038, and C110 in October 2005; and D106 in September 2012. In 2015, Raytheon voluntarily converted the passive system to an active sub-slab depressurization (SSD) system.

[6] The 1989 ROD lists the COCs for groundwater and soil as: chloroform, 1,2-dichlorobenzene, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, Freon-113, phenol, tetrachloroethene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, antimony, arsenic, cadmium, and lead. The 2010 ROD Amendment lists the COCs for the vapor intrusion pathway as: tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, and vinyl chloride.

1.4 SUMMARY OF 2019 MAIN ACTIVITIES

The following activities were completed at the Site during this reporting period:

January	• 15th - Performed monthly NPDES groundwater extraction treatment system (treatment system) sampling.
February	• 5th - Performed monthly NPDES groundwater treatment system sampling. • 15th - Submitted 2018 Annual Self-Monitoring NPDES Report to RWQCB (Haley & Aldrich, 2019c). • 15th to 17th - Collected air samples from Buildings A, B, C, D, and E. • 17th - Inspected the APUs installed in utility rooms A1034, A1015, B1038, C110, and D106. • 17th - First quarter 2019 inspection and sampling of SSD system. • 20th to 22nd -Shut off the treatment system and drained both vessels for liquid-phase granular activated carbon (LGAC) changeout. Restarted the treatment system on the 22nd.
March	• 5th - Performed monthly NPDES groundwater treatment system sampling. • 6th - Conducted first quarter groundwater level monitoring.
April	• 2nd - Performed monthly NPDES groundwater treatment system sampling. • 11th Performed vapor-phase granular activated carbon (VGAC) changeout for SSD system at Building B. • 15th - Submitted the 2018 Annual Report to EPA (Haley & Aldrich, 2019e).
May	• 7th – Performed monthly NPDES treatment system sampling. • 20th to 22nd - Shut off the treatment system and replaced ozone destruction unit and drained both vessels for LGAC changeout. Restarted the treatment system on 22nd. • 24th - Inspected the APUs installed in utility rooms A1034, A1015, B1038, C110, and D106. • 24th - Second quarter 2019 inspection and sampling of SSD system.
June	• 6th - Conducted second quarter groundwater level monitoring. • 11th – Performed monthly NPDES treatment system sampling.
July	• 2nd – Performed monthly NPDES treatment system sampling. • 3rd – Performed VGAC changeout for SSD system at Buildings A and D.
August	• 6th – Performed monthly NPDES treatment system sampling. • 18th – Third quarter 2019 inspection and sampling of SSD system. • 18th – Inspected the APUs installed in utility rooms A1034, A1015, B1038, C110, and D106. • 18th to 19th – Collected air samples in Building B.
September	• 3rd – Performed monthly NPDES groundwater treatment system sampling. • 19th – Conducted third quarter/annual regional groundwater level monitoring.

October	• 7th – 8th - Shut off the treatment system and drained both vessels for LGAC changeout. Restarted the treatment system on 8th. • 15th – Performed monthly NPDES treatment system sampling.
November	• 5th – Performed annual NPDES treatment system sampling • 18th – Inspected the APUs installed in utility rooms A1034, A1015, B1038, C110, and D106. • 27th – Received annual NPDES laboratory results. Zinc concentration exceeded the permitted level. Collected confirmation samples and turned off the treatment system.
December	• 3rd – Collected and analyzed additional samples from treatment system to determine zinc concentration at effluent and receiving water discharge points. • 5th – Turned the treatment system back on. • 9th – Performed monthly NPDES groundwater treatment system sampling. • 23rd – Conducted fourth quarter groundwater level monitoring.

2. Groundwater Extraction and Treatment System

2.1 TREATMENT SYSTEM DESCRIPTION AND PERFORMANCE

The treatment system consists of a skid-mounted high-pressure oxidation (HiPOx™) unit followed by 3,000- and 1,000-pound LGAC vessels.[7] The hydrogen peroxide/ozone oxidation system operates by injecting 25 percent hydrogen peroxide and ozone generated from liquid oxygen into ten 2-inch pipeline reactors. VOCs and 1,4-dioxane are oxidized during the oxidation process. Following oxidation, the groundwater flows through a 3,000-pound LGAC vessel and then a 1,000-pound LGAC vessel for final polish. The water is termed "influent" before it enters the treatment system and "effluent" after it exits the LGAC vessels. The treated groundwater is conveyed to Stevens Creek for discharge under NPDES Permit No. CAG912002, issued by the RWQCB on 18 December 2018 and modified by request of Raytheon on 26 March 2019.

Groundwater is extracted from eight extraction wells and treated at the groundwater treatment system. Five extraction wells, RE-05A, RE-23A, RE-24A, RE-25A, and R-65B1(B2), are located within and three extraction wells, RAY-1A, RAY-1B1, and I-1B2, are located outside of the slurry wall enclosure (Figure 2). In 2019, the groundwater treatment system operated at an average discharge flow rate of 26.65 gallons per minute (gpm). Table 1 presents monthly average groundwater extraction flow rates for each well.

2.1.1 Treatment System OM&M Activities

OM&M activities were performed on behalf of Raytheon in accordance with the current OM&M Manual (Locus, 2013) and included the following activities:

- The treatment system operations were inspected and monitored at least weekly;
- Monthly treatment system sampling was conducted in accordance with NPDES Permit requirements, and all laboratory analytical reports for sampling conducted during the reporting period have been uploaded to the GeoTracker database;
- Appendix B provides historical water quality concentration data for trichloroethene (TCE), cis-1,2-dichloroethene , vinyl chloride, and other VOCs analyzed by EPA Method 8260B from 1986 to the present;
- The conditions of the groundwater monitoring and extraction wells were inspected; and
- Groundwater treatment system components were replaced or repaired as needed

2.1.2 Treatment System Sampling and Mass Removal

Field Solutions, Inc., (Field Solutions) collected monthly groundwater treatment system samples from the system influent (RAYINF), the HiPOx™ system effluent (RAYMID1), and the system effluent (RAYEFT) to confirm that the treatment system effectively removed the COCs. Midstream sample RAYMID2 was also collected to track the performance of the 3,000-pound LGAC vessel. The monthly samples were analyzed for VOCs using EPA Method 8260B. Table 2 presents the analytical results for the system

[7] Haley & Aldrich installed the 1,000-pound LGAC vessel in October 2016.

influent and effluent sampling points. As presented in Tables 2 and 3, the March 2019 influent data is anomalous based on historical and operational data.

In 2019, the treatment system treated approximately 14.8 million gallons of water and removed 553 pounds of VOCs, Tables 1 and 3, respectively. A total of 19,391 pounds of VOCs has been removed from the groundwater and treated from 1986 through the end of 2019, as presented in Table 3 and Appendix B. Appendix B-1 summarizes the TCE influent concentration since 2001; Appendices B-2 and B-3 summarize the VOC influent concentration and cumulative VOC mass removed since 1986.

2.1.3 System Operation

In 2019, the treatment system operated approximately 97 percent of the time and was shut down for planned OM&M activities such as carbon changeouts and minor disruptions to clean, replace, or update certain system components. This percentage includes a system shut down for 191 consecutive hours between 27 November and 5 December 2019 based on an exceedance of zinc concentration above the NPDES Permit level in an effluent sample. The treatment system GWETS resumed operations on 5 December 2019, after confirmation effluent samples showed zinc detection below the NPDES Permit levels. No untreated groundwater was discharged during any shutdowns.

2.2 GROUNDWATER LEVELS MEASUREMENTS

Quarterly groundwater level measurements were collected in slurry wall and aquitard well pairs. Slurry wall well pairs consist of one well inside and one well outside of the slurry wall and are used to measure the direction of the horizontal gradient across the slurry wall. Aquitard well clusters consist of wells near each other but screened in two zones immediately above and below the aquitard and are used to measure the direction of the vertical gradient.

Annual groundwater level measurements were collected in September 2019 for all accessible monitoring wells at and around the Site as a part of the annual regional groundwater monitoring program.

Similar to previous years, artesian conditions were gauged and documented in some of the lower B2 and B3 Zone wells (see Table 4). To prevent artesian conditions from surfacing, Haley & Aldrich installed one temporary packer in 2019 in well R62B2 and removed one temporary packer from well R39B2. There are sixteen monitoring wells currently equipped with pressurized packers at the Site (noted in Table 4).

Figures 3 through 6 present groundwater level contour maps for the A, B1, Upper B2, and Lower B2, respectively. Appendix C presents historical well hydrographs.

2.2.1 Horizontal (Slurry Wall) and Vertical (Aquitard) Groundwater Gradients

In March, June, September, and December 2019, groundwater levels were measured to monitor the direction of the groundwater gradient across the slurry wall and aquitards. Seven well pairs were used to evaluate groundwater gradient directions across the slurry wall, and fifteen well pairs were used to evaluate the vertical gradient directions across the aquitards (Figure 7).

2.2.2 Slurry Wall

Quarterly water level measurements collected in 2019 demonstrated that an inward gradient across the slurry wall has been maintained in most well pairs (Table 5) except for those across the northern slurry wall and one of the two well pairs (R-57A/R-60A) along the eastern slurry wall. Appendix D includes plots of the differences in groundwater levels across the slurry wall.

2.2.3 Vertical Gradient Directions

Table 6 and Appendix D show the differences in groundwater levels in A and B1 Zone well pairs. In 2019, upward hydraulic gradients were consistently observed in eight of the eleven well pairs used to monitor the gradient across the A/B1 Aquitard. Slight downward gradients were observed in well pairs R-63B1/R-60A, RP-42B/R-73A, and R-68B1/R-67A in at least two quarters during the year. The hydraulic gradient direction across the B1/B2 Aquitard and Upper and Lower B2 Zone was consistently upward throughout 2019 as shown in Table 6 and Appendix D, demonstrating upward vertical gradients near the bottom of the slurry wall enclosure.

2.3 HYDRAULIC CONTROL AND CAPTURE ZONE ANALYSIS

The groundwater capture at the Site is evaluated according to the EPA's 2008 guidance (EPA, 2008). The 2008 EPA estimation of the capture zone is based on following general assumptions:

- Homogeneous, isotropic, confined aquifer of infinite extend;
- Uniform aquifer thickness;
- Fully penetrating extraction well(s);
- Uniform regional horizontal hydraulic gradient;
- Steady-state flow;
- Negligible vertical gradient;
- No net recharge accounted for in regional hydraulic gradient; and
- No other source of water introduced to aquifer because of extraction.

The groundwater level contour lines along the eastern and western slurry walls were used to calculate the groundwater gradients for A and B Zones. The interpreted capture zone was then compared to the target capture zones and flow budget calculations using potentiometric surface maps.

Water-bearing transmissivity values at the Site were calculated using the results of pumping tests in 1987 (HLA Associates, 1987-1988). The average transmissivity of 3,088 gallons per day per foot (gpd/ft) selected for the A Zone was calculated from transmissivity values obtained from monitoring wells 69A, RW1A, and ME1A. The average transmissivity of 12,130 gpd/ft selected for the B Zone was calculated from transmissivity values obtained from monitoring wells RW1B1, R5B1, and RW1B1.

The calculated 2019 capture zones for extraction wells RAY-1A and RAY-1B1 are shown in Table 7. The average 2019 pump rates, listed in Table 1, were used for the 2019 capture zone calculations.

The capture zones calculated using EPA's 2008 guidance do not consider the presence of the slurry wall upgradient of extraction wells. The estimated capture zones depicted on Figures 3 and 4 for wells RAY-1A and RAY-1B1, respectively, reflect the presence of the slurry wall. These estimated capture zones are based on our best professional judgments and Site knowledge.

RAY-1A and RAY-1B1 were installed to capture a target area of groundwater immediately downgradient of the slurry wall. The capture zones depicted on Figures 3 and 4 indicate that these wells effectively capture the target area.

2.3.1 Flow Budget Calculations

Water balance calculations were performed to verify the estimated capture zones by comparing the groundwater flux flowing into the Site with the rate of groundwater removal from extraction wells RAY-1A and RAY-1B1. If the estimated groundwater flux is greater than the pumping rate from the well, the depicted capture zone overestimates the actual capture. If the estimated groundwater flux is less than the pumping rate from the well, the depicted capture zone underestimates the actual capture. To be conservative, the estimated groundwater flux should be equal to or less than the pumping rate from the well.

Theoretically, inflow to the water-bearing zone could be caused by recharge from precipitation, surface water bodies, lateral inflow from upgradient areas, or vertical flow between aquifer zones. Outflow is the rate of groundwater flow being removed from the zone. Water outflow from the water-bearing zone could be caused by vertical leakage between the zones and groundwater extraction.

Canonie Environmental's 1988 feasibility study demonstrated that recharge is considered negligible at the MEW Site because most of the surface is covered by impermeable features such as paving and buildings. Low-permeability clays extending from the surface to approximately 10 to 15 feet bgs further limit the extent of infiltration. With other inflow pathways being negligible, groundwater flow at the Site is mostly attributed to the lateral flow from upgradient areas.

The estimated groundwater flow into the aquifer zone and the estimated pumping required for adequate capture are calculated in Table 8. The estimated flow rate into the capture zone is calculated in accordance to the EPA's 2008 guidance (EPA, 2008).

Because extraction wells RAY-1A and RAY-1B1 are immediately downgradient of the slurry wall, groundwater removed from these wells must originate from incoming groundwater flux around the slurry wall. As such, a representative gradient "*i*" is calculated as the hydraulic gradient from the northern edge of the western side of the slurry wall.

2.3.1.1 RAY-1A

The average pumping rate was measured at 3.66 gpm. With an assumed factor of 1.5, the interpreted capture zones correspond to estimated groundwater flux of 2.75 gpm, which is lower than the actual pumping rate from Well RAY-1A (see Table 8).

2.3.1.2 RAY-1B1

The average pumping rate was measured at 3.89 gpm. With an assumed factor of 1.5, the interpreted capture zones correspond to an estimated groundwater flux of 2.92 gpm, which is lower than the actual pumping rate from Well RAY-1B1 (see Table 8).

In summary, the estimated groundwater flux in each of the A and B1 Zones is less than the pumping rates from RAY-1A and RAY-1B1, respectively. Therefore, the interpreted capture zones depicted on Figures 3 and 4 and the flow budget estimations shown above indicate that extraction wells RAY-1A and RAY-1B1 provide appropriate capture of the target area.

2.4 VOC CONCENTRATIONS

In accordance with the trial reduction of groundwater sampling frequency for monitoring wells associated with the MEW Regional Groundwater Remediation Program from annual to biennial (Geosyntec, 2018), Raytheon samples eleven monitoring wells biennially. A summary of the analytical results for the 2018 biennial groundwater samples collected on 15 October 2018 and associated iso-contour maps are presented in Appendix E.

Raytheon samples twenty-four monitoring wells within the slurry wall enclosure every four years to align with biennial sampling years. Those wells were sampled in September 2016, and the analytical results are presented in Appendix B-1. Table 9 presents the Site's monitoring program and corresponding wells.

In general, groundwater concentrations were detected at their highest levels early in the investigation, before and shortly after the start of groundwater remedial measures. Remedial activities conducted at the Site have removed and treated 3,000 pounds of VOCs from the vadose zone and 19,391 pounds of VOCs from the saturated zones, consequently reducing the VOC concentrations by several orders of magnitude in many wells.

The most recent VOC concentration data presented in Appendix E-1 indicate that TCE is typically present in the highest concentrations as compared to the other COCs at the Site.

2.5 QUALITY ASSURANCE/QUALITY CONTROL

No groundwater samples were collected from Raytheon monitoring wells during this reporting period. Fifty-seven NPDES samples, four field duplicates, and twelve trip blanks were collected and analyzed for VOCs using EPA Methods 8260B during this reporting period. All quality assurance/quality control (QA/QC) followed the procedures specified in the 1991 "Unified Quality Assurance Project Plan" (Canonie Environmental, 1991). The quality of the data during this reporting period was acceptable and valid. Influent sampling requirements set by NPDES Permit No. CAG912002 were met in previous and subsequent months.

Appendix F includes a description and summary of the QA/QC findings. All this year laboratory reports are presented in Appendix G.

3. Vapor Intrusion Response Action

In 2015, Haley & Aldrich converted the passive sub-slab ventilation system beneath Buildings A, B, C, D, and E to an active SSD system to preemptively control potential vapor intrusion into indoor air. Haley & Aldrich documented the work in the "Property-specific Vapor Intrusion Response Action Implementation Report" submitted to EPA on 10 March 2016 (Haley & Aldrich, 2016). Confirmation indoor air samples collected with the heating, ventilating, and air conditioning (HVAC) system on and off after the startup of the SSD system showed COC concentrations below their respective ROD commercial indoor air cleanup levels.

3.1 SSD SYSTEM DESCRIPTION AND PERFORMANCE

The SSD system consists of four extraction points – V002, V008, V011, and V014 – connected to four air abatement enclosures located outside Buildings D, B, A, and E, respectively, that treat the extracted air (one enclosure per extraction point). Figure 8 shows the locations of extraction points. The equipment enclosures include an extraction fan (RadonAway™ HS5000), a VGAC filter (55-gallon drum filled with virgin coconut carbon), moisture knockout, control panel, telemetry system (Sensaphone® Cell682), monitoring ports, and connection piping. The equipment enclosures are lined with absorptive material to reduce the noise level.

This section summarizes the procedures and results of performance monitoring, including SSD system operational data collection and SSD system influent and effluent air sampling completed in accordance with the "Property-specific Long-term Vapor Intrusion Operations, Maintenance, and Monitoring (OM&M) Plan," submitted to EPA on 21 July 2015 ([OM&M Plan]; Haley & Aldrich, 2015b).

3.1.1 System Performance

Haley & Aldrich inspected the operation of the SSD system quarterly during 2019. The treatment system extraction and monitoring points showed negative pressure differentials exceeding the design criterion of -0.020 inch of water column (Table 10) except for one instance in 2019 where positive pressure differential was measured. This was attributed to water that had accumulated in a moisture knockout, which was removed and processed through the treatment system. Subsequent visits showed the system to be operating as designed.

In 2019, the SSD system operated continuously with only minor disruptions to replace certain system components when needed and for planned maintenance and modifications such as VGAC changeouts.

3.1.2 Treatment System Sampling and Mass Removal

Influent and effluent air samples were collected from each treatment compound to confirm compliance with the substantive requirements of the Bay Area Air Quality Management District (BAAQMD). Air samples were collected quarterly at the influent and effluent points of the four SSD extraction points on 17 February, 24 May, 18 August, and 18 November 2019. Laboratory analytical reports for all sampling conducted in 2019 are included in Appendix G.

Haley & Aldrich calculated the SSD system emission rates by multiplying the air flow rate measured on the discharge side of the fans by the effluent chemical concentrations (converted to mass) reported by the laboratory. Emission rates of the detected chemicals were compared with the emissions thresholds established by the BAAQMD in Regulation 2-1-103, BAAQMD Table 2-5-1, and BAAQMD Regulation 8-47-113. As shown in Table 11, the SSD system meets the emission requirements of the BAAQMD.

The SSD VGAC was changed out on 11 April 2019 for Building B, and on 3 July 2019 for Buildings A and D. Haley & Aldrich also responded to a system alarm on 12 December 2019 related to the Building D SSD system fan unit. No other non-routine maintenance was necessary in 2019.

3.2 INDOOR AIR SAMPLING

The "Property-specific Vapor Intrusion Control System Remedial Design, Mountain View, California" (Haley & Aldrich, 2014) requires two confirmation indoor air sampling events following startup of the SSD system.

The first confirmation indoor air sampling events were performed on 4 and 6 December 2015 within Buildings A and E, 18 and 20 December 2015 within Building D. Buildings B and C were not sampled due to tenant improvements. All COC concentrations were below their respective ROD commercial indoor air cleanup levels, and the results were provided to EPA in the "Property-specific Vapor Intrusion Response Action Implementation Report" submitted to EPA on 10 March 2016 (Haley & Aldrich, 2016). The first round of confirmation indoor air samples were collected within Building C on 4 and 20 November 2018 following completion of tenant improvements. All COC concentrations were below their respective ROD commercial indoor air cleanup levels (Haley & Aldrich, 2018b).

The second round of confirmation indoor air samples were collected from Buildings A, C, D, and E, and the first round of confirmation indoor air samples were collected from Building B with the HVAC system on 15 February 2019 and with the HVAC system off on 17 February 2019. Building B was also sampled on 18 August 2019 with the HVAC off and on 19 August 2019 with the HVAC on to complete its second confirmation indoor air sampling event.

3.2.1 Building Walkthrough and Sampling Methodology

3.2.1.1 January/February 2019 – Buildings A, B, C, D, and E

Haley & Aldrich submitted an indoor air sampling plan to the EPA on 16 January 2019, which was subsequently modified and resubmitted to EPA on 14 February 2019 (Haley & Aldrich, 2019a; Haley & Aldrich, 2019b). Haley & Aldrich conducted these walkthroughs in Buildings A, B, C, D, and E with representatives of the property owner on 23 January 2019 to confirm that the previously sampled locations inside the buildings were still representative of building occupancy. Sample locations and results are presented on Figures 9 though 14.

Haley & Aldrich collected air samples in the buildings on 15 February 2019 with the HVAC system on and on 17 February 2019 with the HVAC system turned off for at least 36 hours. All air samples were collected over an 8-hour period in individually certified clean 6-liter passivated (SUMMA®) canisters, transported under standard chain of custody protocol, and analyzed for seven COCs using EPA Method TO-15 in the selective ion monitoring mode by TestAmerica Laboratories, Inc., of West Sacramento,

California, a laboratory certified by the National Environmental Laboratory Accreditation Program. Duplicate samples were collected for QA/QC purposes during each sampling event.

3.2.1.2 August 2019 – Building B

Building B was not initially sampled in 2015 because it was unoccupied and tenant improvements were planned. Tenant improvements were completed in Building B in 2016; however, confirmation indoor air sampling was postponed pending completion of tenant improvements in Building A in 2017 and Building C in 2018, which are connected to Building B by hallways and a common lobby. Haley & Aldrich completed the first confirmation indoor air sampling event in Building B in February 2019 described above.

Haley & Aldrich submitted an indoor air sampling plan for Building B to the EPA on 30 July 2019 and conducted a building walkthrough with representatives of the property owner on 9 August 2019 (Haley & Aldrich, 2019f). Haley & Aldrich collected air samples in the building on 18 August 2019 with the HVAC system turned off for at least 36 hours and on 19 August 2019 with the HVAC system turned on. Sample locations and results are presented on Figure 10. Air samples were collected over an 8-hour period in individually certified clean 6-liter passivated (SUMMA®) canisters, transported under standard chain of custody protocol, and analyzed for seven COCs using EPA Method TO-15 in the selective ion monitoring mode by Eurofins TestAmerica, of West Sacramento, California, a laboratory certified by the National Environmental Laboratory Accreditation Program.

3.2.2 Air Sampling Results

All COC concentrations were below their respective ROD commercial indoor air cleanup levels. The results of the January/February sampling in Buildings A, B, C, D, and E were transmitted to the EPA on 27 March 2019 (Haley & Aldrich, 2019d). The results of the August 2019 sampling in Building B were submitted to EPA on 9 October 2019. Table 12 and Figures 9 through 14 present the results.

3.3 EVALUATION OF SSD SYSTEM EFFECTIVENESS

The SSD system is operating according to its design specifications and objectives based on our evaluation of the operational data collected after starting the SSD system. Indoor air COC concentrations collected after the SSD system was activated were below the ROD commercial indoor air cleanup levels.

3.4 EVALUATION OF APU SYSTEM

The air purification units installed in utility rooms A1034, A1015, B1038, C110, and D106 operated continuously in 2019. Haley & Aldrich and Field Solutions conducted routine quarterly inspections of the units on 17 February, 24 May, 18 August, and 18 November 2019. The utility room locations are shown on Figures 9 through 14. The most recent indoor air COC concentrations in these utility rooms were below the ROD commercial indoor air cleanup levels.

3.5 QUALITY ASSURANCE/QUALITY CONTROL

Haley & Aldrich conducted a QA/QC review of the SSD system and indoor air analytical data for precision, accuracy, completeness, sample container contamination, conformance with holding times, and detection limits (Appendix G). Ninety-eight air samples and 32 SSD system influent and effluent air samples were collected and analyzed during this reporting period. Project samples and laboratory control samples were reviewed and evaluated in accordance with the OM&M Plan and EPA's updated National Functional Guidelines for Organic Data Review (EPA 540-R-2017-002; EPA, 2017). In summary, the analytical data are of acceptable quality.

4. Problems Encountered

Annual parameters were analyzed in the influent and effluent samples during November and required samples to be analyzed for more than VOCs in accordance with the Permit. The influent and effluent samples collected on 5 November 2019 were also analyzed for total metals, hexavalent chromium, total mercury, and total cyanide. Haley & Aldrich received the laboratory analytical results on 27 November 2019 reporting an influent zinc concentration of 5.4 micrograms per liter (µg/L), and the effluent zinc concentration was 98 µg/L, above its Maximum Daily Effluent Limitation (MDEL) of 95 µg/L and above its Monthly Average Effluent Limitation (MAEL) of 47 µg/L as specified in the permit.

Haley & Aldrich validated the sampling results subsequently collected confirmation effluent and influent samples then shut down the treatment system on the same day, 27 November 2019. The results showed effluent zinc concentration of 27 µg/L, below its MDEL; however, the arithmetic mean concentration of zinc during November 2019 was 62.5 µg/L, above its MAEL of 47 µg/L. Zinc was not detected in the influent sample.

Additional confirmation influent and effluent samples and upstream and downstream receiving water samples were collected and analyzed for zinc on 3 December 2019. The treatment system was restarted briefly to collect influent and effluent samples. All treated water was contained within the treatment system compound's secondary containment, and no water was discharged to the storm drain. Haley & Aldrich received the laboratory analytical results on 4 December 2019. The results showed an effluent zinc concentration of 0.77 µg/L, below its MDEL and MAEL. Zinc was not detected in the influent sample and was detected at concentrations of 11 µg/L and 5.6 µg/L in the upstream and downstream receiving water samples, respectively. The treatment system then resumed operation on 5 December 2019.

The 5 November 2019 effluent zinc concentration is anomalous and is not representative of treatment system conditions. None of the historical or subsequent confirmation sampling events have exceeded the NPDES limits.

5. Technical Assessment

5.1 IS THE REMEDY FUNCTIONING AS INTENDED?

Based on the data review described in the previous sections, the groundwater and vapor intrusion remedies are functioning as intended. Appendix A includes the 2019 Annual Report Remedy Performance Checklist.

5.2 ARE CAPTURE ZONES ADEQUATE?

Section 2.3 presents an evaluation of the groundwater capture zones using several lines of evidence. Based on this evaluation, the overall plume capture at the Site is appropriate.

5.3 ARE GRADIENTS ACROSS THE SLURRY WALLS AND VERTICAL GRADIENTS APPROPRIATE?

Quarterly water level measurements collected in 2019 demonstrate that an inward gradient across the slurry wall has been maintained in most well pairs. Although the direction of the hydraulic gradient across the northern slurry wall and one of two well pairs along the eastern slurry wall is outward, well operations within the slurry wall direct the water flow into those wells. The groundwater on the downgradient side of the slurry wall is being captured by wells RAY-1A and RAY-1B1.

In 2019, upward gradients were consistently observed in eight of the eleven well pairs used to monitor the direction of the hydraulic gradient across of the A/B1 Aquitard. Slight downward gradients were observed in three well pairs in at least two quarters during the year. The gradient direction across the B1/B2 Aquitard and Upper and Lower B2 Zones was consistently upward throughout 2019, demonstrating proper vertical hydraulic gradients near the bottom of the slurry wall enclosure.

5.4 ARE CONCENTRATIONS DECREASING OVER TIME?

Remedial actions implemented by Raytheon at the Site have removed and treated 3,000 pounds of VOCs from the vadose zone and more than 19,391 pounds of VOCs from the saturated zone, consequently reducing VOC concentrations an order of magnitude or more in many wells.

6. Conclusions and Recommendations

The groundwater and vapor intrusion remedies implemented by Raytheon at the Site are performing as intended and remain protective of human health and the environment. Contingent upon EPA approval, Haley & Aldrich plans to reduce groundwater well pair monitoring from quarterly to semiannual. No additional actions are warranted at this time.

7. Activities Planned for 2020

The following Site-specific activities are planned for 2020:

- Continue to operate and maintain the groundwater extraction and treatment system;
- Collect annual groundwater level measurements (in September) as part of the Regional Groundwater Remediation Program;
- Collect semiannual groundwater level measurements from well pairs, pending EPA approval;
- Evaluate the pump performance at all extraction wells and conduct any corrective actions, if needed;
- Collect biennial groundwater samples in September/October from eleven Raytheon wells in accordance with the sampling program;
- Inspect the APUs at the Site quarterly;
- Investigate any reported obstruction in monitoring wells;
- Continue to monitor the SSD system as outlined in the OM&M Plan; and
- Submit annual and NPDES status reports.

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TABLES

TABLE 1
2019 AVERAGE EXTRACTION WELL FLOW RATES
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Extraction Wells	January	February	March	April	May	June	July	August	September	October	November	December	2019 Average
RAY-1A	3.47	4.01	4.04	3.45	3.84	4.04	3.91	3.93	3.46	3.47	3.64	2.90	3.66
RAY-1B1	3.77	3.78	4.05	4.06	3.94	3.91	4.07	4.05	3.80	3.95	4.16	3.23	3.89
I-1B2	1.90	3.21	3.35	3.27	3.03	3.35	3.25	3.30	2.98	2.72	2.36	0.10	2.70
R-65B2	2.73	2.69	2.66	3.04	2.78	2.82	2.81	2.89	2.77	2.88	2.94	2.49	2.79
RE-05A	4.09	4.05	4.35	4.37	4.16	4.61	4.68	4.67	4.34	4.67	3.53	2.42	4.16
RE-23A	3.50	3.36	3.26	2.69	2.04	2.38	2.81	2.67	2.46	2.43	2.56	2.02	2.68
RE-24A	7.06	7.06	7.42	7.04	6.28	6.84	6.58	5.86	4.77	4.51	4.66	4.29	6.02
RE-25A	0.60	0.93	1.50	1.53	1.40	1.38	1.26	1.21	1.01	0.95	1.00	0.81	1.13
Average GWTS Discharge Flow Rate*	28.72	25.86	30.70	30.41	20.10	29.79	29.82	28.81	27.31	23.80	27.03	17.40	26.65
Total treated groundwater (gallons)	14,830,325												

ABBREVIATIONS AND NOTES:

GWTS = Groundwater Treatment System

Flow rates are calculated averages based on the total monthly flow from each well and through the treatment system, in gallons per minute.

* Based on effluent flow meter readings from the GWTS, in gallons per minute.

TABLE 2
2019 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Location	Influent (RAYINF)														Effluent (RAYEFT)													
Sample Date	01/15/2019	02/05/2019	03/05/2019[4]	04/02/2019	05/07/2019	06/11/2019	07/02/2019	08/06/2019	09/03/2019	10/15/2019	11/05/2019	11/27/2019	12/03/2019	12/10/2019	01/15/2019	02/05/2019	03/05/2019	04/02/2019	05/07/2019	06/11/2019	07/02/2019	08/06/2019	09/03/2019	10/15/2019	11/05/2019	11/27/2019	12/03/2019	12/10/2019	NPDES Effluent Limitation[1]
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	
Analysis Date(s)	01/21/2019	02/08/2019	03/06/2019	04/08/2019	05/10/2019	06/14/2019	07/08/2019	08/08/2019	09/06/2019	10/21/2019	11/05/2019	12/02/2019	12/04/2019	12/13/2019	01/21/2019	02/08/2019	03/06/2019	04/08/2019	05/10/2019	06/14/2019	07/08/2019	08/08/2019	09/06/2019	10/21/2019	11/05/2019	12/02/2019	12/04/2019	12/13/2019	
	01/22/2019	02/11/2019	03/07/2019	04/09/2019	05/13/2019	06/17/2019	07/10/2019	08/12/2019	09/09/2019	10/22/2019	11/06/2019	--	--	12/16/2019	--	--	--	--	05/13/2019	06/17/2019	07/10/2019	--	09/09/2019	--	11/06/2019	--	--	--	
	--	--	--	--	--	--	--	08/13/2019	--	--	11/08/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	11/08/2019	--	--	--	
Inorganics (EPA 1631E, 200.8, 300.0, 7199; SM4500-CN-E)																													
Mercury, Total	--	--	--	--	--	--	--	--	--	--	**0.00050**	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.00014	--	--	--	0.050/0.10
Antimony, Total	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--/6.0
Arsenic, Total	--	--	--	--	--	--	--	--	--	--	**0.40**	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.40**	--	--	--	--/10
Beryllium, Total	--	--	--	--	--	--	--	--	--	--	< 0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.10	--	--	--	--
Cadmium, Total	--	--	--	--	--	--	--	--	--	--	**0.054 J**	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.061 J**	--	--	--	0.90/1.8
Chromium, Total	--	--	--	--	--	--	--	--	--	--	**1.5**	--	--	--	--	--	--	--	--	--	--	--	--	--	**1.8**	--	--	--	--/10
Copper, Total	--	--	--	--	--	--	--	--	--	--	**0.59**	--	--	--	--	--	--	--	--	--	--	--	--	--	**2.8**	--	--	--	10/20
Lead, Total	--	--	--	--	--	--	--	--	--	--	< 0.050	--	--	--	--	--	--	--	--	--	--	--	--	--	**1.2**	--	--	--	2.6/5.2
Manganese, Total	--	--	--	--	--	--	--	--	--	--	**480**	--	--	--	--	--	--	--	--	--	--	--	--	--	**1.8**	--	--	--	--
Nickel, Total	--	--	--	--	--	--	--	--	--	--	**1.7**	--	--	--	--	--	--	--	--	--	--	--	--	--	**3.8**	--	--	--	22/44
Selenium, Total	--	--	--	--	--	--	--	--	--	--	**3.3**	--	--	--	--	--	--	--	--	--	--	--	--	--	**3.5**	--	--	--	4.1/8.2
Silver, Total	--	--	--	--	--	--	--	--	--	--	< 0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.10	--	--	--	1.1/2.2
Thallium, Total	--	--	--	--	--	--	--	--	--	--	< 0.050	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.067 J**	--	--	--	--/2.0
Zinc, Total	--	--	--	--	--	--	--	--	--	--	**5.4**	< 0.59	< 0.59	--	--	--	--	--	--	--	--	--	--	--	**98**	**27**	**0.77 J**	--	47/95
Sulfate (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**12**	--	--	--	--
Cyanide	--	--	--	--	--	--	--	--	--	--	< 0.00000069	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.00000069	--	--	--	--
Chromium VI (Hexavalent)	--	--	--	--	--	--	--	--	--	--	**0.88**	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.36	--	--	--	--/10
Volatile Organic Compounds (EPA 8260B)[2]																													
1,1,1,2-Tetrachloroethane	< 0.095 J	< 0.095	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	--	--	< 0.027	< 0.095	< 0.095	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	--	--	< 0.027	--/--
1,1,1-Trichloroethane	**0.99 J-**	**1.2**	**1.1**	**1.1**	**1.2**	**0.91**	**1.0**	**1.2**	**1.1**	**1.2**	**1.2**	--	--	**1.1**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	--/0.50
1,1,2,2-Tetrachloroethane	< 0.056 J	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	--	--	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	--	--	< 0.056	--/--
1,1,2-Trichloroethane	**0.28 J-**	**0.38**	**0.31**	**0.34**	**0.30**	**0.29**	**0.41**	**0.26**	**0.25**	**0.22**	**0.20**	--	--	**0.34**	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	--	--	< 0.070	--/0.50
1,1-Dichloroethane	**6.9 J-**	**7.9**	**7.2**	**6.5**	**8.2**	**5.8**	**5.3**	**6.1**	**6.4**	**6.3**	**6.7**	--	--	**6.3**	< 0.025	**0.12 J**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	--/0.50
1,1-Dichloroethene	**8.2 J-**	**9.4**	**8.2**	**7.4**	< 51	**7.1**	**7.2**	**7.3**	**7.8**	**8.2**	**7.7**	--	--	**8.0**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	--	--	< 0.10	0.057/0.11
1,1-Dichloropropene	< 0.036 J	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	--	--	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	--	--	< 0.036	--/--
1,2,3-Trichlorobenzene	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	--/--
1,2,3-Trichloropropane	< 0.050 J	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	--/--
1,2,4-Trichlorobenzene	**0.095 J-**	**0.14 J**	**0.11 J**	< 0.072	< 0.072	**0.091 J**	< 0.072	< 0.072	< 0.072	< 0.30	**0.18 J**	--	--	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	--	--	< 0.072	--/--
1,2,4-Trimethylbenzene	< 0.072 J	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	--	--	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	< 0.072	--	--	< 0.072	--/--
1,2-Dibromo-3-chloropropane (DBCP)	< 0.44 J	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	--	--	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	--	--	< 0.44	--/--
1,2-Dibromoethane (Ethylene Dibromide)	< 0.025 J	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	--/--
1,2-Dichlorobenzene	**7.2 J-**	**8.0**	**7.7**	**4.9**	**7.0**	**6.3**	**6.0**	**5.3**	**5.7**	**6.1**	**7.4**	--	--	**6.6**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	--/--
1,2-Dichloroethane	< 0.094 J	< 0.094	< 0.043	< 0.043	**0.046 J**	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	--	--	**0.058 J**	< 0.094	< 0.094	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	< 0.043	--	--	< 0.043	0.38/0.50

TABLE 2

2019 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA

350 ELLIS STREET

MOUNTAIN VIEW, CALIFORNIA

Location	Influent (RAYINF)														Effluent (RAYEFT)													
Sample Date	01/15/2019	02/05/2019	03/05/2019[4]	04/02/2019	05/07/2019	06/11/2019	07/02/2019	08/06/2019	09/03/2019	10/15/2019	11/05/2019	11/27/2019	12/03/2019	12/10/2019	01/15/2019	02/05/2019	03/05/2019	04/02/2019	05/07/2019	06/11/2019	07/02/2019	08/06/2019	09/03/2019	10/15/2019	11/05/2019	11/27/2019	12/03/2019	12/10/2019	NPDES Effluent Limitation[1]
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	
Analysis Date(s)	01/21/2019	02/08/2019	03/06/2019	04/08/2019	05/10/2019	06/14/2019	07/08/2019	08/08/2019	09/06/2019	10/21/2019	11/05/2019	12/02/2019	12/04/2019	12/13/2019	01/21/2019	02/08/2019	03/06/2019	04/08/2019	05/10/2019	06/14/2019	07/08/2019	08/08/2019	09/06/2019	10/21/2019	11/05/2019	12/02/2019	12/04/2019	12/13/2019	
	01/22/2019	02/11/2019	03/07/2019	04/09/2019	05/13/2019	06/17/2019	07/10/2019	08/12/2019	09/09/2019	10/22/2019	11/06/2019	--	--	12/16/2019	--	--	--	--	05/13/2019	06/17/2019	07/10/2019	--	09/09/2019	--	11/06/2019	--	--	--	
	--	--	--	--	--	--	--	08/13/2019	--	--	11/08/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	11/08/2019	--	--	--	
Volatile Organic Compounds (EPA 8260B)[2]																													
1,2-Dichloropropane	< 0.060 J	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	--	--	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	--	--	< 0.060	--/--
1,3,5-Trimethylbenzene	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	--/--
1,3-Dichlorobenzene	**0.36 J-**	**0.39**	**0.34**	**0.29 J**	**0.33**	**0.30**	**0.29 J**	**0.22 J**	**0.29 J**	**0.29 J**	**0.31**	--	--	**0.25 J**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	--/--
1,3-Dichloropropane	< 0.056 J	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	--	--	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	--	--	< 0.056	--/--
1,4-Dichlorobenzene	**2.9 J-**	**3.1**	**2.7**	**2.5**	**2.9**	**2.6**	**2.2**	**1.9**	**2.3**	**2.3**	**2.4**	--	--	**2.0**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	--/--
2,2-Dichloropropane	< 0.060 J	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	--	--	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	--	--	< 0.060	--/--
2-Butanone (Methyl Ethyl Ketone)	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	--	--	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	--	--	< 2.5	--/--
2-Chlorotoluene	< 0.12 J	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	--	--	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	--	--	< 0.12	--/--
2-Hexanone	< 0.94 J	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	--	--	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	< 0.94	--	--	< 0.94	--/--
2-Phenylbutane (sec-Butylbenzene)	< 0.17 J	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	--	--	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	--	--	< 0.17	--/--
4-Chlorotoluene	< 0.050 J	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	--/--
4-Methyl-2-Pentanone (Methyl Isobutyl Ketor	< 1.7 J	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	--	--	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	--	--	< 1.7	--/--
Acetone	< 3.1 J	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	--	--	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	--	--	< 3.1	--/--
Benzene	**0.077 J-**	**0.095 J**	**0.11 J**	< 0.030	< 0.030	**0.072 J**	**0.088 J**	**0.061 J**	**0.074 J**	**0.075 J**	< 0.030	--	--	**0.081 J**	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	--	--	< 0.030	--/0.50
Bromobenzene	< 0.035 J	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	--	--	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	--	--	< 0.035	--/--
Bromodichloromethane	< 0.060 J	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	--	--	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	--	--	< 0.060	--/--
Bromoform	< 0.16 J	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	--	--	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	--	--	< 0.16	--/--
Bromomethane (Methyl Bromide)	< 0.16 J	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	--	--	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	--	--	< 0.16	--/--
Carbon disulfide	< 0.083 J	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	--	--	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	< 0.083	--	--	< 0.083	--/--
Carbon tetrachloride	< 0.025 J	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	--/--
Chlorobenzene	< 0.025 R	**0.044 J**	**0.038 J**	**0.036 J**	< 0.025	< 0.025	**0.041 J**	**0.026 J**	**0.049 J**	< 0.20	**0.039 J**	--	--	**0.040 J**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	--/--
Chlorobromomethane	< 0.025 J	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	--	--	< 0.025	--/--
Chloroethane	< 0.096 J	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	--	--	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	< 0.096	--	--	< 0.096	--/--
Chloroform (Trichloromethane)	**0.47 J-**	**0.61**	**0.65**	**0.71**	**0.74**	**0.55**	**0.70**	**0.80**	**0.78**	**0.90**	**0.98**	--	--	**1.1**	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	--	--	< 0.030	--/1.9
Chloromethane (Methyl Chloride)	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	--/--
cis-1,2-Dichloroethene	**910 J-**	**880**	**4,400**	**890**	**790**	**700**	**660 J**	**750**	**620**	**660**	**810**	--	--	**830**	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	--	--	< 0.055	--/0.50
cis-1,3-Dichloropropene	< 0.090 J	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	--	--	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090	--	--	< 0.090	--/--
Cymene (p-Isopropyltoluene)	< 0.050 J	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.30	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.30	--/--
Dibromochloromethane	< 0.055 J	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	--	--	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	< 0.055	--	--	< 0.055	--/--
Dibromomethane	< 0.062 J	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	--	--	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	< 0.062	--	--	< 0.062	--/--
Dichlorodifluoromethane (CFC-12)	< 0.13 J	< 0.13	< 0.13 J	< 0.13	< 0.13	**0.33 J**	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	--	--	**0.28 J**	< 0.13	< 0.13	< 0.13 J	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	--	--	< 0.13	--/--
Ethylbenzene	< 0.030 R	< 0.20	< 0.20	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.20	**0.052 J**	--	--	< 0.030	< 0.030	< 0.20	< 0.20	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	--	--	< 0.030	--/0.50
Hexachlorobutadiene	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	--/--

TABLE 2

2019 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA

350 ELLIS STREET

MOUNTAIN VIEW, CALIFORNIA

Location	Influent (RAYINF)														Effluent (RAYEFT)													
Sample Date	01/15/2019	02/05/2019	03/05/2019[4]	04/02/2019	05/07/2019	06/11/2019	07/02/2019	08/06/2019	09/03/2019	10/15/2019	11/05/2019	11/27/2019	12/03/2019	12/10/2019	01/15/2019	02/05/2019	03/05/2019	04/02/2019	05/07/2019	06/11/2019	07/02/2019	08/06/2019	09/03/2019	10/15/2019	11/05/2019	11/27/2019	12/03/2019	12/10/2019	NPDES Effluent Limitation[1]
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	
Analysis Date(s)	01/21/2019	02/08/2019	03/06/2019	04/08/2019	05/10/2019	06/14/2019	07/08/2019	08/08/2019	09/06/2019	10/21/2019	11/05/2019	12/02/2019	12/04/2019	12/13/2019	01/21/2019	02/08/2019	03/06/2019	04/08/2019	05/10/2019	06/14/2019	07/08/2019	08/08/2019	09/06/2019	10/21/2019	11/05/2019	12/02/2019	12/04/2019	12/13/2019	
	01/22/2019	02/11/2019	03/07/2019	04/09/2019	05/13/2019	06/17/2019	07/10/2019	08/12/2019	09/09/2019	10/22/2019	11/06/2019	--	--	12/16/2019	--	--	--	--	05/13/2019	06/17/2019	07/10/2019	--	09/09/2019	--	11/06/2019	--	--	--	
	--	--	--	--	--	--	--	08/13/2019	--	--	11/08/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	11/08/2019	--	--	--	
Volatile Organic Compounds (EPA 8260B)[2]																													
Isopropylbenzene (Cumene)	< 0.19 J	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	--	--	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	--	--	< 0.19	--/--
Naphthalene	< 0.22 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	--	--	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	--	--	< 0.22	--/--
n-Butylbenzene	< 0.080 J	< 0.50	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	--	--	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	--	--	< 0.080	--/--
n-Propylbenzene	< 0.091 J	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	--	--	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	< 0.091	--	--	< 0.091	--/--
Styrene	< 0.19 J	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	--	--	< 0.19	< 0.19	< 0.19	< 0.50	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	--	--	< 0.19	--/--
Tetrachloroethene	**3.2 J-**	**3.8**	**3.3**	**2.6**	**2.9**	**2.8**	**2.5**	**2.3**	**3.0**	**3.0**	**2.9**	--	--	**2.7**	< 0.084	< 0.084	< 0.084	< 0.084	< 0.084	< 0.084	< 0.084	< 0.084	< 0.084	< 0.084	< 0.084	--	--	< 0.084	--/0.50
Toluene	< 0.050 R	< 0.050	< 0.050	**0.080 J**	**0.076 J**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	**0.050 J**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	--	--	< 0.050	--/0.50
trans-1,2-Dichloroethene	**65 J-**	**72**	**760**	**57**	**81 J**	**61**	< 0.089	**57**	**54**	**69**	**71**	--	--	**70**	< 0.089	< 0.089	< 0.089	< 0.089	< 0.089	< 0.089	< 0.089	< 0.089	< 0.089	< 0.089	< 0.089	--	--	< 0.089	--/0.50
trans-1,3-Dichloropropene	< 0.092 J	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	--	--	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	< 0.092	--	--	< 0.092	--/--
Trichloroethene	**2,500 J-**	**2,600**	**13,000**	**2,500**	**2,200**	**2,200**	**2,200 J**	**2,400**	**1,700**	**2,200**	**2,400**	--	--	**2,600**	< 0.066	< 0.066	< 0.066	< 0.066	< 0.066	< 0.066	< 0.066	< 0.066	< 0.066	< 0.066	< 0.066	--	--	< 0.066	--/0.65
Trichlorofluoromethane (CFC-11)	< 0.11 J	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	--	--	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	--	--	< 0.11	--/--
Trifluorotrichloroethane (Freon 113)	**11 J-**	**14**	**13**	**11**	**12**	**11**	**11**	**11**	**19**	**17**	**15**	--	--	**13**	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	--	--	< 0.078	--/--
Vinyl acetate	< 0.44 J	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 220 R	< 0.44	< 4.4	< 0.44	< 0.44	--	--	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44 R	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	--	--	< 0.44	--/--
Vinyl chloride	**35 J-**	**38**	**140**	**24**	**33**	**26**	**24**	**31**	**37**	**34**	**38**	--	--	**35**	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	--	--	< 0.013	--/0.50
Xylene (total)	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	--	--	< 0.15	--/0.50
Semivolatile Organic Compounds (EPA 8270C)																													
1,4-Dioxane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.098	--	--	--	--	--	--	--	--	--	--/--
Acute Toxicity (EPA Method 821-R-02-012)																													
Percent Survival	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100%	--	--	--	-[3]

Notes:

1. NPDES effluent limitations apply to the VOC results and are specified in Table 2 of Regional Water Quality Control Board Order No. R2-2018-0050 (Order), NPDES Permit No. CAG912002. Values are given as monthly average/maximum daily effluent limitation for discharge to drinking water areas in accordance with the Authorization to Discharge.
2. Influent and effluent samples are analyzed for the full EPA Method 8260B analyte list. Only detected VOCs are included in table. Refer to the electronic spreadsheet that will be submitted concurrently with this report for a complete list of analytical results.
3. The survival of test fish in 96-hour static renewal biassay with the discharge shall not be less than a three sample moving median of 90% survival and a single test value of not less than 70% survival.
4. March 2019 influent sampling data are anomalous based on historical VOC and operational data.

Bold values denote detection at the given concentration.
All units are micrograms per liter (µg/L), unless noted
< 0.020 - Denotes chemical was not detected at or above the laboratory method detection limit shown.
-- = Compound not analyzed / no effluent limitation specified in Order.
J = Denotes estimated concentration.
J- = Denotes estimated, biased low.
R = Denotes rejected data due to exceeded headspace present in the vial used for analysis.

TABLE 3
CUMULATIVE GROUNDWATER VOC REMOVAL DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Month	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1986-2018	See Appendix B				18,838
2019	January	3.552	1,375,260	40.68	18,879
	February	3.639	1,175,400	35.62	18,914
	March	18.34[1]	1,236,300	188.82	19,103
	April	3.508	1,530,300	44.71	19,148
	May	3.140	1,106,400	28.93	19,177
	June	3.025	1,197,150	30.16	19,207
	July	2.923	1,548,145	37.69	19,245
	August	3.274	1,129,110	30.79	19,275
	September	2.458	1,165,394	23.86	19,299
	October	3.009	1,317,596	33.02	19,332
	November	3.364	1,139,957	31.94	19,364
	December	3.577	909,313	27.09	19,391
Total Mass Removed in pounds during the 2019 reporting period.				**553**	

NOTES:

Measurements were taken by Field Solutions, Inc.

1. March 2019 VOC concentration is anomalous based on historical VOC and operational data.

TABLE 4
2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
I-1B2	3/16/2017	25.83	32.93	58.76	Extraction pump on
	9/21/2017	23.54	35.22		
	9/20/2018	17.83	40.93		
	9/19/2019	25.37	33.39		
ME1A	3/16/2017	12.56	45.44	58.00	
	9/21/2017	11.64	46.36		
	9/20/2018	12.35	45.65		
	9/19/2019	10.84	47.16		
ME1B1	3/16/2017	9.27	48.73	58.00	
	9/21/2017	8.33	49.67		
	9/20/2018	9.53	48.47		
	9/19/2019	7.62	50.38		
R10A	3/16/2017	14.44	37.39	51.83	
	9/21/2017	14.27	37.56		
	9/20/2018	14.51	37.32		
	9/19/2019	13.51	38.32		
R13B1	3/16/2017	5.36	29.64	35.00	
	9/21/2017	6.07	28.93		
	9/20/2018	6.01	28.99		
	9/19/2019	5.54	29.46		
R13B2	3/16/2017	3.05	31.95	35.00	
	9/21/2017	6.07	28.93		
	9/20/2018	3.88	31.12		
	9/19/2019	3.12	31.88		
R14A	3/16/2017	10.13	45.28	55.41	
	9/21/2017	9.13	46.28		
	9/20/2018	10.13	45.28		
	9/19/2019	8.59	46.82		
R14B1	3/16/2017	14.36	47.64	62.00	
	9/21/2017	14.70	47.30		
	9/20/2018	16.57	45.43		
	9/19/2019	14.31	47.69		
R15A	3/16/2017	11.32	45.62	56.94	
	9/21/2017	10.35	46.59		
	9/20/2018	11.27	45.67		
	9/19/2019	9.67	47.27		
R16B1	3/16/2017	6.69	40.31	47.00	
	9/21/2017	6.65	40.35		
	9/20/2018	7.02	39.98		Water in well box
	9/19/2019	6.07	40.93		Well under pressure

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R17B2	3/16/2017	12.15	48.54	60.69	
	9/21/2017	11.16	49.53		
	9/20/2018	11.70	48.99		Water in well box
	9/19/2019	14.82	45.87		
R18B3	3/16/2017	0.00	51.66	51.66	
	9/21/2017	0.00	51.66		
	9/20/2018	-	-		Deflated packer
	9/19/2019	-5.50	57.16		Artesian
R1B1	3/16/2017	11.73	40.14	51.87	
	9/21/2017	11.51	40.36		
	9/20/2018	12.55	39.32		
	9/19/2019	11.29	40.58		
R20A	3/16/2017	11.34	45.66	57.00	
	9/21/2017	10.26	46.74		
	9/20/2018	11.19	45.81		
	9/19/2019	9.51	47.49		
R21A	3/16/2017	17.79	46.36	64.15	
	9/21/2017	16.75	47.40		
	9/20/2018	17.78	46.37		Well under pressure
	9/19/2019	15.91	48.24		
R21B1	3/16/2017	20.60	52.40	73.00	
	9/21/2017	20.49	52.51		
	9/20/2018	22.93	50.07		
	9/19/2019	20.06	52.94		
R22A	3/16/2017	26.23	46.77	73.00	
	9/21/2017	25.27	47.73		
	9/20/2018	26.57	46.43		
	9/19/2019	24.71	48.29		
R22B1	3/16/2017	13.83	48.90	62.73	
	9/21/2017	12.81	49.92		
	9/20/2018	14.08	48.65		
	9/19/2019	12.10	50.63		
R24A	3/16/2017	-	-	70.05	Well is obstructed at 22.20ft
	9/21/2017	-	-		Well is obstructed at 22.20ft
	9/20/2018	22.20	47.85		Well Redeveloped 10/26/2018
	9/19/2019	20.88	49.17		
R25A	3/16/2017	15.09	44.11	59.2	
	9/21/2017	14.32	44.88		
	9/20/2018	14.91	44.29		
	9/19/2019	13.56	45.64		

TABLE 4
2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R27A	3/16/2017	13.85	33.85	47.7	
	9/21/2017	14.21	33.49		
	9/20/2018	14.00	33.70		
	9/19/2019	13.08	34.62		
R27B2	3/16/2017	4.20	47.46	51.66	
	9/21/2017	1.42	50.24		
	9/20/2018	2.18	49.48		
	9/19/2019	0.75	50.91		
R27B3	3/16/2017	0.00	51.37	51.37	
	9/21/2017	0.00	51.37		
	9/20/2018	-	-		Deflated packer
	9/19/2019	-7.11	58.48		Artesian
R28B2	3/16/2017	2.63	54.94	57.57	
	9/21/2017	1.68	55.89		
	9/20/2018	3.40	54.17		
	9/19/2019	0.83	56.74		
R29A	3/16/2017	7.12	28.88	36.00	
	9/21/2017	7.79	28.21		
	9/20/2018	7.81	28.19		
	9/19/2019	7.77	28.23		
R2A	3/16/2017	20.41	37.44	57.85	
	9/21/2017	15.65	42.20		
	9/20/2018	15.64	42.21		
	9/19/2019	14.46	43.39		
R30B2	3/16/2017	13.26	49.74	63.00	
	9/21/2017	12.26	50.74		
	9/20/2018	13.69	49.31		
	9/19/2019	11.50	51.50		
R31A	3/16/2017	9.23	24.77	34.00	
	9/21/2017	9.65	24.35		
	9/20/2018	9.71	24.29		
	9/19/2019	9.40	24.60		
R32A	3/16/2017	7.95	27.70	35.65	
	9/21/2017	8.51	27.14		
	9/20/2018	8.28	27.37		
	9/19/2019	7.90	27.75		
R33B2	3/16/2017	8.41	48.23	56.64	
	9/21/2017	7.53	49.11		
	9/20/2018	8.79	47.85		
	9/19/2019	6.86	49.78		

TABLE 4
2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R36A	3/16/2017	20.30	33.69	53.99	
	6/15/2017	15.31	38.68		
	9/21/2017	13.79	40.20		
	12/21/2017	13.66	40.33		
	3/15/2018	12.95	41.04		
	6/21/2018	13.18	40.81		
	9/20/2018	13.65	40.34		
	12/20/2018	14.72	39.27		
	3/6/2019	12.47	41.52		
	6/6/2019	12.34	41.65		
	9/19/2019	12.25	41.74		
	12/23/2019	11.36	42.63		
R36B1	3/16/2017	13.13	45.62	58.75	
	9/21/2017	12.42	46.33		
	9/20/2018	13.39	45.36		Deflated packer
	9/19/2019	11.74	47.01		
R37B3	3/16/2017	0.09	60.43	60.52	Installed deflated packer
	9/21/2017	0.00	60.52		
	9/20/2018	1.91	58.61		
	9/19/2019	0.00	60.52		Well under pressure
R39B2	3/16/2017	2.45	48.62	51.07	
	6/15/2017	1.05	50.02		
	9/21/2017	0.59	50.48		
	12/21/2017	-	-		Water in well box, Artesian
	3/15/2018	1.18	49.89		
	6/21/2018	1.46	49.61		
	9/20/2018	1.77	49.30		
	12/20/2018	2.23	48.84		Deflated packer
	3/6/2019	1.92	49.15		
	6/6/2019	1.63	49.44		
	9/19/2019	0.81	50.26		
	12/23/2019	0.52	50.55		Deflated packer removed
R3B1	3/16/2017	12.43	34.73	47.16	
	9/21/2017	12.29	34.87		
	9/20/2018	12.90	34.26		
	9/19/2019	12.00	35.16		
R3C	3/16/2017	4.34	65.76	70.10	
	9/21/2017	0.78	69.32		
	9/20/2018	3.81	66.29		Deflated packer
	9/19/2019	0.00	70.10		Artesian

TABLE 4
2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R40B1(B2)	3/16/2017	15.65	38.41	54.06	
	9/21/2017	15.32	38.74		
	9/20/2018	16.63	37.43		
	9/19/2019	15.70	38.36		
R41A	3/16/2017	13.91	37.09	51.00	
	6/15/2017	11.35	39.65		
	9/21/2017	10.72	40.28		
	12/21/2017	-	-		Vehicle parked above well
	3/15/2018	9.98	41.02		
	6/21/2018	10.30	40.70		
	9/20/2018	10.68	40.32		
	12/20/2018	11.34	39.66		
	3/6/2019	9.62	41.38		
	6/6/2019	9.79	41.21		
	9/19/2019	9.66	41.34		
	12/23/2019	9.16	41.84		
R41B2	3/16/2017	9.05	47.95	57.00	
	9/21/2017	8.13	48.87		
	9/20/2018	9.41	47.59		
	9/19/2019	7.41	49.59		
R42B1	3/16/2017	11.06	45.55	56.61	
	9/21/2017	10.37	46.24		
	9/20/2018	11.05	45.56		Well under pressure
	9/19/2019	9.67	46.94		
R43A	3/16/2017	7.02	38.98	46.00	
	9/21/2017	6.95	39.05		
	9/20/2018	7.21	38.79		
	9/19/2019	6.46	39.54		
R44A	3/16/2017	12.20	45.46	57.66	
	9/21/2017	11.18	46.48		
	9/20/2018	12.08	45.58		
	9/19/2019	10.72	46.94		
R45A	3/16/2017	15.05	46.95	62.00	
	9/21/2017	15.56	46.44		
	9/20/2018	17.26	44.74		
	9/19/2019	15.22	46.78		
R46A	3/16/2017	25.13	47.87	73.00	
	9/21/2017	24.33	48.67		
	9/20/2018	25.98	47.02		
	9/19/2019	23.98	49.02		

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R46B1	3/16/2017	12.77	45.23	58.00	
	9/21/2017	12.04	45.96		
	9/20/2018	12.93	45.07		
	9/19/2019	11.38	46.62		
R48A	3/16/2017	20.15	46.71	66.86	
	9/21/2017	19.02	47.84		
	9/20/2018	20.08	46.78		
	9/19/2019	18.26	48.60		
R4C	3/16/2017	7.17	64.83	72.00	
	9/21/2017	4.36	67.64		
	9/20/2018	7.71	64.29		
	9/19/2019	1.86	70.14		
R50A	3/16/2017	15.49	44.94	60.43	
	9/21/2017	14.75	45.68		
	9/20/2018	16.00	44.43		
	9/19/2019	14.26	46.17		
R50B2	3/16/2017	4.50	55.50	60.00	
	9/21/2017	3.35	56.65		Water level Fluctuation
	9/20/2018	5.49	54.51		
	9/19/2019	2.18	57.82		
R51A	3/16/2017	14.21	45.79	60.00	
	9/21/2017	13.25	46.75		
	9/20/2018	14.18	45.82		
	9/19/2019	12.49	47.51		
R51B3	3/16/2017	0.00	59.86	59.86	
	9/21/2017	0.00	59.86		
	9/20/2018	0.85	59.01		Deflated packer
	9/19/2019	-3.56	63.42		Artesian
R52A	3/16/2017	18.45	45.55	64.00	
	9/21/2017	17.44	46.56		
	9/20/2018	18.52	45.48		
	9/19/2019	16.76	47.24		
R52B2	3/16/2017	13.49	50.75	64.24	
	9/21/2017	12.41	51.83		
	9/20/2018	14.07	50.17		
	9/19/2019	11.67	52.57		
R53A	3/16/2017	16.29	42.31	58.60	
	9/21/2017	15.59	43.01		
	9/20/2018	16.01	42.59		
	9/19/2019	14.83	43.77		

