Department of Energy
Energy Technology Engineering Center
4100 Guardian Street, Suite 160
Simi Valley, CA 93063

March 12, 2018

Mr. Mohsen Nazemi
Deputy Director
California Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

Re: Report on Annual Groundwater Monitoring Area IV, 2017 Santa Susana Field Laboratory (SSFL), Ventura County, CA

Dear Mr. Nazemi:

The Department of Energy (DOE) is pleased to submit the Report on Annual Groundwater Monitoring Area IV, 2017. This report summarizes the DOE Groundwater monitoring activities conducted during 2017 at Area IV within the SSFL located in Ventura County, CA. The annual report includes water quality data collected from administrative Area IV, Northern Buffer Zone, and off-site wells. There are no Regulated Unit or Post Closure Permit (PCP) monitoring program requirements for Area IV. DOE, NASA, and Boeing all worked together collaboratively and agreed on the groundwater contour and the plume delineation maps for the Chatsworth Formation Operable Unit.

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to evaluate the information submitted. I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please give me a call at (805) 416-0992. Best regards.

Sincerely,

John B. Jones, PMP
Director of DOE/ETEC

cc: Stephie Jennings, DOE
Brad Frazee, North Wind
John Wondolleck, CDM
Mark Malinowski, DTSC
Tom Seckington, DTSC
Buck King, DTSC
Mark Zeller, Boeing
Peter Zorba, NASA

Report on Annual Groundwater Monitoring, Area IV, 2017

Santa Susana Field Laboratory Ventura County, California

Prepared for:
United States Department of Energy

Prepared by:
North Wind, Inc.

NORTHWIND INCORPORATED

March 2018

NWI-10784-001

Report on Annual Groundwater Monitoring, Area IV, 2017

Santa Susana Field Laboratory Ventura County, California

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Prepared for:
United States Department of Energy
4100 Guardian Street, Suite 160
Simi Valley, CA 93063

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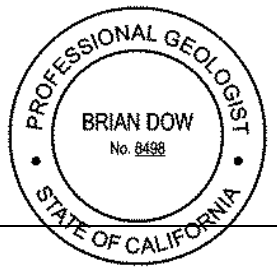
PROFESSIONAL CERTIFICATION

Report on Annual Groundwater Monitoring, Area IV, 2017
January 1 through December 31, 2017
Santa Susana Field Laboratory
Ventura County, California

March 2018

This Annual Groundwater Monitoring Report has been prepared by a team of qualified professionals under the supervision of the senior staff whose seal and signature appears below.

Reviewed by
T. Stewart Williford
ETEC Manager



Prepared by
Brian Dow, PG, PMP
Principal Geologist

Approved by
Brad Frazee
Project Manager

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Executive Summary

This report summarizes the United States Department of Energy (DOE) groundwater monitoring activities conducted during 2017 at Area IV within the Santa Susana Field Laboratory (SSFL), located in Ventura County, California. The annual report has been developed by North Wind, Inc., (North Wind) in collaboration and with contributions from CDM Federal Programs Corporation (CDM Smith), and includes water quality data collected from administrative Area IV, Northern Buffer Zone, and off-site wells. For simplicity, data from these areas reported herein are referred to as "Area IV." DOE has gone above and beyond meeting the requirements in the Site-Wide Groundwater Water Quality Sampling and Analysis Plan (WQSAP) by including additional water quality samples in support of the Groundwater Resource Conservation and Recovery Act (RCRA) Facility Investigations (RFI) Program (CDM Smith 2015a).

Groundwater samples were collected in 2017 by North Wind and CDM Smith. The following groundwater monitoring activities were conducted within Area IV, and are summarized in this report:

- Water quality samples were collected during the first quarter 2017 pursuant to the Site-Wide Groundwater Monitoring Program (Haley & Aldrich 2010b).Water quality samples were collected during the first quarter 2017 to support the Groundwater RCRA RFI Program (CDM Smith 2015a).

- Water quality samples were collected from March 23 to April 4, 2017, by CDM Smith from four seep well clusters downgradient of Area IV (CDM Smith 2018a).

- Scheduled 2017 samples were collected with the exceptions identified in this report.

- Water level measurements were collected in the first, second, third, and fourth quarters of 2017, and groundwater elevation contours for 2017 were prepared and are presented in this report.

- Well maintenance was performed.

There are no Regulated Unit or Post Closure Permit (PCP) monitoring program requirements for Area IV.

Exceptions to the WQSAP are summarized in this report. Water supply well WS-07 was sampled by National Aeronautics and Space Administration (NASA) as part of its groundwater investigation work.

Exceptions Noted during the 2017 Activities

Exceptions to the Site-Wide WQSAP are discussed in the report and included wells that could not be sampled due to being dry; wells containing insufficient water for sampling; or a well obstruction due to partially removed Flexible Liner Underground Technologies (FLUTe) devices. Stabilization readings for some wells were collected at intervals greater than five minutes based on the time requirement to exchange water in the flow-through cell due to the low flow rate. For 10 wells, the low-flow stabilization criterion was not met based on the water level drawdown exceeding 0.3 feet.

A groundwater sample was collected from RD-34B using a pump placed immediately above the existing borehole obstruction (167 feet below ground surface), and low-flow sampling procedures were followed.

A groundwater sample from RD-57 could not be obtained due to a downhole obstruction caused by a partially removed FLUTe sampling device. The lid on this well has been welded shut to restrict access.

Reporting limits for all analytes were met except for vinyl chloride, 1,2-dichloroethane, carbon tetrachloride, and gasoline-range organics (GRO). These differences are discussed in detail in Section 3.4 and are considered sufficient to meet project requirements.

First quarter 2017 data were previously reported in a quarterly report (North Wind 2017b) and included analytical table errors due to a database software update and an inconsistency with how laboratory flags for non-detect analytes were carried over during the data validation process. These issues have been corrected in annual report Tables 10 through 15, and a corrective action has been implemented to prevent these errors during future sampling events. Thus, Tables 10 through 15 presented herein replace those that were presented in the quarterly report.

Sample Results Evaluation

As discussed in detail in Section 4.2.3, impacted areas for the main contaminants of concern (COCs) trichloroethene (TCE), tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), vinyl chloride, 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethane (1,1-DCA), 1,4-dioxane, carbon tetrachloride, total petroleum hydrocarbons (TPH), nitrate, and tritium had results consistent with those seen in previous years. No new areas of impact have been identified from this 2017 sampling event. All other wells impacted by COCs will continue to be monitored as required by the Site-Wide WQSAP.

There are also analytes of interest that are not identified as COCs. These include perchlorate, 1,2,3-trichloropropane (1,2,3-TCP), formaldehyde, n-nitrosodimethylamine (NDMA), and fluoride. Based on 2017 results as well as past sampling events, no areas of impact to groundwater from these analytes are indicated.

A review was conducted in Section 4.2.4 regarding all analytes that were detected for the first time in 2017 as well as whether each concentration is the new maximum concentration value for each affected well. For analytes that were above any associated SSFL screening criteria in a particular well, and if groundwater flow trends indicate it, sampling for those analytes will be performed in 2018. New first-time detected analytes will also be sampled for in 2018 if they were not able to be sampled in 2017.

Conclusions

The first quarter 2017 sampling activities met the objectives stated in the Site-Wide Groundwater Monitoring Program and Site-Wide WQSAP except where noted above and in the body of this report. In general, sample results were consistent with historical results. Groundwater infiltration from heavy rains during late 2016 and the beginning of 2017 may have influenced the new and maximum detections discussed in Section 4.2.4. Any newly detected sample results will be monitored in future sampling events. Areas of impact to groundwater from COCs remained consistent and will be further evaluated with the 2018 results to see if any changes are required.

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APPENDICES

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,1,1-TCA	1,1,1-trichloroethane
1,2,3-TCP	1,2,3-trichloropropane
1,2-DCA	1,2-dichloroethane
22 CCR	Title 22 California Code of Regulations
Boeing	The Boeing Company
CDM Smith	CDM Federal Programs Corporation
cis-1,2-DCE	cis-1,2-dichloroethene
COC	contaminant of concern
DOE	United States Department of Energy
DPH	Department of Public Health
DRO	diesel-range organics
DTSC	Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
ESADA	Empire State Atomic Development Authority
ETEC	Energy Technology Engineering Center
FLUTe	Flexible Liner Underground Technologies
FSDF	Former Sodium Disposal Facility
GRO	gasoline-range organics
GWIM	Groundwater Interim Measure
GWRC	Groundwater Resources Consultants
HMSA	Hazardous Materials Storage Area
LUFT	leaking underground fuel tank
MCL	maximum contaminant level
MDL	method detection limit
mg/L	milligrams per liter
mrem/yr	millirems per year
MSL	mean sea level
MWH	Montgomery Watson Harza
NASA	National Aeronautics and Space Administration
NBZ	Northern Buffer Zone

NDMA	n-nitrosodimethylamine
North Wind	North Wind, Inc.
PCE	tetrachloroethene
pCi/L	picocuries per liter
PCP	Post-Closure Permit
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RMHF	Radioactive Materials Handling Facility
RI	Remedial Investigation
RWQCB	Regional Water Quality Control Board
SMCL	secondary maximum contaminant level
SNAP	Systems Nuclear Auxiliary Power (Facility)
Sr-90	strontium-90
SSFL	Santa Susana Field Laboratory
SWGW RBSL	site-wide groundwater risk-based screening level
TCE	trichloroethene
TPH	total petroleum hydrocarbons
trans-1,2-DCE	trans-1,2-dichloroethene
VOC	volatile organic compound
WQSAP	Water Quality Sampling and Analysis Plan

Report on Annual Groundwater Monitoring, Area IV, 2017

Santa Susana Field Laboratory Ventura County, California

1. INTRODUCTION

This report summarizes the groundwater monitoring activities conducted during 2017 by the United States Department of Energy (DOE) within Area IV of the Santa Susana Field Laboratory (SSFL) located in Ventura County, California (Figure 1). Previous annual reports have reported groundwater monitoring activities performed for the entirety of SSFL, including areas administered by The Boeing Company (Boeing) and the National Aeronautics and Space Administration (NASA) at administrative Areas I, II, III, IV, and undeveloped land both to the north and south. DOE is submitting data for wells within Area IV for which it has responsibility under the 2007 Consent Order for Corrective Action (Department of Toxic Substances Control [DTSC] 2007). This report describes groundwater monitoring activities that occurred from January through December 2017 within administrative Area IV, the Northern Buffer Zone, and off-site wells located to the north and west of Area IV. For simplicity, administrative Area IV, Northern Buffer Zone, and off-site wells associated with Area IV are termed "Area IV" in this report.

This report contains Area IV information relative to DOE activities only and as such has been modified to reflect regulatory compliance requirements for Area IV. There are currently no Post-Closure Permit (PCP) Regulated Unit Monitoring Program requirements and leaking underground fuel tank (LUFT) requirements for Area IV.

Site-Wide Groundwater Monitoring Program activities for Area IV described in this report were the result of implementation of the December 2010 Site-Wide Water Quality Sampling and Analysis Plan (WQSAP; Haley & Aldrich 2010b), and site-wide activities in support of the DOE Area IV Groundwater Resource Conservation and Recovery Act (RCRA) Facility Investigations (RFI) Program (CDM Smith 2015a).

1.1 Site Description

The SSFL is located approximately 29 miles northwest of downtown Los Angeles, California, in the southeast corner of Ventura County (Figure 1). The SSFL occupies approximately 2,850 acres of hilly terrain, with approximately 1,100 feet of topographic relief near the crest of the Simi Hills. Figure 1 shows the geographic location and property boundaries of the site, as well as surrounding areas. The site is divided into four administrative areas (Areas I, II, III, and IV) and includes undeveloped land both to the north and south. Most of Area I and all of Areas III and IV are owned by Boeing. The United States Environmental Protection Agency (EPA) Identification Number for Areas I and III is CAD093365435. Area II is owned by the federal government and administered by NASA along with a portion of Area I. The EPA Identification Number for Area II is CA1800090010. Boeing owns the entirety of Area IV. The EPA Identification Numbers for Area IV are CAD000629972 and CA389009001. Ninety acres of Area IV were leased to the DOE, which also owns facilities in Area IV. The northern and southern undeveloped lands of SSFL were not used for industrial activities and are owned by Boeing.

1.2 Regulatory Background

Prior to submission of this annual report, groundwater sampling activities for Area IV were reported along with results from Areas I, II, and III. As a result, previous annual reports were intended to fulfill the requirements of multiple regulatory programs being implemented at SSFL. These include requirements addressed in the PCP monitoring programs (Regulated Unit Programs) for Areas I, II, and III approved by the California EPA DTSC, the Site-Wide Groundwater Monitoring Program approved by DTSC, and LUFT monitoring program overseen by DTSC. There are no Regulated Unit or LUFT requirements for Area IV and thus they are not addressed in this document.

The content of this report is in compliance with the December 2010 Site-Wide WQSAP (Haley & Aldrich 2010b). The Site-Wide Groundwater Monitoring Program is prescribed by the Site-Wide WQSAP.

1.3 Objectives

Area IV groundwater compliance requirements are presented in the Site-Wide Groundwater Monitoring Program. The objective of this report is to document compliance with that program. The scope of this report includes the following:

- Executive summary of significant findings;
- Summary of monitoring programs and activities conducted during the calendar year;
- Summary of maintenance inspections of monitored wells, if any;
- Summary of modifications made to monitoring equipment during the calendar year, if any;
- Summary of deviations from the Site-Wide WQSAP, if any;
- Discussion of significant events that may influence the occurrence and movement of groundwater;
- Summary of results of laboratory analyses of water samples;
- Summary tables indicating monitoring parameter results that lie outside of historical range for each monitoring location;
- Summary of constituent concentrations at wells that exceed SSFL groundwater screening reference values (SSFL screening criteria);
- Summary of outstanding issues and/or follow-up work;
- Contaminant plume maps with isoconcentration contours for specific regulated units or areas;
- Water level data, hydrographs, and groundwater elevation contour maps;
- Contaminant concentration versus time plots and a discussion of evident trends; and

- Results of quality assurance/quality control sampling and analysis and assessment of data quality, including accuracy, precision, and completeness with associated laboratory and data validation reports.

1.4 Report Organization

The remainder of this report is organized as follows:

- Section 2 provides a description of the site geology and hydrogeology.
- Section 3 provides a summary of the activities performed during this reporting period.
- Section 4 presents the results of field work and analytical testing.
- Section 5 presents planned activities for 2018.
- Section 6 provides references.

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2. SITE GEOLOGY AND HYDROGEOLOGY

2.1 Geology

The SSFL is located in the Western Transverse Ranges physiographic province of southern California. The province's geology and physiography reflect at least 70 million years of geologic history. The sedimentary rocks in the portion encompassing SSFL range from coarse-grained conglomerates and sandstones to fine-grained siltstones and shale. The geologic history of the Western Transverse Ranges is complex and involves several distinct episodes of deformation involving tectonic extension, rotation, compression, and shearing. In the vicinity of SSFL, this has caused the Western Transverse Ranges to rotate more than 90 degrees clockwise. This complex geologic history is reflected in multiple fold, fault, and fracture orientations in the vicinity of SSFL.

The Chatsworth Formation underlies much of the province and is exposed across most of SSFL (Figure 2). It is a turbidic sandstone with interbedded shale, siltstone, and conglomerate approximately 6,000 feet thick and more than 65 million years old. As a result of geologic folding, the Chatsworth Formation dips moderately (typically 25 to 35 degrees) to the northwest at SSFL, along the south limb of the Simi Valley syncline. Detailed geologic mapping in the site vicinity was performed to augment published geologic maps, resulting in the subdivision of the Chatsworth Formation into upper and lower units (Montgomery Watson Harza [MWH] 2009). The lower formation is exposed in southeastern SSFL and dips northwest beneath the remainder of the site. The upper Chatsworth Formation is exposed across much of the remainder of the site and has been subdivided further into stratigraphic packages consisting of coarse- and fine-grained members. Numerous steeply dipping to near-vertical faults offset this stratigraphy. Fault gouge and fracturing, ancillary to faults, are observed at some locations.

Unconsolidated deposits at SSFL include alluvium, artificial fill, and thin soils over bedrock. The alluvium generally consists of silty sand and occurs in topographic lows and along ephemeral drainages. Areas with 5 to 30 feet of alluvium cover more than 300 acres of SSFL, or about 11 percent of the site.

2.2 Hydrogeology

Groundwater occurs at SSFL in alluvium and weathered and unweathered bedrock (Montgomery Watson 2000; MWH 2009). First-encountered groundwater may be observed in any of these media under water table conditions. For regulatory purposes, near-surface groundwater is defined to occur within the site's unconsolidated deposits (e.g., alluvium) and shallow weathered bedrock, whereas deep groundwater, referred to as "Chatsworth Formation groundwater," occurs in the unweathered bedrock. The near-surface groundwater may be perched or vertically continuous with deeper groundwater.

The boundaries of the mountain groundwater system encompassing SSFL include where the Simi Hills meet the floor of the Simi and San Fernando valleys, and where groundwater tends to discharge to seeps and phreatophytes along several surrounding canyons. The base of the active groundwater flow system occurs at the boundary between fresh and connate groundwater, assumed to occur at approximately sea level. The upper boundary of the mountain groundwater flow system is the regional water table and localized perched water tables. Hydrogeologic boundaries internal to the groundwater flow system include areas of groundwater discharge to seeps and phreatophytes, pumped wells, and various boundary effects along faults and geologic contacts.

Portions of the Chatsworth Formation comprise locally transmissive aquifer units. These units generally consist of the fractured sandstone members of the upper Chatsworth Formation, many of which are several hundred feet thick. Separating the major sandstone units are a series of relatively thin shale and siltstone members that typically behave as aquitards.

The arrangement and geometry of the hydrogeologic units are controlled by geologic contacts, folding, and faulting. Faults truncate permeable zones and fractures, juxtapose different units and fold orientations, and form low-permeability boundaries and zones of enhanced fracturing. Together, these structures result in a complex three-dimensional distribution of hydrogeologic units and anisotropic permeability that influence directions and rates of groundwater flow. Major faults subdivide SSFL into several large blocks, which are further subdivided by shale beds.

The SSFL water table is a subdued reflection of the topography, which, relative to the surrounding valleys, presents as a large groundwater mound that is maintained by rainfall recharge. Distinct differences in groundwater head are observed across fine-grained units and faults that impede groundwater flow. Groundwater moves from areas of recharge toward pumping wells and downward and outward toward hill slope seeps and the surrounding lowlands. The direction of vertical flow is downward at most site locations.

Insight into the pattern of SSFL groundwater flow has been provided through the development and use of a representative three-dimensional groundwater flow model (MWH 2009).

3. REPORTING PERIOD ACTIVITIES

The reporting period for this report covers the 2017 calendar year, from January 1, 2017, to December 31, 2017. Work performed during the 2017 annual reporting period is presented in this section. Groundwater samples were collected in 2017 as part of the Area IV Site-Wide Groundwater Monitoring Program and to support the DOE Groundwater RFI Program.

The Site-Wide Groundwater Monitoring Program – December 2010 Site-Wide WQSAP (Haley & Aldrich 2010b) was implemented to fulfill the groundwater monitoring program specific to Area IV at SSFL.

The following activities stipulated by the Site-Wide WQSAP were conducted during the reporting period:

- Measurement of groundwater levels at all accessible program wells.
- Collection and submission of groundwater samples from select wells for laboratory analysis.

The goals of Groundwater RFI (CDM Smith 2015a) sampling conducted during 2017 were:

- Collect water levels and groundwater samples from monitoring wells and seeps not sampled as part of the Site-Wide Groundwater Monitoring Program.
- Close remaining groundwater data gaps for existing wells through additional chemical analyses from those stated in the Site-Wide WQSAP.

All data collection activities reported herein were performed by North Wind, Inc. (North Wind) under contract to DOE. First quarter 2017 data were previously reported in a quarterly report (North Wind 2017b) and included analytical table errors due to a database software update and an inconsistency with how laboratory flags for non-detect analytes were carried over during the data validation process. These issues have been corrected in annual report Tables 10 through 15, and corrective action has been implemented to prevent these errors during future sampling events. Thus, Tables 10 through 15 presented herein replace those that were presented in the quarterly report.

Table 1 lists the wells present within Area IV during the sampling and associated sampling program, i.e., sampled under the WQSAP or sampled to address groundwater RFI data needs.

Well, piezometer, and seep locations are shown on Figure 3. The wells that are identified as Site-Wide Monitoring Program wells are highlighted on Figure 4. Well construction details are provided in Appendix A.

North Wind completed field groundwater monitoring activities during the first, second, third, and fourth quarters of the 2017 reporting period, and CDM Federal Programs Corporation (CDM Smith) completed field seep groundwater monitoring activities during March and April of 2017 (CDM Smith 2018a). Field activities were conducted in general accordance with the Site-Wide WQSAP (Haley & Aldrich 2010b), with exceptions described in Section 3.4. Field personnel followed the sampling and analysis requirements described in the Site-Wide WQSAP.

Former Sodium Disposal Facility Groundwater Interim Measure (GWIM)

One of the regulatory requirements for DOE to complete in Area IV is conducting a GWIM at the Former Sodium Disposal Facility (FSDF). Shallow well RS-54 (installed to approximately 40 feet below ground surface) has exhibited 1,1,1-trichloroethane (1,1,1-TCA) concentrations exceeding 10,000 micrograms per liter (µg/L) and trichloroethene (TCE) concentrations exceeding 1,000 µg/L. The original plan for the FSDF GWIM was to pump RS-54 and treat the water locally. However, because the well is a poor producer of groundwater, that decision was changed to pump the well for off-site treatment and disposal.

RS-54 has been dry during recent years; however, water was observed in the well following higher than average rains during winter 2016/2017 (Appendices B and C). Pumping of the well was initiated by CDM Smith on November 6, and it was determined that it could not sustain a pumping rate of 0.5 gallons per minute. During each pumping event, the water column was lowered to the elevation of the pump intake, typically within a 20-minute period. The well was pumped by CDM Smith 13 times from November 6 to December 18. Approximately 193 gallons of water was removed. The average concentration of 1,1,1-TCA observed was 7,100 µg/L and of TCE was 1,260 µg/L. A technical memorandum (CDM Smith 2018b) will provide further description of the pumping and analytical results.

Former Sodium Disposal Volatile Organic Compound (VOC) Source Investigation

Twenty passive soil gas samplers were installed by CDM Smith via direct-push rig in temporary vapor wells at the alluvial soil / bedrock interface in the FSDF area to locate the VOC source of impacted groundwater observed in well RS-54. The samplers were left in place for 48 hours, retrieved, and shipped to the analytical laboratory. The results indicated that the primary bedrock VOC source is in the vicinity of well RS-54. A technical memorandum (CDM Smith 2018c) will provide further results and conclusions of the FSDF VOC source investigation.

3.1 Modifications to Well Network and Equipment

Wells and piezometers were inspected during the first quarter of 2017. Well maintenance needs were noted and completed as needed. Table 2 presents well maintenance, equipment modifications, well construction, and well development activities performed on Area IV wells and piezometers during 2017. No new Area IV wells were installed, developed, or sampled during 2017.

3.2 Water Level Gauging

Area IV static water levels were gauged at all accessible program wells. Depths to water were measured from the top of each well casing. Conditions of the well (e.g., loose caps, damaged casing) were recorded in field logs. Wells were gauged using an electronic water-level meter. Portions of the cable and meter or probe that were in contact with groundwater were decontaminated before use at each well. Water levels were obtained in first, second, third, and fourth quarters of 2017 and are summarized in Table 3.

Water supply well WS-07 was not gauged. Gauging of WS-07 may be performed by NASA and/or Boeing in the future.

3.3 Groundwater Sampling and Analysis

Area IV monitoring wells are scheduled to be sampled annually in accordance with the Site-Wide WQSAP. The Area IV Site-Wide Groundwater Monitoring Program includes 64 wells that are included in the Site-Wide Water Level Monitoring Program. Of those 64 wells, 30 wells are included for sampling under the Site-Wide Sampling Program. An additional 55 wells were subject to groundwater sampling under the RFI Program. A total of 72 wells were scheduled to be sampled during the first quarter of 2017. Of those, six were dry and 66 were sampled. Wells that could not be sampled in 2017 and the associated reasons are discussed in Table 4.

The locations of the wells, piezometers, and seeps are presented on Figure 3. The Site-Wide Groundwater Monitoring Program wells are presented in Table 1 and shown on Figure 4. Beginning in 2013, the monitoring frequency of the Site-Wide Program decreased from semi-annual to annual.

Groundwater field parameters collected during purging, prior to sample collection, are presented in Table 5. Groundwater samples analyzed in 2017 per the Site-Wide WQSAP (Haley & Aldrich 2010b) and Groundwater RFI (CDM Smith 2015a) are presented in Table 6. The analytical methods are presented in Table 7.

The sampling of four seep well clusters located north of Area IV was conducted March 23 to April 4, 2017, by CDM Smith from nine seep wells of the 12 visited. The seep clusters are located on the slope north and down-gradient of Area IV, as shown in Figure 3. Three of the probe clusters (SP-424, SP-900, and SP-19) are located on Brandeis property and one (SP-T02) is in the Northern Buffer Zone (NBZ). Three of the seep probes (SP-900C, SP-TO2A, and SPT02C) were pumped dry and did not recover water; therefore, samples could not be collected from these seep wells. Seep cluster wells SP-424B, SP-424C, and SP-900A had artesian conditions; water was flowing at the surface and seeping to the ground at the probes. Seep wells were purged and sampled using 1/4-inch polyethylene tubing, either attached to a peristaltic pump or inserted into the well casing (for wells with artesian conditions). Purge water was monitored for water quality parameters (temperature, specific conductance, pH, turbidity, and ORP) using a YSI sonde meter. Samples were obtained once parameters stabilized. The results for water quality parameters and specific information regarding exceptions to the WQSAP, if any, and analyses performed are provided in a technical memorandum (CDM Smith 2018a). Analytical results for seep samples are provided in Tables 10, 11, 13, 14, and 15 herein.

3.4 Deviations from Water Quality Sampling and Analysis Plans

Exceptions to the Site-Wide WQSAP (Haley & Aldrich 2010b) are presented in Table 4. Exceptions included wells that could not be sampled due to being dry; wells containing insufficient water for sampling; and a well obstruction caused by a partially removed Flexible Liner Underground Technologies (FLUTe) multi-level sampling system.

Stabilization readings for some wells were collected at intervals greater than five minutes based on giving enough time to exchange water in the flow-through cell due to the flow rate. For one well, low-flow stabilization criteria were not met based on the water level drawdown exceeding 0.3 feet.

Due to an obstruction in well RD-34B, the groundwater sample from this well was collected using a pump placed immediately above the obstruction (167 feet below ground surface), and low-flow sampling procedures were followed.

The reporting limit for vinyl chloride, 1 µg/L, was above the SSFL groundwater screening level reference value (SSFL screening criteria) maximum contaminant level (MCL) criterion of 0.5 µg/L.

The method detection limit (MDL) was 0.10 µg/L, however, and all sample results were nondetect so the 1 µg/L reporting limit is considered sufficient for project purposes. The reporting limit was also elevated for 1,2-dichloroethane (1,2,-DCA) at 1 µg/L (MDL = 0.13 µg/L) whereas the MCL criterion is 0.5 µg/L. The reporting limit for carbon tetrachloride was also above the SSFL screening criterion MCL of 0.5 µg/L at 1 µg/L. The MDL was 0.19 µg/L, which is below the criterion. If results are detected between the MDL and reporting limit they are reported as detected estimated results. All these sample reporting limits are considered sufficient and meet project requirements.

The reporting limit for gasoline-range organics (GRO) is above the taste/odor threshold of 5 µg/L for the SSFL screening criteria. The reporting limit from the December 2010 Site-Wide WQSAP (Haley & Aldrich 2010b) has a value of 50 µg/L. The laboratory had a reporting limit of 25 µg/L and an MDL of 10 µg/L. Any results detected between 10 µg/L and/or above 25 µg/L have been reported. The reporting limit and MDL values are both below the WQSAP stated reporting limit. Based on professional judgment the 25 µg/L reporting limit is adequate for project purposes.

No exceptions other than those listed in Table 4 occurred for Area IV wells during 2017.

4. MONITORING RESULTS

This section provides a review of Area IV 2017 groundwater levels, and groundwater quality results and trends. Historical data were summarized in previous reports by:

- Groundwater Resources Consultants (GWRC 2000);
- Haley & Aldrich (2001 through 2010a);
- MWH (2011a, 2011b, 2012, 2013, 2014);
- CDM Smith (2015b, 2016a, 2016b, 2016c); and
- North Wind (2017a).

Groundwater screening reference values used to evaluate results are presented in Table 8. First-time detections of analytes and new historical maximum results are presented in Table 9.

4.1 Groundwater Elevations and Flow Conditions

Water level elevations for 2017 are presented in Table 3. Annual precipitation data are presented in Appendix B. Water level hydrographs are provided in Appendix C. Occurrence and movement of groundwater at Area IV is influenced by precipitation and pumping.

There were no groundwater extraction events that are believed to influence the presence or movement of groundwater in Area IV. The only groundwater extraction occurred at RS-54 beginning in November 2017 and after the fourth quarter groundwater level elevations were measured (Section 3).

Groundwater elevations measured in SSFL Chatsworth Formation monitoring wells during 2017 ranged from a low of approximately 1,312 feet above mean sea level (MSL) at well RD-59A to a high of about 1,803 feet above MSL at well DS-45 (Table 3, Figure 5). The highest perched zone elevation was measured in PZ-100 at 1,861 feet above MSL.

Figure 5 presents contours of first-encountered, non-perched groundwater elevations, as determined from water levels measured during the fourth quarter of 2017. Additional information that helped constrain the contouring included topography, the approximate elevations of identified seeps, historical water level data for wells and piezometers not gauged during 2017, and the understanding that groundwater level discontinuities coincide with certain fault segments and other geologic structures. In the case of well clusters, water levels from the shallowest wells were used. The data represent water levels primarily within the Chatsworth Formation, but include levels in younger deposits where the zone of saturation is continuous with the underlying formations.

The groundwater elevation contour map is provided to satisfy, in part, the requirements of Title 22 California Code of Regulations (22 CCR), Section 66264.97, for determining groundwater flow rates and directions. A groundwater elevation contour map can be used in simple hydrogeologic settings to depict variations in the elevation of the water table surface, which can in turn be used to interpret apparent relative directions of groundwater flow. However, the groundwater elevation contours depicted in Figure 5 are not used to infer groundwater flow directions or rates of groundwater movement due to the hydrogeologic complexities at SSFL as described in Section 2.2. Mountain-scale estimates of groundwater flow rates and three-dimensional groundwater flow directions from areas within SSFL were made and are presented in the draft groundwater remedial investigation (RI) report

(MWH 2009). While DOE acknowledges the significant effort that has been spent calibrating the mountain-scale model, DOE believes that the model does not characterize the flow paths in Area IV with sufficient accuracy to make important investigation and remediation decisions. As part of the RFI Program, local-scale flow and transport modeling is currently being performed for DOE by Dr. Scott James of Baylor University and Dr. Bill Arnold to reflect Area IV conditions (CDM Smith 2017).

4.2 Groundwater Quality

Laboratory analytical results for groundwater samples are tabulated in Tables 10 through 15. Time series plots of analytical data for contaminants of concern (COCs) TCE, perchlorate, and tritium identified in the Site-Wide Groundwater Monitoring Program (Haley & Aldrich 2010b) are provided in Appendix D.

Constituents detected for the first time in groundwater sampled from individual locations are presented in Table 9. Constituents previously detected in groundwater sampled from a particular location and reported at new maximum concentrations are also presented in Table 9. Aside from these exceptions, the analytical results were within historical ranges (GWRC 2000; Haley & Aldrich 2001 through 2010a; MWH 2003, 2011a, 2011b, 2012, 2013, 2014) and 2014/2015 Annual Reports (CDM Smith 2015b, 2016d).

Groundwater chemical concentration data from the 2017 reporting period are presented on chemical extent maps illustrating areas of impacted groundwater for 13 chemicals on Figures 6 through 18. These chemicals were selected for mapping because they are COCs in the Site-Wide Groundwater Monitoring Program, and were selected for presentation on chemical extent maps in the Groundwater RI Report (MWH 2009).

4.2.1 Quality Assurance and Quality Control

Based on the quality of all results considered, completeness goals were found to be met with the data for 2017 suitable for the intended uses (Appendix E).

Per the Site-Wide WQSAP (Haley & Aldrich 2010b), the quality assurance assessment provides an assessment of data quality, including precision, accuracy, representativeness, comparability, completeness, and sensitivity. The quality assurance assessment also includes results of the data validation process, and a summary of the field sampling and analytical program, data management review procedure, and data verification process.

4.2.2 Groundwater Screening Reference Values

The groundwater sampling results for individual chemicals are compared for discussion purposes to the following screening values, listed in approximate descending order of importance and/or relevance:

- Site-specific values developed by DTSC (i.e., groundwater comparison concentrations for metals) (listed as SSFL Comparison in report tables);

- Isotope-specific activity limits for individual beta/photon emitters based on the effective dose equivalent of 4 millirems per year (mrem/yr) (Federal Register 2000);

- Primary MCLs established by the EPA and promulgated by the Safe Drinking Water Act, and by the California Department of Public Health (DPH) promulgated by 22 CCR, sections 64431

through 64449 and 64672 (Regional Water Quality Control Board [RWQCB] 2008; DPH 2008) (listed as Primary MCL and Cal MCL in report tables);

- Notification Levels/Advisory Levels established by the California DPH (RWQCB 2008; DPH 2010);

- Secondary maximum contaminant levels (SMCLs), which address aesthetics such as taste and odor (RWQCB 2008; DPH 2006) (listed as Secondary MCL in report tables);

- Taste and Odor Threshold (RWQCB 2008) (listed as Taste/Odor in report tables); and

- Site-specific values developed for SSFL using risk assessment procedures assuming direct ingestion of groundwater (listed as site-wide groundwater risk-based screening level [SWGW RBSL] in report tables).

For chemicals with more than one screening value, the lower value is used to be more conservative. When EPA and California DPH values for MCLs differ, the lower value is used. In cases where the Secondary Maximum Contaminant Level (SMCL) is lower than the Primary MCL, the SMCL is used.

The methodology used to develop the risk-based screening values for chemicals that are not metallic elements and where there are no agency-published values is described in a technical memorandum included in Appendix 7-C of the Groundwater RI Report (MWH 2009). Groundwater screening reference values are presented in Table 8.

4.2.3 Areas of Impacted Groundwater

Chemical concentration data from the 2017 reporting period are posted on chemical extent maps showing areas of impacted groundwater for 13 chemicals on Figures 6 through 18. For wells not sampled in 2017, the figures present the most recent sample results. The 13 chemicals were selected for mapping because they are COCs in the Site-Wide Groundwater Monitoring Program, generally exhibit more than solitary spatially isolated detects, were presented on chemical extent maps in the Groundwater RI Report (MWH 2009) and the RFI Work Plan (CDM Smith 2015a), and were based on a comprehensive site-wide evaluation of their extent in groundwater.

The COC figures presented in this report are TCE, tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), vinyl chloride, 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethane (1,1-DCA), 1,4-dioxane, carbon tetrachloride, total petroleum hydrocarbons (TPH), nitrate, and tritium. Perchlorate is a COC but current conditions indicate that no areas of impacted groundwater are identified. No figure is presented for this analyte. Analytes 1,2,3-trichloropropene (1,2,3-TCP), formaldehyde, n-nitrosodimethylamine (NDMA), and fluoride are discussed in this section because they were analytes identified as needing further evaluation.

Chemicals with concentrations historically exceeding screening values at five or more locations but having adequate sampling coverage in recent data to indicate the chemical is no longer present at concentrations above the SSFL screening criteria (e.g., 1,1,1-TCA, chloroform, and benzene) were not included. Chemicals that are common laboratory contaminants (e.g., methylene chloride and bis [2-ethylhexyl] phthalate) and those that are naturally occurring and for which there is no known site-related anthropogenic source (e.g., sulfate) were also not included, even if they had concentrations exceeding screening values at five or more locations.

The 2017 analytical results were evaluated to identify any additional chemicals for which a chemical extent map was warranted according to the criteria used in the Groundwater RI Report (MWH 2009). No additional chemicals were identified for generation of a chemical extent map.

Areas of impacted groundwater from the Groundwater RI Report (MWH 2009) form the basis of those shown in the chemical extent maps in this report. Adjustments to the areas of impacted groundwater are made each year, as new data are collected. The chemical extent boundaries for each chemical are defined by the groundwater screening reference values listed in Table 8. The maximum concentrations at each location from samples collected in 2017 are posted for each chemical and the locations are color-coded to indicate whether the result exceeded the screening value, was detected below the screening value, or was not detected. For locations that were not sampled in 2017, the most recent historical result is posted along with the date the sample was collected.

Isoconcentration lines equal to screening values for selected chemicals in groundwater are depicted in Figures 6 through 18 and are based on both current and historical sampling results as well as professional judgment, particularly for chemicals that are transformation or daughter products from either the biological or abiotic decay of a parent (e.g., cis-1,2-DCE produced from the biological transformation of TCE). The screening-value isoconcentration lines represent the interpreted map-view extent of impacted groundwater based on all available data, not just the most recent reporting period.

The areas of impacted groundwater for each of the chemicals plotted are discussed below and have been adjusted based on the results from the first quarter 2017 sampling event.

Trichloroethene (Figure 6 and Table 10)

For TCE there are five impacted areas in Area IV.

FSDF / Empire State Atomic Development Authority (ESADA) Area

TCE concentrations detected above the MCL of 5 µg/L for this area in 2017 include wells:

- RS-54 at 1,200 µg/L
- RD-21 at 27 µg/L
- RD-23 at 34 µg/L
- RD-64 at 25 µg/L
- RD-65 at 47 µg/L

The detection at RS-54 is similar to previous detections during the most recent years in which the well contained water, including 2007, 2008, and 2013 (Appendix D). The 2017 concentrations detected in wells RD-23, RD-64, and RD-65 increased compared to 2016 results (19, 14, and 14 µg/L, respectively). The 2017 result at RD-21 decreased from 42 µg/L in 2016. TCE in RD-33A dropped below the MCL in 2017 from 7 µg/L detected during the first quarter 2016. New maximum detections of TCE were detected below the MCL in C-08 at 2.5 µg/L and in DS-46 at 1.1 µg/L. It is also the first time TCE has been detected at DS-46 (Table 9).

Building 4100 / Building 56 Landfill Area

TCE concentrations detected above the MCL of 5 µg/L for this area in 2017 include well:

- RD-07 at 29 µg/L

The 2017 TCE concentration at RD-07 decreased from the result detected in 2015 (50 µg/L). For reference, the TCE concentration detected in the adjacent Boeing well RD-91 was 200 µg/L in 2014.

DOE Leach Field 3 Area

TCE concentrations detected above the MCL of 5 µg/L for this area in 2017 include well:

- PZ-105 at 7.9 µg/L

PZ-105 had insufficient water for sampling in 2016 and was nondetect for TCE in 2015; however, it is notable that the 2015 detection limit was above the MCL of 5 µg/L. The 2017 detection was similar in concentration to those detected in 2013 and 2014. The DOE Leach Field 3 area of impacted groundwater, assumed to originate at the Metals Clarifier, includes PZ-005, PZ-104, and PZ-105, and DD-145. This plume has been separated from the western wing of the Area III impacted groundwater.

Hazardous Materials Storage Area (HMSA) Area

TCE concentrations detected above the MCL of 5 µg/L for this area in 2017 include wells:

- DD-144 at 170 µg/L
- PZ-108 at 160 µg/L
- PZ-120 at 13 µg/L

The concentration detected at DD-144 is similar to that detected during 2016. TCE increased in PZ-108 during 2017 from 75 µg/L in 2015. PZ-120 decreased during 2017 from 90 µg/L in 2014. The concentrations detected in PZ-109 decreased from 8.9 µg/L during the first quarter 2016 to just below the MCL during 2017. The detection at RD-29 was also just below the MCL and the detection of 1.6 µg/L at PZ-122 is a new maximum (Table 9).

Radioactive Materials Handling Facility (RMHF) Area

TCE concentrations detected above the MCL of 5 µg/L for this area in 2017 include well:

- RD-63 at 6.2 µg/L

The TCE detection in RD-63 increased slightly from just below the MCL in 2016. TCE was detected at 11 µg/L during 2014 in well RS-28 (dry and not sampled during 2015 and 2016), but was nondetect in 2017.

Tetrachloroethene (Figure 7 and Table 10)

There is one area impacted by PCE in Area IV.

Systems Nuclear Auxiliary Power (SNAP) Area

- PCE was detected above the SSFL screening criterion (MCL) of 5 µg/L in well PZ-109 at a concentration of 42 µg/L. This concentration is similar to those detected in previous years.
- PCE was also detected just below the MCL in well DD-142 at a concentration of 4.6 µg/L, which is a decrease from the 12 µg/L detected during the first quarter of 2016. With the exception of a low estimated detection at DS-43, all other wells in this area were nondetect for PCE.

cis-1,2-Dichloroethene (Figure 8 and Table 10)

There are four areas impacted by cis-1,2-DCE.

FSDF/ESADA

- For this area, cis-1,2-DCE was detected above the SSFL screening criterion (MCL) of 6 µg/L in well RD-65 at a concentration of 7.4 µg/L.
- The compound cis-1,2-DCE was detected below the MCL in wells RD-64, RD-21, RD-23, RD-33A, RD-54A, and C-08. The 1.4 µg/L detection at C-08 is a new maximum (Table 9).

Building 56 Landfill

- Well RD-07 had a maximum detected value for cis-1,2-DCE of 2.6 µg/L, which is below the SSFL screening criterion (MCL) and at a concentration similar to that detected in 2016.
- For reference, RD-91 had a cis-1,2,-DCE concentration of 17 µg/L in 2014 and is currently included only in the water level monitoring program (Table 1).
- Well DD-141 was nondetect for cis-1,2-DCE. No other wells in this area were sampled, as all previous results were nondetect.

HMSA

- For this area, cis-1,2-DCE was detected above the SSFL screening criterion (MCL) of 6 µg/L in well DD-144 at a concentration of 14 µg/L, which is similar to the 2016 detection.
- The compound cis-1,2-DCE was also detected above the MCL in PZ-108 at a concentration of 19 µg/L, an increase from 5.3 µg/L during 2015 when there was sufficient water for sampling. This is a new maximum (Table 9).
- Wells PZ-109 and PZ-120 had respective cis-1,2-DCE detections of 1.9 µg/L and 2 µg/L in 2017, below the SSFL screening criterion (MCL).
- The remaining wells in this area were nondetect for cis-1,2-DCE except for an estimated detection at RD-29 of 0.24J µg/L.

RMHF

- Wells RD-30, RD-34A, and RD-63 had detected concentrations of cis-1,2-DCE in 2017 below the SSFL screening criterion (MCL) of 6 µg/L at concentrations similar to the 2016 results.
- Wells RD-19, RD-98, RD-27, RS-28, PZ-116, and DD-143 reported nondetect concentrations for this analyte in 2017.

trans-1,2-Dichloroethene (Figure 9 and Table 10)

There is one area impacted by trans-1,2-DCE.

FSDF/ESADA

- During 2017, trans-1,2-DCE was detected in RD-65 at 12 µg/L, above the SSFL screening criterion (MCL) value of 10 µg/L. This is a new maximum (Table 9).

- The compound trans-1,2-DCE was detected in RD-33A at 2.1 µg/L, which is a new maximum (Table 9). The 2016 detection of 1.9 µg/L in this well was also a new maximum.

- Wells RD-23 and RD-64 had estimated detections of 0.24J µg/L and 0.66J µg/L, respectively.

- The remaining FSDF/ESADA wells sampled during 2017 were all nondetect for trans-1,2-DCE.

Other Results

The other wells that were sampled in 2017 all had nondetect concentrations except an estimated concentration detected in RMHF area well RD-34A at 0.16J µg/L and in HMSA well DD-144 at 0.63J µg/L, both below the SSFL screening criterion (MCL). The detection at DD-144 is a first detection and new maximum (Table 9).

Vinyl Chloride (Figure 10 and Table 10)

There is one area impacted by vinyl chloride.

FSDF/ESADA

- Vinyl chloride results were nondetect for all wells sampled in 2017. In general, the reporting limit for vinyl chloride was 1 µg/L, which was above the SSFL screening criterion (MCL) of 0.5 µg/L. However, the MDL was 0.10 µg/L; with all sample results being nondetect, the 1 µg/L reporting limit is considered sufficient for project purposes.

- It is notable that the vinyl chloride reporting limit and MDL at RS-54 were elevated above the MCL to 100 µg/L and 10µg/L, respectively, due to a 100 times laboratory dilution factor. Based on GWIM pumping data (Section 3, CDM Smith 2018b), it is inferred that vinyl chloride was present in this well during the first quarter of 2017 as a daughter product obscured by the 1,200 µg/L detection of parent compound TCE.

Other Results

- The vinyl chloride reporting limit and MDL at HMSA well PZ-108 were elevated above the MCL to 10 µg/L and 1 µg/L, respectively, due to a 10 times laboratory dilution factor. For reference, the detected TCE concentration at PZ-108 was 160 µg/L.

1,1-Dichloroethene (Figure 11 and Table 10)

There are three areas impacted by 1,1-DCE.

FSDF/ESADA

- The compound 1,1-DCE was detected in RS-54 at a concentration of 1,300 µg/L, which is a decrease from the 3,700 µg/L detected when the well had sufficient water for sampling during 2013.

- During 2017, 1,1-DCE was detected in RD-65 at a concentration of 9.2 µg/L, which is an increase to above the SSFL screening criterion (MCL) of 6 µg/L from the 2016 detection of 4 µg/L.

- The other wells in this area had nondetect concentrations for 2017, except for RD-23 and RD-33A, which had estimated concentrations of 0.6J µg/L and 0.56J µg/L, respectively.

RMHF

- In the RMHF area, well RD-63 had an estimated detected concentration for 1,1-DCE of 0.85J µg/L in 2017, which is below the SSFL screening criterion (MCL). All the other wells sampled in this area had nondetect results.

Other Results

- Well PZ-103 had an estimated detected concentration for 1,1-DCE of 0.26J µg/L in 2017, which is below the SSFL screening criterion (MCL).

1,2-Dichloroethane (Figure 12 and Table 10)

There is one area impacted by 1,2-DCA.

FSDF/ESADA

- During 2017, there was only one estimated detection of 1,2-DCA in RD-65 at 0.19J µg/L, below the SSFL screening criterion (MCL) of 0.5 µg/L.

- RS-54 was nondetect in 2017; however, the reporting limit and MDL were elevated above the MCL to 100 µg/L and 13 µg/L, respectively, due to a 100 times laboratory dilution. For reference, RS-54 had a detected concentration of 16 µg/L in 2013, which exceeds the SSFL screening criterion (MCL).

Other Results

- The 1,2-DCA reporting limit and MDL at HMSA well PZ-108 were elevated above the MCL to 10 µg/L and 1.3 µg/L, respectively, due to a 10 times laboratory dilution factor. For reference, the detected TCE concentration at PZ-108 was 160 µg/L.

- For the remaining wells sampled for 1,2-DCA in 2017, sample results were nondetect. The reporting limit, though, was above the SSFL screening criterion (MCL) of 0.5 µg/L at 1 µg/L. However, the MDL was 0.13 µg/L; with all results being nondetect, the 1 µg/L reporting limit is considered sufficient for project purposes.

1,1-Dichloroethane (Figure 13 and Table 10)

There are two areas impacted by 1,1-DCA.

FSDF/ESADA

- Well RS-54 had a 1,1-DCA concentration of 1,700 µg/L detected during 2017, which is above the SSFL screening criterion (MCL) of 5 µg/L and a similar concentration to when there was sufficient water for sampling during 2013.

- Well RD-65 had a concentration of 3.3 µg/L, which is below the MCL and an increase from 1.1 µg/L detected during 2016.

Other Results

The other wells that were sampled in 2017 all had nondetect concentrations except for RD-33A in the FSDF area with an estimated concentration of 0.47J µg/L, RD-63 in the RMHF area with an estimated concentration of 0.61J µg/L, and PZ-120 in the HMSA area with an estimated concentration of 0.44J µg/L. These results are below the MCL.

1,4-Dioxane (Figure 14 and Table 10)

There are two areas historically impacted by 1,4-dioxane; the compound was not detected in the three sampled wells during 2017. However, based on historical discussion provided below, it is recommended that the compound be analyzed at additional wells during future sampling rounds.

FSDF/ESADA

- The FSDF/ESADA area of impacted groundwater was reduced in 2014 due to an estimated 1,4-dioxane concentration of 0.46J µg/L in RD-65, below the SSFL screening criterion (notification level) of 1 µg/L. In 2013 RD-65 had a concentration above the screening level at 2.1 µg/L. Well RD-65 was not sampled for 1,4-dioxane in 2015, 2016, or 2017. It is recommend to add 1,4-dioxane to the RD-65 analyte list for future sampling rounds.

- In 2016, 1,4-dioxane was detected above the SSFL screening criterion (notification level) of 1 µg/L in RD-33A at 1.8 µg/L, in DS-46 at 1.2 µg/L, and in DD-140 at 1.4J µg/L. These wells were not analyzed for 1,4-dioxane during 2017 and it is recommended to add 1,4-dioxane to the analyte list for future sampling rounds at these wells.

RMHF

- In 2017, 1,4-dioxane was not analyzed in RD-63. However, it was analyzed during 2016 and detected above the SSFL screening criterion (notification level) of 1 µg/L in RD-63 at 1.4 µg/L. It is recommended that 1,4-dioxane analysis be added for RD-63 for future sampling rounds.

Carbon Tetrachloride (Figure 15 and Table 10)

There is one area impacted by carbon tetrachloride.

FSDF/ESADA

- Carbon tetrachloride was detected in well RD-21 at a concentration of 8.3 µg/L, which is above the SSFL screening criterion (MCL) of 0.5 µg/L. This is similar to the concentration detected in 2016.

Other Results

- The other wells that were sampled in 2017 all had nondetect concentrations for carbon tetrachloride. The reporting limit for carbon tetrachloride was 1 µg/L, above the SSFL screening criterion MCL of 0.5 µg/L; however, the MDL was below the MCL at 0.19 µg/L, which is considered sufficient for project purposes.

- The carbon tetrachloride reporting limit and MDL at HMSA well PZ-108 were elevated above the MCL to 10 µg/L and 1.9 µg/L, respectively, due to a 10 times laboratory dilution factor. For

reference, the detected carbon tetrachloride nondetect during 2015 had a lower reporting limit of 0.13 µg/L.

Total Petroleum Hydrocarbons C4-C30 (Figure 16 and Table 12)

There are three areas impacted by TPH, which are defined by two categories: diesel-range organics (DRO; C12-C30); and GRO (C4-C12). For the purposes of plume delineation the contour areas are combined.

The SSFL screening criterion for DRO is 100 µg/L and for GRO it is 5 µg/L. There were discrepancies in these criteria between Table 8 and the required reporting limit presented in the WQSAP. Both Table 8 and the reporting limits presented in the WQSAP are very low, and laboratories have shown it is hard to achieve these limits. For evaluation in this document the limits used are as stated, and evaluation of nondetect results in cases where the values are greater than the SSFL screening criteria are performed on a case-by-case basis.

During 2017, GRO was not detected above the MDL of 10 µg/L.

Five wells had a first time and new maximum detect for DRO during 2017 (Table 9). It can be inferred that higher-than-average rains during winter 2016/2017 influenced these results via advective mobilization and downward migration of adsorbed soil/bedrock impacts, and/or flushing of vadose zone TPH as groundwater elevations rise.

FSDF/ESADA

- During 2016, DRO was above the 100 µg/L SSFL screening criterion (threshold criteria) at an estimated concentration of 140J µg/L. DRO analysis is recommended for future sampling at this well.

- Wells RD-54A and RD-54B have never been sampled for GRO or DRO. It is recommended to sample these wells for these analytes in 2018.

DOE Leach Field 3

- DRO was detected in PZ-105 above the 100 µg/L SSFL screening criterion (threshold criteria) at a concentration of 180 µg/L. This is a first time and new maximum detect (Table 9).

HMSA

- DRO was detected in RS-28 at a concentration of 890 µg/L and in PZ-122 at an estimated concentration of 180J µg/L, both above the 100 µg/L SSFL screening criterion (threshold criteria). These are both first time and new maximum detects (Table 9).

- Well PZ-121 in the HMSA area of impact had nondetect concentrations when last sampled in 2008. The reporting limits, though, were above the SSFL screening criteria (threshold criteria) for both DRO and GRO. This well was dry and not sampled in 2017. It will continue to be monitored in 2018.

Building 56 Landfill

- DRO was detected in DD-141 above the 100 µg/L SSFL screening criterion (threshold criteria) at a concentration of 510 µg/L. This is a first time and new maximum detect (Table 9).

Building 100 Trench/Metals Clarifier

- Although Building 100 is not recognized as a source area, DRO was detected in DD-145 above the 100 µg/L SSFL screening criterion (threshold criteria) at a concentration of 120 µg/L. This is a first time and new maximum detect (Table 9).

Nitrate as NO_3 (Figure 17 and Table 13)

There is one area of impacted groundwater for nitrate.

Building 100 Trench/Metals Clarifier

- Nitrate was detected in PZ-005 at 27 mg/L, below the SSFL screening criterion (MCL) of 45 mg/L. This is a decrease from 71 mg/L in August 2008, when there was sufficient water in PZ-005 to collect samples.

- Nitrate was detected in PZ-103 at 24 mg/L, below the SSFL screening criterion (MCL) of 45 mg/L. This is a decrease from the estimated concentration of 56J mg/L in 2014, when there was sufficient water in PZ-103 to collect samples. Nitrate was also detected below the MCL at DD-145 at a concentration of 1.5 mg/L.

- Well PZ-104 was sampled for nitrate for the first time due to being dry in previous years; thus, 0.025 mg/L was a first time and new maximum (Table 9).

DOE Leach Field 3

- Nitrate was detected in PZ-105 at 4.5 mg/L, below the SSFL screening criterion (MCL) of 45 mg/L. This is a new maximum detection (Table 9).

Other Results

Nitrate was detected in PZ-122 at 1.6 mg/L, below the SSFL screening criterion (MCL) of 45 mg/L.

Tritium (Figure 18 and Table 14)

Although the DOE Leach Field 2 is located outside the tritium source area and is not recognized as a source for tritium, it was the only area of impact during the 2017 sampling event.

DOE Leach Field 2

- The concentrations of tritium were above the SSFL screening criterion (MCL) of 20,000 picocuries per liter (pCi/L) for well RD-90 at 38,300 pCi/L, and near the MCL for RD-95 at 19,600 pCi/L. The concentration at RD-90 is similar to the 2016 detection, whereas RD-95 decreased from 27,900 pCi/L detected in 2016.

- All other wells and seep in this area had tritium results that were nondetect or below the MCL.

Other Results

All other wells and seeps sampled in Area IV had tritium results that were nondetect.

Other Analytes of Interest

The following analytes are not considered COCs but are of potential interest.

Perchlorate (Table 11)

In the past there was one area of impacted groundwater for perchlorate. Current conditions indicate that there are no areas of impacted groundwater from perchlorate since all 2017 sample results are below the SSFL screening criterion (MCL) of 6 µg/L. Sample results for 2017 are discussed below for the former area of impacted groundwater.

FSDF/ESADA

- The highest 2017 perchlorate result was 3.5 µg/L at PZ-100. This is a first time and new maximum detection (Table 9).

- For the 2017 sampling results, perchlorate was detected in RS-18 at 1.1 µg/L, RD-21 at 1.9 µg/L, and RS-54 at 2.2 µg/L. All of these results are below the SSFL screening criterion (MCL) of 6 µg/L. All other perchlorate results were very low or nondetect.

Other Results

- Perchlorate was detected in DD-141 for a first time and new maximum of 0.25 µg/L (Table 9).

- All other results were below the MCL.

No figure is required for this analyte.

1,2,3-Trichloropropane (Table 10)

There are no areas in Area IV with 1,2,3-TCP impacted groundwater. No figure is required for this analyte.

Formaldehyde

Areas of impacted groundwater for formaldehyde are not present in Area IV. No figure is required for this analyte.

N-Nitrosodimethylamine

There are no areas of impacted groundwater for NDMA located in Area IV. No figure is required for this analyte.

Fluoride (Table 13)

The previous area of impact for fluoride was in the vicinity and south of the SNAP area. Since fluoride was not detected above the screening value for any Area IV wells in 2014, this area of impact was removed.

All Area IV wells sampled for fluoride in 2017 (Table 13) had sample concentrations below the SSFL screening criterion. No figure is required for this analyte. However, seeps SP-424A, SP-424B, SP-424C, SP-19A, and SP-19B had fluoride concentrations at or above the screening criterion of 0.8 mg/L with concentrations ranging from 0.8 mg/L to 2.4 mg/L (CDM Smith 2018a).

4.2.4 Analytical Results

During the 2017 sampling period, analytes in groundwater samples collected in Area IV that were detected for the first time at a particular well, and/or were analyzed for the first time, are shown in

Table 9. Table 9 also shows whether the 2017 detected result is a new maximum value for that analyte at that well. The following items depict the process of identifying the analytes shown in Table 9:

- Analytes that were detected for the first time in a well in 2017.
- If analytes are analyzed for the first time ever for that well, the well is denoted with an asterisk.
- Of these analytes, the detected values are compared to all data to see if the 2017 value is the new maximum value for that well.

The few cases for which there are insufficient historical data to provide further context for the recent results, or that otherwise warrant further discussion, are presented below, with on-site detections (excluding radiochemical constituents) discussed in Section 4.2.4.1. Off-site detections (excluding radiochemical constituents) are discussed in Section 4.2.4.2. Radiochemistry results are discussed in Section 4.2.5. Follow-up discussion of 2016 results highlighted in the 2016 annual report (North Wind 2017a) are discussed in Section 4.2.6.

4.2.4.1 On-Site Detections

Constituent concentrations (except for radiochemical constituents that are discussed separately in Section 4.2.5) detected in groundwater samples collected from on-site wells in 2017 and presented in Table 9 are discussed below. There were many first time and new maximum detections for DRO (Table 12) and metals (Table 15). These were likely influenced by above-average rainfall during the winter of 2016/2017 (Appendix B).

First-Time Analyses of an Analyte at a Particular Well

There were no new analytical suites included in the 2017 sampling event. However, nitrate was analyzed for the first time in PZ-104 due to its being dry during prior attempts to sample for nitrate.

First-Time Detection of the Analyte and New Maximum Value

As shown in Table 9, certain analytes were detected for the first time during 2017 in various wells and those concentrations are also now the new maximum values for those analytes at these particular wells. New maximum concentrations in this category above the associated SSFL screening criteria values include:

- Diesel range organics in wells DD-141, DD-145, PZ-105, PZ-122, and RS-28;
- Methylene chloride in well DD-144; and
- Various dissolved and total metals in wells DD-139, DD-140, DD-142, DD-143, DD-144, DD-145, DS-43, DS-44, DS-45, DS-46, DS-47, PZ-005, PZ-103, PZ-104, PZ-105, PZ-116, PZ-120, RD-21, RD-33A, RD-33C, RD-34B, RD-34C, RD-54A, RD-59A, RD-96, RS-25, and RS-27.

Not a First-Time Detect but Analyte Concentration is New Maximum Value

As shown in Table 9, certain analytes were detected as new maximum values in various wells during 2017. Each detected concentration was not the first time each analyte was seen in the well but the value is now a new maximum concentration. New maximum values for previously detected analytes exceeding the associated SSFL screening criteria values include:

- Cis-1,2-dichloroethene in well PZ-108;
- Trans-1,2-dichloroethene in well RD-65;
- Methylene chloride in well RS-54; and
- Several dissolved and total metals in wells DD-141, DD-143, DD-144, PZ-104, PZ-116, RD-21, RD-23, RD-54A, and RS-54.

4.2.4.2 Off-Site Detections

Off-site wells sampled during 2017 included RD-59A, RD-59B, and RD-59C. There were no contaminant detections in these wells except for perchlorate below the screening level in RD-59A at an estimated concentration of 0.016J µg/L, and dissolved strontium was detected for the first time in RD-59A at a concentration of 0.83 mg/L, which is similar to the 0.8 mg/L screening level.

4.2.5 Radiochemistry Results

Radiochemistry analyses were performed for samples collected during the 2017 reporting period under the Site-Wide and RFI programs. Radiochemistry analytical results for 2017 are presented in Table 14, and discussed further below. Radiochemistry analyses included both total (non-filtered water) and dissolved (filtered water) results.