TABLE 4
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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R53B2	3/16/2017	1.85	62.24	64.09	
	9/21/2017	0.48	63.61		
	9/20/2018	3.40	60.69		Deflated packer
	9/19/2019	0.00	64.09		Well under pressure
R54A	3/16/2017	14.45	42.73	57.18	
	9/21/2017	13.79	43.39		
	9/20/2018	14.21	42.97		
	9/19/2019	13.00	44.18		
R54B3	3/16/2017	0.94	63.58	64.52	
	9/21/2017	0.00	64.52		
	9/20/2018	2.43	62.09		Deflated packer
	9/19/2019	0.00	64.52		Well under pressure
R55A	3/16/2017	14.47	33.29	47.76	
	6/15/2017	14.48	33.28		
	9/21/2017	14.41	33.35		
	12/21/2017	14.31	33.45		
	3/15/2018	13.68	34.08		
	6/21/2018	14.21	33.55		
	9/20/2018	14.52	33.24		
	12/20/2018	14.62	33.14		
	3/6/2019	12.63	35.13		
	6/6/2019	13.26	34.50		
	9/19/2019	13.64	34.12		
	12/23/2019	12.95	34.81		
R55B2	3/16/2017	9.73	54.48	64.21	
	9/21/2017	8.82	55.39		
	9/20/2018	10.95	53.26		
	9/19/2019	7.79	56.42		
R56B3	3/16/2017	3.08	61.05	64.13	
	9/21/2017	1.97	62.16		
	9/20/2018	5.14	58.99		
	9/19/2019	0.20	63.93		

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R57A	3/16/2017	11.65	42.06	53.71	
	6/15/2017	11.07	42.64		
	9/21/2017	10.81	42.90		
	12/21/2017	10.81	42.90		
	3/15/2018	10.41	43.30		
	6/21/2018	10.88	42.83		
	9/20/2018	11.32	42.39		
	12/20/2018	11.68	42.03		
	3/6/2019	10.26	43.45		
	6/6/2019	10.13	43.58		
	9/19/2019	10.04	43.67		
	12/23/2019	9.81	43.90		
R57B3	3/16/2017	3.31	53.69	57.00	Installed deflated packer
	9/21/2017	0.22	56.78		
	9/19/2019	-4.07	61.07		Artesian
R58A	3/16/2017	16.98	36.79	53.77	
	6/15/2017	11.91	41.86		
	9/21/2017	10.59	43.18		
	12/21/2017	10.53	43.24		
	3/15/2018	9.85	43.92		
	6/21/2018	10.20	43.57		
	9/20/2018	10.64	43.13		
	12/20/2018	11.43	42.34		
	3/6/2019	9.59	44.18		
	6/6/2019	9.66	44.11		
	9/19/2019	9.66	44.11		
	12/23/2019	8.75	45.02		
R58B2	3/16/2017	7.15	43.43	50.58	
	9/21/2017	6.22	44.36		
	9/20/2018	6.15	44.43		Water in well box
	9/19/2019	4.92	45.66		

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R59A	3/16/2017	10.33	44.36	54.69	
	6/15/2017	9.98	44.71		
	9/21/2017	9.91	44.78		
	12/21/2017	9.99	44.70		
	3/15/2018	9.77	44.92		
	6/21/2018	10.31	44.38		
	9/20/2018	10.53	44.16		
	12/20/2018	10.58	44.11		
	3/6/2019	9.62	45.07		
	6/6/2019	9.71	44.98		
	9/19/2019	9.85	44.84		
	12/23/2019	9.47	45.22		
R59B2	3/16/2017	0.30	50.99	51.29	
	6/15/2017	0.00	51.29		Water in well box
	9/21/2017	0.00	51.29		
	12/21/2017	-	-		Artesian
	3/15/2018	-	-		Artesian
	6/21/2018	-	-		Artesian
	9/20/2018	0.76	50.53		Deflated packer installed
	12/20/2018	1.27	50.02		
	3/6/2019	-	-		Artesian
	6/6/2019	-	-		Artesian
	9/19/2019	-1.91	53.20		Artesian
	12/23/2019	-	-		Artesian
R5B1	3/16/2017	13.26	34.18	47.44	
	6/15/2017	13.22	34.22		
	9/21/2017	13.15	34.29		
	12/21/2017	13.32	34.12		
	3/15/2018	12.57	34.87		
	6/21/2018	13.01	34.43		
	9/20/2018	13.76	33.68		
	12/20/2018	13.67	33.77		
	3/6/2019	11.95	35.49		
	6/6/2019	12.94	34.50		Well under pressure
	9/19/2019	12.86	34.58		
	12/23/2019	12.17	35.27		
R5B2	3/16/2017	0.00	50.46	50.46	
	9/21/2017	0.00	50.46		
	9/20/2018	0.16	50.30		Deflated packer
	9/19/2019	-2.45	52.91		Artesian

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R5B3	3/16/2017	0.00	50.20	50.2	
	9/21/2017	0.00	50.20		Replaced plug in well
	9/20/2018	-	-		
	9/19/2019	-9.23	59.43		Artesian
R60A	3/16/2017	15.18	41.26	56.44	
	6/15/2017	15.11	41.33		
	9/21/2017	12.68	43.76		
	12/21/2017	12.55	43.89		
	3/15/2018	12.00	44.44		
	6/21/2018	12.34	44.10		
	9/20/2018	12.75	43.69		
	12/20/2018	13.30	43.14		
	3/6/2019	11.68	44.76		
	6/6/2019	11.71	44.73		Well under pressure
	9/19/2019	11.64	44.80		
	12/23/2019	11.21	45.23		
R60B1	3/16/2017	7.59	50.42	58.01	
	6/15/2017	6.83	51.18		
	9/21/2017	6.68	51.33		
	12/21/2017	6.88	51.13		
	3/15/2018	6.78	51.23		
	6/21/2018	7.32	50.69		
	9/20/2018	7.93	50.08		
	12/20/2018	8.43	49.58		
	3/6/2019	6.87	51.14		
	6/6/2019	6.18	51.83		
	9/19/2019	5.57	52.44		
	12/23/2019	5.64	52.37		
R61B3	3/16/2017	0.00	58.41	58.41	Installed deflated packer
	9/21/2017	0.00	58.41		
	9/20/2018	-	-		Artesian
	9/19/2019	-4.76	63.17		Artesian
R62A	3/16/2017	11.40	36.19	47.59	
	9/21/2017	11.40	36.19		
	9/20/2018	-	-		Vehicle parked above well
	9/19/2019	10.40	37.19		

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R62B2	3/16/2017	2.04	54.87	56.91	
	6/15/2017	0.55	56.36		
	9/21/2017	1.02	55.89		
	12/21/2017	1.31	55.60		Installed Deflated packer
	3/15/2018	1.39	55.52		
	6/21/2018	2.00	54.91		
	9/20/2018	2.79	54.12		
	12/20/2018	3.95	52.96		
	3/6/2019	1.64	55.27		
	6/6/2019	0.23	56.68		
	9/19/2019	0.00	56.91		Well under pressure
	12/23/2019	0.00	56.91		Well under pressure
R63A	3/16/2017	11.41	46.92	58.33	
	9/21/2017	14.78	43.55		
	9/20/2018	14.77	43.56		
	9/19/2019	13.47	44.86		
R63B1	3/16/2017	17.70	38.82	56.52	
	6/15/2017	14.24	42.28		Water in well box
	9/21/2017	13.30	43.22		
	12/21/2017	13.24	43.28		Water in well box
	3/15/2018	12.57	43.95		
	6/21/2018	12.82	43.70		
	9/20/2018	13.33	43.19		
	12/20/2018	14.17	42.35		
	3/6/2019	12.31	44.21		
	6/6/2019	12.25	44.27		Water in well box
	9/19/2019	12.12	44.40		
	12/23/2019	11.45	45.07		
R64B1	3/16/2017	9.77	46.88	56.65	
	6/15/2017	9.20	47.45		
	9/21/2017	9.10	47.55		
	12/21/2017	9.24	47.41		
	3/15/2018	8.95	47.70		
	6/21/2018	9.44	47.21		
	9/20/2018	9.96	46.69		
	12/20/2018	10.28	46.37		
	3/6/2019	8.81	47.84		
	6/6/2019	8.49	48.16		
	9/19/2019	8.43	48.22		
	12/23/2019	8.09	48.56		

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R65B1(B2)	3/16/2017	-	-	53.00	Extraction well, unable to collect
	6/15/2017	-	-		
	9/21/2017	-	-		
	12/21/2017	-	-		
	3/15/2018	-	-		
	6/21/2018	-	-		
	9/20/2018	-	-		
	12/20/2018	-	-		
	3/6/2019	-	-		
	6/6/2019	-	-		
	9/19/2019	-	-		
	12/23/2019	-	-		
R66B1	3/16/2017	12.57	36.15	48.72	
	9/21/2017	8.18	40.54		
	9/20/2018	8.22	40.50		
	9/19/2019	7.02	41.70		
R67A	3/16/2017	18.55	39.03	57.58	
	6/15/2017	14.90	42.68		Water in well box
	9/21/2017	13.85	43.73		
	12/21/2017	13.78	43.80		
	3/15/2018	13.10	44.48		
	6/21/2018	13.34	44.24		
	9/20/2018	13.83	43.75		Water in well box
	12/20/2018	14.70	42.88		
	3/6/2019	12.81	44.77		
	6/6/2019	12.70	44.88		
	9/19/2019	12.61	44.97		
	12/23/2019	11.93	45.65		

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R67B1	3/16/2017	12.97	36.09	49.06	
	6/15/2017	9.48	39.58		
	9/21/2017	8.51	40.55		
	12/21/2017	8.47	40.59		Water in well box
	3/15/2018	7.79	41.27		
	6/21/2018	8.02	41.04		
	9/20/2018	8.54	40.52		
	12/20/2018	9.40	39.66		
	3/6/2019	7.48	41.58		
	6/6/2019	7.40	41.66		Well under pressure, water in well box
	9/19/2019	7.33	41.73		
	12/23/2019	6.64	42.42		
R68A	3/16/2017	17.65	39.79	57.44	
	9/21/2017	14.46	42.98		
	9/20/2018	-	-		Vehicle parked above well
	9/19/2019	13.41	44.03		
R68B1	3/16/2017	20.72	36.24	56.96	
	6/15/2017	15.51	41.45		
	9/21/2017	13.93	43.03		
	12/21/2017	13.83	43.13		
	3/15/2018	13.11	43.85		
	6/21/2018	13.36	43.60		
	9/20/2018	13.83	43.13		
	12/20/2018	14.87	42.09		
	3/6/2019	12.83	44.13		
	6/6/2019	12.65	44.31		
	9/19/2019	12.58	44.38		
	12/23/2019	11.79	45.17		

TABLE 4
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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R68B2	3/16/2017	0.00	54.91	54.91	
	6/15/2017	0.00	54.91		Water in well box
	9/21/2017	0.00	54.91		
	12/21/2017	-	-		Artesian
	3/15/2018	-	-		
	6/21/2018	0.08	54.83		
	9/20/2018	-	-		Deflated packer
	12/20/2018	-	-		
	3/6/2019	-	-		Artesian
	6/6/2019	-	-		Artesian
	9/19/2019	1.25	53.66		Water level stabilized
	12/23/2019	1.43	53.48		
R69A	3/16/2017	19.95	36.27	56.22	
	6/15/2017	16.26	39.96		
	9/21/2017	15.00	41.22		
	12/21/2017	14.80	41.42		Water in well box
	3/15/2018	13.76	42.46		
	6/21/2018	13.68	42.54		
	9/20/2018	15.09	41.13		
	12/20/2018	15.94	40.28		
	3/6/2019	13.85	42.37		
	6/6/2019	13.69	42.53		
	9/19/2019	13.43	42.79		
	12/23/2019	12.61	43.61		
R69B1	3/16/2017	18.51	38.77	57.28	
	9/21/2017	14.14	43.14		
	9/20/2018	14.16	43.12		
	9/19/2019	12.94	44.34		
R69B2	3/16/2017	6.42	48.43	54.85	
	6/15/2017	4.53	50.32		
	9/21/2017	4.31	50.54		
	12/21/2017	4.29	50.56		Water level Fluctuation
	3/15/2018	4.30	50.55		
	6/21/2018	4.69	50.16		
	9/20/2018	5.03	49.82		
	12/20/2018	6.14	48.71		
	3/6/2019	4.15	50.70		
	6/6/2019	3.29	51.56		
	9/19/2019	3.24	51.61		
	12/23/2019	2.64	52.21		

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R6A	3/16/2017	9.48	46.16	55.64	
	6/15/2017	8.67	46.97		
	9/16/2016	8.42	47.22		
	12/21/2017	8.54	47.10		
	3/15/2018	8.36	47.28		
	6/21/2018	8.91	46.73		
	9/20/2018	6.48	49.16		
	12/20/2018	9.92	45.72		
	3/6/2019	8.54	47.10		
	6/6/2019	7.93	47.71		
	9/19/2019	7.72	47.92		
	12/23/2019	7.72	47.92		
R6B1	3/16/2017	7.87	38.13	46.00	
	9/21/2017	7.78	38.22		
	9/20/2018	8.22	37.78		Water in well box
	9/19/2019	7.39	38.61		
R70A	3/16/2017	19.07	38.26	57.33	
	9/21/2017	14.70	42.63		
	9/20/2018	14.71	42.62		Water in well box
	9/19/2019	13.63	43.70		
R70B1	3/16/2017	17.43	38.82	56.25	
	6/15/2017	13.92	42.33		
	9/21/2017	12.98	43.27		
	12/21/2017	12.92	43.33		
	3/15/2018	12.27	43.98		
	6/21/2018	12.46	43.79		
	9/20/2018	13.00	43.25		
	12/20/2018	13.82	42.43		
	3/6/2019	11.92	44.33		
	6/6/2019	11.95	44.30		
	9/19/2019	11.78	44.47		
	12/23/2019	11.31	44.94		
R70B2	3/16/2017	7.82	46.86	54.68	
	9/21/2017	7.17	47.51		
	9/20/2018	8.12	46.56		
	9/19/2019	6.47	48.21		
R71A	3/16/2017	16.79	37.74	54.53	
	9/21/2017	12.37	42.16		
	9/20/2018	12.34	42.19		
	9/19/2019	11.15	43.38		

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R71B2	3/16/2017	5.80	51.65	57.45	
	9/21/2017	4.88	52.57		
	9/20/2018	6.71	50.74		
	9/19/2019	4.13	53.32		
R72A	3/16/2017	20.01	36.46	56.47	
	6/15/2017	16.18	40.29		Water in well box, water level Fluctuation
	9/21/2017	15.07	41.40		
	12/21/2017	14.93	41.54		Water in well box, water level Fluctuation
	3/15/2018	14.10	42.37		
	6/21/2018	14.24	42.23		
	9/20/2018	15.03	41.44		Water in well box Well under pressure
	12/20/2018	15.92	40.55		
	3/6/2019	13.97	42.50		Well under pressure
	6/6/2019	13.94	42.53		Well under pressure
	9/19/2019	13.73	42.74		
	12/23/2019	12.85	43.62		
R72B2	3/16/2017	9.11	48.00	57.11	
	6/15/2017	7.24	49.87		
	9/21/2017	6.92	50.19		
	12/21/2017	7.07	50.04		
	3/15/2018	6.89	50.22		
	6/21/2018	7.42	49.69		
	9/20/2018	7.71	49.40		
	12/20/2018	8.88	48.23		
	3/6/2019	6.32	50.79		
	6/6/2019	5.95	51.16		
	9/19/2019	5.94	51.17		
	12/23/2019	5.35	51.76		

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Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R73A	3/16/2017	21.83	37.36	59.19	
	6/15/2017	17.44	41.75		
	9/21/2017	16.08	43.11		
	12/21/2017	15.95	43.24		Water in well box
	3/15/2018	15.24	43.95		
	6/21/2018	15.38	43.81		
	9/20/2018	15.96	43.23		
	12/20/2018	16.93	42.26		
	3/6/2019	14.89	44.30		
	6/6/2019	14.84	44.35		
	9/19/2019	14.70	44.49		
	12/23/2019	13.81	45.38		
R73B2	3/16/2017	7.72	49.43	57.15	
	6/15/2017	6.26	50.89		
	9/21/2017	6.07	51.08		
	12/21/2017	6.19	50.96		
	3/15/2018	6.22	50.93		
	6/21/2018	6.80	50.35		
	9/20/2018	6.93	50.22		
	12/20/2018	-	-		Vehicle parked above well
	3/6/2019	6.28	50.87		
	6/6/2019	5.41	51.74		
	9/19/2019	5.40	51.75		
	12/23/2019	4.69	52.46		
R74A	3/16/2017	19.27	38.57	57.84	
	9/21/2017	14.78	43.06		
	9/20/2018	14.74	43.10		
	9/19/2019	13.69	44.15		
R7B1	3/16/2017	12.97	43.50	56.47	
	6/15/2017	14.08	42.39		
	9/21/2017	13.18	43.29		
	12/21/2017	13.19	43.28		
	3/15/2018	12.39	44.08		
	6/21/2018	12.62	43.85		
	9/20/2018	13.11	43.36		
	12/20/2018	14.04	42.43		
	3/6/2019	12.12	44.35		
	6/6/2019	12.02	44.45		
	9/19/2019	11.93	44.54		
	12/23/2019	11.21	45.26		

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350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
R9B1	3/16/2017	18.61	38.67	57.28	
	9/21/2017	17.42	39.86		
	9/20/2018	18.97	38.31		
	9/19/2019	16.53	40.75		
R9B2	3/16/2017	18.82	53.18	72.00	
	9/21/2017	17.82	54.18		
	9/20/2018	19.79	52.21		
	9/19/2019	17.03	54.97		
R9B3	3/16/2017	4.96	64.68	69.64	
	9/21/2017	3.27	66.37		
	9/20/2018	6.51	63.13		
	9/19/2019	1.20	68.44		
RAY-1A	3/16/2017	16.00	29.21	45.21	Extraction pump on
	9/21/2017	16.53	28.68		
	9/20/2018	20.53	24.68		
	9/19/2019	13.46	31.75		
RAY-1B1	3/16/2017	13.37	32.40	45.77	Extraction pump on
	9/21/2017	13.60	32.17		
	9/20/2018	14.37	31.40		
	9/19/2019	13.78	31.99		
RE10A	3/16/2017	19.78	38.87	58.65	
	9/21/2017	15.51	43.14		
	9/20/2018	15.39	43.26		
	9/19/2019	14.43	44.22		
RE11A	3/16/2017	14.56	34.19	48.75	
	9/21/2017	9.95	38.80		
	9/20/2018	10.03	38.72		
	9/19/2019	8.60	40.15		
RE12A	3/16/2017	11.77	36.87	48.64	
	9/21/2017	8.47	40.17		
	9/20/2018	8.47	40.17		
	9/19/2019	7.44	41.20		
RE1B2	3/16/2017	2.37	50.51	52.88	Deflated packer installed
	9/21/2017	0.83	52.05		
	9/20/2018	2.26	50.62		Water in well box
	9/19/2019	0.00	52.88		Well under pressure
RE21A	3/16/2017	14.67	35.21	49.88	
	9/21/2017	10.33	39.55		
	9/20/2018	10.33	39.55		
	9/19/2019	9.20	40.68		

TABLE 4
2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
RE22A	3/16/2017	15.86	33.95	49.81	
	6/15/2017	12.08	37.73		
	9/21/2017	11.04	38.77		
	12/21/2017	10.96	38.85		
	3/15/2018	10.05	39.76		
	6/21/2018	10.07	39.74		
	9/20/2018	11.17	38.64		
	12/20/2018	12.01	37.80		
	3/6/2019	9.99	39.82		
	6/6/2019	9.90	39.91		
	9/19/2019	9.71	40.10		
	12/23/2019	8.96	40.85		
RE23A	3/16/2017	19.56	34.10	53.66	Extraction pump on
	9/21/2017	13.74	39.92		
	9/20/2018	14.50	39.16		
	9/19/2019	12.29	41.37		
RE24A	3/16/2017	25.48	29.76	55.24	Extraction pump on
	9/21/2017	19.85	35.39		
	9/20/2018	21.18	34.06		
	9/19/2019	15.00	40.24		
RE25A	3/16/2017	19.41	37.59	57.00	Extraction pump on
	9/21/2017	14.09	42.91		
	9/20/2018	29.82	27.18		
	9/19/2019	14.09	42.91		
RE3B1	3/16/2017	12.65	36.06	48.71	
	9/21/2017	8.24	40.47		
	9/20/2018	8.26	40.45		
	9/19/2019	7.04	41.67		
RE5A	3/16/2017	20.00	36.85	56.85	Extraction pump on
	9/21/2017	15.67	41.18		
	9/20/2018	15.62	41.23		
	9/19/2019	14.94	41.91		

TABLE 4
2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
RE7A	3/16/2017	13.08	35.53	48.61	
	6/15/2017	9.74	38.87		
	9/21/2017	8.91	39.70		
	12/21/2017	8.82	39.79		
	3/15/2018	8.06	40.55		
	6/21/2018	8.24	40.37		
	9/20/2018	8.93	39.68		
	12/20/2018	9.72	38.89		
	3/6/2019	7.83	40.78		
	6/6/2019	7.86	40.75		
	9/19/2019	7.67	40.94		
	12/23/2019	7.04	41.57		
RE8A	3/16/2017	15.07	36.59	51.66	
	6/15/2017	12.05	39.61		
	9/21/2017	11.27	40.39		
	12/21/2017	11.08	40.58		
	3/15/2018	10.27	41.39		
	6/21/2018	10.50	41.16		
	9/20/2018	11.28	40.38		
	12/20/2018	12.12	39.54		
	3/6/2019	9.97	41.69		
	6/6/2019	10.07	41.59		
	9/19/2019	10.04	41.62		
	12/23/2019	9.32	42.34		
RE9A	3/16/2017	20.96	37.77	58.73	
	9/21/2017	16.08	42.65		
	9/20/2018	15.96	42.77		Water in well box
	9/19/2019	14.86	43.87		
RH1A	3/16/2017	16.69	45.70	62.39	
	9/21/2017	15.68	46.71		
	9/20/2018	16.76	45.63		
	9/19/2019	15.05	47.34		
RP16B	3/16/2017	10.48	48.15	58.63	
	9/21/2017	9.57	49.06		
	9/20/2018	10.80	47.83		
	9/19/2019	9.07	49.56		

2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
RP19B	3/16/2017	17.20	39.27	56.47	
	6/15/2017	13.72	42.75		
	9/21/2017	12.81	43.66		
	12/21/2017	12.77	43.70		
	3/15/2018	12.14	44.33		
	6/21/2018	12.36	44.11		
	9/20/2018	12.82	43.65		
	12/20/2018	13.71	42.76		
	3/6/2019	11.87	44.60		
	6/6/2019	11.72	44.75		
	9/19/2019	11.64	44.83		
	12/23/2019	11.01	45.46		
RP21B	3/16/2017	14.46	38.88	53.34	
	6/15/2017	11.11	42.23		
	9/21/2017	10.21	43.13		
	12/21/2017	10.11	43.23		
	3/15/2018	9.46	43.88		
	6/21/2018	9.69	43.65		
	9/20/2018	10.19	43.15		
	12/21/2018	11.00	42.34		
	3/6/2019	9.14	44.20		
	6/6/2019	9.06	44.28		
	9/19/2019	8.97	44.37		
	12/23/2019	8.33	45.01		
RP22B	3/16/2017	16.55	47.52	64.07	
	9/21/2017	15.50	48.57		
	9/20/2018	16.58	47.49		Well Redeveloped on 10/26/2018
	9/19/2019	14.62	49.45		
RP23B	3/16/2017	15.98	38.69	54.67	
	6/15/2017	12.51	42.16		
	9/21/2017	11.80	42.87		
	12/21/2017	11.53	43.14		
	3/15/2018	10.85	43.82		
	6/21/2018	11.10	43.57		
	9/20/2018	11.60	43.07		
	12/20/2018	12.45	42.22		
	3/6/2019	10.56	44.11		
	6/6/2019	10.52	44.15		Well under pressure
	9/19/2019	10.41	44.26		
	12/23/2019	9.76	44.91		

TABLE 4
2019 GROUNDWATER ELEVATION DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)	Reference Elevation (feet MSL)	Comments
RP24B	3/16/2017	16.85	38.14	54.99	
	9/21/2017	15.50	39.49		
	9/20/2018	12.16	42.83		
	12/20/2018	18.31	36.68		
	9/19/2019	10.90	44.09		
RP41B	3/16/2017	19.58	37.77	57.35	
	9/21/2017	13.90	43.45		
	9/20/2018	13.83	43.52		
	9/19/2019	12.60	44.75		
RP42B	3/16/2017	23.94	37.76	61.70	
	6/15/2017	19.24	42.46		Water level fluctuation
	9/21/2017	18.51	43.19		
	12/21/2017	18.12	43.58		Well cap broken
	3/15/2018	17.94	43.76		
	6/21/2018	17.54	44.16		
	9/20/2018	17.93	43.77		
	12/20/2018	18.31	43.39		
	3/6/2019	17.62	44.08		Well under presure
	6/6/2019	17.34	44.36		Well under presure
	9/19/2019	16.67	45.03		
	12/23/2019	16.41	45.29		
RP43B	3/16/2017	18.69	38.59	57.28	
	6/15/2017	15.22	42.06		Well box full of water
	9/21/2017	14.27	43.01		
	12/21/2017	14.19	43.09		Well box full of water
	3/15/2018	13.55	43.73		
	6/21/2018	13.73	43.55		
	9/20/2018	14.25	43.03		
	12/20/2018	15.06	42.22		
	3/6/2019	13.21	44.07		
	6/6/2019	13.16	44.12		
	9/19/2019	12.28	45.00		
	12/23/2019	12.45	44.83		

ABBREVIATIONS AND NOTES:

MSL - Mean Sea Level

- = water level was not measured.

Artesian Conditions = Within 15 minutes of packer removal, water in well overflows during groundwater elevation measurement.

Well under pressure = Water in well rises after packer removal, but does not overflow within 15 minutes.

TABLE 5

2019 DIFFERENTIAL WATER LEVELS IN WELL PAIRS ACROSS THE SLURRY WALL
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	Location	6 March 2019		6 June 2019		19 September 2019		23 December 2019	
		Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)
R-06A[1]	South wall	47.10	5.58	47.71	6.06	47.92	6.18	47.92	5.29
R-36A[2]		41.52		41.65		41.74		42.63	
R-60B1[1]	South wall	51.14	6.79	51.83	7.38	52.44	7.90	52.37	7.11
R-07B1[2]		44.35		44.45		44.54		45.26	
R-59A[1]	West wall	45.07	0.89	44.98	0.87	44.84	0.73	45.22	0.20
R-58A[2]		44.18		44.11		44.11		45.02	
R-57A[1]	East wall	43.45	-1.31	43.58	-1.15	43.67	-1.13	43.90	-1.33
R-60A[2]		44.76		44.73		44.80		45.23	
R-64B1[1]	East wall	47.84	3.63	48.16	3.89	48.22	3.82	48.56	3.49
R-63B1[2]		44.21		44.27		44.40		45.07	
R-55A[1]	North wall	35.13	-5.65	34.50	-6.25	34.12	-6.82	34.81	-6.76
RE-07A[2]		40.78		40.75		40.94		41.57	
R-05B1[1]	North wall	35.49	-8.62	34.50	-9.65	34.58	-9.68	35.27	-9.64
RP-23B[2]		44.11		44.15		44.26		44.91	

ABBREVIATIONS AND NOTES:

ft MSL = feet above Mean Sea Level

A positive difference indicates an inward gradient.

[1]Outside wells - Monitoring well is located outside the footprint of the slurry wall.

[2]Inside wells - Monitoring well is located inside the footprint of the slurry wall.

TABLE 6

2019 DIFFERENTIAL WATER LEVELS IN WELL PAIRS ACROSS THE AQUITARD
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well Cluster	Well ID	6 March 2019		6 June 2019		19 September 2019		23 December 2019	
		Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)
1	RP-21B	44.20	2.82	44.28	3.07	44.37	3.03	45.01	3.17
	R-41A	41.38		41.21		41.34		41.84	
2	R-59B2 (l)	NM	-	NM	-	53.20	2.94	NM	-
	R-39B2 (u)	49.15		49.44		50.26		50.55	
3	R-65B1B2	NM	-	NM	-	NM	-	NM	-
	R-58A	44.18		44.11		44.11		45.02	
4	R-07B1	44.35	2.83	44.45	2.80	44.54	2.80	45.26	2.63
	R-36A	41.52		41.65		41.74		42.63	
5	R-63B1	44.21	-0.55	44.27	-0.46	44.40	-0.40	45.07	-0.16
	R-60A	44.76		44.73		44.80		45.23	
6	R-68B2 (l)	NM	-	NM	-	53.66	2.05	53.48	1.27
	R-69B2 (u)	50.70		51.56		51.61		52.21	
7	R-73B2	50.87	6.74	51.74	7.43	51.75	7.37	52.46	-
	R-68B1	44.13		44.31		44.38		45.17	
8	RP-19B	44.60	-0.16	44.75	0.02	44.83	0.03	45.46	0.23
	R-60A	44.76		44.73		44.80		45.23	
9	RP-42B	44.08	-0.22	44.36	0.01	45.03	0.54	45.29	-0.09
	R-73A	44.30		44.35		44.49		45.38	
10	RP-43B	44.07	1.57	44.12	1.59	45.00	2.26	44.83	1.21
	R-72A	42.50		42.53		42.74		43.62	
11	R-67B1	41.58	1.76	41.66	1.75	41.73	1.63	42.42	1.57
	RE-22A	39.82		39.91		40.10		40.85	
12	R-67B1	41.58	-0.11	41.66	0.07	41.73	0.11	42.42	0.08
	RE-08A	41.69		41.59		41.62		42.34	
12	R-70B1	44.33	1.96	44.30	1.77	44.47	1.68	44.94	1.33
	R-69A	42.37		42.53		42.79		43.61	
14	R-62B2 (l)	55.27	4.48	56.68	5.52	56.91	5.74	56.91	5.15
	R-72B2 (u)	50.79		51.16		51.17		51.76	
15	R-68B1	44.13	-0.64	44.31	-0.57	44.38	-0.59	45.17	-0.48
	R-67A	44.77		44.88		44.97		45.65	

ABBREVIATIONS AND NOTES:

ft MSL = foot above Mean Sea Level

"-" = Not calculated

NM = Not measured

A positive difference indicates an upward gradient.

(l) = Lower well in aquifer

(u) = Upper well in aquifer

TABLE 7
2019 CAPTURE ZONE WIDTH CALCULATION
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Extraction Well	Extraction Rate, Q [1] (gpm)	Transmissivity, T [2] (gpd/ft)	Hydraulic Gradient, I [3] (ft/ft)	Capture Zone width at well[4] (ft)	Maximum Capture Zone Width Upgradient[4] (ft)
RAY-1A	3.66	3,088	0.009	47	95
RAY-1B1	3.89	12,130	0.011	10	21

NOTES:

[1]The pumping rates are the average rate of 2019.

[2]The transmissivities used in the calculations were averages of the nearby wells transmissivities calculated in the "Remedial Investigation Report" revised June 1988 by Harding Lawson Associates (Note: Transmisivity, T=K*b).

[3] It is based on the potentiometric surface maps depicted in Figures 3 and 4, where the equipotential lines along the eastern and western slurry walls are used to calculate two gradients which are averaged to produce a single hydraulic gradient.

[4]The calculation is based on January 2008 EPA guidance on capture zone analysis.

TABLE 8
2019 WATER BALANCE RESULTS
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Extraction Well	Upgradient Width of Incoming Groundwater Flux, w [1] (ft)	Transmissivity, T [2] (gpd/ft)	Hydraulic Gradient, i (ft/ft)	Estimated Pumping Rate, Q_{est} [3] (gpm)	Actual Pumping Rate, Q [4] (gpm)
RAY-1A	95	3,088	0.009	2.75	3.46
RAY-1B1	21	12,130	0.011	2.92	3.89

NOTES:

[1]Estimation is based on January 2008 EPA guidance on capture zone analysis.

[2]The transmissivities used in the calculations were averages of the nearby wells transmissivities found in the "Remedial Investigation Report" revised June 1988 by Harding Lawson Associates (Note: Transmisivitty, T=K*b).

[3]The calculation is based on January 2008 EPA guidance on capture zone analysis.

[4]The actual pumping rates were measured on 19 September 2019.

TABLE 9
MONITORING, SAMPLING AND REPORTING SCHEDULES
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Wells Monitored Quarterly - Groundwater Elevations		
A Zone	**B1 Zone**	**B2 Zone**
R-36A	R-5B1	R-39B2
R-41A	R-60B1	R-59B2
R-55A	R-63B1	R-62B2
R-57A	R-64B1	R-65B1(B2)
R-58A	R-67B1	R-68B2
R-59A	R-68B1	R-69B2
R-60A	R-70B1	R-72B2
R-67A	R-7B1	R-73B2
R-69A	RP-19B	
R-6A	RP-21B	
R-72A	RP-23B	
R-73A	RP-42B	
RE-22A	RP-43B	
RE-7A		
RE-8A		

Wells Monitored Biennially - Sampling and Groundwater Elevations		
A Zone	**B1 Zone**	**B2 Zone**
24A	007B1	I-1B2
83A	94B1	R-17B2
100A	97B1	
R-52A	RAY-1B1	
RAY-1A		

TABLE 9
MONITORING, SAMPLING AND REPORTING SCHEDULES
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Wells Monitored Every Four Years - Sampling and Groundwater Elevations		
A Zone	**B1 Zone**	**B2 Zone**
R-36A	R-7B1	R-27B2
R-41A	R-67B1	R-39B2
R-60A	RP-19B	R-65B1B2
R-72A	RP-21B	R-68B2
RE-07A	RP-23B	RE-1B2
RE-08A	RP-24B	
RE-09A	RP-41B	
RE-10A	RP-43B	
RE-23A		
RE-24A		
RE-25A		

Reporting Schedule		
Report	**Agency**	**Frequency**
NPDES	RWQCB	Semi-annually (Submitted on the 15th day of February and August of each year)
Annual Progress Report	EPA	Annually (submitted in April of each year)

TABLE 10
SUB-SLAB DEPRESSURIZATION SYSTEM PERFORMANCE DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

	V001	V002								V003	V004	V005	V006	V007	V008							
Date	Pressure Differential (inH_2O)	Vacuum - Influent (inH_2O)	Vacuum - Effluent (inH_2O)	Pressure Differential (inH_2O)	VOCs - Influent (ppmv)	VOCs - Effluent (ppmv)	Temp. - Influent (deg F)	Temp. - Effluent (deg F)	Flow - Effluent (CFM)	Pressure Differential (inH_2O)	Pressure Differential (inH_2O)	Pressure Differential (inH_2O)	Pressure Differential (inH_2O)	Pressure Differential (inH_2O)	Vacuum - Influent (inH_2O)	Vacuum - Effluent (inH_2O)	Pressure Differential (inH_2O)	VOCs - Influent (ppmv)	VOCs - Effluent (ppmv)	Temp. - Influent (deg F)	Temp. - Effluent (deg F)	Flow - Effluent (CFM)
10/21/2015	-0.080	-4.0	2.0	-0.300	6.3	0.9	NM	NM	54	-0.030	-0.040	-0.050	-0.040	-0.120	-9.0	2.0	-0.370	0.0	1.1	NM	78	51
10/28/2015	-0.080	-6.5	2.5	-0.290	13.2	0.0	NM	80	52	-0.040	-0.040	-0.035	-0.030	-0.100	-11.0	2.0	-0.330	0.1	0.1	NM	83	49
11/17/2015	-0.120	-6.0	2.0	-0.380	8.0	6.2	NM	77	51	-0.080	-0.080	-0.060	-0.050	-0.130	-11.0	2.0	-0.380	0.0	0.0	NM	75	54
12/4/2015	-0.132	-7.0	2.0	-0.359	NM	NM	61	75	47	-0.090	-0.085	-0.064	-0.061	-0.137	-11.0	2.0	-0.375	NM	NM	60	72	50
12/6/2015	-0.123	-7.0	2.0	-0.367	NM	NM	61	77	47	-0.081	-0.078	-0.067	-0.069	-0.120	-11.0	2.0	-0.352	NM	NM	60	73	46
12/20/2015	-0.148	-6.5	2.0	-0.375	NM	NM	59	72	56	-0.087	-0.088	-0.081	-0.078	-0.141	-12.0	2.0	-0.376	NM	NM	60	67	48
1/18/2016	-0.150	-7.0	2.0	-0.406	36.4	23.4	61	78	51	-0.102	-0.095	-0.075	-0.067	-0.132	-12.0	2.0	-0.367	34.0	0.9	61	76	50
2/25/2016	-0.148	-6.0	2.0	-0.380	37.1	0.2	63	79	54	-0.099	-0.098	-0.074	-0.063	-0.134	-12.0	2.5	-0.359	5.2	0.1	60	67	43
3/22/2016	NM	-6.0	2.0	NM	NM	NM	60	78	54	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
5/12/2016	-0.134	-8.2	3.2	-0.374	6.8	0.7	76	84	53	-0.088	-0.080	-0.090	-0.081	-0.134	-8.0	2.9	-0.356	3.1	0.1	70	83	51
8/9/2016	-0.119	-8.0	3.1	-0.355	16.9	9.6	76	86	48	-0.066	-0.062	-0.063	-0.064	-0.118	-7.5	3.0	-0.354	14.6	6.5	76	86	52
11/8/2016	-0.121	-7.2	3.0	-0.342	5.1	5.1	79	80	50	-0.065	-0.071	-0.065	-0.162 2	-0.136	-8.5	3.1	-0.353	10.5	0.1	76	84	46
2/8/2017	-0.130	-7.3	3.2	-0.385	0.0	0.0	73	82	52	-0.091	-0.092	-0.081	-0.069	-0.152	-8.5	3.1	-0.374	0.5	0.0	74	82	50
5/2/2017	-0.139	-7.2	3.1	-0.393	8.0	6.6	80	87	49	-0.074	-0.080	-0.088	-0.069	-1.50	-8.0	3.2	-0.372	3.0	0.0	82	86	51
8/9/2017	-0.055	-7.2	3.0	-0.358	5.5	0.7	82	90	52	-0.075	-0.065	-0.041	-0.045	-0.141	-7.5	3.3	-0.361	4.8	1.8	80	88	52
11/8/2017	-0.160	-7.6	2.9	-0.405	4.0	2.0	66	79	57	-0.084	-0.052	-0.060	-0.053	-0.104	-7.5	2.4	-0.273	10.1	3.2	70	81	49
2/7/2018	-0.127	-7.4	3.0	-0.375	0.8	0	72	83	51	-0.084	-0.079	-0.066	-0.062	-0.139	-6.5	3.0	-0.372	4.2	1.5	68	80	51
5/7/2018	-0.145	-7.4	3.0	-0.400	0.4	0.0	78	85	55	-0.100	-0.101	-0.083	-0.08	-0.165	-6.5	3.0	-0.385	3.1	0.0	78	84	52
8/8/2018	-0.135	-7.0	3.0	-0.377	0.7	0.0	78	88	53	-0.082	-0.080	-0.063	-0.06	-0.122	-6.5	3.1	-0.351	5.7	0.8	76	87	52
11/6/2018	-0.149	-7.4	3.0	-0.407	1.2	0.0	72	84	50	-0.082	-0.070	-0.067	-0.069	-0.125	-7.0	4.2	-0.354	9.0	0.0	69	82	49
2/15/2019	-0.145	-7.0	2.8	-0.417	NM	NM	NM	NM	49	-0.100	-0.093	-0.052	-0.065	-0.137	-7.5	4.0	-0.360	NM	NM	NM	NM	50
2/17/2019	-0.214	-7.0	3.0	-0.477	NM	NM	69	79	51	-0.130	-0.107	-0.123	-0.127	-0.155	-7.0	4.0	-0.413	NM	NM	64	75	50
5/24/2019	-0.145	-8.2	2.6	-0.376	NM	NM	76	82	49	-0.091	-0.093	-0.095	-0.074	-0.133	-8.0	3.0	-0.363	NM	NM	74	84	49
8/18/2019	-0.178	-8.6	3.0	-0.385	NM	NM	89	96	51	-0.095	-0.090	-0.067	-0.072	-0.142	-7.0	3.4	-0.339	NM	NM	90	92	48
11/18/2019	0.212	-6.5	3.0	-0.389	NM	NM	70	70	53	-0.011	-0.019	-0.012	-0.014	-0.130	-6.5	3.2	-0.295	NM	NM	72	82	50

ABBREVIATIONS AND NOTES:

CFM = cubic feet per minute
deg F = degrees Fahrenheit
inH2O = inches of water column
NM = not measured
ppmv = parts per million by volume
[1]Valve was installed to throttle flow. Values shown are suction side/discharge side, respectively.

TABLE 10
SUB-SLAB DEPRESSURIZATION SYSTEM PERFORMANCE DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

	V009	V010	V011								V012	V013	V014						
Date	Pressure Differential (inH_2O)	Pressure Differential (inH_2O)	Vacuum - Influent (inH_2O)	Vacuum - Effluent (inH_2O)	Pressure Differential (inH_2O)	VOCs - Influent (ppmv)	VOCs - Effluent (ppmv)	Temp. - Influent (deg F)	Temp. - Effluent (deg F)	Flow - Effluent (CFM)	Pressure Differential (inH_2O)	Pressure Differential (inH_2O)	Vacuum - Influent (inH_2O)[1]	Vacuum - Effluent (inH_2O)	Pressure Differential (inH_2O)	VOCs - Influent (ppmv)	VOCs - Effluent (ppmv)	Temp. - Influent (deg F)	Temp. - Effluent (deg F)	Flow - Effluent (CFM)
10/21/2015	-0.070	-0.150	-8.0	3.0	-0.380	1.2	0.0	NM	NM	53	-0.040	-0.100	-4.0	2.5	-0.400	0.0	0.2	NM	NM	59
10/28/2015	-0.160	-0.140	-8.5	2.0	-0.390	0.1	0.3	NM	85	53	-0.060	-0.120	-4.0	2.5	-0.390	0.0	0.0	NM	86	59
11/17/2015	-0.200	-0.200	-9.0	2.0	-0.400	0.3	0.2	NM	78	53	-0.060	-0.100	-10.0	2.3	-0.400	1.7	0.8	NM	84	60
12/4/2015	-0.204	-0.169	-11.0	2.0	-0.319	NM	NM	61	78	52	-0.057	-0.105	-9.8	2.0	-0.403	NM	NM	68	79	54
12/6/2015	-0.191	-0.157	-11.0	2.0	-0.379	NM	NM	63	79	53	-0.057	-0.110	-10.0	2.0	-0.407	NM	NM	69	77	47
12/20/2015	-0.214	-0.175	-11.0	1.5	-0.389	NM	NM	60	75	50	-0.052	-0.104	-11.0	2.0	-0.405	NM	NM	65	78	60
1/18/2016	-0.210	-0.185	-12.0	2.0	-0.400	78.5	52.0	62	79	52	-0.065	-0.115	-11.0	2.0	-0.403	1.3	0.4	71	82	59
2/25/2016	-0.204	-0.166	-12.0	2.0	-0.378	3.6	0.0	62	76	41	-0.067	-0.120	-11.0	2.5	-0.403	0.7	0.2	65	85	63
3/22/2016	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
5/12/2016	-0.212	-0.181	-11.0	3.0	-0.380	0.7	0.0	72	84	51	-0.053	-0.078	-8.2/-27 3	1.3	-0.243	0.3	0.0	76	92	40
8/9/2016	-0.198	-0.153	-9.0	3.2	-0.368	4.4	2.6	78	84	51	-0.039	-0.088	-8.0/-28 3	1.2	-0.246	11.5	12.6	83	95	40
11/8/2016	-0.206	-0.151	-11.3	3.0	-0.349	4.4	8.3	82	84	45	-0.049	-0.087	-8.2/-28 3	1.1	-0.247	0.0	0.0	84	95	39
2/8/2017	-0.227	-0.198	-11.5	3.1	-0.403	0.0	0.0	71	75	51	-0.064	-0.099	-9.2/-28.5	1.1	-0.260	0.0	0.0	78	90	42
5/2/2017	-0.223	-0.186	-11.5	3.1	-0.377	1.9	0.0	76	84	48	-0.050	-0.095	-8.4/-28.5	1.1	-0.258	0.0	0.0	83	96	40
8/9/2017	-0.216	-0.183	-9.5	3.2	-0.412	10.8	9.6	80	90	52	-0.051	-0.095	-8.6/-29.0	1.1	-0.253	0.9	0.3	86	97	42
11/8/2017	-0.158	-0.143	-11.0	3.2	-0.366	7.5	1.7	69	79	52	-0.043	-0.092	-8.9/-29.0	1.2	-0.265	6.0	4.4	70	89	47
2/7/2018	-0.225	-0.22	-11.0	3.0	-0.433	3.5	0.4	66	80	49	-0.045	-0.087	-8.8/-29	1.2	-0.245	0.0	0.0	76	90	41
5/7/2018	-0.222	-0.182	-10.5	3.0	-0.385	4.7	0.0	74	84	50	-0.046	-0.087	-8.8/-29	1.2	-0.241	0.0	0.0	82	92	43
8/8/2018	-0.193	-0.147	-10.0	3.0	-0.362	3.6	0.8	78	89	50	-0.041	-0.073	-8.8/-29	1.4	-0.233	0.0	0.0	82	95	43
11/6/2018	-0.191	-0.166	-10.5	3.2	-0.371	2.0	0.0	68	86	47	-0.030	-0.072	-8.8/-29	1.4	-0.232	0.0	0.0	76	92	41
2/15/2019	-0.209	-0.223	-12.5	3.2	-0.434	NM	NM	NM	NM	48	-0.044	-0.097	-9.5/NM	1.4	-0.254	NM	NM	NM	NM	39
2/17/2019	-0.252	-0.248	-11.0	3.2	-0.458	1.9	0.0	60	77	47	-0.062	-0.101	-9.5/-30	1.4	-0.260	NM	NM	76	84	38
5/24/2019	-0.214	-0.188	-11.0	3.0	-0.387	NM	NM	70	87	46	-0.042	-0.072	-9	1.4	-0.232	NM	NM	79	93	40
8/18/2019	-0.205	-0.152	-9.5	3.4	-0.361	NM	NM	87	96	45	-0.092	-0.130	-10/-31	1.4	-0.284	NM	NM	89	98	40
11/18/2019	-0.135	-0.041	-11.5	3.0	-0.040	NM	NM	82	86	47	-0.030	-0.156	-29	1.4	-0.305	NM	NM	70	90	41

ABBREVIATIONS AND NOTES:

CFM = cubic feet per minute
deg F = degrees Fahrenheit
inH2O = inches of water column
NM = not measured
ppmv = parts per million by volume
[1]Valve was installed to throttle flow. Values shown are suction side/discharge side, respectively.

TABLE 11
SUB-SLAB DEPRESSURIZATION SYSTEM BAAQMD DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Chemical[1]	Sample Date	Building A (Extraction Point V011)			Building B (Extraction Point V008)			Building D (Extraction Point V002)			Building E (Extraction Point V014)			Comparison with BAAQMD Toxic Air Contaminant Trigger Levels						
		Effluent Analytical Result ($\mu g/m^3$)	Effluent Reporting Limit ($\mu g/m^3$)	Flow Rate (CFM)	Effluent Analytical Result ($\mu g/m^3$)	Effluent Reporting Limit ($\mu g/m^3$)	Flow Rate (CFM)	Effluent Analytical Result ($\mu g/m^3$)	Effluent Reporting Limit ($\mu g/m^3$)	Flow Rate (CFM)	Effluent Analytical Result ($\mu g/m^3$)	Effluent Reporting Limit ($\mu g/m^3$)	Flow Rate (CFM)	Total SSD Emissions[2] (lb/hr)	Period[3] (Days)	SSD Emissions in Period[4] (lb)	Total SSD Emissions in 2019[5] (lb/yr)	BAAQMD Acute (1-hr. max.) Trigger Level[6] (lb/hr)	BAAQMD Chronic Trigger Level[6] (lb/yr)	Below BAAQMD Trigger Level?
Benzene	2/17/2019	< 2.4	2.4	47	< 36	36	50	< 1.3	1.3	51	< 2.0	2.0	38	7.70E-06	103	1.90E-02	5.0E-02	6.0E-02	2.9E+00	Yes
	5/24/2019	< 19	19	46	< 1.3	1.3	49	< 9.8	9.8	49	< 1.3	1.3	40	5.48E-06	96	1.26E-02				
	8/18/2019	< 1.3	1.3	45	< 1.3	1.3	48	< 1.3	1.3	51	< 1.3	1.3	40	8.97E-07	86	1.85E-03				
	11/18/2019	33	3.4	47	< 3.3	3.3	50	< 3.3	3.3	53	< 3.3	3.3	41	7.59E-06	92	1.68E-02				
2-Butanone (Methyl Ethyl Ketone)	2/17/2019	< 4.5	4.5	47	< 66	66	50	< 2.4	2.4	51	< 3.8	3.8	38	1.42E-05	103	3.50E-02	8.6E-02	2.9E+01	NA	Yes
	5/24/2019	< 34	34	46	< 2.4	2.4	49	< 18	18	49	2.4	2.4	40	9.92E-06	96	2.29E-02				
	8/18/2019	5.2	2.4	45	6.0	2.4	48	6.8	2.4	51	6.1	2.4	40	4.17E-06	86	8.62E-03				
	11/18/2019	14	12	47	< 12	12	50	< 12	12	53	< 12	12	41	8.94E-06	92	1.97E-02				
Carbon Disulfide	2/17/2019	< 4.7	4.7	47	< 69	69	50	22	2.5	51	41	4.0	38	2.38E-05	103	5.88E-02	3.9E-01	1.4E+01	3.1E+04	Yes
	5/24/2019	52	36	46	26	4.7	49	450	19	49	19	2.5	40	9.94E-05	96	2.29E-01				
	8/18/2019	55	2.5	45	69	2.5	48	64	2.5	51	25	2.5	40	3.77E-05	86	7.78E-02				
	11/18/2019	< 13	13	47	< 13	13	50	< 13	13	53	< 13	13	41	9.30E-06	92	2.05E-02				
Chloroform	2/17/2019	3.8	2.8	47	< 41	41	50	< 1.5	1.5	51	3.4	2.3	38	9.12E-06	103	2.25E-02	6.1E-02	3.3E-01	1.5E+01	Yes
	5/24/2019	<21	21	46	<1.5	1.5	49	<11	11	49	1.8	1.5	40	6.16E-06	96	1.42E-02				
	8/18/2019	< 1.5	1.5	45	9.5	1.5	48	< 1.5	1.5	51	2.9	1.5	40	2.69E-06	86	5.55E-03				
	11/18/2019	< 5.2	5.2	47	30	5	50	< 5.0	5.0	53	5.2	5	41	8.33E-06	92	1.84E-02				
Ethylbenzene	2/17/2019	< 3.3	3.3	47	< 48	48	50	< 1.7	1.7	51	< 2.8	2.8	38	1.03E-05	103	2.54E-02	5.3E-02	NA	3.3E+01	Yes
	5/24/2019	< 25	25	46	< 1.7	1.7	49	< 13	13	49	< 1.7	1.7	40	7.23E-06	96	1.67E-02				
	8/18/2019	< 1.7	1.7	45	< 1.7	1.7	48	< 1.7	1.7	51	< 1.7	1.7	40	1.17E-06	86	2.42E-03				
	11/18/2019	9.2	4.6	47	< 4.4	4.4	50	< 4.4	4.4	53	< 4.5	4.5	41	4.01E-06	92	8.85E-03				
Tetrachloroethene	2/17/2019	< 5.2	5.2	47	< 75	75	50	< 2.7	2.7	51	47	4.3	38	2.22E-05	103	5.48E-02	9.7E-02	4.4E+01	1.4E+01	Yes
	5/24/2019	< 40	40	46	< 2.7	2.7	49	< 21	21	49	< 2.7	2.7	40	1.16E-05	96	2.67E-02				
	8/18/2019	< 2.7	2.7	45	< 2.7	2.7	48	< 2.7	2.7	51	< 2.7	2.7	40	1.86E-06	86	3.85E-03				
	11/18/2019	< 7.2	7.2	47	< 7.0	7	50	< 7.0	7.0	53	< 7.0	7	41	5.04E-06	92	1.11E-02				
Toluene	2/17/2019	< 2.9	2.9	47	< 42	42	50	< 1.5	1.5	51	< 2.4	2.4	38	9.00E-06	103	2.23E-02	9.1E-02	8.2E+01	1.2E+04	Yes
	5/24/2019	< 22	22	46	< 1.5	1.5	49	< 12	12	49	< 1.5	1.5	40	6.47E-06	96	1.49E-02				
	8/18/2019	< 1.5	1.5	45	2.9	1.5	48	< 1.5	1.5	51	< 1.5	1.5	40	1.29E-06	86	2.66E-03				
	11/18/2019	120	4.0	47	< 3.9	3.9	50	< 3.9	3.9	53	< 3.9	3.9	41	2.32E-05	92	5.13E-02				
1,1,1-Trichloroethane	2/17/2019	< 3.1	3.1	47	< 46	46	50	< 1.6	1.6	51	17	2.6	38	1.19E-05	103	2.94E-02	5.7E-02	1.5E+02	3.9E+04	Yes
	5/24/2019	< 24	24	46	< 1.6	1.6	49	< 13	13	49	< 1.6	1.6	40	7.03E-06	96	1.62E-02				
	8/18/2019	< 1.6	1.6	45	< 1.6	1.6	48	< 1.6	1.6	51	< 1.6	1.6	40	1.10E-06	86	2.28E-03				
	11/18/2019	< 5.8	5.8	47	< 5.6	5.6	50	< 5.6	5.6	53	< 5.6	5.6	41	4.04E-06	92	8.92E-03				
Trichloroethene	2/17/2019	4.6	4.1	47	7,600	60	50	< 2.1	2.1	51	190	3.4	38	1.45E-03	103	3.59E+00	4.1E+00	NA	4.1E+01	Yes
	5/24/2019	260	31	46	2.3	2.1	49	31	17	49	< 2.1	2.1	40	5.09E-05	96	1.17E-01				
	8/18/2019	7.3	2.1	45	10	2.1	48	2.4	2.1	51	< 2.1	2.1	40	3.81E-06	86	7.87E-03				
	11/18/2019	< 5.7	5.7	47	810	5.5	50	< 5.5	5.5	53	< 5.5	5.5	41	1.55E-04	92	3.41E-01				
m,p-Xylene	2/17/2019	< 6.6	6.6	47	< 97	97	50	< 3.5	3.5	51	< 5.6	5.6	38	2.08E-05	103	5.14E-02	1.0E-01	4.9E+01	2.7E+04	Yes
	5/24/2019	< 51	51	46	< 3.5	3.5	49	< 27	27	49	< 3.5	3.5	40	1.48E-05	96	3.42E-02				
	8/18/2019	< 3.5	3.5	45	< 3.5	3.5	48	< 3.5	3.5	51	< 3.5	3.5	40	2.42E-06	86	4.99E-03				
	11/18/2019	19	4.6	47	< 4.4	4.4	50	< 4.4	4.4	53	< 4.5	4.5	41	5.73E-06	92	1.27E-02				
o-Xylene	2/17/2019	< 3.3	3.3	47	< 48	48	50	< 1.7	1.7	51	< 2.8	2.8	38	1.03E-05	103	2.54E-02	5.2E-02	4.9E+01	2.7E+04	Yes
	5/24/2019	< 25	25	46	< 1.7	1.7	49	< 13	13	49	< 1.7	1.7	40	7.23E-06	96	1.67E-02				
	8/18/2019	< 1.7	1.7	45	< 1.7	1.7	48	< 1.7	1.7	51	< 1.7	1.7	40	1.17E-06	86	2.42E-03				
	11/18/2019	6.0	4.6	47	< 4.4	4.4	50	< 4.4	4.4	53	< 4.5	4.5	41	3.44E-06	92	7.61E-03				

TABLE 11
SUB-SLAB DEPRESSURIZATION SYSTEM BAAQMD DATA
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Abbreviations and Notes:

$\mu g/m^3$ = micrograms per cubic meter

BAAQMD = Bay Area Air Quality Management District

lb/hr = pounds per hour

lb/yr = pounds per year

NA = BAAQMD Toxic Air Contaminant Trigger Level not established for chemical

< 3.1 = Denotes chemical was not detected at or above the laboratory reporting limit shown

CFM = cubic feet per minute

[1]Only detected compounds for which BAAQMD Toxic Air Contaminant Trigger Levels were established are shown in this table.

[2] Emissions are calculated as the cumulative emissions from all four treatment systems using the flow rate measured in each effluent flow measurement port and the corresponding detected concentrations of effluent samples.

[3] Period is calculated as the number of days between the previous sampling date and the next sampling date.

[4] Emissions in period is calculated as the SSD emissions times the period (days) times 24 (hours per day).

[5] Emissions are cumulative for the calendar year since the last sampling date in 2018 (11/06/2018) and are presented in lb/yr.

[6] BAAQMD Toxic Air Contaminant Trigger Levels are established in BAAQMD Table 2-5-1.

TABLE 12
AIR SAMPLING RESULTS BUILDINGS A, B, C, D AND E
370 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Location / Sample ID	Sample Date	Ventilation Status	Sample Purpose	Sample Duration (hours)	Sample Type	Chemicals of Concern						
						1,1-DCA	1,1-DCE	cis-1,2-DCE	PCE	trans-1,2-DCE	TCE	Vinyl chloride
Building A												
370AMB1A	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370AMB1A	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	1.0	0.22	< 0.051
370AMB2A	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.11	< 0.11	< 0.051
370AMB2A	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	0.29	0.85	0.56	< 0.051
370AMB3A	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.11	< 0.11	< 0.051
370AMB3A	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.88	0.22	< 0.051
370PATH1A	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.15	1.7	< 0.051
370PATH1A (DUP01)	02/15/2019	On	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	0.16	1.8	< 0.051
370PATH1A	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.72	1.1	< 0.051
350-380OUT1	02/15/2019	On	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350-380OUT1	02/17/2019	Off	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
Building B												
370AMB1B	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370AMB1B	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.28	< 0.051
370AMB1B	08/18/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.078	0.40	< 0.051
370AMB1B	08/19/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.14	< 0.051
370AMB2B	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.13	< 0.051
370AMB2B	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.42	< 0.051
370AMB2B	08/18/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.55	< 0.051
370AMB2B	08/19/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.14	< 0.051
370AMB3B	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370AMB3B	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.34	< 0.051
370AMB3B	08/18/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	1.8	< 0.051
370AMB3B	08/19/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370AMB4B	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370AMB4B	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.37	< 0.051
370AMB4B	08/18/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.51	< 0.051
370AMB4B	08/19/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.12	< 0.051
370AMB5B	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370AMB5B	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.26	< 0.051
370AMB5B	08/18/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.49	< 0.051
370AMB5B	08/19/2019	On	Indoor	8	Primary	0.13	0.15	0.13	0.20	0.17	0.27	0.11
370PATH1B	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.16	< 0.051
370PATH1B	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.22	< 0.051
370PATH1B	08/18/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.23	< 0.051
370PATH1B	08/19/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370PATH2B	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.13	< 0.051
370PATH2B (DUP02)	02/15/2019	On	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.16	< 0.051
370PATH2B	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.17	< 0.051
370PATH2B (DUP02)	02/17/2019	Off	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.22	< 0.051
370PATH2B	08/18/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.12	0.75	< 0.051
370PATH2B (DUP1)	08/18/2019	Off	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	0.14	0.80	< 0.051
370PATH2B	08/19/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.40	< 0.051
370PATH2B (DUP1)	08/19/2019	On	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	0.086	0.41	< 0.051
350-380OUT1	02/15/2019	On	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350-380OUT1	02/17/2019	Off	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370OUT1B	08/18/2019	Off	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
370HVAC1B	08/19/2019	On	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.11	< 0.051
Building C												
380AMB1Ce[b]	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB1Ce[b]	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.13	< 0.051
380AMB2Ce[b]	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	0.13	< 0.079	< 0.11	< 0.051
380AMB2Ce[b]	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.12	0.12	< 0.051
380AMB2Cw[b]	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB2Cw[b]	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.28	< 0.051

TABLE 12
AIR SAMPLING RESULTS BUILDINGS A, B, C, D AND E
370 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Location / Sample ID	Sample Date	Ventilation Status	Sample Purpose	Sample Duration (hours)	Sample Type	Chemicals of Concern						
						1,1-DCA	1,1-DCE	cis-1,2-DCE	PCE	trans-1,2-DCE	TCE	Vinyl chloride
Building C												
380AMB4Ce	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB4Ce	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.23	< 0.051
380AMB4Cw	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB4CW (DUP03)	02/15/2019	On	Indoor	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB4Cw	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.093	0.60	< 0.051
380AMB5Ce	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB5Ce	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB5Cw	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB5Cw	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB6Ce	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB6Ce	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.16	0.17	< 0.051
380AMB6Cw	02/15/2019	On	Indoor	8	Primary	< 0.098	< 0.096	< 0.096	< 0.16	< 0.096	< 0.13	< 0.062
380AMB6Cw	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.10	< 0.11	< 0.051
380PATH1Ce	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380PATH1Ce (DUP04)	02/15/2019	On	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380PATH1Ce	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	0.090	0.19	< 0.051
380PATH1Ce (DUP04)	02/17/2019	Off	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	0.084	0.18	< 0.051
380PATH2Ce	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	0.20	< 0.079	< 0.11	< 0.051
380PATH2Ce	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350-380OUT1	02/15/2019	On	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350-380OUT1	02/17/2019	Off	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
Building D												
380AMB1D	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB1D	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB4D	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB4D	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.11	< 0.051
380AMB5D	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380AMB5D	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380PATH1D	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
380PATH1D	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	0.14	< 0.051
380PATH2D	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	0.13	< 0.14	< 0.079	0.53	< 0.051
380PATH2D	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	0.15	< 0.14	< 0.079	0.63	< 0.051
380PATH2D (DUP05)	02/17/2019	Off	Pathway	8	Duplicate	< 0.081	< 0.079	0.16	< 0.14	< 0.079	0.64	< 0.051
350-380OUT1	02/15/2019	On	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350-380OUT1	02/17/2019	Off	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
Building E												
350AMB1	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350AMB2	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350AMB3	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350AMB3	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350AMB4	02/15/2019	On	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350AMB4	02/17/2019	Off	Indoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350PATH1	02/15/2019	On	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350PATH1	02/17/2019	Off	Pathway	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350PATH1 (DUP06)	02/17/2019	Off	Pathway	8	Duplicate	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350-380OUT1	02/15/2019	On	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
350-380OUT1	02/17/2019	Off	Outdoor	8	Primary	< 0.081	< 0.079	< 0.079	< 0.14	< 0.079	< 0.11	< 0.051
ROD Commercial Indoor Air Cleanup Level						6	700	210	2	210	5	2

TABLE 12
AIR SAMPLING RESULTS BUILDINGS A, B, C, D AND E
370 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Notes:
DCA - Dichloroethane
DCE - Dichloroethene
PCE - Tetrachloroethene
TCE - Trichloroethene
All units are micrograms per cubic meter ($\mu g/m^3$).
<0.020 - Denotes chemical was not detected at or above the laboratory reporting limit shown.
J - Denotes estimated concentration.
Chemicals of Concern and ROD Commercial Indoor Air Cleanup Levels as defined in
EPA's "Record of Decision Amendment for the Vapor Intrusion Pathway, Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View and Moffett Field, California," 16 August 2010.

FIGURES

MAP SOURCE: ESRI
USGS QUAD: MOUNTAIN VIEW, CA
SITE COORDINATES: 37°23'53.3"N, 122°3'17.2"W

HALEY ALDRICH

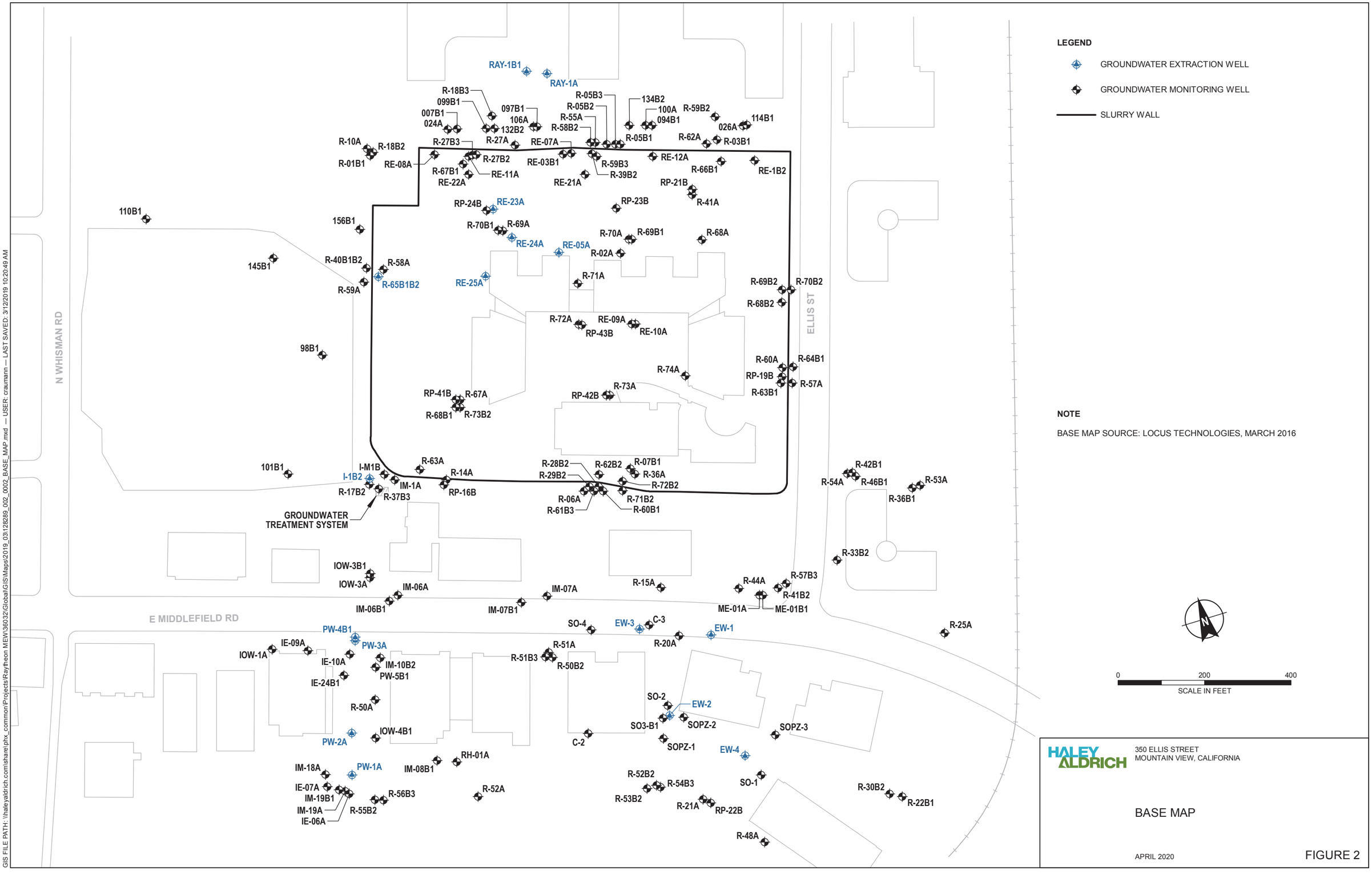
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

SITE LOCATION MAP

APPROXIMATE SCALE: 1 IN = 2000 FT
APRIL 2020

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Raytheon MEW\36032\Global\GIS\Maps\2019_03\128289_002_0001_SITE_LOCATION_MAP.mxd — USER: craumann — LAST SAVED: 3/12/2019 9:29:28 AM



GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Raytheon MEW\36032\Global\GIS\Maps\2019_03\128289_002_0002_BASE_MAP.mxd — USER: craumann — LAST SAVED: 3/12/2019 10:20:49 AM

HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

BASE MAP

APRIL 2020

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Raytheon MEW\360320\Global\GIS\Maps\2020_02\128289_002_00MB_POTENTIOMETRIC_SURFACE_MAPS.mxd — USER: anichols — LAST SAVED: 3/31/2020 3:31:50 PM

N WHISMAN RD

E MIDDLEFIELD RD

ELLIS ST

RAY-1A 31.75

024A 34.90

R-10A 38.32

R-27A 34.62

106A 34.20

RE-07A 40.94

R-55A 34.12

100A 35.07

026A 37.92

R-62A 37.19

RE-11A 40.15

RE-08A 41.62

RE-22A 40.10

RE-23A 41.37

RE-21A 40.68

RE-12A 41.20

R-41A 41.34

R-69A 42.79

RE-24A 40.24

RE-05A 41.91

R-70A 43.70

R-68A 44.03

RE-25A 42.91

R-71A 43.38

R-02A 43.39

R-59A 44.84

R-58A 44.11

R-72A 42.74*

RE-09A 43.87

RE-10A 44.22

R-74A 44.15

R-60A 44.80

R-73A 44.49

R-57A 43.67

R-67A 45.17

R-63A 44.86

R-36A 41.74*

R-54A 44.18

R-53A 43.77

IM-1A NA

R-14A 46.82

R-06A 47.92

GROUNDWATER TREATMENT SYSTEM

IOW-3A 45.15

IM-06A 45.43

IM-07A 47.27

R-15A 47.27

R-44A 46.94*

SO-4 47.43

EW-3 47.49

C-3 47.39

R-20A 47.49

EW-1 47.09

ME-01A 47.16

R-25A 45.64

IOW-1A 45.76

PW-3A 46.09

IE-09A 46.01

IE-10A 46.09

R-50A 46.17

R-51A 47.51

SO-2 47.71

SOPZ-2 47.76

C-2 47.68

EW-2 47.73

SOPZ-3 47.58

SOPZ-1 47.80

EW-4 47.73

SO-1 47.75

IM-18A 46.81*

PW-1A 47.47

IE-07A 47.18

IE-06A 47.27

IM-19A 47.20

RH-01A 47.34

R-52A 47.24

R-21A 48.24

R-48A 48.60

35 36 37 38 39 40 41 42 43 44 45 46 47 48

LEGEND

- GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- RAY-1A ESTIMATED CAPTURE ZONE
- GROUNDWATER CONTOUR, ELEVATION IN FT ABOVE MEAN SEA LEVEL, 1-FT INTERVAL
- GROUNDWATER DEPRESSION
- SLURRY WALL

NOTES

1. GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.

2. * INDICATES THAT THE ELEVATION WAS NOT USED IN GENERATING GROUNDWATER CONTOURS.

3. *ITALICIZED VALUES* INDICATES GROUNDWATER ELEVATIONS PROVIDED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).

4. INTERPRETED POTENTIOMETRIC SURFACE DATA ARE DEPICTED BEYOND THE SITE BOUNDARIES AS PRESENTED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).

5. NA = NOT APPLICABLE

N

0 200 400

SCALE IN FEET

HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

POTENTIOMETRIC SURFACE MAP, A ZONE, 19 SEPTEMBER 2019

APRIL 2020

FIGURE 3

RAY-1B1 31.99'
007B1 34.29
099B1 34.33
097B1 34.44
R-05B1 34.58
094B1 35.24
R-03B1 35.16
114B1 35.53
R-66B1 41.70
R-01B1 40.58*
R-67B1 41.73
RE-03B1 41.67
156B1 38.89
145B1 39.30
RP-24B 44.09
RP-23B 44.26
RP-21B 44.37
R-70B1 44.47
R-69B1 44.34
RP-43B 45.00
098B1 41.10
R-64B1 48.22
RP-19B 44.53
R-63B1 44.40
RP-41B 44.75
R-68B1 44.38
RP-42B 45.03
R-07B1 44.54
R-42B1 46.94
R-46B1 46.62
R-36B1 47.01
101B1 43.12
RP-16B 49.56
R-60B1 52.44
GROUNDWATER TREATMENT SYSTEM
IOW-3B1 44.81
IM-06B1 45.58
IM-07B1 47.95
ME-01B1 50.38
PW-4B1 45.76
PW-5B1 45.68
IE-24B1 45.91
IOW-4B1 45.35
IM-08B1 47.62
IM-19B1 47.10
RP-22B 49.45*
R-22B1 50.63

N WHISMAN RD
ELLIS ST
E MIDDLEFIELD RD

LEGEND

- GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- RAY-1A ESTIMATED CAPTURE ZONE
- GROUNDWATER CONTOUR, ELEVATION IN FT ABOVE MEAN SEA LEVEL, 1-FT INTERVAL
- GROUNDWATER DEPRESSION
- SLURRY WALL

NOTES

1. GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.
2. * INDICATES THAT THE ELEVATION WAS NOT USED IN GENERATING GROUNDWATER CONTOURS.
3. *ITALICIZED VALUES* INDICATE GROUNDWATER ELEVATIONS PROVIDED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).
4. INTERPRETED POTENTIOMETRIC SURFACE DATA ARE DEPICTED BEYOND THE SITE BOUNDARIES AS PRESENTED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).

N

0 200 400
SCALE IN FEET

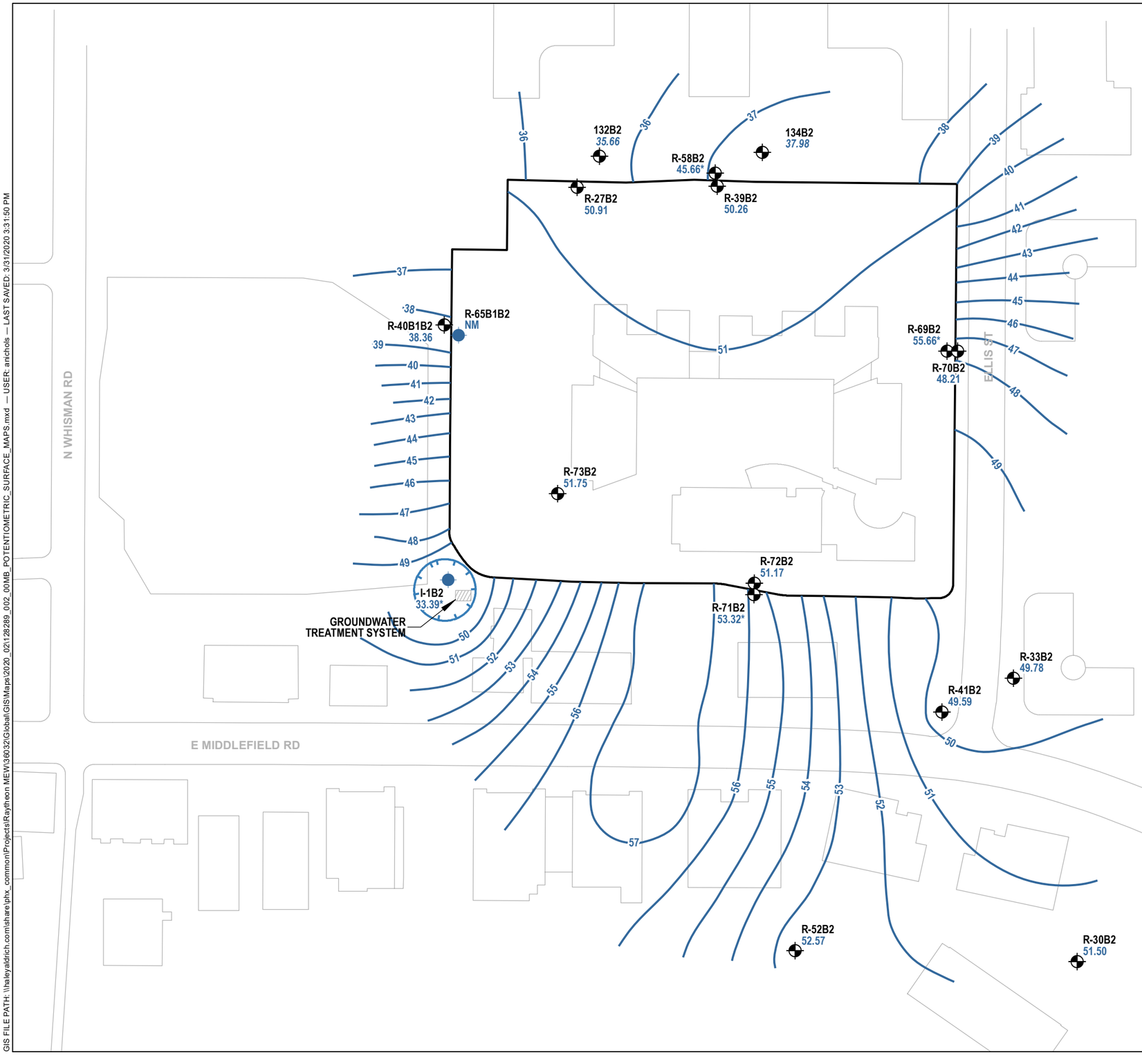
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

POTENTIOMETRIC SURFACE MAP, B1 ZONE, 19 SEPTEMBER 2019

APRIL 2020

FIGURE 4



LEGEND

- GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- GROUNDWATER CONTOUR, ELEVATION IN FT ABOVE MEAN SEA LEVEL, 1-FT INTERVAL
- GROUNDWATER DEPRESSION
- SLURRY WALL

NOTES

1. GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.
2. * INDICATES THAT THE ELEVATION WAS NOT USED IN GENERATING GROUNDWATER CONTOURS.
3. *ITALICIZED VALUES* INDICATE GROUNDWATER ELEVATIONS PROVIDED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).
4. INTERPRETED POTENTIOMETRIC SURFACE DATA ARE DEPICTED BEYOND THE SITE BOUNDARIES AS PRESENTED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).
5. NM = NOT MEASURED

N

0 200 400
SCALE IN FEET

HALEY ALDRICH

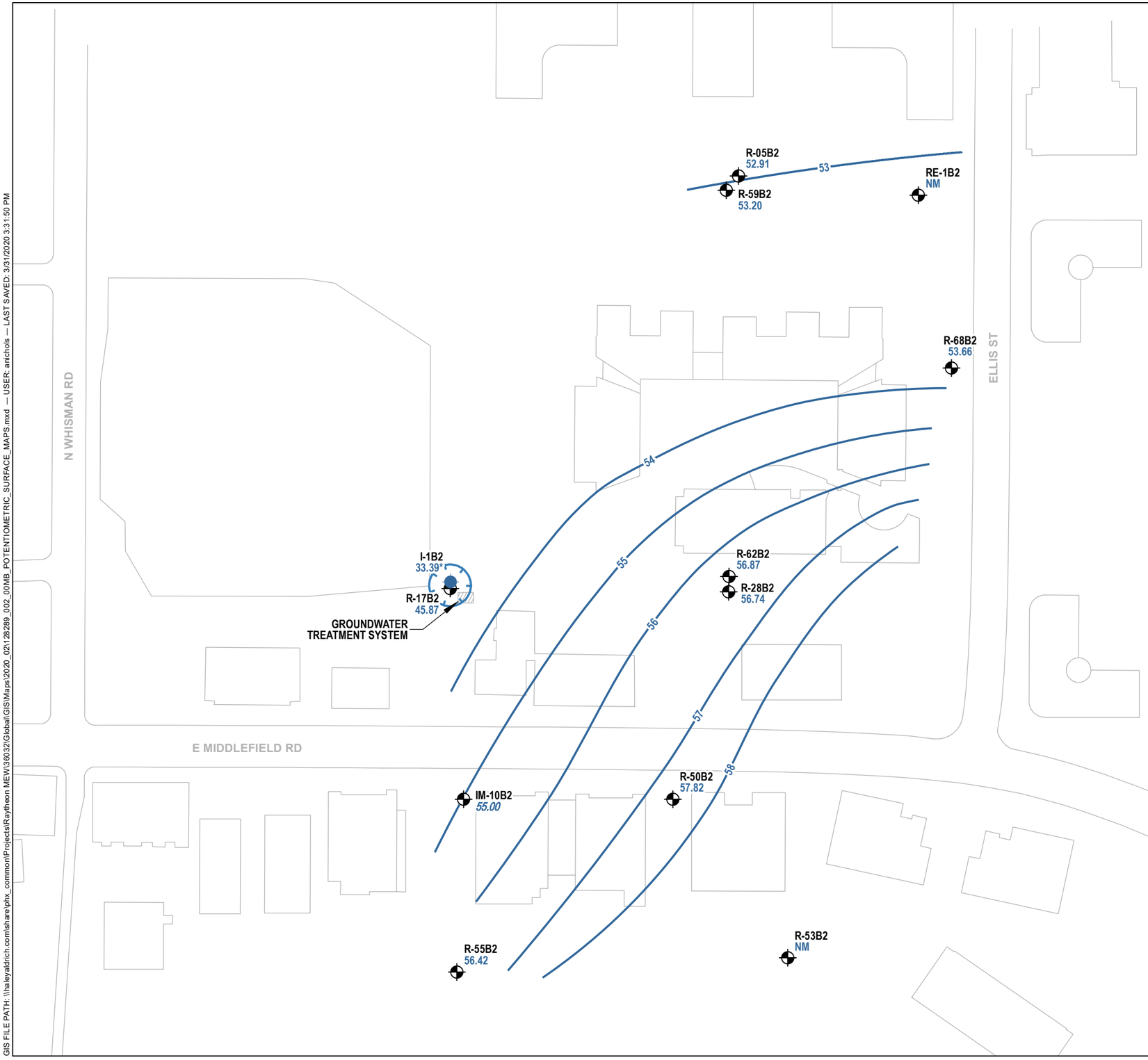
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

POTENTIOMETRIC SURFACE MAP, UPPER B2 ZONE, 19 SEPTEMBER 2019

APRIL 2020

FIGURE 5

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Raytheon MEW\36932\Global\GIS\Maps\2020_02\128289_002_00MB_POTENTIOMETRIC_SURFACE_MAPS.mxd — USER: anichols — LAST SAVED: 3/31/2020 3:31:50 PM



LEGEND

- GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- GROUNDWATER CONTOUR, ELEVATION IN FT ABOVE MEAN SEA LEVEL, 1-FT INTERVAL
- GROUNDWATER DEPRESSION

NOTES

1. GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.

2. * INDICATES THAT THE ELEVATION WAS NOT USED IN GENERATING GROUNDWATER CONTOURS.

3. *ITALICIZED VALUES* INDICATE GROUNDWATER ELEVATIONS PROVIDED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).

4. INTERPRETED POTENTIOMETRIC SURFACE DATA ARE DEPICTED BEYOND THE SITE BOUNDARIES AS PRESENTED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2020).

N

0 200 400
SCALE IN FEET

HALEY ALDRICH

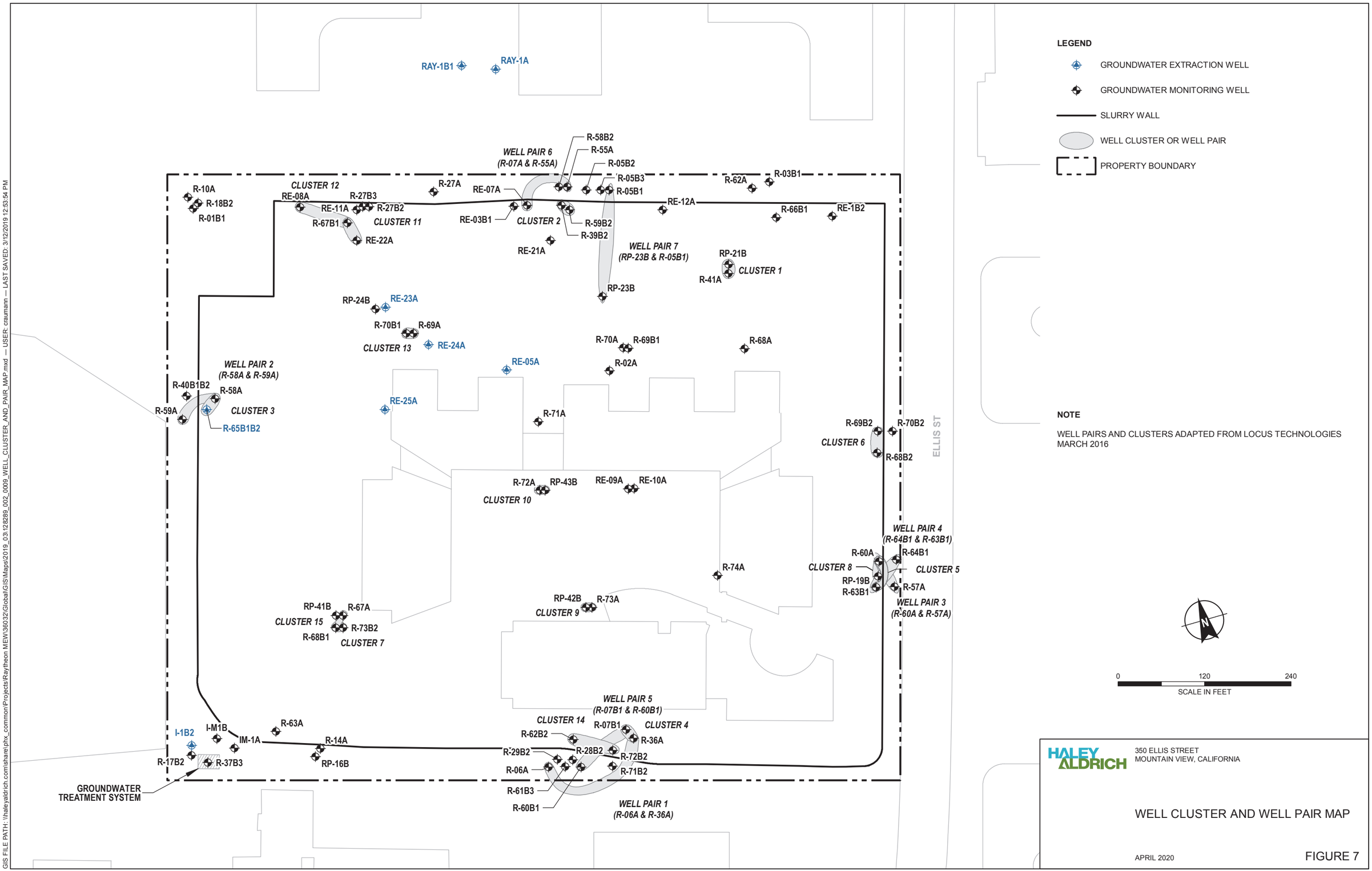
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

POTENTIOMETRIC SURFACE MAP, LOWER B2 ZONE, 19 SEPTEMBER 2019

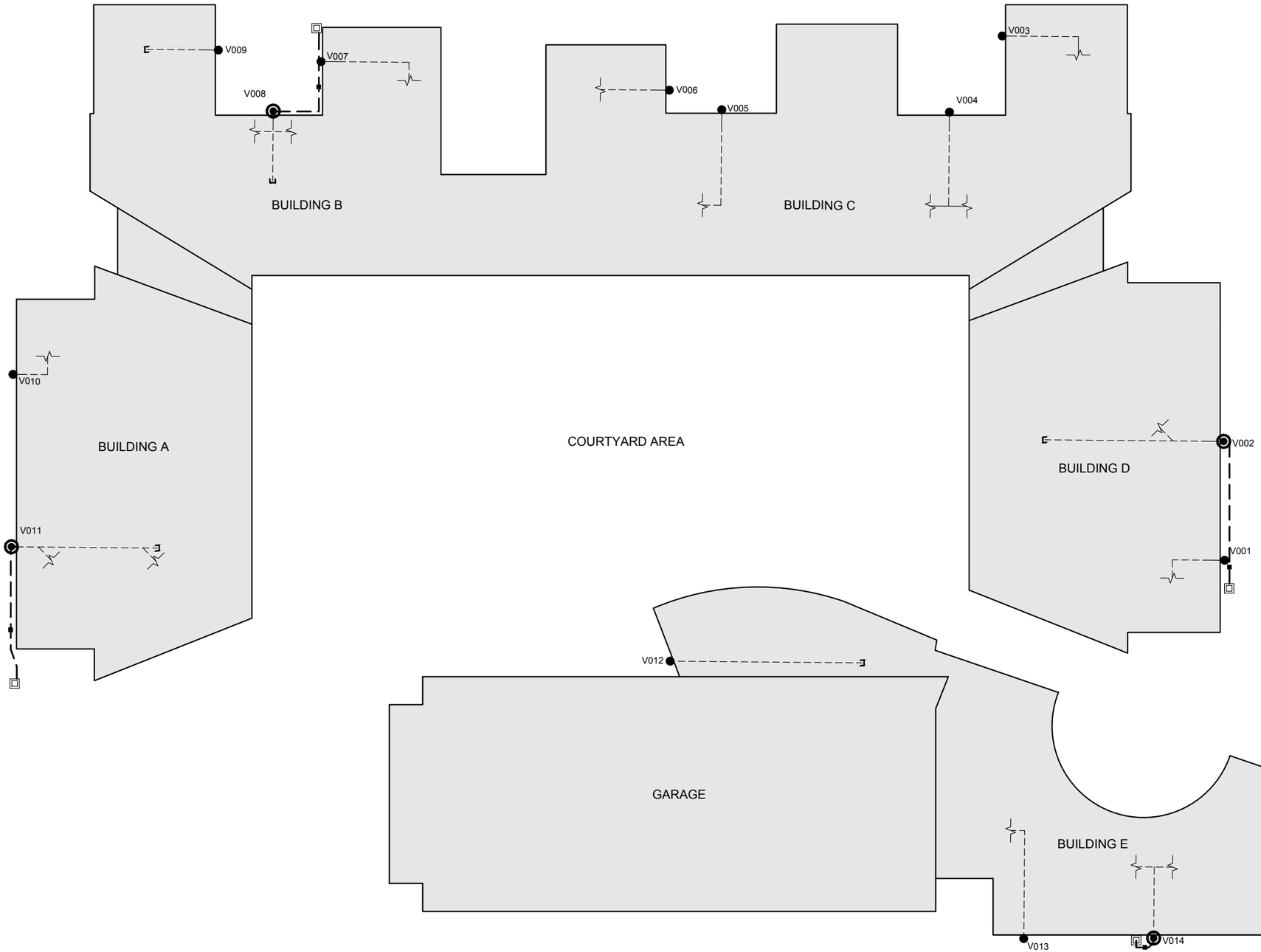
APRIL 2020

FIGURE 6

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Raytheon MEW\36032\Global\GIS\Maps\2020_02\128289_002_00MB_POTENTIOMETRIC_SURFACE_MAPS.mxd — USER: anichols — LAST SAVED: 3/31/2020 3:31:50 PM



GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Raytheon MEW\36032\GlobalGIS\Maps\2019_03\128289_002_0009_WELL_CLUSTER_AND_PAIR_MAP.mxd — USER: craumann — LAST SAVED: 3/12/2019 12:53:54 PM



LEGEND

- BUILDING
- SUB-SLAB 3" Ø PVC PIPING
- SUB-SLAB 3" Ø SLOTTED PVC PIPING
- CONVEYANCE PIPE TRENCH
- END CAP
- DENOTES UNKNOWN TERMINATION POINT
- V003 PRESSURE MONITORING POINT
- V014 EXTRACTION POINT
- EQUIPMENT ENCLOSURE
- DRAINAGE VAULT

NOTES

1. THIS BASE PLAN WAS PREPARED BY DIGITIZING EXPLORATION LOCATIONS FROM A PLAN OF THE SITE, ENTITLED BASE MAP (350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA) BY LOCUS TECHNOLOGIES. AS SUCH, ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. LOCATIONS OF SUB-SLAB PIPES ARE BASED ON VIDEO SURVEYS CONDUCTED 6 NOVEMBER 2012 AND 25 MARCH 2013.

N

0 60 120

SCALE IN FEET

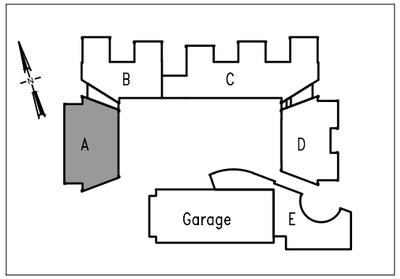
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

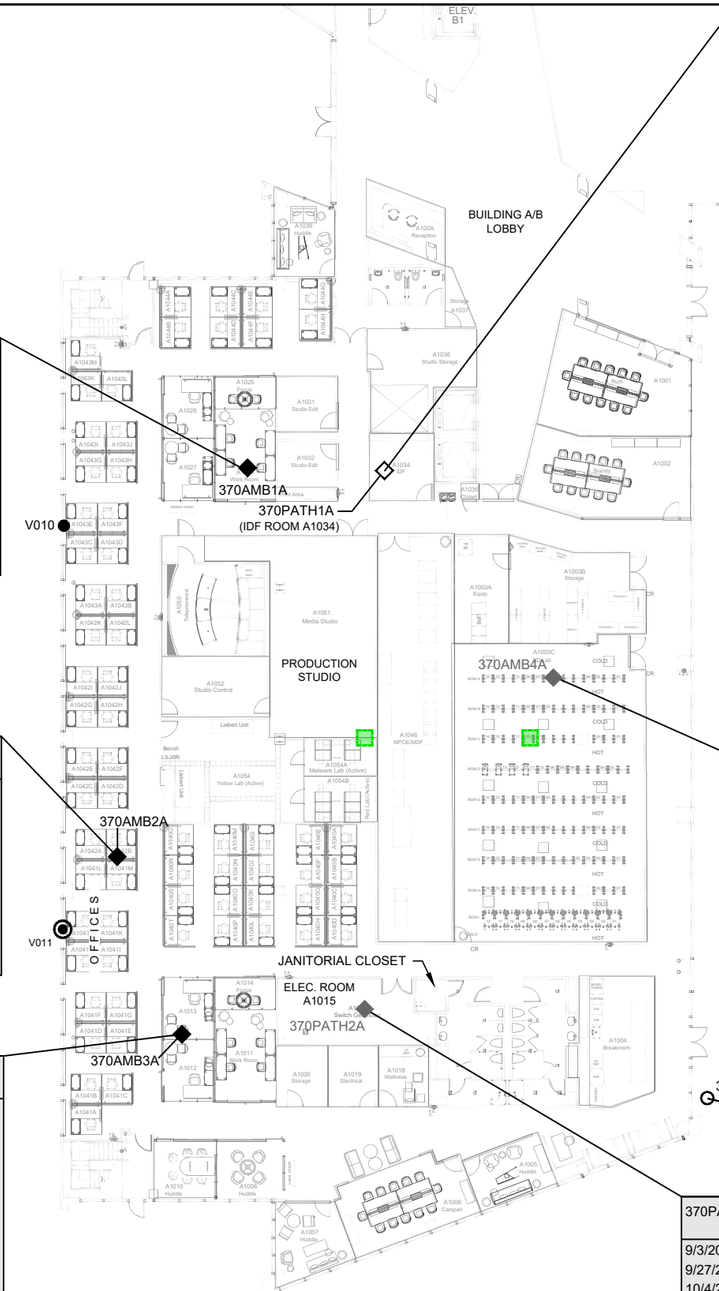
SUB-SLAB DEPRESSURIZATION SYSTEM

SCALE: AS SHOWN
APRIL 2020

FIGURE 8



KEY PLAN



370AMB1A	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	1.2	-
5/17/2003	1.4	-
9/27/2003	0.63/0.65	-
10/4/2003	0.27	-
9/26/2006	-	0.32
2/20/2008	-	ND (0.18)
12/4/2015	-	ND (0.11)
12/6/2015	0.13	-
2/15/2019	-	ND (0.11)
2/17/2019	0.22	-

370PATH1A	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	150/150	-
5/17/2003	170/150	-
9/3/2003	-	12/12
9/27/2003	13	-
10/4/2003	6.4	-
4/13/2004	-	2.0
4/15/2004	-	0.83
4/20/2004	-	0.58
6/16/2004	-	0.55/3.3
7/23/2004	-	8.4
7/30/2004	-	2.0
9/3/2004	-	1.8
9/14/2004	-	0.98
8/2/2005	-	0.49/0.48
9/26/2006	-	0.34
2/20/2008	-	ND (0.18)/1.2
6/2/2012	4.2	-
6/21/2012	1.6	-
12/4/2015	-	ND (0.11)J/(0.86)J
12/6/2015	0.51/0.69	-
2/15/2019	-	1.7/1.8
2/17/2019	1.1	-

370HVAC2A	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.20)	-
5/17/2003	0.29	-
9/26/2006	-	ND (0.16)
2/20/2008	-	ND (0.16)

370AMB2A	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.58	-
5/17/2003	0.62	-
9/27/2003	0.22	-
10/4/2003	ND (0.20)	-
9/26/2006	-	0.48
2/20/2008	-	ND (0.16)
12/4/2015	-	ND (0.11)
12/6/2015	1.6	-
2/15/2019	-	ND (0.11)
2/17/2019	0.56	-

370AMB4A	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	3.7	-
5/17/2003	2.7	-
9/27/2003	2.6/3.2	-
10/4/2003	0.47	-
11/13/2003	-	0.45
9/26/2006	-	0.34
2/20/2008	-	0.41

370AMB3A	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.92	-
5/17/2003	1.2	-
9/27/2003	0.33/0.32	-
10/4/2003	1.9	-
9/26/2006	-	0.49/0.51
2/20/2008	-	ND (0.18)
12/4/2015	-	3.6
12/6/2015	2.0	-
2/15/2019	-	ND (0.11)
2/17/2019	0.22	-

370PATH2A	HVAC Off µg/m3	HVAC On µg/m3
9/3/2003	-	2.1
9/27/2003	3.1	-
10/4/2003	4.8/4.6	-
9/30/2005	-	5.8
11/29/2005	-	3.0/2.4
1/24/2006	-	2.2
9/26/2006	-	2.3
2/20/2008	-	1.0
6/2/2012	3.0	-
6/21/2012	0.31	-
2/28/2013	0.45	-
12/4/2015	-	0.53
12/6/2015	0.41	-

350-380OUT1	HVAC Off µg/m3	HVAC On µg/m3
6/2/2012	0.049	-
6/21/2012	ND (0.027)	-
12/4/2015	-	ND (0.11)
12/6/2015	ND (0.11)	-
2/15/2019	-	ND (0.11)
2/17/2019	ND (0.11)	-

LEGEND

- HISTORICAL AIR SAMPLING LOCATION
- INDOOR AIR SAMPLING LOCATION
- PATHWAY AIR SAMPLING LOCATION (UNOCCUPIED UTILITY ROOM)
- OUTDOOR AIR SAMPLING LOCATION
- PRESSURE MONITORING POINT
- EXTRACTION POINT
- APPROXIMATE FOOTING TRENCH LOCATION (2017)

EXAMPLE DATABOX

SAMPLE LOCATION NAME	370HVAC2A	HVAC Off µg/m3	HVAC On µg/m3	HVAC STATUS
				SAMPLE UNITS
SAMPLE COLLECTION DATE	5/10/2003	ND (0.20)	-	TCE CONCENTRATION
	5/17/2003	0.29	-	
	9/26/2006	-	ND (0.16)	
	2/20/2008	-	ND (0.16)	

NOTES

1. THIS FIGURE IS BASED ON AN AUTOCAD DRAWING PROVIDED BY LOCUS TECHNOLOGIES AND THE PROPERTY OWNER.
2. ALL LOCATIONS ARE APPROXIMATE.
3. THE RESULTS OF SAMPLES COLLECTED BETWEEN 2003 AND 2008 WERE PROVIDED BY OTHERS.
4. CONDUITS IN ELECTRICAL ROOM A1015 (370PATH2A) WERE SEALED IN AUGUST 2003, MARCH 2012 AND FEBRUARY 2019, AND TWO AIR PURIFIERS WERE INSTALLED IN OCTOBER 2005. ONE OF THE TWO AIR PURIFIERS WAS MOVED INTO THE IDF ROOM IN BUILDING D IN SEPTEMBER 2012. CONDUITS IN IDF ROOM A1034 (370PATH1A) WERE SEALED IN AUGUST 2003 AND MARCH 2012, AND AN AIR PURIFIER WAS INSTALLED IN APRIL 2004.
5. SUB-SLAB DEPRESSURIZATION SYSTEM BEGAN OPERATION ON 21 OCTOBER 2015.
6. SECOND THROUGH FOURTH FLOORS ARE NOT SHOWN AND NO INDOOR AIR SAMPLES WERE COLLECTED.
7. 370HVAC2A WAS COLLECTED ON THE ROOF.
8. CHEMICAL CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER CUBIC METER (µg/m³).
9. "ND" DENOTES SAMPLE WAS NOT DETECTED AT OR ABOVE THE LABORATORY'S REPORTING LIMIT, WHICH IS PRESENTED IN PARENTHESES().
10. ## DENOTES PRIMARY/DUPLICATE RESULTS.
11. "J" DENOTES ESTIMATED CONCENTRATION.
12. IDF ROOM A1034 AND ELECTRICAL ROOM A1015 ARE EQUIPPED WITH RECIRCULATED AIR ONLY AND NO OUTSIDE MAKEUP AIR.

0 30 60

SCALE IN FEET

HALEY ALDRICH

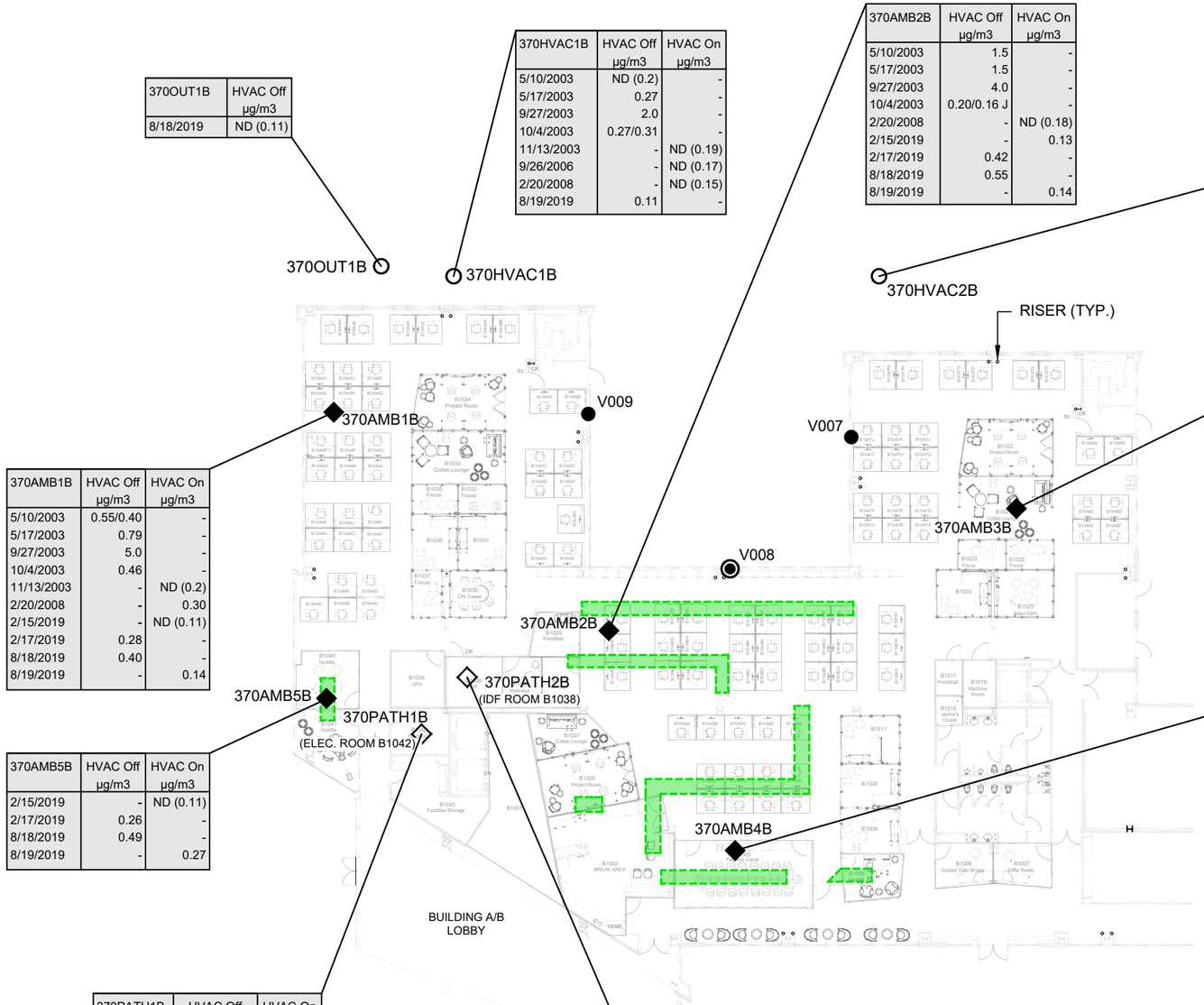
350-380 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

LOCATION OF AIR SAMPLES AND TCE RESULTS - 370 ELLIS STREET, BUILDING A

SCALE: AS SHOWN
APRIL 2020

FIGURE 9

MOBINI, DARIUSH Printed: 2/28/2020 10:23 AM Layout: FIG-1
\\HALEYALDRICH.COM\SHARE\SJC_COMMON\36032_RAYTHEON_MEWCAD\129571_006\129571-005_007_370 ELLIS_BLDG A.DWG



370OUT1B	HVAC Off µg/m3
8/18/2019	ND (0.11)

370HVAC1B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.2)	-
5/17/2003	0.27	-
9/27/2003	2.0	-
10/4/2003	0.27/0.31	-
11/13/2003	-	ND (0.19)
9/26/2006	-	ND (0.17)
2/20/2008	-	ND (0.15)
8/19/2019	0.11	-

370AMB2B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	1.5	-
5/17/2003	1.5	-
9/27/2003	4.0	-
10/4/2003	0.20/0.16 J	-
2/20/2008	-	ND (0.18)
2/15/2019	-	0.13
2/17/2019	0.42	-
8/18/2019	0.55	-
8/19/2019	-	0.14

370HVAC2B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.19)	-
5/17/2003	ND (0.2)	-
9/26/2006	-	ND (0.16)
2/20/2008	-	ND (0.19)

370AMB1B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.55/0.40	-
5/17/2003	0.79	-
9/27/2003	5.0	-
10/4/2003	0.46	-
11/13/2003	-	ND (0.2)
2/20/2008	-	0.30
2/15/2019	-	ND (0.11)
2/17/2019	0.28	-
8/18/2019	0.40	-
8/19/2019	-	0.14

370AMB3B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	1.5	-
5/17/2003	0.90	-
9/27/2003	3.0	-
10/4/2003	0.46	-
11/13/2003	-	ND (0.19)
2/20/2008	-	ND (0.18)
2/15/2019	-	ND (0.11)
2/17/2019	0.34	-
8/18/2019	1.8	-
8/19/2019	-	ND (0.11)

370AMB5B	HVAC Off µg/m3	HVAC On µg/m3
2/15/2019	-	ND (0.11)
2/17/2019	0.26	-
8/18/2019	0.49	-
8/19/2019	-	0.27

370AMB4B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	2.5/2.7	-
5/17/2003	1.3/1.4/3.5	-
9/27/2003	8.0/7.6	-
10/4/2003	0.52/0.82	-
11/13/2003	-	ND (0.2)/ND (0.19)
9/26/2006	-	ND (0.17)/0.26 J
2/20/2008	-	ND (0.18)
2/15/2019	-	ND (0.11)
2/17/2019	0.37	-
8/18/2019	0.51	-
8/19/2019	-	0.12

370PATH1B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	1.6/ND (0.85)	-
5/17/2003	0.86	-
9/3/2003	-	0.63
9/27/2003	5.6/5.9	-
10/4/2003	0.94/0.94	-
9/26/2006	-	0.51/0.78
2/20/2008	-	0.20
2/15/2019	-	0.16
2/17/2019	0.22	-
8/18/2019	0.23	-
8/19/2019	-	ND (0.11)

370PATH2B	HVAC Off µg/m3	HVAC On µg/m3
9/3/2003	-	8.8/8.6
9/27/2003	18	-
10/4/2003	1.2	-
9/30/2005	0.25	-
11/29/2005	-	ND (0.19)
1/24/2006	-	0.59
9/26/2006	-	ND (0.16)/ND (0.27)
2/20/2008	-	0.47
6/2/2012	2.1	-
6/21/2012	0.084	-
2/15/2019	-	0.13/0.16
2/17/2019	0.17/0.22	-
8/18/2019	0.75/0.80	-
8/19/2019	-	0.40/0.41

LEGEND

- INDOOR AIR SAMPLING LOCATION
- PATHWAY AIR SAMPLING LOCATION (UNOCCUPIED UTILITY ROOM)
- OUTDOOR AIR SAMPLING LOCATION
- PRESSURE MONITORING POINT
- EXTRACTION POINT
- APPROXIMATE UTILITY TRENCH LOCATION (2016)

EXAMPLE DATABOX

SAMPLE LOCATION NAME

370HVAC2B	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.19)	-
5/17/2003	ND (0.2)	-
9/26/2006	-	ND (0.16)
2/20/2008	-	ND (0.19)

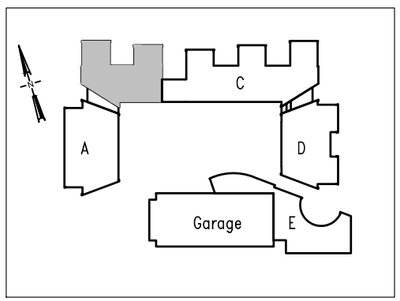
HVAC STATUS SAMPLE UNITS

SAMPLE COLLECTION DATE

TCE CONCENTRATION

NOTES

1. THIS FIGURE IS BASED ON AN AUTOCAD DRAWING PROVIDED BY LOCUS TECHNOLOGIES AND THE PROPERTY OWNER.
2. ALL LOCATIONS ARE APPROXIMATE.
3. THE RESULTS OF SAMPLES COLLECTED BETWEEN 2003 AND 2008 WERE PROVIDED BY OTHERS.
4. CONDUITS IN ELEC. ROOM B1042 (370PATH1B) WERE SEALED IN AUGUST 2003, MAY 2012, AND FEBRUARY 2019. CONDUITS IN IDF ROOM B1038 (370PATH2B) WERE SEALED IN AUGUST 2003, MARCH 2012, AND FEBRUARY 2019, AND AN AIR PURIFIER WAS INSTALLED IN OCTOBER 2005.
5. IDF ROOM B1038 AND ELECTRICAL ROOM B1042 ARE EQUIPPED WITH RECIRCULATED AIR ONLY AND NO OUTSIDE MAKEUP AIR.
6. SECOND THROUGH FOURTH FLOORS ARE NOT SHOWN AND NO INDOOR AIR SAMPLES WERE COLLECTED.
7. SAMPLES 370HVAC1B AND 370HVAC2B WERE COLLECTED ON THE ROOF.
8. SUB-SLAB DEPRESSURIZATION SYSTEM BEGAN OPERATION ON 21 OCTOBER 2015.
9. TRICHLOROETHENE (TCE) CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER CUBIC METER (µg/m³).
10. "ND" DENOTES TCE WAS NOT DETECTED AT OR ABOVE THE LABORATORY'S REPORTING LIMIT, WHICH IS PRESENTED IN PARENTHESES().
11. #/# DENOTES PRIMARY/DUPLICATE RESULTS.
12. "J" DENOTES ESTIMATED CONCENTRATION.



KEY PLAN

0 30 60

SCALE IN FEET

HALEY ALDRICH

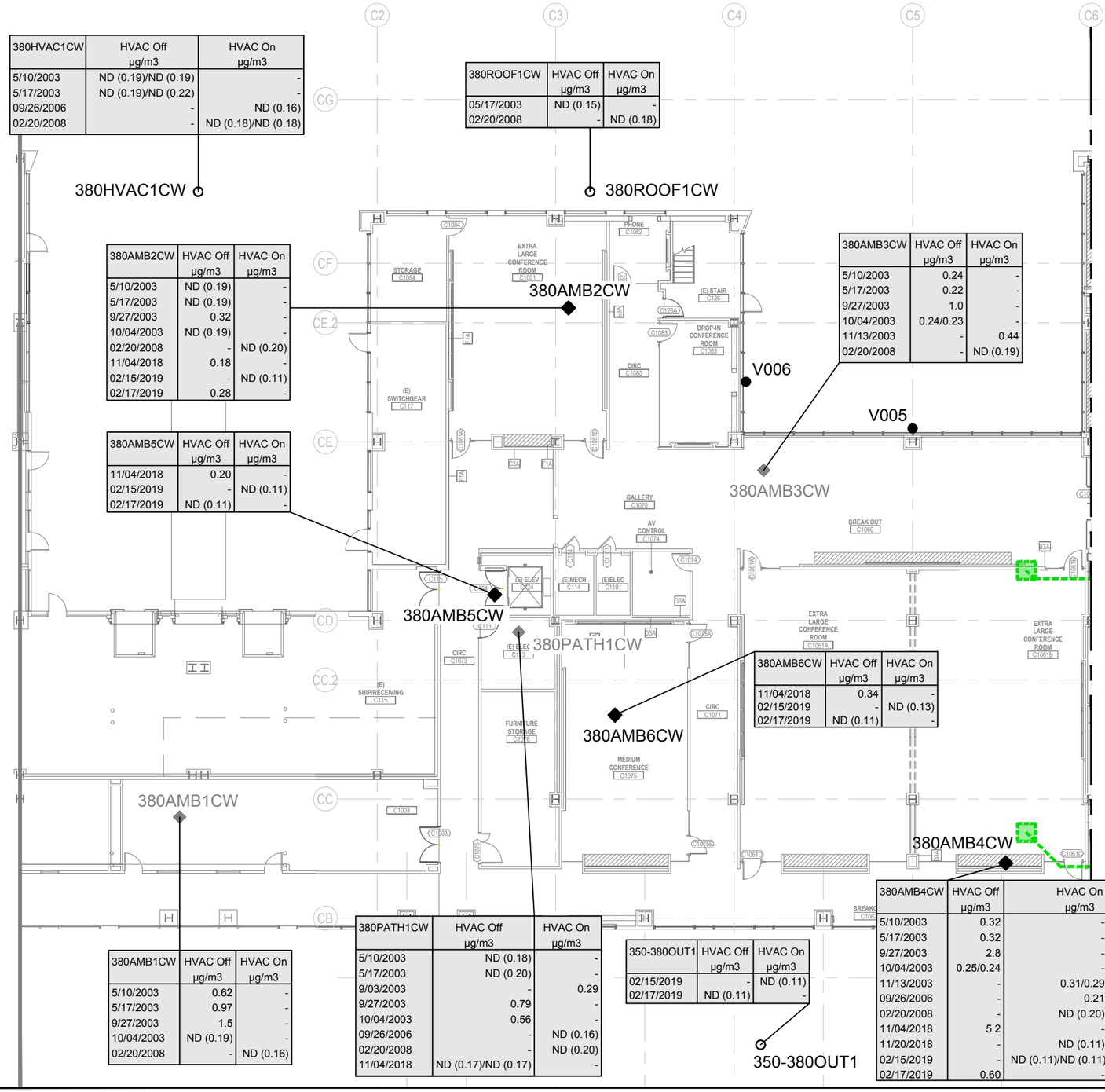
350-380 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

LOCATION OF AIR SAMPLES AND RESULTS - 370 ELLIS STREET, BUILDING B

SCALE: AS SHOWN
APRIL 2020

FIGURE 10

POSTOLOWSKI, KEVIN Printed: 10/1/2019 4:13 PM Layout: FIG 1
Z:\SJC_COMMON\36032_RAYTHEON_MEW\CAD\129571-005\129571-005_011_370 ELLIS_BLDG B SEPT 2019.DWG



380HVAC1CW	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.19)/ND (0.19)	-
5/17/2003	ND (0.19)/ND (0.22)	-
09/26/2006	-	ND (0.16)
02/20/2008	-	ND (0.18)/ND (0.18)

380ROOF1CW	HVAC Off µg/m3	HVAC On µg/m3
05/17/2003	ND (0.15)	-
02/20/2008	-	ND (0.18)

380AMB2CW	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.19)	-
5/17/2003	ND (0.19)	-
9/27/2003	0.32	-
10/04/2003	ND (0.19)	-
02/20/2008	-	ND (0.20)
11/04/2018	0.18	-
02/15/2019	-	ND (0.11)
02/17/2019	0.28	-

380AMB3CW	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.24	-
5/17/2003	0.22	-
9/27/2003	1.0	-
10/04/2003	0.24/0.23	-
11/13/2003	-	0.44
02/20/2008	-	ND (0.19)

380AMB5CW	HVAC Off µg/m3	HVAC On µg/m3
11/04/2018	0.20	-
02/15/2019	-	ND (0.11)
02/17/2019	ND (0.11)	-

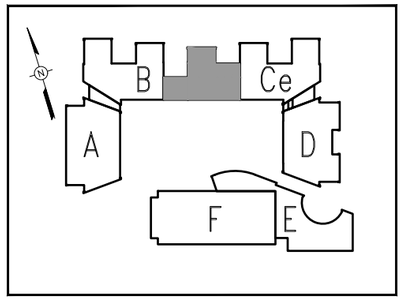
380AMB6CW	HVAC Off µg/m3	HVAC On µg/m3
11/04/2018	0.34	-
02/15/2019	-	ND (0.13)
02/17/2019	ND (0.11)	-

380AMB1CW	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.62	-
5/17/2003	0.97	-
9/27/2003	1.5	-
10/04/2003	ND (0.19)	-
02/20/2008	-	ND (0.16)

380PATH1CW	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.18)	-
5/17/2003	ND (0.20)	-
9/03/2003	-	0.29
9/27/2003	0.79	-
10/04/2003	0.56	-
09/26/2006	-	ND (0.16)
02/20/2008	-	ND (0.20)
11/04/2018	ND (0.17)/ND (0.17)	-

350-380OUT1	HVAC Off µg/m3	HVAC On µg/m3
02/15/2019	-	ND (0.11)
02/17/2019	ND (0.11)	-

380AMB4CW	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.32	-
5/17/2003	0.32	-
9/27/2003	2.8	-
10/04/2003	0.25/0.24	-
11/13/2003	-	0.31/0.29
09/26/2006	-	0.21
02/20/2008	-	ND (0.20)
11/04/2018	5.2	-
11/20/2018	-	ND (0.11)
02/15/2019	-	ND (0.11)/ND (0.11)
02/17/2019	0.60	-



LEGEND

- INDOOR AIR SAMPLING LOCATION
- PATHWAY AIR SAMPLING LOCATION (UNOCCUPIED UTILITY ROOM)
- HISTORICAL AIR SAMPLING LOCATION
- EXTERIOR PRESSURE MONITORING POINT LOCATION
- APPROXIMATE UTILITY TRENCH LOCATION (2018)

SAMPLE LOCATION NAME	380ROOF1CW	HVAC Off µg/m3	HVAC On µg/m3	– HVAC STATUS
				– SAMPLE UNITS
SAMPLE COLLECTION DATE	05/17/2003	ND (0.15)	-	
	02/20/2008	-	ND (0.18)	– TCE CONCENTRATION

NOTES

1. THIS FIGURE IS BASED ON AN AUTOCAD DRAWING PROVIDED BY LOCUS TECHNOLOGIES.
2. ALL LOCATIONS ARE APPROXIMATE.
3. THE RESULTS OF SAMPLES COLLECTED BETWEEN 2003 AND 2008 WERE PROVIDED BY OTHERS.
4. CONDUITS IN ELECTRICAL ROOM C113 (380PATH1CW) WERE SEALED IN AUGUST 2003 AND MAY 2012, AND IN SWITCHGEAR ROOM C117 IN FEBRUARY 2019.
5. SUB-SLAB DEPRESSURIZATION SYSTEM BEGAN OPERATION ON 21 OCTOBER 2015.
6. SECOND THROUGH FOURTH FLOORS ARE NOT SHOWN AND NO INDOOR SAMPLES WERE COLLECTED.
7. ELECTRICAL ROOM C113 IS EQUIPPED WITH RECIRCULATED AIR ONLY AND NO OUTSIDE MAKEUP AIR.
8. CHEMICAL CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER CUBIC METER (µg/m³).
9. "ND" DENOTES SAMPLE WAS NOT DETECTED AT OR ABOVE THE LABORATORY'S REPORTING LIMIT, WHICH IS PRESENTED IN PARENTHESES().
10. #/# DENOTES PRIMARY/DUPLICATE RESULTS.
11. 380HVAC1CW AND ROOD1CW WERE COLLECTED ON THE ROOF.