Radiochemistry analytes reported for the first time in groundwater at individual locations as well as any new maximum concentrations are presented in Table 9.

First-Time Analyses of an Analyte at a Particular Well

There were no new analytical suites included in the 2017 sampling event.

First-Time Detection of the Analyte as well as the New Maximum Value

As shown in Table 9, certain analytes were reported for the first time in various wells and those concentrations are also now the new maximum values for those analytes at these particular wells.

All radionuclides detected for the first time in various wells were below the SSFL screening criteria. Due to the short radioactive half-lives of isotopes including sodium-22 and cobalt-60, it is unlikely that they would be detected for the first time during 2017 considering that the source was shut down decades ago. Thus, some of these first-time detections may be anomalous and will be compared to 2018 sample data to determine a trend, if any. Should short half-life isotopes be detected again during 2018, the laboratory will be contacted to further investigate the anomaly.

Not a First-Time Detect but Analyte Concentration is New Maximum Value

As shown in Table 9, certain analytes were reported as new maximum values in various wells in 2017. Each reported concentration was not the first time each analyte was seen in the well but the value is now a new maximum concentration. New maximum values for previously detected analytes exceeding the associated SSFL screening criteria values include:

- Dissolved gross alpha in wells PZ-116 and RD-94;

- Total gross alpha in wells PZ-116, RD-19, RD-54A, RD-94, and RD-98; and
- Total radium-228 in well RD-98.

4.2.6 2016 Results Follow-up

This section evaluates whether or not sampling and analyses performed during 2017 are sufficient to resolve documented follow-up sampling issues from the previous annual report, and assesses the need for changes to the groundwater monitoring programs.

4.2.6.1 2016 Outstanding Issues

Vinyl chloride, carbon tetrachloride, 1,2-DCA, 1,4-dioxane, and GRO had 2016 reporting limits above the respective SSFL screening criteria in one or more samples. Similar reporting limits were used during first quarter 2017 since the results are considered sufficient and meet the project requirements, as discussed in Section 3.4 and Table 4. The reporting limit of 1.0 µg/L was met for 1,4-dioxane during first quarter 2017.

Silica gel cleanup was recommended to address uncertainty whether DRO detected in groundwater samples is from released petroleum or natural/biogenic sources. Silica gel cleanup was not used to prepare first quarter 2017 DRO samples. It is recommended to prepare DRO samples using silica gel cleanup for one or more future sampling rounds.

The FSDF/ESADA area of impacted groundwater was reduced in 2014 due to concentrations below the SSFL screening criterion (notification level) of 1 µg/L for 1,4-dioxane in monitoring well RD-65 (0.46J µg/L). In 2013 it had a concentration of 2.1 µg/L. Well RD-65 was not sampled for 1,4-dioxane in 2015, 2016, or first quarter 2017. It is recommend to add 1,4-dioxane to the RD-65 analyte list for one or more future sampling rounds.

During 2014, RD-23 had a DRO concentration of 17 mg/L, above the SSFL screening criterion (threshold criterion) for DRO. DRO was not sampled in well RD-23 during 2016 or first quarter 2017. DRO analysis is recommended for one or more future sampling rounds at this well.

Wells RD-54A and RD-54B have never been sampled for GRO or DRO, and were not sampled for these analytes during first quarter 2017. It is recommended to sample these wells for GRO and DRO in one or more future sampling rounds.

The estimated concentration of nitrate was 39J mg/L for well RD-20 in 2014. This well was not sampled for nitrate in 2015, 2016, or first quarter 2017. Analysis of nitrate is recommended for one or more future sampling rounds.

4.2.6.2 2016 On-Site Detects

For on-site reported sample results included in the 2016 annual report, Section 4.2.4 (North Wind 2017a), all analytes were analyzed accordingly unless the well had insufficient sample volume or was dry.

4.2.6.3 2016 Off-site Detects

There were no off-site results highlighted in the 2016 annual report, Section 4.2.4 (North Wind 2017a) requiring follow-up in Area IV. The 2016 seep sampling results were reported in a technical memorandum (CDM Smith 2016a).

4.2.6.4 2016 Radiochemistry Results

For radiochemistry detected sample results reported in the 2016 annual report, Section 4.2.4 (North Wind 2017a), all required methods were analyzed accordingly unless the well had insufficient sample volume or was dry.

5. 2018 PLANNED ACTIVITIES

The next sampling event will occur during the first quarter 2018. The monitoring frequency for the Site-Wide Program will be quarterly for water level monitoring and annual for sampling and analysis, with sampling performed in the first calendar quarter.

In addition to collecting Site-Wide Program data, groundwater was collected from Area IV wells under the Area IV Groundwater RFI. The combination of the site-wide and RFI groundwater data collected in 2017 have been used to update the current groundwater site conditions within Area IV. Not all wells scheduled for sampling in 2017 were sampled, in most cases because of lack of water available for sampling in Area IV wells. As a result, the current groundwater condition at some locations could not be determined and the historic data must be used to determine the extent of COCs in groundwater.

5.1 Outstanding Issues and/or Follow-Up Work

Water level monitoring will be completed quarterly in 2018 and sampling analysis will be performed in the first quarter 2018 in accordance with the Site-Wide Monitoring and RFI programs.

After review of the first quarter 2017 sampling, some outstanding issues were identified and recommendations have been made for potential follow-up work. These are listed below based on rationale provided in Section 4.2.

- It is recommended to prepare DRO samples using silica gel cleanup for one or more future sampling rounds.

- It is recommended that results for radionuclides with short half-lives (including sodium-22 and cobalt-60) detected for the first time during 2017 (in various wells and below the SSFL screening criteria) be compared to 2018 data to provide an additional line of evidence that the detections are anomalies. It is unlikely that they would appear for the first time decades after the source was shut down.

- It is recommend to add sampling of the following for one or more future sampling rounds:

    - 1,4-dioxane from DD-140, DS-46, RD-33A, RD-63, RD-65, and RS-54;

    - DRO from RD-23;

    - GRO and DRO from RD-54A and RD-54B; and

    - Nitrate from RD-20.

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TABLES

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TABLE 1
LIST OF WELLS - SITE-WIDE GROUNDWATER MONITORING PROGRAM
AREA IV GROUNDWATER RFI
SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Well ID	Sampling Program[1]	Groundwater Impact Area	Water Level Monitoring Program	Well Sponsorship[2]	Location
C-08	RFI		W	DOE	FSDF
ES-31			W	Boeing	17th Street Pond
OS-02	S	13, 14, 16, 17	W	Boeing	Offsite
OS-03	S	13, 14, 16, 17	W	Boeing	Offsite
OS-04	S	13, 14, 16, 17	W	Boeing	Offsite
OS-05	S	13, 14, 16, 17	W	Boeing	Offsite
PZ-005	RFI			DOE	B65 Clarifier
PZ-041	RFI			DOE	PDU
PZ-051				Boeing	17th Street Pond
PZ-052				Boeing	Area III Boundary
PZ-055				Boeing	New Conservation Yard
PZ-097	S	17	W	DOE	FSDF
PZ-098	RFI			DOE	FSDF
PZ-100	RFI			DOE	FSDF
PZ-101	RFI			Boeing	ESADA
PZ-102				Boeing	B4009
PZ-103	RFI			DOE	B65 Clarifier
PZ-104	RFI			DOE	B65 Clarifier
PZ-105	RFI			DOE	B65 Clarifier
PZ-106				Boeing	Boeing Leachfield
PZ-107				Boeing	17th Street Pond
PZ-108	S	15	W	DOE	HMSA
PZ-109	RFI			DOE	B4057
PZ-110				Boeing	Area III Boundary
PZ-111				Boeing	Area III Boundary
PZ-112				Boeing	SE Drum Storage
PZ-113				Boeing	Area III Boundary
PZ-114				Boeing	New Conservation Yard
PZ-115				Boeing	New Conservation Yard
PZ-116	RFI			DOE	RMHF
PZ-120	RFI			DOE	HMSA
PZ-121	RFI			DOE	HMSA
PZ-122	RFI			DOE	PDU
PZ-124	S	16	W	DOE	B56 Landfill
PZ-150				Boeing	SRE
PZ-151				NASA	Area III Boundary
PZ-160				Boeing	SRE
PZ-161	RFI			Boeing	SRE
RD-07	S	16	W	DOE	B56 Landfill
RD-13	S	18	W	Boeing	Pond Dredge Area
RD-14	S	7	W	DOE	Old Conservation Yard
RD-15	RFI		W	Boeing	New Conservation Yard
RD-16			W	Boeing	SE Drum Storage
RD-17	RFI		W	DOE	B30/93 Leachfields
RD-18	S	13	W	Boeing	SRE
RD-19	S	13	W	DOE	B133
RD-20	S	18	W	DOE	B4100 Trench
RD-21	RFI		W	DOE	FSDF
RD-22	RFI		W	DOE	FSDF
RD-23	RFI		W	DOE	FSDF
RD-24	RFI		W	DOE	B4057
RD-27	RFI		W	DOE	RMHF
RD-29	RFI		W	DOE	PDU
RD-30	RFI		W	DOE	RMHF

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AREA IV GROUNDWATER RFI
SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Well ID	Sampling Program[1]	Groundwater Impact Area	Water Level Monitoring Program	Well Sponsorship[2]	Location
RD-33A	S	17	W	DOE	FSDF
RD-33B	S	17	W	DOE	FSDF
RD-33C	S	17	W	DOE	FSDF
RD-34A	S	13	W	DOE	RMHF
RD-34B	S	13	W	DOE	RMHF
RD-34C	S	13	W	DOE	RMHF
RD-50	S	17	W	Boeing	ESADA
RD-54A	S	17	W	DOE	FSDF
RD-54B	RFI		W	DOE	FSDF
RD-54C	RFI		W	DOE	FSDF
RD-57	S	17	W	DOE	FSDF
RD-59A	S	13, 14, 16, 17	W	DOE	Offsite
RD-59B	S	13, 14, 16, 17	W	DOE	Offsite
RD-59C	S	13, 14, 16, 17	W	DOE	Offsite
RD-63	S	13	W	DOE	RMHF
RD-64	RFI		W	DOE	FSDF
RD-65	RFI		W	DOE	FSDF
RD-74	RFI		W	DOE	B56 Landfill
RD-85	S	13	W	Boeing	SRE
RD-86	S	13	W	Boeing	SRE
RD-87	RFI		W	DOE	Tritium Plume
RD-88	RFI		W	DOE	Tritium Plume
RD-89	RFI		W	DOE	Tritium Plume
RD-90	RFI		W	DOE	Tritium Plume
RD-91			W	Boeing	B4100
RD-92			W	Boeing	New Conservation Yard
RD-93	RFI		W	DOE	Tritium Plume
RD-94	RFI		W	DOE	Tritium Plume
RD-95	RFI		W	DOE	Tritium Plume
RD-96	S	16	W	DOE	B4057
RD-97	RFI		W	DOE	B4057
RD-98	RFI		W	DOE	RMHF
RD-102				Boeing	SRE
RS-11			W	Boeing	17th Street Pond
RS-16	RFI		W	DOE	B56 Landfill
RS-18	S	17	W	DOE	FSDF
RS-23			W	Boeing	ESADA
RS-24			W	Boeing	SE Drum Storage
RS-25	RFI		W	DOE	B133
RS-27	RFI		W	DOE	PDU
RS-28	RFI		W	DOE	RMHF
RS-36				Boeing	SRE
RS-54	RFI		W	DOE	FSDF
WS-07			W	NASA/Boeing	Area III Boundary
DS-43	RFI			DOE	B57
DS-44	RFI			DOE	DOE Leachfield
DS-45	RFI				B4065 Leachfield
DS-46	RFI				Downgradient fo FSDF
DS-47	RFI			DOE	B64 Leachfield
DD-139	RFI			DOE	FSDF
DD-140	RFI			DOE	FSDF
DD-141	RFI				Toe of B56 landfill
DD-142	RFI			DOE	B57
DD-143	RFI				RMHF

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AREA IV GROUNDWATER RFI
SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Well ID	Sampling Program[1]	Groundwater Impact Area	Water Level Monitoring Program	Well Sponsorship[2]	Location
DD-144	RFI			DOE	HMSA
DD-145	RFI			DOE	DOE Leachfield

TABLE 1
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AREA IV GROUNDWATER RFI
SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Well ID	Sampling Program[1]	Groundwater Impact Area	Water Level Monitoring Program	Well Sponsorship[2]	Location
Seeps and Springs[3]					
					Nearest Impact Area
SP-900A				DOE	FSDF
SP-900B				DOE	FSDF
SP-900C				DOE	FSDF
SP-19A				DOE	Tritium Plume
SP-19B				DOE	Tritium Plume
SP-T02A				DOE	Tritium Plume
SP-T02B				DOE	Tritium Plume
SP-T02C				DOE	Tritium Plume
SP-T02D				DOE	Tritium Plume
SP-424A				DOE	RMHF
SP-424B				DOE	RMHF
SP-424C				DOE	RMHF

NOTES AND ABBREVIATIONS

S	Included in Site-Wide Sampling Program
W	Included in Site-Wide Water Level Monitoring Program
RFI	Collected as part of DOE Area IV GW RFI.

[1] Haley & Aldrich, 2010. Site-Wide Water Quality Sampling and Analysis Plan, Santa Susana Field Laboratory, Simi Hills, Ventura County, California, Revision 1, File No. 20090-456/556/656/M489. December.
[2] Well Sponsorship. On February 10, 2015, DOE and Boeing agreed to well sponsorship for First Quarter 2015 sampling. Modification to well sponsorship may occur prior to subsequent sampling events.
[3] Seeps and springs are monitored under a separate program.

TABLE 2
MODIFICATIONS TO MONITORING WELL NETWORK AND EQUIPMENT, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

WELL MAINTENANCE

Well ID	Monitoring Program	Quarter Identified	Issue Identification Date	Issue	Issue Resolution	Quarter Resolved	Issue Resolution Date
RD-57	SW	2016Q1	3/10/2016	FLUTe was only partially removed due to an obstruction. Well cap wielded shut.	No planned action at this time.	--	--
RD-74	SW	2014Q1	2/4/2014	Obstruction at about 95 ft bgs due to pump left in well. Total well depth is 101 feet.	Issue discussed with DTSC in March 2016. Well is dry. No planned action at this time.	--	--

EQUIPMENT MODIFICATIONS

Well ID	Monitoring Program	Quarter	Modification Date	Description
RD-96	SW	2016Q1	3/18/2016	Lowered the dedicated pump from 73.3 ft BTOC to 81.0 ft BTOC.

WELL CONSTRUCTION

Well ID	Monitoring Program	Quarter	Completion Date	Description
None				

WELL DEVELOPMENT

Well ID	Monitoring Program	Quarter	Development Date	Description
None				

Notes:
SW - Well monitored under Site-Wide Program
BTOC - below top of casing
bgs - below ground surface

TABLE 3
WATER LEVEL DATA. 2017 - Area IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q1	C-8	Chatsworth	18-Jan-17	199.87	1842.23	1642.36	
Q1	C-8	Chatsworth	6-Mar-17	200.24	1842.23	1641.99	
Q2	C-8	Chatsworth	13-Apr-17	200.60	1842.23	1641.63	
Q3	C-8	Chatsworth	12-Jul-17	201.34	1842.23	1640.89	
Q4	C-8	Chatsworth	12-Oct-17	201.60	1842.23	1640.63	
Q1	DD-139	Chatsworth	18-Jan-17	181.84	1793.01	1611.17	
Q1	DD-139	Chatsworth	6-Mar-17	180.08	1793.01	1612.93	
Q2	DD-139	Chatsworth	12-Apr-17	180.40	1793.01	1612.61	
Q3	DD-139	Chatsworth	12-Jul-17	180.82	1793.01	1612.19	
Q4	DD-139	Chatsworth	12-Oct-17	181.07	1793.01	1611.94	
Q1	DD-140	Chatsworth	18-Jan-17	163.83	1798.16	1634.33	
Q1	DD-140	Chatsworth	6-Mar-17	162.25	1798.16	1635.91	
Q2	DD-140	Chatsworth	12-Apr-17	157.77	1798.16	1640.39	
Q3	DD-140	Chatsworth	12-Jul-17	155.63	1798.16	1642.53	
Q4	DD-140	Chatsworth	12-Oct-17	154.63	1798.16	1643.53	
Q1	DD-141	Chatsworth	17-Jan-17	77.53	1762.79	1685.26	
Q1	DD-141	Chatsworth	6-Mar-17	75.01	1762.79	1687.78	
Q2	DD-141	Chatsworth	12-Apr-17	73.31	1762.79	1689.48	
Q3	DD-141	Chatsworth	12-Jul-17	72.42	1762.79	1690.37	
Q4	DD-141	Chatsworth	12-Oct-17	74.21	1762.79	1688.58	
Q1	DD-142	Chatsworth	17-Jan-17	65.60	1812.22	1746.62	
Q1	DD-142	Chatsworth	6-Mar-17	65.31	1812.22	1746.91	
Q2	DD-142	Chatsworth	13-Apr-17	64.62	1812.22	1747.60	
Q3	DD-142	Chatsworth	12-Jul-17	63.54	1812.22	1748.68	
Q4	DD-142	Chatsworth	12-Oct-17	63.11	1812.22	1749.11	
Q1	DD-143	Chatsworth	17-Jan-17	52.75	1789.74	1736.99	
Q1	DD-143	Chatsworth	6-Mar-17	37.92	1789.74	1751.82	
Q2	DD-143	Chatsworth	13-Apr-17	35.73	1789.74	1754.01	
Q3	DD-143	Chatsworth	12-Jul-17	39.03	1789.74	1750.71	
Q4	DD-143	Chatsworth	12-Oct-17	41.78	1789.74	1747.96	
Q1	DD-144	Chatsworth	17-Jan-17	30.73	1810.69	1779.96	
Q1	DD-144	Chatsworth	6-Mar-17	20.46	1810.69	1790.23	
Q2	DD-144	Chatsworth	13-Apr-17	18.74	1810.69	1791.95	
Q3	DD-144	Chatsworth	12-Jul-17	19.13	1810.69	1791.56	
Q4	DD-144	Chatsworth	12-Oct-17	21.00	1810.69	1789.69	
Q1	DD-145	Chatsworth	17-Jan-17	33.89	1798.90	1765.01	
Q1	DD-145	Chatsworth	6-Mar-17	27.04	1798.90	1771.86	
Q2	DD-145	Chatsworth	13-Apr-17	25.87	1798.90	1773.03	
Q3	DD-145	Chatsworth	11-Jul-17	26.27	1798.90	1772.63	
Q4	DD-145	Chatsworth	12-Oct-17	27.19	1798.90	1771.71	
Q1	DS-43	Chatsworth	17-Jan-17	21.87	1809.52	1787.65	
Q1	DS-43	Chatsworth	6-Mar-17	15.09	1809.52	1794.43	
Q2	DS-43	Chatsworth	13-Apr-17	13.82	1809.52	1795.70	

TABLE 3
WATER LEVEL DATA. 2017 - Area IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q3	DS-43	Chatsworth	12-Jul-17	14.42	1809.52	1795.10	
Q4	DS-43	Chatsworth	11-Oct-17	15.91	1809.52	1793.61	
Q1	DS-44	Chatsworth	17-Jan-17	77.30	1851.21	1773.91	
Q1	DS-44	Chatsworth	6-Mar-17	71.64	1851.21	1779.57	
Q2	DS-44	Chatsworth	12-Apr-17	69.84	1851.21	1781.37	
Q3	DS-44	Chatsworth	12-Jul-17	70.56	1851.21	1780.65	
Q4	DS-44	Chatsworth	12-Oct-17	71.21	1851.21	1780.00	
Q1	DS-45	Chatsworth	17-Jan-17	Dry	1866.58	Dry	
Q1	DS-45	Chatsworth	6-Mar-17	63.50	1866.58	1803.08	
Q2	DS-45	Shallow	12-Apr-17	77.39	1866.58	1789.19	
Q3	DS-45	Shallow	12-Jul-17	Dry	1866.58	Dry	
Q4	DS-45	Shallow	12-Oct-17	Dry	1866.58	Dry	
Q1	DS-46	Chatsworth	18-Jan-17	53.54	1797.79	1744.25	
Q1	DS-46	Chatsworth	6-Mar-17	24.31	1797.79	1773.48	
Q2	DS-46	Shallow	12-Apr-17	27.58	1797.79	1770.21	
Q3	DS-46	Shallow	12-Jul-17	35.45	1797.79	1762.34	
Q4	DS-46	Shallow	12-Oct-17	39.91	1797.79	1757.88	
Q1	DS-47	Chatsworth	17-Jan-17	111.21	1867.94	1756.73	
Q1	DS-47	Chatsworth	6-Mar-17	111.22	1867.94	1756.72	
Q2	DS-47	Chatsworth	12-Apr-17	110.75	1867.94	1757.19	
Q3	DS-47	Chatsworth	12-Jul-17	101.34	1867.94	1766.60	
Q4	DS-47	Chatsworth	12-Oct-17	110.20	1867.94	1757.74	
Q1	ES-31	Shallow	11-Jan-17	Dry	1787.01	Dry	(1)
Q2	ES-31	Shallow	4-Apr-17	12.38	1787.01	1774.63	(1)
Q3	ES-31	Shallow	13-Jul-17	18.60	1787.01	1768.41	
Q4	ES-31	Shallow	11-Oct-17	21.62	1787.01	1765.39	
Q1	PZ-005	Shallow	6-Mar-17	21.30	1800.97	1779.67	
Q3	PZ-005	Shallow	11-Jul-17	19.46	1802.47	1783.01	
Q4	PZ-005	Shallow	11-Oct-17	21.11	1802.47	1781.36	
Q1	PZ-041	Shallow	6-Mar-17	6.37	1809.10	1802.73	
Q3	PZ-041	Shallow	12-Jul-17	14.96	1809.10	1794.14	
Q4	PZ-041	Shallow	11-Oct-17	19.02	1809.10	1790.08	
Q1	PZ-097	Shallow	18-Jan-17	Dry	1761.87	Dry	
Q1	PZ-097	Shallow	6-Mar-17	Dry	1761.87	Dry	
Q2	PZ-097	Shallow	12-Apr-17	Dry	1761.87	Dry	
Q3	PZ-097	Shallow	12-Jul-17	Dry	1761.87	Dry	
Q4	PZ-097	Shallow	12-Oct-17	Dry	1761.87	Dry	
Q1	PZ-098	Shallow	6-Mar-17	16.32	1797.78	1781.46	
Q3	PZ-098	Shallow	11-Jul-17	28.00	1797.78	1769.78	
Q4	PZ-098	Shallow	11-Oct-17	36.40	1797.78	1761.38	
Q1	PZ-100	Shallow	6-Mar-17	9.41	1870.11	1860.7	
Q3	PZ-100	Shallow	11-Jul-17	12.25	1870.11	1857.86	
Q4	PZ-100	Shallow	11-Oct-17	12.58	1870.11	1857.53	

TABLE 3
WATER LEVEL DATA. 2017 - Area IV
SANTA SUSANA FIELD LABORATORY
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Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q3	PZ-101	Shallow	11-Jul-17	22.75	1869.71	1846.96	
Q4	PZ-101	Shallow	11-Oct-17	22.90	1869.71	1846.81	
Q3	PZ-102	Shallow	11-Jul-17	60.57	1827.78	1767.21	
Q4	PZ-102	Shallow	11-Oct-17	60.59	1827.78	1767.19	
Q1	PZ-103	Shallow	6-Mar-17	30.70	1815.93	1785.23	
Q3	PZ-103	Shallow	11-Jul-17	32.13	1815.93	1783.80	
Q4	PZ-103	Shallow	11-Oct-17	32.70	1815.93	1783.23	
Q1	PZ-104	Shallow	6-Mar-17	21.55	1797.47	1775.92	
Q3	PZ-104	Shallow	11-Jul-17	22.13	1797.47	1775.34	
Q4	PZ-104	Shallow	11-Oct-17	23.78	1797.47	1773.69	
Q1	PZ-105	Shallow	6-Mar-17	14.63	1803.87	1789.24	
Q3	PZ-105	Shallow	11-Jul-17	13.90	1803.87	1789.97	
Q4	PZ-105	Shallow	11-Oct-17	15.35	1803.87	1788.52	
Q3	PZ-106	Shallow	11-Jul-17	19.60	1784.17	1764.57	
Q4	PZ-106	Shallow	11-Oct-17	21.32	1784.17	1762.85	
Q1	PZ-108	Shallow	17-Jan-17	25.93	1809.36	1783.43	
Q1	PZ-108	Shallow	6-Mar-17	13.00	1809.36	1796.36	
Q2	PZ-108	Shallow	13-Apr-17	12.30	1809.36	1797.06	
Q3	PZ-108	Shallow	11-Jul-17	15.24	1809.36	1794.12	
Q4	PZ-108	Shallow	11-Oct-17	18.55	1809.36	1790.81	
Q1	PZ-109	Shallow	6-Mar-17	20.46	1809.36	1788.9	
Q3	PZ-109	Shallow	11-Jul-17	15.57	1809.51	1793.94	
Q4	PZ-109	Shallow	11-Oct-17	16.21	1809.51	1793.30	
Q3	PZ-110	Shallow	11-Jul-17	Dry	1818.90	Dry	
Q4	PZ-110	Shallow	11-Oct-17	Dry	1818.90	Dry	
Q3	PZ-111	Shallow	11-Jul-17	18.73	1794.90	1776.17	
Q4	PZ-111	Shallow	11-Oct-17	20.05	1794.90	1774.85	
Q3	PZ-112	Shallow	11-Jul-17	36.28	1829.14	1792.86	
Q4	PZ-112	Shallow	11-Oct-17	36.70	1829.14	1792.44	
Q3	PZ-113	Shallow	11-Jul-17	16.39	1823.68	1807.29	
Q4	PZ-113	Shallow	11-Oct-17	Dry	1823.68	Dry	
Q1	PZ-114	Shallow	6-Mar-17	Dry	1818.19	Dry	
Q3	PZ-114	Shallow	11-Jul-17	Dry	1818.19	Dry	
Q4	PZ-114	Shallow	13-Oct-17	Dry	1818.19	Dry	
Q1	PZ-116	Shallow	6-Mar-17	23.77	1827.78	1804.01	
Q3	PZ-116	Shallow	11-Jul-17	Dry	1827.78	Dry	
Q4	PZ-116	Shallow	11-Oct-17	Dry	1827.78	Dry	
Q1	PZ-120	Shallow	6-Mar-17	17.23	1810.96	1793.73	
Q3	PZ-120	Shallow	11-Jul-17	19.09	1810.96	1791.87	
Q4	PZ-120	Shallow	11-Oct-17	21.00	1810.96	1789.96	
Q1	PZ-121	Shallow	6-Mar-17	Dry	1808.98	Dry	
Q3	PZ-121	Shallow	11-Jul-17	Dry	1809.50	Dry	
Q4	PZ-121	Shallow	11-Oct-17	Dry	1809.50	Dry	

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SANTA SUSANA FIELD LABORATORY
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Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q1	PZ-122	Shallow	6-Mar-17	12.22	1810.80	1798.58	
Q3	PZ-122	Shallow	11-Jul-17	18.13	1808.40	1790.27	
Q4	PZ-122	Shallow	11-Oct-17	26.65	1808.40	1781.75	
Q1	PZ-124	Shallow	17-Jan-17	Dry	1764.11	Dry	
Q1	PZ-124	Shallow	6-Mar-17	Dry	1764.11	Dry	
Q2	PZ-124	Shallow	12-Apr-17	Dry	1764.11	Dry	
Q3	PZ-124	Shallow	11-Jul-17	Dry	1764.11	Dry	
Q4	PZ-124	Shallow	12-Oct-17	Dry	1764.11	Dry	
Q1	RD-07	Chatsworth	17-Jan-17	101.86	1812.82	1710.96	
Q1	RD-07	Chatsworth	6-Mar-17	102.00	1812.82	1710.82	
Q2	RD-07	Chatsworth	12-Apr-17	101.70	1812.82	1711.12	
Q3	RD-07	Chatsworth	12-Jul-17	100.80	1812.82	1712.02	
Q4	RD-07	Chatsworth	12-Oct-17	100.18	1812.82	1712.64	
Q1	RD-13	Chatsworth	11-Jan-17	79.93	1840.01	1760.08	(1)
Q2	RD-13	Chatsworth	5-Apr-17	75.42	1840.01	1764.59	(1)
Q3	RD-13	Chatsworth	13-Jul-17	76.67	1840.01	1763.34	
Q4	RD-13	Chatsworth	11-Oct-17	76.07	1840.01	1763.94	
Q1	RD-14	Chatsworth	17-Jan-17	108.72	1824.18	1715.46	
Q1	RD-14	Chatsworth	6-Mar-17	109.29	1824.18	1714.89	
Q2	RD-14	Chatsworth	12-Apr-17	108.89	1824.18	1715.29	
Q3	RD-14	Chatsworth	11-Jul-17	108.07	1824.18	1716.11	
Q4	RD-14	Chatsworth	11-Oct-17	108.23	1824.18	1715.95	
Q1	RD-15	Chatsworth	11-Jan-17	77.49	1817.70	1740.21	(1)
Q2	RD-15	Chatsworth	5-Apr-17	65.34	1817.70	1752.36	(1)
Q3	RD-15	Chatsworth	13-Jul-17	66.25	1817.70	1751.45	
Q4	RD-15	Chatsworth	11-Oct-17	67.98	1817.70	1749.72	
Q1	RD-16	Chatsworth	11-Jan-17	62.06	1808.89	1746.83	(1)
Q2	RD-16	Chatsworth	4-Apr-17	45.96	1808.99	1763.03	(1)
Q3	RD-16	Chatsworth	13-Jul-17	48.41	1808.99	1760.58	
Q4	RD-16	Chatsworth	11-Oct-17	50.89	1808.99	1758.10	
Q1	RD-17	Chatsworth	17-Jan-17	49.46	1836.30	1786.84	
Q1	RD-17	Chatsworth	6-Mar-17	41.61	1836.30	1794.69	
Q2	RD-17	Chatsworth	12-Apr-17	40.25	1836.30	1796.05	
Q3	RD-17	Chatsworth	11-Jul-17	40.13	1836.30	1796.17	
Q4	RD-17	Chatsworth	11-Oct-17	41.50	1836.30	1794.80	
Q1	RD-18	Chatsworth	11-Jan-17	114.11	1839.51	1725.40	(1)
Q2	RD-18	Chatsworth	5-Apr-17	112.88	1839.51	1726.63	(1)
Q3	RD-18	Chatsworth	13-Jul-17	111.14	1839.51	1728.37	
Q4	RD-18	Chatsworth	11-Oct-17	111.05	1839.51	1728.46	
Q1	RD-19	Chatsworth	17-Jan-17	98.68	1853.16	1754.48	
Q1	RD-19	Chatsworth	6-Mar-17	95.20	1853.16	1757.96	
Q2	RD-19	Chatsworth	12-Apr-17	91.91	1853.16	1761.25	
Q3	RD-19	Chatsworth	11-Jul-17	89.51	1853.16	1763.65	

TABLE 3
WATER LEVEL DATA. 2017 - Area IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q4	RD-19	Chatsworth	11-Oct-17	89.36	1853.16	1763.80	
Q1	RD-20	Chatsworth	17-Jan-17	57.15	1819.52	1762.37	
Q1	RD-20	Chatsworth	6-Mar-17	51.84	1819.52	1767.68	
Q2	RD-20	Chatsworth	12-Apr-17	49.00	1819.52	1770.52	
Q3	RD-20	Chatsworth	11-Jul-17	48.13	1819.52	1771.39	
Q4	RD-20	Chatsworth	11-Oct-17	49.08	1819.52	1770.44	
Q1	RD-21	Chatsworth	18-Jan-17	106.54	1866.96	1760.42	
Q1	RD-21	Chatsworth	6-Mar-17	104.81	1866.96	1762.15	
Q2	RD-21	Chatsworth	13-Apr-17	104.58	1866.96	1762.38	
Q3	RD-21	Chatsworth	12-Jul-17	104.41	1866.96	1762.55	
Q4	RD-21	Chatsworth	11-Oct-17	104.66	1866.96	1762.30	
Q1	RD-22	Chatsworth	18-Jan-17	298.80	1853.41	1554.61	
Q1	RD-22	Chatsworth	6-Mar-17	298.50	1853.41	1554.91	
Q2	RD-22	Chatsworth	13-Apr-17	298.69	1853.41	1554.72	
Q3	RD-22	Chatsworth	12-Jul-17	298.60	1853.41	1554.81	
Q4	RD-22	Chatsworth	11-Oct-17	298.58	1853.41	1554.83	
Q1	RD-23	Chatsworth	18-Jan-17	239.11	1838.19	1599.08	
Q1	RD-23	Chatsworth	6-Mar-17	238.71	1838.19	1599.48	
Q2	RD-23	Chatsworth	13-Apr-17	238.95	1838.19	1599.24	
Q3	RD-23	Chatsworth	12-Jul-17	239.24	1838.19	1598.95	
Q4	RD-23	Chatsworth	11-Oct-17	239.36	1838.19	1598.83	
Q1	RD-24	Chatsworth	17-Jan-17	51.75	1809.93	1758.18	
Q1	RD-24	Chatsworth	6-Mar-17	48.92	1809.93	1761.01	
Q2	RD-24	Chatsworth	13-Apr-17	47.70	1809.93	1762.23	
Q3	RD-24	Chatsworth	11-Jul-17	46.56	1809.93	1763.37	
Q4	RD-24	Chatsworth	11-Oct-17	46.62	1809.93	1763.31	
Q1	RD-27	Chatsworth	17-Jan-17	68.75	1841.67	1772.92	
Q1	RD-27	Chatsworth	6-Mar-17	63.35	1841.67	1778.32	
Q2	RD-27	Chatsworth	13-Apr-17	63.89	1841.67	1777.78	
Q3	RD-27	Chatsworth	12-Jul-17	59.82	1841.67	1781.85	
Q4	RD-27	Chatsworth	12-Oct-17	60.41	1841.67	1781.26	
Q1	RD-29	Chatsworth	17-Jan-17	29.86	1806.29	1776.43	
Q1	RD-29	Chatsworth	6-Mar-17	9.89	1806.29	1796.40	
Q2	RD-29	Chatsworth	13-Apr-17	12.11	1806.29	1794.18	
Q3	RD-29	Chatsworth	11-Jul-17	13.91	1806.29	1792.38	
Q4	RD-29	Chatsworth	11-Oct-17	20.02	1806.29	1786.27	
Q1	RD-30	Chatsworth	17-Jan-17	34.80	1768.69	1733.89	
Q1	RD-30	Chatsworth	6-Mar-17	15.89	1768.69	1752.80	
Q2	RD-30	Chatsworth	13-Apr-17	15.21	1768.69	1753.48	
Q3	RD-30	Chatsworth	11-Jul-17	18.50	1768.69	1750.19	
Q4	RD-30	Chatsworth	11-Oct-17	20.94	1768.69	1747.75	
Q1	RD-33A	Chatsworth	18-Jan-17	210.80	1792.97	1582.17	
Q1	RD-33A	Chatsworth	6-Mar-17	210.73	1792.97	1582.24	

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Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q2	RD-33A	Chatsworth	12-Apr-17	210.74	1792.97	1582.23	
Q3	RD-33A	Chatsworth	12-Jul-17	210.71	1792.97	1582.26	
Q4	RD-33A	Chatsworth	12-Oct-17	210.52	1792.97	1582.45	
Q1	RD-33B	Chatsworth	18-Jan-17	281.82	1793.72	1511.90	
Q1	RD-33B	Chatsworth	6-Mar-17	280.90	1793.72	1512.82	
Q2	RD-33B	Chatsworth	12-Apr-17	281.03	1793.72	1512.69	
Q3	RD-33B	Chatsworth	12-Jul-17	281.10	1793.72	1512.62	
Q4	RD-33B	Chatsworth	12-Oct-17	280.94	1793.72	1512.78	
Q1	RD-33C	Chatsworth	18-Jan-17	283.79	1793.61	1509.82	
Q1	RD-33C	Chatsworth	6-Mar-17	283.00	1793.61	1510.61	
Q2	RD-33C	Chatsworth	12-Apr-17	283.04	1793.61	1510.57	
Q3	RD-33C	Chatsworth	12-Jul-17	283.12	1793.61	1510.49	
Q4	RD-33C	Chatsworth	12-Oct-17	283.04	1793.61	1510.57	
Q1	RD-34A	Chatsworth	17-Jan-17	53.39	1761.91	1708.52	
Q1	RD-34A	Chatsworth	6-Mar-17	40.48	1761.91	1721.43	
Q2	RD-34A	Chatsworth	13-Apr-17	44.74	1761.91	1717.17	
Q3	RD-34A	Chatsworth	11-Jul-17	47.36	1761.91	1714.55	
Q4	RD-34A	Chatsworth	11-Oct-17	49.30	1761.91	1712.61	
Q1	RD-34B	Chatsworth	17-Jan-17	70.50	1762.51	1692.01	
Q1	RD-34B	Chatsworth	6-Mar-17	63.01	1762.51	1699.50	
Q2	RD-34B	Chatsworth	13-Apr-17	57.55	1762.51	1704.96	
Q3	RD-34B	Chatsworth	11-Jul-17	57.20	1762.51	1705.31	
Q4	RD-34B	Chatsworth	11-Oct-17	59.41	1762.51	1703.10	
Q1	RD-34C	Chatsworth	17-Jan-17	30.18	1762.79	1732.61	
Q1	RD-34C	Chatsworth	6-Mar-17	28.35	1762.79	1734.44	
Q2	RD-34C	Chatsworth	13-Apr-17	25.11	1762.79	1737.68	
Q3	RD-34C	Chatsworth	11-Jul-17	22.89	1762.79	1739.90	
Q4	RD-34C	Chatsworth	11-Oct-17	23.34	1762.79	1739.45	
Q1	RD-50	Chatsworth	18-Jan-17	128.86	1914.88	1786.02	
Q2	RD-50	Chatsworth	13-Apr-17	128.81	1914.88	1786.07	
Q3	RD-50	Chatsworth	13-Jul-17	128.97	1914.88	1785.91	
Q4	RD-50	Chatsworth	12-Oct-17	129.16	1914.88	1785.72	
Q1	RD-54A	Chatsworth	18-Jan-17	175.86	1841.72	1665.86	
Q1	RD-54A	Chatsworth	6-Mar-17	176.12	1841.72	1665.60	
Q2	RD-54A	Chatsworth	13-Apr-17	176.44	1841.72	1665.28	
Q3	RD-54A	Chatsworth	12-Jul-17	177.04	1841.72	1664.68	
Q4	RD-54A	Chatsworth	12-Oct-17	177.51	1841.72	1664.21	
Q1	RD-54B	Chatsworth	18-Jan-17	242.07	1842.54	1600.47	
Q1	RD-54B	Chatsworth	6-Mar-17	241.63	1842.54	1600.91	
Q2	RD-54B	Chatsworth	13-Apr-17	241.91	1842.54	1600.63	
Q3	RD-54B	Chatsworth	12-Jul-17	242.39	1842.54	1600.15	
Q4	RD-54B	Chatsworth	12-Oct-17	242.52	1842.54	1600.02	
Q1	RD-54C	Chatsworth	18-Jan-17	232.40	1843.77	1611.37	

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Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q1	RD-54C	Chatsworth	6-Mar-17	231.74	1843.77	1612.03	
Q2	RD-54C	Chatsworth	13-Apr-17	231.95	1843.77	1611.82	
Q3	RD-54C	Chatsworth	12-Jul-17	231.64	1843.77	1612.13	
Q4	RD-54C	Chatsworth	12-Oct-17	231.52	1843.77	1612.25	
Q1	RD-57	Chatsworth	6-Mar-17	NA	1774.15	NA	(2)
Q2	RD-57	Chatsworth	12-Apr-17	NA	1774.15	NA	(2)
Q3	RD-57	Chatsworth	12-Jul-17	NA	1774.15	NA	(2)
Q4	RD-57	Chatsworth	12-Oct-17	NA	1774.15	NA	(2)
Q1	RD-59A	Chatsworth	18-Jan-17	24.98	1340.59	1315.61	
Q1	RD-59A	Chatsworth	6-Mar-17	24.93	1340.59	1315.66	
Q2	RD-59A	Chatsworth	12-Apr-17	25.87	1340.59	1314.72	
Q3	RD-59A	Chatsworth	14-Jul-17	28.79	1340.59	1311.80	
Q4	RD-59A	Chatsworth	13-Oct-17	28.67	1340.59	1311.92	
Q1	RD-59B	Chatsworth Artesian	18-Jan-17	19 psi	1342.49	NA	(3)
Q1	RD-59B	Chatsworth Artesian	6-Mar-17	20 psi	1342.49	NA	(3)
Q2	RD-59B	Chatsworth Artesian	12-Apr-17	19 psi	1342.49	NA	(3)
Q3	RD-59B	Chatsworth Artesian	14-Jul-17	19 psi	1342.49	NA	(3)
Q4	RD-59B	Chatsworth Artesian	13-Oct-17	19 psi	1342.49	NA	(3)
Q1	RD-59C	Chatsworth Artesian	18-Jan-17	19 psi	1345.41	NA	(3)
Q1	RD-59C	Chatsworth Artesian	6-Mar-17	20 psi	1345.41	NA	(3)
Q2	RD-59C	Chatsworth Artesian	12-Apr-17	19 psi	1345.41	NA	(3)
Q3	RD-59C	Chatsworth Artesian	14-Jul-17	19 psi	1345.41	NA	(3)
Q4	RD-59C	Chatsworth Artesian	13-Oct-17	19 psi	1345.41	NA	(3)
Q1	RD-63	Chatsworth	17-Jan-17	48.00	1764.83	1716.83	
Q1	RD-63	Chatsworth	6-Mar-17	36.75	1764.83	1728.08	
Q2	RD-63	Chatsworth	13-Apr-17	31.16	1764.83	1733.67	
Q3	RD-63	Chatsworth	11-Jul-17	31.96	1764.83	1732.87	
Q4	RD-63	Chatsworth	11-Oct-17	34.53	1764.83	1730.30	
Q1	RD-64	Chatsworth	18-Jan-17	249.03	1857.04	1608.01	
Q1	RD-64	Chatsworth	6-Mar-17	248.95	1857.04	1608.09	
Q2	RD-64	Chatsworth	13-Apr-17	249.10	1857.04	1607.94	
Q3	RD-64	Chatsworth	12-Jul-17	249.29	1857.04	1607.75	
Q4	RD-64	Chatsworth	12-Oct-17	249.37	1857.04	1607.67	
Q1	RD-65	Chatsworth	18-Jan-17	220.34	1819.14	1598.8	
Q1	RD-65	Chatsworth	6-Mar-17	220.17	1819.14	1598.97	
Q2	RD-65	Chatsworth	12-Apr-17	220.19	1819.14	1598.95	
Q3	RD-65	Chatsworth	12-Jul-17	220.10	1819.14	1599.04	
Q4	RD-65	Chatsworth	12-Oct-17	220.09	1819.14	1599.05	
Q1	RD-74	Chatsworth	17-Jan-17	Dry	1810.90	Dry	
Q1	RD-74	Chatsworth	6-Mar-17	Dry	1810.90	Dry	
Q2	RD-74	Chatsworth	12-Apr-17	Dry	1810.90	Dry	
Q3	RD-74	Chatsworth	12-Jul-17	Dry	1810.90	Dry	
Q4	RD-74	Chatsworth	12-Oct-17	Dry	1810.90	Dry	

TABLE 3
WATER LEVEL DATA. 2017 - Area IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q1	RD-85	Chatsworth	11-Jan-17	91.37	1849.36	1757.99	(1)
Q2	RD-85	Chatsworth	5-Apr-17	83.21	1849.36	1766.15	(1)
Q3	RD-85	Chatsworth	13-Jul-17	86.05	1849.36	1763.31	
Q4	RD-85	Chatsworth	12-Oct-17	83.12	1849.36	1766.24	
Q1	RD-86	Chatsworth	11-Jan-17	Dry	1832.16	Dry	(1)
Q2	RD-86	Chatsworth	5-Apr-17	Dry	1832.16	Dry	(1)
Q3	RD-86	Chatsworth	13-Jul-17	Dry	1832.16	Dry	
Q4	RD-86	Chatsworth	12-Oct-17	Dry	1832.16	Dry	
Q1	RD-87	Chatsworth	17-Jan-17	Dry	1789.09	Dry	
Q1	RD-87	Chatsworth	6-Mar-17	55.53	1789.09	1733.56	
Q2	RD-87	Chatsworth	13-Apr-17	48.77	1789.09	1740.32	
Q3	RD-87	Chatsworth	12-Jul-17	50.10	1789.09	1738.99	
Q4	RD-87	Chatsworth	12-Oct-17	52.58	1789.09	1736.51	
Q1	RD-88	Chatsworth	17-Jan-17	30.70	1774.62	1743.92	
Q1	RD-88	Chatsworth	6-Mar-17	29.28	1774.62	1745.34	
Q2	RD-88	Chatsworth	13-Apr-17	30.93	1774.62	1743.69	
Q3	RD-88	Chatsworth	12-Jul-17	Dry	1774.62	Dry	
Q4	RD-88	Chatsworth	12-Oct-17	Dry	1774.62	Dry	
Q1	RD-89	Chatsworth	17-Jan-17	Dry	1814.18	Dry	
Q1	RD-89	Chatsworth	6-Mar-17	Dry	1814.18	Dry	
Q2	RD-89	Chatsworth	13-Apr-17	Dry	1814.18	Dry	
Q3	RD-89	Chatsworth	12-Jul-17	Dry	1814.18	Dry	
Q4	RD-89	Chatsworth	12-Oct-17	Dry	1814.18	Dry	
Q1	RD-90	Chatsworth	17-Jan-17	49.30	1784.75	1735.45	
Q1	RD-90	Chatsworth	6-Mar-17	41.20	1784.75	1743.55	
Q2	RD-90	Chatsworth	13-Apr-17	41.23	1784.75	1743.52	
Q3	RD-90	Chatsworth	12-Jul-17	42.00	1784.75	1742.75	
Q4	RD-90	Chatsworth	12-Oct-17	43.61	1784.75	1741.14	
Q1	RD-91	Chatsworth	17-Jan-17	104.80	1818.04	1713.24	
Q2	RD-91	Chatsworth	12-Apr-17	29.53	1818.04	1788.51	
Q3	RD-91	Chatsworth	11-Jul-17	37.88	1818.04	1780.16	
Q4	RD-91	Chatsworth	12-Oct-17	88.45	1818.04	1729.59	
Q1	RD-92	Chatsworth	11-Jan-17	73.5	1833.74	1760.24	(1)
Q2	RD-92	Chatsworth	5-Apr-17	72.42	1833.74	1761.32	(1)
Q3	RD-92	Chatsworth	13-Jul-17	72.90	1833.74	1760.84	
Q4	RD-92	Chatsworth	12-Oct-17	73.12	1833.74	1760.62	
Q1	RD-93	Chatsworth	17-Jan-17	47.62	1810.48	1762.86	
Q1	RD-93	Chatsworth	6-Mar-17	45.90	1810.48	1764.58	
Q2	RD-93	Chatsworth	13-Apr-17	44.25	1810.48	1766.23	
Q3	RD-93	Chatsworth	12-Jul-17	42.90	1810.48	1767.58	
Q4	RD-93	Chatsworth	12-Oct-17	41.92	1810.48	1768.56	
Q1	RD-94	Chatsworth	17-Jan-17	Dry	1744.38	Dry	
Q1	RD-94	Chatsworth	6-Mar-17	22.12	1744.38	1722.26	

TABLE 3
WATER LEVEL DATA. 2017 - Area IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q2	RD-94	Chatsworth	13-Apr-17	25.00	1744.38	1719.38	
Q3	RD-94	Chatsworth	12-Jul-17	27.76	1744.38	1716.62	
Q4	RD-94	Chatsworth	12-Oct-17	30.08	1744.38	1714.30	
Q1	RD-95	Chatsworth	17-Jan-17	67.12	1811.36	1744.24	
Q1	RD-95	Chatsworth	6-Mar-17	67.08	1811.36	1744.28	
Q2	RD-95	Chatsworth	13-Apr-17	67.95	1811.36	1743.41	
Q3	RD-95	Chatsworth	12-Jul-17	66.65	1811.36	1744.71	
Q4	RD-95	Chatsworth	12-Oct-17	66.24	1811.36	1745.12	
Q1	RD-96	Chatsworth	17-Jan-17	78.61	1805.09	1726.48	
Q1	RD-96	Chatsworth	6-Mar-17	78.65	1805.09	1726.44	
Q2	RD-96	Chatsworth	12-Apr-17	77.31	1805.49	1728.18	
Q3	RD-96	Chatsworth	12-Jul-17	75.69	1805.49	1729.80	
Q4	RD-96	Chatsworth	12-Oct-17	75.75	1805.49	1729.74	
Q1	RD-97	Chatsworth	17-Jan-17	70.51	1792.22	1721.71	
Q1	RD-97	Chatsworth	6-Mar-17	67.23	1792.22	1724.99	
Q2	RD-97	Chatsworth	12-Apr-17	63.22	1792.22	1729.00	
Q3	RD-97	Chatsworth	12-Jul-17	64.23	1792.22	1727.99	
Q4	RD-97	Chatsworth	12-Oct-17	65.79	1792.22	1726.43	
Q1	RD-98	Chatsworth	17-Jan-17	61.83	1808.73	1746.90	
Q1	RD-98	Chatsworth	6-Mar-17	43.22	1808.73	1765.51	
Q2	RD-98	Chatsworth	13-Apr-17	45.96	1808.73	1762.77	
Q3	RD-98	Chatsworth	11-Jul-17	50.11	1808.73	1758.62	
Q4	RD-98	Chatsworth	12-Oct-17	52.80	1808.73	1755.93	
Q1	RS-11	Shallow	11-Jan-17	Dry	1790.39	Dry	(1)
Q2	RS-11	Shallow	4-Apr-17	Dry	1790.39	Dry	(1)
Q3	RS-11	Shallow	13-Jul-17	Dry	1790.39	Dry	
Q4	RS-11	Shallow	12-Oct-17	Dry	1790.39	Dry	
Q1	RS-16	Shallow	17-Jan-17	Dry	1811.05	Dry	
Q1	RS-16	Shallow	6-Mar-17	Dry	1811.05	Dry	
Q2	RS-16	Shallow	12-Apr-17	Dry	1811.05	Dry	
Q3	RS-16	Shallow	12-Jul-17	Dry	1811.05	Dry	
Q4	RS-16	Shallow	12-Oct-17	Dry	1811.05	Dry	
Q1	RS-18	Shallow	18-Jan-17	4.33	1802.86	1798.53	
Q1	RS-18	Shallow	6-Mar-17	3.30	1802.86	1799.56	
Q2	RS-18	Shallow	12-Apr-17	5.54	1802.86	1797.32	
Q3	RS-18	Shallow	12-Jul-17	11.66	1802.86	1791.20	
Q4	RS-18	Shallow	12-Oct-17	Dry	1802.86	Dry	
Q1	RS-23	Shallow	11-Jan-17	Dry	1887.25	Dry	(1)
Q2	RS-23	Shallow	5-Apr-17	Dry	1887.25	Dry	(1)
Q3	RS-23	Shallow	13-Jul-17	Dry	1887.25	Dry	
Q4	RS-23	Shallow	12-Oct-17	Dry	1887.25	Dry	
Q1	RS-24	Shallow	11-Jan-17	Dry	1809.24	Dry	(1)
Q2	RS-24	Shallow	4-Apr-17	Dry	1809.24	Dry	(1)

TABLE 3
WATER LEVEL DATA. 2017 - Area IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Quarter	Well Identifier	Geological Unit	Date of Measurement	Depth to Water (feet BTOC)	Reference Point Elevation (feet above MSL)	Static Water Level Elevation (feet above MSL)	Notes
Q3	RS-24	Shallow	13-Jul-17	Dry	1809.24	Dry	
Q4	RS-24	Shallow	12-Oct-17	Dry	1809.24	Dry	
Q1	RS-25	Shallow	17-Jan-17	13.10	1862.71	1849.61	
Q1	RS-25	Shallow	6-Mar-17	13.15	1862.71	1849.56	
Q2	RS-25	Shallow	12-Apr-17	13.97	1862.71	1848.74	
Q3	RS-25	Shallow	11-Jul-17	Dry	1862.71	Dry	
Q4	RS-25	Shallow	12-Oct-17	Dry	1862.71	Dry	
Q1	RS-27	Shallow	17-Jan-17	Dry	1804.78	Dry	
Q1	RS-27	Shallow	6-Mar-17	7.54	1804.78	1797.24	
Q2	RS-27	Shallow	13-Apr-17	Dry	1804.78	Dry	
Q3	RS-27	Shallow	11-Jul-17	Dry	1804.78	Dry	
Q4	RS-27	Shallow	12-Oct-17	Dry	1804.78	Dry	
Q1	RS-28	Shallow	17-Jan-17	Dry	1768.59	Dry	
Q1	RS-28	Shallow	6-Mar-17	13.75	1768.59	1754.84	
Q2	RS-28	Shallow	13-Apr-17	14.85	1768.59	1753.74	
Q3	RS-28	Shallow	11-Jul-17	18.60	1768.59	1749.99	
Q4	RS-28	Shallow	12-Oct-17	Dry	1768.59	Dry	
Q3	RS-36	Shallow	11-Jul-17	11.92	1817.73	1805.81	
Q4	RS-36	Shallow	12-Oct-17	15.66	1817.73	1802.07	
Q1	RS-54	Shallow	18-Jan-17	Dry	1846.66	Dry	
Q1	RS-54	Shallow	6-Mar-17	31.34	1846.66	1815.32	
Q2	RS-54	Shallow	13-Apr-17	23.91	1846.66	1822.75	
Q3	RS-54	Shallow	12-Jul-17	20.59	1846.66	1826.07	
Q4	RS-54	Shallow	12-Oct-17	22.36	1846.66	1824.30	

(1) = Boeing Gauging Data
(2) = FLUTe particially removed. Well lid weilded shut.
(3) = Pressure transducers installed on artesian well.
(4) = Well completion not known

BTOC = below top of casing
MSL = Mean Sea Level
NA = Not Applicable

Chatsworth = Chatsworth Formation groundwater unit.
Chatsworth Artesian = Chatsworth Formation groundwater unit - Artesian with hydrostatic head above land surface.
Shallow = Near Surface groundwater unit.
Static water level elevations were calculated using the following equation:

$E_w = E - D + C$

Where:

E_w = Elevation of water above mean sea level (feet)
E = Elevation above mean sea level at point of measurement (feet).
D = Depth to water (feet)
C = Calibration correction factor (feet)

TABLE 4
EXCEPTIONS TO THE SITE-WIDE WATER QUALITY SAMPLING AND ANALYSIS PLAN, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

WELLS NOT SAMPLED	
Well Identifier	**Notes**
PZ-097, PZ-121, PZ-124, RD-74, RD-89, RS-16	Dry
RD-57	FLUTe partially removed, well could not be sampled. Well monument lid has been welded shut to prevent access.
STABILIZATION CRITERIA COLLECTED AT FIXED INTERVALS GREATER THAN 5 MINUTES	
DD-139, DD-143, DS-45, PZ-005, PZ-041, PZ-100, PZ-103, PZ-104, PZ-105, PZ-109, PZ-116, PZ-120, PZ-122, PZ-98, RD-20, RD-90, RD-95, RD-96, RD-97, RS-18, RS-28, RS-54	Readings were collected every 6 minutes to give enough time to exchange water in the flow through cell due to 50 ml/min flow rate.
PURGE VOLUME REQUIREMENTS NOT MET	
RS-27, RD-87, RD-88, RS-25	Wells did not have sufficient recharge to purge the required volume. Disposable bailers were used to bail the wells dry and to sample them within 24 hours, after well had recharged.
LOW-FLOW STABILIZATION CRITERIA NOT MET	
DD-143. DS-45, PZ-041, PZ-100, PZ-105, PZ-109, PZ-116, PZ-98, RD-96, RS-54	Water level drawdown exceeded 0.3 feet.
WELLS SAMPLED USING A DISPOSABLE BAILER	
RS-27, RD-87, RD-88, RS-25	Wells did not have sufficient recharge to sample using Low-Flow method. Disposable bailers were used to bail the wells dry and to sample them within 24 hours.
Well Identifier	**Notes**
QUALITY ASSURANCE PROJECT PLAN (QAPP) REQUIREMENTS	
Requirement	**Exceptions**
Trip Blanks submitted daily with samples analyzed for volatile organic compounds (VOCs), gasoline range organics, 1,4-Dioxane, and 1,2,3-Trichloropropane.	None - 100 Percent Submitted
Quality control (QC) samples collected	See Appendix A
Precision/Accuracy requirements met	See Appendix A

TABLE 4
EXCEPTIONS TO THE SITE-WIDE WATER QUALITY SAMPLING AND ANALYSIS PLAN,
FIRST QUARTER 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

QUALITY ASSURANCE PROJECT PLAN (QAPP) REQUIREMENTS	
Requirement	**Exceptions**
OTHER	
Applicable Samples	The reporting limit for vinyl chloride was above the SSFL groundwater screening level reference value (SSFL screening criteria) maximum contaminant level (MCL) criteria of 0.5 microgram per liter (µg/L) at 1 µg/L. The method detection limit was 0.10 µg/L though and all sample results were nondetect so the 1 µg/L reporting limit is considered sufficient for project purposes. The reporting limit was also elevated for 1,2-dichloroethane at 1 µg/L (MDL 0.13). The MCL criteria is 0.5 µg/L for 1,2-dichloroethane. The reporting limit for gasoline range organics (GRO) is above the taste/odor threshold, but MDL (10 ug/L) was below the required criteria. The reporting limit for carbon tetrachloride was also above the SSFL screening criteria (MCL) of 0.5 µg/L at 1 µg/L. The MDL was 0.19 ug/L which is below the criteria. If results had been detected between the MDL and reporting limit they would have been reported as detected estimated results. All these sample results are considered sufficient and meet project requirements.
RD-34B	The pump intake could not be placed at depth halfway between the depth to water (61.5 feet below ground surface) and the bottom of the saturated open interval of the well (415 feet below ground surface). Pump could not be lowered past the obstruction in well present at a depth of 167 feet below ground surface. The pump was placed immediately above the obstruction and low-flow sampling procedures were followed for the collection of the water sample.