0 20 40
SCALE IN FEET

HALEY ALDRICH

350-380 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

LOCATION OF AIR SAMPLES AND TCE RESULTS - 380 ELLIS STREET, BUILDING CW

SCALE: AS SHOWN
APRIL 2020

FIGURE 11

Saved by: KPOSTOLOWSKI Printed: 3/26/2019 11:02 AM Sheet: FIG 3
Z:\SJC_COMMON\36032_RAYTHEON_MEW\CAD\129571-003\129571-003_0005_BLDG C_AIR SAMPLING_TCE.DWG

380PATH1CE	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	310	-
5/17/2003	200	-
9/03/2003	-	5.0/5.1
9/27/2003	3.8	-
10/04/2003	6.0	-
09/30/2005	-	6.5
11/29/2005	-	0.42
01/24/2006	-	0.20
09/26/2006	-	0.67
02/20/2008	-	0.25
06/02/2012	6.0	-
06/21/2012	0.26	-
11/04/2018	0.32	-
02/15/2019	-	ND (0.11)/ND (0.11)
02/17/2019	0.19/0.18	-

380OUT1C	HVAC Off µg/m3	HVAC On µg/m3
11/04/2018	ND (0.19)	-
11/20/2018	-	0.11

380HVAC1CE	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.20)	-
5/17/2003	ND (0.20)	-
09/26/2006	-	ND (0.15)/ND (0.16)
02/20/2008	-	ND (0.18)

380HVAC2CE	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	ND (0.18)	-
5/17/2003	ND (0.20)	-
09/27/2003	ND (0.19)/ND (0.19)	-
10/04/2003	ND (0.19)	-
09/26/2006	-	ND (0.17)
02/20/2008	-	ND (0.17)

380AMB3CE	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.31/0.29	-
5/17/2003	0.49	-
9/27/2003	0.43	-
10/04/2003	ND (0.19)	-
02/20/2008	-	ND (0.19)

380AMB4CE	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.34/1.6	-
5/17/2003	0.32/0.32	-
9/27/2003	0.55	-
10/04/2003	0.45	-
02/20/2008	-	ND (0.18)
11/04/2018	ND (0.33)	-
02/15/2019	-	ND (0.11)
02/17/2019	0.23	-

380AMB1CE	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.52	-
5/17/2003	0.45	-
9/27/2003	0.50	-
10/04/2003	0.36	-
09/26/2006	-	0.20
02/20/2008	-	ND (0.17)
11/04/2018	ND (0.15)	-
02/15/2019	-	ND (0.11)
02/17/2019	0.13	-

380AMB-HALL2CE	HVAC Off µg/m3	HVAC On µg/m3
02/20/2008	-	ND (0.19)

380AMB6CE	HVAC Off µg/m3	HVAC On µg/m3
11/04/2018	0.83	-
02/15/2019	-	ND (0.11)
02/17/2019	0.17	-

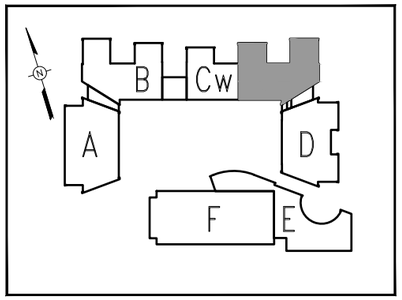
380AMB2CE	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.41	-
5/17/2003	0.37	-
9/27/2003	0.86	-
10/04/2003	0.23	-
09/26/2006	-	0.17
02/20/2008	-	0.23
11/04/2018	ND (0.15)	-
02/15/2019	-	ND (0.11)
02/17/2019	0.12	-

380AMB5CE	HVAC Off µg/m3	HVAC On µg/m3
11/04/2018	ND (0.16)	-
02/15/2019	-	ND (0.11)
02/17/2019	ND (0.11)	-

380PATH2CE	HVAC Off µg/m3	HVAC On µg/m3
9/03/2003	-	ND (0.19)
9/27/2003	0.56	-
10/04/2003	0.25	-
09/26/2006	-	0.22
02/20/2008	-	1.0
11/04/2018	ND (0.17)	-
02/15/2019	-	ND (0.11)
02/17/2019	ND (0.11)	-

380OUT1C
380HVAC1CE
380HVAC2CE
V003
380AMB1CE
380AMB4CE
V004
380AMB3CE
380AMB-HALL2CE
380PATH1CE
380PATH2CE
380AMB6CE
380AMB2CE
380AMB5CE

MATCH LINE — SEE FIGURE 11



LEGEND

- INDOOR AIR SAMPLING LOCATION
- PATHWAY AIR SAMPLING LOCATION (UNOCCUPIED UTILITY ROOM)
- HISTORICAL INDOOR AIR SAMPLING LOCATION
- OUTDOOR AIR SAMPLING LOCATION
- EXTERIOR PRESSURE MONITORING POINT LOCATION
- APPROXIMATE UTILITY TRENCH LOCATION (2018)

SAMPLE LOCATION NAME	380OUT1C	HVAC Off µg/m3	HVAC On µg/m3	HVAC STATUS
				SAMPLE UNITS
SAMPLE COLLECTION DATE	11/04/2018	ND (0.19)	-	
	11/20/2018	-	0.11	TCE CONCENTRATION

NOTES

1. THIS FIGURE IS BASED ON AN AUTOCAD DRAWING PROVIDED BY LOCUS TECHNOLOGIES.
2. ALL LOCATIONS ARE APPROXIMATE.
3. THE RESULTS OF SAMPLES COLLECTED BETWEEN 2003 AND 2008 WERE PROVIDED BY OTHERS.
4. CONDUITS IN ELECTRICAL ROOM C102 (PATH2CE) WERE SEALED IN AUGUST 2003, OCTOBER 2018, AND FEBRUARY 2019. CONDUITS IN IDF ROOM C110 (PATH1CE) WERE SEALED IN AUGUST 2003 AND MARCH 2012, AND AN AIR PURIFIER WAS INSTALLED IN OCTOBER 2005.
5. SUB-SLAB DEPRESSURIZATION SYSTEM BEGAN OPERATION ON 21 OCTOBER 2015.
6. SECOND THROUGH FOURTH FLOORS ARE NOT SHOWN AND NO INDOOR AIR SAMPLES WERE COLLECTED.
7. IDF ROOM C110 AND ELECTRICAL ROOM C102 ARE EQUIPPED WITH RECIRCULATED AIR ONLY AND NO OUTSIDE MAKEUP AIR.
8. CHEMICAL CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER CUBIC METER (µg/m³).
9. "ND" DENOTES SAMPLE WAS NOT DETECTED AT OR ABOVE THE LABORATORY'S REPORTING LIMIT, WHICH IS PRESENTED IN PARENTHESES().
10. #/# DENOTES PRIMARY/DUPLICATE RESULTS.
11. 380HVC1CE AND 380HVAC2CE WERE COLLECTED ON THE ROOF.

0 20 40
SCALE IN FEET

HALEY ALDRICH

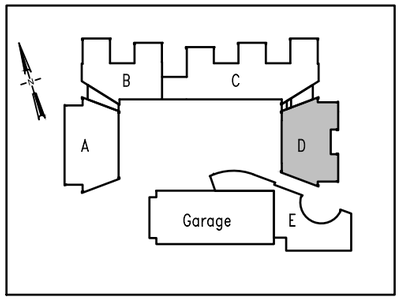
350-380 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

LOCATION OF AIR SAMPLES
380 ELLIS STREET, BUILDING CE

SCALE: AS SHOWN
APRIL 2020

FIGURE 12

Saved by: KPOSTOLOWSKI Printed: 3/22/2019 5:28 PM Sheet: FIG 4
Z:\SJC_COMMON\36032 RAYTHEON MEWCAD\129571-003\129571-003 0005 BLDG C AIR SAMPLING TCE.DWG



KEY PLAN

380PATH2D	HVAC Off µg/m3	HVAC On µg/m3
9/3/2003	-	0.63
9/27/2003	-	1.2
10/4/2003	-	0.73/0.71
9/26/2006	-	1.5
2/20/2008	-	6.4
7/9/2008	-	1.7
6/2/2012	-	26
6/21/2012	-	12
2/28/2013	-	7.2
12/18/2015	-	0.57/0.57
12/20/2015	0.22	-
02/15/2019	-	.053
02/17/2019	0.63/0.64	-

BUILDING C/D LOBBY

380AMB1D	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	-	ND (0.19)/ND (0.18)
5/17/2003	-	0.21/ND (0.19)
9/27/2003	-	ND (0.19)
10/4/2003	-	ND (0.20)
9/26/2006	-	0.44
12/18/2015	-	0.61
12/20/2015	2.0	-
02/15/2019	-	ND (0.11)
02/17/2019	ND (0.11)	-

380AMB4D	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	-	0.84
5/17/2003	-	0.59/0.65
9/27/2003	-	0.85/0.86
10/4/2003	-	0.66/0.63
9/26/2006	-	0.36/0.34
12/18/2015	-	0.67
12/20/2015	3.1	-
02/15/2019	-	ND (0.11)
02/17/2019	0.11	-

380PATH1D	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	-	1.2
5/17/2003	-	5.1/4.8
9/3/2003	-	0.92
9/27/2003	-	1.3
10/4/2003	-	1.3
9/26/2006	-	2.0
2/20/2008	-	1.1
12/18/2015	-	1.1
12/20/2015	1.3	-
02/15/2019	-	ND (0.11)
02/17/2019	0.14	-

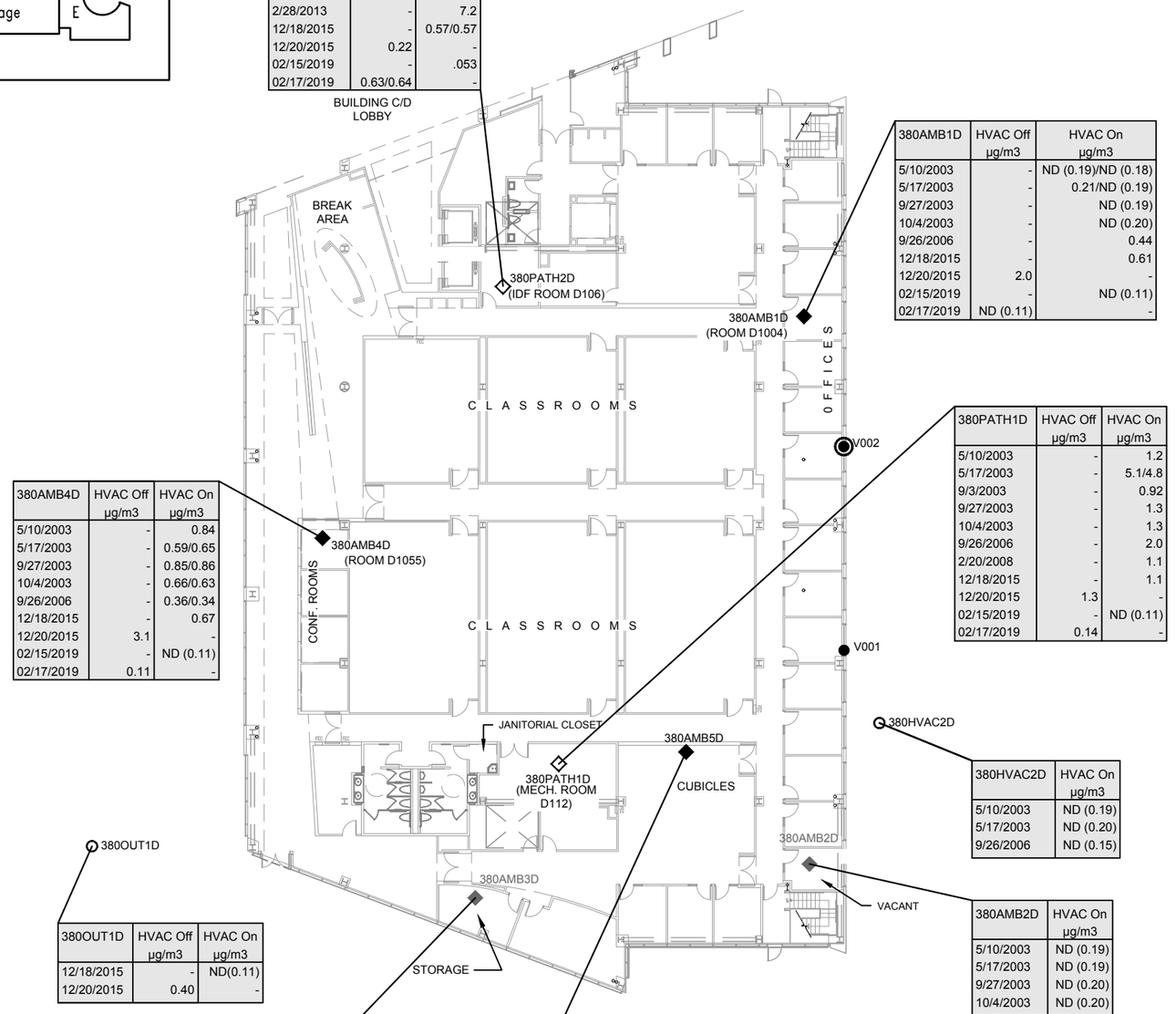
380HVAC2D	HVAC On µg/m3
5/10/2003	ND (0.19)
5/17/2003	ND (0.20)
9/26/2006	ND (0.15)

380AMB2D	HVAC On µg/m3
5/10/2003	ND (0.19)
5/17/2003	ND (0.19)
9/27/2003	ND (0.20)
10/4/2003	ND (0.20)

380OUT1D	HVAC Off µg/m3	HVAC On µg/m3
12/18/2015	-	ND(0.11)
12/20/2015	0.40	-

380AMB3D	HVAC On µg/m3
5/10/2003	0.38
5/17/2003	0.26
9/27/2003	0.19 J
10/4/2003	ND (0.20)
9/26/2006	0.46

380AMB5D	HVAC Off µg/m3	HVAC On µg/m3
12/18/2015	-	1.1
12/20/2015	2.5	-
02/15/2019	-	ND (0.11)
02/17/2019	ND (0.11)	-



LEGEND

- HISTORICAL AIR SAMPLING LOCATION
- INDOOR AIR SAMPLING LOCATION
- PATHWAY AIR SAMPLING LOCATION (UNOCCUPIED UTILITY ROOM)
- OUTDOOR AIR SAMPLING LOCATION
- PRESSURE MONITORING POINT
- EXTRACTION POINT

EXAMPLE DATABOX

SAMPLE LOCATION NAME

380OUT1D	HVAC Off µg/m3	HVAC On µg/m3
12/18/2015	-	ND(0.11)
12/20/2015	0.40	-

SAMPLE COLLECTION DATE

HVAC STATUS
SAMPLE UNITS
TCE CONCENTRATION

NOTES

1. THIS FIGURE IS BASED ON AN AUTOCAD DRAWING PROVIDED BY LOCUS TECHNOLOGIES.
2. ALL LOCATIONS ARE APPROXIMATE.
3. THE RESULTS OF SAMPLES COLLECTED BETWEEN 2003 AND 2008 WERE PROVIDED BY OTHERS.
4. CONDUITS IN MECHANICAL ROOM D112 (380PATH1D) WERE SEALED IN AUGUST 2003. CONDUITS IN IDF ROOM D106 (380PATH2D) WERE SEALED IN AUGUST 2003, MARCH 2012 AND FEBRUARY 2019, AND AN AIR PURIFIER WAS INSTALLED IN SEPTEMBER 2012.
5. SUB-SLAB DEPRESSURIZATION SYSTEM BEGAN OPERATION ON 21 OCTOBER 2015.
6. SECOND THROUGH FOURTH FLOORS ARE NOT SHOWN AND NO INDOOR AIR SAMPLES WERE COLLECTED.
7. 380HVAC2D WAS COLLECTED ON THE ROOF.
8. 380AMB3D WAS MOVED TO THE OCCUPIED CUBICLES AREA AND RENAMED 380AMB5D IN DECEMBER 2015.
9. CHEMICAL CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER CUBIC METER (µg/m³).
10. "ND" DENOTES SAMPLE WAS NOT DETECTED AT OR ABOVE THE LABORATORY'S REPORTING LIMIT, WHICH IS PRESENTED IN PARENTHESES().
11. #/# DENOTES PRIMARY/DUPLICATE RESULTS.
12. IDF ROOM D106 AND MECHANICAL ROOM D112 ARE EQUIPPED WITH RECIRCULATED AIR ONLY AND NO OUTSIDE MAKEUP AIR.
13. "J" DENOTES ESTIMATED CONCENTRATION.

HALEY ALDRICH

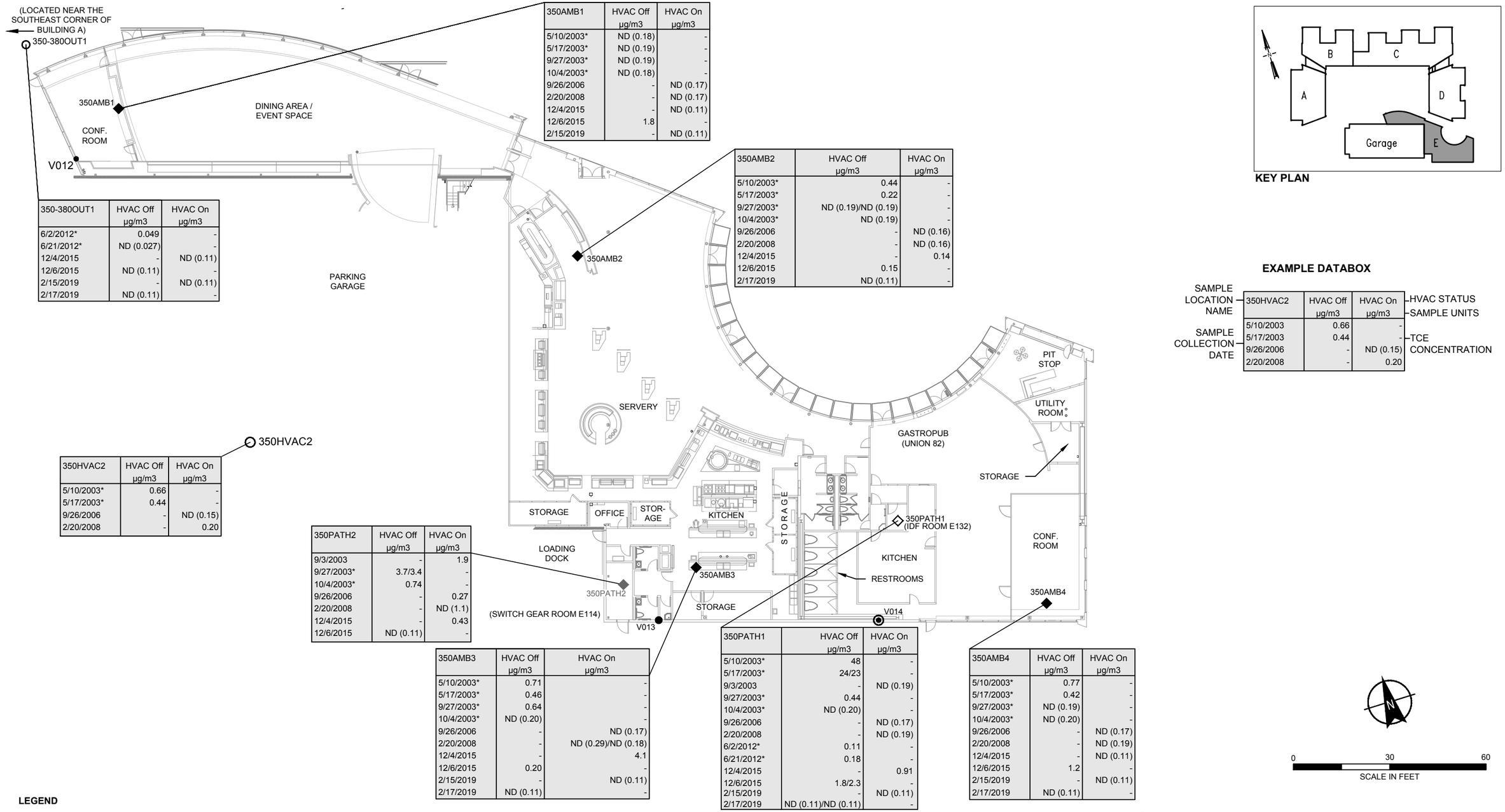
350-380 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

LOCATION OF AIR SAMPLES AND TCE RESULTS - 380 ELLIS STREET, BUILDING D

SCALE: AS SHOWN
APRIL 2020

FIGURE 13

POSTOLOWSKI, KEVIN Printed: 3/22/2019 5:37 PM Layout: FIG 5
Z:\SJC_COMMON\36032_RAYTHEON_MEWCAD\129571-005\129571-005_009-380-D-ELLIS.DWG



350AMB1	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003*	ND (0.18)	-
5/17/2003*	ND (0.19)	-
9/27/2003*	ND (0.19)	-
10/4/2003*	ND (0.18)	-
9/26/2006	-	ND (0.17)
2/20/2008	-	ND (0.17)
12/4/2015	-	ND (0.11)
12/6/2015	1.8	-
2/15/2019	-	ND (0.11)

350-380OUT1	HVAC Off µg/m3	HVAC On µg/m3
6/2/2012*	0.049	-
6/21/2012*	ND (0.027)	-
12/4/2015	-	ND (0.11)
12/6/2015	ND (0.11)	-
2/15/2019	-	ND (0.11)
2/17/2019	ND (0.11)	-

350AMB2	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003*	0.44	-
5/17/2003*	0.22	-
9/27/2003*	ND (0.19)/ND (0.19)	-
10/4/2003*	ND (0.19)	-
9/26/2006	-	ND (0.16)
2/20/2008	-	ND (0.16)
12/4/2015	-	0.14
12/6/2015	0.15	-
2/17/2019	ND (0.11)	-

350HVAC2	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003*	0.66	-
5/17/2003*	0.44	-
9/26/2006	-	ND (0.15)
2/20/2008	-	0.20

350PATH2	HVAC Off µg/m3	HVAC On µg/m3
9/3/2003	-	1.9
9/27/2003*	3.7/3.4	-
10/4/2003*	0.74	-
9/26/2006	-	0.27
2/20/2008	-	ND (1.1)
12/4/2015	-	0.43
12/6/2015	ND (0.11)	-

350AMB3	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003*	0.71	-
5/17/2003*	0.46	-
9/27/2003*	0.64	-
10/4/2003*	ND (0.20)	-
9/26/2006	-	ND (0.17)
2/20/2008	-	ND (0.29)/ND (0.18)
12/4/2015	-	4.1
12/6/2015	0.20	-
2/15/2019	-	ND (0.11)
2/17/2019	ND (0.11)	-

350PATH1	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003*	48	-
5/17/2003*	24/23	-
9/3/2003	-	ND (0.19)
9/27/2003*	0.44	-
10/4/2003*	ND (0.20)	-
9/26/2006	-	ND (0.17)
2/20/2008	-	ND (0.19)
6/2/2012*	0.11	-
6/21/2012*	0.18	-
12/4/2015	-	0.91
12/6/2015	1.8/2.3	-
2/15/2019	-	ND (0.11)
2/17/2019	ND (0.11)/ND (0.11)	-

350AMB4	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003*	0.77	-
5/17/2003*	0.42	-
9/27/2003*	ND (0.19)	-
10/4/2003*	ND (0.20)	-
9/26/2006	-	ND (0.17)
2/20/2008	-	ND (0.19)
12/4/2015	-	ND (0.11)
12/6/2015	1.2	-
2/15/2019	-	ND (0.11)
2/17/2019	ND (0.11)	-

KEY PLAN

EXAMPLE DATABOX

SAMPLE LOCATION NAME

350HVAC2	HVAC Off µg/m3	HVAC On µg/m3
5/10/2003	0.66	-
5/17/2003	0.44	-
9/26/2006	-	ND (0.15)
2/20/2008	-	0.20

HVAC STATUS
SAMPLE UNITS
SAMPLE COLLECTION DATE
TCE CONCENTRATION

LEGEND

- HISTORICAL AIR SAMPLING LOCATION
- INDOOR AIR SAMPLING LOCATION
- PATHWAY AIR SAMPLING LOCATION (UNOCCUPIED UTILITY ROOM)
- OUTDOOR AIR SAMPLING LOCATION
- PRESSURE MONITORING POINT
- EXTRACTION POINT

NOTES

1. THIS FIGURE IS BASED ON AN AUTOCAD DRAWING PROVIDED BY LOCUS TECHNOLOGIES.
2. ALL LOCATIONS ARE APPROXIMATE.
3. THE RESULTS OF SAMPLES COLLECTED BETWEEN 2003 AND 2008 WERE PROVIDED BY OTHERS.
4. CONDUITS IN IDF ROOM E132 (350PATH1) WERE SEALED IN AUGUST 2003, MARCH 2012, AND FEBRUARY 2019.
5. CONDUITS IN SWITCH GEAR ROOM E114 (350PATH2) WERE SEALED IN AUGUST 2003 AND MAY 2012.
6. THE FORMER GYM AREA WAS RENOVATED IN 2015.
7. SUB-SLAB DEPRESSURIZATION SYSTEM BEGAN OPERATION ON 21 OCTOBER 2015.
8. 350HVAC2 WAS COLLECTED ON THE ROOF.
9. CHEMICAL CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER CUBIC METER (µg/m³).
10. "ND" DENOTES SAMPLE WAS NOT DETECTED AT OR ABOVE THE LABORATORY'S REPORTING LIMIT, WHICH IS PRESENTED IN PARENTHESES().
11. #/# DENOTES PRIMARY/DUPLICATE RESULTS.
12. IDF ROOM E113 AND SWITCH GEAR ROOM E114 ARE EQUIPPED WITH RECIRCULATED AIR ONLY AND NO OUTSIDE MAKEUP AIR.

0 30 60
SCALE IN FEET

HALEY ALDRICH

350-380 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

LOCATION OF AIR SAMPLES AND TCE RESULTS - 350 ELLIS STREET, BUILDING E

SCALE: AS SHOWN
APRIL 2020

FIGURE 14

APPENDIX A

2019 Annual Report Remedy Performance Checklist

2019 Annual Report Remedy Performance Checklist

I. GENERAL SITE INFORMATION

Facility Name: *Raytheon Mountain View*

Facility Address, City, State: 350 Ellis Street, Mountain View, California

Checklist completion date: 4 February 2020 | EPA Site ID: CAD09205097

Site Lead: ☐ Fund ☐ PRP ☐ State ☐ State Enforcement ☐ Federal Facility
■ Other, specify: U.S. EPA, Region IX

Site Remedy Components (Include Other Reference Documents for More Information, as appropriate):

Groundwater pump-and-treat system;
Groundwater containment;
Vertical barrier walls (slurry wall is 100 feet deep and extends into the B2 Zone)
Vapor Barrier and sub-slab depressurization system

II. CONTACTS

List important personnel associated with the Site: Name, title, phone number, e-mail address:

PRP / Facility Representatives:
Robert (Bob) Luhrs, Raytheon Company
Senior Environmental Manager
(978) 858-9423
Robert_C_Luhrs@raytheon.com

PRP Contractor/ Consultant:
Elie Haddad, Haley & Aldrich
Principal Consultant
(408) 961-4806
ehaddad@haleyaldrich.com

III. O&M COSTS (OPTIONAL) - CONFIDENTIAL

Total O&M costs include (1) report preparation for agencies (RWQCB, EPA), (2) sampling, analysis, data review (groundwater level monitoring, water quality sampling), (3) groundwater treatment system O&M (routine tasks for operations and maintenance of the treatment system), (4) SSD system O&M, and (5) utilities & fees.

What is your annual O&M cost total for the reporting year?
Breakout your annual O&M cost total into the following categories (use either dollars or %):

- Analytical (e.g., lab costs): _____
- Labor (e.g., site maintenance, sampling): _____
- Materials (e.g., treatment chemicals): _____
- Oversight (e.g., project management): _____
- Utilities (e.g., electric, gas, phone, water): _____
- Reporting (e.g., NPDES, progress): _____

Other (e.g., capital improvements):

Describe unanticipated/unusually high or low O&M costs (go to section [fill in] to recommend optimization methods):

2019 Annual Report Remedy Performance Checklist

IV. ON-SITE DOCUMENTS AND RECORDS (Check all that apply)

■ O&M Manual ☐ O&M Maintenance Logs ■ O&M As-built drawings – *Part of O&M Manual*
☐ O&M reports
☐ Daily access/Security logs
■ Site-Specific Health & Safety Plan ■ Contingency/Emergency Response Plan
■ O&M/OSHA Training Records ☐ Settlement Monument Records
☐ Gas Generation Records ■ Groundwater monitoring records ☐ Leachate extraction records
■ Discharge Compliance Records
■ Air discharge permit ■ Effluent discharge permit ☐ Waste disposal, POTW permit

Are these documents currently readily available? ■ Yes ☐ No If no, where are records kept?

O&M Manual, Site Health & Safety Plan, discharge records and permits are kept on Site; training records are available at Field Solutions, Inc.'s office in San Jose; groundwater monitoring records, O&M reports and maintenance logs are available at Haley & Aldrich, Inc.'s office in San Jose; and groundwater monitoring records are available at both Field Solutions, Inc.'s office and Haley & Aldrich, Inc.'s office.

V. INSTITUTIONAL CONTROLS (as applicable)

List institutional controls called for (and from what enforcement document):

Governmental controls (zoning, local permits, state codes);
Environmental agreements with property owner (proprietary controls);
Informational devices (fact sheets, public meetings)

Consent Degree, Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View, California 9 May 1991.
Record of Decision, Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View, California, 9 June 1989.
Record of Decision Amendment for Vapor Intrusion Pathway, Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View and Moffett Field, California, 16 August 2010.
Interim Final Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89 EPA-540-R-09-001, November 2010.

Status of their implementation:

Where are the ICs documented and/or reported?

City of Mountain View, Santa Clara Country Recorder, Environmental Protection Agency, Raytheon implements the requirements of the Consent Decree, including those of the vapor intrusion work, under a signed access agreement with the property owner.

ICs are being properly implemented and enforced? ■ Yes ☐ No, elaborate below
ICs are adequate for site protection? ■ Yes ☐ No, elaborate below

Additional remarks regarding ICs:

VI. SIGNIFICANT SITE EVENTS
Check all Significant Site events Since the Last Checklist that Affects or May Affect Remedy Performance

☐ Community Issues
☐ Vandalism
■ Maintenance Issues:

☐ Other

Please elaborate on Significant Site Events: Samples collected in November indicated a zinc exceedance in the groundwater treatment system effluent. The results indicated that zinc was detected in the influent at a concentration of 5.4 micrograms per liter (µg/L); however, zinc was detected in the effluent at a concentration of 98 µg/L, above its Maximum Daily Effluent Limitation (MDEL) of 95 µg/L. Haley & Aldrich reviewed the sampling results for laboratory quality assurance/quality control and subsequently collected confirmation effluent and influent samples and then shut down the GWETS on the same day, 27 November 2019. Haley & Aldrich received

the laboratory analytical results of confirmation samples on 2 December 2019. The results showed effluent zinc concentration of 27 µg/L, below its MDEL; however, the arithmetic mean concentration of zinc during November 2019 was 62.5 µg/L, above its Monthly Average Effluent Limitation (MAEL) of 47 µg/L. Zinc was not detected in the influent sample.

To address the receiving water sample requirement, Field Solutions and Haley & Aldrich collected confirmation influent and effluent samples and upstream and downstream receiving water samples on 3 December 2019. The GWETS was restarted briefly to collect influent and effluent samples. All treated water was contained within the GWETS compound's secondary containment and no water was discharged to the storm drain. Haley & Aldrich received the laboratory analytical results on 4 December 2019. The results showed effluent zinc concentration of 0.77 J µg/L, below its MDEL and MAEL. Zinc was not detected in the influent sample and was detected at concentrations of 11 µg/L and 5.6 µg/L in the upstream and downstream receiving water samples, respectively. The GWETS then resumed operation on 5 December 2019.

2019 Annual Report Remedy Performance Checklist

VII. REDEVELOPMENT

Is redevelopment on property planned? ☐ Yes ■ No

If yes, what is planned? Please describe below.

Is redevelopment plan complete ☐ Yes, date: _____; ☐ No ? ■ Not Applicable

Redevelopment proposal in progress? ☐ Yes, elaborate below
■ No; If no, is a proposal anticipated? ☐ Yes ■ No

☐ Is the redevelopment proposal compatible with remedy performance? ☐ Yes ☐ No

Elaborate on redevelopment proposal and how it affects remedy performance:

VIII. GROUNDWATER REMEDY (reference isoconcentration, capture zone maps, trend analysis, and other documentation to support analysis)

Groundwater Quality Data

List the types of data that are available:	What is the source report?
Biennial Site-specific monitoring well data	Annual Report, Appendix B and F
Four-Year Site-specific monitoring well data	Annual Report, Appendix B and F
TCE isoconcentration maps	Annual Report, Appendix B and F
PCE isoconcentration maps	Annual Report, Appendix B and F
cis-1,2-DCE isoconcentration maps	Annual Report, Appendix B and F
Vinyl chloride isoconcentration maps	Annual Report, Appendix B and F

■ Contaminant trend(s) tracked during O&M (i.e., temporal analysis of groundwater contaminant trends).
☐ Groundwater data tracked with software for temporal analyses.
☐ Reviewed MNA parameters to ensure health of substrate (e.g., DO, pH, temperature), if appropriate?

Groundwater Pump & Treat Extraction Well and Treatment System Data

List the types of data that are available:	What is the source report?
Monthly groundwater treatment system data, influent and effluent	NPDES reports and Annual Report, Table 2

■ The system is functioning adequately.
☐ The system has been shut down for significant periods of time in the past year. Please elaborate below.

Discharge Data

List the types of data that are available:	What is the source report?
Monthly data on treatment system effluent	NPDES reports and Annual Report, Table 2

■ The system is in compliance with discharge permits.

Slurry Wall Data

List the types of data that are available:	What is the source report?
Quarterly water level monitoring data from monitoring well pairs	Annual Report, Tables 5 and 6
Capture zone maps	Annual Report, Figures 4 and 5

Is slurry wall operating as designed? ■ Yes ☐ No

If not, what is being done to correct the situation?

Elaborate on technical data and/or other comments

In 2019, horizontal gradients across most sides of the slurry wall were inward, except for the northern slurry wall and one well pair on the eastern wall. However, these gradients do not have a significant impact on remediation because: 1) Raytheon installed two recovery wells in the "A" and "B1" aquifers immediately downgradient of the slurry wall that provides an adequate capture of the area immediately downgradient of the slurry wall, and 2) the slurry wall is a low-permeability wall that allows only minimal chemical migration across its walls even if the gradient is outward. That, combined with the fact that chemicals tend to take the easier pathway and migrate towards recovery wells within the wall enclosure, rather than across the low-permeability wall, would minimize outward chemical migration. Therefore, the slurry wall and the pumping activities within its enclosure physically contain chemicals. If a small flux of chemicals migrates through the slurry wall, it is captured immediately downgradient of the wall.

IX. AIR MONITORING/VAPOR INTRUSION PATHWAY EVALUATION (Include in Annual Progress Report and reference document)

Walkthroughs/Surveys: Quarterly inspections were conducted for the air purification units in Utility Rooms A1034, A1015, B1038, C110, and D106. In 2019, the active sub-slab depressurization (SSD) system beneath Buildings A, B, C, D, and E, was monitored quarterly in accordance with the "Property-specific Vapor Intrusion Response Action Implementation Report, Former Raytheon Facilities, 350 Ellis Street, Mountain View, California," submitted to EPA on 10 March 2016.

Air testing/monitoring conducted: Indoor air samples were collected in Buildings A, B, C, D, and E in 2019. COC concentrations were below their respective ROD commercial indoor air cleanup levels listed in EPA's 16 August 2010 "Record of Decision Amendment for the Vapor Intrusion Pathway, Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View and Moffett Field, California".

Summary of Results: Tables 10 and 11 of the Annual Report present SSD system operational data and emissions monitoring results, respectively. Table 12 of the Annual Report presents indoor air sampling results.

Problems Encountered: None.

Recommendations/Next Steps: Continue operating the SSD system as described in the "Property-specific Long-Term Vapor Intrusion Operations, Maintenance, and Monitoring (OM&M) Plan" (Haley & Aldrich, 21 July 2015).

Schedule: Ongoing.

X. REMEDY PERFORMANCE ASSESSMENT

A. Groundwater Remedies

What are the remedial goals for groundwater? ■ Plume containment (prevent plume migration); ■ Plume restoration (attain ROD-specific cleanup levels in aquifer); ☐ Other goals, please explain:_____

Have you done a trend analysis? ■ Yes ☐ No; If Yes, what does it show?

Appendix B of the Annual Report provides a comparison of the average TCE concentration for each aquifer at different time periods. The concentrations have decreased significantly.

(Is it inconclusive due to inadequate data? Are the concentrations increasing or decreasing?) Explain and provide source document reference _____

2019 Annual Report Remedy Performance Checklist

If plume containment is a remedial goal, check all that apply:
■ Plume migration is under control (explain basis below)
☐ Plume migration is not under control (explain basis below)
☐ Insufficient data to determine plume stability (explain below)
(Include attachments that substantiate your answers, e.g., reference plume, trend analysis, and capture zone maps in source document)

Elaborate on basis for determining that plume containment goal is being met or not being met:

The plume is not expanding, and capture is adequate.

If plume restoration is a cleanup objective, check all that apply:
■ Progress is being made toward reaching cleanup levels (explain basis below)
☐ Progress is not being made toward reaching cleanup levels (explain basis below)
☐ Insufficient data to determine progress toward restoration goal (explain below)

Elaborate on basis for determining progress or lack of progress toward restoration goal:

As explained above, concentrations have decreased significantly since remedial measures begun.

B. Vertical Migration

Have you done an assessment of vertical gradients? ■ Yes ☐ No; If Yes, what does it show? (Is it inconclusive due to inadequate data? Are the concentrations increasing or decreasing? Explain and provide source document reference.)

In 2019, upward gradients across of the A/B1 Aquitard were consistently observed in eight of the eleven well pairs. Slight downward gradients were observed in three others well pairs in at least two quarters during the year. The gradient direction across the B1/B2 Aquitard and Upper and Lower B2 Zones was consistently upward throughout 2019. This demonstrates proper vertical hydraulic gradients near the bottom of the slurry wall enclosure.

C. Source Control Remedies

What are the remedial goals for source control?

The remedial goals are to capture former source areas in the upper groundwater zones.

Elaborate on basis for determining progress or lack of progress toward these goals:

Capture zone analysis in the 2019 Annual Progress Report indicate containment of target capture areas.

XI. PROJECTIONS

<u>Administrative Issues</u>

None.

2019 Annual Report Remedy Performance Checklist

A. Groundwater Remedies - Projections for the upcoming year and long-term (Check all that apply)

Remedy Projections for **the upcoming year (2020)**

■ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☐ Other modification(s) anticipated: _____ Elaborate below. Target date:

Elaborate on Remedy Projections:

Remedy Projections for **the long-term** (Check all that apply)

■ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☐ Other modification(s) anticipated: _____ Elaborate below. Target date:

Elaborate on Remedy Projections:

B. Projections – Slurry Walls (Check all that apply)

Remedy Projections for **the upcoming year**

■ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Other modification(s) anticipated: _____ Elaborate below. Target date:

Elaborate on Remedy Projections:

Remedy Projections for **the long-term**

■ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Other modification(s) anticipated: _____ Elaborate below. Target date:

Elaborate on Remedy Projections:

2019 Annual Report Remedy Performance Checklist

C. Projections – Other Remedial Options Being Reviewed to Enhance Cleanup

Progress implementing recommendations from last report or Five-Year Review
Has optimization study been implemented or scheduled? ■ Yes; ☐ No; If Yes, please elaborate.

A work plan for additional subsurface characterization was submitted to and approved by EPA in 2013. The investigation was completed in 2013 and a report summarizing the results was submitted to EPA in April 2014. The investigation will be used to finalize a plan for optimizing the existing treatment system, but the optimization has been delayed pending property use by the owner.

XII. ADMINISTRATIVE ISSUES
Check all that apply:

☐ Explanation of Significant Differences in progress ☐ ROD Amendment in progress
☐ Site in operational and functional ("shake down") period;
☐ Notice of Intent to Delete in progress ☐ Partial site deletion in progress ☐ TI Waivers
■ Other administrative issues:

Date of Next EPA Five-Year Review: September 2020

XII. RECOMMENDATIONS

No additional recommendations at this time.

APPENDIX B

Cumulative Groundwater VOC Removal Data Since 1986

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1986	10/17/1986	12.37	2,473,490	0	0
	10/27/1986	6.15	2,473,490	41.73	42
	10/28/1986	4.59	2,473,490	3.11	45
	10/29/1986	5.10	2,473,490	3.46	48
	11/5/1986	5.05	3,452,400	33.46	82
	11/12/1986	5.39	3,452,400	35.74	118
	12/1/1986	5.00	2,787,540	72.64	190
	12/29/1986	9.51	2,787,540	203.52	394
	12/31/1986	6.36	2,787,540	9.72	403
1987	1/19/1987	6.52	1,930,153	65.58	469
	1/28/1987	7.16	1,930,153	34.09	503
	2/23/1987	21.70	1,206,884	186.70	690
	3/2/1987	13.24	3,775,862	95.95	786
	3/13/1987	9.49	3,775,862	108.07	894
	4/9/1987	9.25	3,078,120	210.78	1105
	4/22/1987	8.56	3,078,120	93.92	1198
	5/8/1987	4.88	1,837,494	39.34	1238
	5/28/1987	4.02	1,837,494	40.51	1278
	6/3/1987	4.19	2,527,500	17.42	1296
	6/8/1987	4.71	2,527,500	16.32	1312
	6/17/1987	5.42	2,527,500	33.80	1346
	6/25/1987	5.69	2,527,500	31.55	1377
	7/13/1987	4.16	3,866,196	79.38	1457
	7/31/1987	5.12	3,866,196	97.69	1554
	8/13/1987	3.86	3,740,305	51.46	1606
	8/27/1987	4.95	3,740,305	71.07	1677
1988	5/20/1988	4.10	217,000	65.13	1742
	6/7/1988	2.90	210,000	3.01	1745
	6/28/1988	2.80	210,000	3.39	1749
	10/3/1988	3.33	442,835	39.22	1788
	12/22/1988	2.80	442,835	27.20	1815
1989	3/28/1989	2.40	378,200	23.89	1839
	6/20/1989	2.80	474,000	30.57	1869
	9/21/1989	2.90	447,000	33.05	1902
	12/15/1989	2.00	461,900	21.53	1924
1990	3/30/1990	1.90	162,967	8.91	1933
	6/29/1990	1.80	438,000	19.67	1953
	9/28/1990	2.80	213,720	14.93	1967
	12/7/1990	1.05	1,116,000	22.49	1990

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1991	3/28/1991	0.80	1,054,000	25.73	2016
	6/18/1991	0.66	733,740	10.89	2027
	9/16/1991	0.95	673,560	15.71	2042
	12/19/1991	0.63	737,862	11.98	2054
1992	3/26/1992	0.36	794,437	7.77	2062
	6/26/1992	0.48	747,060	8.97	2071
	9/24/1992	4.24	706,860	73.96	2145
	12/8/1992	8.39	846,920	146.07	2291
1993	2/18/1993	5.93	1,011,164	118.37	2409
	3/11/1993	5.64	1,358,947	44.13	2454
	4/14/1993	4.66	1,460,100	63.43	2517
	5/25/1993	4.55	1,154,874	59.07	2576
	6/23/1993	5.24	1,353,270	56.38	2632
	7/22/1993	5.55	1,215,572	53.64	2686
	8/24/1993	6.04	1,085,279	59.31	2745
	9/23/1993	5.69	879,840	41.18	2787
	10/28/1993	6.00	877,021	50.50	2837
	11/24/1993	6.78	772,680	38.78	2876
	12/26/1993	7.48	822,988	54.01	2930
1994	1/13/1994	7.61	1,020,985	38.35	2968
	2/4/1994	7.47	804,160	36.23	3004
	3/4/1994	6.82	1,099,353	57.56	3062
	4/14/1994	7.19	1,035,300	83.68	3146
	5/12/1994	7.10	942,555	51.38	3197
	6/9/1994	7.11	911,880	49.77	3247
	7/14/1994	7.08	956,877	65.01	3312
	8/11/1994	5.28	1,098,640	44.53	3356
	9/15/1994	5.59	779,940	41.84	3398
	10/12/1994	5.33	877,393	34.62	3433
	11/10/1994	3.89	706,080	21.84	3455
	12/15/1994	6.10	791,926	46.36	3501

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1995	1/6/1995	5.35	809,007	26.11	3527
	2/9/1995	4.55	975,912	41.39	3569
	3/9/1995	5.16	1,080,226	42.79	3611
	4/6/1995	5.13	967,170	38.09	3649
	5/15/1995	4.39	997,425	46.82	3696
	6/15/1995	5.04	966,390	41.40	3738
	7/13/1995	4.79	1,130,350	41.57	3779
	8/10/1995	5.54	906,720	38.56	3818
	9/18/1995	5.08	886,970	48.18	3866
	10/12/1995	5.58	830,380	30.49	3896
	11/9/1995	4.98	796,640	30.46	3927
	12/4/1995	6.23	826,780	35.31	3962
1996	1/31/1996	4.72	626,360	47.01	4009
	2/29/1996	5.65	705,320	31.69	4041
	3/31/1996	5.33	721,450	32.68	4074
	4/30/1996	5.56	827,560	37.85	4111
	5/23/1996	6.49	856,930	35.07	4147
	6/14/1996	4.88	1,299,060	38.24	4185
	7/11/1996	3.98	1,577,150	46.47	4231
	8/8/1996	4.43	1,068,297	36.33	4268
	9/27/1996	8.94	1,739,434	213.18	4481
	10/17/1996	6.01	2,309,683	76.12	4557
	11/17/1996	4.92	1,976,504	82.65	4640
	12/17/1996	4.33	1,704,181	60.70	4700
1997	1/24/1997	4.64	1,874,988	236.15	4793
	2/13/1997	4.53	2,001,712	49.72	4843
	3/18/1997	4.76	2,428,607	104.60	4947
	4/16/1997	4.16	2,136,780	70.68	5018
	5/14/1997	4.57	2,280,782	80.02	5098
	6/19/1997	4.79	2,065,358	97.65	5196
	7/16/1997	5.21	2,294,318	88.49	5284
	8/20/1997	3.15	2,117,259	64.00	5348
	9/8/1997	7.11	2,382,011	88.23	5436
	10/2/1997	5.41	2,583,099	91.96	5528
	11/12/1997	4.91	2,059,288	113.66	5642
	12/11/1997	5.43	2,335,012	100.82	5743

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1998	1/16/1998	4.34	2,320,835	99.42	5842
	2/25/1998	4.54	2,322,241	115.63	5958
	3/25/1998	4.38	2,322,667	78.10	6036
	4/10/1998	5.92	2,125,955	55.21	6091
	5/11/1998	6.66	2,181,943	123.51	6215
	6/8/1998	5.95	2,192,143	100.13	6315
	7/9/1998	2.96	2,187,687	55.04	6370
	8/4/1998	5.65	1,909,016	76.89	6447
	9/10/1998	6.31	1,837,103	117.60	6564
	10/30/1998	5.09	2,168,118	151.29	6716
	11/3/1998	5.23	2,050,814	11.76	6727
	12/3/1998	6.37	2,036,071	106.68	6834
1999	1/6/1999	9.38	2,371,413	207.36	7041
	2/1/1999	8.70	1,425,421	88.40	7130
	3/3/1999	6.00	1,657,431	81.80	7212
	4/6/1999	9.90	2,160,686	199.41	7411
	5/4/1999	6.34	2,113,299	102.86	7514
	6/9/1999	4.37	2,268,609	97.85	7612
	7/6/1999	6.00	1,961,659	87.13	7699
	8/3/1999	6.00	1,934,139	89.09	7788
	9/9/1999	6.00	2,474,267	150.60	7939
	10/4/1999	6.00	1,813,012	74.56	8013
	11/2/1999	6.00	1,845,816	88.06	8101
	12/6/1999	6.00	2,262,708	126.56	8228
2000	1/1/2000	6.00	1,539,993	65.87	8294
	3/3/2000	1.26	1,095,810	23.42	8317
	3/8/2000	1.61	1,095,810	2.42	8320
	3/22/2000	2.56	1,095,810	10.77	8330
	3/28/2000	0.84	1,095,810	1.51	8332
	5/9/2000	1.56	1,726,160	30.93	8363
	6/5/2000	1.02	838,365	6.35	8369
	6/21/2000	1.80	838,365	6.61	8376
	8/1/2000	1.52	838,365	14.31	8390
	9/5/2000	2.82	1,619,800	43.77	8434
	10/10/2000	1.35	1,947,460	25.23	8459
	11/6/2000	8.69	1,574,200	101.24	8560
	12/1/2000	10.00	1,411,950	96.80	8657

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2001	1/1/2001	3.80	1,080,750	34.31	8691
	2/1/2001	9.46	970,100	76.60	8768
	3/1/2001	8.01	1,182,000	79.04	8847
	4/1/2001	14.28	1,504,700	179.32	9026
	5/1/2001	9.90	937,150	77.43	9104
	6/1/2001	6.14	913,450	46.81	9151
	7/1/2001	6.80	575,185	32.64	9183
	8/1/2001	10.40	1,142,485	99.16	9282
	9/1/2001	10.00	1,107,530	92.43	9375
	10/1/2001	7.49	1,755,400	109.72	9484
	11/1/2001	7.35	1,453,700	89.17	9574
	12/1/2001	7.39	1,452,270	89.57	9663
2002	1/1/2002	7.48	1,706,930	106.55	9770
	2/1/2002	7.88	943,350	62.04	9832
	3/1/2002	5.95	1,039,650	51.58	9883
	4/1/2002	8.10	1,030,550	69.64	9953
	5/1/2002	7.86	1,395,950	91.57	10045
	6/1/2002	8.66	1,530,800	110.68	10155
	7/1/2002	9.55	957,600	76.32	10232
	8/1/2002	5.29	1,216,500	53.71	10285
	9/1/2002	6.21	1,310,900	67.94	10353
	10/1/2002	5.75	1,157,100	55.52	10409
	11/1/2002	8.05	1,086,575	73.00	10482
	12/1/2002	10.92	1,128,975	102.89	10585
2003	1/1/2003	9.99	1,355,675	113.03	10698
	2/1/2003	11.67	1,288,075	125.48	10823
	3/1/2003	11.07	1,434,490	132.55	10956
	4/1/2003	11.62	1,123,510	108.91	11065
	5/1/2003	8.48	663,730	46.95	11112
	6/1/2003	11.66	1,100,130	107.06	11219
	7/1/2003	10.78	993,850	89.41	11308
	8/1/2003	10.65	782,000	69.50	11378
	9/1/2003	4.14	1,208,490	41.75	11419
	10/1/2003	5.04	817,220	34.37	11454
	11/1/2003		0	-	11497
	12/1/2003	7.92	514,730	34.00	11531

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2004	1/19/2004	7.17	896,910	53.67	11585
	2/24/2004	7.69	897,850	57.62	11642
	3/15/2004	7.52	922,240	57.88	11700
	4/26/2004	6.57	1,209,520	66.32	11766
	5/17/2004	7.02	1,024,285	60.01	11826
	6/21/2004	5.91	816,920	40.32	11867
	7/19/2004	3.35	586,065	16.40	11883
	8/17/2004	6.60	1,387,020	76.43	11960
	9/21/2004	6.24	1,751,543	91.15	12051
	10/19/2004	5.89	1,662,937	81.70	12133
	11/15/2004	4.10	1,343,380	46.01	12179
	12/20/2004	3.86	1,810,315	58.24	12237
2005	1/19/2005	5.13	1,131,215	43.96	12281
	2/23/2005	4.29	1,283,835	52.75	12333
	3/21/2005	4.99	1,593,115	60.55	12394
	4/18/2005	4.95	1,672,165	69.33	12463
	5/16/2005	4.66	1,721,575	68.65	12532
	6/20/2005	4.78	1,540,810	60.53	12593
	7/18/2005	4.53	1,480,250	57.84	12650
	8/15/2005	4.43	1,801,230	67.17	12718
	9/19/2005	4.21	1,444,838	52.27	12770
	10/19/2005	4.72	1,463,479	53.23	12823
	11/21/2005	4.19	1,603,611	60.49	12884
	12/20/2005	3.81	1,377,038	46.41	12930
2006	1/16/2006	3.44	1,523,394	45.77	12976
	2/7/2006	3.76	1,348,990	41.69	13017
	3/15/2006	3.49	1,074,920	32.57	13050
	4/18/2006	3.22	1,328,115	37.74	13088
	5/16/2006	5.55	1,775,355	65.85	13154
	6/27/2006	5.44	1,445,663	66.78	13220
	7/20/2006	5.35	1,806,782	66.97	13287
	8/23/2006	4.70	1,262,105	68.57	13356
	9/22/2006	5.67	1,163,583	47.35	13403
	10/19/2006	5.63	1,815,987	85.61	13489
	11/15/2006	5.82	1,617,622	77.39	13566
	12/18/2006	5.33	1,649,200	77.35	13644

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2007	1/15/2007	4.34	1,460,498	71.85	13715
	2/21/2007	4.11	1,494,310	67.55	13783
	3/20/2007	4.11	1,650,136	69.36	13852
	4/19/2007	4.44	1,427,088	71.49	13924
	5/21/2007	4.33	1,496,597	54.85	13979
	6/21/2007	4.35	1,036,802	37.46	14016
	7/18/2007	4.04	1,166,521	41.23	14057
	8/16/2007	3.38	1,658,509	52.08	14109
	9/17/2007	4.37	1,105,795	34.99	14144
	10/15/2007	4.11	1,554,429	54.95	14199
	11/21/2007	3.99	524,276	17.95	14217
	12/26/2007	3.92	145,473	4.84	14222
2008	1/21/2008	5.04	1,095,626	40.15	14262
	2/18/2008	4.06	991,811	39.71	14302
	3/17/2008	4.42	1,185,466	41.53	14344
	4/16/2008	4.08	1,529,220	54.31	14398
	5/20/2008	3.79	1,074,870	35.56	14433
	6/16/2008	3.64	1,185,285	32.75	14466
	7/9/2008	3.64	507,936	15.42	14482
	9/24/2008	0.59	247,343	0.19	14482
	10/15/2008	4.47	1,387,745	40.00	14522
	11/17/2008	6.13	1,086,198	49.00	14571
	12/17/2008	3.94	1,164,878	25.00	14596
2009	1/20/2009	4.28	1,486,450	53.04	14649
	2/18/2009	5.96	1,088,423	54.08	14703
	3/16/2009	4.69	1,074,739	42.02	14745
	4/20/2009	4.17	1,063,959	36.99	14782
	5/18/2009	2.66	1,385,381	30.72	14813
	6/15/2009	4.47	1,049,972	39.13	14852
	7/20/2009	2.38	1,226,349	24.33	14876
	8/17/2009	2.30	1,064,645	20.41	14897
	9/21/2009	2.30	1,024,120	19.64	14916
	10/19/2009	2.40	1,179,441	23.60	14940
	11/16/2009	2.20	932,094	17.10	14957
	12/21/2009	3.08	1,197,182	30.74	14970

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2010	1/18/2010	2.48	868,448	17.96	15006
	2/15/2010	2.07	882,502	15.22	15021
	3/15/2010	3.50	658,716	19.22	15040
	4/19/2010	1.68	977,397	13.72	15054
	5/17/2010	3.68	1,044,433	32.05	15086
	6/21/2010	2.89	1,176,812	28.32	15114
	7/19/2010	2.88	856,039	20.52	15135
	8/16/2010	2.15	607,092	10.90	15146
	9/20/2010	2.15	1,211,204	21.68	15167
	10/18/2010	2.64	1,386,567	30.51	15198
	11/15/2010	2.79	812,678	18.88	15217
	12/22/2010	2.80	1,392,139	32.45	15249
2011	1/21/2011	2.51	812,897	17.01	15266
	2/25/2011	4.79	1,102,459	44.01	15310
	3/25/2011	2.97	1,063,813	26.36	15336
	4/29/2011	3.05	1,231,474	31.35	15368
	5/27/2011	2.67	1,036,610	23.11	15391
	6/24/2011	2.46	978,064	20.03	15411
	7/29/2011	3.34	1,173,957	32.65	15444
	8/26/2011	1.85	765,901	11.82	15455
	9/30/2011	1.90	1,262,176	19.94	15475
	10/28/2011	1.73	1,361,315	19.61	15495
	11/25/2011	1.88	1,032,800	16.18	15511
	12/30/2011	2.23	2,531,761	46.96	15558
2012	1/27/2012	2.20	1,607,164	29.44	15587
	2/24/2012	2.39	1,230,684	24.48	15612
	3/30/2012	2.38	1,599,189	31.69	15644
	4/27/2012	3.46	1,278,997	36.84	15680
	5/25/2012	2.33	1,334,211	25.95	15706
	6/29/2012	2.21	1,661,511	30.59	15737
	7/27/2012	2.49	1,303,197	27.06	15764
	8/31/2012	2.50	1,593,126	33.14	15797
	9/28/2012	2.14	1,379,885	24.65	15822
	10/26/2012	2.18	1,260,645	22.90	15845
	11/30/2012	2.31	1,516,420	29.25	15874
	12/29/2012	2.78	1,651,015	38.32	15912

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2013	1/25/2013	1.76	1,122,690	16.48	15929
	2/22/2013	4.03	1,150,460	38.61	15967
	3/29/2013	3.59	1,577,390	47.22	16015
	4/26/2013	3.25	1,874,160	50.84	16066
	5/31/2013	2.81	1,888,820	44.20	16110
	6/28/2013	2.91	1,816,240	44.00	16154
	7/26/2013	2.83	1,846,630	43.51	16197
	8/30/2013	2.61	2,370,440	51.57	16249
	9/27/2013	2.95	1,783,900	43.83	16293
	10/25/2013	3.02	1,550,780	38.98	16332
	11/27/2013	2.60	1,948,870	42.28	16374
	12/27/2013	3.70	1,792,270	55.29	16429
2014	1/31/2014	2.72	1,945,950	44.16	16473
	2/28/2014	2.51	1,723,890	36.05	16509
	3/28/2014	2.42	1,578,790	31.91	16541
	4/25/2014	2.26	1,571,080	29.59	16571
	5/30/2014	2.41	1,504,590	30.17	16601
	6/27/2014	2.30	1,345,660	25.84	16627
	7/25/2014	2.26	1,036,270	19.48	16646
	8/29/2014	1.85	1,492,240	22.95	16669
	9/26/2014	3.74	823,480	25.68	16695
	10/31/2014	3.00	2,007,480	50.21	16745
	11/26/2014	3.70	1,733,930	53.43	16799
	12/24/2014	3.64	1,838,410	55.79	16854
2015	1/20/2015	3.18	2,418,320	64.15	16919
	2/13/2015	3.14	1,728,540	45.28	16964
	3/16/2015	3.10	1,591,510	41.15	17005
	4/20/2015	3.05	1,420,630	36.12	17041
	5/19/2015	2.59	2,109,620	45.59	17087
	6/16/2015	3.57	1,691,320	50.28	17137
	7/20/2015	2.81	2,097,640	49.09	17186
	8/17/2015	2.92	1,259,120	30.68	17217
	9/8/2015	3.29	1,665,900	45.74	17263
	10/16/2015	4.67	1,206,470	47.00	17310
	11/19/2015	6.27	1,192,380	62.34	17372
	12/14/2015	3.41	1,688,530	47.96	17420

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2016	1/19/2016	3.37	1,272,590	35.74	17456
	2/16/2016	3.42	1,052,055	29.96	17486
	3/22/2016	3.38	1,259,865	35.47	17521
	4/12/2016	4.51	1,164,935	43.71	17565
	5/24/2016	4.49	1,554,370	58.15	17623
	6/21/2016	4.19	1,247,220	43.56	17666
	7/19/2016	4.29	1,237,680	44.20	17711
	8/9/2016	4.02	1,547,340	51.80	17762
	9/27/2016	4.40	1,118,656	40.97	17803
	10/25/2016	4.07	1,335,373	45.30	17849
	11/15/2016	4.03	1,188,321	39.91	17889
	12/13/2016	5.27	1,293,900	56.77	17945
2017	1/17/2017	4.51	1,177,370	44.20	17989
	2/14/2017	4.28	1,190,540	42.43	18032
	3/7/2017	3.96	1,072,815	35.38	18067
	4/11/2017	3.86	1,147,090	36.85	18104
	5/16/2017	3.87	1,369,375	44.14	18148
	6/6/2017	3.98	1,023,450	33.94	18182
	7/25/2017	3.99	1,090,220	36.26	18218
	8/15/2017	4.36	1,447,135	52.54	18271
	9/19/2017	4.29	1,154,205	41.26	18312
	10/31/2017	4.02	1,356,373	45.44	18357
	11/14/2017	3.77	1,147,922	36.03	18394
	12/19/2017	3.02	1,079,625	27.19	18421
2018	1/16/2018	4.51	1,177,370	42.81	18464
	2/13/2018	4.28	1,190,540	44.06	18508
	3/13/2018	3.96	1,072,815	37.82	18545
	4/10/2018	2.75	1,260,005	25.41	18571
	5/15/2018	2.30	892,960	18.25	18589
	6/12/2018	2.02	1,024,854	17.89	18607
	7/3/2018	2.65	1,186,196	23.88	18631
	8/7/2018	2.26	935,560	19.52	18650
	9/19/2018	3.91	932,350	32.61	18683
	10/9/2018	5.43	1,377,230	55.25	18738
	11/13/2018	4.81	1,171,360	47.21	18785
	12/18/2018	4.81	1,203,340	53.44	18839

CUMULATIVE GROUNDWATER VOC REMOVAL DATA SINCE 1986
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Year	Date	VOC Concentration (mg/L)	Total Flow (gal/month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2019	1/15/2019	3.55	1,375,260	40.68	18880
	2/5/2019	3.64	1,175,400	35.62	18915
	3/5/2019	18.3	1,236,300	188.8	19104
	4/2/2019	3.51	1,530,300	44.71	19149
	5/7/2019	3.14	1,106,400	28.93	19178
	6/11/2019	3.03	1,197,150	30.16	19208
	7/2/2019	2.92	1,548,145	37.69	19245
	8/6/2019	3.27	1,129,110	30.79	19276
	9/3/2019	2.46	1,165,394	23.86	19300
	10/15/2019	3.01	1,317,596	33.02	19333
	11/5/2019	3.36	1,139,957	31.94	19365
	12/10/2019	3.58	909,313	27.09	19392

Notes:

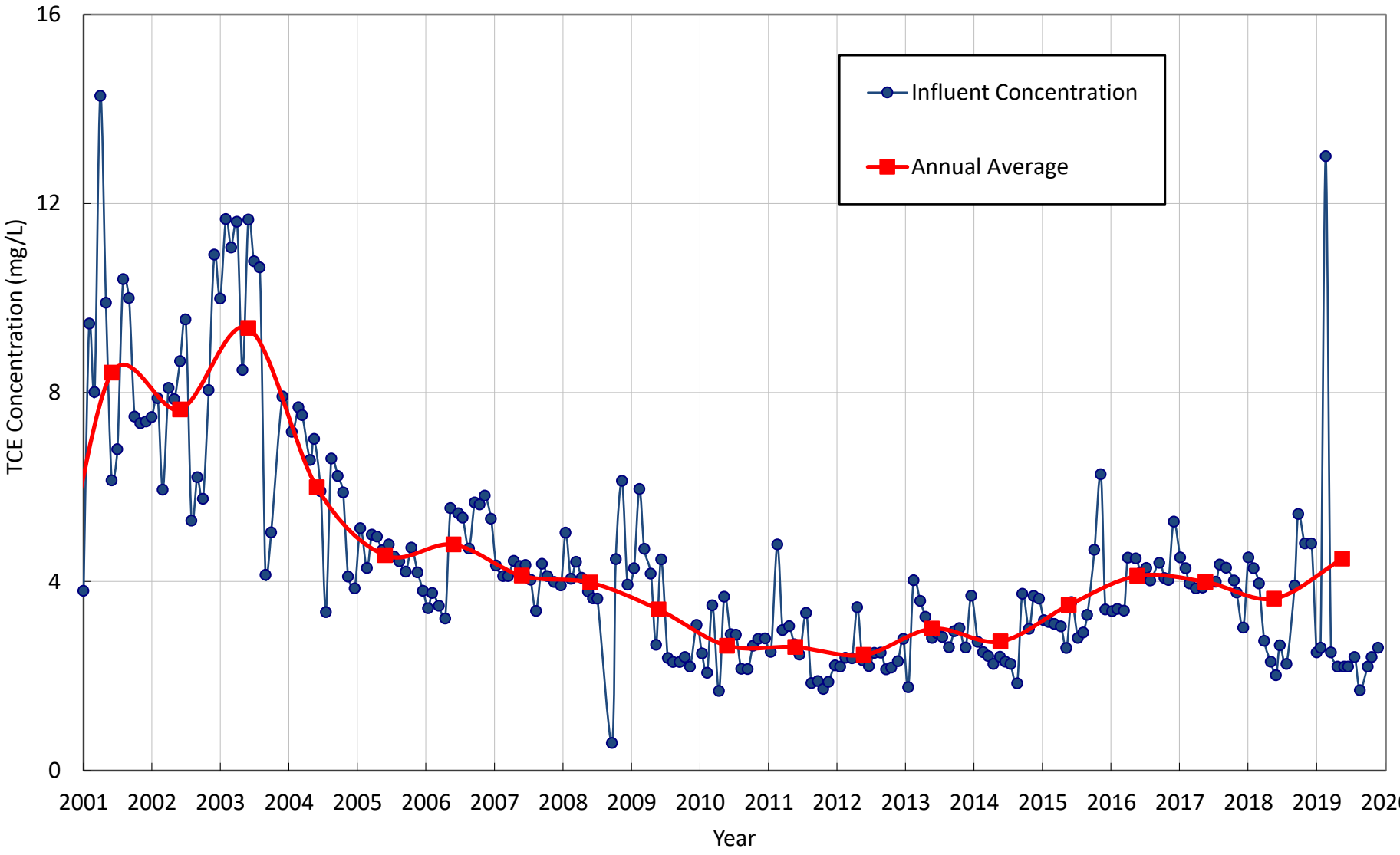
mg/L - milligrams per liter

gal/month - gallons per month

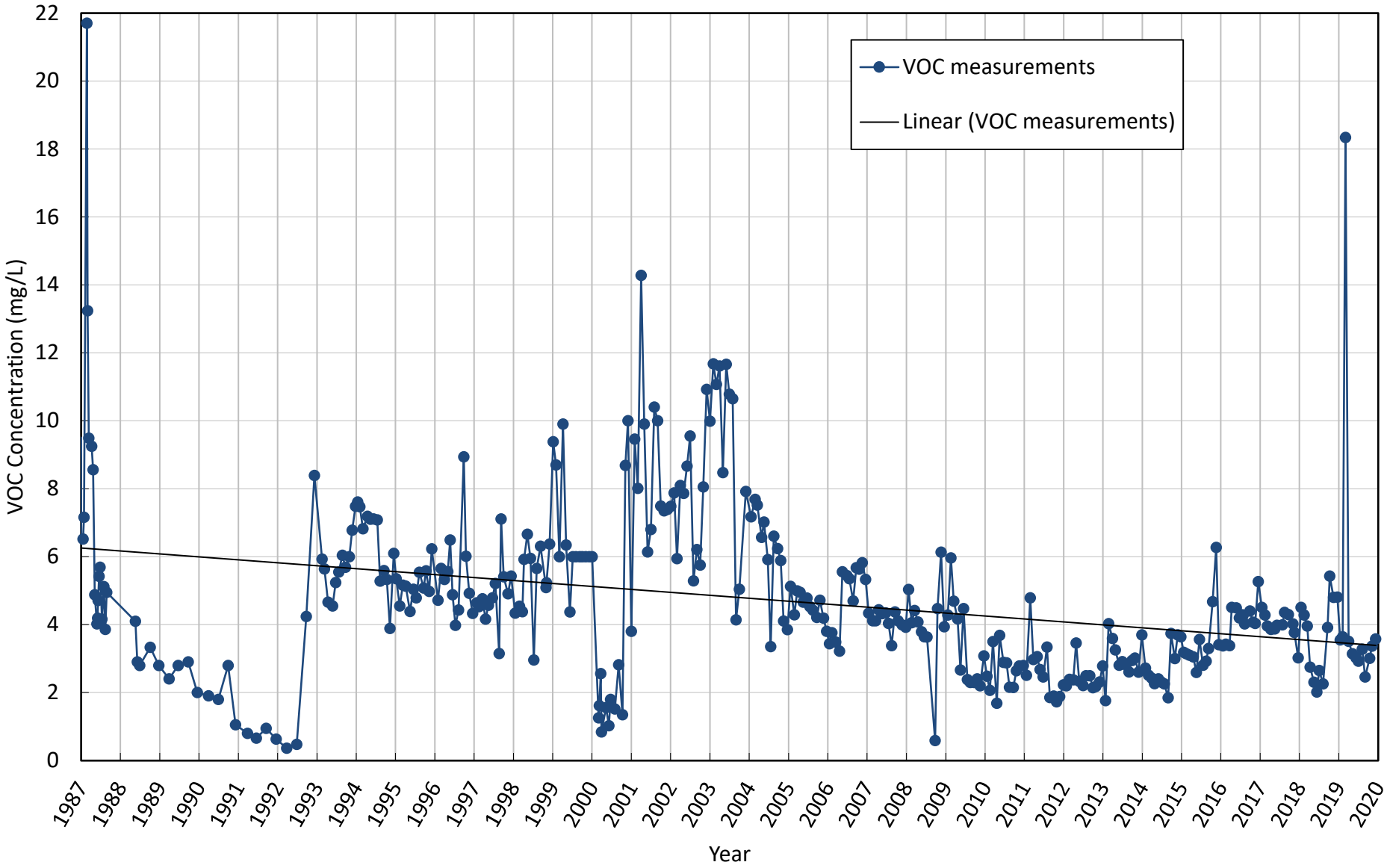
lbs - pounds

Raytheon started groundwater extraction at the site in 1982; however, data to calculate the VOC removal rate between 1982 and October 1986 are not available.

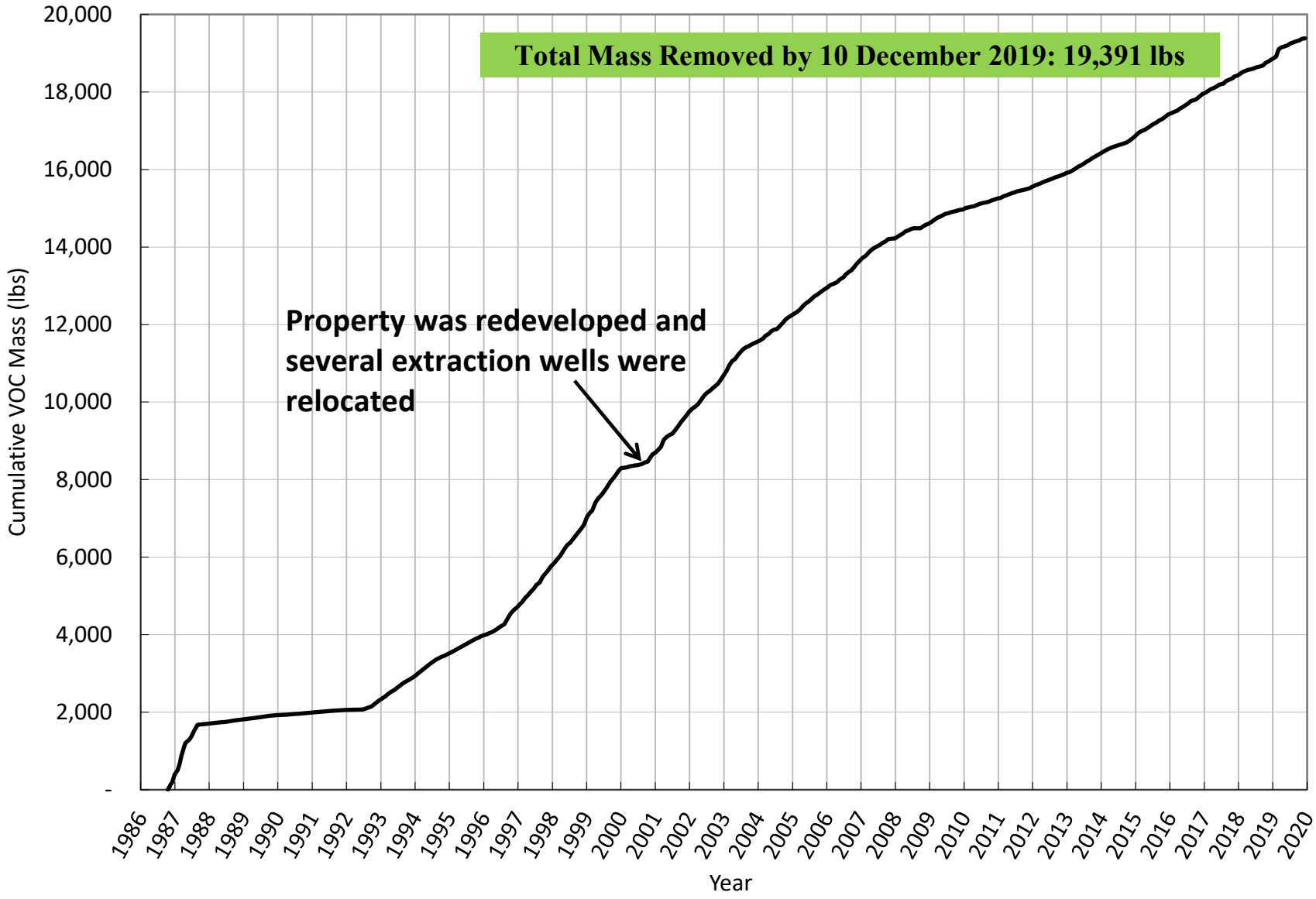
APPENDIX B-1
TCE CONCENTRATIONS IN GROUNDWATER TREATMENT SYSTEM INFLUENT SINCE 2001
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA



APPENDIX B-2
TOTAL VOC INFLUENT GROUNDWATER CONCENTRATIONS
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA



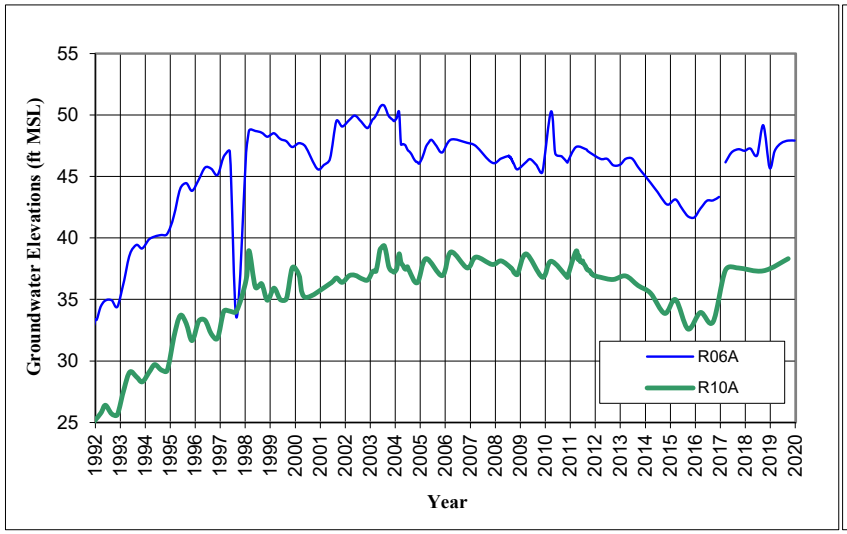
APPENDIX B-3
CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

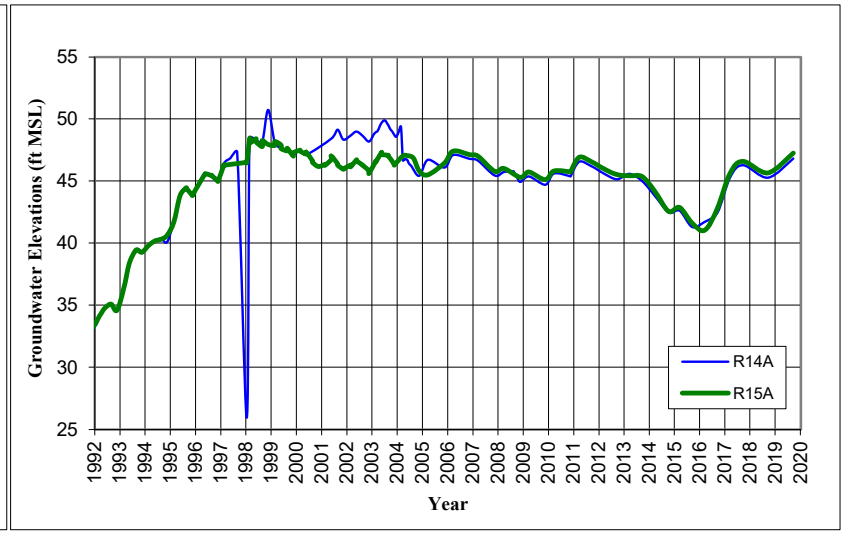


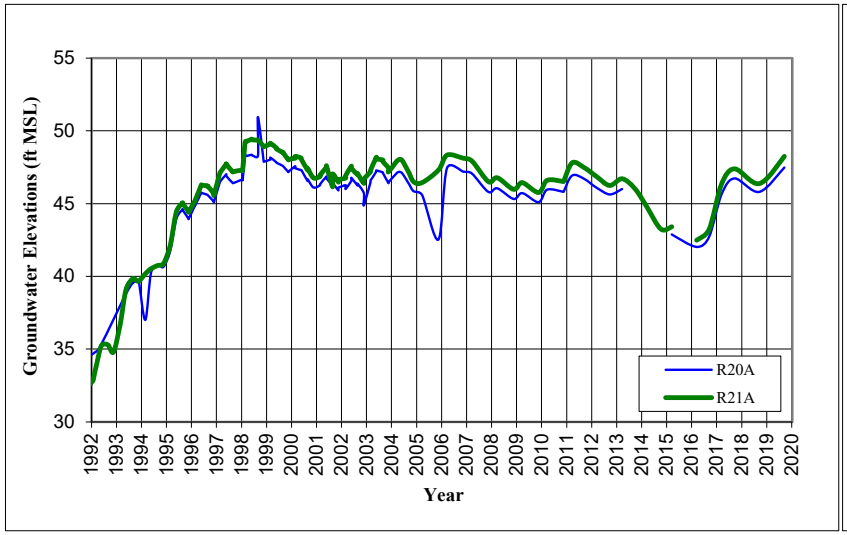
APPENDIX C

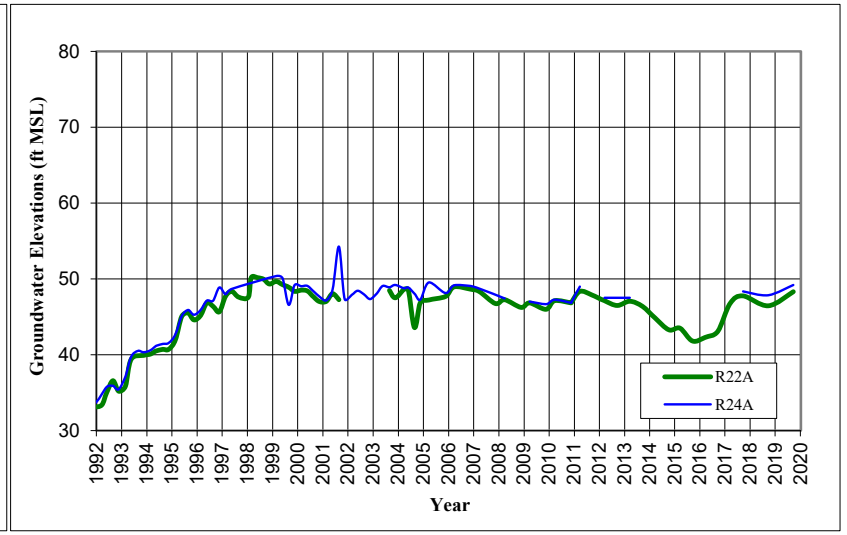
Historical Groundwater Hydrographs

APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS

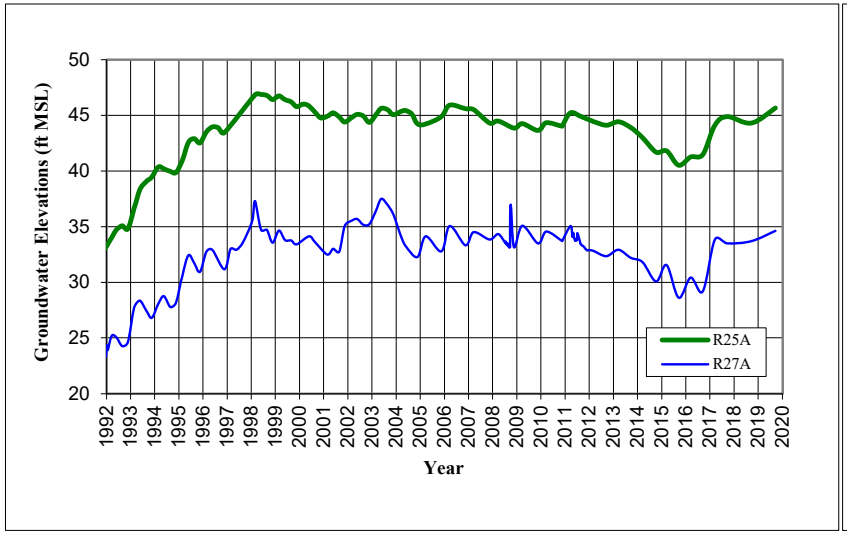


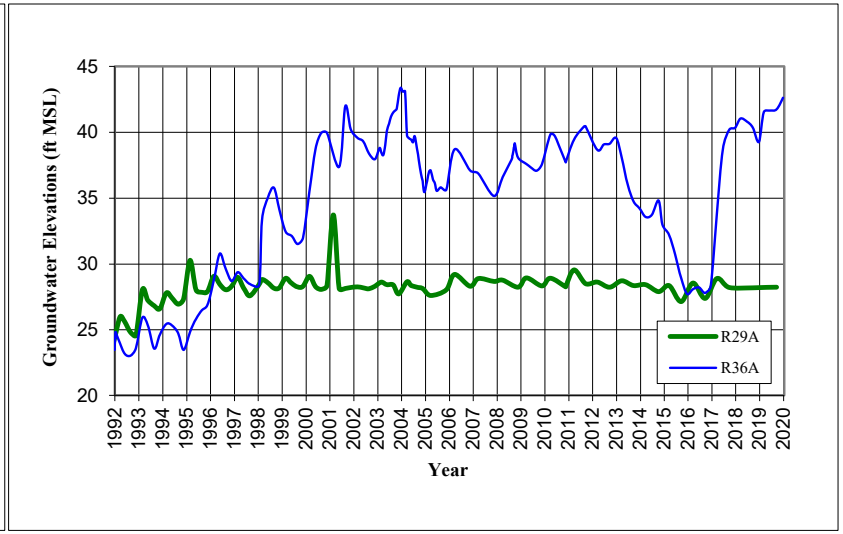


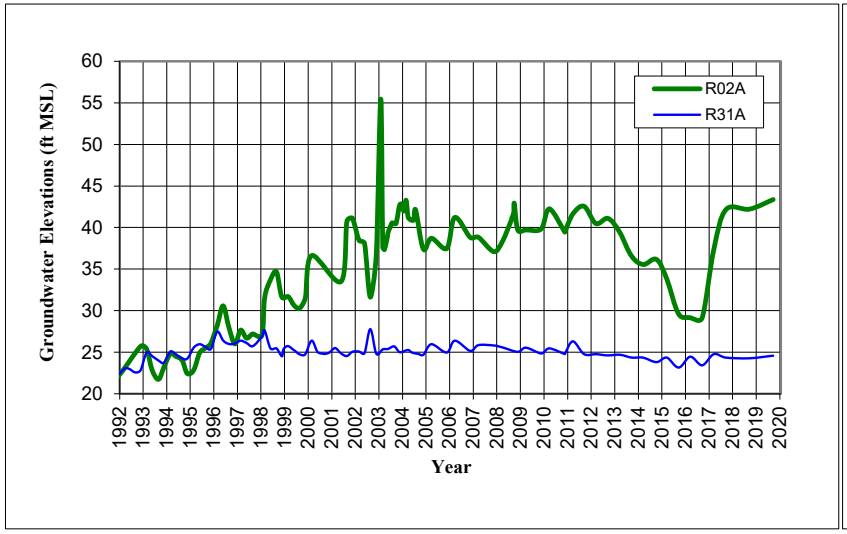


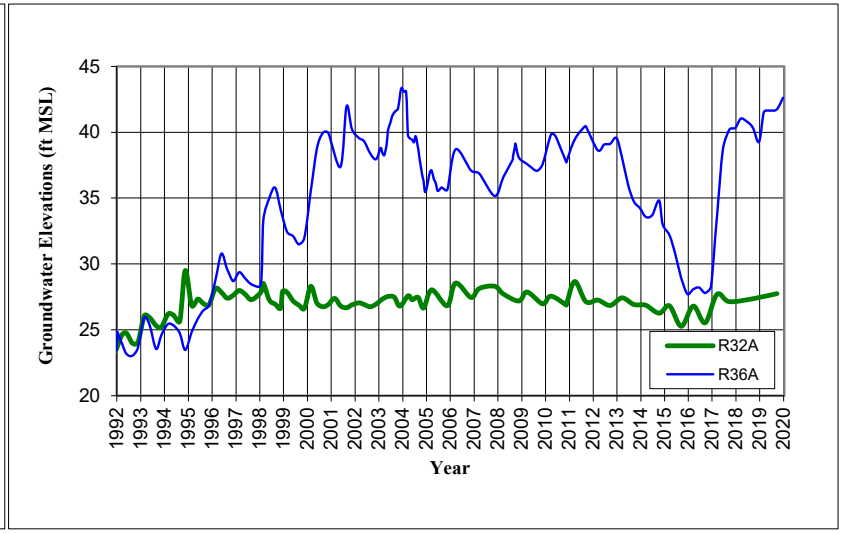


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS

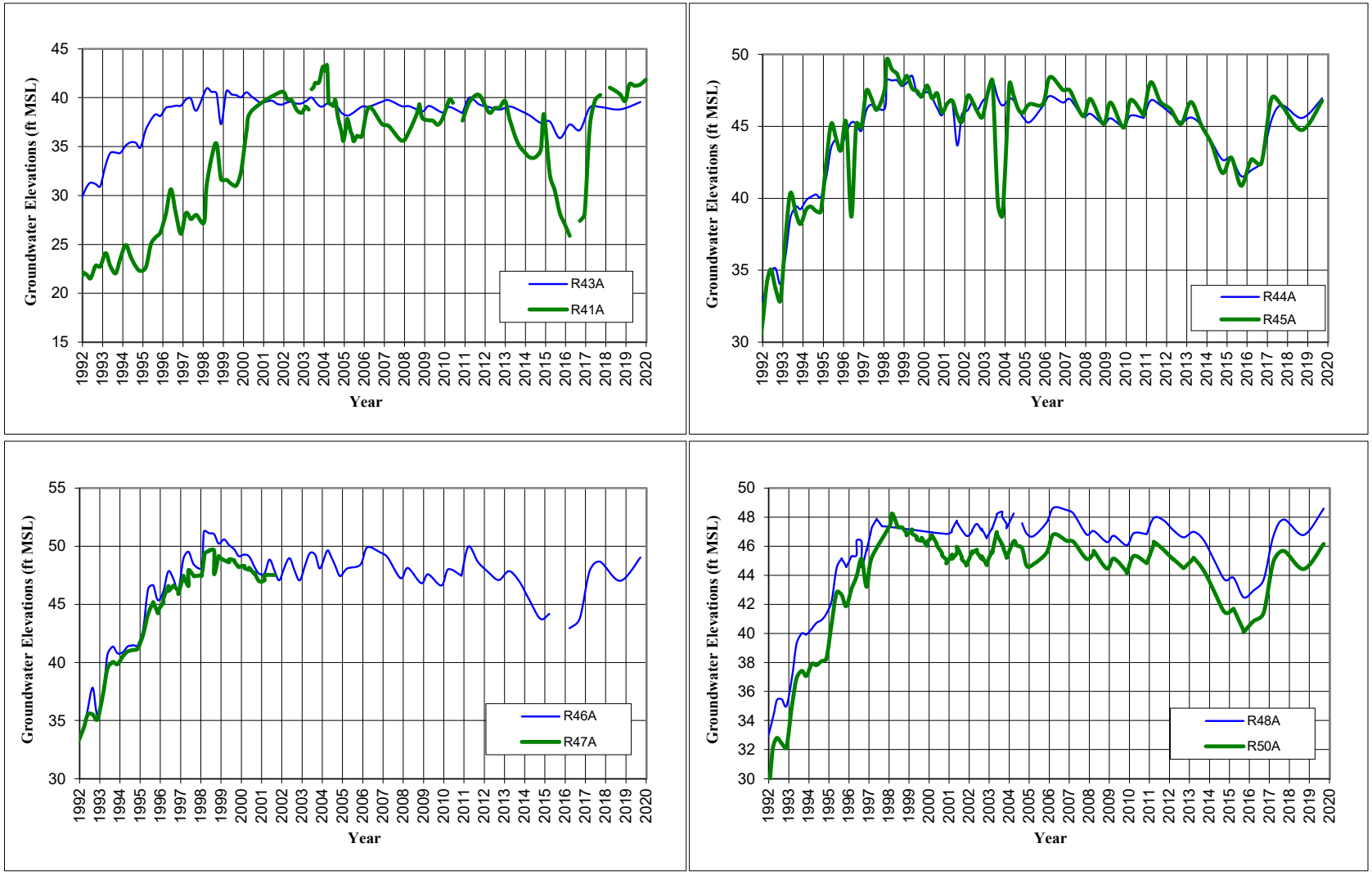




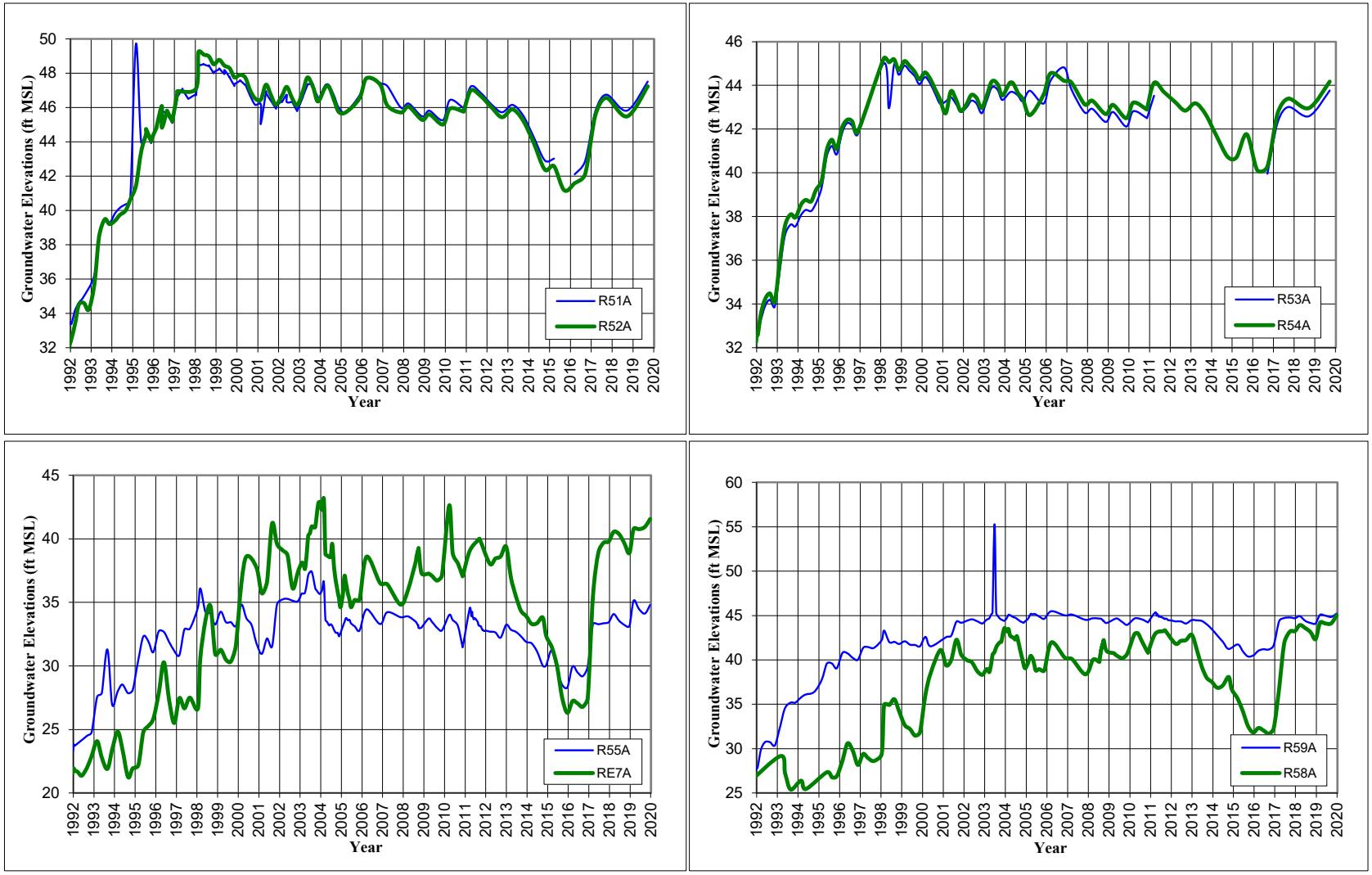




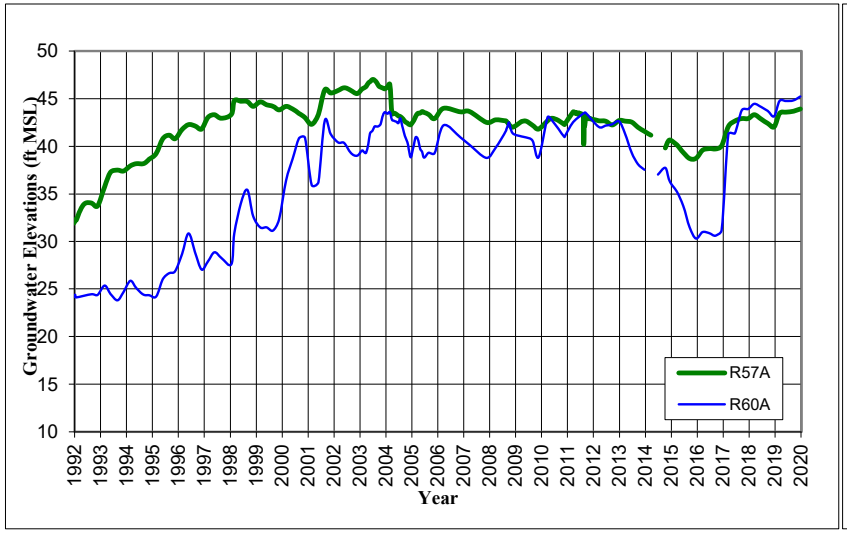
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS

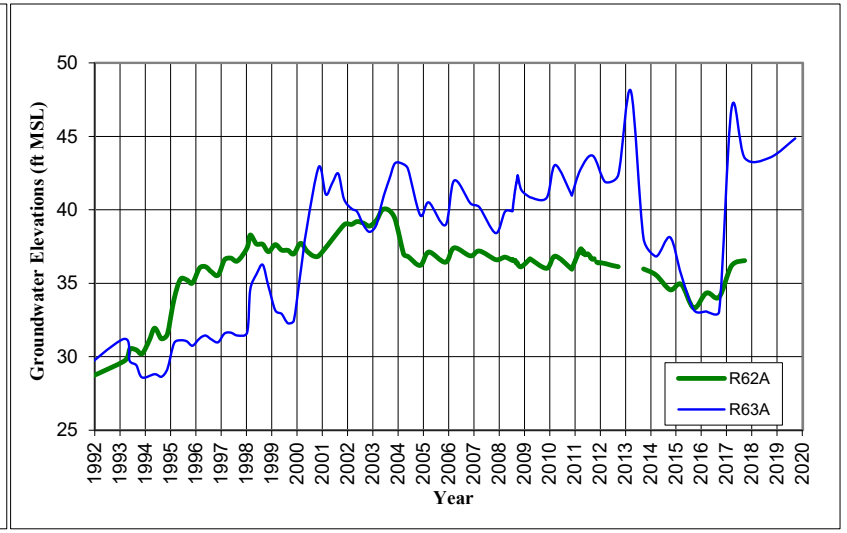


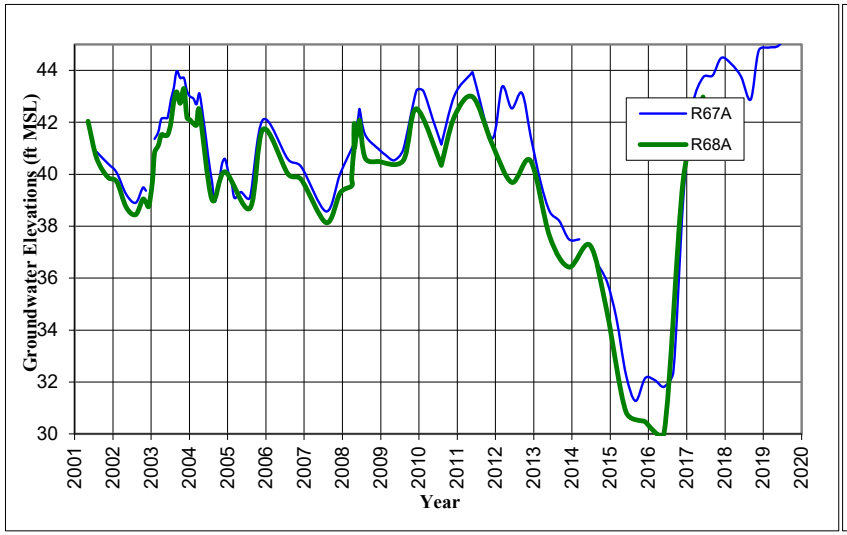
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS

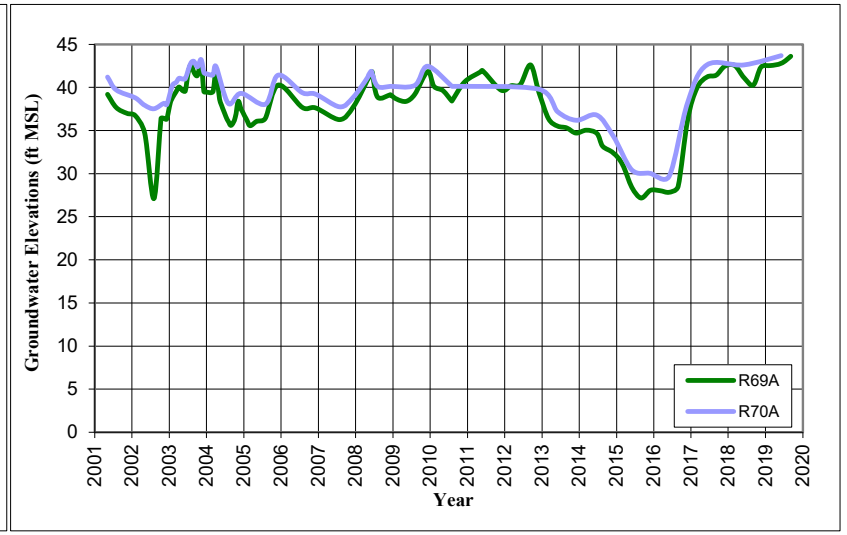


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS

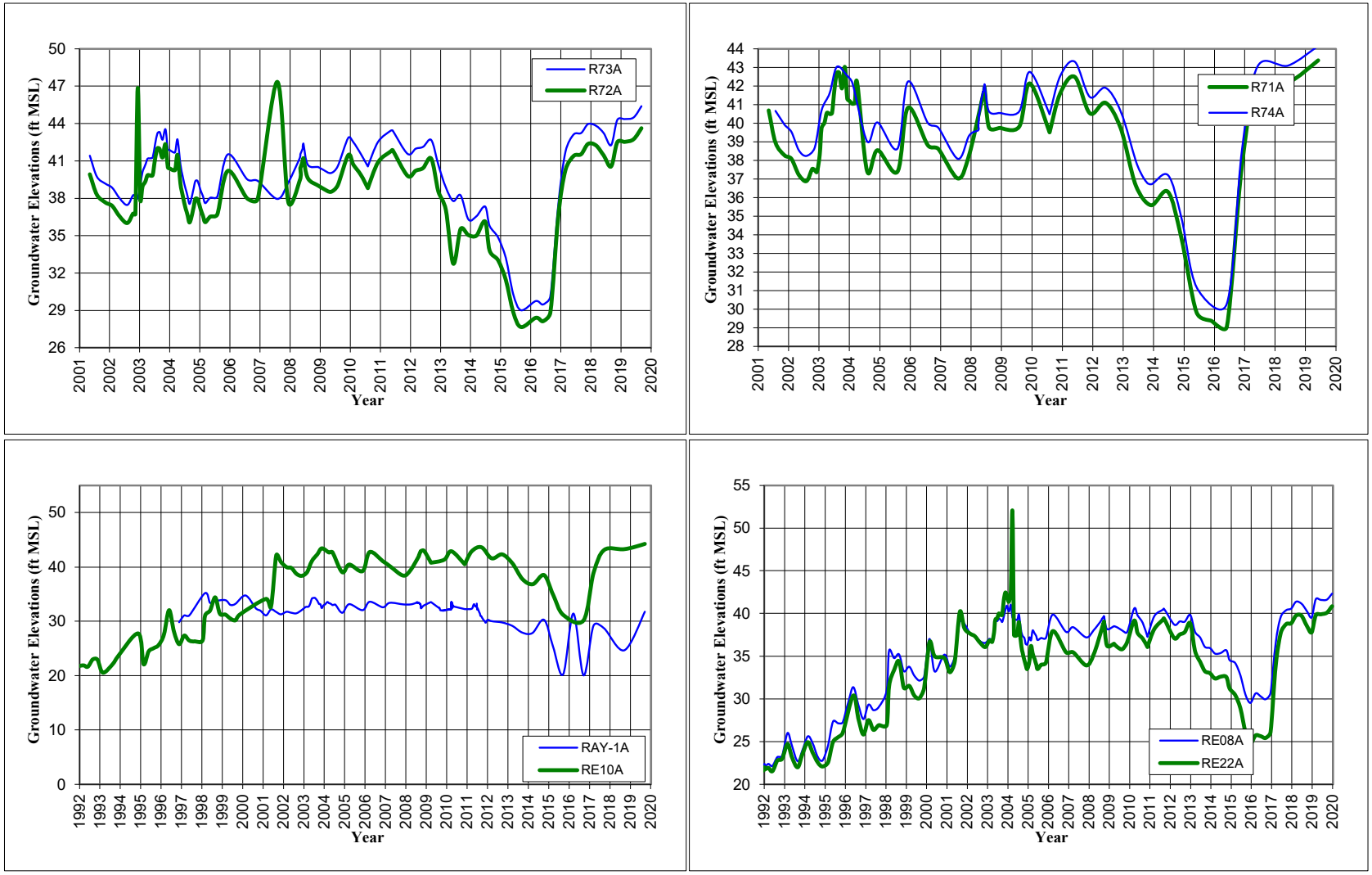




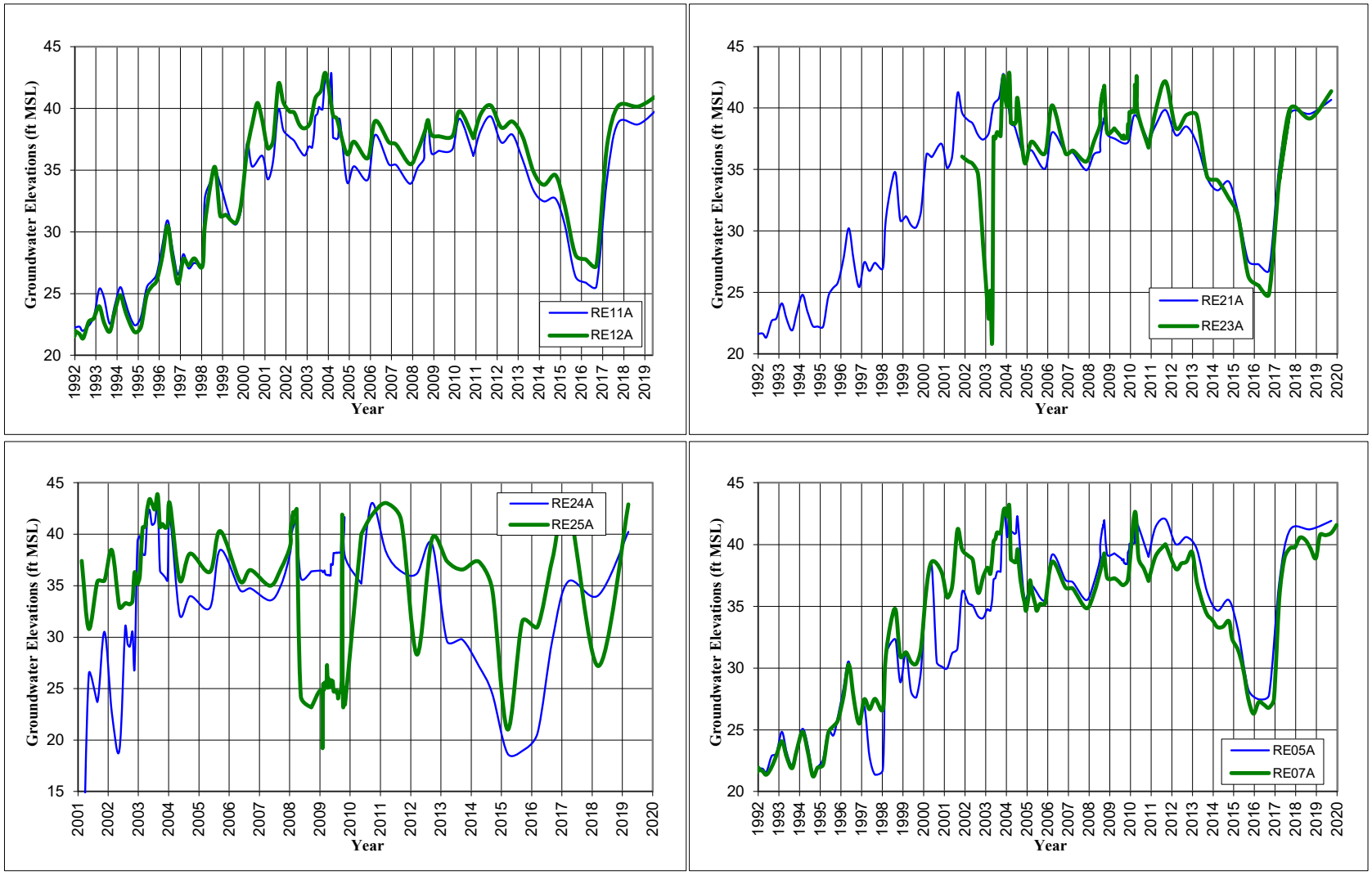




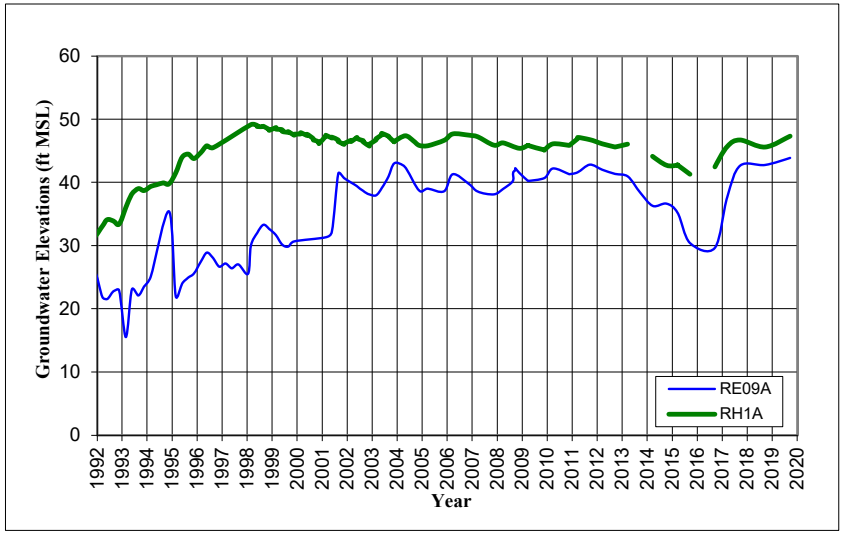
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS



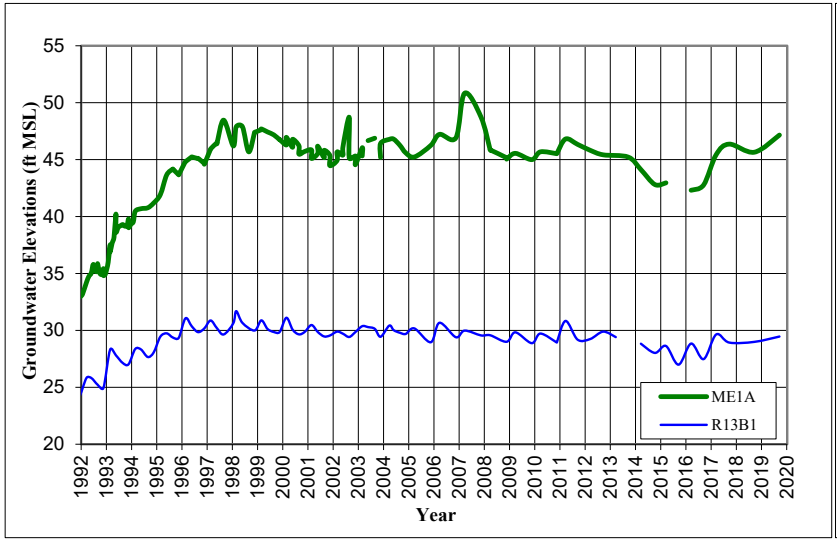
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS

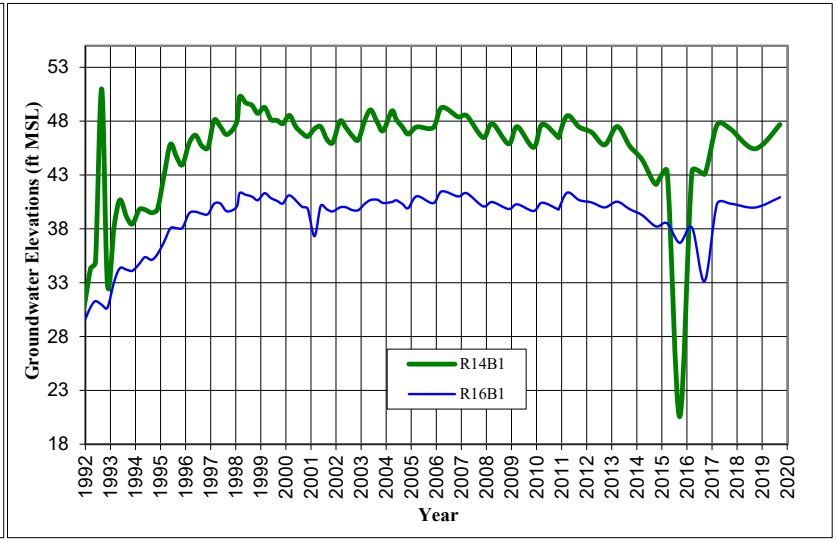


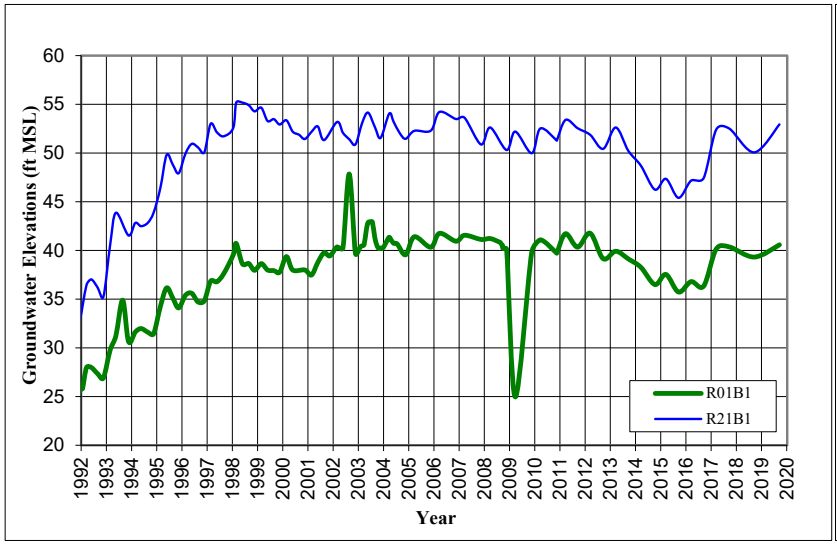
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN A ZONE WELLS