TABLE 5
GROUNDWATER FIELD PARAMETERS, 2017 - AREA IV SANTA SUSANA
FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Date	Temperature (° C)	pH	Conductivity (mmhos)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Oxidation Reduction Potential (mV)
PZ-005	3/7/2017	21.1	7.00	1.301	3.41	126.0	80.4
PZ-041	3/9/2017	20.2	7.04	0.957	1.79	11.1	270.1
PZ-097	DRY						
PZ-098	3/7/2017	14.5	6.64	0.902	5.58	4.2	318.6
PZ-100	3/7/2017	18.2	7.34	1.250	8.14	4.6	286.2
PZ-103	3/7/2017	16.6	7.14	1.360	4.65	34.0	120.6
PZ-104	3/7/2017	18.9	6.85	2.845	1.45	307.0	-21.2
PZ-105	3/6/2017	18.3	7.14	1.018	5.47	20.3	268.8
PZ-108	3/6/2017	16.0	6.47	1.302	2.62	22.0	169.7
PZ-109	3/13/2017	20.8	7.22	1.311	0.40	13.0	62.9
PZ-116	3/10/2017	18.5	6.81	1.680	2.07	5.1	300.2
PZ-120	3/10/2017	18.5	6.98	0.999	3.14	15.0	123.6
PZ-121	DRY						
PZ-122	3/14/2017	18.8	6.90	0.971	3.39	3.7	303.6
PZ-124	DRY						
RD-07	3/13/2017	22.6	7.01	0.682	1.71	3.4	264.1
RD-14	3/20/2017	17.7	7.04	0.697	1.11	3.7	262.6
RD-17	3/22/2017	19.2	6.96	0.857	0.07	45.8	-22.6
RD-19	3/23/2017	15.9	6.43	1.445	0.94	4.4	384.2
RD-20	3/7/2017	19.6	7.08	1.476	4.20	2.7	270.9
RD-21	3/21/2017	15.2	7.06	0.896	3.17	19.0	204.4
RD-24	3/13/2017	20.6	7.16	0.870	0.33	17.0	-101.2
RD-27	3/22/2017	19.6	7.62	0.521	0.55	18.1	-160.2
RD-29	3/17/2017	21.5	6.95	0.859	0.26	5.0	-55.1
RD-30	3/15/2017	16.4	6.65	0.996	1.25	215.0	172.4
RD-33A	3/13/2017	20.5	7.24	0.720	1.42	6.0	-22.9
RD-33B	3/22/2017	15.4	8.09	0.419	2.85	7.0	14.7
RD-33C	3/22/2017	17.2	7.55	0.614	1.75	14.0	-115.2
RD-34A	3/23/2017	16.5	6.39	1.285	0.56	6.0	-16.0
RD-34B	3/23/2017	14.8	9.85	0.275	0.60	7.0	-38.5
RD-34C	3/17/2017	19.5	7.79	0.502	0.18	4.4	-197.4
RD-54A	3/20/2017	14.0	6.80	0.804	2.49	28.0	214.4
RD-54B	3/21/2017	14.9	8.14	0.332	0.97	16.0	105.4
RD-54C	3/17/2017	20.3	10.77	0.553	0.08	241.0	-520.8
RD-59A	3/24/2017	15.0	7.10	1.485	0.47	4.2	253.8
RD-59B	3/24/2017	18.3	7.28	0.922	0.20	3.0	-84.4
RD-59C	3/24/2017	19.3	7.53	0.949	0.19	8.0	-57.1
RD-63	3/17/2017	20.4	6.81	1.095	0.45	8.0	-76.3
RD-65	3/17/2017	18.1	7.32	0.579	1.68	5.0	95.6
RD-74	DRY						
RD-87[1]	3/27/2017	Insufficient volume of water for water quality readings					
RD-88[1]	3/27/2017	Insufficient volume of water for water quality readings					
RD-89	DRY						
RD-90	3/8/2017	25.7	6.83	1.153	1.14	1.4	196.3
RD-93	3/14/2017	19.6	6.43	1.748	2.25	10.0	90.1
RD-94	3/14/2017	18.8	6.64	1.924	2.24	27.0	68.1
RD-95	3/8/2017	21.2	6.33	1.706	0.65	292.0	92.0
RD-96	3/21/2017	16.4	6.80	0.960	0.67	3.6	219.7
RD-97	3/13/2017	20.4	6.62	1.142	1.38	4.1	268.6
RD-98	3/17/2017	19.8	6.97	0.694	5.36	3.2	336.4
RS-16	DRY						

TABLE 5
GROUNDWATER FIELD PARAMETERS, FIRST QUARTER 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Date	Temperature (° C)	pH	Conductivity (mmhos)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Oxidation Reduction Potential (mV)
RS-18	3/8/2017	17.2	7.10	0.609	2.54	4.4	236.6
RS-25[1]	3/27/2017	Insufficient volume of water for water quality readings					
RS-27[1]	3/27/2017	Insufficient volume of water for water quality readings					
RS-28	3/15/2017	21.9	6.67	0.653	1.05	6.1	303.7
RS-54	3/9/2017	23.4	7.01	1.220	2.48	7.0	56.5
DD-139	3/9/2017	25.9	6.91	0.827	2.89	11.0	79.6
DD-140	3/8/2017	19.8	7.24	0.957	1.11	10.0	65.0
DD-141	3/16/2017	16.7	6.90	1.007	0.97	48.0	24.3
DD-142	3/13/2017	22.8	6.93	1.231	0.98	4.4	245.7
DD-143	3/16/2017	18.8	6.80	1.170	0.41	52.6	73.4
DD-143[2]	3/23/2017	21.3	6.73	1.175	0.57	3.6	94.3
DD-144	3/14/2017	20.6	6.68	1.150	1.22	114.0	-15.7
DD-144[3]	3/20/2017	19.5	6.80	0.948	0.98	67.9	175.6
DD-145	3/14/2017	22.1	6.89	1.161	0.54	16.0	28.4
DD-145[3]	3/20/2017	18.7	6.94	0.978	0.42	9.2	220.6
DS-43	3/13/2017	22.4	7.21	1.217	0.24	14.0	-116.2
DS-44	3/16/2017	22.7	7.26	0.894	0.96	24.0	62.3
DS-45	3/9/2017	20.4	7.04	0.999	5.84	5.8	305.2
DS-46	3/8/2017	18.2	6.66	1.073	0.69	99.0	-1.2
DS-47	3/15/2017	21.2	7.14	0.784	2.88	38.0	86.1
RD-22	3/14/2017	22.7	7.20	1.203	2.39	9.0	-36.4
RD-23	3/14/2017	24.9	7.38	0.674	4.65	10.0	128.7
RD-57	Lid Welded Shut						
RD-64	3/16/2017	18.60	7.00	1.144	1.23	3.0	87.4
C-8	3/21/2017	16.0	7.01	0.881	1.68	8.0	193.0

NOTES AND ABBREVIATIONS

[1] - Insufficient water volume to collect water quality readings
[2] - Resampled, Lab missed Nitrate holding time
[3] - Resampled, VOA vials contained air bubbles
° C - degrees Celsius
mmhos - millimhos
mg/L - milligrams per liter
mV - millivolt
NTU - nephelometric turbidity unit

TABLE 6
SAMPLES ANALYZED, 2017 - AREA IV SANTA SUSANA
FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Event	Site-Wide Monitoring Program	DOE Area IV Groundwater RFI Analytes	Well Sponsor
C-08	2017 Q1	NA	VOCs Metals	DOE
PZ-005	2017 Q1	NA	VOCs Metals Nitrates	DOE
PZ-041	2017 Q1	NA	VOCs GRO, DRO	DOE
PZ-98	2017 Q1	NA	VOCs Perchlorate	DOE
PZ-100	2017 Q1	NA	VOCs Perchlorate	DOE
PZ-103	2017 Q1	NA	VOCs Metals GRO, DRO Nitrates	DOE
PZ-104	2017 Q1	NA	VOCs Metals Nitrates	DOE
PZ-105	2017 Q1	NA	VOCs Metals GRO, DRO Nitrates	DOE
PZ-108	2017 Q1	VOCs	NA	DOE
PZ-109	2017 Q1	NA	VOCs	DOE
PZ-116	2017 Q1	NA	VOCs Metals GRO, DRO Radionuclides	DOE
PZ-120	2017 Q1	NA	VOCs Metals Radionuclides	DOE
PZ-122	2017 Q1	NA	VOCs GRO, DRO Nitrates Radionuclides	DOE
RD-07	2017 Q1	VOCs	Metals	DOE
RD-14	2017 Q1	VOCs 1,2,3-TCP Fluoride Radiochemistry	GRO, DRO	DOE
RD-17	2017 Q1	NA	VOCs Radionuclides	DOE
RD-19	2017 Q1	VOCs Metals Radiochemistry Fluoride	GRO, DRO	DOE
RD-20	2017 Q1	VOCs	NA	DOE
RD-21	2017 Q1	NA	VOCs Perchlorate Metals	DOE

TABLE 6
SAMPLES ANALYZED, FIRST QUARTER 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Event	Site-Wide Monitoring Program	DOE Area IV Groundwater RFI Analytes	Well Sponsor
RD-22	2017 Q1	NA	VOC Metals Perchlorate GRO, DRO	
RD-23	2017 Q1	NA	VOCs Metals Perchlorate GRO, DRO	
RD-24	2017 Q1	NA	VOCs Perchlorate	DOE
RD-27	2017 Q1	NA	VOCs Radionuclides	DOE
RD-29	2017 Q1	NA	VOCs	DOE
RD-30	2017 Q1	NA	VOCs GRO, DRO Radionuclides	DOE
RD-33A	2017Q1	VOCs Metals Perchlorate Radiochemistry	NA	
RD-33B	2017 Q1	VOCs Metals Perchlorate Radiochemistry	NA	DOE
RD-33C	2017 Q1	VOCs Metals Perchlorate Radiochemistry	NA	DOE
RD-34A	2017 Q1	VOCs Metals Radiochemistry Fluoride 1,4 Dioxane	GRO, DRO	DOE
RD-34B	2017 Q1	VOCs Metals Radiochemistry Fluoride 1,4 Dioxane	NA	DOE

TABLE 6
SAMPLES ANALYZED, FIRST QUARTER 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Event	Site-Wide Monitoring Program	DOE Area IV Groundwater RFI Analytes	Well Sponsor
RD-34C	2017 Q1	VOCs Metals Radiochemistry Fluoride 1,4-Dioxane	NA	DOE
RD-54A	2017 Q1	VOCs Metals Perchlorate Radiochemistry	NA	DOE
RD-54B	2017 Q1	NA	VOCs Perchlorate	
RD-54C	2017 Q1	NA	VOCs Perchlorate	
RD-59A	2017 Q1	VOCs Metals Perchlorate Radiochemistry Fluoride	NA	DOE
RD-59B	2017 Q1	VOCs Metals Perchlorate Radiochemistry Fluoride	NA	DOE
RD-59C	2017 Q1	VOCs Metals Perchlorate Radiochemistry Fluoride	NA	DOE
RD-63	2017 Q1	VOCs	NA	DOE
RD-64	2017 Q1	NA	VOCs Metals Perchlorate GRO, DRO Radionuclides	DOE
RD-65	2017 Q1	NA	VOCs	DOE

TABLE 6
SAMPLES ANALYZED, FIRST QUARTER 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Event	Site-Wide Monitoring Program	DOE Area IV Groundwater RFI Analytes	Well Sponsor
RD-87	2017 Q1	NA	Tritium	
RD-88	2017 Q1	NA	Radionuclides (Total EPA 901.1 only) Tritium	
RD-90	2017 Q1	NA	Tritium	DOE

TABLE 6
SAMPLES ANALYZED, FIRST QUARTER 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Event	Site-Wide Monitoring Program	DOE Area IV Groundwater RFI Analytes	Well Sponsor
RD-93	2017 Q1	NA	Tritium	DOE
RD-94	2017 Q1		Radionuclides and Tritium	
RD-95	2017 Q1	NA	Tritium	DOE
RD-96	2017 Q1	VOCs Radiochemistry	Perchlorate GRO, DRO Metals	DOE
RD-97	2017 Q1	NA	VOCs	DOE
RD-98	2017 Q1	NA	VOCs Radionuclides	DOE
RS-18	2017 Q1	VOCs Metals Perchlorate Radiochemistry	NA	DOE
RS-25	2017 Q1	NA	VOCs Metals Radionuclides (Total and Dissolved EPA 901.1 only)	
RS-27	2017 Q1	NA	VOCs Metals	DOE
RS-28	2017 Q1	NA	VOCs GRO, DRO Radionuclides	DOE
RS-54	2017 Q1	NA	VOCs Metals Perchlorate	DOE
DS-43	2017 Q1	NA	VOCs Metals	DOE
DS-44	2017 Q1	NA	VOCs Metals Radionuclides	DOE
DS-45	2017 Q1	NA	VOCs Metals Radionuclides	DOE
DS-46	2017 Q1	NA	VOCs Metals	DOE
DS-47	2017 Q1	NA	VOCs Metals Radionuclides and Tritium	DOE
DD-139	2017 Q1	NA	VOCs Metals Perchlorate	DOE
DD-140	2017 Q1	NA	VOCs Metals	DOE
DD-141	2017 Q1	NA	VOCs Metals Perchlorate GRO, DRO Radionuclides	DOE
DD-142	2017 Q1	NA	VOCs Metals	DOE
DD-143	2017 Q1	NA	VOCs Metals GRO, DRO Radionuclides Nitrates	DOE

TABLE 6
SAMPLES ANALYZED, FIRST QUARTER 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Event	Site-Wide Monitoring Program	DOE Area IV Groundwater RFI Analytes	Well Sponsor
DD-144	2017 Q1	NA	VOCs Metals Tritium	DOE
DD-145	2017 Q1	NA	VOCs Metals GRO, DRO Nitrates	DOE

ABBREVIATIONS
GW RFI - Groundwater RCRA Facility Investigation
DOE Area IV - Department of Energy Area IV
1,2,3-TCP - 1,2,3-Trichloropropane
DRO - Diesel Range Organics
GRO - Gasoline Range Organics
VOCs - Volatile Organic Compounds
NA - Not applicable

NOTES
Radiochemistry Suite:
Gross Alpha and Gross Beta (Total & Dissolved)
Isotopic Uranium (Total & Dissolved)
Sr-90 (Total & Dissolved)
Am-241 (Total & Dissolved)
TM-171 (Total & Dissolved)
Cm-243/244, Cm-245/246 (Total & Dissolved)
Pu-238, Pu-239/240, Pu-242 (Total & Dissolved)
C-14 (Total & Dissolved)
I-129 (Total & Dissolved)

TABLE 7
GROUNDWATER
MONITORING PROGRAM ANALYSES, 2017 - AREA IV SANTA SUSANA
FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analytes			Analytical Method
1,2,3-Trichloropropane			8260B/E524.2
1,4-Dioxane			8260B SIM
Fluoride, Nitrate			300.0
Metals[1]:	Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc		6010C/6020A/7470A
Perchlorate			6860
Radiochemistry:	Cesium-137 and other Gamma-emitting radionuclides[2]		901.1
	Gross Alpha and Gross Beta		900.0
	Radium-226		903.0
	Radium-228		904.0
	Strontium-90		905.0/ASTM D5811-95
	Tritium		906.0
	Isotopic Uranium		DOE A-01-R
Gasoline Range Organics			8015B
Diesel Range Organics			8015B
Volatile Organic Compounds:			8260B
	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	
	1,1,2-Trichloro-1,2,2-trifluoroethane	Dibromofluoromethane (Surr)	
	1,1,2-Trichloroethane	Ethylbenzene	
	1,1-Dichloroethane	Methylene Chloride	
	1,1-Dichloroethene	Tetrachloroethene	
	1,2-Dichloroethane	Toluene	
	1,2-Dichloroethane-d4 (Surr)	Toluene-d8 (Surr)	
	2-Butanone (MEK)	trans-1,2-Dichloroethene	
	4-Bromofluorobenzene (Surr)	Trichloroethene	
	Acetone	Trichlorofluoromethane	
	Benzene	Vinyl Chloride	
	Carbon Tetrachloride	Xylenes (Total)	
	Chloroform		

Notes:

[1] Metal analyses include total and dissolved fractions

[2] Radionuclides by Method 901.1: Actinium-228, Americium-241, Antimony-125, Barium-133, Cesium-134, Cesium-137, Cobalt-57, Cobalt-60, Europium-152, Europium-154, Europium-155, Manganese-54, Potassium-40, Sodium-22.

MEK - Methyl Ethyl Ketone

Laboratories: Test America, St. Louis; Test America, Denver; Test America, Irvine

TABLE 8
GROUNDWATER SCREENING REFERENCE VALUES SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Radiochemistry	Antimony-125	300	pCi/L	Primary MCL [a]
Radiochemistry	Barium-133	1520	pCi/L	Primary MCL [b]
Radiochemistry	Barium-137m	2150000	pCi/L	Primary MCL [b]
Radiochemistry	Carbon-14	2000	pCi/L	Primary MCL [a]
Radiochemistry	Cesium-134	80	pCi/L	Primary MCL [a]
Radiochemistry	Cesium-137	200	pCi/L	Primary MCL [a]
Radiochemistry	Cobalt-57	1000	pCi/L	Primary MCL [a]
Radiochemistry	Cobalt-60	100	pCi/L	Primary MCL [a]
Radiochemistry	Europium-152	200	pCi/L	Primary MCL [a]
Radiochemistry	Gross alpha	15	pCi/L	Primary MCL
Radiochemistry	Gross beta	50	pCi/L	Cal MCL
Radiochemistry	Gross beta	4	mrem/yr	Primary MCL
Radiochemistry	Iodine-129	1	pCi/L	Primary MCL [a]
Radiochemistry	Manganese-54	300	pCi/L	Primary MCL [a]
Radiochemistry	Neptunium-236	5960	pCi/L	Primary MCL [b]
Radiochemistry	Niobium-94	707	pCi/L	Primary MCL [b]
Radiochemistry	Radium-226/228	5	pCi/L	Primary MCL
Radiochemistry	Sodium-22	400	pCi/L	Primary MCL [a]
Radiochemistry	Strontium-90	8	pCi/L	Primary MCL
Radiochemistry	Thulium-171	1000	pCi/L	Primary MCL [a]
Radiochemistry	Tin-126	293	pCi/L	Primary MCL [b]
Radiochemistry	Tritium	20000	pCi/L	Primary MCL
Radiochemistry	Uranium-233/234	20	pCi/L	Cal MCL
Radiochemistry	Uranium-235	20	pCi/L	Cal MCL
Radiochemistry	Uranium-238	20	pCi/L	Cal MCL
Halogenated Ethenes	1,2-Dichloroethenes	130	ug/L	SWGW RBSL
Halogenated Ethenes	Tetrachloroethene	5	ug/L	Primary MCL
Halogenated Ethenes	Trichloroethene	5	ug/L	Primary MCL
Halogenated Ethenes	cis-1,2-Dichloroethene	6	ug/L	Cal MCL
Halogenated Ethenes	trans-1,2-Dichloroethene	10	ug/L	Cal MCL
Halogenated Ethenes	1,1-Dichloroethene	6	ug/L	Cal MCL
Halogenated Ethenes	Vinyl chloride	0.5	ug/L	Cal MCL
Halogenated Ethanes	1,1,2,2-Tetrachloroethane	1	ug/L	Cal MCL
Halogenated Ethanes	1,1,2-Trichloroethane	5	ug/L	Primary MCL
Halogenated Ethanes	1,1,1-Trichloroethane	200	ug/L	Primary MCL
Halogenated Ethanes	1,2-Dichloroethane	0.5	ug/L	Cal MCL
Halogenated Ethanes	1,1-Dichloroethane	5	ug/L	Cal MCL
Halogenated Ethanes	Chloroethane	16	ug/L	Taste/Odor
Halogenated Ethanes	1,2-Dibromoethane	0.05	ug/L	Primary MCL
Halogenated Ethanes	1,1,2-Trichloro-1,2,2-trifluoroethane	1200	ug/L	Cal MCL
Halogenated Ethanes	1,2-Dichloro-1,1,2-trifluoroethane	190000	ug/L	SWGW RBSL
Halogenated Ethanes	2,2-Dichloro-1,1,1-trifluoroethane	190000	ug/L	SWGW RBSL
Halogenated Methanes	Carbon Tetrachloride	0.5	ug/L	Cal MCL
Halogenated Methanes	Chloroform	80	ug/L	Primary MCL
Halogenated Methanes	Methylene chloride	5	ug/L	Primary MCL
Halogenated Methanes	Chloromethane	5.7	ug/L	SWGW RBSL
Halogenated Methanes	Trichlorofluoromethane	150	ug/L	Cal MCL
Halogenated Methanes	Dichlorodifluoromethane	1000	ug/L	Notification Level
Halogenated Methanes	Bromochloromethane	34000	ug/L	Taste/Odor
Halogenated Methanes	Bromodichloromethane	80	ug/L	Primary MCL
Halogenated Methanes	Bromoform	80	ug/L	Primary MCL
Halogenated Methanes	Bromomethane	8.8	ug/L	SWGW RBSL
Halogenated Methanes	Dibromochloromethane	80	ug/L	Primary MCL

TABLE 8
GROUNDWATER SCREENING REFERENCE VALUES SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Non-Halogenated VOCs	2-Heptanone	280	ug/L	Taste/Odor
Non-Halogenated VOCs	Benzyl chloride	12	ug/L	Taste/Odor
Non-Halogenated VOCs	Cumene	770	ug/L	Notification Level
Non-Halogenated VOCs	Ethanol	760000	ug/L	Taste/Odor
Non-Halogenated VOCs	Ethyl acetate	2600	ug/L	Taste/Odor
Non-Halogenated VOCs	Ethyl ether	750	ug/L	Taste/Odor
Non-Halogenated VOCs	Methanol	740000	ug/L	Taste/Odor
Non-Halogenated VOCs	m-Xylene & p-Xylene	1750	ug/L	Cal MCL
Non-Halogenated VOCs	n-Hexane	6.4	ug/L	Taste/Odor
Non-Halogenated VOCs	Pentanal	17	ug/L	Taste/Odor
Non-Halogenated VOCs	sec-Butyl alcohol	19000	ug/L	Taste/Odor
Non-Halogenated VOCs	tert-Butyl alcohol	12	ug/L	Notification Level
Non-Halogenated VOCs	1,3,5-Trimethylbenzene	330	ug/L	Notification Level
Non-Halogenated VOCs	1,2,4-Trimethylbenzene	330	ug/L	Notification Level
Non-Halogenated VOCs	2-Hexanone	250	ug/L	Taste/Odor
Non-Halogenated VOCs	Acetone	20000	ug/L	Taste/Odor
Non-Halogenated VOCs	Acetonitrile	300000	ug/L	Taste/Odor
Non-Halogenated VOCs	Acrolein	110	ug/L	Taste/Odor
Non-Halogenated VOCs	Acrylonitrile	910	ug/L	Taste/Odor
Non-Halogenated VOCs	Benzene	1	ug/L	Cal MCL
Non-Halogenated VOCs	Carbon Disulfide	160	ug/L	Notification Level
Non-Halogenated VOCs	Ethane	7500	ug/L	Taste/Odor
Non-Halogenated VOCs	Ethylbenzene	300	ug/L	Cal MCL
Non-Halogenated VOCs	Ethylene	39	ug/L	Taste/Odor
Non-Halogenated VOCs	Isopropanol	160000	ug/L	Taste/Odor
Non-Halogenated VOCs	m-Xylene	1750	ug/L	Cal MCL
Non-Halogenated VOCs	Methacrylonitrile	2100	ug/L	Taste/Odor
Non-Halogenated VOCs	Methane	3100	ug/L	SWGW RBSL
Non-Halogenated VOCs	Methyl ethyl ketone	3800	ug/L	SWGW RBSL
Non-Halogenated VOCs	Methyl isobutyl ketone (MIBK)	120	ug/L	Notification Level
Non-Halogenated VOCs	Methyl methacrylate	25	ug/L	Taste/Odor
Non-Halogenated VOCs	Methyl tert-butyl ether	5	ug/L	Secondary MCL
Non-Halogenated VOCs	n-Butylbenzene	260	ug/L	Notification Level
Non-Halogenated VOCs	n-Propylbenzene	260	ug/L	Notification Level
Non-Halogenated VOCs	Naphthalene	17	ug/L	Notification Level
Non-Halogenated VOCs	o + p Xylene	1750	ug/L	Cal MCL
Non-Halogenated VOCs	o-Xylene	1750	ug/L	Cal MCL
Non-Halogenated VOCs	sec-Butylbenzene	260	ug/L	Notification Level
Non-Halogenated VOCs	Styrene	100	ug/L	Primary MCL
Non-Halogenated VOCs	tert-Butylbenzene	260	ug/L	Notification Level
Non-Halogenated VOCs	Toluene	150	ug/L	Cal MCL
Non-Halogenated VOCs	Vinyl acetate	88	ug/L	Taste/Odor
Non-Halogenated VOCs	Xylenes, Total	1750	ug/L	Cal MCL
Halogenated Benzenes	1,2,3-Trichlorobenzene	2.1	ug/L	SWGW RBSL
Halogenated Benzenes	1,2,4-Trichlorobenzene	5	ug/L	Cal MCL
Halogenated Benzenes	1,2-Dichlorobenzene	600	ug/L	Primary MCL
Halogenated Benzenes	1,3-Dichlorobenzene	600	ug/L	Archived Advisory Level
Halogenated Benzenes	1,4-Dichlorobenzene	5	ug/L	Cal MCL
Halogenated Benzenes	Chlorobenzene	70	ug/L	Cal MCL
Halogenated Propene/Propanes	1,2,3-Trichloropropane	0.005	ug/L	Notification Level
Halogenated Propene/Propanes	1,2-Dibromo-3-chloropropane	0.2	ug/L	Primary MCL
Halogenated Propene/Propanes	1,2-Dichloropropane	5	ug/L	Primary MCL
Halogenated Propene/Propanes	1,3-Dichloropropane	130	ug/L	SWGW RBSL

TABLE 8
GROUNDWATER SCREENING REFERENCE VALUES SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Halogenated Propene/Propanes	1,3-Dichloropropene	0.5	ug/L	Cal MCL
Halogenated Propene/Propanes	Allyl chloride	8.9	ug/L	Taste/Odor
Halogenated Propene/Propanes	cis-1,3-Dichloropropene	0.5	ug/L	Cal MCL
Halogenated Propene/Propanes	trans-1,3-Dichloropropene	0.81	ug/L	SWGW RBSL
Other Halogenated VOCs	o-Chlorotoluene	140	ug/L	Notification Level
Other Halogenated VOCs	p-Chlorotoluene	140	ug/L	Notification Level
1,4-Dioxane	1,4-Dioxane	1	ug/L	Notification Level
SVOC	Diphenyl ether	630	ug/L	SWGW RBSL
SVOC	p-Cresol	63	ug/L	SWGW RBSL
SVOC	p-Dinitrobenzene	1.3	ug/L	SWGW RBSL
SVOC	Diazinon	1.2	ug/L	Notification Level
SVOC	Diethyl phthalate	10000	ug/L	SWGW RBSL
SVOC	Ethylene glycol	14000	ug/L	Notification Level
SVOC	Formaldehyde	100	ug/L	Notification Level
SVOC	Hydrazine	160000	ug/L	Taste/Odor
SVOC	m-Cresol	37	ug/L	Taste/Odor
SVOC	o-Cresol	630	ug/L	SWGW RBSL
SVOC	1,2,3-Trichloropropene	0.005	ug/L	Notification Level
SVOC	1,3-Dinitrobenzene	1.3	ug/L	SWGW RBSL
SVOC	2,4,6-Trichlorophenol	2.1	ug/L	SWGW RBSL
SVOC	2,4-Dimethylphenol	100	ug/L	Archived Advisory Level
SVOC	2,6-Dinitrotoluene	0.22	ug/L	SWGW RBSL
SVOC	2-Chlorophenol	63	ug/L	SWGW RBSL
SVOC	3,3'-Dichlorobenzidine	0.12	ug/L	SWGW RBSL
SVOC	4,6-Dinitro-o-cresol	1.3	ug/L	SWGW RBSL
SVOC	Aniline	65000	ug/L	Taste/Odor
SVOC	Benzidine	0.0003	ug/L	SWGW RBSL
SVOC	Benzoic acid	50000	ug/L	SWGW RBSL
SVOC	bis(2-Chloroethoxy)methane	38	ug/L	SWGW RBSL
SVOC	bis(2-Chloroethyl) ether	360	ug/L	Taste/Odor
SVOC	bis(2-Ethylhexyl) phthalate	4	ug/L	Cal MCL
SVOC	Butyl benzyl phthalate	78	ug/L	SWGW RBSL
SVOC	Di-n-butyl phthalate	1300	ug/L	SWGW RBSL
SVOC	Di-n-octyl phthalate	500	ug/L	SWGW RBSL
SVOC	Dimethyl phthalate	130000	ug/L	SWGW RBSL
SVOC	Hexachlorobenzene	1	ug/L	Primary MCL
SVOC	Hexachlorocyclopentadiene	50	ug/L	Primary MCL
SVOC	Hexachloroethane	10	ug/L	Taste/Odor
SVOC	Isophorone	5400	ug/L	Taste/Odor
SVOC	n-Nitrosodi-n-propylamine	0.01	ug/L	Notification Level
SVOC	n-Nitrosodiethylamine	0.01	ug/L	Notification Level
SVOC	n-Nitrosodiphenylamine	16	ug/L	SWGW RBSL
SVOC	Nitrobenzene	110	ug/L	Taste/Odor
SVOC	o-Toluidine	11000	ug/L	Taste/Odor
SVOC	Pentachloronitrobenzene	20	ug/L	Archived Advisory Level
SVOC	Pentachlorophenol	1	ug/L	Primary MCL
SVOC	Phenol	4200	ug/L	Archived Advisory Level
SVOC	Pyridine	950	ug/L	Taste/Odor
PAH	2-Methylnaphthalene	50	ug/L	SWGW RBSL
PAH	Anthracene	3800	ug/L	SWGW RBSL
PAH	Benzo(a)pyrene	0.2	ug/L	Primary MCL
PAH	Phenanthrene	3800	ug/L	SWGW RBSL
PAH	Pyrene	380	ug/L	SWGW RBSL

TABLE 8
GROUNDWATER SCREENING REFERENCE VALUES SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
NDMA	n-Nitrosodimethylamine	0.01	ug/L	Notification Level
Energetics	Perchlorate	6	ug/L	Cal MCL
Energetics	2,4,6-Trinitrotoluene	1	ug/L	Notification Level
Energetics	HMX	350	ug/L	Notification Level
Energetics	RDX	0.3	ug/L	Notification Level
TPH	Fuel Hydrocarbons, C4-C12, as heavy Hydrocarbons	500	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C6-C14, as JP-4	1800	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C6-C15, as JP-4	1800	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C6-C16, as JP-4	1800	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C6-C16, C21-C24, as JP-4	1800	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C6-C7	500	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C7-C10, as gasoline	5	ug/L	Taste/Odor
TPH	Fuel Hydrocarbons, C7-C14, as JP-4	1800	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C7-C16, as JP-4	1800	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C8-C10, as gasoline	5	ug/L	Taste/Odor
TPH	Fuel Hydrocarbons, C8-C12, as heavy Hydrocarbons	1800	ug/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C8-C14, as heavy Hydrocarbons	1800	ug/L	SWGW RBSL
TPH	Gasoline Range Organics (C4-C12)	5	ug/L	Taste/Odor
TPH	Gasoline Range Organics (C6-C14)	5	ug/L	Taste/Odor
TPH	Gasoline Range Organics (C7-C12)	5	ug/L	Taste/Odor
TPH	Diesel Range Organics	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C12-C14)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C13-C22)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C14-C20)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C15-C20)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C20-C30)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C21-C24)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C21-C30)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C8-C11)	100	ug/L	Taste/Odor
TPH	Diesel Range Organics (C8-C30)	100	ug/L	Taste/Odor
TPH	Fuel Hydrocarbons, C6-C17, as JP-4	1800	ug/L	SWGW RBSL
TPH	Gasoline Range Organics (C8-C11)	1800	ug/L	SWGW RBSL
TPH	Jet Fuel 4 (C6-C13)	1800	ug/L	SWGW RBSL
TPH	Kerosene (C10-C12)	1800	ug/L	SWGW RBSL
TPH	Kerosene (C10-C14)	1800	ug/L	SWGW RBSL
TPH	Kerosene Range Organics (C11-C14)	1800	ug/L	SWGW RBSL
TPH	Total Petroleum Hydrocarbons (as Kerosene)	1800	ug/L	SWGW RBSL
TPH	Gasoline Range Organics	5	ug/L	Taste/Odor
TPH	Gasoline Range Organics (C6-C12)	5	ug/L	Taste/Odor
PCB	Aroclor 1016	0.5	ug/L	Primary MCL
PCB	Polychlorinated biphenyls	0.5	ug/L	Primary MCL
PCB	Aroclor 1254	0.5	ug/L	Primary MCL
PCB	Aroclor 1260	0.5	ug/L	Primary MCL
PCB	Aroclor 1221	0.5	ug/L	Primary MCL
PCB	Aroclor 1232	0.5	ug/L	Primary MCL
PCB	Aroclor 1242	0.5	ug/L	Primary MCL
PCB	Aroclor 1248	0.5	ug/L	Primary MCL
Herbicides	2,4,5-Trichlorophenoxypropionic acid (Silvex)	50	ug/L	Cal MCL
Herbicides	2,4-Dichlorophenoxyacetic Acid (2,4-D)	130	ug/L	SWGW RBSL
Herbicides	2,4,5-T	130	ug/L	SWGW RBSL
Herbicides	Dalapon	200	ug/L	Cal MCL
Herbicides	Dinoseb	7	ug/L	Primary MCL
Herbicides	Propachlor	90	ug/L	Notification Level