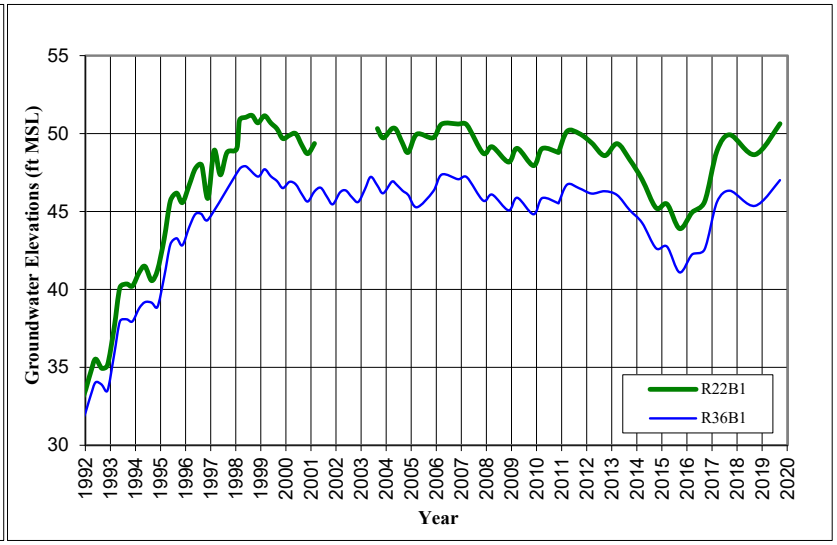


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B1 ZONE WELLS

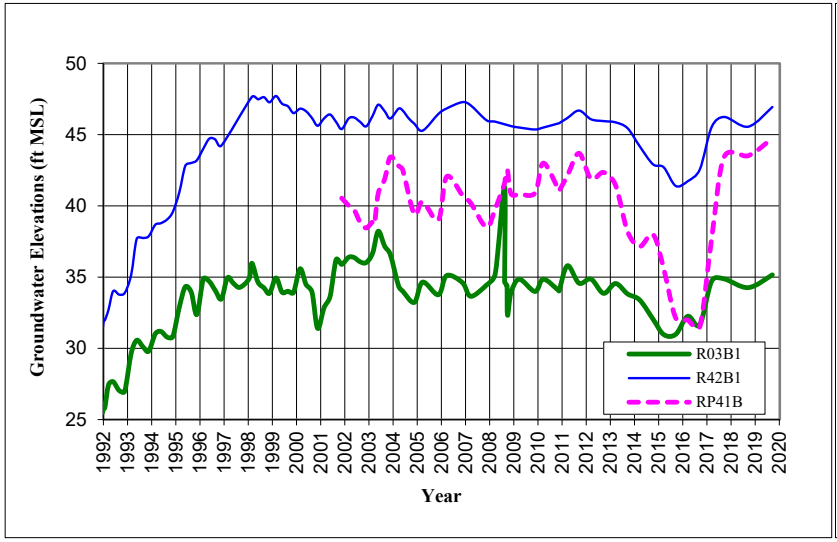


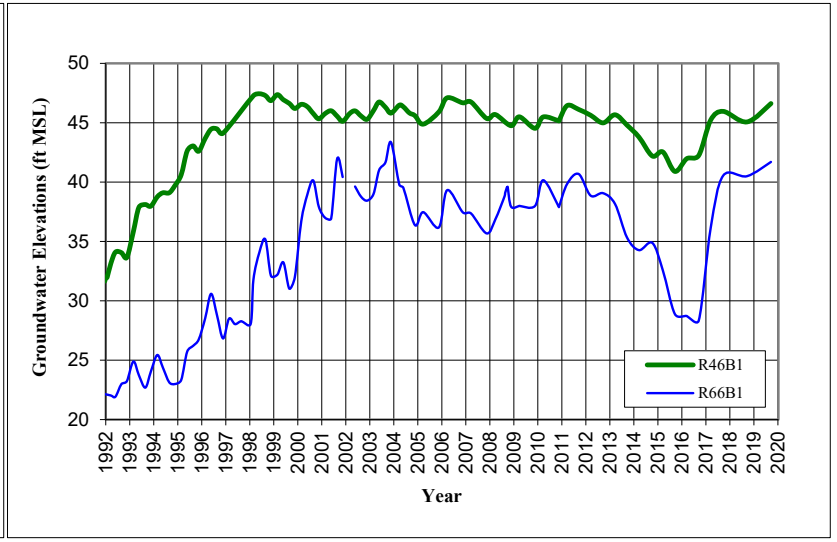


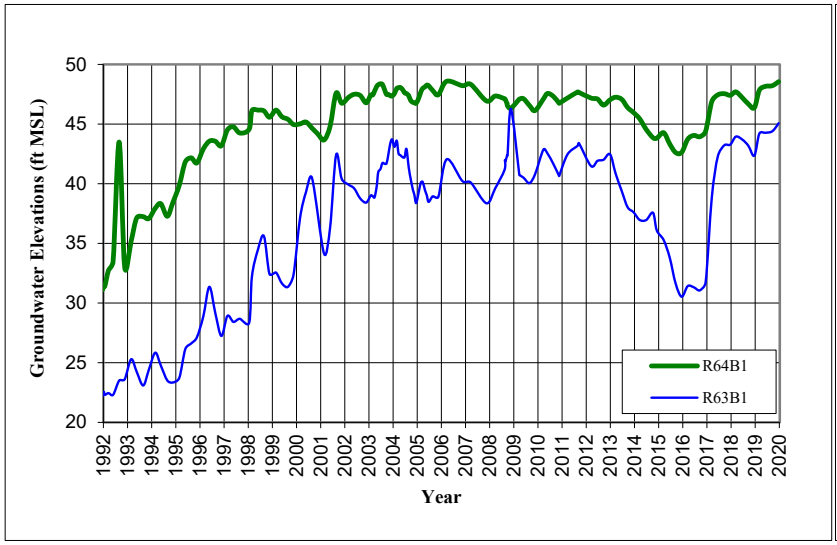


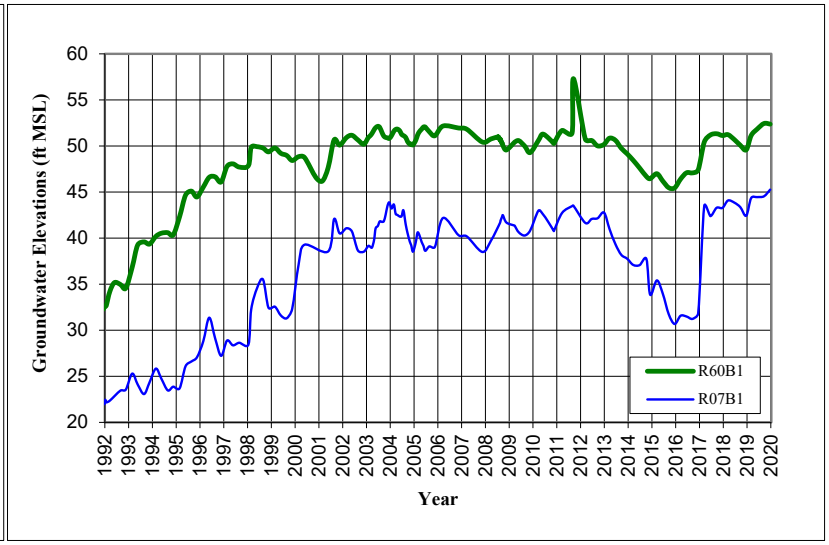


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B1 ZONE WELLS

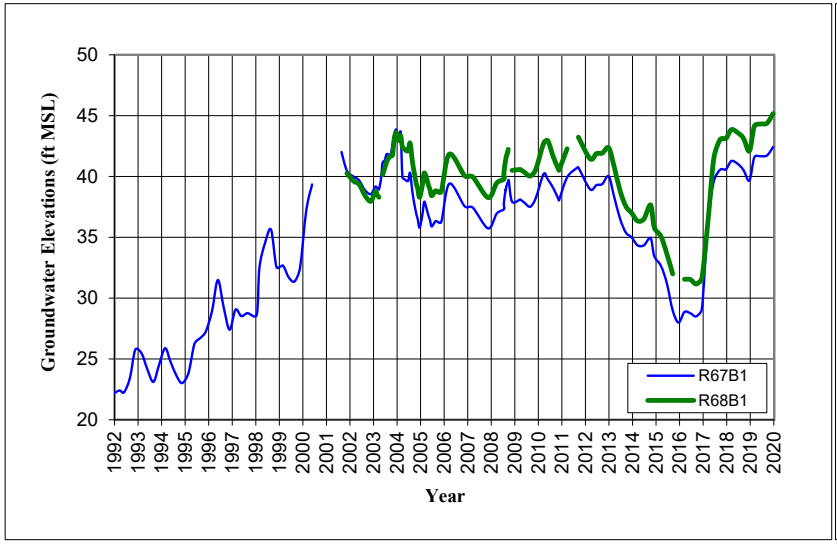


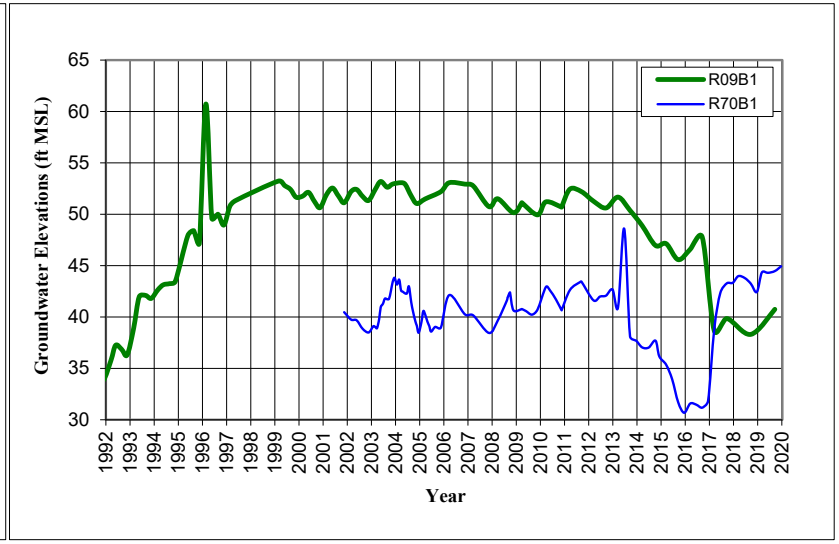


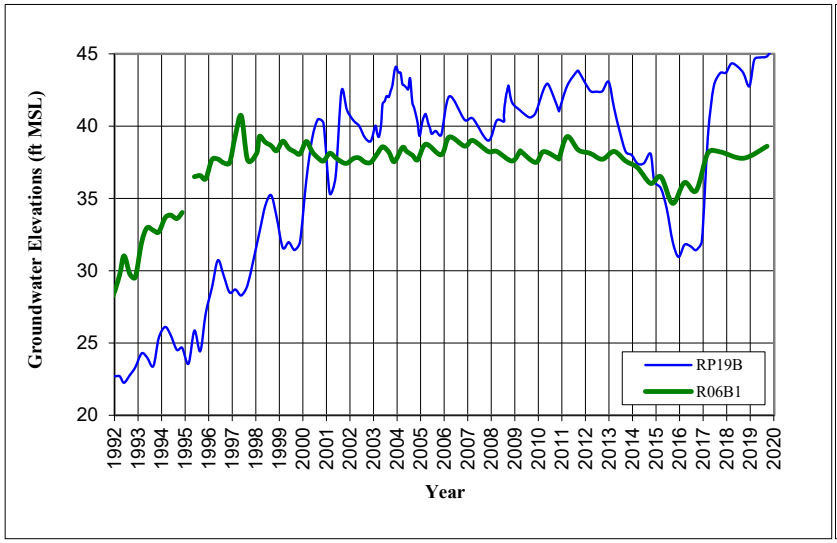


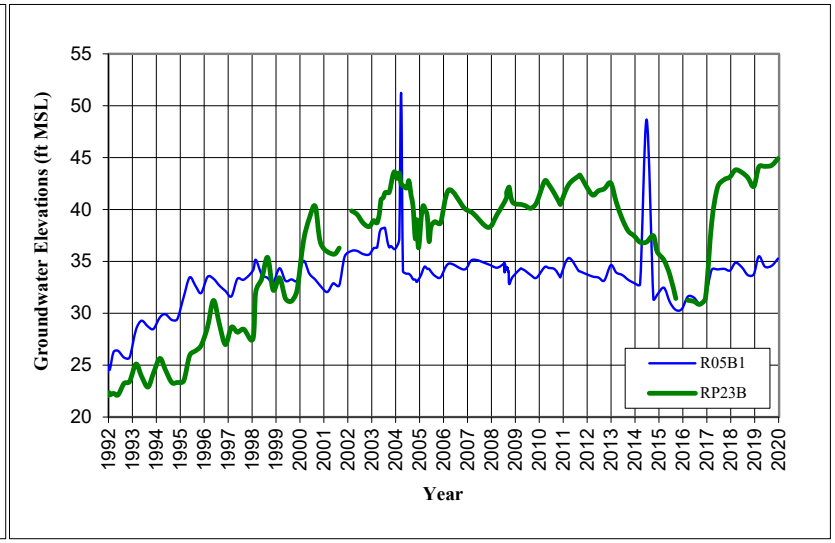


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B1 ZONE WELLS

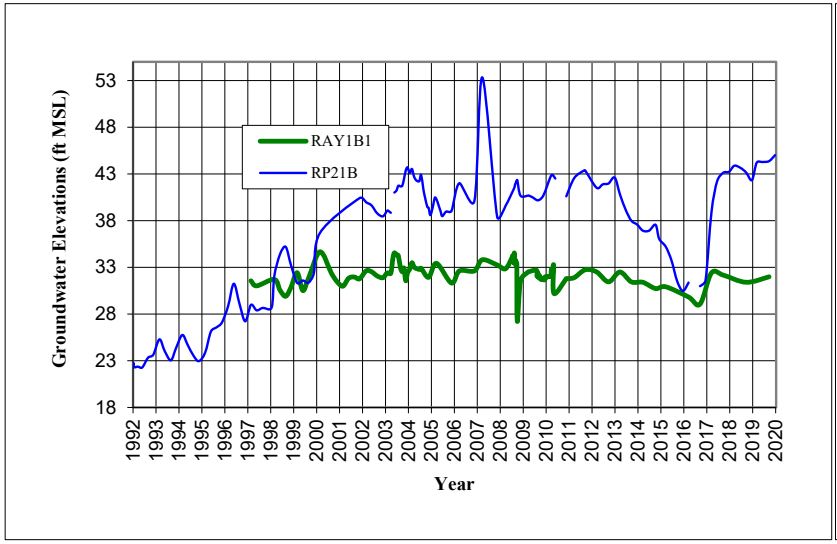


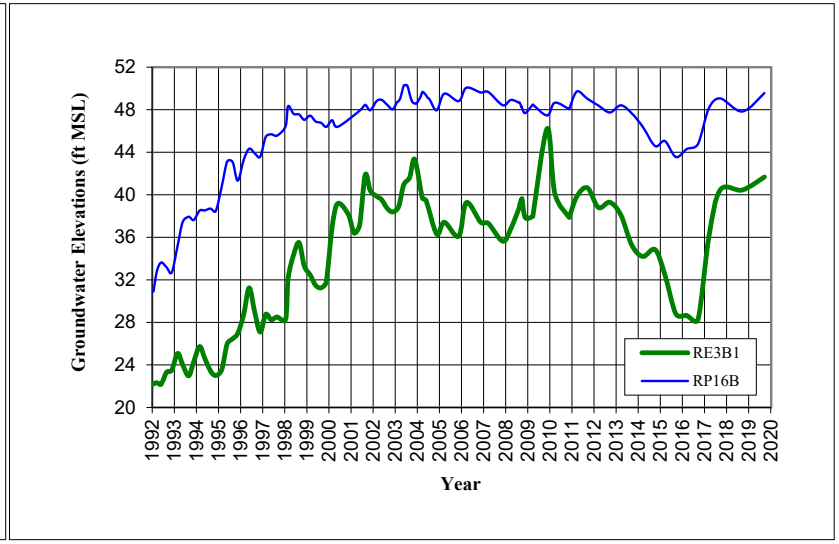


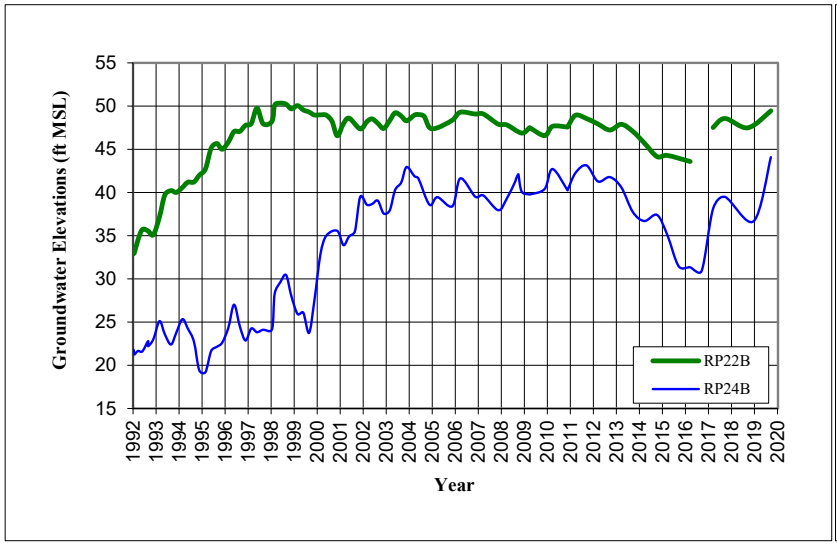


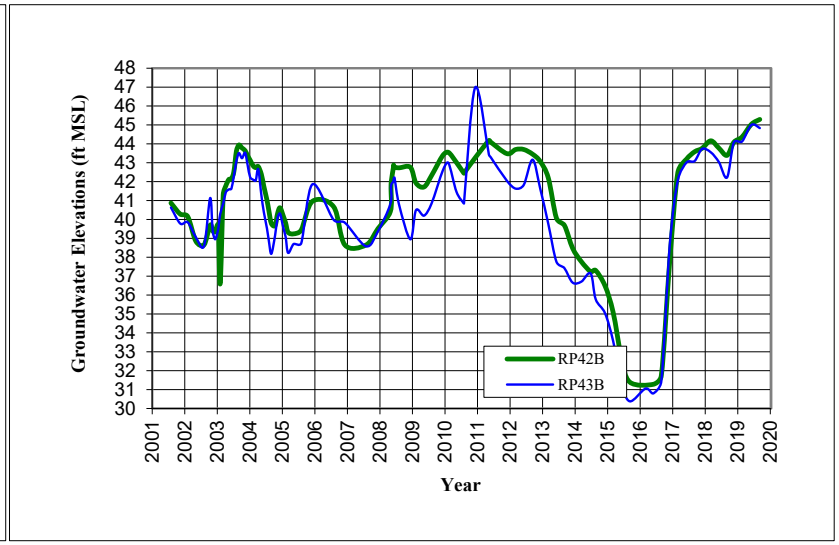


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B1 ZONE WELLS

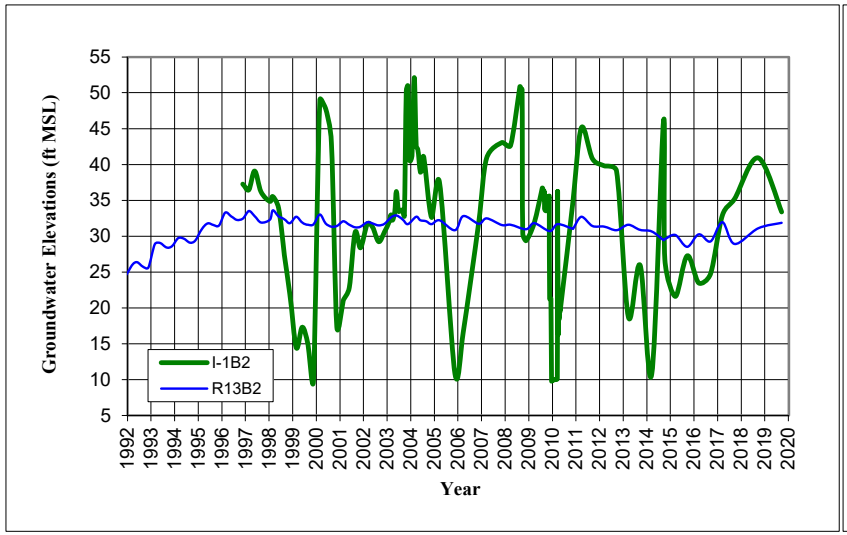


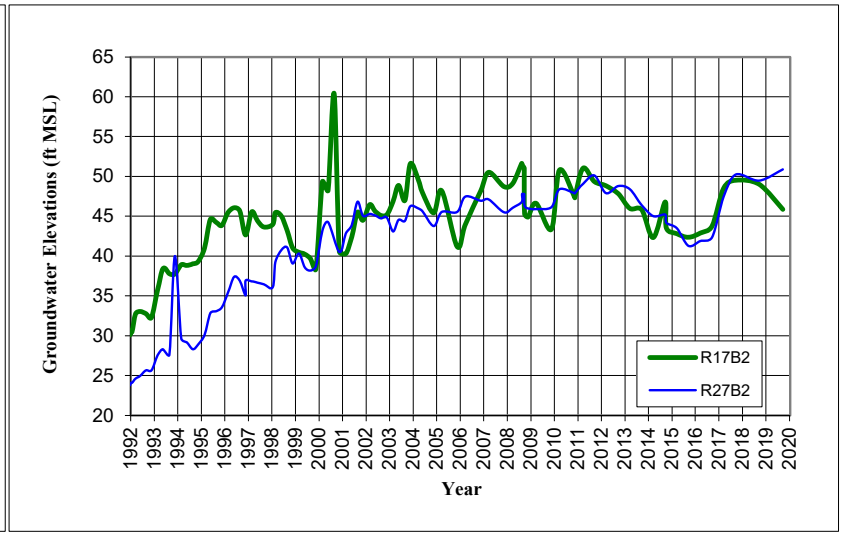


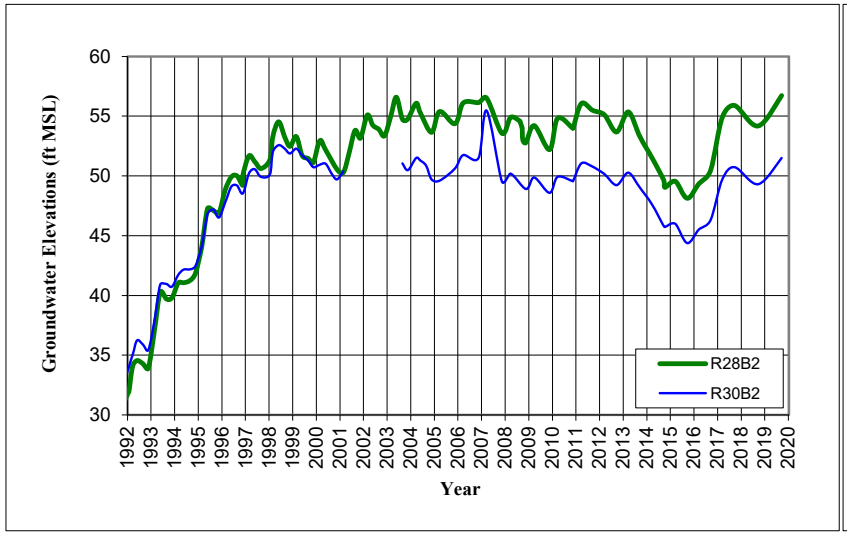


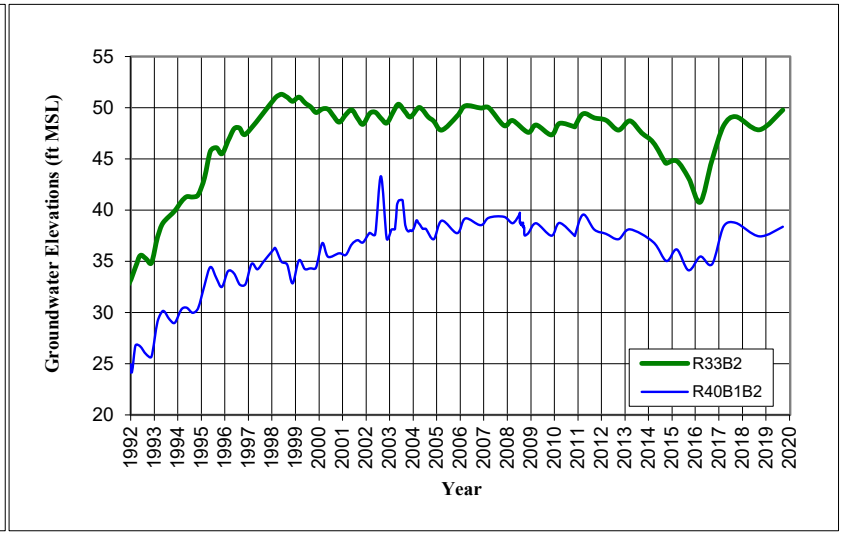


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B2 ZONE WELLS

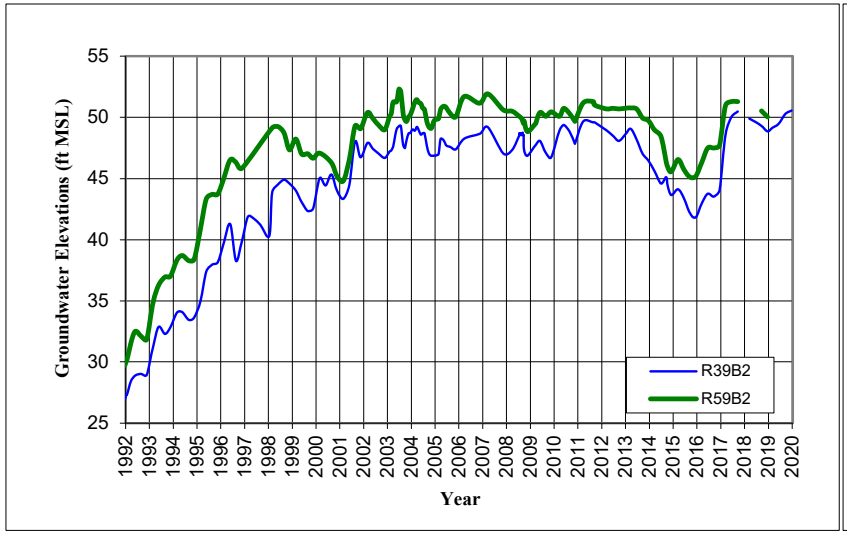


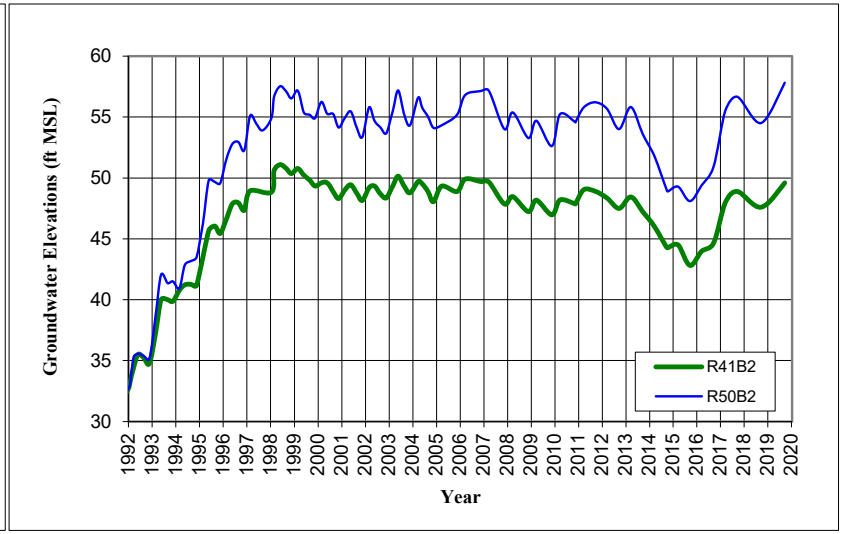


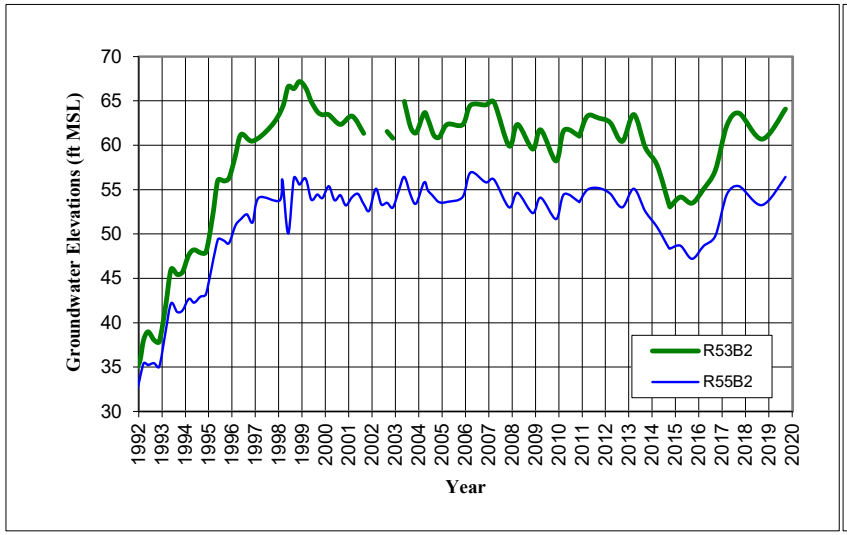


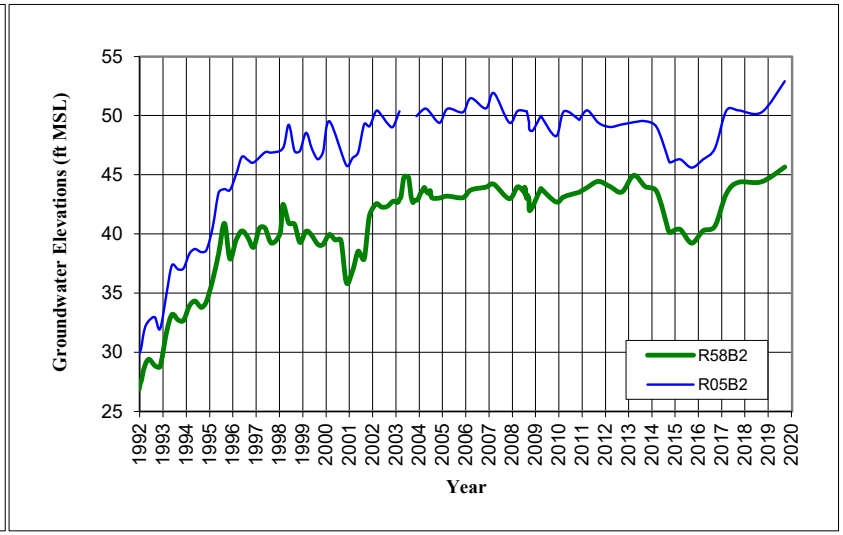


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B2 ZONE WELLS

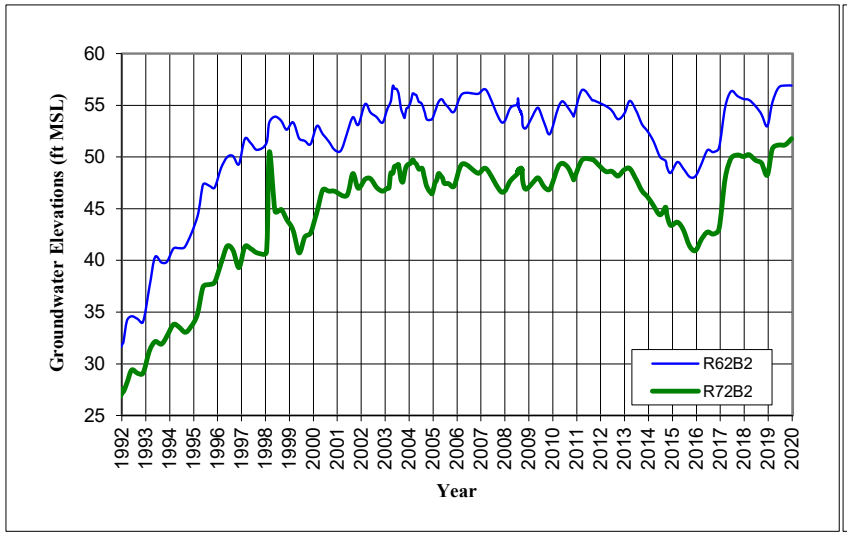


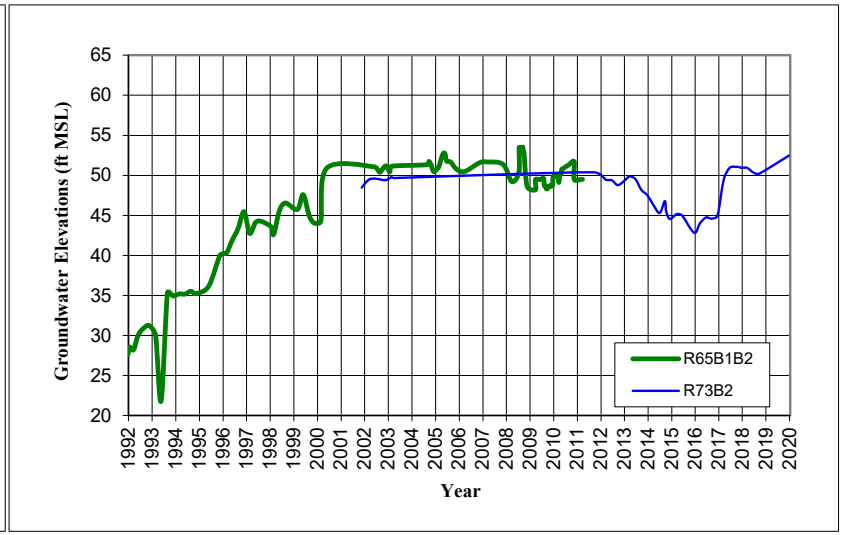


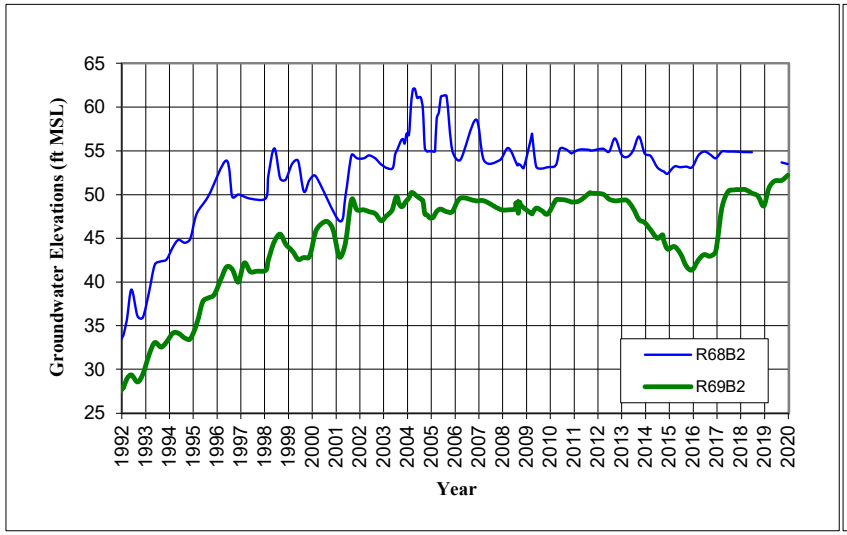


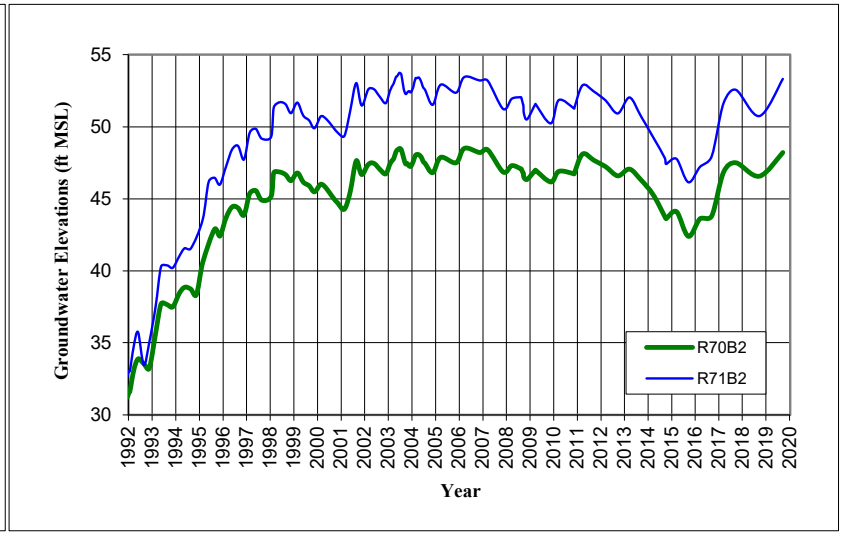


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B2 ZONE WELLS

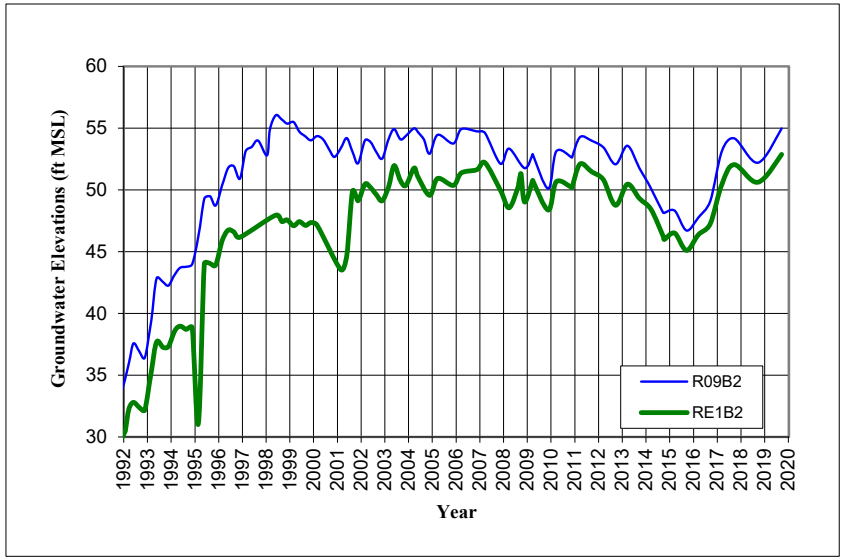




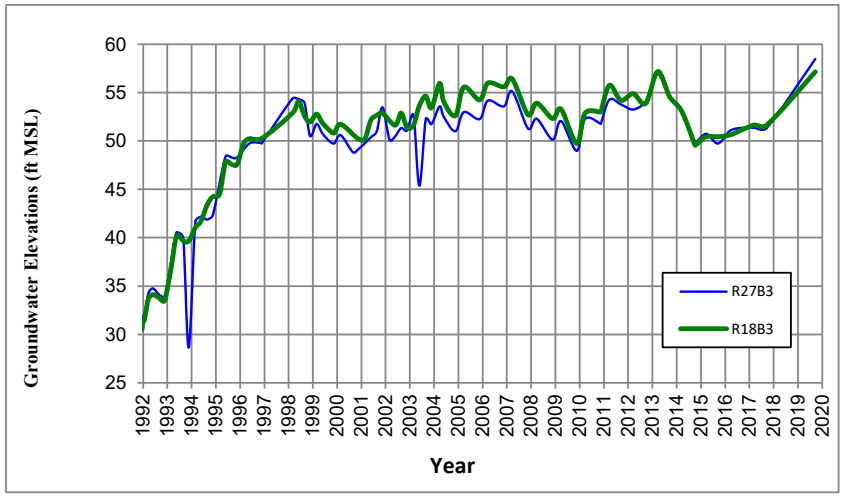


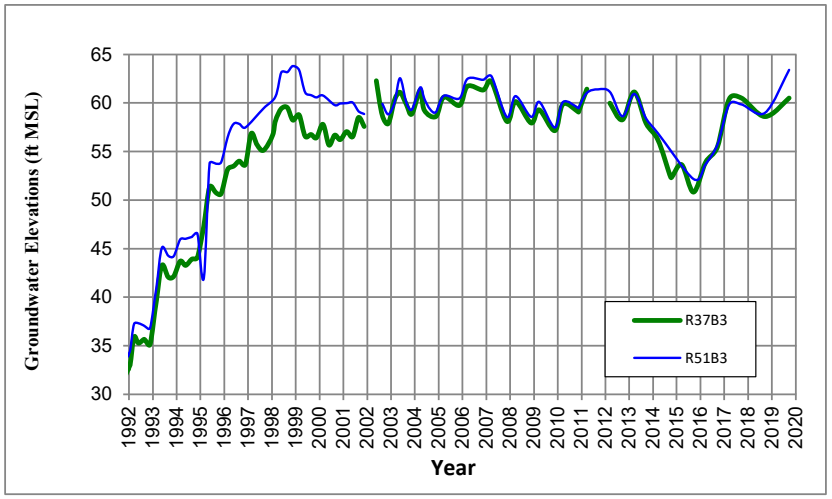


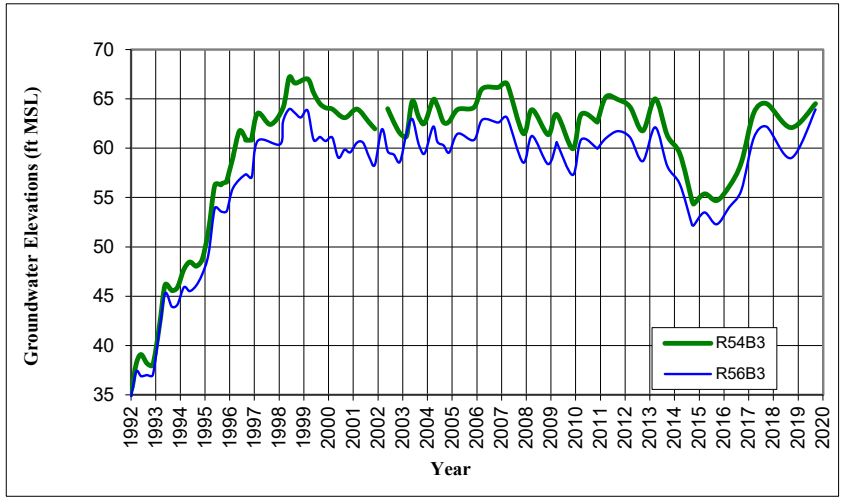
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B2 ZONE WELLS

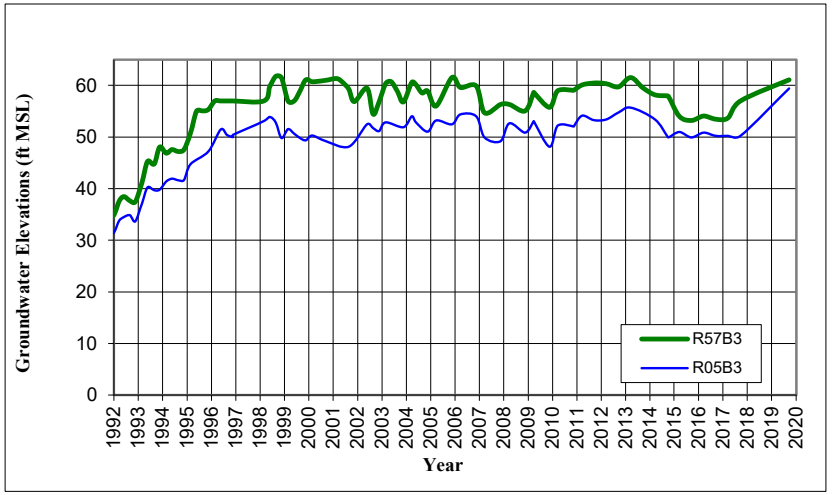


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B3 ZONE WELLS

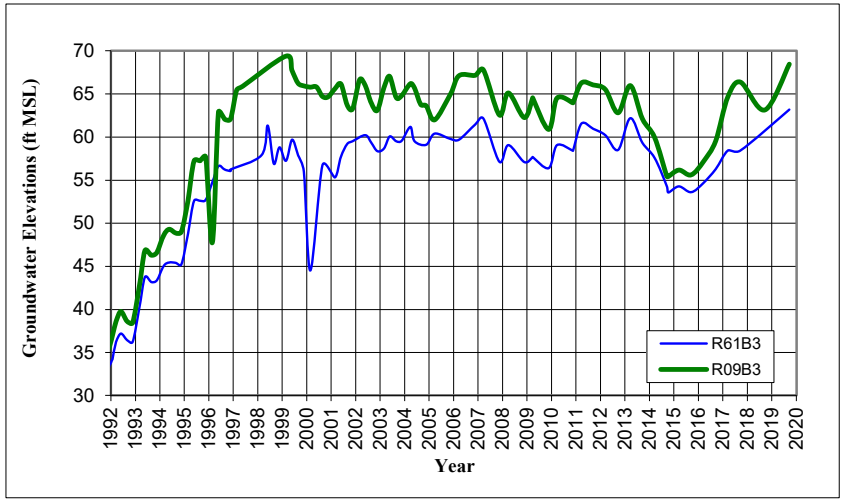








APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN B3 ZONE WELLS



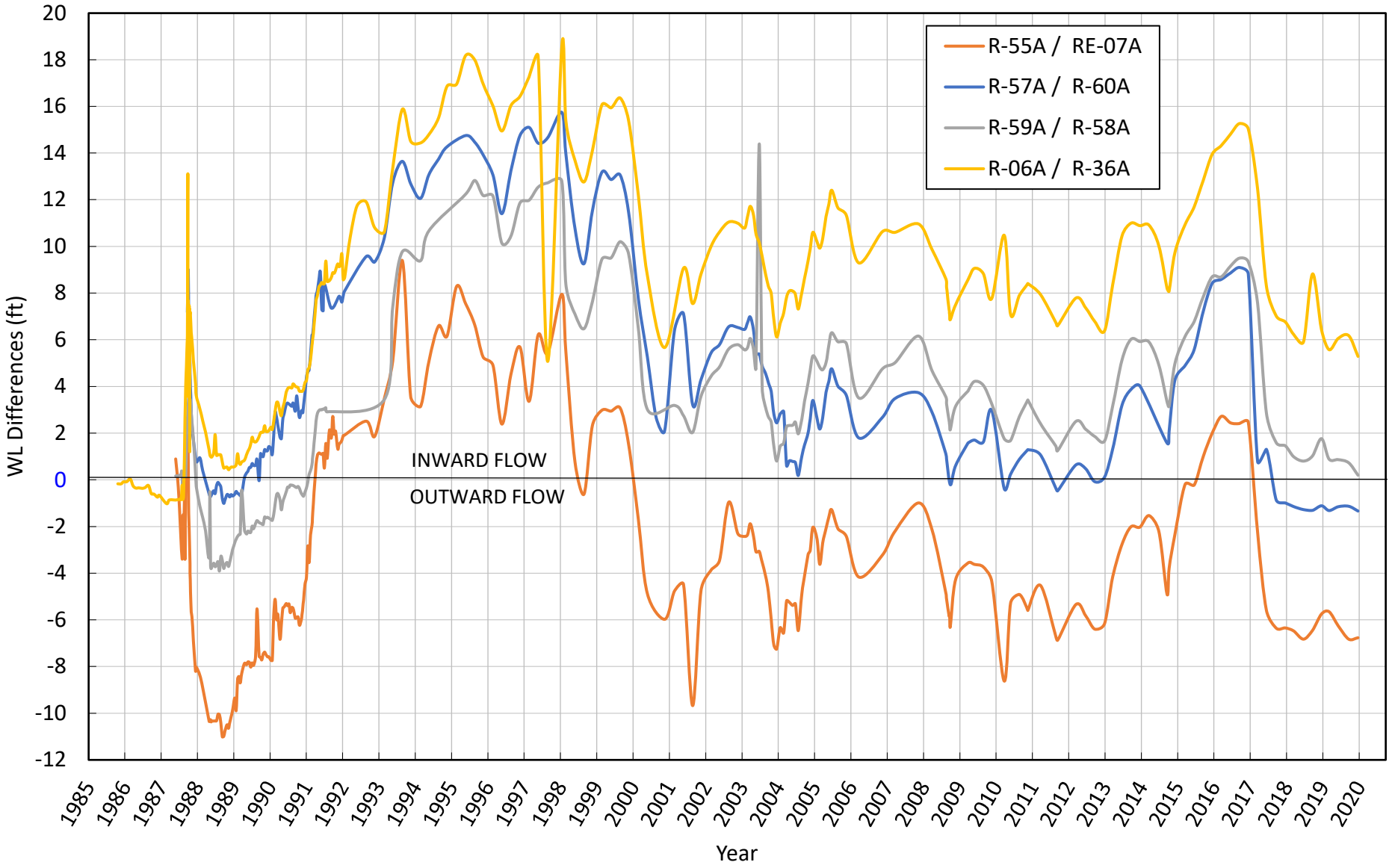
APPENDIX D

Groundwater Level Differences Across the Slurry Wall and Water-Bearing Zones

APPENDIX D

WATER ELEVATION DIFFERENCES ACROSS THE SLURRY WALL IN THE A ZONE

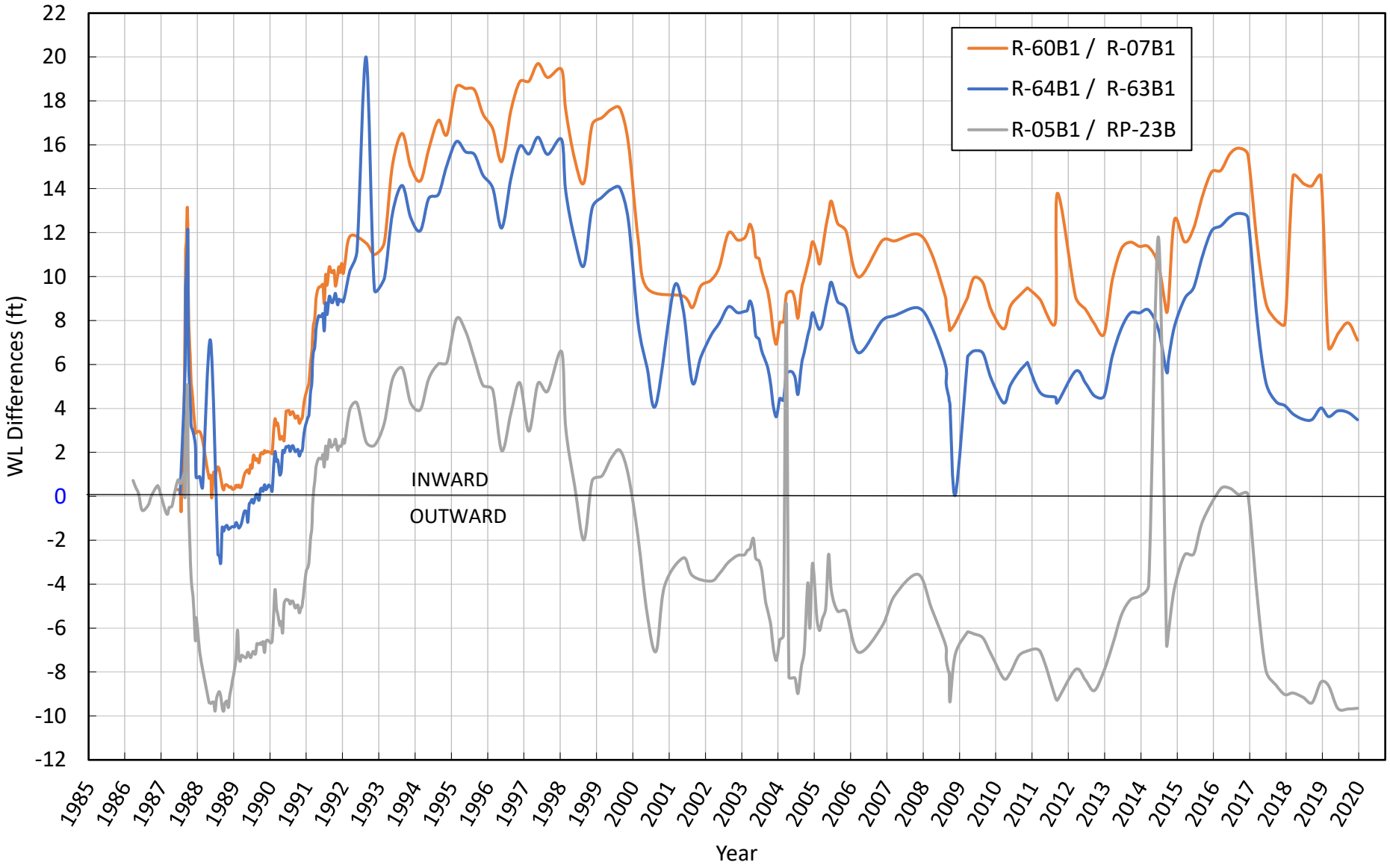
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA



APPENDIX D

WATER ELEVATION DIFFERENCES ACROSS THE SLURRY WALL IN THE B1 ZONE

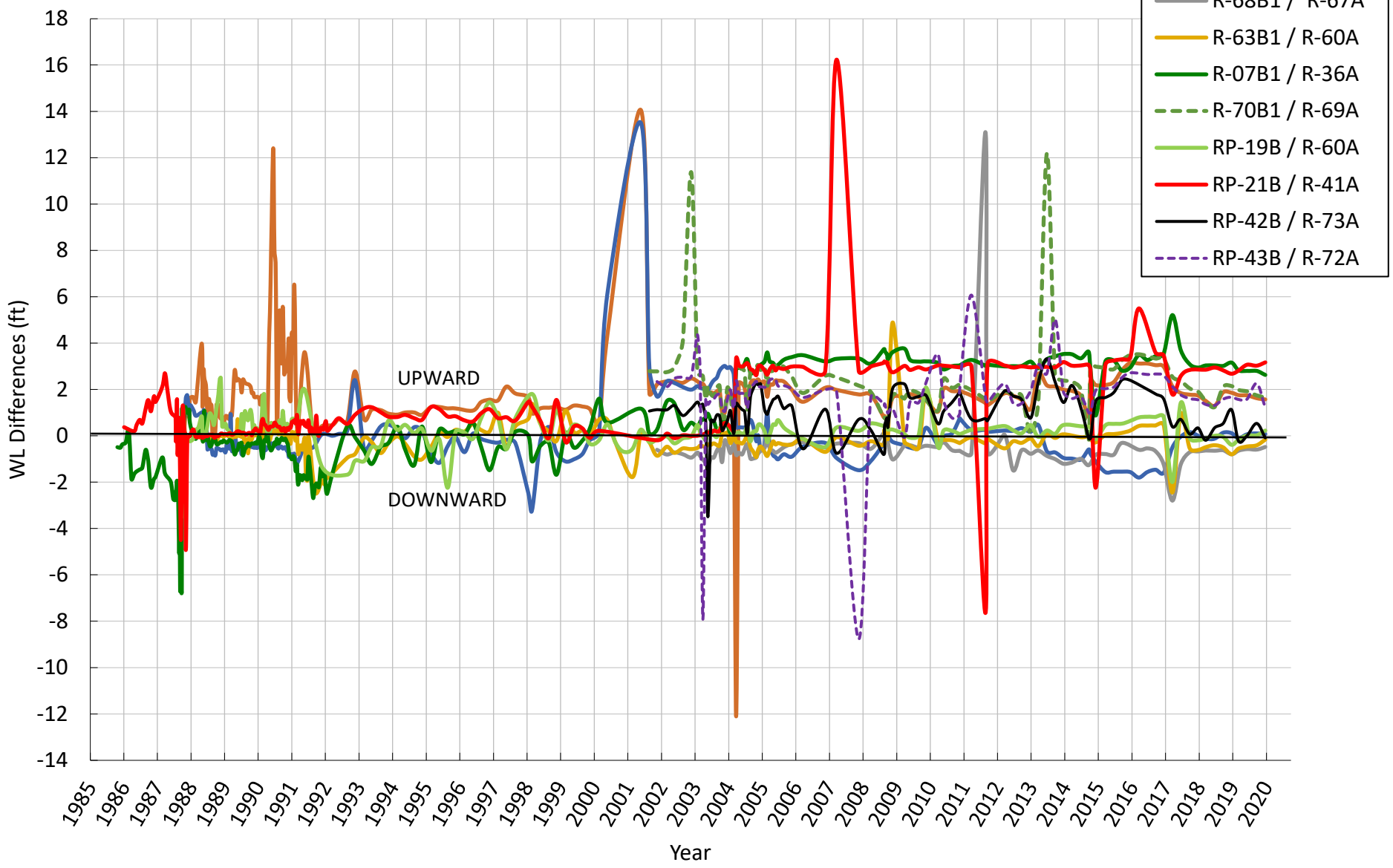
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA



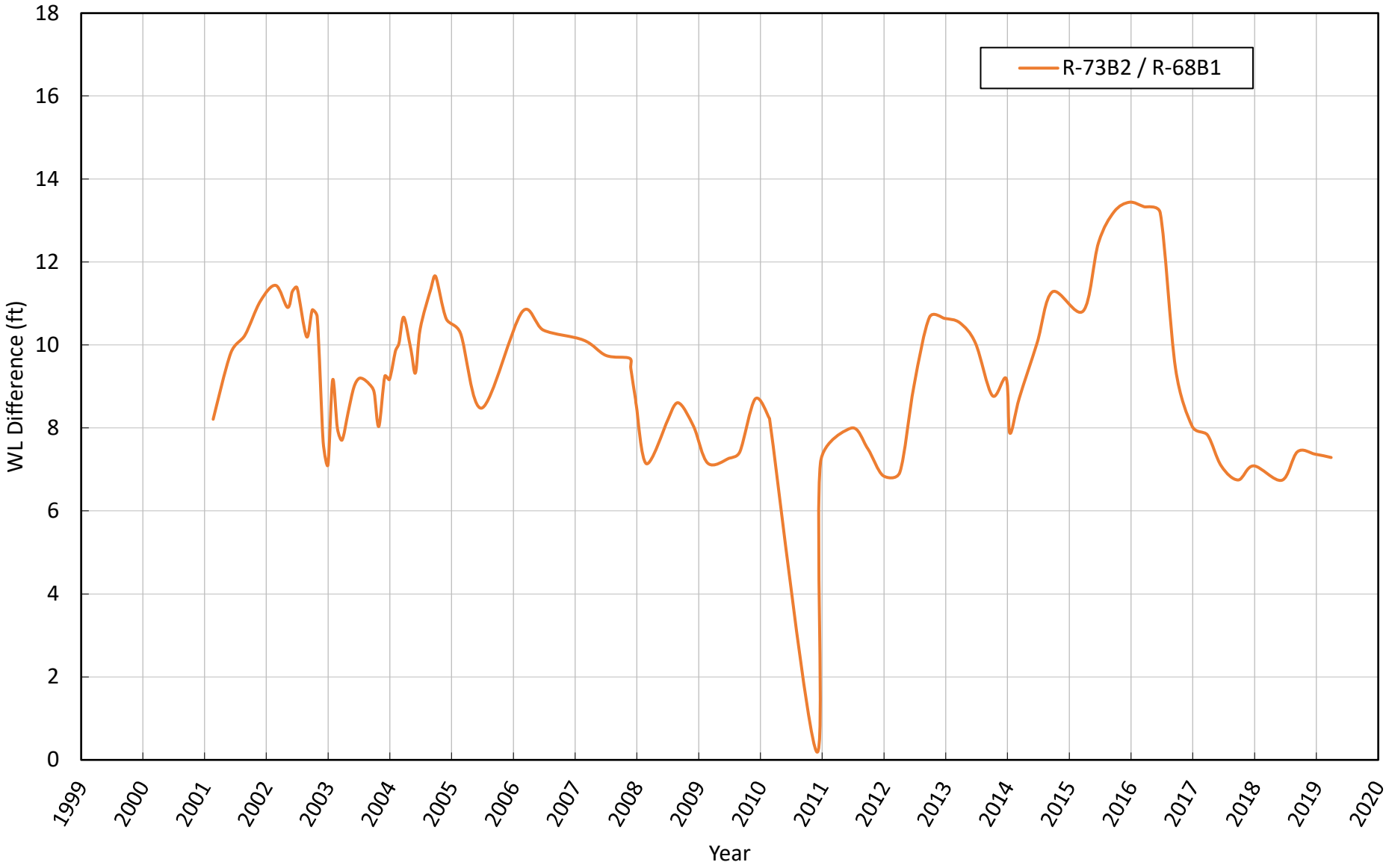
APPENDIX D

WATER ELEVATION DIFFERENCES ACROSS A/B1 AQUITARD

350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA



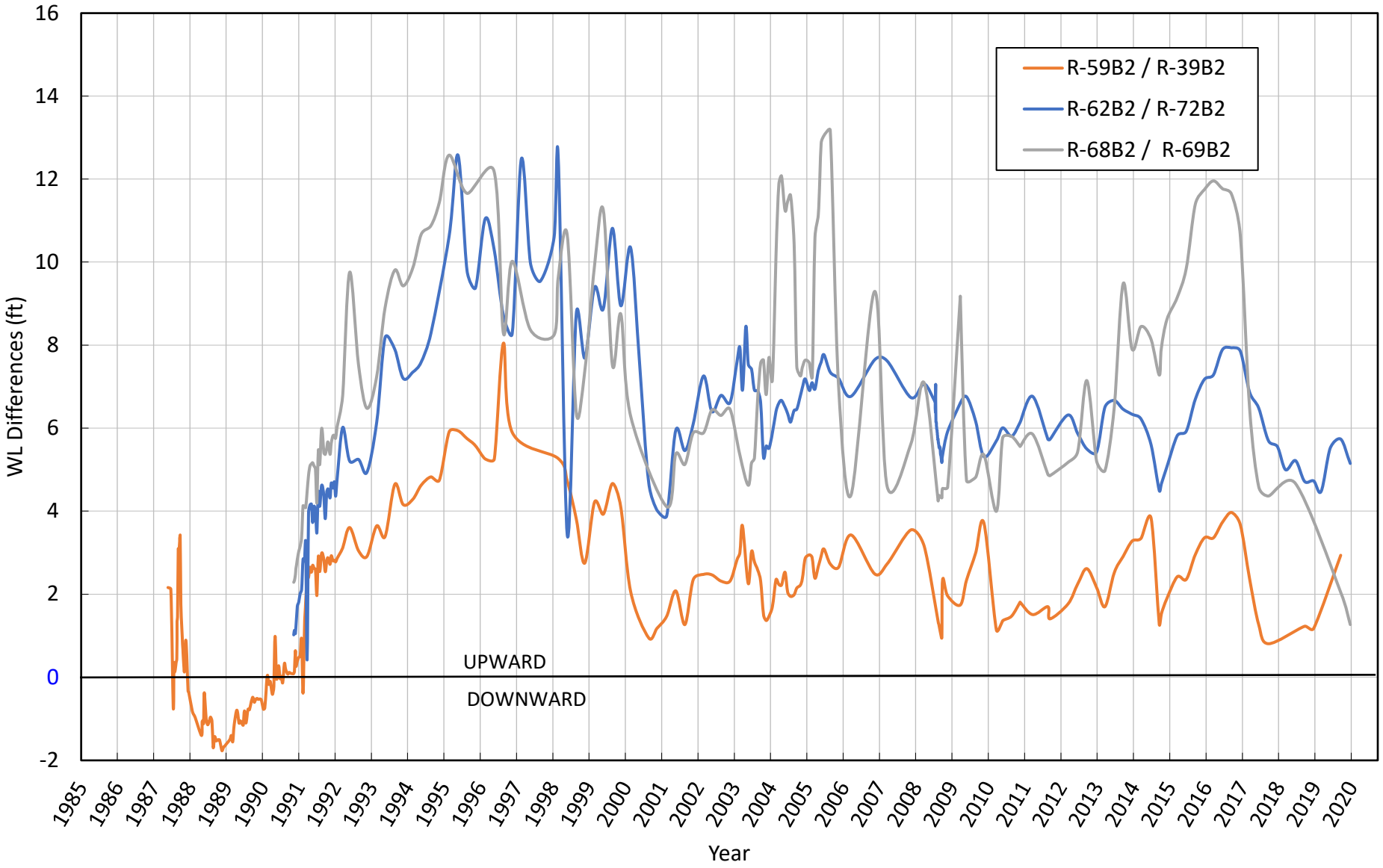
APPENDIX D
WATER ELEVATION DIFFERENCE ACROSS B1/B2 AQUITARD
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA



APPENDIX D

WATER ELEVATION DIFFERENCES BETWEEN UPPER AND LOWER B2 ZONE

350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA



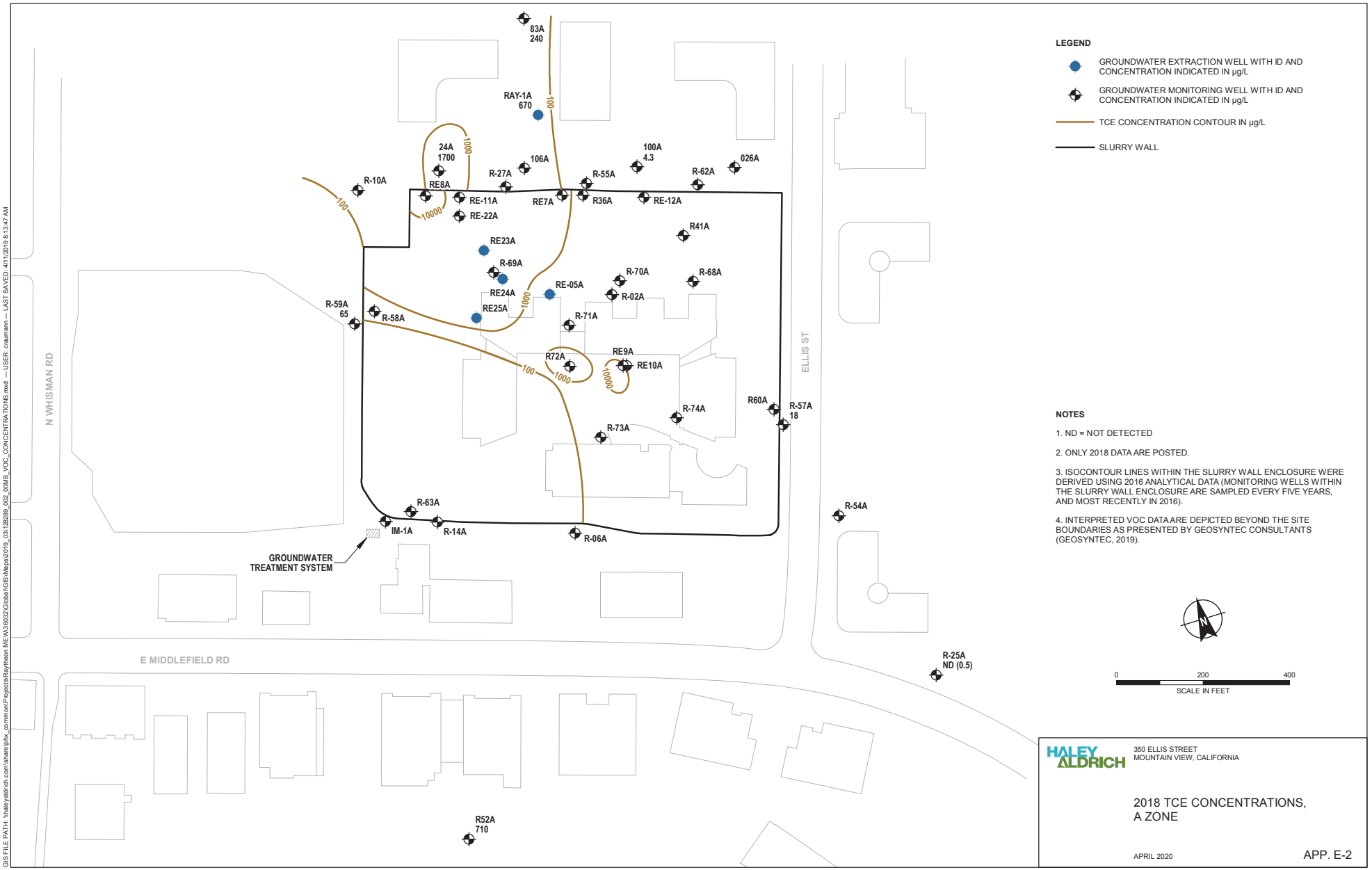
APPENDIX E

Groundwater Quality Data

APPENDIX E-1
SUMMARY OF SITE-SPECIFIC BIENNIALLY MONITORING WELL ANALYTICAL DATA 350
ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Well ID	100A	24A	7B1	83A	94B1	97B1	I-1B2	R-17B2	R-52A		RAY-1A	RAY-1B1
Date Sampled	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018
Sample Purpose	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Duplicate	Primary	Primary
Volatile Organic Compounds (EPA 8260B)												
1,1,1-Trichloroethane	< 0.50	< 0.50	< 0.50	**3.0**	< 0.50	**2.8**	< 0.50	< 0.50	< 0.50	< 0.50	**1.8**	**1.4**
1,1,2,2-Tetrachloroethane	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane	**2.0**	**1.6**	< 0.50	**3.6**	**1.1**	**2.8**	< 0.50	< 0.50	**3.5**	**3.7**	**4.1**	**2.4**
1,1-Dichloroethene	**2.8**	**7.9**	< 0.50	**3.1**	**2.6**	**6.3**	< 0.50	**1.3**	**1.5**	**1.4**	**5.0**	**4.9**
1,2,4-Trichlorobenzene	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dibromoethane (Ethylene Dibromide)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	< 0.50	**0.62**	< 0.50	< 0.50	< 0.50	**0.22 J**	< 0.50	< 0.50	< 0.50	< 0.50	**3.4**	< 0.50
1,2-Dichloroethane	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	< 0.50	**0.23 J**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**0.32 J**	< 0.50
Bromodichloromethane	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromomethane (Methyl Bromide)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbon tetrachloride	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroform (Trichloromethane)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**0.28 J**	< 0.50
Chloromethane (Methyl Chloride)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene	**130**	**2,900**	**13**	**59**	**21**	**51**	**1.7**	**98**	**45**	**46**	**300**	**55**
cis-1,3-Dichloropropene	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromochloromethane	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dichlorodifluoromethane (CFC-12)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methylene chloride	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	< 0.50	**1.3**	< 0.50	**0.33 J**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**2.1**	< 0.50
trans-1,2-Dichloroethene	**2.8**	**33**	< 0.50	**0.91**	< 0.50	**0.45 J**	< 0.50	**1.4**	< 0.50	< 0.50	**3.4**	< 0.50
trans-1,3-Dichloropropene	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene	**4.3**	**1,700**	**31**	**240**	**230**	**580**	**220**	**260**	**710**	**670**	**670**	**400**
Trichlorofluoromethane (CFC-11)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Trifluorotrichloroethane (Freon 113)	< 1.0	**0.18 J**	< 1.0	**6.3**	**0.22 J**	**0.61 J**	< 1.0	< 1.0	< 1.0	< 1.0	**3.2**	**0.64 J**
Vinyl chloride	< 0.50	**5.0**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**12**	< 0.50	< 0.50	**5.3**	< 0.50

Notes:
Detected values are **bolded.**
All results are reported in micrograms per liter (µg/L).
Non-detects are displayed as less than the laboratory reporting limit (< RL).
J = result is estimated due to detection between the MDL and reporting limit (RL).



LEGEND

- GROUNDWATER EXTRACTION WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- GROUNDWATER MONITORING WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- TCE CONCENTRATION CONTOUR IN µg/L
- SLURRY WALL

NOTES

1. ND = NOT DETECTED
2. ONLY 2018 DATA ARE POSTED.
3. ISOCONTOUR LINES WITHIN THE SLURRY WALL ENCLOSURE WERE DERIVED USING 2016 ANALYTICAL DATA (MONITORING WELLS WITHIN THE SLURRY WALL ENCLOSURE ARE SAMPLED EVERY FIVE YEARS, AND MOST RECENTLY IN 2016).
4. INTERPRETED VOC DATA ARE DEPICTED BEYOND THE SITE BOUNDARIES AS PRESENTED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2019).

N

0 200 400
SCALE IN FEET

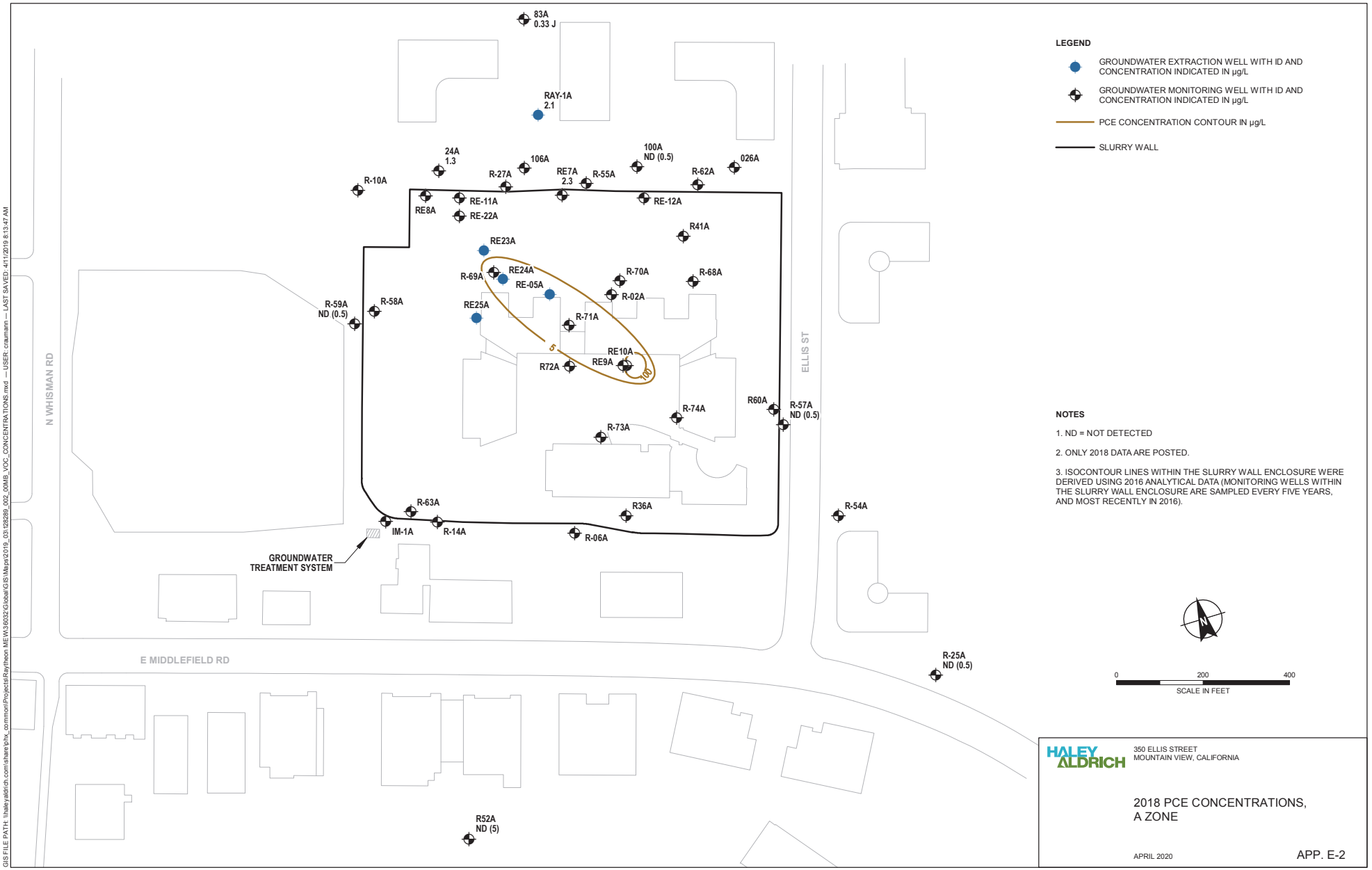
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 TCE CONCENTRATIONS, A ZONE

APRIL 2020

APP. E-2



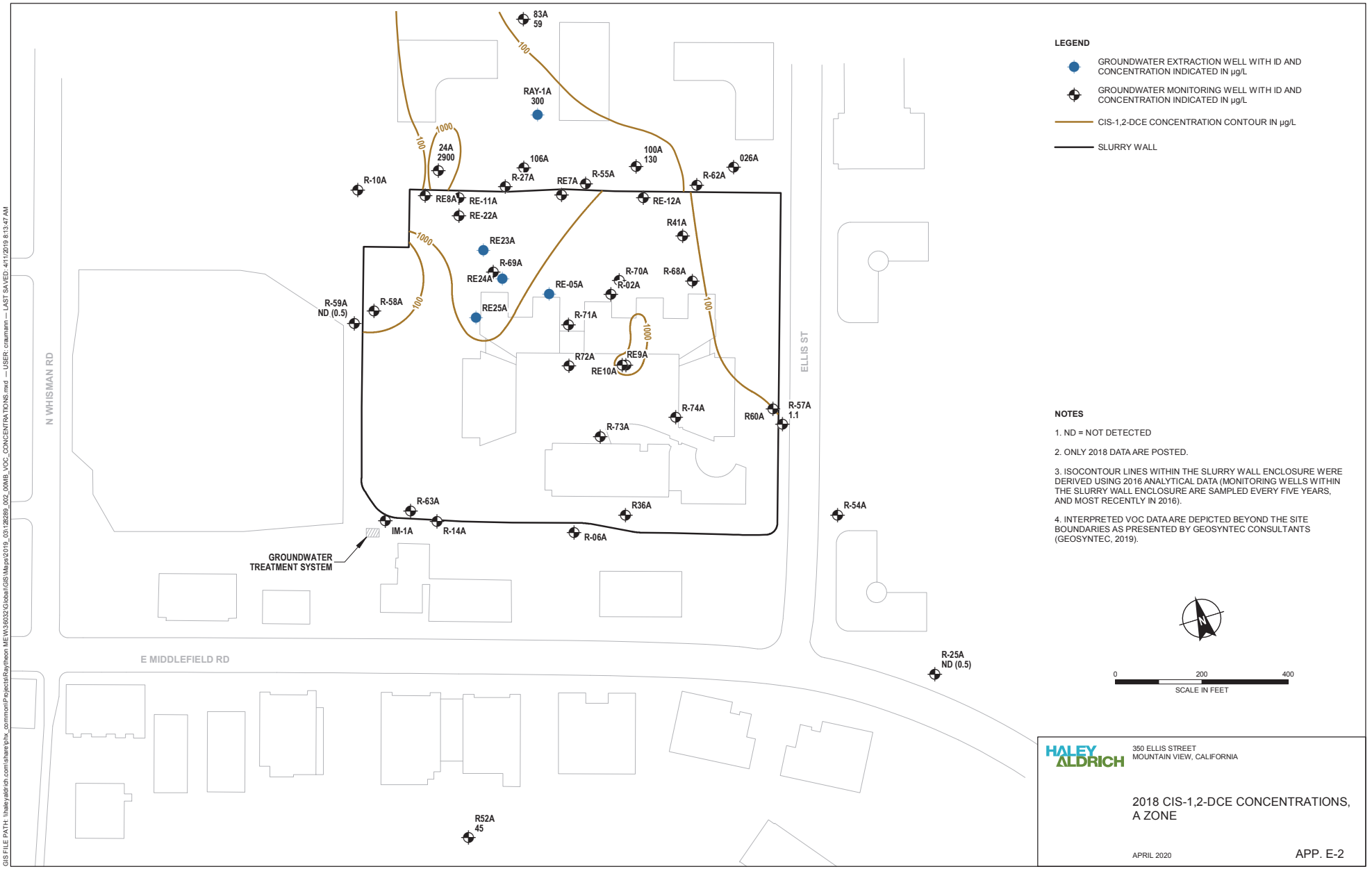
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 PCE CONCENTRATIONS, A ZONE

APRIL 2020

APP. E-2



LEGEND

- GROUNDWATER EXTRACTION WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- GROUNDWATER MONITORING WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- CIS-1,2-DCE CONCENTRATION CONTOUR IN µg/L
- SLURRY WALL

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N

0 200 400
SCALE IN FEET

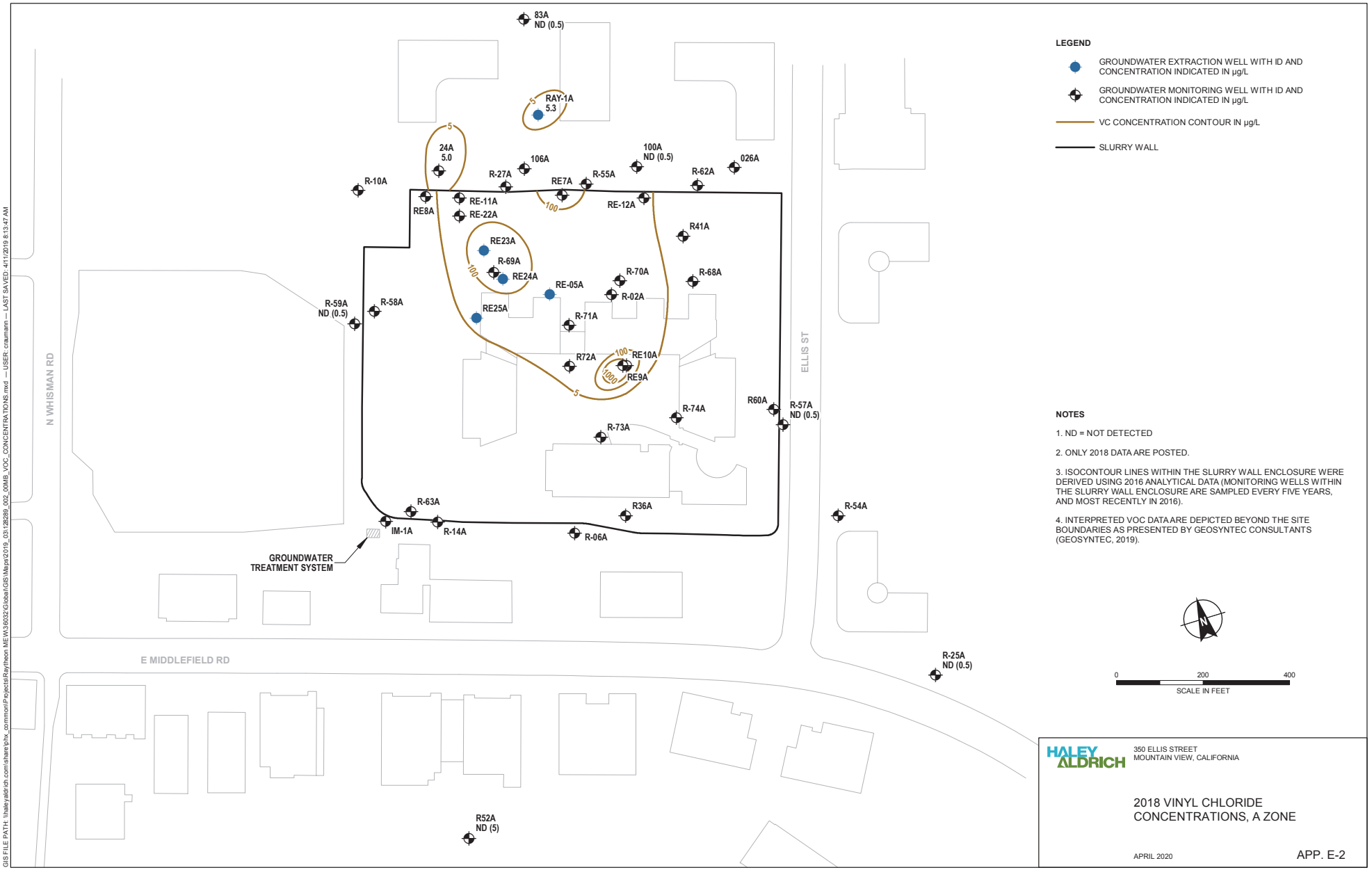
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 CIS-1,2-DCE CONCENTRATIONS, A ZONE

APRIL 2020

APP. E-2



LEGEND

- GROUNDWATER EXTRACTION WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- GROUNDWATER MONITORING WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- VC CONCENTRATION CONTOUR IN µg/L
- SLURRY WALL

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N

0 200 400
SCALE IN FEET

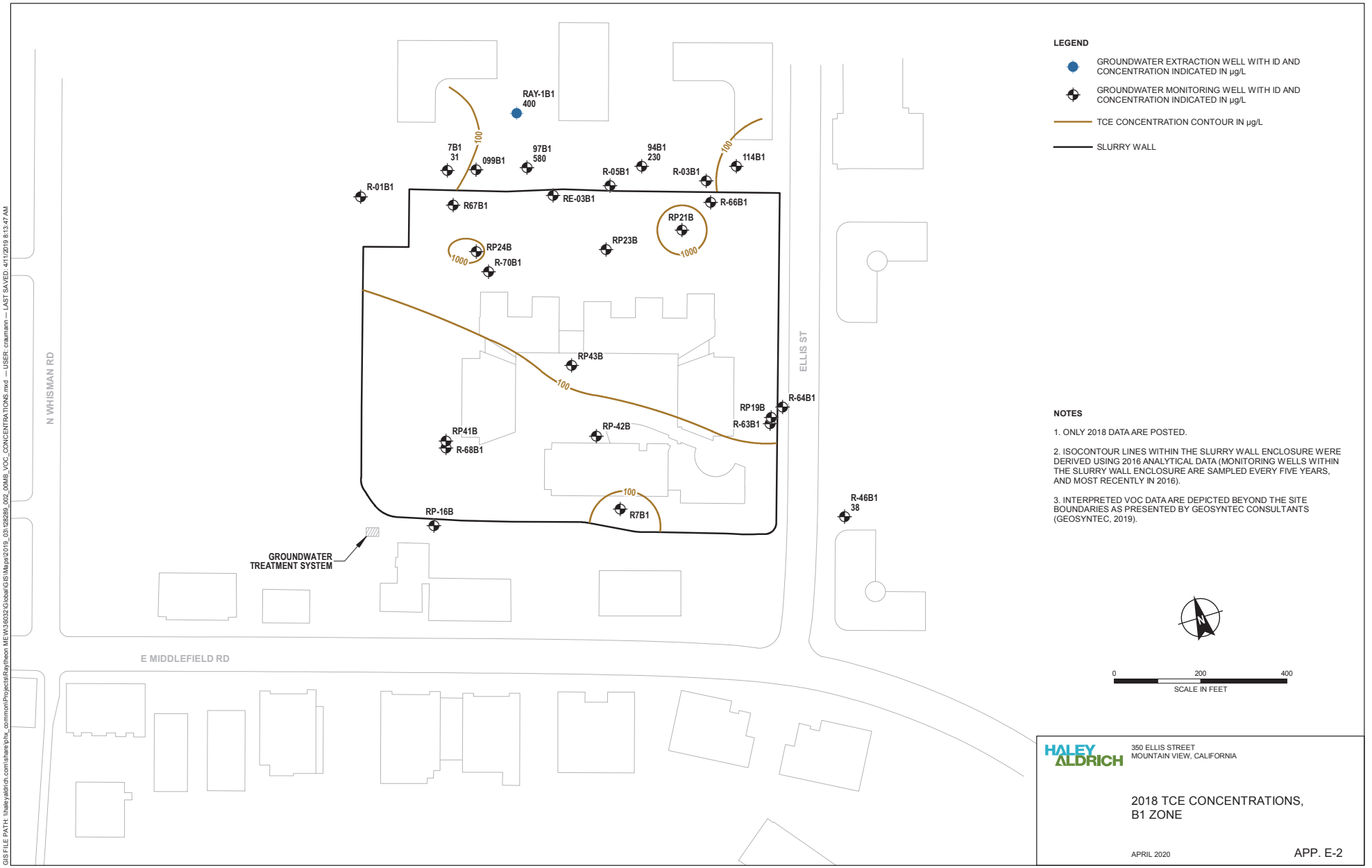
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 VINYL CHLORIDE CONCENTRATIONS, A ZONE

APRIL 2020

APP. E-2



LEGEND

- GROUNDWATER EXTRACTION WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- GROUNDWATER MONITORING WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- TCE CONCENTRATION CONTOUR IN µg/L
- SLURRY WALL

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N

0 200 400
SCALE IN FEET

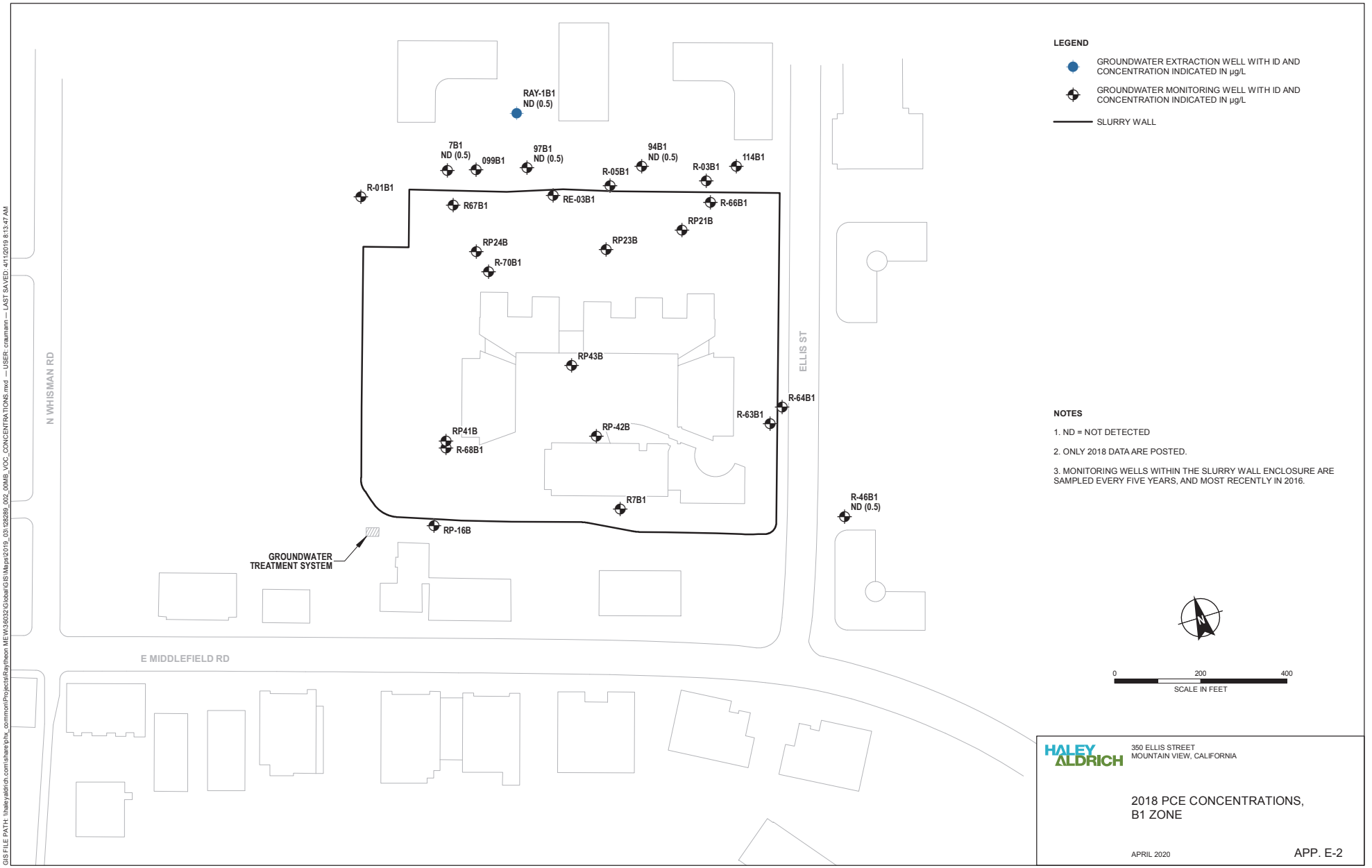
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 TCE CONCENTRATIONS, B1 ZONE

APRIL 2020

APP. E-2



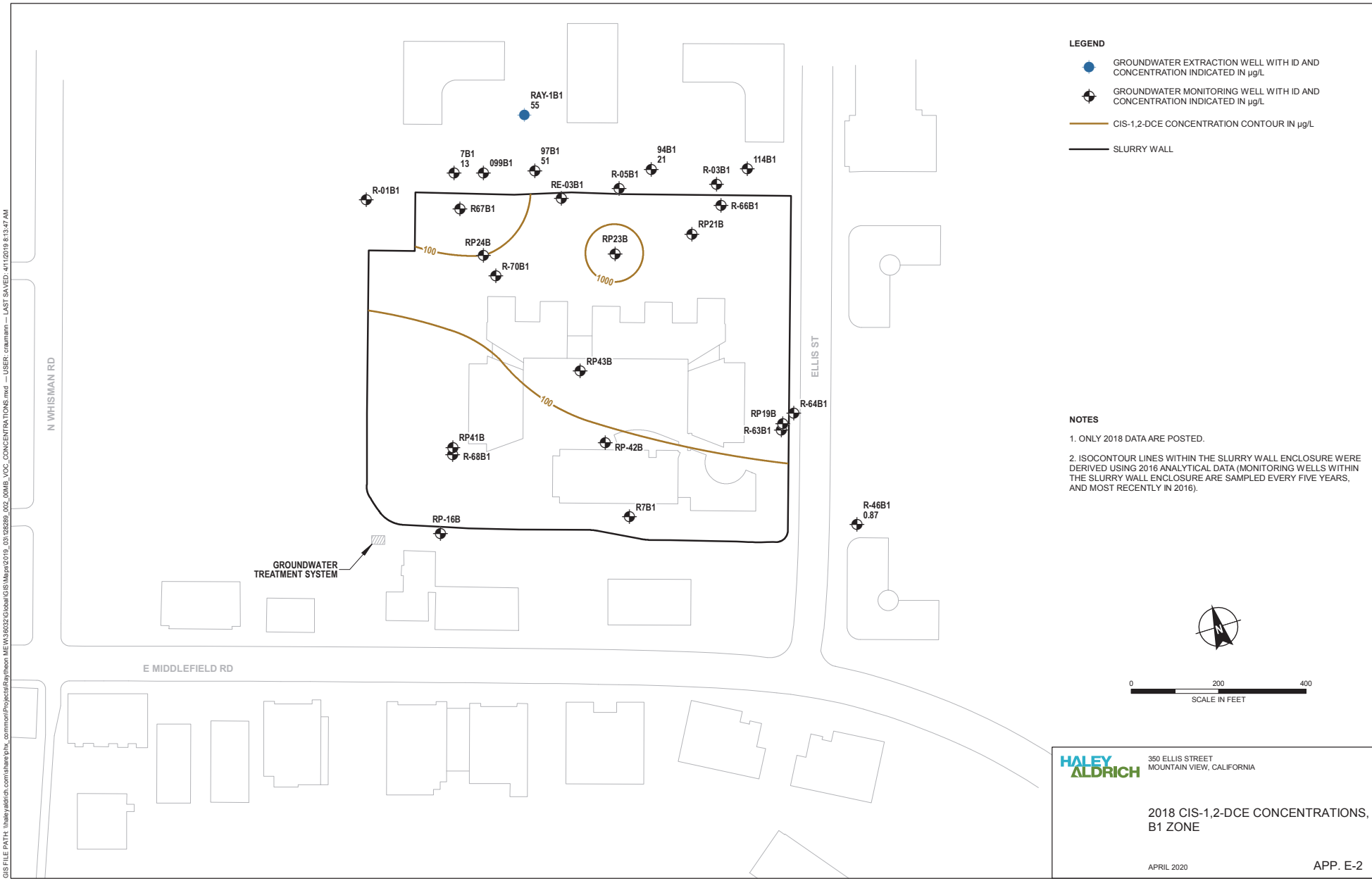
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 PCE CONCENTRATIONS, B1 ZONE

APRIL 2020

APP. E-2



LEGEND

- GROUNDWATER EXTRACTION WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- GROUNDWATER MONITORING WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
- CIS-1,2-DCE CONCENTRATION CONTOUR IN µg/L
- SLURRY WALL

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0 200 400
SCALE IN FEET

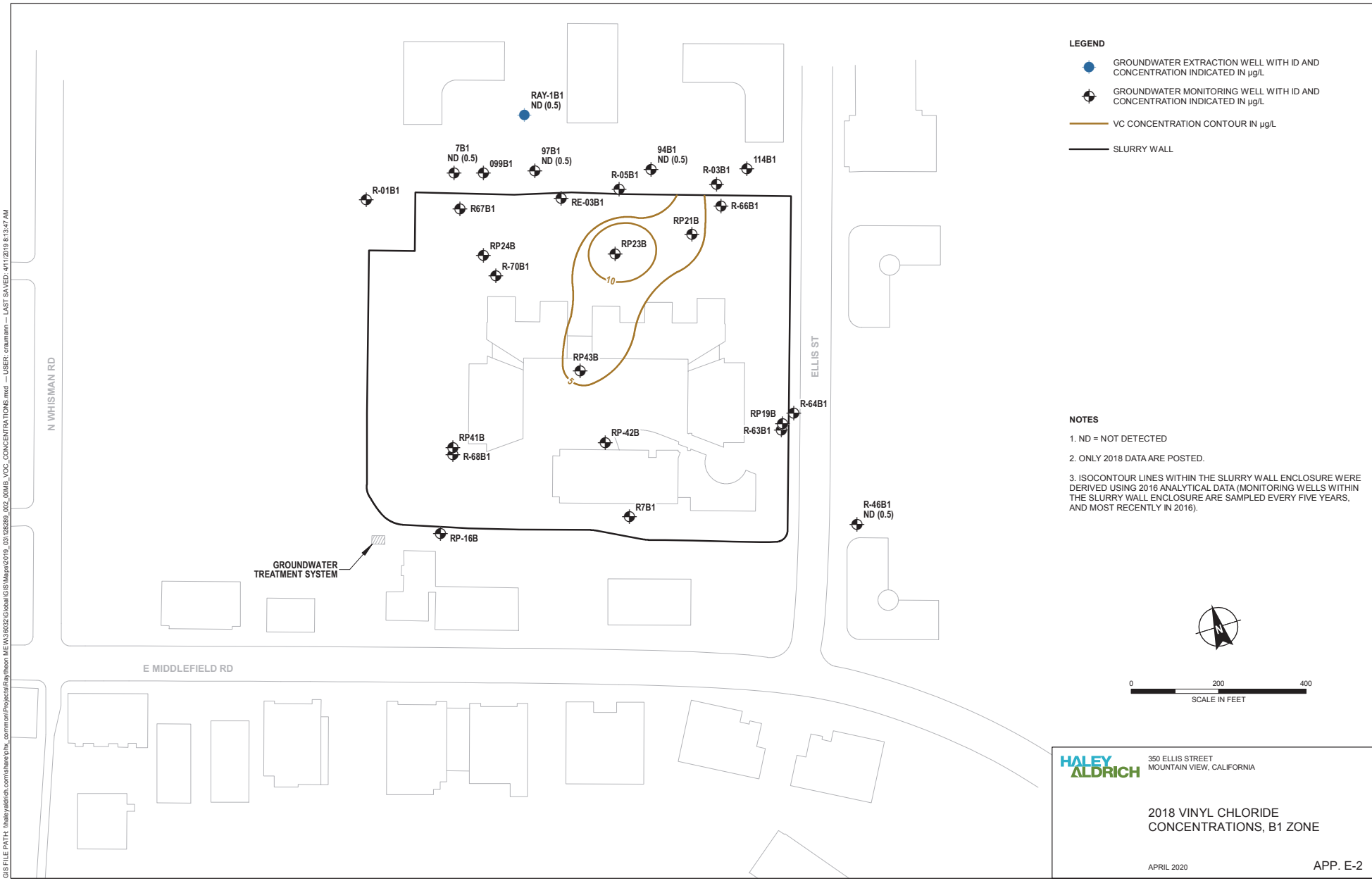
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 CIS-1,2-DCE CONCENTRATIONS, B1 ZONE

APRIL 2020

APP. E-2



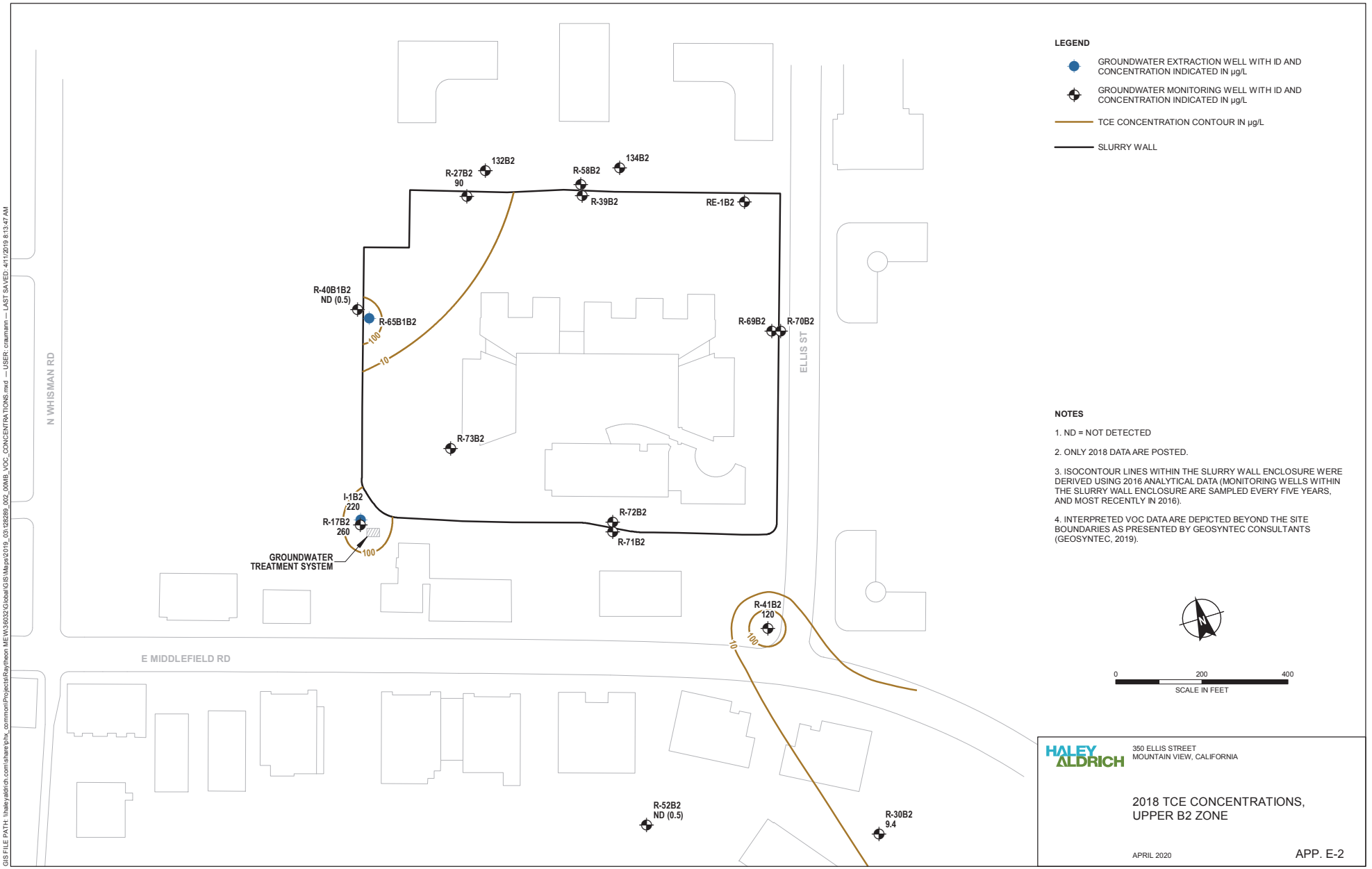
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 VINYL CHLORIDE CONCENTRATIONS, B1 ZONE

APRIL 2020

APP. E-2


LEGEND
GROUNDWATER EXTRACTION WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
GROUNDWATER MONITORING WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
TCE CONCENTRATION CONTOUR IN µg/L
SLURRY WALL
NOTES
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4. INTERPRETED VOC DATA ARE DEPICTED BEYOND THE SITE BOUNDARIES AS PRESENTED BY GEOSYNTEC CONSULTANTS (GEOSYNTEC, 2019).
N WHISMAN RD
E MIDDLEFIELD RD
ELLIS ST
132B2
R-27B2 90
134B2
R-58B2
R-39B2
RE-1B2
R-40B1B2 ND (0.5)
R-65B1B2
100
10
R-69B2
R-70B2
R-73B2
I-1B2 220
R-17B2 260
100
GROUNDWATER TREATMENT SYSTEM
R-72B2
R-71B2
R-41B2 120
100
10
R-52B2 ND (0.5)
R-30B2 9.4
0
200
400
SCALE IN FEET
HALEY ALDRICH
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA
2018 TCE CONCENTRATIONS, UPPER B2 ZONE
APRIL 2020
APP. E-2
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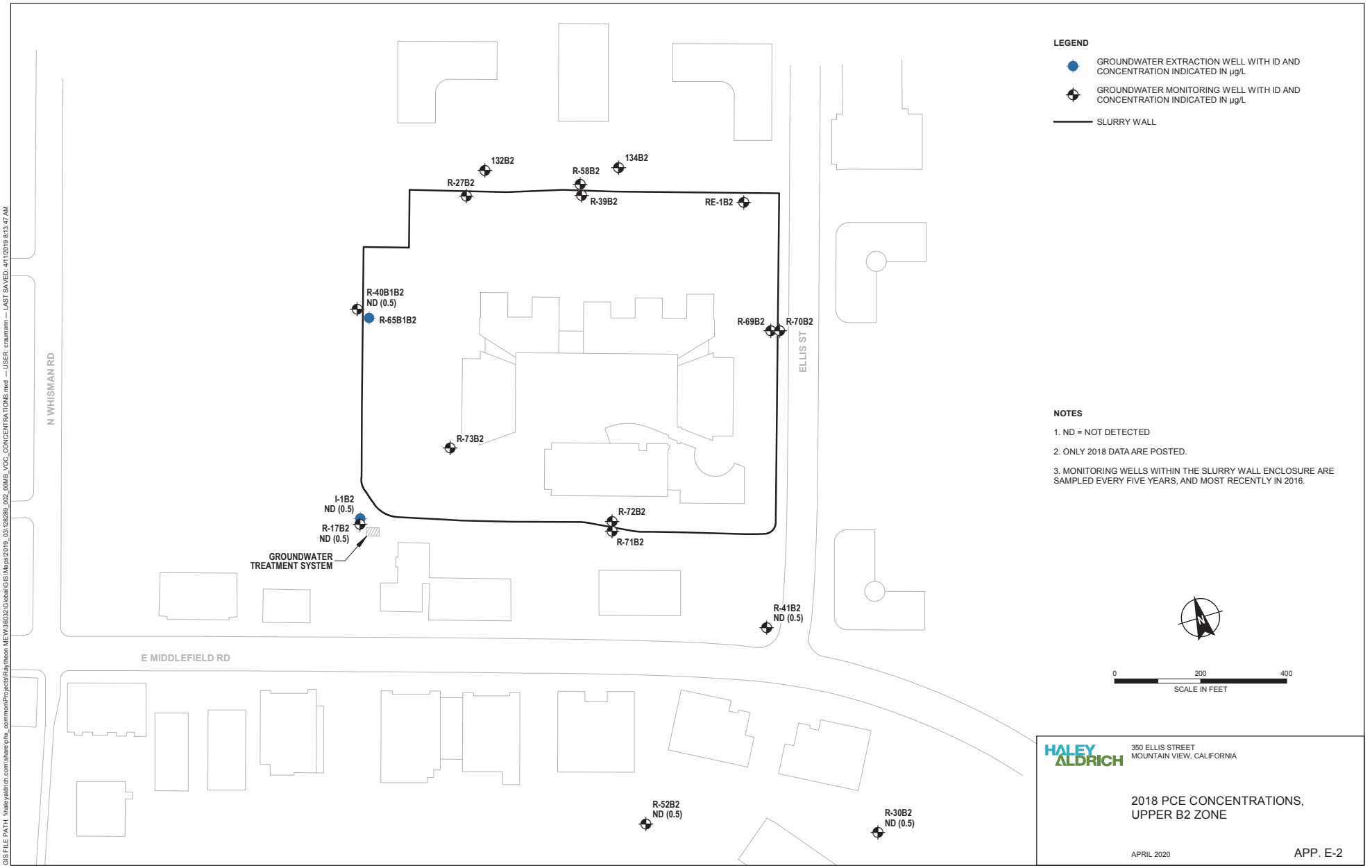

NOTES

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2. ONLY 2018 DATA ARE POSTED.
3. MONITORING WELLS WITHIN THE SLURRY WALL ENCLOSURE ARE SAMPLED EVERY FIVE YEARS, AND MOST RECENTLY IN 2016.

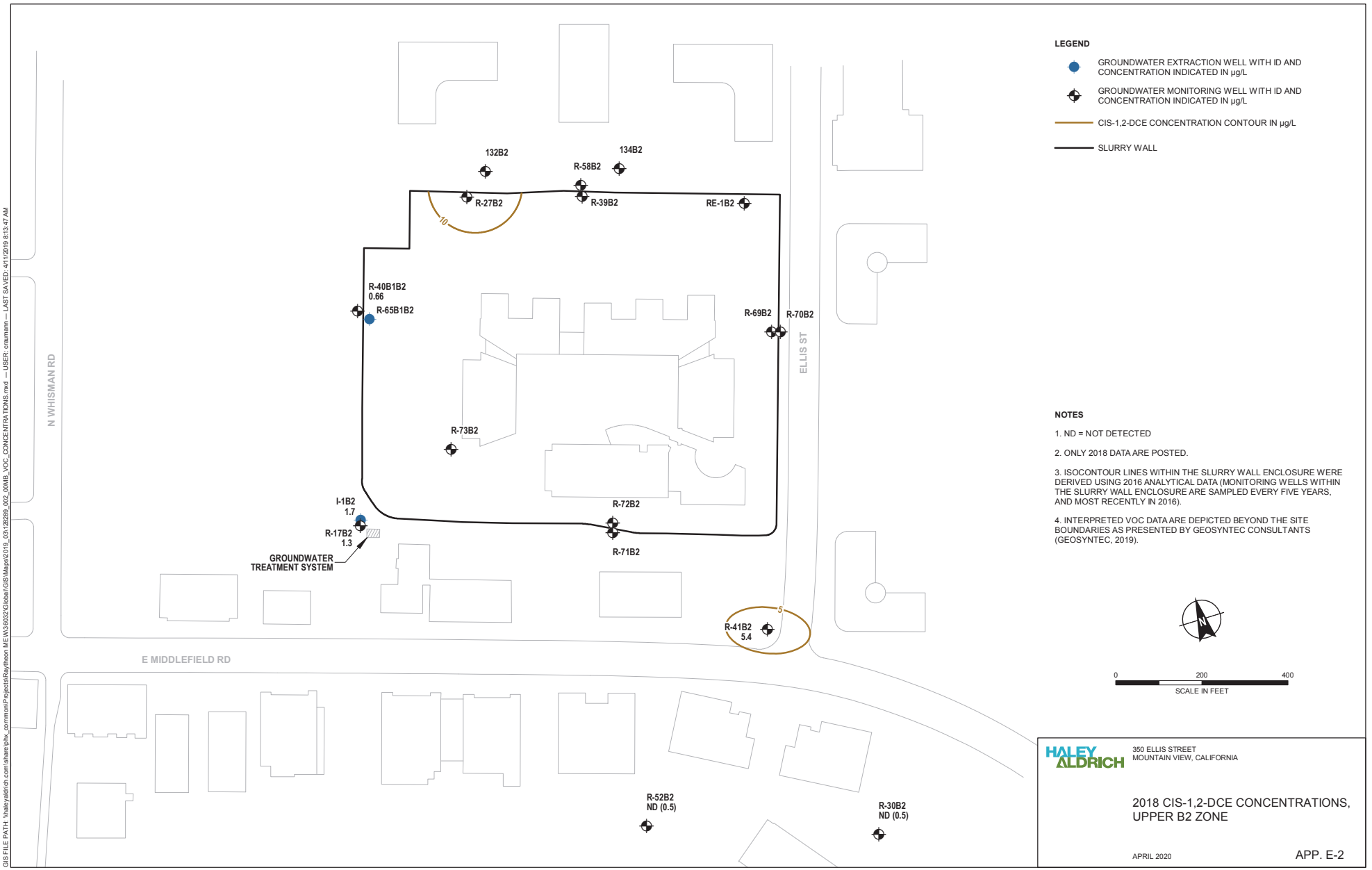
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 PCE CONCENTRATIONS, UPPER B2 ZONE

APRIL 2020

APP. E-2



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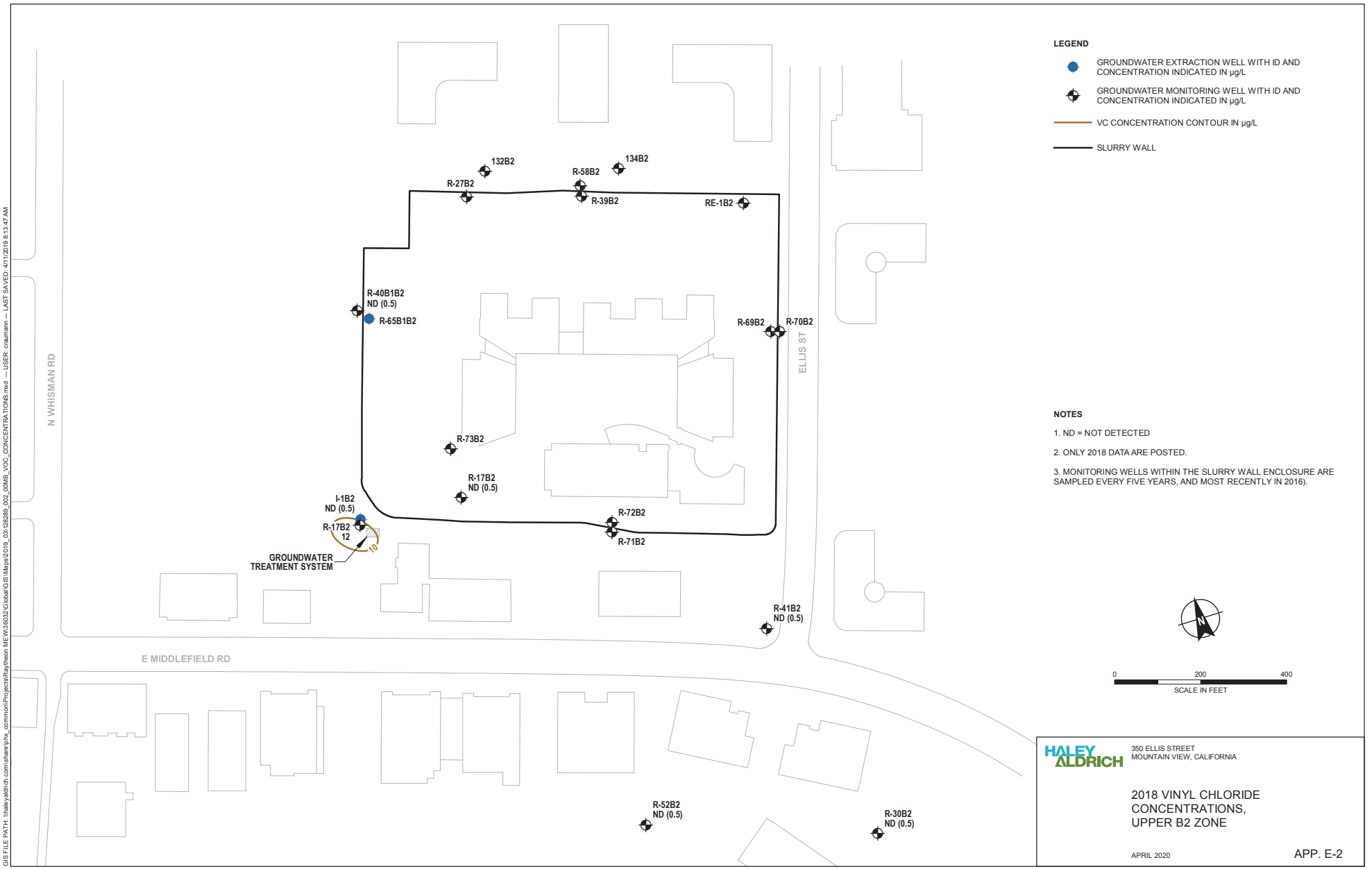
HALEY ALDRICH

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

2018 CIS-1,2-DCE CONCENTRATIONS, UPPER B2 ZONE

APRIL 2020

APP. E-2


LEGEND
GROUNDWATER EXTRACTION WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
GROUNDWATER MONITORING WELL WITH ID AND CONCENTRATION INDICATED IN µg/L
VC CONCENTRATION CONTOUR IN µg/L
SLURRY WALL
NOTES
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3. MONITORING WELLS WITHIN THE SLURRY WALL ENCLOSURE ARE SAMPLED EVERY FIVE YEARS, AND MOST RECENTLY IN 2016).
N WHISMAN RD
E MIDDLEFIELD RD
ELLIS ST
132B2
134B2
R-27B2
R-58B2
R-39B2
RE-1B2
R-40B1B2
ND (0.5)
R-65B1B2
R-69B2
R-70B2
R-73B2
R-17B2
ND (0.5)
I-1B2
ND (0.5)
R-17B2
12
10
GROUNDWATER
TREATMENT SYSTEM
R-72B2
R-71B2
R-41B2
ND (0.5)
R-52B2
ND (0.5)
R-30B2
ND (0.5)
N
0
200
400
SCALE IN FEET
HALEY ALDRICH
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA
2018 VINYL CHLORIDE CONCENTRATIONS, UPPER B2 ZONE
APRIL 2020
APP. E-2
GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Raytheon MEW\36032\Global\GIS\Maps\2019_03\128289_002_00MB_VOC_CONCENTRATIONS.mxd — USER: craumann — LAST SAVED: 4/11/2019 8:13:47 AM

APPENDIX F

2019 Quality Assurance/Quality Control Reports

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

Data Usability Summary Report

Project Name: MEW / 350-380 Ellis St.

Analytical Laboratory: TestAmerica Laboratories, Inc. – West Sacramento, California

Validation Performed by: Vanessa Godard

Validation Date: March 2019

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the 350-380 Ellis St. indoor ambient air samples collected on 15 and 17 February 2019. The analytical results for Sample Delivery Group(s) (SDG) below were reviewed to determine the data's usability. This data validation and usability assessment was performed per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) "EPA National Functional Guidelines (NFG) for Organic Compounds" and EPA "Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15 (Rev. 6)" and laboratory standard operating procedures. The following quality assurance/quality control criteria were reviewed as applicable for analytes reported in the project sample(s):

1. Sample Delivery Group Number 320-47710-1
2. Sample Delivery Group Number 320-47711-1

- Holding Times/Preservation
- Reporting Limits & Sample Dilutions
- Blank Sample Analysis
- Clean Canister Certification
- Surrogate Recovery Compliance
- Laboratory Control Sample / Laboratory Control Sample Duplicate
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control or laboratory duplicate analyses performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and usable; any exceptions are noted in the following pages.

1. SAMPLE DELIVERY GROUP NUMBER 320-47710-1

1.1 SUMMARY

This DUSR summarizes the review of SDG number 320-47710-1. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Laboratory ID	Sample Collection Date	Matrix	Methods	Holding Time
370PATH1A-021719	N	320-47710-1	2/17/2019	Indoor Air	VOCs by TO-15 SIM	30 days
370AMB1A-021719	N	320-47710-2	2/17/2019		VOCs by TO-15 SIM	30 days
370AMB2A-021719	N	320-47710-3	2/17/2019		VOCs by TO-15 SIM	30 days
370AMB3A-021719	N	320-47710-4	2/17/2019		VOCs by TO-15 SIM	30 days
370PATH1B-021719	N	320-47710-5	2/17/2019		VOCs by TO-15 SIM	30 days
370AMB5B-021719	N	320-47710-6	2/17/2019		VOCs by TO-15 SIM	30 days
370AMB1B-021719	N	320-47710-7	2/17/2019		VOCs by TO-15 SIM	30 days
370PATH2B-021719	N	320-47710-8	2/17/2019		VOCs by TO-15 SIM	30 days
370AMB2B-021719	N	320-47710-9	2/17/2019		VOCs by TO-15 SIM	30 days
370AMB4B-021719	N	320-47710-10	2/17/2019		VOCs by TO-15 SIM	30 days
370AMB3B-021719	N	320-47710-11	2/17/2019		VOCs by TO-15 SIM	30 days
DUP02-021719	FD	320-47710-12	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB4CW-021719	N	320-47710-13	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB6CW-021719	N	320-47710-14	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB5CW-021719	N	320-47710-15	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB2CW-021719	N	320-47710-16	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB4CE-021719	N	320-47710-17	2/17/2019		VOCs by TO-15 SIM	30 days
380PATH2CE-021719	N	320-47710-18	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB2CE-021719	N	320-47710-19	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB1CE-021719	N	320-47710-20	2/17/2019		VOCs by TO-15 SIM	30 days
380PATH1CE-021719	N	320-47710-21	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB6CE-021719	N	320-47710-22	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB5CE-021719	N	320-47710-23	2/17/2019		VOCs by TO-15 SIM	30 days
350-380OUT1-021719	N	320-47710-24	2/17/2019		VOCs by TO-15 SIM	30 days
DUP04-021719	FD	320-47710-25	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB4D-021719	N	320-47710-26	2/17/2019		VOCs by TO-15 SIM	30 days
380PATH2D-021719	N	320-47710-27	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB1D-021719	N	320-47710-28	2/17/2019		VOCs by TO-15 SIM	30 days
380AMB5D-021719	N	320-47710-29	2/17/2019		VOCs by TO-15 SIM	30 days
380PATH1D-021719	N	320-47710-30	2/17/2019		VOCs by TO-15 SIM	30 days
DUP05-021719	FD	320-47710-31	2/17/2019		VOCs by TO-15 SIM	30 days
350AMB1-021719	N	320-47710-32	2/17/2019		Zero Vacuum: Analysis Cancelled	
350AMB2-021719	N	320-47710-33	2/17/2019		VOCs by TO-15 SIM	30 days
350AMB3-021719	N	320-47710-34	2/17/2019		VOCs by TO-15 SIM	30 days
350PATH1-021719	N	320-47710-35	2/17/2019		VOCs by TO-15 SIM	30 days
350AMB4-021719	N	320-47710-36	2/17/2019		VOCs by TO-15 SIM	30 days
DUP06-021719	FD	320-47710-37	2/17/2019		VOCs by TO-15 SIM	30 days

1.2 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

1.3 REPORTING LIMITS & SAMPLE DILUTIONS

No dilutions were performed on data in this report.

1.4 CLEAN CANISTER CERTIFICATION

The canisters used for the TO-15 SIM sample collection were certified clean by individual can analysis prior to sampling to ensure that no target analytes were present. These analysis sheets were reviewed, and no target analytes were detected in the laboratory-provided canisters with the following exceptions:

Sample ID	Analysis Date	Clean Can ID	Analyte*	Blank Concentration (ppb v/v)	Sample Concentration (ppb v/v)	Qualification **
370PATH1A	1/9/2019	34001486	MC	0.13 J	NA	None, NR.
			Acetone	0.071 JB	NA	None, NR.
370AMB1A	1/9/2019	34000074	MC	0.13 J	NA	None, NR.
			Toluene	0.011 J	NA	None, NR.
			Acetone	0.092 JB	NA	None, NR.
370AMB2A	1/9/2019	34000609	Acetone	0.10 JB	NA	None, NR.
370AMB3A	12/28/2018	8157	Chloromethane	0.019 J	NA	None, NR.
370PATH1B	1/10/2019	34001385	Acetone	0.079 JB	NA	None, NR.
370AMB5B	12/20/2018	34001419	NA	ND	NA	None, clean.
370AMB1B	12/20/2018	34000596	NA	ND	NA	None, clean.
370PATH2B	1/11/2019	34000430	Chloromethane	0.014 J	NA	None, NR.
			Acetone	0.064 JB	NA	None, NR.
370AMB2B	1/4/2019	34001124	Acetone	0.045 JB	NA	None, NR.
370AMB4B	1/5/2019	34002050	NA	ND	NA	None, clean.
370AMB3B	1/4/2019	34001153	Acetone	0.054 JB	NA	None, NR.
DUP02-021719	1/11/2019	8206	Chloroform	0.012 J	NA	None, NR.
			Chloromethane	0.012 J	NA	None, NR.
			Acetone	0.071 JB	NA	None, NR.
380AMB4CW	1/9/2019	9093	TCE	0.011 J	0.11	None, >2x RL.
380AMB6CW	1/9/2019	34001362	Benzene	0.017 J	NA	None, NR.
			Chloroform	0.016 J	NA	None, NR.
			1,2-DCA	0.015 J	NA	None, NR.
			TCE	0.0051 J	0.020 U	None, ND.
380AMB5CW	1/9/2019	34000219	TCE	0.014 J	0.020 U	None, ND.
380AMB2CW	1/4/2019	34000843	Acetone	0.045 JB	NA	None, NR.
380AMB4CE	1/11/2019	34000083	Toluene	0.011 J	NA	None, NR.
			Acetone	0.057 JB	NA	None, NR.
380PATH2CE	1/11/2019	34001154	Chloromethane	0.015 J	NA	None, NR.
			MC	0.12 J	NA	None, NR.
			Acetone	0.15 JB	NA	None, NR.
380AMB2CE	12/29/2018	34002085	Chloromethane	0.094 J	NA	None, NR.
			Toluene	0.012 J	NA	None, NR.
380AMB1CE	12/16/2018	34000840	Acetone	0.13 JB	NA	None, NR.

Sample ID	Analysis Date	Clean Can ID	Analyte*	Blank Concentration (ppb v/v)	Sample Concentration (ppb v/v)	Qualification **
380PATH1CE	1/10/2019	34000484	Chloromethane	0.019 J	NA	None, NR.
			Acetone	0.076 JB	NA	None, NR.
380AMB6CE	1/25/2019	8350	NA	ND	NA	None, clean.
380AMB5CE	1/9/2019	34001511	TCE	0.0091 J	0.020 U	None, ND.
350-380OUT1	1/4/2019	34000876	Chloromethane	0.018 J	NA	None, NR.
			Toluene	0.016 J	NA	None, NR.
			Acetone	0.13 JB	NA	None, NR.
DUP04-021719	1/9/2019	34000095	MC	0.15 J	NA	None, NR.
			Toluene	0.011 J	NA	None, NR.
			Acetone	0.13 JB	NA	None, NR.
380AMB4D	1/25/2019	34002170	NA	ND	NA	None, clean.
380PATH2D	1/10/2019	34001661	Acetone	0.13 JB	NA	None, NR.
380AMB1D	1/25/2019	34001329	NA	ND	NA	None, clean.
380AMB5D	1/5/2019	8302	NA	ND	NA	None, clean.
380PATH1D	1/25/2019	8447	NA	ND	NA	None, clean.
DUP05-021719	1/11/2019	34001426	Chloromethane	0.011 J	NA	None, NR.
			Acetone	0.16 JB	NA	None, NR.
350AMB1	1/9/2019	34000294	TCE	0.014 J	NA	Cancelled.
			Acetone	0.055 JB	NA	None, NR.
350AMB2	1/10/2019	34000414	MC	0.13 J	NA	None, NR.
			Acetone	0.095 JB	NA	None, NR.
350AMB3	1/9/2019	34001304	MC	0.15 J	NA	None, NR.
			Toluene	0.011 J	NA	None, NR.
			Acetone	0.098 JB	NA	None, NR.
350PATH1	1/10/2019	34000558	NA	ND	NA	None, clean.
350AMB4	1/11/2019	34000301	Chloromethane	0.013 J	NA	None, NR.
			Acetone	0.041 JB	NA	None, NR.
DUP06-021719	1/11/2019	34000493	Chloromethane	0.013 J	NA	None, NR.
			MC	0.15 J	NA	None, NR.

* MC = Methylene Chloride; TCE = Trichloroethene; 1,2-DCA = 1,2-Dichloroethane. ** NR = not reported.

1.5 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The %R were within the specified limits.

1.6 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

The laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent difference (RPDs) within the specified limits.

1.7 LABORATORY AND FIELD DUPLICATE SAMPLE ANALYSIS

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 35% (or the absolute difference rule was satisfied if detects are less than 5x the RL).

Field Duplicate RPD Calculations:

Method(s): TO-15 SIM				
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	370PATH2B-021719	**DUP02-021719**		
Trichloroethene	**0.17**	**0.22**	NA	None, Abs. Diff. < RL
Other Target VOCs	ND	ND	NA	None, Both ND
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	380PATH1CE-021719	**DUP04-021719**		
trans-1,2-Dichloroethene	**0.090**	**0.084**	NA	None, Abs. Diff. < RL
Trichloroethene	**0.19**	**0.18**	NA	None, Abs. Diff. < RL
Other Target VOCs	ND	ND	NA	None, Both ND
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	380PATH2D-021719	**DUP05-021719**		
cis-1,2-Dichloroethene	**0.15**	**0.16**	NA	None, Abs. Diff. < RL
Trichloroethene	**0.63**	**0.64**	1.6	None, RPD < 35%
Other Target VOCs	ND	ND	NA	None, Both ND
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	350PATH1-021719	**DUP06-021719**		
All Target VOCs	ND	ND	NA	None, Both ND

1.8 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

1.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

2. SAMPLE DELIVERY GROUP NUMBER 320-47711-1

2.1 SUMMARY

This DUSR summarizes the review of SDG number 320-47711-1. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Laboratory ID	Sample Collection Date	Matrix	Methods	Holding Time
370PATH1A-021519	N	320-47711-1	2/15/2019	Indoor Air	VOCs by TO-15 SIM	30 days
370AMB1A-021519	N	320-47711-2	2/15/2019		VOCs by TO-15 SIM	30 days
370AMB2A-021519	N	320-47711-3	2/15/2019		VOCs by TO-15 SIM	30 days
370AMB3A-021519	N	320-47711-4	2/15/2019		VOCs by TO-15 SIM	30 days
DUP01-021519	FD	320-47711-5	2/15/2019		VOCs by TO-15 SIM	30 days
370PATH1B-021519	N	320-47711-6	2/15/2019		VOCs by TO-15 SIM	30 days
370AMB5B-021519	N	320-47711-7	2/15/2019		VOCs by TO-15 SIM	30 days
370AMB1B-021519	N	320-47711-8	2/15/2019		VOCs by TO-15 SIM	30 days
370PATH2B-021519	N	320-47711-9	2/15/2019		VOCs by TO-15 SIM	30 days
370AMB2B-021519	N	320-47711-10	2/15/2019		VOCs by TO-15 SIM	30 days
370AMB4B-021519	N	320-47711-11	2/15/2019		VOCs by TO-15 SIM	30 days
370AMB3B-021519	N	320-47711-12	2/15/2019		VOCs by TO-15 SIM	30 days
DUP02-021519	FD	320-47711-13	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB4CW-021519	N	320-47711-14	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB6CW-021519	N	320-47711-15	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB5CW-021519	N	320-47711-16	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB2CW-021519	N	320-47711-17	2/15/2019		VOCs by TO-15 SIM	30 days
DUP03-021519	FD	320-47711-18	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB4CE-021519	N	320-47711-19	2/15/2019		VOCs by TO-15 SIM	30 days
380PATH2CE-021519	N	320-47711-20	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB2CE-021519	N	320-47711-21	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB1CE-021519	N	320-47711-22	2/15/2019		VOCs by TO-15 SIM	30 days
380PATH1CE-021519	N	320-47711-23	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB6CE-021519	N	320-47711-24	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB5CE-021519	N	320-47711-25	2/15/2019		VOCs by TO-15 SIM	30 days
350-380OUT1-021519	N	320-47711-26	2/15/2019		VOCs by TO-15 SIM	30 days
DUP04-021519	FD	320-47711-27	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB4D-021519	N	320-47711-28	2/15/2019		VOCs by TO-15 SIM	30 days
380PATH2D-021519	N	320-47711-29	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB1D-021519	N	320-47711-30	2/15/2019		VOCs by TO-15 SIM	30 days
380AMB5D-021519	N	320-47711-31	2/15/2019		VOCs by TO-15 SIM	30 days
380PATH1D-021519	N	320-47711-32	2/15/2019		VOCs by TO-15 SIM	30 days
350AMB1-021519	N	320-47711-33	2/15/2019		VOCs by TO-15 SIM	30 days
350AMB3-021519	N	320-47711-34	2/15/2019		VOCs by TO-15 SIM	30 days
350PATH1-021519	N	320-47711-35	2/15/2019		VOCs by TO-15 SIM	30 days
350AMB4-021519	N	320-47711-36	2/15/2019		VOCs by TO-15 SIM	30 days

2.2 CASE NARRATIVE

The TestAmerica laboratory report case narrative lists various quality control exceedances not covered in a standard Level II review, including internal standard exceedances and initial (ICV) and/or continuing calibration (CCV) exceedances. As a full Level IV validation was not requested, these quality control exceedances were not reviewed, and no qualifiers were therefore applied.

- The internal standard responses were outside acceptable limits for samples -19, -26, -27, -28 and -30. The samples were reanalyzed and showed evidence of matrix interference; therefore, the original run was reported. These same samples also had surrogate recoveries out of limits. See Section 2.7 for details.