TABLE 8
GROUNDWATER SCREENING REFERENCE VALUES SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Pesticides	Kepone	0.0093	ug/L	SWGW RBSL
Pesticides	Endosulfan I	75	ug/L	SWGW RBSL
Pesticides	Endosulfan II	75	ug/L	SWGW RBSL
Pesticides	gamma-BHC	0.2	ug/L	Primary MCL
Pesticides	Methyl parathion	2	ug/L	Archived Advisory Level
Pesticides	p,p'-Methoxychlor	30	ug/L	Cal MCL
Pesticides	Parathion	40	ug/L	Archived Advisory Level
Pesticides	Endosulfan sulfate	75	ug/L	SWGW RBSL
Pesticides	4,4'-DDE	0.44	ug/L	SWGW RBSL
Pesticides	Aldrin	0.002	ug/L	Archived Advisory Level
Pesticides	alpha-BHC	0.015	ug/L	Archived Advisory Level
Pesticides	beta-BHC	0.025	ug/L	Archived Advisory Level
Pesticides	Chlordane	0.1	ug/L	Cal MCL
Pesticides	Dieldrin	0.002	ug/L	Archived Advisory Level
Pesticides	Dimethoate	1	ug/L	Archived Advisory Level
Pesticides	4,4'-DDD	0.62	ug/L	SWGW RBSL
Pesticides	Toxaphene	3	ug/L	Primary MCL
Pesticides	Endrin	2	ug/L	Primary MCL
Pesticides	Heptachlor	0.01	ug/L	Cal MCL
Pesticides	Heptachlor epoxide	0.01	ug/L	Cal MCL
Dioxins/Furans	2,3,7,8-TCDD	0.00003	ug/L	Primary MCL
Metals	Aluminum, Dissolved	13000	ug/L	SWGW RBSL
Metals	Boron, Dissolved	340	ug/L	SSFL Comparison
Metals	Tin, Dissolved	2.4	ug/L	SSFL Comparison
Metals	Antimony, Dissolved	2.5	ug/L	SSFL Comparison
Metals	Arsenic, Dissolved	7.7	ug/L	SSFL Comparison
Metals	Barium, Dissolved	150	ug/L	SSFL Comparison
Metals	Beryllium, Dissolved	0.14	ug/L	SSFL Comparison
Metals	Cadmium, Dissolved	0.2	ug/L	SSFL Comparison
Metals	Chromium, Dissolved	14	ug/L	SSFL Comparison
Metals	Cobalt, Dissolved	1.9	ug/L	SSFL Comparison
Metals	Copper, Dissolved	4.7	ug/L	SSFL Comparison
Metals	Hexavalent Chromium, Dissolved	38	ug/L	SWGW RBSL
Metals	Iron, Dissolved	4100	ug/L	SSFL Comparison
Metals	Lead, Dissolved	11	ug/L	SSFL Comparison
Metals	Magnesium, Dissolved	77000	ug/L	SSFL Comparison
Metals	Manganese, Dissolved	150	ug/L	SSFL Comparison
Metals	Mercury, Dissolved	0.063	ug/L	SSFL Comparison
Metals	Molybdenum, Dissolved	2.2	ug/L	SSFL Comparison
Metals	Nickel, Dissolved	17	ug/L	SSFL Comparison
Metals	Potassium, Dissolved	9600	ug/L	SSFL Comparison
Metals	Selenium, Dissolved	1.6	ug/L	SSFL Comparison
Metals	Silver, Dissolved	0.17	ug/L	SSFL Comparison
Metals	Sodium, Dissolved	190000	ug/L	SSFL Comparison
Metals	Strontium, Dissolved	800	ug/L	SSFL Comparison
Metals	Thallium, Dissolved	0.13	ug/L	SSFL Comparison
Metals	Vanadium, Dissolved	2.6	ug/L	SSFL Comparison
Metals	Zinc, Dissolved	6300	ug/L	SSFL Comparison
Metals	Aluminum	200	ug/L	Secondary MCL
Metals	Antimony	2.5	ug/L	SSFL Comparison
Metals	Arsenic	7.7	ug/L	SSFL Comparison
Metals	Barium	150	ug/L	SSFL Comparison
Metals	Beryllium	0.14	ug/L	SSFL Comparison

TABLE 8
GROUNDWATER SCREENING REFERENCE VALUES SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Metals	Boron	340	ug/L	SSFL Comparison
Metals	Cadmium	0.2	ug/L	SSFL Comparison
Metals	Chromium	14	ug/L	SSFL Comparison
Metals	Cobalt	1.9	ug/L	SSFL Comparison
Metals	Copper	4.7	ug/L	SSFL Comparison
Metals	Hexavalent Chromium	14	ug/L	SSFL Comparison
Metals	Iron	4100	ug/L	SSFL Comparison
Metals	Lead	11	ug/L	SSFL Comparison
Metals	Magnesium	77000	ug/L	SSFL Comparison
Metals	Manganese	150	ug/L	SSFL Comparison
Metals	Mercury	0.063	ug/L	SSFL Comparison
Metals	Molybdenum	2.2	ug/L	SSFL Comparison
Metals	Nickel	17	ug/L	SSFL Comparison
Metals	Potassium	9600	ug/L	SSFL Comparison
Metals	Selenium	1.6	ug/L	SSFL Comparison
Metals	Silver	0.17	ug/L	SSFL Comparison
Metals	Sodium	190000	ug/L	SSFL Comparison
Metals	Strontium	800	ug/L	SSFL Comparison
Metals	Thallium	0.13	ug/L	SSFL Comparison
Metals	Tin	2.4	ug/L	SSFL Comparison
Metals	Vanadium	2.6	ug/L	SSFL Comparison
Metals	Zinc	6300	ug/L	SSFL Comparison
Inorganics	Chlorine	4000	ug/L	Primary MCL
Inorganics	Nitrate-NO3	45000	ug/L	Cal MCL
Inorganics	Chloride	250000	ug/L	Secondary MCL
Inorganics	Chlorate	0.8	ug/L	Notification Level
Inorganics	Cyanides	150	ug/L	Cal MCL
Inorganics	Fluoride	800	ug/L	SSFL Comparison
Inorganics	Nitrate-N	10000	ug/L	Primary MCL
Inorganics	Nitrite-N	1000	ug/L	Primary MCL
Inorganics	Sulfate	376000	ug/L	SSFL Comparison
Inorganics	Total Dissolved Solids	500000	ug/L	Recommended SMCL
Inorganics	Total Dissolved Solids	1000000	ug/L	Upper SMCL
Inorganics	Total Dissolved Solids	1500000	ug/L	Short-Term SMCL
General Parameters	Formic Acid	1700000	ug/L	Taste/Odor
General Parameters	Turbidity	5	NTU	Secondary MCL
General Parameters	Specific conductivity	900	umhos/cm	Recommended SMCL
General Parameters	Specific conductivity	1600	umhos/cm	Upper SMCL
General Parameters	Specific conductivity	2200	umhos/cm	Short-Term SMCL

NOTES AND ABBREVIATIONS

VOCs - volatile organic compounds
SVOC - semi volatile organic compound
PAH - polycyclic aromatic hydrocarbon
NDMA - n-Nitrosodimethylamine
TPH - total petroleum hydrocarbons
PCB - polychlorinated biphenyl

Primary MCL - Primary Maximum Contaminant Level
Cal MCL - California Primary Maximum Contaminant Level
Secondary MCL - Secondary Maximum Contaminant Level
SMCL - Secondary Maximum Contaminant Level
Taste/Odor - Taste/Odor Threshold
SSFL Comparison - site-specific values for metals developed by DTSC
SWGW RBSL - Site-Wide Groundwater Risk-Based Screening Level proposed in GW RI Report (MWH, 2009)

ug/L - micrograms per liter
pCi/L - picocuries per liter
mrem/yr - millirem per year
NTU - nephelometric turbidity units
umhos/cm - micromhos per centimeter

(a) - isotope-specific MCL for beta emitters based on Primary MCL of 4 mrem/yr critical organ dose limit for gross beta (EPA, 2000)
(b) - isotope-specific MCL for beta emitters based on the 4 mrem/yr effective dose equivalent for gross beta (EPA, 2000)

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
1,1,2-Trichloro-1,2,2-trifluoroethane, Total	DD-144	N	Y	11	J	µg/L	1200	µg/L	N
Acetone	DS-47	N	Y	2.8	J	µg/L	20000	µg/L	N
	RD-27	N	Y	3.6	J	µg/L	20000	µg/L	N
	RD-30	Y	Y	4.5	J	µg/L	20000	µg/L	N
	RD-54C	N	Y	19		µg/L	20000	µg/L	N
	RD-98	Y	Y	2.7	J	µg/L	20000	µg/L	N
Actinium-228, Dissolved	RD-30	Y	Y	-2.848		pCi/L	A	A	A
	RD-34C	N	Y	51.299999		pCi/L	A	A	A
	RD-94	N	Y	79.599998		pCi/L	A	A	A
	RS-25	N	Y	44.25		pCi/L	A	A	A
Actinium-228, Total	DD-141	Y	Y	43.150002		pCi/L	A	A	A
	PZ-116	N	Y	25.73		pCi/L	A	A	A
	RD-27	N	Y	69.879997		pCi/L	A	A	A
	RD-30	Y	Y	15.2		pCi/L	A	A	A
	RD-88	N	Y	19.83		pCi/L	A	A	A
	RD-96	N	Y	55.400002		pCi/L	A	A	A
	RS-18	N	Y	6.6750002		pCi/L	A	A	A
Aluminum, Dissolved	DD-141	Y	Y	0.02		mg/l	0.2	mg/L	N
	RD-22	Y	Y	0.038		mg/l	0.2	mg/L	N
	RD-23	Y	Y	0.05		mg/l	0.2	mg/L	N
	DD-140	Y	Y	0.028		mg/l	0.2	mg/L	N
	DD-143	Y	Y	0.02		mg/l	0.2	mg/L	N
	DD-144	Y	Y	0.54		mg/l	0.2	mg/L	Y
	DS-44	Y	Y	0.071		mg/l	0.2	mg/L	N
	RS-25	Y	Y	0.018		mg/l	0.2	mg/L	N
	RS-27	Y	Y	0.078		mg/l	0.2	mg/L	N
Aluminum, Total	C-08	Y	Y	0.021		mg/l	0.2	mg/L	N
	DD-143	N	Y	1.8	J+	mg/l	0.2	mg/L	Y
	PZ-120	Y	Y	0.11		mg/l	0.2	mg/L	N
	RD-22	Y	Y	0.059	J+	mg/l	0.2	mg/L	N
	RS-54	Y	Y	0.027		mg/l	0.2	mg/L	N
	DD-139	Y	Y	0.19		mg/l	0.2	mg/L	N
	DD-140	Y	Y	0.11		mg/l	0.2	mg/L	N
	DD-142	Y	Y	0.21	J+	mg/l	0.2	mg/L	Y
	DD-144	Y	Y	3.7	J+	mg/l	0.2	mg/L	Y
	DD-145	Y	Y	0.5	J+	mg/l	0.2	mg/L	Y
	DS-43	Y	Y	0.35	J+	mg/l	0.2	mg/L	Y
	DS-44	Y	Y	1.1	J+	mg/l	0.2	mg/L	Y
	DS-45	Y	Y	0.072		mg/l	0.2	mg/L	N
	DS-46	Y	Y	0.11		mg/l	0.2	mg/L	N
	DS-47	Y	Y	0.11	J+	mg/l	0.2	mg/L	N
	PZ-105	Y	Y	0.4		mg/l	0.2	mg/L	Y
	PZ-116	Y	Y	0.079		mg/l	0.2	mg/L	N
	RD-21	Y	Y	0.47		mg/l	0.2	mg/L	Y
	RD-54A	Y	Y	2		mg/l	0.2	mg/L	Y
	RS-25	Y	Y	6.1		mg/l	0.2	mg/L	Y
	RS-27	Y	Y	1.6		mg/l	0.2	mg/L	Y
Americium-241, Dissolved	RD-30	Y	Y	0.3263		pCi/L	A	A	A
	RS-25	Y	Y	8.1660004		pCi/L	A	A	A
Americium-241, Total	DD-141	Y	Y	-7.355		pCi/L	A	A	A
	RD-27	Y	Y	10.36		pCi/L	A	A	A
	RD-30	Y	Y	1.595		pCi/L	A	A	A
	RS-18	Y	Y	-1.234		pCi/L	A	A	A
	PZ-116	Y	Y	8.0410004		pCi/L	A	A	A
	RD-88	Y	Y	8.4099998		pCi/L	A	A	A
Antimony, Dissolved	PZ-105	N	Y	0.0014		mg/l	0.0025	mg/L	N
	PZ-116	Y	Y	0.0006	J+	mg/l	0.0025	mg/L	N
	PZ-120	Y	Y	0.0007	J+	mg/l	0.0025	mg/L	N
	DS-45	Y	Y	0.0008	J+	mg/l	0.0025	mg/L	N
	RS-27	Y	Y	0.0009		mg/l	0.0025	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Antimony, Total	DD-144	Y	Y	0.0011	J+	mg/l	0.0025	mg/L	N
	DD-145	Y	Y	0.0005	J+	mg/l	0.0025	mg/L	N
	DS-47	Y	Y	0.0006	J+	mg/l	0.0025	mg/L	N
	PZ-105	Y	Y	0.0014		mg/l	0.0025	mg/L	N
	PZ-120	Y	Y	0.001	J+	mg/l	0.0025	mg/L	N
	RD-07	Y	Y	0.0004	J+	mg/l	0.0025	mg/L	N
	RS-54	N	Y	0.0047	J+	mg/l	0.0025	mg/L	Y
	DS-45	Y	Y	0.0008	J+	mg/l	0.0025	mg/L	N
	PZ-116	Y	Y	0.0009	J+	mg/l	0.0025	mg/L	N
	RS-25	Y	Y	0.0005		mg/l	0.0025	mg/L	N
	RS-27	Y	Y	0.0009		mg/l	0.0025	mg/L	N
Antimony-125, Dissolved	RD-30	Y	Y	4.6009998		pCi/L	300	pCi/L	N
	RS-25	Y	Y	7.9590001		pCi/L	300	pCi/L	N
Antimony-125, Total	DD-141	Y	Y	11.6		pCi/L	300	pCi/L	N
	PZ-116	N	Y	12.96		pCi/L	300	pCi/L	N
	RD-27	N	Y	11.9		pCi/L	300	pCi/L	N
	RD-30	Y	Y	18.58		pCi/L	300	pCi/L	N
	RD-88	N	Y	16.08		pCi/L	300	pCi/L	N
	RS-18	N	Y	2.681		pCi/L	300	pCi/L	N
Arsenic, Dissolved	C-08	N	Y	0.002		mg/l	0.0077	mg/L	N
	DD-140	N	Y	0.003		mg/l	0.0077	mg/L	N
	DD-141	N	Y	0.0006		mg/l	0.0077	mg/L	N
	PZ-104	N	Y	0.0048		mg/l	0.0077	mg/L	N
	PZ-116	N	Y	0.0013		mg/l	0.0077	mg/L	N
	PZ-120	N	Y	0.0018		mg/l	0.0077	mg/L	N
	RD-96	N	Y	0.0006		mg/l	0.0077	mg/L	N
	DS-45	Y	Y	0.001		mg/l	0.0077	mg/L	N
	PZ-005	Y	Y	0.0008		mg/l	0.0077	mg/L	N
	RS-25	Y	Y	0.0004		mg/l	0.0077	mg/L	N
	RS-27	Y	Y	0.0046		mg/l	0.0077	mg/L	N
Arsenic, Total	C-08	N	Y	0.0021		mg/l	0.0077	mg/L	N
	DD-144	N	Y	0.0022		mg/l	0.0077	mg/L	N
	PZ-005	Y	Y	0.0015		mg/l	0.0077	mg/L	N
	PZ-104	N	Y	0.0061		mg/l	0.0077	mg/L	N
	PZ-120	N	Y	0.0019		mg/l	0.0077	mg/L	N
	RD-21	N	Y	0.0007		mg/l	0.0077	mg/L	N
	RD-54A	N	Y	0.005		mg/l	0.0077	mg/L	N
	RD-59A	N	Y	0.0011	J-	mg/l	0.0077	mg/L	N
	DS-45	Y	Y	0.0009		mg/l	0.0077	mg/L	N
	PZ-116	Y	Y	0.0009		mg/l	0.0077	mg/L	N
	RS-25	Y	Y	0.0014		mg/l	0.0077	mg/L	N
	RS-27	Y	Y	0.0044		mg/l	0.0077	mg/L	N
Barium, Dissolved	C-08	N	Y	0.051	J+	mg/l	0.15	mg/L	N
	DD-140	N	Y	0.025		mg/l	0.15	mg/L	N
	DD-145	N	Y	0.047	J+	mg/l	0.15	mg/L	N
	DS-43	N	Y	0.092		mg/l	0.15	mg/L	N
	PZ-104	N	Y	0.044		mg/l	0.15	mg/L	N
	DS-45	Y	Y	0.038	J+	mg/l	0.15	mg/L	N
	DS-46	Y	Y	0.046		mg/l	0.15	mg/L	N
	PZ-005	Y	Y	0.063		mg/l	0.15	mg/L	N
	RS-25	Y	Y	0.18		mg/l	0.15	mg/L	Y
	RS-27	Y	Y	0.033		mg/l	0.15	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Barium, Total	C-08	N	Y	0.05		mg/l	0.15	mg/L	N
	DD-143	N	Y	0.051	J-	mg/l	0.15	mg/L	N
	DD-144	N	Y	0.1	J+	mg/l	0.15	mg/L	N
	DD-145	N	Y	0.05	J+	mg/l	0.15	mg/L	N
	DS-43	N	Y	0.11	J+	mg/l	0.15	mg/L	N
	PZ-120	N	Y	0.018	J+	mg/l	0.15	mg/L	N
	RD-33C	N	Y	0.077		mg/l	0.15	mg/L	N
	RD-34B	N	Y	0.008	J+	mg/l	0.15	mg/L	N
	RD-54A	N	Y	0.058		mg/l	0.15	mg/L	N
	DS-45	Y	Y	0.039	J+	mg/l	0.15	mg/L	N
	DS-46	Y	Y	0.05	J+	mg/l	0.15	mg/L	N
	PZ-116	Y	Y	0.038	J+	mg/l	0.15	mg/L	N
	RS-25	Y	Y	0.21		mg/l	0.15	mg/L	Y
	RS-27	Y	Y	0.044		mg/l	0.15	mg/L	N
Barium-133, Dissolved	RD-30	Y	Y	3.6240001		pCi/L	1520	pCi/L	N
	RS-25	Y	Y	-1.875		pCi/L	1520	pCi/L	N
Barium-133, Total	DD-141	Y	Y	-1.6		pCi/L	1520	pCi/L	N
	RD-27	Y	Y	-4.865		pCi/L	1520	pCi/L	N
	RD-30	Y	Y	-8.134		pCi/L	1520	pCi/L	N
	RS-18	N	Y	1.258		pCi/L	1520	pCi/L	N
	PZ-116	Y	Y	-7.173		pCi/L	1520	pCi/L	N
	RD-88	Y	Y	7.1760001		pCi/L	1520	pCi/L	N
Beryllium, Dissolved	PZ-120	Y	Y	0.0002	J+	mg/l	0.00014	mg/L	Y
	RD-96	Y	Y	0.0001	J+	mg/l	0.00014	mg/L	N
Beryllium, Total	DD-144	Y	Y	0.0002		mg/l	0.00014	mg/L	Y
	PZ-104	Y	Y	0.0001		mg/l	0.00014	mg/L	N
	RD-54A	Y	Y	0.0002		mg/l	0.00014	mg/L	Y
Boron, Dissolved	DD-141	Y	Y	0.087		mg/l	0.34	mg/L	N
	RD-07	Y	Y	0.086		mg/l	0.34	mg/L	N
	RD-21	Y	Y	0.052		mg/l	0.34	mg/L	N
	RD-23	N	Y	0.048		mg/l	0.34	mg/L	N
	RD-33A	N	Y	0.02		mg/l	0.34	mg/L	N
	RD-33B	Y	Y	0.017		mg/l	0.34	mg/L	N
	RD-33C	Y	Y	0.029		mg/l	0.34	mg/L	N
	RD-34C	N	Y	0.022		mg/l	0.34	mg/L	N
	DD-139	Y	Y	0.033		mg/l	0.34	mg/L	N
	DD-140	Y	Y	0.025		mg/l	0.34	mg/L	N
	DD-142	Y	Y	0.48		mg/l	0.34	mg/L	Y
	DD-143	Y	Y	0.083		mg/l	0.34	mg/L	N
	DD-144	Y	Y	0.13		mg/l	0.34	mg/L	N
	DD-145	Y	Y	0.071		mg/l	0.34	mg/L	N
	DS-43	Y	Y	0.15		mg/l	0.34	mg/L	N
	DS-44	Y	Y	0.1		mg/l	0.34	mg/L	N
	DS-45	Y	Y	0.26		mg/l	0.34	mg/L	N
	DS-46	Y	Y	0.037		mg/l	0.34	mg/L	N
	DS-47	Y	Y	0.034		mg/l	0.34	mg/L	N
	PZ-005	Y	Y	0.15		mg/l	0.34	mg/L	N
	PZ-103	Y	Y	0.065		mg/l	0.34	mg/L	N
	PZ-104	Y	Y	0.13		mg/l	0.34	mg/L	N
	PZ-116	Y	Y	0.1		mg/l	0.34	mg/L	N
	PZ-120	Y	Y	1.1		mg/l	0.34	mg/L	Y
	RD-54A	Y	Y	0.021		mg/l	0.34	mg/L	N
	RD-59A	Y	Y	0.096		mg/l	0.34	mg/L	N
	RD-59B	Y	Y	0.068		mg/l	0.34	mg/L	N
	RD-59C	Y	Y	0.076		mg/l	0.34	mg/L	N
	RD-96	Y	Y	0.023		mg/l	0.34	mg/L	N
	RS-18	Y	Y	0.081		mg/l	0.34	mg/L	N
	RS-25	Y	Y	0.055		mg/l	0.34	mg/L	N
	RS-27	Y	Y	0.28		mg/l	0.34	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Boron, Total	RD-33A	N	Y	0.021		mg/l	0.34	mg/L	N
	DD-139	Y	Y	0.034		mg/l	0.34	mg/L	N
	DD-140	Y	Y	0.024		mg/l	0.34	mg/L	N
	DD-142	Y	Y	0.43		mg/l	0.34	mg/L	Y
	DD-144	Y	Y	0.15		mg/l	0.34	mg/L	N
	DD-145	Y	Y	0.081		mg/l	0.34	mg/L	N
	DS-43	Y	Y	0.14		mg/l	0.34	mg/L	N
	DS-45	Y	Y	0.26		mg/l	0.34	mg/L	N
	DS-46	Y	Y	0.036		mg/l	0.34	mg/L	N
	DS-47	Y	Y	0.039		mg/l	0.34	mg/L	N
	PZ-005	Y	Y	0.15		mg/l	0.34	mg/L	N
	PZ-103	Y	Y	0.065		mg/l	0.34	mg/L	N
	PZ-104	Y	Y	0.12		mg/l	0.34	mg/L	N
	PZ-105	Y	Y	0.14		mg/l	0.34	mg/L	N
	PZ-116	Y	Y	0.1		mg/l	0.34	mg/L	N
	RD-07	Y	Y	0.078		mg/l	0.34	mg/L	N
	RD-19	Y	Y	0.11		mg/l	0.34	mg/L	N
	RD-21	Y	Y	0.053		mg/l	0.34	mg/L	N
	RD-33B	Y	Y	0.02		mg/l	0.34	mg/L	N
	RD-33C	Y	Y	0.032		mg/l	0.34	mg/L	N
	RD-34B	Y	Y	0.019		mg/l	0.34	mg/L	N
	RD-54A	Y	Y	0.025		mg/l	0.34	mg/L	N
	RD-59A	Y	Y	0.085		mg/l	0.34	mg/L	N
	RD-59B	Y	Y	0.069		mg/l	0.34	mg/L	N
	RD-59C	Y	Y	0.075		mg/l	0.34	mg/L	N
	RD-96	Y	Y	0.027		mg/l	0.34	mg/L	N
	RS-18	Y	Y	0.082		mg/l	0.34	mg/L	N
	RS-25	Y	Y	0.058		mg/l	0.34	mg/L	N
	RS-27	Y	Y	0.29		mg/l	0.34	mg/L	N
Cadmium, Total	PZ-005	Y	Y	0.0008		mg/l	0.0002	mg/L	Y
	PZ-116	Y	Y	0.0005	J+	mg/l	0.0002	mg/L	Y
	RS-27	Y	Y	0.0012		mg/l	0.0002	mg/L	Y
Calcium, Dissolved	RD-34A	N	Y	140	J+	mg/l	A	A	A
	RD-59A	N	Y	130		mg/l	A	A	A
	DD-139	Y	Y	98		mg/l	A	A	A
	DD-140	Y	Y	93		mg/l	A	A	A
	DD-142	Y	Y	120		mg/l	A	A	A
	DD-143	Y	Y	150		mg/l	A	A	A
	DD-144	Y	Y	110		mg/l	A	A	A
	DD-145	Y	Y	120		mg/l	A	A	A
	DS-43	Y	Y	100		mg/l	A	A	A
	DS-44	Y	Y	96		mg/l	A	A	A
	DS-45	Y	Y	120		mg/l	A	A	A
	DS-46	Y	Y	110		mg/l	A	A	A
	DS-47	Y	Y	72		mg/l	A	A	A
	PZ-005	Y	Y	120		mg/l	A	A	A
	PZ-103	Y	Y	150		mg/l	A	A	A
	PZ-104	Y	Y	280		mg/l	A	A	A
	PZ-105	Y	Y	120		mg/l	A	A	A
	PZ-116	Y	Y	170		mg/l	A	A	A
	PZ-120	Y	Y	85		mg/l	A	A	A
	RD-96	Y	Y	100		mg/l	A	A	A
	RS-18	Y	Y	79		mg/l	A	A	A
	RS-25	Y	Y	80		mg/l	A	A	A
	RS-27	Y	Y	55		mg/l	A	A	A

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Calcium, Total	RD-22	N	Y	150		mg/l	A	A	A
	DD-139	Y	Y	98		mg/l	A	A	A
	DD-140	Y	Y	84		mg/l	A	A	A
	DD-142	Y	Y	94		mg/l	A	A	A
	DD-144	Y	Y	130	J+	mg/l	A	A	A
	DD-145	Y	Y	130		mg/l	A	A	A
	DS-43	Y	Y	83		mg/l	A	A	A
	DS-44	Y	Y	93	J-	mg/l	A	A	A
	DS-45	Y	Y	110		mg/l	A	A	A
	DS-46	Y	Y	100		mg/l	A	A	A
	DS-47	Y	Y	80		mg/l	A	A	A
	PZ-105	Y	Y	100		mg/l	A	A	A
	PZ-116	Y	Y	120		mg/l	A	A	A
	RD-07	Y	Y	77		mg/l	A	A	A
	RD-19	Y	Y	190		mg/l	A	A	A
	RD-21	Y	Y	95		mg/l	A	A	A
	RD-33B	Y	Y	24		mg/l	A	A	A
	RD-33C	Y	Y	69		mg/l	A	A	A
	RD-34A	Y	Y	160		mg/l	A	A	A
	RD-34B	Y	Y	2.8		mg/l	A	A	A
	RD-34C	Y	Y	45	J-	mg/l	A	A	A
	RD-54A	Y	Y	100		mg/l	A	A	A
	RD-59A	Y	Y	130		mg/l	A	A	A
	RD-59B	Y	Y	56		mg/l	A	A	A
	RD-59C	Y	Y	34		mg/l	A	A	A
	RD-96	Y	Y	110		mg/l	A	A	A
	RS-18	Y	Y	71		mg/l	A	A	A
	RS-25	Y	Y	85		mg/l	A	A	A
	RS-27	Y	Y	68		mg/l	A	A	A
	RS-54	Y	Y	100		mg/l	A	A	A
Cesium-134, Dissolved	RD-30	Y	Y	2.0039999		pCi/L	80	pCi/L	N
	RS-25	Y	Y	-5.615		pCi/L	80	pCi/L	N
Cesium-134, Total	DD-141	Y	Y	2.1210001		pCi/L	80	pCi/L	N
	RD-27	N	Y	4.3249998		pCi/L	80	pCi/L	N
	RD-30	Y	Y	-1.717		pCi/L	80	pCi/L	N
	RD-88	N	Y	6.177		pCi/L	80	pCi/L	N
	RS-18	N	Y	4.973		pCi/L	80	pCi/L	N
CESIUM-137, Dissolved	DS-44	Y	Y	10.4		pCi/L	200	pCi/L	N
	RD-30	Y	Y	-1.444		pCi/L	200	pCi/L	N
	RS-25	Y	Y	1.184		pCi/L	200	pCi/L	N
CESIUM-137, Total	DD-141	Y	Y	2.029		pCi/L	200	pCi/L	N
	PZ-116	N	Y	4.6900001		pCi/L	200	pCi/L	N
	RD-30	Y	Y	-2.199		pCi/L	200	pCi/L	N
Chloroform	RS-54	N	Y	16	J	µg/L	80	µg/L	N
Chromium, Dissolved	PZ-103	N	Y	0.0028		mg/l	0.014	mg/L	N
	PZ-120	Y	Y	0.0017		mg/l	0.014	mg/L	N
	PZ-005	Y	Y	0.0007		mg/l	0.014	mg/L	N
	RS-25	Y	Y	0.0005		mg/l	0.014	mg/L	N
Chromium, Total	C-08	Y	Y	0.0027		mg/l	0.014	mg/L	N
	DD-143	N	Y	0.0032		mg/l	0.014	mg/L	N
	DD-144	N	Y	0.0056		mg/l	0.014	mg/L	N
	DS-43	N	Y	0.001		mg/l	0.014	mg/L	N
	PZ-105	Y	Y	0.0013		mg/l	0.014	mg/L	N
	PZ-120	Y	Y	0.002		mg/l	0.014	mg/L	N
	RD-21	Y	Y	0.0009		mg/l	0.014	mg/L	N
	RD-22	N	Y	0.012		mg/l	0.014	mg/L	N
	RD-23	N	Y	0.03		mg/l	0.014	mg/L	Y
	RD-54A	N	Y	0.0051		mg/l	0.014	mg/L	N
	RD-64	Y	Y	0.0018		mg/l	0.014	mg/L	N
	RS-54	N	Y	0.053		mg/l	0.014	mg/L	Y
	DS-45	Y	Y	0.0007		mg/l	0.014	mg/L	N
	PZ-116	Y	Y	0.0018		mg/l	0.014	mg/L	N
	RS-25	Y	Y	0.0049		mg/l	0.014	mg/L	N
	RS-27	Y	Y	0.002		mg/l	0.014	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
cis-1,2-dichloroethene	C-08	N	Y	1.4		µg/L	6	µg/L	N
	PZ-108	N	Y	19		µg/L	6	µg/L	Y
Cobalt, Dissolved	C-08	N	Y	0.0003		mg/l	0.0019	mg/L	N
	DD-141	Y	Y	0.0006		mg/l	0.0019	mg/L	N
	DD-143	N	Y	0.0001		mg/l	0.0019	mg/L	N
	DD-144	N	Y	0.0005		mg/l	0.0019	mg/L	N
	PZ-103	N	Y	0.0001		mg/l	0.0019	mg/L	N
	PZ-104	N	Y	0.0066		mg/l	0.0019	mg/L	Y
	PZ-116	Y	Y	0.0001	J+	mg/l	0.0019	mg/L	N
	PZ-120	N	Y	0.0002	J+	mg/l	0.0019	mg/L	N
	DS-45	Y	Y	0.0008	J+	mg/l	0.0019	mg/L	N
	DS-46	Y	Y	0.0031		mg/l	0.0019	mg/L	Y
	PZ-005	Y	Y	0.0001		mg/l	0.0019	mg/L	N
	RS-25	Y	Y	0.0001	J+	mg/l	0.0019	mg/L	N
	RS-27	Y	Y	0.0005	J+	mg/l	0.0019	mg/L	N
Cobalt, Total	C-08	N	Y	0.0003	J+	mg/l	0.0019	mg/L	N
	DD-141	N	Y	0.0019		mg/l	0.0019	mg/L	N
	DD-143	N	Y	0.0008		mg/l	0.0019	mg/L	N
	DD-144	N	Y	0.002	J+	mg/l	0.0019	mg/L	Y
	PZ-005	Y	Y	0.0008		mg/l	0.0019	mg/L	N
	PZ-104	N	Y	0.0085		mg/l	0.0019	mg/L	Y
	PZ-105	N	Y	0.0003		mg/l	0.0019	mg/L	N
	RD-21	N	Y	0.0007		mg/l	0.0019	mg/L	N
	RD-22	N	Y	0.0004	J+	mg/l	0.0019	mg/L	N
	RD-34B	Y	Y	0.0001		mg/l	0.0019	mg/L	N
	RD-54A	N	Y	0.0054		mg/l	0.0019	mg/L	Y
	DS-45	Y	Y	0.001	J+	mg/l	0.0019	mg/L	N
	DS-46	Y	Y	0.0033	J+	mg/l	0.0019	mg/L	Y
	PZ-116	Y	Y	0.0003	J+	mg/l	0.0019	mg/L	N
	RS-25	Y	Y	0.0018	J+	mg/l	0.0019	mg/L	N
	RS-27	Y	Y	0.0009	J+	mg/l	0.0019	mg/L	N
Cobalt-57, Dissolved	RD-30	Y	Y	2.5090001		pCi/L	1000	pCi/L	N
	RS-25	Y	Y	3.2520001		pCi/L	1000	pCi/L	N
Cobalt-57, Total	DD-141	Y	Y	2.563		pCi/L	1000	pCi/L	N
	DD-143	N	Y	7.4299998		pCi/L	1000	pCi/L	N
	RD-27	Y	Y	2.299		pCi/L	1000	pCi/L	N
	RD-30	Y	Y	0.003596		pCi/L	1000	pCi/L	N
	RS-18	Y	Y	2.4779999		pCi/L	1000	pCi/L	N
	PZ-116	Y	Y	-2.006		pCi/L	1000	pCi/L	N
	RD-88	Y	Y	-1.408		pCi/L	1000	pCi/L	N
Cobalt-60, Dissolved	RD-30	Y	Y	4.263		pCi/L	100	pCi/L	N
	RS-25	Y	Y	-0.6824		pCi/L	100	pCi/L	N
Cobalt-60, Total	DD-141	Y	Y	-3.974		pCi/L	100	pCi/L	N
	PZ-116	N	Y	10.7		pCi/L	100	pCi/L	N
	RD-17	N	Y	14.2		pCi/L	100	pCi/L	N
	RD-27	N	Y	1.17		pCi/L	100	pCi/L	N
	RD-30	Y	Y	-13.09		pCi/L	100	pCi/L	N
	RD-59A	N	Y	13.5		pCi/L	100	pCi/L	N
	RD-88	N	Y	8.6859999		pCi/L	100	pCi/L	N
	RS-18	N	Y	2.7379999		pCi/L	100	pCi/L	N
Copper, Dissolved	DD-139	N	Y	0.0015	J+	mg/l	0.0047	mg/L	N
	DD-140	Y	Y	0.0012		mg/l	0.0047	mg/L	N
	DD-141	Y	Y	0.0015		mg/l	0.0047	mg/L	N
	DD-145	Y	Y	0.0011		mg/l	0.0047	mg/L	N
	DS-44	Y	Y	0.0006		mg/l	0.0047	mg/L	N
	PZ-103	Y	Y	0.0008		mg/l	0.0047	mg/L	N
	PZ-120	Y	Y	0.003	J+	mg/l	0.0047	mg/L	N
	RD-96	Y	Y	0.001		mg/l	0.0047	mg/L	N
	DS-45	Y	Y	0.0014	J+	mg/l	0.0047	mg/L	N
	DS-46	Y	Y	0.0009		mg/l	0.0047	mg/L	N
	PZ-005	Y	Y	0.0022		mg/l	0.0047	mg/L	N
	RS-25	Y	Y	0.0008		mg/l	0.0047	mg/L	N
	RS-27	Y	Y	0.0024		mg/l	0.0047	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Copper, Total	DD-143	N	Y	0.0012	J-	mg/l	0.0047	mg/L	N
	DD-144	N	Y	0.0038	J+	mg/l	0.0047	mg/L	N
	PZ-005	Y	Y	0.0055		mg/l	0.0047	mg/L	Y
	PZ-105	Y	Y	0.0009		mg/l	0.0047	mg/L	N
	RD-21	N	Y	0.0025		mg/l	0.0047	mg/L	N
	RD-54A	N	Y	0.025		mg/l	0.0047	mg/L	Y
	DS-45	Y	Y	0.0014	J+	mg/l	0.0047	mg/L	N
	PZ-116	Y	Y	0.0017	J+	mg/l	0.0047	mg/L	N
	RS-25	Y	Y	0.0037		mg/l	0.0047	mg/L	N
	RS-27	Y	Y	0.0049		mg/l	0.0047	mg/L	Y
Diesel Range Organics [C10-C28], Total	DD-141	Y	Y	0.51		mg/L	0.1	mg/L	Y
	DD-145	Y	Y	0.12		mg/L	0.1	mg/L	Y
	PZ-105	Y	Y	0.18		mg/L	0.1	mg/L	Y
	PZ-122	Y	Y	0.18	J	mg/L	0.1	mg/L	Y
	RS-28	Y	Y	0.89		mg/L	0.1	mg/L	Y
Europium-152, Dissolved	RD-30	Y	Y	17.57		pCi/L	200	pCi/L	N
	RS-25	Y	Y	-17.75		pCi/L	200	pCi/L	N
Europium-152, Total	DD-141	Y	Y	12.03		pCi/L	200	pCi/L	N
	PZ-116	N	Y	26.389999		pCi/L	200	pCi/L	N
	RD-27	N	Y	32.959999		pCi/L	200	pCi/L	N
	RD-30	Y	Y	3.2090001		pCi/L	200	pCi/L	N
	RS-18	N	Y	11.55		pCi/L	200	pCi/L	N
Europium-154, Dissolved	RD-30	Y	Y	16.27		pCi/L	A	A	A
	RS-25	Y	Y	42.200001		pCi/L	A	A	A
Europium-154, Total	DD-141	Y	Y	3.165		pCi/L	A	A	A
	RD-27	N	Y	32.150002		pCi/L	A	A	A
	RD-30	Y	Y	22.51		pCi/L	A	A	A
	RD-88	N	Y	29.969999		pCi/L	A	A	A
	RS-18	N	Y	16.120001		pCi/L	A	A	A
Europium-155, Dissolved	RD-30	Y	Y	12.91		pCi/L	A	A	A
	RS-25	Y	Y	-15.3		pCi/L	A	A	A
Europium-155, Total	DD-141	Y	Y	-1.287		pCi/L	A	A	A
	PZ-116	N	Y	7.0760002		pCi/L	A	A	A
	RD-27	N	Y	11.72		pCi/L	A	A	A
	RD-30	Y	Y	7.934		pCi/L	A	A	A
	RD-88	N	Y	3.217		pCi/L	A	A	A
Fluoride, Total	RD-34B	N	Y	0.58		mg/l	0.8	mg/L	N
	PZ-104	Y	Y	0.38	J	mg/l	0.8	mg/L	N
Gross Alpha, Dissolved	DS-44	N	Y	8.5		pCi/L	15	pCi/L	N
	PZ-116	N	Y	31.700001		pCi/L	15	pCi/L	Y
	RD-94	N	Y	42.5		pCi/L	15	pCi/L	Y
Gross Alpha, Total	DD-141	N	Y	11.2		pCi/L	15	pCi/L	N
	DS-44	N	Y	14.5		pCi/L	15	pCi/L	N
	PZ-116	N	Y	40.900002		pCi/L	15	pCi/L	Y
	PZ-120	N	Y	10.3		pCi/L	15	pCi/L	N
	RD-19	N	Y	43.299999		pCi/L	15	pCi/L	Y
	RD-54A	N	Y	21		pCi/L	15	pCi/L	Y
	RD-59A	N	Y	8.4799995	J	pCi/L	15	pCi/L	N
	RD-64	N	Y	9.1899996		pCi/L	15	pCi/L	N
	RD-94	N	Y	54.200001		pCi/L	15	pCi/L	Y
	RD-98	N	Y	13.8		pCi/L	15	pCi/L	N
Gross Beta, Dissolved	DS-47	N	Y	5.52		pCi/L	50	pCi/L	N
	PZ-120	N	Y	10.2		pCi/L	50	pCi/L	N
Gross Beta, Total	DD-141	N	Y	11.8		pCi/L	50	pCi/L	N
	DD-143	N	Y	11.6		pCi/L	50	pCi/L	N
	PZ-116	N	Y	15.7		pCi/L	50	pCi/L	N
	PZ-120	N	Y	8.1899996		pCi/L	50	pCi/L	N
	RD-54A	N	Y	11.2		pCi/L	50	pCi/L	N
	RD-94	N	Y	26.1		pCi/L	50	pCi/L	N
	RD-98	N	Y	246		pCi/L	50	pCi/L	Y

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Iron, Dissolved	DD-141	Y	Y	0.14	J+	mg/l	4.1	mg/L	N
	DD-140	Y	Y	0.14		mg/l	4.1	mg/L	N
	DD-143	Y	Y	0.28	J+	mg/l	4.1	mg/L	N
	DD-144	Y	Y	4.4		mg/l	4.1	mg/L	Y
	DD-145	Y	Y	0.059		mg/l	4.1	mg/L	N
	DS-43	Y	Y	2.2		mg/l	4.1	mg/L	N
	DS-44	Y	Y	0.11		mg/l	4.1	mg/L	N
	DS-46	Y	Y	0.28		mg/l	4.1	mg/L	N
	RD-96	Y	Y	0.022		mg/l	4.1	mg/L	N
	RS-25	Y	Y	0.023		mg/l	4.1	mg/L	N
	RS-27	Y	Y	0.14		mg/l	4.1	mg/L	N
Iron, Total	DD-141	N	Y	2.1		mg/l	4.1	mg/L	N
	DD-143	N	Y	3		mg/l	4.1	mg/L	N
	RD-22	N	Y	0.38		mg/l	4.1	mg/L	N
	RD-59B	N	Y	0.085		mg/l	4.1	mg/L	N
	RS-54	N	Y	0.58		mg/l	4.1	mg/L	N
	DD-139	Y	Y	0.48		mg/l	4.1	mg/L	N
	DD-140	Y	Y	0.57		mg/l	4.1	mg/L	N
	DD-142	Y	Y	0.34	J-	mg/l	4.1	mg/L	N
	DD-144	Y	Y	26	J+	mg/l	4.1	mg/L	Y
	DD-145	Y	Y	2.3	J+	mg/l	4.1	mg/L	N
	DS-43	Y	Y	12	J-	mg/l	4.1	mg/L	Y
	DS-44	Y	Y	1.7		mg/l	4.1	mg/L	N
	DS-45	Y	Y	0.15		mg/l	4.1	mg/L	N
	DS-46	Y	Y	12		mg/l	4.1	mg/L	Y
	DS-47	Y	Y	0.27	J+	mg/l	4.1	mg/L	N
	PZ-105	Y	Y	0.59		mg/l	4.1	mg/L	N
	PZ-116	Y	Y	0.17		mg/l	4.1	mg/L	N
	RD-19	Y	Y	0.058		mg/l	4.1	mg/L	N
	RD-21	Y	Y	1.3		mg/l	4.1	mg/L	N
	RD-33B	Y	Y	0.51		mg/l	4.1	mg/L	N
	RD-33C	Y	Y	1.9		mg/l	4.1	mg/L	N
	RD-34B	Y	Y	0.28		mg/l	4.1	mg/L	N
	RD-34C	Y	Y	4.3		mg/l	4.1	mg/L	Y
	RD-54A	Y	Y	14		mg/l	4.1	mg/L	Y
	RD-96	Y	Y	0.04		mg/l	4.1	mg/L	N
	RS-25	Y	Y	7.6		mg/l	4.1	mg/L	Y
	RS-27	Y	Y	2.3		mg/l	4.1	mg/L	N
Lead, Dissolved	DD-144	Y	Y	0.0002		mg/l	0.011	mg/L	N
Lead, Total	DD-143	N	Y	0.0009		mg/l	0.011	mg/L	N
	DD-144	N	Y	0.0018	J+	mg/l	0.011	mg/L	N
	DS-43	N	Y	0.0008	J+	mg/l	0.011	mg/L	N
	PZ-005	Y	Y	0.0009		mg/l	0.011	mg/L	N
	PZ-104	Y	Y	0.0012		mg/l	0.011	mg/L	N
	PZ-105	Y	Y	0.0002		mg/l	0.011	mg/L	N
	PZ-120	Y	Y	0.0012	J+	mg/l	0.011	mg/L	N
	RD-21	N	Y	0.0023		mg/l	0.011	mg/L	N
	RD-22	N	Y	0.0009	J+	mg/l	0.011	mg/L	N
	RD-54A	N	Y	0.019		mg/l	0.011	mg/L	Y
	RS-54	N	Y	0.022	J+	mg/l	0.011	mg/L	Y
	RS-25	Y	Y	0.0019		mg/l	0.011	mg/L	N
	RS-27	Y	Y	0.0016		mg/l	0.011	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Magnesium, Dissolved	C-08	N	Y	6.5		mg/l	77	mg/L	N
	DD-141	N	Y	23		mg/l	77	mg/L	N
	PZ-105	N	Y	20		mg/l	77	mg/L	N
	RD-33B	N	Y	6.3		mg/l	77	mg/L	N
	RD-34C	N	Y	17		mg/l	77	mg/L	N
	RD-59A	N	Y	38	J+	mg/l	77	mg/L	N
	DD-139	Y	Y	14		mg/l	77	mg/L	N
	DD-140	Y	Y	20		mg/l	77	mg/L	N
	DD-142	Y	Y	22		mg/l	77	mg/L	N
	DD-143	Y	Y	31		mg/l	77	mg/L	N
	DD-144	Y	Y	21	J+	mg/l	77	mg/L	N
	DD-145	Y	Y	15	J+	mg/l	77	mg/L	N
	DS-43	Y	Y	26		mg/l	77	mg/L	N
	DS-44	Y	Y	19		mg/l	77	mg/L	N
	DS-45	Y	Y	34		mg/l	77	mg/L	N
	DS-46	Y	Y	15		mg/l	77	mg/L	N
	DS-47	Y	Y	18	J+	mg/l	77	mg/L	N
	PZ-005	Y	Y	16		mg/l	77	mg/L	N
	PZ-103	Y	Y	8.6		mg/l	77	mg/L	N
	PZ-104	Y	Y	46		mg/l	77	mg/L	N
	PZ-116	Y	Y	61		mg/l	77	mg/L	N
	PZ-120	Y	Y	18		mg/l	77	mg/L	N
	RD-96	Y	Y	33		mg/l	77	mg/L	N
	RS-18	Y	Y	15		mg/l	77	mg/L	N
	RS-25	Y	Y	34		mg/l	77	mg/L	N
	RS-27	Y	Y	11		mg/l	77	mg/L	N
Magnesium, Total	C-08	N	Y	6.7		mg/l	77	mg/L	N
	DD-141	N	Y	24		mg/l	77	mg/L	N
	DD-143	N	Y	30		mg/l	77	mg/L	N
	RD-22	N	Y	22		mg/l	77	mg/L	N
	DD-139	Y	Y	14		mg/l	77	mg/L	N
	DD-140	Y	Y	20		mg/l	77	mg/L	N
	DD-142	Y	Y	19		mg/l	77	mg/L	N
	DD-144	Y	Y	23		mg/l	77	mg/L	N
	DD-145	Y	Y	16		mg/l	77	mg/L	N
	DS-43	Y	Y	24		mg/l	77	mg/L	N
	DS-44	Y	Y	20		mg/l	77	mg/L	N
	DS-45	Y	Y	34		mg/l	77	mg/L	N
	DS-46	Y	Y	15		mg/l	77	mg/L	N
	DS-47	Y	Y	19		mg/l	77	mg/L	N
	PZ-105	Y	Y	19		mg/l	77	mg/L	N
	PZ-116	Y	Y	41		mg/l	77	mg/L	N
	RD-07	Y	Y	12		mg/l	77	mg/L	N
	RD-19	Y	Y	41	J	mg/l	77	mg/L	N
	RD-21	Y	Y	6.3		mg/l	77	mg/L	N
	RD-33B	Y	Y	6.9	J	mg/l	77	mg/L	N
	RD-33C	Y	Y	15	J	mg/l	77	mg/L	N
	RD-34B	Y	Y	0.35	J	mg/l	77	mg/L	N
	RD-34C	Y	Y	16		mg/l	77	mg/L	N
	RD-54A	Y	Y	8.4		mg/l	77	mg/L	N
	RD-59A	Y	Y	37	J+	mg/l	77	mg/L	N
	RD-59B	Y	Y	16	J+	mg/l	77	mg/L	N
	RD-59C	Y	Y	12	J+	mg/l	77	mg/L	N
	RD-96	Y	Y	36		mg/l	77	mg/L	N
	RS-18	Y	Y	15		mg/l	77	mg/L	N
	RS-25	Y	Y	38		mg/l	77	mg/L	N
	RS-27	Y	Y	12		mg/l	77	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Manganese, Dissolved	DD-140	Y	Y	0.032	J+	mg/l	0.15	mg/L	N
	DD-142	Y	Y	0.0075	J+	mg/l	0.15	mg/L	N
	DD-143	Y	Y	0.069		mg/l	0.15	mg/L	N
	DD-144	Y	Y	0.14	J+	mg/l	0.15	mg/L	N
	DD-145	Y	Y	0.022	J+	mg/l	0.15	mg/L	N
	DS-43	Y	Y	0.15	J+	mg/l	0.15	mg/L	N
	DS-44	Y	Y	0.0081		mg/l	0.15	mg/L	N
	DS-46	Y	Y	0.62	J+	mg/l	0.15	mg/L	Y
	PZ-005	Y	Y	0.0097	J+	mg/l	0.15	mg/L	N
	PZ-103	Y	Y	0.0005	J+	mg/l	0.15	mg/L	N
	PZ-104	Y	Y	1.6	J+	mg/l	0.15	mg/L	Y
	RD-96	Y	Y	0.0071		mg/l	0.15	mg/L	N
	RS-25	Y	Y	0.0009		mg/l	0.15	mg/L	N
	RS-27	Y	Y	0.07		mg/l	0.15	mg/L	N
Manganese, Total	DD-143	N	Y	0.11		mg/l	0.15	mg/L	N
	RD-34A	N	Y	0.081		mg/l	0.15	mg/L	N
	DD-139	Y	Y	0.044	J+	mg/l	0.15	mg/L	N
	DD-140	Y	Y	0.045	J+	mg/l	0.15	mg/L	N
	DD-142	Y	Y	0.028		mg/l	0.15	mg/L	N
	DD-144	Y	Y	0.27	J+	mg/l	0.15	mg/L	Y
	DD-145	Y	Y	0.047	J+	mg/l	0.15	mg/L	N
	DS-43	Y	Y	0.22		mg/l	0.15	mg/L	Y
	DS-44	Y	Y	0.041		mg/l	0.15	mg/L	N
	DS-45	Y	Y	0.031		mg/l	0.15	mg/L	N
	DS-46	Y	Y	0.67	J+	mg/l	0.15	mg/L	Y
	DS-47	Y	Y	0.011	J+	mg/l	0.15	mg/L	N
	PZ-105	Y	Y	0.021	J+	mg/l	0.15	mg/L	N
	PZ-116	Y	Y	0.047		mg/l	0.15	mg/L	N
	RD-07	Y	Y	0.0012		mg/l	0.15	mg/L	N
	RD-19	Y	Y	0.0025		mg/l	0.15	mg/L	N
	RD-21	Y	Y	0.021	J+	mg/l	0.15	mg/L	N
	RD-33B	Y	Y	0.023	J+	mg/l	0.15	mg/L	N
	RD-33C	Y	Y	0.17	J+	mg/l	0.15	mg/L	Y
	RD-34B	Y	Y	0.0042		mg/l	0.15	mg/L	N
	RD-34C	Y	Y	0.05		mg/l	0.15	mg/L	N
	RD-54A	Y	Y	0.6	J+	mg/l	0.15	mg/L	Y
	RD-59A	Y	Y	0.055	J-	mg/l	0.15	mg/L	N
	RD-59B	Y	Y	0.025	J	mg/l	0.15	mg/L	N
	RD-59C	Y	Y	0.017	J	mg/l	0.15	mg/L	N
	RD-96	Y	Y	0.037	J+	mg/l	0.15	mg/L	N
	RS-25	Y	Y	0.071		mg/l	0.15	mg/L	N
	RS-27	Y	Y	0.11		mg/l	0.15	mg/L	N
Manganese-54, Dissolved	RD-30	Y	Y	-8.052		pCi/L	300	pCi/L	N
	RS-25	Y	Y	3.523		pCi/L	300	pCi/L	N
Manganese-54, Total	DD-141	Y	Y	0.8592		pCi/L	300	pCi/L	N
	RD-27	Y	Y	2.99		pCi/L	300	pCi/L	N
	RD-30	Y	Y	-5.7		pCi/L	300	pCi/L	N
	RS-18	Y	Y	-3.009		pCi/L	300	pCi/L	N
	PZ-116	Y	Y	4.2470002		pCi/L	300	pCi/L	N
	RD-88	Y	Y	-4.983		pCi/L	300	pCi/L	N
Mercury, Total	RD-54A	Y	Y	0.0002		mg/l	0.000063	mg/L	Y
Methylene Chloride	DD-144	Y	Y	9.5	J	µg/L	5	µg/L	Y
	RS-54	N	Y	90	J	µg/L	5	µg/L	Y