2.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

2.4 REPORTING LIMITS & SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
380AMB6CW-021519	320-47711-15	VOCs by TO15SIM	1.21x	Dilution required based on higher than average canister pressure on arrival at lab.

2.5 CLEAN CANISTER CERTIFICATION

The canisters used for the TO-15 SIM sample collection were certified clean by individual can analysis prior to sampling to ensure that no target analytes were present. These analysis sheets were reviewed, and no target analytes were detected in the laboratory-provided canisters with the following exceptions:

Sample ID	Analysis Date	Clean Can ID	Analyte*	Blank Concentration (ppb v/v)	Sample Concentration (ppb v/v)	Qualification **
370PATH1A	12/18/2018	7904	Acetone	0.076 JB	NA	None, NR.
370AMB1A	1/25/2019	34000383	NA	ND	NA	None, clean.
370AMB2A	1/4/2019	34000011	NA	ND	NA	None, clean.
370AMB3A	1/2/2019	34000188	Acetone	0.068 JB	NA	None, NR.
DUP01-021519	1/4/2019	8253	Acetone	0.070 JB	NA	None, NR.
370PATH1B	1/9/2019	34001169	MC	0.14 J	NA	None, NR.
			Acetone	0.081 JB	NA	None, NR.
370AMB5B	1/10/2019	8456	MC	0.14 J	NA	None, NR.
			Toluene	0.018 J	NA	None, NR.
			Acetone	0.15 JB	NA	None, NR.
370AMB1B	1/25/2019	34000081	NA	ND	NA	None, clean.
370PATH2B	1/11/2019	34001222	Chloroform	0.012 J	NA	None, NR.
			1,2-DCA	0.015 J	NA	None, NR.
			Ethylbenzene	0.013 J	NA	None, NR.
			m,p-Xylene	0.039 J	NA	None, NR.
			o-Xylene	0.015 J	NA	None, NR.

Sample ID	Analysis Date	Clean Can ID	Analyte*	Blank Concentration (ppb v/v)	Sample Concentration (ppb v/v)	Qualification **
370AMB2B	1/4/2019	34001045	Benzene	0.013 J	NA	None, NR.
			Toluene	0.019 J	NA	None, NR.
			Acetone	0.17 JB	NA	None, NR.
370AMB4B	1/11/2019	8017	MC	0.16 J	NA	None, NR.
370AMB3B	1/11/2019	8405	MC	0.14 J	NA	None, NR.
			Acetone	0.12 JB	NA	None, NR.
DUP02-021519	1/10/2019	34001320	MC	0.14 J	NA	None, NR.
			Acetone	0.15 JB	NA	None, NR.
380AMB4CW	1/25/2019	34001282	NA	ND	NA	None, clean.
380AMB6CW	1/4/2019	34000576	Acetone	0.048 JB	NA	None, NR.
380AMB5CW	1/5/2019	34000845	NA	ND	NA	None, clean.
380AMB2CW	1/4/2019	34001530	Chloromethane	0.015 J	NA	None, NR.
			MC	0.16 J	NA	None, NR.
			Toluene	0.016 J	NA	None, NR.
			Acetone	0.13 JB	NA	None, NR.
DUP03-021519	1/25/2019	7796	NA	ND	NA	None, clean.
380AMB4CE	12/18/2018	34000015	Benzene	0.017 J	NA	None, NR.
			TCE	0.011 J	**0.021**	**Result U**
380PATH2CE	1/11/2019	34001375	Acetone	0.055 JB	NA	None, NR.
380AMB2CE	1/4/2019	34001655	NA	ND	NA	None, clean.
380AMB1CE	1/11/2019	34001477	Acetone	0.078 JB	NA	None, NR.
380PATH1CE	1/4/2019	34002124	NA	ND	NA	None, clean.
380AMB6CE	12/18/2018	7899	Acetone	0.16 JB	NA	None, NR.
380AMB5CE	1/10/2019	34000140	Acetone	0.084 JB	NA	None, NR.
350-380OUT1	1/10/2019	34000342	MC	0.15 J	NA	None, NR.
			Toluene	0.011 J	NA	None, NR.
			Acetone	0.096 JB	NA	None, NR.
DUP04-021519	1/11/2019	34002071	Chloromethane	0.017 J	NA	None, NR.
			Toluene	0.011 J	NA	None, NR.
			Acetone	0.042 JB	NA	None, NR.
380AMB4D	1/10/2019	34001509	NA	ND	NA	None, clean.
380PATH2D	12/28/2018	34001295	Chloromethane	0.010 J	NA	None, NR.
			Toluene	0.011 J	NA	None, NR.
			m,p-Xylene	0.025 J	NA	None, NR.
			Total Xylenes	0.025 J	NA	None, NR.
380AMB1D	1/9/2019	34001378	Acetone	0.081 JB	NA	None, NR.
380AMB5D	12/28/2018	34000107	Chloromethane	0.015 J	NA	None, NR.
380PATH1D	1/25/2019	34000437	NA	ND	NA	None, clean.
350AMB1	1/25/2019	34001296	NA	ND	NA	None, clean.
350AMB3	12/20/2018	34001126	NA	ND	NA	None, clean.
350PATH1	12/18/2018	34000405	Acetone	0.17 JB	NA	None, NR.
350AMB4	12/20/2018	8275	Chloroethane	0.027 J	NA	None, NR.

* MC = Methylene Chloride; TCE = Trichloroethene; 1,2-DCA = 1,2-Dichloroethane. ** NR = not reported.

2.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The %R were within the specified limits with the following exceptions:

Method	Sample ID*	Lab ID	Surrogate	Recovery	Qualification
TO-15 SIM	380AMB4CE	320-47711-19	1,2-Dichloroethane-d4	132%	**"J+" Trichloroethene****
	350-380OUT1	320-47711-26		133%	None, sample ND for targets.
	DUP04-021519	320-47711-27		131%	None, sample ND for targets.
	380AMB4D	320-47711-28		131%	None, sample ND for targets.
	380AMB1D	320-47711-30		131%	None, sample ND for targets.

* The samples were reanalyzed and showed evidence of matrix interference; therefore, the original run was reported.
** This detect was qualified ND by canister contamination; therefore, no qualification is relevant from the high surrogate recovery.

2.7 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

The laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent difference (RPDs) within the specified limits.

2.8 LABORATORY AND FIELD DUPLICATE SAMPLE ANALYSIS

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 35% (or the absolute difference rule was satisfied if detects are less than 5x the RL).

Field Duplicate RPD Calculations:

Method(s): TO-15 SIM				
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	370PATH1A-021519	**DUP01-021519**		
trans-1,2-Dichloroethene	**0.15**	**0.16**	NA	None, Abs. Diff. < RL
Trichloroethene	**1.7**	**1.8**	5.7	None, RPD < 35%
Other Target VOCs	ND	ND	NA	None, Both ND
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	370PATH2B-021519	**DUP02-021519**		
Trichloroethene	**0.13**	**0.16**	NA	None, Abs. Diff. < RL
Other Target VOCs	ND	ND	NA	None, Both ND
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	380AMB4CW-021519	**DUP03-021519**		
All Target VOCs	ND	ND	NA	None, Both ND
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	380PATH1CE-021519	**DUP04-021519**		
All Target VOCs	ND	ND	NA	None, Both ND

2.9 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

2.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
380AMB4CE-021519	Trichloroethene	0.11	0.11 U	Canister Contamination

* This detect was also initially qualified “J+” due to high surrogate recovery; however, based on the canister contamination, this qualification is now irrelevant.

References

1. United States Environmental Protection Agency, 2014. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15, SOP NO. HW-31, Revision 6. June.

2. United States Environmental Protection Agency, 2017. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

Glossary

- Sample Types:
  - N Primary Sample
  - FD Field Duplicate Sample
  - FB Field Blank Sample
  - EB Equipment Blank Sample
  - TB Trip Blank Sample

- Units:
  - µg/cm3 microgram per centimeter cubed
  - ppb v/v parts per billion volume/volume

- Table Footnotes
  - NA Not applicable
  - ND Non-detect

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

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Data Usability Summary Report

Project Name: MEW / 370 Ellis Street. Building B

Analytical Laboratory: Eurofins TestAmerica Laboratories, Inc. – West Sacramento, California

Validation Performed by: Vanessa Godard

Validation Reviewed by: Katherine Miller

Validation Date: September 2019

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the 370 Ellis Street. Building B indoor ambient air samples collected on 18 & 19 August 2019. The analytical results for Sample Delivery Group(s) (SDG) below were reviewed to determine the data's usability. This data validation and usability assessment was performed per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) "EPA National Functional Guidelines (NFG) for Organic Compounds" and EPA "Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15 (Rev. 6)" and laboratory standard operating procedures. The following quality assurance/quality control criteria were reviewed as applicable for analytes reported in the project sample(s):

1. Sample Delivery Group Number 320-53496-1

- Holding Times/Preservation
- Reporting Limits & Sample Dilutions
- Blank Sample Analysis
- Clean Canister Certification
- Surrogate Recovery Compliance
- Laboratory Control Sample / Laboratory Control Sample Duplicate
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control or laboratory duplicate analyses performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and usable; any exceptions are noted in the following pages.

1. SAMPLE DELIVERY GROUP NUMBER 320-53496-1

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 320-53496-1. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

- The lab report was revised on 9/4/2019 to add a missing clean canister certification.

Analyses were performed on the following samples:

Sample ID	Sample Type	Laboratory ID	Sample Collection Date	Matrix	Methods	Holding Time
370AMB1B-081819	N	320-53496-1	8/18/2019	Indoor Air	Targeted VOCs by TO-15 SIM	30 days
370AMB2B-081819	N	320-53496-2	8/18/2019	Indoor Air		
370AMB3B-081819	N	320-53496-3	8/18/2019	Indoor Air		
370AMB4B-081819	N	320-53496-4	8/18/2019	Indoor Air		
370AMB5B-081819	N	320-53496-5	8/18/2019	Indoor Air		
370PATH1B-081819	N	320-53496-6	8/18/2019	Indoor Air		
370PATH2B-081819	N	320-53496-7	8/18/2019	Indoor Air		
370OUT1B-081819	N	320-53496-8	8/18/2019	Ambient Air		
370DUP1-081819	FD	320-53496-9	8/18/2019	Indoor Air		
370AMB1B-081919	N	320-53496-10	8/19/2019	Indoor Air		
370AMB2B-081919	N	320-53496-11	8/19/2019	Indoor Air		
370AMB3B-081919	N	320-53496-12	8/19/2019	Indoor Air		
370AMB4B-081919	N	320-53496-13	8/19/2019	Indoor Air		
370AMB5B-081919	N	320-53496-14	8/19/2019	Indoor Air		
370PATH1B-081919	N	320-53496-15	8/19/2019	Indoor Air		
370PATH2B-081919	N	320-53496-16	8/19/2019	Indoor Air		
370HVAC1B-081919	N	320-53496-17	8/19/2019	Ambient Air		
370DUP1-081919	FD	320-53496-18	8/19/2019	Indoor Air		

1.2 CASE NARRATIVE

The TestAmerica laboratory report case narrative lists various quality control exceedances not covered in a standard Level II review, such as internal standard exceedances and initial and/or continuing calibration exceedances. As a full Level IV validation was not requested, these quality control exceedances were not reviewed, and no qualifiers were therefore applied.

- Internal standard response for sample 320-53496-12 was outside control limits. The sample was reextracted and/or reanalyzed with concurring results. The data have been reported.

1.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

1.4 REPORTING LIMITS & SAMPLE DILUTIONS

No dilutions were performed on data in this report.

1.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

1.6 CLEAN CANISTER CERTIFICATION

The canisters used for the TO-15 SIM sample collection were certified clean by individual can analysis prior to sampling to ensure that no target analytes were present. These analysis sheets were reviewed, and no target analytes were detected in the laboratory-provided canisters with the following exceptions:

Sample ID	Analysis Date	Clean Can ID	Analyte	Canister Concentration (ppb v/v)	Sample Concentration (ppb v/v)	Qualification
320-53496-1	8/5/2019	34000458	Various	0.010-0.023 J	NR	NA, not reported.
320-53496-2	7/9/2019	34000113	Chloromethane	0.027 J	NR	NA, not reported.
320-53496-4	7/24/2019	34001282	Various	0.011-0.019 J	NR	NA, not reported.
320-53496-5	7/23/2019	34001431	m,p-Xylenes	0.024 J	NR	NA, not reported.
320-53496-7	7/9/2019	8086	Chloromethane	0.012 J	NR	NA, not reported.
320-53496-9	7/10/2019	34002085	Chloromethane	0.019 J	NR	NA, not reported.
320-53496-10	7/11/2019	8245	trans,1-2,DCE	0.0059 J	ND	NA, sample ND.
320-53496-14	7/9/2019	34002059	Benzene	0.011 J	NR	NA, not reported.
320-53496-16	7/24/2019	34000342	Various	0.0084-0.088 J	NR	NA, not reported.
320-53496-17	7/19/2019	7814	Benzene	0.010 J	NR	NA, not reported.
320-53496-18	7/23/2019	34001429	Acetone	0.070 J	NR	NA, not reported.

1.7 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The %R were within the specified limits.

1.8 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

The laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent difference (RPDs) within the specified limits.

1.9 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 35%.

Field Duplicate RPD Calculations:

Method(s): TO-15 SIM				
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	370PATH2B-081819	**370DUP1-081819**		
1,1-Dichloroethane	0.081 U	0.081 U	NA	None, Both ND
1,1-Dichloroethene	0.079 U	0.079 U	NA	None, Both ND
cis-1,2-Dichloroethene	0.079 U	0.079 U	NA	None, Both ND
Tetrachloroethene	0.14 U	0.14 U	NA	None, Both ND
trans-1,2-Dichloroethene	**0.12**	**0.14**	15	None, RPD < 35%
Trichloroethene	**0.75**	**0.80**	6	None, RPD < 35%
Vinyl chloride	0.051 U	0.051 U	NA	None, Both ND
Analyte (µg/m3)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	370PATH2B-081919	**370DUP1-081919**		
1,1-Dichloroethane	0.081 U	0.081 U	NA	None, Both ND
1,1-Dichloroethene	0.079 U	0.079 U	NA	None, Both ND
cis-1,2-Dichloroethene	0.079 U	0.079 U	NA	None, Both ND
Tetrachloroethene	0.14 U	0.14 U	NA	None, Both ND
trans-1,2-Dichloroethene	0.079 U	**0.086**	8	None, RPD < 35%
Trichloroethene	**0.40**	**0.41**	2	None, RPD < 35%
Vinyl chloride	0.051 U	0.051 U	NA	None, Both ND

1.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

References

1. United States Environmental Protection Agency, 2014. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15, SOP NO. HW-31, Revision 6. June.

2. United States Environmental Protection Agency, 2017. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

Glossary

- Sample Types:
  - N Primary Sample
  - FD Field Duplicate Sample
  - FB Field Blank Sample
  - EB Equipment Blank Sample
  - TB Trip Blank Sample

- Units:
  - µg/cm3 microgram per centimeter cubed
  - ppb v/v parts per billion volume/volume

- Table Footnotes
  - NA Not applicable
  - ND Non-detect

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

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Data Usability Summary Report

Project Name: 350 Ellis St., Mountain View, CA – NPDES

Analytical Laboratory: TestAmerica Laboratories, Inc. – Pleasanton, CA

Validation Performed by: Vanessa Godard

Validation Reviewed by: Katherine Miller

Validation Date: July 2019

Haley & Aldrich, Inc., prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the 350 Ellis St. groundwater samples collected from 15 January to 11 June 2019. The analytical results for Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability. This data validation and usability assessment was performed per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) "National Functional Guidelines for Organic Data Review". The following quality assurance/quality control criteria from the analysis of the project samples were reviewed as applicable:

1. Sample Delivery Group Numbers 720-90778-1, 720-91183-1, 720-91597-1, 720-91725-1, 720-92291-1, 720-92509-1, 720-92607-1, 720-92728-1, 720-92892-1, 720-92893-1, 720-93221-1, and 720-93467-1 (January – June)

- Holding Times/Preservation
- Reporting Limits and Sample Dilution
- Blank Sample Analysis
- Surrogate Recovery Compliance
- Laboratory Control Samples
- Matrix Spike Samples
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control, matrix spike, or laboratory duplicate analyses performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and RL are flagged "J" estimated.

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and usable; any exceptions are noted in the following pages.

1. Sample Delivery Group Numbers 720-90778-1, 720-91183-1, 720-91597-1, 720-91725-1, 720-92291-1, 720-92509-1, 720-92607-1, 720-92728-1, 720-92892-1, 720-92893-1, 720-93221-1, and 720-93467-1 (January – June)

1.1 SUMMARY

This DUSR summarizes the review of SDG numbers 720-90778-1, 720-91183-1, 720-91597-1, 720-91725-1, 720-92291-1, 720-92509-1, 720-92607-1, 720-92728-1, 720-92892-1, 720-92893-1, 720-93221-1, and 720-93467-1. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not utilized.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
TRIPBLANK - 011519	TB	720-90778-1	1/15/2019	Blank	A
RAY350-EFT-011519	N	720-90778-2	1/15/2019	Groundwater	A
RAY350-MID1-011519	N	720-90778-3	1/15/2019	Groundwater	A
RAY350-INF-011519	N	720-90778-4	1/15/2019	Groundwater	A
TRIPBLANK - 020519	TB	720-91183-1	2/5/2019	Blank	A
RAY350-EFT-020519	N	720-91183-2	2/5/2019	Groundwater	A
RAY350-MID1-020519	N	720-91183-3	2/5/2019	Groundwater	A
RAY350-INF-020519	N	720-91183-4	2/5/2019	Groundwater	A
RAY350-DUP-1-020519	FD	720-91183-5	2/5/2019	Groundwater	A
RAY350-MID2-022619	N	720-91597-1	2/26/2019	Groundwater	A
TRIPBLANK - 030519	TB	720-91725-1	3/5/2019	Blank	A
RAY350-EFT-030519	N	720-91725-2	3/5/2019	Groundwater	A
RAY350-MID1-030519	N	720-91725-3	3/5/2019	Groundwater	A
RAY350-INF-030519	N	720-91725-4	3/5/2019	Groundwater	A
TRIPBLANK - 040219	TB	720-92291-1	4/2/2019	Blank	A
RAY350-EFT-040219	N	720-92291-2	4/2/2019	Groundwater	A
RAY350-MID1-040219	N	720-92291-3	4/2/2019	Groundwater	A
RAY350-INF-040219	N	720-92291-4	4/2/2019	Groundwater	A
RAY350-MID2-040219	N	720-92291-5	4/2/2019	Groundwater	A
RAY350-MID2-041619	N	720-92509-1	4/16/2019	Groundwater	A
RAY350-MID2-042319	N	720-92607-1	4/23/2019	Groundwater	A
RAY350-MID2-043019	N	720-92728-1	4/30/2019	Groundwater	A
TRIPBLANK - 050719	TB	720-92892-1	5/7/2019	Blank	A
RAY350-EFT-050719	N	720-92892-2	5/7/2019	Groundwater	A, B
RAY350-MID1-050719	N	720-92892-3	5/7/2019	Groundwater	A
RAY350-INF-050719	N	720-92892-4	5/7/2019	Groundwater	A
RAY350-DUP-1-050719	FD	720-92892-5	5/7/2019	Groundwater	A
RAY350-MID2-050719	N	720-92893-1	5/7/2019	Groundwater	A

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
RAY350-MID2-052819	N	720-93221-1	5/28/2019	Groundwater	A
TRIPBLANK - 061119	TB	720-93467-1	6/11/2019	Blank	A
RAY350-EFT-061119	N	720-93467-2	6/11/2019	Groundwater	A
RAY350-MID1-061119	N	720-93467-3	6/11/2019	Groundwater	A
RAY350-INF-020519	N	720-93467-4	6/11/2019	Groundwater	A

Holding Times:

A. Volatile Organic Compounds (VOCs) by EPA 8260B ---------- 7 days unpreserved; 14 days preserved
B. 1,4-Dioxane by EPA 8270C SIM ---------- 7 days extraction, 40 days analysis

1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

Method	Matrix	Holding Time	Preservation	Sample ID, Violation, Qualification
EPA 8260B	Water	7 days unpreserved; 14 days preserved	Cool to ≤ 6 °C; pH < 2 with HCl; No Headspace	The following samples were analyzed from vial containing headspace. **"J-/UJ" all data**, unless low level detections have been seen historically or no data is available, in which case **that analyte should be rejected**. • 720-90778-3 (MID1): TCE and extended VOC list rejected • 720-90778-4 (INF): reject Chlorobenzene, Ethylbenzene, Toluene • 720-92607-1 (MID2): reject 1,1-Dichloroethane, Methylene chloride • 720-92728-1 (MID2): reject 1,1-Dichloroethane, Methylene chloride
				The cooler for SDG 720-93467-1 arrived slightly above temperature at 9.8 degrees C. As samples were delivered same day as collection and there is evidence chilling had begun, no action is required.

Cooler temperature on arrival to the laboratory was:

- 720-90778-1: 0.9; 0.8 Degrees C
- 720-91183-1: 1.2; 0.3 Degrees C
- 720-91597-1: 2.5 Degrees C
- 720-91725-1: 4.3; 1.2 Degrees C
- 720-92291-1: 1.2, 3.6; 1.7 Degrees C
- 720-92509-1: 3.0 Degrees C
- 720-92607-1: 0.2 Degrees C
- 720-92728-1: 5.8 Degrees C
- 720-92892-1: 4.3; 2.6; 1.4 Degrees C
- 720-92893-1: 4.3 Degrees C
- 720-93221-1: 3.2 Degrees C
- 720-93467-1: **9.8;** 0.9 Degrees C

1.3 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The %R were within the specified limits.

1.4 CASE NARRATIVE

The TestAmerica laboratory report case narrative lists various quality control exceedances not covered in a standard Level II review and include internal standard exceedances and initial (ICV) and/or continuing calibration (CCV) exceedances. Since a full Level IV validation was not requested, these quality control exceedances were not reviewed, and no qualifiers were therefore applied.

- 720-91183-1: CCV above limits for Vinyl acetate. The samples associated with this CCV were ND; therefore, the data have been reported.
- 720-91725-1:
  - CCV below limits for Vinyl chloride. A RL standard was analyzed, and the target analyte was detected. Since the associated samples were ND for this analyte, the data have been reported.
  - CCV outside limits for Dichlorodifluoromethane. This compound has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/analysis was not performed. These results have been reported and qualified.
- 720-92892-1: CCV below limits for 1,1-Dichloroethene. A RL standard was analyzed, and the target analyte was detected. Since the associated samples were ND for this analyte, the data have been reported.

1.5 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
RAY350-INF-050719	720-92892-4	1,1-Dichloroethene by EPA 8260B	500x	Dilution required to bring the concentration of target analytes within calibration range.
RAY350-DUP-1-050719	720-92892-5		500x	
RAY350-DUP-1-020519	720-91183-5	VOCs by EPA 8260C	200x	
RAY350-INF-020519	720-93467-4	Methylene chloride	100x	

1.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The %R were within the specified limits.

1.7 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent difference (RPDs) within the specified limits with the following exceptions:

Sample Type	Method	Batch ID	Analyte	%R	Qualifier	Affected Samples
LCS/LCSD	EPA 8260B	294394	Vinyl acetate	156%/153%	NA	None, samples ND.
LCS/LCSD		295695	Dichlorodifluoromethane	41%/42%	**UJ**	**720-91725-1, 2, 3, 4**
LCS			Vinyl acetate	155%	NA	None, samples ND.
LCS/LCSD		303252	Methylene Chloride	169%/184%	NA	None, samples ND.

1.8 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration	Qualifier	Affected Samples
Method Blank	294394	Acetone	3.64 J ug/L	**RL U**	**720-91183-3**
		n-Butylbenzene	0.0851 J ug/L	**RL U**	**720-91183-3, -4**
		tert-Butylbenzene	0.138 J ug/L	**RL U**	**720-91183-1, -4**
		Ethylbenzene	0.0577 J ug/L	**RL U**	**720-91183-1, 2, 3, 4**
Method Blank	294440	tert-Butylbenzene	0.138 J ug/L	**RL U**	**720-91183-5**
		Ethylbenzene	0.0557 J ug/L	**RL U**	**720-91183-5**
		Styrene	0.314 J ug/L	**RL U**	**720-91183-5**
Method Blank	295695	m,p-Xylene	0.136 J ug/L	**RL U**	**720-91725-1 (Total Xylenes)**
		Styrene	0.316 J ug/L	**RL U**	**720-91725-1, -2**
		n-Butylbenzene	0.0917 J ug/L	NA	None, samples ND.
		tert-Butylbenzene	0.138 J ug/L	NA	None, samples ND.
		Ethylbenzene	0.0570 J ug/L	**RL U**	**720-91725-1, 2, 3, 4**
Method Blank	298266	Toluene	0.303 ug/L	NA	Blank not associated.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport. Blank samples for field quality control had no detections, indicating that no contamination from field activities occurred with the following exceptions:

Blank Type	Date of Blank	Analyte Detected in Blank	Concentration	Qualifier	Affected Samples
Trip Blank	2/5/2019	Ethylbenzene	0.056 J ug/L	NA	None, qualified ND by MBK.
		Styrene	0.32 J ug/L	NA	None, samples all ND.
		tert-Butylbenzene	0.13 J ug/L	NA	None, qualified ND by MBK.
Trip Blank	3/5/2019	Ethylbenzene	0.060 J ug/L	NA	None, qualified ND by MBK.
		Styrene	0.32 J ug/L	NA	None, qualified ND by MBK.
		Xylene (total)	0.15 J ug/L	NA	None, qualified ND by MBK.

1.9 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for any field duplicates in this SDG is shown below. RPDs were all below 35% for water (or the absolute difference rule was satisfied if detects were less than 5x the RL).

Field Duplicate RPD Calculations:

Method(s): EPA 8260B				
Analyte (µg/L)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	350RAYINF-020519	**RAY350-DUP-1-020519**		
1,1,1-Trichloroethane	**1.2**	40 U	NA	None, Abs. Diff. < RL
1,1,2-Trichloroethane	**0.38**	40 U	NA	None, Abs. Diff. < RL
1,1-Dichloroethane	**7.9**	**6.3 J**	NA	None, Abs. Diff. < RL
1,1-Dichloroethene	**9.4**	40 U	NA	None, Abs. Diff. < RL
1,2,4-Trichlorobenzene	**0.14 J**	60 U	NA	None, Abs. Diff. < RL
1,2-Dichlorobenzene	**8.0**	60 U	NA	None, Abs. Diff. < RL
1,3-Dichlorobenzene	**0.39**	60 U	NA	None, Abs. Diff. < RL
1,4-Dichlorobenzene	**3.1**	60 U	NA	None, Abs. Diff. < RL
Benzene	**0.095 J**	40 U	NA	None, Abs. Diff. < RL
Chlorobenzene	**0.044 J**	40 U	NA	None, Abs. Diff. < RL
Chloroform	**0.61**	40 U	NA	None, Abs. Diff. < RL
cis-1,2-Dichloroethene	**880**	**850**	3.5	None, RPD < 35%
Ethylbenzene	0.060 J*	12 J*	NA	None, Both ND
n-Butylbenzene	0.084 J*	100 U	NA	None, Both ND
Styrene	0.50 U	63 J*	NA	None, Both ND
tert-Butylbenzene	0.14 J*	28 J*	NA	None, Both ND
Tetrachloroethene	**3.8**	100 U	NA	None, Abs. Diff. < RL
trans-1,2-Dichloroethene	**72**	**68**	NA	None, Abs. Diff. < RL
Trichloroethene	**2,600**	**2,500**	3.9	None, RPD < 35%
Trifluorotrichloroethane	**14**	100 U	NA	None, Abs. Diff. < RL
Vinyl chloride	**38**	**27**	33.8	None, RPD < 35%
Analyte (µg/L)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	350RAYINF-050719	**RAY350-DUP-1-050719**		
1,1,1-Trichloroethane	**1.2**	**1.2**	0.0	None, RPD < 35%
1,1,2-Trichloroethane	**0.30**	**0.31**	NA	None, Abs. Diff. < RL
1,1-Dichloroethane	**8.2**	**8.1**	1.2	None, RPD < 35%
1,2-Dichlorobenzene	**7.0**	**6.6**	5.9	None, RPD < 35%
1,2-Dichloroethane	**0.046 J**	0.20 U	NA	None, Abs. Diff. < RL
1,3-Dichlorobenzene	**0.33**	**0.32**	NA	None, Abs. Diff. < RL
1,4-Dichlorobenzene	**2.9**	**2.8**	3.5	None, RPD < 35%
Chloroform	**0.74**	**0.74**	NA	None, Abs. Diff. < RL
cis-1,2-Dichloroethene	**790**	**890**	11.9	None, RPD < 35%
Dichlorodifluoromethane	0.40 U	**0.25 J**	NA	None, Abs. Diff. < RL
Tetrachloroethene	**2.9**	**2.9**	0.0	None, RPD < 35%
Toluene	**0.076 J**	**0.071 J**	NA	None, Abs. Diff. < RL
trans-1,2-Dichloroethene	**81 J**	**74 J**	NA	None, Abs. Diff. < RL
Trichloroethene	**2,200**	**2,500**	12.8	None, RPD < 35%
Trifluorotrichloroethane	**12**	**12**	0.0	None, RPD < 35%
Vinyl chloride	**33**	**32**	3.1	None, RPD < 35%

* Qualified non-detect (ND) based on method blank contamination.

1.10 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effect of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

1.11 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable except for rejected data noted below. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
RAY350-INF-011519	Chlorobenzene	ND U	Reject	Analyzed from vial containing headspace.
	Ethylbenzene	ND U	Reject	
	Toluene	ND U	Reject	
	Remaining VOCs	Detect/ND U	Detect J-/ND UJ	
RAY350-MID1-011519	Trichloroethene	ND U	Reject	
	Extended List	ND U	Reject	
	Remaining VOCs	Detect/ND U	Detect J-/ND UJ	
RAY350-DUP-1-020519	Ethylbenzene	12 J	40 U	Method Blank Contamination
	Styrene	63 J	100 U	
	tert-Butylbenzene	28 J	100 U	
RAY350-EFT-020519	Ethylbenzene	0.056 J	0.20 U	
RAY350-INF-020519	Ethylbenzene	0.060 J	0.20 U	
	n-Butylbenzene	0.084 J	0.50 U	
	tert-Butylbenzene	0.14 J	0.50 U	
RAY350-MID1-020519	Ethylbenzene	0.055 J	0.20 U	
	n-Butylbenzene	0.080 J	0.50 U	
	Acetone	3.4 J	6.0 U	
TRIPBLANK - 020519	Ethylbenzene	0.056 J	0.20 U	
	tert-Butylbenzene	0.13 J	0.50 U	
All March Samples	Dichlorodifluoromethane	ND U	ND UJ	Lab Control Sample Exceedance
RAY350-EFT-030519	Ethylbenzene	0.056 J	0.20 U	Method Blank Contamination
	Styrene	0.31 J	0.50 U	
RAY350-INF-030519	Ethylbenzene	0.059 J	0.20 U	
RAY350-MID1-030519	Ethylbenzene	0.055 J	0.20 U	
TRIPBLANK - 030519	Ethylbenzene	0.060 J	0.20 U	
	Styrene	0.32 J	0.50 U	
	Xylene (total)	0.15 J	0.50 U	
RAY350-MID2-042319	1,1-Dichloroethane	ND U	Reject	Analyzed from vial containing headspace.
	Methylene chloride	ND U	Reject	
	Remaining VOCs	Detect/ND U	Detect J-/ND UJ	
RAY350-MID2-043019	1,1-Dichloroethane	ND U	Reject	
	Methylene chloride	ND U	Reject	
	Remaining VOCs	Detect/ND U	Detect J-/ND UJ	

References

1. United States Environmental Protection Agency, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

Glossary

- Sample Types:
  - N Primary Sample
  - FD Field Duplicate Sample
  - FB Field Blank Sample
  - EB Equipment Blank Sample
  - TB Trip Blank Sample
- Units:
  - µg/L or ug/L microgram per liter
  - mg/L milligram per liter
- Table Footnotes
  - NA Not applicable
  - ND Non-detect

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

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Data Usability Summary Report

Project Name: 350 Ellis St., Mountain View, CA – NPDES

Analytical Laboratory: TestAmerica Laboratories, Inc. – Pleasanton, CA

Validation Performed by: Katherine Miller

Validation Reviewed by: Vanessa Godard

Validation Date: 14 January 2020

Haley & Aldrich, Inc., Data Usability Summary Report (DUSR) to summarize the review and validation of the 350 Ellis St. NPDES groundwater samples collected from 02 July to 24 December 2019 and submitted to Eurofins TestAmerica of Pleasanton, CA. The analytical results for the Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability.

This data validation and usability assessment was performed as per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) "*National Functional Guidelines for Organic Data Review*". The following quality assurance/quality control (QA/QC) criteria from the analysis of the project samples were reviewed as applicable:

1. Summary

- Holding Times/Preservation
- Reporting Limits and Sample Dilution
- Blank Sample Analysis
- Surrogate Recovery Compliance
- Laboratory Control Samples
- Matrix Spike Samples
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control analysis performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and reporting limit (RL) are flagged "J" estimated.

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

1. Summary

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG numbers 720-938451 through 720-967121. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods	Holding Time
RAY350-MID2-070219	N	720-93845-1	7/2/2019	Groundwater	Volatile Organic Compounds (VOCs) by EPA 8260B	7 days un-preserved; 14 days preserved
TRIPBLANK - 070219	TB	720-93847-1	7/2/2019	Blank		
RAY350-EFT-070219	N	720-93847-2	7/2/2019	Groundwater		
RAY350-MID1-070219	N	720-93847-3	7/2/2019	Groundwater		
RAY350-INF-070219	N	720-93847-4	7/2/2019	Groundwater		
RAY350-MID2-070919	N	720-93909-1	7/9/2019	Groundwater		
RAY350-MID2-071619	N	720-94045-1	7/16/2019	Groundwater		
RAY350-MID2-072319	N	720-94150-1	7/23/2019	Groundwater		
RAY350-MID2-073119	N	720-94278-1	7/31/2019	Groundwater		
RAY350-MID2-080619	N	720-94375-1	8/6/2019	Groundwater		
TRIPBLANK - 080619	TB	720-94381-1	8/6/2019	Blank		
RAY350-EFT-080619	N	720-94381-2	8/6/2019	Groundwater		
RAY350-MID1-080619	N	720-94381-3	8/6/2019	Groundwater		
RAY350-INF-080619	N	720-94381-4	8/6/2019	Groundwater		
RAY350-DUP-1-080619	FD	720-94381-5	8/6/2019	Groundwater		
RAY350-MID2-081319	N	720-94487-1	8/13/2019	Groundwater		
RAY350-MID2-082019	N	720-94636-1	8/20/2019	Groundwater		
RAY350-MID2-082719	N	720-94763-1	8/27/2019	Groundwater		
RAY350-MID2-090319	N	720-94872-1	9/3/2019	Groundwater		
TRIPBLANK - 090319	TB	720-94875-1	9/3/2019	Blank		
RAY350-EFT-090319	N	720-94875-2	9/3/2019	Groundwater		
RAY350-MID1-090319	N	720-94875-3	9/3/2019	Groundwater		
RAY350-INF-090319	N	720-94875-4	9/3/2019	Groundwater		
RAY350-MID2-091019	N	720-95000-1	9/10/2019	Groundwater		
RAY350-MID2-091719	N	720-95087-1	9/17/2019	Groundwater		
RAY350-MID2-092419	N	720-95206-1	9/24/2019	Groundwater		
TRIPBLANK - 101519	TB	720-95578-1	10/15/2019	Blank		
RAY350-EFT-101519	N	720-95578-2	10/15/2019	Groundwater		
RAY350-MID2-101519	N	720-95578-3	10/15/2019	Groundwater		
RAY350-MID1-101519	N	720-95578-4	10/15/2019	Groundwater		
RAY350-INF-101519	N	720-95578-5	10/15/2019	Groundwater		
TRIPBLANK - 121019	TB	720-96494-1	12/10/2019	Blank		
RAY350-EFT-121019	N	720-96494-2	12/10/2019	Groundwater		
RAY350-MID1-121019	N	720-96494-3	12/10/2019	Groundwater		
RAY350-INF-121019	N	720-96494-4	12/10/2019	Groundwater		
RAY350-MID2-122419	N	720-96712-1	12/24/2019	Groundwater		

1.2 CASE NARRATIVE

The TestAmerica laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since a full Level IV validation was not requested, these quality control exceedances were not reviewed, and no qualifiers were therefore applied.

- 720-94381-1: CCV above limits for Vinyl acetate. The samples associated with this CCV were ND; therefore, the data have been reported.

1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol with the following exceptions:

Method	Matrix	Holding Time	Preservation	Sample ID, Violation, Qualification
EPA 8260B	Water	7 days unpreserved; 14 days preserved	Cool to ≤ 6 °C; pH < 2 with Hydrochloric Acid (HCl); No Headspace	All samples were received unpreserved with a pH >2. Analyzed within 7 days, therefore no qualification necessary.
				Reanalysis of samples 720-93847-1, 2, 3 and dilution of 720-93847-4 were performed out of hold on day 8 following collection. **Qualify data estimated "J/R".**
				The cooler for SDG 720-94150-1, 720-94487-1, and 720-94763-1 arrived above temperature at 7.1, 16.2, and 8.0 degrees Celsius, respectively. As samples were delivered same day as collection with ice, no action is required.

Cooler temperature in degrees Celsius on arrival to the laboratory was:

- 720-93845-1: 1.7
- 720-93847-1: 1.7; 0.8
- 720-93909-1: 5.2
- 720-94045-1: 5.5
- 720-94150-1: **7.1**
- 720-94278-1: 1.5
- 720-94375-1: 4.0
- 720-94381-1: 4.0; 3.6
- 720-94487-1: **16.2**
- 720-94636-1: 5.4
- 720-94763-1: **8.0**
- 720-94872-1: 4.4
- 720-94875-1: 4.4; 1.5
- 720-95000-1: 4.3
- 720-95087-1: 0.2
- 720-95206-1: 2.8
- 720-95578-1: 4.8; 0.1
- 720-96494-1: 2.0; 4.4
- 720-96712-1: 2.2

1.4 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
RAY350-INF-070219	720-93847-4	Vinyl acetate by EPA 8260B	500x	Dilution required to bring the concentration of target analytes within calibration range.
RAY350-INF-090319	720-94875-4		10x	

1.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	272736	1,2,4-Trichlorobenzene	0.153 J	NA	None, samples ND.
Method Blank	314739	1,2,4-Trichlorobenzene	0.121 J	**RL U**	**720-95578-5**
Method Blank	269822	Styrene	0.250 J	NA	None, not associated.
Method Blank	318808	4-Isopropyltoluene	0.124 J	**RL U**	**720-96494-1,2,3,4**
		tert-Butylbenzene	0.0628 J	**RL U**	**720-96494-1,2,3,4**
Method Blank	270677	Naphthalene	0.227 J	NA	None, samples ND.
Method Blank	270677	Naphthalene	0.298 J	NA	None, samples ND.
Method Blank	273065	Naphthalene	0.351 J	NA	None, samples ND.
Method Blank	268795	Methylene Chloride	2.41 J	NA	None, samples ND.
Method Blank	310461	Methylene Chloride	2.63 J	NA	None, samples ND.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport. The analysis of the blank samples for field quality control was free of target compounds with the following exceptions:

Blank Type	Date of Blank	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Trip Blank	10/15/2019	Ethylbenzene	0.051 J	**RL U**	**720-95578-3,5**
Trip Blank	10/15/2019	Chlorobenzene	0.030 J	**RL U**	**720-95578-4,5**
Trip Blank	12/10/2019	2,2-Dichloropropane	0.083 J	NA	None, samples ND.
Trip Blank	12/10/2019	tert-Butylbenzene	0.12 J	NA	None, qualified ND by MBK.
Trip Blank	12/10/2019	4-Isopropropyltoluene	0.061 J	NA	None, qualified ND by MBK.

1.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to preparing samples for determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds. The %R for each surrogate compound added to each project samples was determined to be within the laboratory specified quality control limits with the following exceptions:

Method	Sample ID	Lab ID	Surrogate	Recovery	Qualification
EPA 8260B	350RAYMID1-080619	720-94381-3	1,2-Dichloroethane-d4	122%	None, sample ND.
	350RAYDUP1-080619	720-94381-5	1,2-Dichloroethane-d4	121% (10x)	None, within NFG limits.
				123% (100x)	None, within NFG limits.

1.7 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits with the following exceptions:

Sample Type	Method	Batch ID	Analyte	%R	Qualifier	Affected Samples
LCS/LCSD	8260B	310461	Bromomethane	121%/122%	NA	None, samples ND.
LCS/LCSD	8260B	310461	Methylene Chloride	161%/166%	NA	None, samples ND.
LCS/LCSD	8260B	269550	Vinyl acetate	127%/128%	NA	None, samples ND.

1.8 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

1.9 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The following sample(s) were used for field duplicate analysis and the RPDs were all below 35% for water (or the absolute difference rule was satisfied if detects were less than 5x the RL).

Primary Sample ID	Duplicate Sample ID	Method(s)
350RAYINF-080619	RAY350-DUP-1-080619	VOCs by EPA 8260B

Field Duplicate RPD Calculations:

Method(s): EPA 8260B				
Analyte (µg/L)	Primary Sample ID	Duplicate Sample ID	% RPD	Qualification
	350RAYINF-080619	RAY350-DUP-1-080619		
1,1,1-Trichloroethane	**1.2**	**1.2**	0	None, RPD < 35%
1,1,2-Trichloroethane	**0.26**	**0.25**	NA	None, Abs. Diff. < RL
1,1-Dichloroethane	**6.1**	**5.9**	3	None, RPD < 35%
1,1-Dichloroethene	**7.3**	**6.9**	6	None, RPD < 35%
1,2-Dichlorobenzene	**5.3**	**5.2**	2	None, RPD < 35%
1,3-Dichlorobenzene	**0.22 J**	**0.23 J**	NA	None, Abs. Diff. < RL
1,4-Dichlorobenzene	**1.9**	**1.9**	0	None, RPD < 35%
Benzene	**0.061 J**	**0.062 J**	NA	None, Abs. Diff. < RL
Chlorobenzene	**0.026 J**	0.20 U	NA	None, Abs. Diff. < RL
Chloroform	**0.80**	**0.80**	NA	None, Abs. Diff. < RL
cis-1,2-Dichloroethene	**750**	**720**	4	None, RPD < 35%
Tetrachloroethene	**2.3**	**2.4**	NA	None, Abs. Diff. < RL
trans-1,2-Dichloroethene	**57**	**61**	7	None, RPD < 35%
Trichloroethene	**2400**	**2400**	0	None, RPD < 35%
Trifluorotrichloroethane	**11**	**11**	0	None, RPD < 35%
Vinyl chloride	**31**	**35**	12	None, RPD < 35%
Remaining VOCs	ND U	ND U	NA	None, Both ND.

1.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
TRIPBLANK - 070219	Vinyl acetate	ND U	Reject	Holding Time Exceedance
RAY350-EFT-070219		ND U	Reject	
RAY350-MID1-070219		ND U	Reject	
RAY350-INF-070219		ND U	Reject	
RAY350-INF-070219	cis-1,2-Dichloroethene	660	660 J	
RAY350-INF-070219	Trichloroethene	2200	2200 J	
RAY350-INF-101519	Ethylbenzene	0.054 J	0.20 U	Trip Blank Contamination
RAY350-MID2-101519		0.052 J	0.20 U	
RAY350-INF-101519	Chlorobenzene	0.051 J	0.20 U	
RAY350-MID1-101519		0.027 J	0.20 U	
RAY350-INF-101519	1,2,4-Trichlorobenzene	0.17 J	0.30 U	Method Blank Contamination
TRIPBLANK - 121019	tert-Butylbenzene	0.12 J	0.50 U	
RAY350-EFT-121019		0.12 J	0.50 U	
RAY350-MID1-121019		0.12 J	0.50 U	
RAY350-INF-121019		0.12 J	0.50 U	
TRIPBLANK - 121019	Cymene (p-Isopropyltoluene)	0.061 J	0.30 U	
RAY350-EFT-121019		0.061 J	0.30 U	
RAY350-MID1-121019		0.060 J	0.30 U	
RAY350-INF-121019		0.061 J	0.30 U	

Glossary

- Sample Types:
  - N — Primary Sample
  - FD — Field Duplicate Sample
  - TB — Trip Blank Sample
- Units:
  - µg/L or ug/L — micrograms per liter
  - mg/L — milligrams per liter
- Table Footnotes
  - NA — Not applicable
  - ND — Non-detect
  - NR — Not reported
- Abbreviations
  - DUSR — Data Usability Summary Report
  - SDG — Sample Delivery Group
  - EPA — Environmental Protection Agency
  - NFG — National Functional Guidelines
  - QA/QC — Quality Assurance/Quality Control
  - RL — Reporting Limit
  - MDL — Method Detection Limit
  - SOP — Standard Operating Procedures
  - COC — Chain of Custody
  - % — Percent
  - %R — Percent Recovery
  - RPD — Relative Percent Difference
  - LCS/LCSD — Laboratory Control Sample/Laboratory Control Sample Duplicate
  - MS/MSD — Matrix Spike/Matrix Spike Duplicate

Qualifiers

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
  - NJ The analysis indicated the presence of a compound for which there was presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

References

1. United States Environmental Protection Agency, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

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Data Usability Summary Report

Project Name: Raytheon MEW – 350 Ellis Street

Analytical Laboratory: TestAmerica Laboratories, Inc. – West Sacramento, California

Validation Performed by: Vanessa Godard

Validation Reviewed by: Katherine Miller

Validation Date: June 2019

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the 350 Ellis Street soil gas samples collected on 17 February and 24 May 2019. The analytical results for Sample Delivery Group(s) (SDG) below were reviewed to determine the data's usability. This data validation and usability assessment was performed per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) "EPA National Functional Guidelines (NFG) for Organic Compounds" and EPA "Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15 (Rev. 6)" and laboratory standard operating procedures. The following quality assurance/quality control criteria were reviewed as applicable for analytes reported in the project sample(s):

1. Sample Delivery Group Number 320-47728-1
2. Sample Delivery Group Number 320-50743-1

- Holding Times/Preservation
- Reporting Limits & Sample Dilutions
- Blank Sample Analysis
- Clean Canister Certification
- Surrogate Recovery Compliance
- Laboratory Control Sample / Laboratory Control Sample Duplicate
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control or laboratory duplicate analyses performed concurrently with the project samples.

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and usable; any exceptions are noted in the following pages.

1. SAMPLE DELIVERY GROUP NUMBER 320-47728-1

1.1 SUMMARY

This DUSR summarizes the review of SDG number 320-47728-1. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

- Lab report and EDD have data switched for samples -7 and -8. Revised EDD issued on 6/21.

Analyses were performed on the following samples:

Sample ID	Sample Type	Laboratory ID	Sample Collection Date	Matrix	Methods	Holding Time
350-V002-INF-021719	N	320-47728-1	2/17/2019	Soil Gas	VOCs by TO-15	30 days
350-V002-EFF-021719	N	320-47728-2	2/17/2019	Soil Gas		
350-V008-INF-021719	N	320-47728-3	2/17/2019	Soil Gas		
350-V008-EFF-021719	N	320-47728-4	2/17/2019	Soil Gas		
350-V011-INF-021719	N	320-47728-5	2/17/2019	Soil Gas		
350-V011-EFF-021719	N	320-47728-6	2/17/2019	Soil Gas		
350-V014-INF-021719	N	320-47728-7	2/17/2019	Soil Gas		
350-V014-EFF-021719	N	320-47728-8	2/17/2019	Soil Gas		

1.2 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

1.3 REPORTING LIMITS & SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
350-V008-INF	320-47728-3	VOCs by TO-15	~42.4x	Dilution required based on high target analyte concentrations.
350-V008-EFF	320-47728-4		~27.8x	
350-V002-INF	320-47728-1		~19.2x	
350-V011-INF	320-47728-5		~19.1x	

1.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

1.5 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The %R were within the specified limits.

1.6 CLEAN CANISTER CERTIFICATION

The canisters used for the TO-15 sample collection were certified clean by batch can analysis prior to sampling to ensure that no target analytes were present. These analysis sheets were reviewed, and no target analytes were detected in the laboratory-provided canisters with the following exceptions:

Sample ID	Analysis Date	Clean Can ID	Analyte	Blank Concentration (ppb v/v)	Sample Concentration (ppb v/v)	Qualification
350-V002-INF	Batched with 34002476 (1/26/2019)	8934	Acetone; Carbon disulfide; Propylene	0.20 J; 0.092 J B; 0.35 J B*	ND; ND; NR	None, sample ND.
350-V002-EFF		34000679			ND; **7.0;** NR	None, sample >2x RL.
350-V008-INF		34001117			ND; ND; NR	None, sample ND.
350-V008-EFF		8940			ND; ND; NR	None, sample ND.
350-V011-INF		34001013			ND; **22**; NR	**Result U**
350-V011-EFF		34002451			ND; ND; NR	None, sample ND.
350-V014-INF		34000965			**13; 1.3**; NR	None; **Result U**
350-V014-EFF		9178			ND; **13**, NR	None, sample >2x RL.

* Propylene is not reported for site samples.

1.7 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

The laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent difference (RPDs) within the specified limits.

- Batch 279640 containing sample 320-47728-8 did not report a LCS. The LCS/LCSD reported for batch 279404 containing the other samples was within limits and was used to assess precision/accuracy.

1.8 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

1.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
320-47728-5	Carbon disulfide	68	68 U	Canister Contamination
320-47728-7		4.2	4.2 U	

2. SAMPLE DELIVERY GROUP NUMBER 320-50743-1

2.1 SUMMARY

This DUSR summarizes the review of SDG number 320-50743-1. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Laboratory ID	Sample Collection Date	Matrix	Methods	Holding Time
350-V002-INF-052419	N	320-50743-1	5/24/2019	Soil Gas	VOCs by TO-15	30 days
350-V002-EFF-052419	N	320-50743-2	5/24/2019	Soil Gas		
350-V008-INF-052419	N	320-50743-3	5/24/2019	Soil Gas		
350-V008-EFF-052419	N	320-50743-4	5/24/2019	Soil Gas		
350-V011-INF-052419	N	320-50743-5	5/24/2019	Soil Gas		
350-V011-EFF-052419	N	320-50743-6	5/24/2019	Soil Gas		
350-V014-INF-052419	N	320-50743-7	5/24/2019	Soil Gas		
350-V014-EFF-052419	N	320-50743-8	5/24/2019	Soil Gas		

2.2 CASE NARRATIVE

The TestAmerica laboratory report case narrative lists various quality control exceedances not covered in a standard Level II review, including internal standard exceedances and initial (ICV) and/or continuing calibration (CCV) exceedances. As a full Level IV validation was not requested, these quality control exceedances were not reviewed, and no qualifiers were therefore applied.

- Acetone and Carbon disulfide recovered above the upper control limit in the CCV. The samples associated with this CCV were ND for the affected analytes; therefore, the data have been reported.

2.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

2.4 REPORTING LIMITS & SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
350-V011-INF	320-50743-5	VOCs by TO-15	~18.6x	Dilution required based on high target analyte concentrations.
350-V008-INF	320-50743-3		~18.2x	
350-V011-EFF	320-50743-6		~14.6x	
350-V002-INF	320-50743-1		~11x	
350-V002-EFF	320-50743-2		~7.7x	
350-V008-EFF	320-50743-4		1.88x	Reanalysis required re-pressurization.

2.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

2.6 CLEAN CANISTER CERTIFICATION

The canisters used for the TO-15 sample collection were certified clean by individual and batch can analysis prior to sampling to ensure that no target analytes were present. These analysis sheets were reviewed, and no target analytes were detected in the laboratory-provided canisters with the following exceptions:

Sample ID	Analysis Date	Clean Can ID	Analyte	Blank Concentration (ppb v/v)	Sample Concentration (ppb v/v)	Qualification
350-V002-INF	Batched with 34001976 (5/16/19)	34000805	Acetone; Carbon disulfide	0.40 J B; 0.085 J	ND; **50**	None, >2x RL.
350-V002-EFF		34001225			ND; **140**	None, >2x RL.
350-V008-INF		34000898			ND; **29**	None; **Result U**
350-V008-EFF		34001676			**6.3; 8.2**	**Result U**; None
350-V011-INF		34001629			ND; ND	None, sample ND.
350-V011-EFF		34000641			ND; **17**	None; **Result U**
350-V014-EFF		34001790			**6.4; 6.1**	**Result U**; None
350-V014-INF	5/11/19	8290	Acetone	0.84 J	ND	None, sample ND.
			1,1-Difluoroethane	0.091 J B	NR	NA, not reported.

2.7 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The %R were within the specified limits.

2.8 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

The laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent difference (RPDs) within the specified limits with the following exceptions:

Sample Type	Method	Batch ID	Analyte	%R	Qualifier	Affected Samples
LCS/LCSD	TO-15	300819	Carbon disulfide	140%/143%	NA	None, reanalyzed.
LCS/LCSD		301077	Carbon disulfide	145%/143%	NA	None, reanalyzed.
LCS		301531	Acetone	130%/128%	NA	None, samples ND.
LCS			Carbon disulfide	143%/142%	NA	None, sample ND.

2.9 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

2.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
320-50743-4	Acetone	15	15 U	Canister Contamination
320-50743-8		15	15 U	
320-50743-3	Carbon disulfide	90	90 U	
320-50743-6		52	52 U	

References

1. United States Environmental Protection Agency, 2014. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15, SOP NO. HW-31, Revision 6. June.

2. United States Environmental Protection Agency, 2017. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

Glossary

- Sample Types:
  - N Primary Sample
  - FD Field Duplicate Sample
  - FB Field Blank Sample
  - EB Equipment Blank Sample
  - TB Trip Blank Sample

- Units:
  - µg/cm3 microgram per centimeter cubed
  - ppb v/v parts per billion volume/volume

- Table Footnotes
  - NA Not applicable
  - ND Non-detect
  - NR Not reported

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

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Data Usability Summary Report

Project Name: Raytheon MEW – 350 Ellis Street

Analytical Laboratory: Eurofins TestAmerica – West Sacramento, California

Validation Performed by: Carly Nemanic

Validation Reviewed by: Katherine Miller

Validation Date: 21 February 2020

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the 350 Ellis Street soil gas samples collected on 18 August and 18 November 2019 and submitted to Eurofins TestAmerica – West Sacramento, California. The analytical results for the Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability.

This data validation and usability assessment was performed as per the guidance and requirements from the U.S. Environmental Protection Agency's (EPA) *National Functional Guidelines (NFG) for Organic Compounds* and *Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15 (Rev. 6),* and laboratory standard operating procedures, herein referred to as the specified limits. The following quality assurance/quality control (QA/QC) criteria from the analysis of the project samples were reviewed as applicable:

1. Sample Delivery Group Number 320-53491-1
2. Sample Delivery Group Number 320-56586-1

- Holding Times/Preservation
- Reporting Limits & Sample Dilutions
- Blank Sample Analysis
- Clean Canister Certification
- Surrogate Recovery Compliance
- Laboratory Control Sample / Laboratory Control Sample Duplicate
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control analysis performed concurrently with the project samples.

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

1. SAMPLE DELIVERY GROUP NUMBER 320-53491-1

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 320-53491-1, dated 20 September 2019. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel.

- Laboratory report revised on September 20, 2019, to correct Dilution Factor applied to sample "350-V008-INF-081819" (320-53491-3).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods	Holding Time
350-V002-INF-081819	N	320-53491-1	8/18/2019	GS	TO-15	30 days
350-V002-EFF-081819	N	320-53491-2	8/18/2019	GS	TO-15	30 days
350-V008-INF-081819	N	320-53491-3	8/18/2019	GS	TO-15	30 days
350-V008-EFF-081819	N	320-53491-4	8/18/2019	GS	TO-15	30 days
350-V011-INF-081819	N	320-53491-5	8/18/2019	GS	TO-15	30 days
350-V011-EFF-081819	N	320-53491-6	8/18/2019	GS	TO-15	30 days
350-V014-INF-081819	N	320-53491-7	8/18/2019	GS	TO-15	30 days
350-V014-EFF-081819	N	320-53491-8	8/18/2019	GS	TO-15	30 days

1.2 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

1.3 REPORTING LIMITS & SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
350-V002-INF-081819	320-53491-1	VOCs by TO-15	3.62	Dilution required based on high target analyte concentrations.
350-V008-INF-081819	320-53491-3		14.9	
350-V011-INF-081819	320-53491-5		18.5	
350-V014-INF-081819	320-53491-7		2.5	

1.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

1.5 CLEAN CANISTER CERTIFICATION

The canisters used for the TO-15 sample collection were certified clean by batch can analysis prior to sampling to ensure that no target analytes were present. These analysis sheets were reviewed, and no target analytes were detected in the laboratory-provided canisters with the following exceptions:

Batch	Analyte	Blank Concentration (ppb v/v)	Qualification
304916, 302609	124-trichlorobenze carbon disulfide; acetone, n-octane	0.73 JB, 0.099 J, 0.33 J, 0.088 JB	None, samples ND.

1.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to preparing samples for determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds. The %R for each surrogate compound added to each project sample was determined to be within the laboratory specified quality control limits.

1.7 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits with the following exceptions:

Sample Type	Method	Batch ID	Analyte	%R	Qualifier	Affected Samples
LCSD	TO-15	322338	1,1,2-Trichloroethane	125%	NA	None, samples are ND

1.8 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.
The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

1.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

2. SAMPLE DELIVERY GROUP NUMBER 320-56586-1

2.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 320-56586-1, 27 December 2019. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Laboratory report was revised on 12/27/2019 to include the clean canister certifications
- A revised Chain of Custody (COC) was provided by the client on 11/25/19.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods	Holding Time
350-V002-INF-111819	N	1911528-01A	11/18/2019	GS	TO-15	30 days
350-V002-EFF-111819	N	1911528-02A	11/18/2019	GS	TO-15	30 days
350-V008-INF-111819	N	1911528-03A	11/18/2019	GS	TO-15	30 days
350-V008-EFF-111819	N	1911528-04A	11/18/2019	GS	TO-15	30 days
350-V011-INF-111819	N	1911528-05A	11/18/2019	GS	TO-15	30 days
350-V011-EFF-111819	N	1911528-06A	11/18/2019	GS	TO-15	30 days
350-V014-INF-111819	N	1911528-07A	11/18/2019	GS	TO-15	30 days
350-V014-EFF-111819	N	1911528-08A	11/18/2019	GS	TO-15	30 days

2.2 CASE NARRATIVE

The reported result for 4-Ethyltoluene in samples 350-V008-INF-111819 and 350-V011-INF-111819 may be biased high due to co-elution with a non-target compound with similar characteristic ions. Both the primary and secondary ion for 4-Ethyltoluene exhibited potential interference. **Results qualified "J" for estimated.**

2.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

2.4 REPORTING LIMITS & SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

Sample ID	Lab ID	Analyte/ Method	Issue/Explanation
350-V002-INF-111819	320-53491-1	VOCs by TO-15	Dilution required based on high target analyte concentrations.
350-V011-INF-111819	320-53491-5		

2.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

2.6 CLEAN CANISTER CERTIFICATION

The canisters used for the TO-15 SIM sample collection were certified clean by batch can analysis prior to sampling to ensure that no target analytes were present. These analysis sheets were reviewed, and no target analytes were detected in the laboratory-provided canisters.

2.7 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to preparing samples for determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds. The %R for each surrogate compound added to each project sample was determined to be within the laboratory specified quality control limits.

2.8 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS/LCSD analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits with the following exceptions:

Sample Type	Method	Batch ID	Analyte	%R	Qualifier	Affected Samples
LCS/LCSD	TO-15	1911528	1,2,4-Trichlorobenzene	RPD>20%	NA	None, samples are ND

2.9 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

2.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
350-V008-INF-111819	4-Ethyl toluene	18	18 J	co-elution with a non-target compound
350-V011-INF-111819	4-Ethyl toluene	42	42 J	

Glossary

- Sample Types:
  - N Primary Sample
  - FD Field Duplicate Sample
  - FB Field Blank Sample
  - EB Equipment Blank Sample
  - TB Trip Blank Sample
- Units:
  - µg/cm3 microgram per centimeter cubed
  - ppb v/v parts per billion volume/volume
- Matrices:
  - AA Ambient Air
  - IA Indoor Air
  - GS Soil Gas
- Table Footnotes
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Abbreviations
  - DUSR Data Usability Summary Report
  - SDG Sample Delivery Group
  - EPA Environmental Protection Agency
  - NFG National Functional Guidelines
  - QA/QC Quality Assurance/Quality Control
  - RL Laboratory Reporting Limit
  - MDL Laboratory Method Detection Limit
  - SOP Laboratory Standard Operating Procedures
  - COC Chain of Custody
  - %R Percent Recovery
  - RPD Relative Percent Difference
  - LCS/LCSD Laboratory Control Sample/Laboratory Control Sample Duplicate

Qualifiers

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
  - NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

References

1. United States Environmental Protection Agency, 2014. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15, SOP NO. HW-31, Revision 6. June.

2. United States Environmental Protection Agency, 2017. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

APPENDIX G

2019 Analytical Laboratory Reports
(redacted due to file size – included only in CD copy)