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Molybdenum, Dissolved	C-08	Y	Y	0.002		mg/l	0.0022	mg/L	N
	PZ-116	N	Y	0.011		mg/l	0.0022	mg/L	Y
	RD-07	N	Y	0.0011		mg/l	0.0022	mg/L	N
	RD-19	Y	Y	0.0007		mg/l	0.0022	mg/L	N
	DD-139	Y	Y	0.0025		mg/l	0.0022	mg/L	Y
	DD-140	Y	Y	0.0026		mg/l	0.0022	mg/L	Y
	DD-142	Y	Y	0.0025	J+	mg/l	0.0022	mg/L	Y
	DD-143	Y	Y	0.004		mg/l	0.0022	mg/L	Y
	DD-144	Y	Y	0.0012	J+	mg/l	0.0022	mg/L	N
	DD-145	Y	Y	0.0019	J+	mg/l	0.0022	mg/L	N
	DS-43	Y	Y	0.0025	J+	mg/l	0.0022	mg/L	Y
	DS-44	Y	Y	0.008		mg/l	0.0022	mg/L	Y
	DS-45	Y	Y	0.0015		mg/l	0.0022	mg/L	N
	DS-47	Y	Y	0.0052	J+	mg/l	0.0022	mg/L	Y
	PZ-005	Y	Y	0.0015		mg/l	0.0022	mg/L	N
	PZ-103	Y	Y	0.0023		mg/l	0.0022	mg/L	Y
	PZ-104	Y	Y	0.0021		mg/l	0.0022	mg/L	N
	PZ-120	Y	Y	0.0074		mg/l	0.0022	mg/L	Y
	RD-96	Y	Y	0.0013		mg/l	0.0022	mg/L	N
	RS-25	Y	Y	0.0011		mg/l	0.0022	mg/L	N
Molybdenum, Total	C-08	Y	Y	0.0019		mg/l	0.0022	mg/L	N
	PZ-104	Y	Y	0.0018		mg/l	0.0022	mg/L	N
	RD-22	Y	Y	0.0019		mg/l	0.0022	mg/L	N
	RD-33A	Y	Y	0.0012		mg/l	0.0022	mg/L	N
	DD-139	Y	Y	0.0024		mg/l	0.0022	mg/L	Y
	DD-140	Y	Y	0.0022		mg/l	0.0022	mg/L	N
	DD-142	Y	Y	0.0025		mg/l	0.0022	mg/L	Y
	DD-144	Y	Y	0.0021	J+	mg/l	0.0022	mg/L	N
	DD-145	Y	Y	0.0018	J+	mg/l	0.0022	mg/L	N
	DS-43	Y	Y	0.0023		mg/l	0.0022	mg/L	Y
	DS-44	Y	Y	0.0069		mg/l	0.0022	mg/L	Y
	DS-45	Y	Y	0.0015	J+	mg/l	0.0022	mg/L	N
	DS-46	Y	Y	0.0007		mg/l	0.0022	mg/L	N
	DS-47	Y	Y	0.0058	J+	mg/l	0.0022	mg/L	Y
	PZ-005	Y	Y	0.0014		mg/l	0.0022	mg/L	N
	PZ-103	Y	Y	0.0024		mg/l	0.0022	mg/L	Y
	PZ-105	Y	Y	0.018		mg/l	0.0022	mg/L	Y
	PZ-116	Y	Y	0.012	J+	mg/l	0.0022	mg/L	Y
	RD-07	Y	Y	0.0011		mg/l	0.0022	mg/L	N
	RD-19	Y	Y	0.0007		mg/l	0.0022	mg/L	N
	RD-21	Y	Y	0.0022		mg/l	0.0022	mg/L	N
	RD-33B	Y	Y	0.0021		mg/l	0.0022	mg/L	N
	RD-33C	Y	Y	0.0014		mg/l	0.0022	mg/L	N
	RD-34B	Y	Y	0.0025		mg/l	0.0022	mg/L	Y
	RD-34C	Y	Y	0.0012		mg/l	0.0022	mg/L	N
	RD-54A	Y	Y	0.0018		mg/l	0.0022	mg/L	N
	RD-59A	Y	Y	0.0018		mg/l	0.0022	mg/L	N
	RD-59B	Y	Y	0.0013	J-	mg/l	0.0022	mg/L	N
	RD-59C	Y	Y	0.001	J-	mg/l	0.0022	mg/L	N
	RD-96	Y	Y	0.001		mg/l	0.0022	mg/L	N
	RS-18	Y	Y	0.0022		mg/l	0.0022	mg/L	N
	RS-25	Y	Y	0.0011		mg/l	0.0022	mg/L	N
	RS-27	Y	Y	0.0007		mg/l	0.0022	mg/L	N
Nickel, Dissolved	DD-141	N	Y	0.0031		mg/l	0.017	mg/L	N
	DD-143	N	Y	0.0004		mg/l	0.017	mg/L	N
	PZ-103	Y	Y	0.0012		mg/l	0.017	mg/L	N
	PZ-104	Y	Y	0.006		mg/l	0.017	mg/L	N
	RD-19	N	Y	0.0031		mg/l	0.017	mg/L	N
	DS-45	Y	Y	0.0035		mg/l	0.017	mg/L	N
	DS-46	Y	Y	0.0092		mg/l	0.017	mg/L	N
	PZ-005	Y	Y	0.0011		mg/l	0.017	mg/L	N
	RS-25	Y	Y	0.0005	J+	mg/l	0.017	mg/L	N
	RS-27	Y	Y	0.0033	J+	mg/l	0.017	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Nickel, Total	DD-144	N	Y	0.0055	J+	mg/l	0.017	mg/L	N
	PZ-005	Y	Y	0.0028		mg/l	0.017	mg/L	N
	PZ-104	Y	Y	0.0089		mg/l	0.017	mg/L	N
	PZ-105	Y	Y	0.0009		mg/l	0.017	mg/L	N
	RD-21	Y	Y	0.0012		mg/l	0.017	mg/L	N
	RD-22	N	Y	0.0083	J+	mg/l	0.017	mg/L	N
	RD-54A	N	Y	0.006	J+	mg/l	0.017	mg/L	N
	RD-96	N	Y	0.0022		mg/l	0.017	mg/L	N
	DS-45	Y	Y	0.0032		mg/l	0.017	mg/L	N
	DS-46	Y	Y	0.009	J+	mg/l	0.017	mg/L	N
	PZ-116	Y	Y	0.0022		mg/l	0.017	mg/L	N
	RS-25	Y	Y	0.003		mg/l	0.017	mg/L	N
	RS-27	Y	Y	0.0041		mg/l	0.017	mg/L	N
Nitrate, Total	PZ-105	N	Y	4.5		mg/l	10	mg/L	N
	PZ-104*	Y	Y	0.025		mg/l	10	mg/L	N
Perchlorate, Total	DD-141	Y	Y	0.25		µg/L	6	µg/L	N
	PZ-100	Y	Y	3.5		µg/L	6	µg/L	N
Potassium, Dissolved	DD-141	N	Y	5.4		mg/l	9.6	mg/L	N
	RD-19	N	Y	6.6	J-	mg/l	9.6	mg/L	N
	RD-34A	N	Y	4.2	J-	mg/l	9.6	mg/L	N
	RD-34C	N	Y	3.2		mg/l	9.6	mg/L	N
	RD-59B	N	Y	3.2	J+	mg/l	9.6	mg/L	N
	RD-64	N	Y	3.8		mg/l	9.6	mg/L	N
	RS-54	N	Y	1.8		mg/l	9.6	mg/L	N
	DD-139	Y	Y	4.5		mg/l	9.6	mg/L	N
	DD-140	Y	Y	5.6		mg/l	9.6	mg/L	N
	DD-142	Y	Y	4.3		mg/l	9.6	mg/L	N
	DD-143	Y	Y	5.8		mg/l	9.6	mg/L	N
	DD-144	Y	Y	5.7	J+	mg/l	9.6	mg/L	N
	DD-145	Y	Y	4.9	J+	mg/l	9.6	mg/L	N
	DS-43	Y	Y	5.9		mg/l	9.6	mg/L	N
	DS-44	Y	Y	4.1		mg/l	9.6	mg/L	N
	DS-45	Y	Y	4.2		mg/l	9.6	mg/L	N
	DS-46	Y	Y	4.4		mg/l	9.6	mg/L	N
	DS-47	Y	Y	4.6	J+	mg/l	9.6	mg/L	N
	PZ-005	Y	Y	1.9		mg/l	9.6	mg/L	N
	PZ-103	Y	Y	1.5		mg/l	9.6	mg/L	N
	PZ-104	Y	Y	12		mg/l	9.6	mg/L	Y
	PZ-105	Y	Y	6		mg/l	9.6	mg/L	N
	PZ-116	Y	Y	9.1		mg/l	9.6	mg/L	N
	PZ-120	Y	Y	3.2		mg/l	9.6	mg/L	N
	RD-96	Y	Y	4.6	J-	mg/l	9.6	mg/L	N
	RS-18	Y	Y	0.88		mg/l	9.6	mg/L	N
	RS-25	Y	Y	3.4		mg/l	9.6	mg/L	N
	RS-27	Y	Y	1.4		mg/l	9.6	mg/L	N
Potassium, Total	C-08	N	Y	3.2		mg/l	9.6	mg/L	N
	DD-141	N	Y	6		mg/l	9.6	mg/L	N
	RD-23	N	Y	2.7	J+	mg/l	9.6	mg/L	N
	RD-33A	N	Y	3.7	J+	mg/l	9.6	mg/L	N
	RD-33C	N	Y	3.7	J-	mg/l	9.6	mg/L	N
	RD-34A	N	Y	4.7	J-	mg/l	9.6	mg/L	N
	RD-34C	N	Y	3.2		mg/l	9.6	mg/L	N
	RD-54A	N	Y	3.4		mg/l	9.6	mg/L	N
	RD-59A	N	Y	4.5		mg/l	9.6	mg/L	N
	RD-59B	N	Y	3.3	J+	mg/l	9.6	mg/L	N
	RD-59C	N	Y	2.5	J+	mg/l	9.6	mg/L	N
	DD-139	Y	Y	4.4		mg/l	9.6	mg/L	N
	DD-140	Y	Y	5.6		mg/l	9.6	mg/L	N
	DD-142	Y	Y	4.2	J+	mg/l	9.6	mg/L	N
	DD-144	Y	Y	7.2		mg/l	9.6	mg/L	N
	DD-145	Y	Y	6		mg/l	9.6	mg/L	N
	DS-43	Y	Y	5.9	J+	mg/l	9.6	mg/L	N
	DS-44	Y	Y	4.5		mg/l	9.6	mg/L	N
	DS-45	Y	Y	4		mg/l	9.6	mg/L	N
	DS-46	Y	Y	4.5		mg/l	9.6	mg/L	N
	DS-47	Y	Y	5		mg/l	9.6	mg/L	N
	PZ-105	Y	Y	5.9		mg/l	9.6	mg/L	N
	PZ-116	Y	Y	11		mg/l	9.6	mg/L	Y
	RD-19	Y	Y	7	J-	mg/l	9.6	mg/L	N
	RD-96	Y	Y	5		mg/l	9.6	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
	RS-27	Y	Y	1.2	J-	mg/l	9.6	mg/L	N
Potassium-40, Dissolved	RD-30	Y	Y	-128.9		pCi/L	A	A	A
	RS-25	Y	Y	52.509998		pCi/L	A	A	A
Potassium-40, Total	DD-141	Y	Y	21.77		pCi/L	A	A	A
	PZ-116	N	Y	37.139999		pCi/L	A	A	A
	PZ-122	N	Y	156		pCi/L	A	A	A
	RD-30	Y	Y	49.950001		pCi/L	A	A	A
Radium-226, Dissolved	DS-47	N	Y	0.458		pCi/L	5	pCi/L	N
	PZ-122	Y	Y	0.234		pCi/L	5	pCi/L	N
	RD-19	N	Y	1.53		pCi/L	5	pCi/L	N
	RD-96	N	Y	1.01		pCi/L	5	pCi/L	N
Radium-226, Total	PZ-122	Y	Y	0.169		pCi/L	5	pCi/L	N
	RD-17	N	Y	1.4299999		pCi/L	5	pCi/L	N
	RD-34B	Y	Y	0.173		pCi/L	5	pCi/L	N
	RD-34C	N	Y	0.758		pCi/L	5	pCi/L	N
	RD-54A	N	Y	1.4400001		pCi/L	5	pCi/L	N
	RD-59C	N	Y	0.677		pCi/L	5	pCi/L	N
	RD-64	N	Y	1.5700001		pCi/L	5	pCi/L	N
	RS-28	N	Y	0.177		pCi/L	5	pCi/L	N
	PZ-116	Y	Y	0.136		pCi/L	5	pCi/L	N
	PZ-120	Y	Y	0.346		pCi/L	5	pCi/L	N
	RD-94	Y	Y	0.61		pCi/L	5	pCi/L	N
Radium-228, Dissolved	DD-143	N	Y	3		pCi/L	5	pCi/L	N
	RD-19	N	Y	2.5999999		pCi/L	5	pCi/L	N
	RD-94	Y	Y	1.0700001		pCi/L	5	pCi/L	N
	RD-96	N	Y	1.58	J	pCi/L	5	pCi/L	N
Radium-228, Total	DD-141	N	Y	4.0799999		pCi/L	5	pCi/L	N
	DD-143	N	Y	4.1300001		pCi/L	5	pCi/L	N
	DS-47	N	Y	0.732		pCi/L	5	pCi/L	N
	RD-17	N	Y	1.67		pCi/L	5	pCi/L	N
	RD-19	N	Y	3.26		pCi/L	5	pCi/L	N
	RD-27	N	Y	2.1600001		pCi/L	5	pCi/L	N
	RD-30	Y	Y	0.498		pCi/L	5	pCi/L	N
	RD-33A	N	Y	1.59		pCi/L	5	pCi/L	N
	RD-33B	Y	Y	0.424		pCi/L	5	pCi/L	N
	RD-33C	Y	Y	2.1800001		pCi/L	5	pCi/L	N
	RD-54A	N	Y	1.87		pCi/L	5	pCi/L	N
	RD-59A	Y	Y	0.486		pCi/L	5	pCi/L	N
	RD-59B	N	Y	1.23		pCi/L	5	pCi/L	N
	RD-96	N	Y	2.05		pCi/L	5	pCi/L	N
	RD-98	N	Y	13.5		pCi/L	5	pCi/L	Y
	PZ-116	Y	Y	0.48		pCi/L	5	pCi/L	N
	RD-94	Y	Y	1.16		pCi/L	5	pCi/L	N
Selenium, Dissolved	PZ-116	N	Y	0.0065		mg/l	0.0016	mg/L	Y
	PZ-120	Y	Y	0.0009		mg/l	0.0016	mg/L	N
	DS-45	Y	Y	0.0031		mg/l	0.0016	mg/L	Y
	PZ-005	Y	Y	0.0011		mg/l	0.0016	mg/L	N
	RS-25	Y	Y	0.001		mg/l	0.0016	mg/L	N
Selenium, Total	PZ-005	Y	Y	0.0014		mg/l	0.0016	mg/L	N
	PZ-104	Y	Y	0.005		mg/l	0.0016	mg/L	Y
	PZ-105	Y	Y	0.0012		mg/l	0.0016	mg/L	N
	DS-45	Y	Y	0.0033		mg/l	0.0016	mg/L	Y
	PZ-116	Y	Y	0.0048		mg/l	0.0016	mg/L	Y
	RS-25	Y	Y	0.0011		mg/l	0.0016	mg/L	N
Silver, Dissolved	PZ-116	Y	Y	0		mg/l	0.00017	mg/L	N
	RD-21	Y	Y	0.0007		mg/l	0.00017	mg/L	Y
	RD-59C	Y	Y	0.0001		mg/l	0.00017	mg/L	N
	RD-96	Y	Y	0.0004		mg/l	0.00017	mg/L	Y
Silver, Total	RD-23	Y	Y	0.0001		mg/l	0.00017	mg/L	N
	RD-54A	Y	Y	0	J+	mg/l	0.00017	mg/L	N
	RD-96	Y	Y	0	J+	mg/l	0.00017	mg/L	N
	RS-27	Y	Y	0.0001		mg/l	0.00017	mg/L	N
Sodium, Dissolved	DD-141	N	Y	68		mg/l	190	mg/L	N
	DD-143	N	Y	68		mg/l	190	mg/L	N
	DD-145	N	Y	81	J+	mg/l	190	mg/L	N
	DS-43	N	Y	150		mg/l	190	mg/L	N
	PZ-105	N	Y	95		mg/l	190	mg/L	N
	RD-34C	N	Y	43		mg/l	190	mg/L	N
	RD-59A	N	Y	150		mg/l	190	mg/L	N
	RD-64	N	Y	67		mg/l	190	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
	RD-96	N	Y	48		mg/l	190	mg/L	N
	DD-140	Y	Y	42	J+	mg/l	190	mg/L	N
	DS-45	Y	Y	44	J+	mg/l	190	mg/L	N
	DS-46	Y	Y	55	J+	mg/l	190	mg/L	N
	PZ-005	Y	Y	85		mg/l	190	mg/L	N
	PZ-103	Y	Y	93		mg/l	190	mg/L	N
	PZ-104	Y	Y	260		mg/l	190	mg/L	Y
	PZ-116	Y	Y	200	J+	mg/l	190	mg/L	Y
	PZ-120	Y	Y	89	J+	mg/l	190	mg/L	N
	RS-25	Y	Y	55		mg/l	190	mg/L	N
	RS-27	Y	Y	27		mg/l	190	mg/L	N
Sodium, Total	DD-141	N	Y	67	J+	mg/l	190	mg/L	N
	DD-144	N	Y	70	J+	mg/l	190	mg/L	N
	DD-145	N	Y	91		mg/l	190	mg/L	N
	RD-22	N	Y	57	J+	mg/l	190	mg/L	N
	RD-54A	N	Y	36		mg/l	190	mg/L	N
	RD-59A	N	Y	150	J+	mg/l	190	mg/L	N
	DD-140	Y	Y	43	J+	mg/l	190	mg/L	N
	DS-45	Y	Y	42		mg/l	190	mg/L	N
	DS-46	Y	Y	55	J+	mg/l	190	mg/L	N
	PZ-116	Y	Y	160		mg/l	190	mg/L	N
	RS-25	Y	Y	55		mg/l	190	mg/L	N
	RS-27	Y	Y	26		mg/l	190	mg/L	N
	RS-54	Y	Y	80		mg/l	190	mg/L	N
Sodium-22, Dissolved	DD-143	Y	Y	11.1		pCi/L	400	pCi/L	N
	RD-30	Y	Y	7.0900002		pCi/L	400	pCi/L	N
	RD-96	Y	Y	11.1		pCi/L	400	pCi/L	N
	RS-25	Y	Y	1.951		pCi/L	400	pCi/L	N
Sodium-22, Total	DD-141	Y	Y	6.1999998		pCi/L	400	pCi/L	N
	RD-30	Y	Y	3.902		pCi/L	400	pCi/L	N
	RD-33C	N	Y	5.6599998		pCi/L	400	pCi/L	N
	RD-59A	N	Y	12.4		pCi/L	400	pCi/L	N
	RD-64	N	Y	5.8499999		pCi/L	400	pCi/L	N
	RS-18	N	Y	0.4192		pCi/L	400	pCi/L	N
Strontium, Dissolved	DD-141	N	Y	0.28		mg/l	0.8	mg/L	N
	PZ-105	N	Y	0.49		mg/l	0.8	mg/L	N
	RD-07	N	Y	0.23		mg/l	0.8	mg/L	N
	RD-21	N	Y	0.25		mg/l	0.8	mg/L	N
	RD-34C	N	Y	0.26		mg/l	0.8	mg/L	N
	RD-64	N	Y	0.59		mg/l	0.8	mg/L	N
	DD-139	Y	Y	0.29		mg/l	0.8	mg/L	N
	DD-140	Y	Y	0.25		mg/l	0.8	mg/L	N
	DD-142	Y	Y	0.31		mg/l	0.8	mg/L	N
	DD-143	Y	Y	0.34		mg/l	0.8	mg/L	N
	DD-144	Y	Y	0.25		mg/l	0.8	mg/L	N
	DD-145	Y	Y	0.5		mg/l	0.8	mg/L	N
	DS-43	Y	Y	0.34		mg/l	0.8	mg/L	N
	DS-44	Y	Y	0.27		mg/l	0.8	mg/L	N
	DS-45	Y	Y	0.35		mg/l	0.8	mg/L	N
	DS-46	Y	Y	0.3		mg/l	0.8	mg/L	N
	DS-47	Y	Y	0.22		mg/l	0.8	mg/L	N
	PZ-005	Y	Y	0.53		mg/l	0.8	mg/L	N
	PZ-103	Y	Y	0.97		mg/l	0.8	mg/L	Y
	PZ-104	Y	Y	1.6		mg/l	0.8	mg/L	Y
	PZ-116	Y	Y	0.64		mg/l	0.8	mg/L	N
	PZ-120	Y	Y	0.23		mg/l	0.8	mg/L	N
	RD-54A	Y	Y	0.31		mg/l	0.8	mg/L	N
	RD-59A	Y	Y	0.83		mg/l	0.8	mg/L	Y
	RD-59B	Y	Y	0.6		mg/l	0.8	mg/L	N
	RD-59C	Y	Y	0.68		mg/l	0.8	mg/L	N
	RD-96	Y	Y	0.25		mg/l	0.8	mg/L	N
	RS-18	Y	Y	0.23		mg/l	0.8	mg/L	N
	RS-25	Y	Y	0.46		mg/l	0.8	mg/L	N
	RS-27	Y	Y	0.32		mg/l	0.8	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Strontium, Total	RD-33A	N	Y	0.33		mg/l	0.8	mg/L	N
	RD-34A	N	Y	0.32		mg/l	0.8	mg/L	N
	DD-139	Y	Y	0.28		mg/l	0.8	mg/L	N
	DD-140	Y	Y	0.25		mg/l	0.8	mg/L	N
	DD-142	Y	Y	0.25		mg/l	0.8	mg/L	N
	DD-144	Y	Y	0.3		mg/l	0.8	mg/L	N
	DD-145	Y	Y	0.61		mg/l	0.8	mg/L	N
	DS-43	Y	Y	0.29		mg/l	0.8	mg/L	N
	DS-44	Y	Y	0.24		mg/l	0.8	mg/L	N
	DS-45	Y	Y	0.33		mg/l	0.8	mg/L	N
	DS-46	Y	Y	0.31		mg/l	0.8	mg/L	N
	DS-47	Y	Y	0.25		mg/l	0.8	mg/L	N
	PZ-005	Y	Y	0.59		mg/l	0.8	mg/L	N
	PZ-103	Y	Y	1		mg/l	0.8	mg/L	Y
	PZ-104	Y	Y	1.6		mg/l	0.8	mg/L	Y
	PZ-105	Y	Y	0.47		mg/l	0.8	mg/L	N
	PZ-116	Y	Y	0.53		mg/l	0.8	mg/L	N
	PZ-120	Y	Y	0.21		mg/l	0.8	mg/L	N
	RD-07	Y	Y	0.19		mg/l	0.8	mg/L	N
	RD-19	Y	Y	0.41		mg/l	0.8	mg/L	N
	RD-21	Y	Y	0.25		mg/l	0.8	mg/L	N
	RD-33B	Y	Y	0.12		mg/l	0.8	mg/L	N
	RD-33C	Y	Y	0.43		mg/l	0.8	mg/L	N
	RD-34B	Y	Y	0.014		mg/l	0.8	mg/L	N
	RD-34C	Y	Y	0.22		mg/l	0.8	mg/L	N
	RD-54A	Y	Y	0.3		mg/l	0.8	mg/L	N
	RD-59A	Y	Y	0.8		mg/l	0.8	mg/L	N
	RD-59B	Y	Y	0.59		mg/l	0.8	mg/L	N
	RD-59C	Y	Y	0.63		mg/l	0.8	mg/L	N
	RD-96	Y	Y	0.26		mg/l	0.8	mg/L	N
	RS-18	Y	Y	0.23		mg/l	0.8	mg/L	N
	RS-25	Y	Y	0.47		mg/l	0.8	mg/L	N
	RS-27	Y	Y	0.34		mg/l	0.8	mg/L	N
Strontium-90, Dissolved	PZ-122	N	Y	0.569		pCi/L	8	pCi/L	N
	RD-64	N	Y	0.287		pCi/L	8	pCi/L	N
	RS-28	N	Y	2.6199999		pCi/L	8	pCi/L	N
Strontium-90, Total	RS-28	Y	Y	2.0799999		pCi/L	8	pCi/L	N
Thallium, Dissolved	DD-141	Y	Y	0.0001		mg/l	0.00013	mg/L	N
	PZ-120	Y	Y	0.0001	J+	mg/l	0.00013	mg/L	N
	RD-19	N	Y	0.0001		mg/l	0.00013	mg/L	N
	RD-96	Y	Y	0.0001		mg/l	0.00013	mg/L	N
Thallium, Total	DD-141	Y	Y	0.0001		mg/l	0.00013	mg/L	N
	DD-144	N	Y	0.0001	J+	mg/l	0.00013	mg/L	N
	PZ-105	Y	Y	0.0001		mg/l	0.00013	mg/L	N
	RD-23	Y	Y	0.0001	J+	mg/l	0.00013	mg/L	N
	RS-25	Y	Y	0.0001		mg/l	0.00013	mg/L	N
Tin, Dissolved	RD-22	Y	Y	0.0014		mg/l	0.0024	mg/L	N
Toluene, Total	C-08	Y	Y	0.54	J	µg/L	150	µg/L	N
	DD-140	Y	Y	1.1		µg/L	150	µg/L	N
	PZ-005	Y	Y	0.32	J	µg/L	150	µg/L	N
trans-1,2-Dichloroethene	DD-144	Y	Y	0.63	J	µg/L	10	µg/L	N
	RD-33A	N	Y	2.1		µg/L	10	µg/L	N
	RD-65	N	Y	12		µg/L	10	µg/L	Y
Trichloroethene, Total	C-08	N	Y	2.5		µg/L	5	µg/L	N
	DS-46	Y	Y	1.1		µg/L	5	µg/L	N
	PZ-122	N	Y	1.6		µg/L	5	µg/L	N
	RD-29	N	Y	4.4		µg/L	5	µg/L	N
Tritium, Total	DD-144	Y	Y	-24.77		pCi/L	20000	pCi/L	N
Uranium-233/234, Dissolved	RD-19	N	Y	16.4		pCi/L	20	pCi/L	N
	RD-59A	N	Y	1.99		pCi/L	20	pCi/L	N
	DD-141	Y	Y	2.1800001		pCi/L	20	pCi/L	N
	DD-143	Y	Y	2.8199999		pCi/L	20	pCi/L	N
	DS-44	Y	Y	3.0999999		pCi/L	20	pCi/L	N
	DS-47	Y	Y	2.4100001		pCi/L	20	pCi/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Uranium-233/234, Total	RD-19	N	Y	18		pCi/L	20	pCi/L	N
	RD-33A	N	Y	2.6400001		pCi/L	20	pCi/L	N
	RD-59A	N	Y	2.0799999		pCi/L	20	pCi/L	N
	RD-59B	N	Y	0.37		pCi/L	20	pCi/L	N
	RD-59C	N	Y	0.384		pCi/L	20	pCi/L	N
	RD-94	N	Y	18.5		pCi/L	20	pCi/L	N
	DD-141	Y	Y	2.3499999		pCi/L	20	pCi/L	N
	DD-143	Y	Y	2.74		pCi/L	20	pCi/L	N
	DS-44	Y	Y	3.1300001		pCi/L	20	pCi/L	N
	DS-47	Y	Y	2.8399999		pCi/L	20	pCi/L	N
	RD-30	Y	Y	5.27		pCi/L	20	pCi/L	N
	RS-28	Y	Y	1.21		pCi/L	20	pCi/L	N
Uranium-235/236, Dissolved	PZ-120	N	Y	0.264		pCi/L	20	pCi/L	N
	RD-17	N	Y	0.0994		pCi/L	20	pCi/L	N
	RD-19	N	Y	0.856		pCi/L	20	pCi/L	N
	RD-27	N	Y	0.11		pCi/L	20	pCi/L	N
	RD-54A	N	Y	0.215		pCi/L	20	pCi/L	N
	RD-64	N	Y	0.119		pCi/L	20	pCi/L	N
	RD-98	N	Y	0.207		pCi/L	20	pCi/L	N
	DD-141	Y	Y	0.0989		pCi/L	20	pCi/L	N
	DS-44	Y	Y	0.181		pCi/L	20	pCi/L	N
	DS-47	Y	Y	0.204		pCi/L	20	pCi/L	N
	RD-30	Y	Y	0.277		pCi/L	20	pCi/L	N
Uranium-235/236, Total	PZ-120	N	Y	0.289		pCi/L	20	pCi/L	N
	RD-14	N	Y	0.129		pCi/L	20	pCi/L	N
	RD-19	N	Y	0.778		pCi/L	20	pCi/L	N
	RD-64	N	Y	0.129		pCi/L	20	pCi/L	N
	RD-98	N	Y	0.196		pCi/L	20	pCi/L	N
	DS-44	Y	Y	0.19		pCi/L	20	pCi/L	N
	RD-30	Y	Y	0.196		pCi/L	20	pCi/L	N
Uranium-238, Dissolved	RD-14	N	Y	1.77		pCi/L	20	pCi/L	N
	RD-19	N	Y	15.5		pCi/L	20	pCi/L	N
	RD-33C	Y	Y	0.077		pCi/L	20	pCi/L	N
	RD-54A	N	Y	2.1099999		pCi/L	20	pCi/L	N
	RD-59A	N	Y	1.61		pCi/L	20	pCi/L	N
	RD-59C	Y	Y	0.135		pCi/L	20	pCi/L	N
	DD-141	Y	Y	1.89		pCi/L	20	pCi/L	N
	DD-143	Y	Y	2.1900001		pCi/L	20	pCi/L	N
	DS-44	Y	Y	3.0799999		pCi/L	20	pCi/L	N
	DS-47	Y	Y	1.8200001		pCi/L	20	pCi/L	N
	PZ-116	Y	Y	17.299999		pCi/L	20	pCi/L	N
	PZ-120	Y	Y	3.77		pCi/L	20	pCi/L	N
	PZ-122	Y	Y	6.2199998		pCi/L	20	pCi/L	N
	RD-17	Y	Y	1.41		pCi/L	20	pCi/L	N
	RD-27	Y	Y	0.885		pCi/L	20	pCi/L	N
	RD-30	Y	Y	5.1599998		pCi/L	20	pCi/L	N
	RD-64	Y	Y	1.3099999		pCi/L	20	pCi/L	N
	RD-94	Y	Y	16.6		pCi/L	20	pCi/L	N
	RS-18	Y	Y	2.5		pCi/L	20	pCi/L	N
	RS-28	Y	Y	1.29		pCi/L	20	pCi/L	N
Uranium-238, Total	RD-19	N	Y	14.9		pCi/L	20	pCi/L	N
	RD-33A	N	Y	1.86		pCi/L	20	pCi/L	N
	RD-59A	N	Y	1.4		pCi/L	20	pCi/L	N
	RD-59B	N	Y	0.145		pCi/L	20	pCi/L	N
	RD-59C	N	Y	0.145		pCi/L	20	pCi/L	N
	RD-94	N	Y	18.5		pCi/L	20	pCi/L	N
	RD-96	N	Y	4.8800001		pCi/L	20	pCi/L	N
	RD-98	N	Y	2.1099999		pCi/L	20	pCi/L	N
	DD-141	Y	Y	1.67		pCi/L	20	pCi/L	N
	DD-143	Y	Y	2.1700001		pCi/L	20	pCi/L	N
	DS-44	Y	Y	2.77		pCi/L	20	pCi/L	N
	DS-47	Y	Y	1.97		pCi/L	20	pCi/L	N
	RD-30	Y	Y	6.0799999		pCi/L	20	pCi/L	N
	RS-28	Y	Y	1.42		pCi/L	20	pCi/L	N
Vanadium, Dissolved	DD-140	Y	Y	0.0036		mg/l	0.0026	mg/L	Y
	DD-141	N	Y	0.0017		mg/l	0.0026	mg/L	N
	PZ-116	Y	Y	0.0008		mg/l	0.0026	mg/L	N
	DS-45	Y	Y	0.0053		mg/l	0.0026	mg/L	Y
	PZ-005	Y	Y	0.0009		mg/l	0.0026	mg/L	N

Table 9
First-Time Detects and New Maximum Concentrations, Q1 2017, Area IV

Analyte	Well Identifier	Is this 1st Detection? (Y/N)	Is Result New Maximum? (Y/N)	2017 Result		Result Unit	Groundwater Screening Reference Value	Unit	Exceed SL?
Vanadium, Total	DD-141	N	Y	0.0059		mg/l	0.0026	mg/L	Y
	DD-143	N	Y	0.0043		mg/l	0.0026	mg/L	Y
	DD-144	N	Y	0.012		mg/l	0.0026	mg/L	Y
	PZ-005	Y	Y	0.0059		mg/l	0.0026	mg/L	Y
	PZ-104	Y	Y	0.0062		mg/l	0.0026	mg/L	Y
	RD-21	N	Y	0.0029		mg/l	0.0026	mg/L	Y
	RD-54A	N	Y	0.0058		mg/l	0.0026	mg/L	Y
	DS-45	Y	Y	0.0055		mg/l	0.0026	mg/L	Y
	PZ-116	Y	Y	0.0011		mg/l	0.0026	mg/L	N
	RS-25	Y	Y	0.01	J+	mg/l	0.0026	mg/L	Y
	RS-27	Y	Y	0.0047	J+	mg/l	0.0026	mg/L	Y
Zinc, Dissolved	DD-145	N	Y	0.0042		mg/l	6.3	mg/L	N
	PZ-103	Y	Y	0.003		mg/l	6.3	mg/L	N
	PZ-120	Y	Y	0.028		mg/l	6.3	mg/L	N
	DS-45	Y	Y	0.0044		mg/l	6.3	mg/L	N
	DS-46	Y	Y	0.0037		mg/l	6.3	mg/L	N
	PZ-005	Y	Y	0.0053		mg/l	6.3	mg/L	N
	RS-25	Y	Y	0.033		mg/l	6.3	mg/L	N
	RS-27	Y	Y	0.0046		mg/l	6.3	mg/L	N
Zinc, Total	DD-144	N	Y	0.016		mg/l	6.3	mg/L	N
	DS-43	N	Y	0.0035	J+	mg/l	6.3	mg/L	N
	DS-44	N	Y	0.0057		mg/l	6.3	mg/L	N
	PZ-005	Y	Y	0.016		mg/l	6.3	mg/L	N
	PZ-104	Y	Y	0.013		mg/l	6.3	mg/L	N
	PZ-105	Y	Y	0.0059		mg/l	6.3	mg/L	N
	PZ-120	Y	Y	0.065	J+	mg/l	6.3	mg/L	N
	RD-21	N	Y	0.04	J+	mg/l	6.3	mg/L	N
	RD-22	N	Y	0.059		mg/l	6.3	mg/L	N
	RD-54A	N	Y	0.43		mg/l	6.3	mg/L	N
	RS-18	N	Y	0.0023		mg/l	6.3	mg/L	N
	RS-54	N	Y	0.82	J+	mg/l	6.3	mg/L	N
	DS-45	Y	Y	0.0036	J+	mg/l	6.3	mg/L	N
	DS-46	Y	Y	0.0029		mg/l	6.3	mg/L	N
	PZ-116	Y	Y	0.0067	J+	mg/l	6.3	mg/L	N
	RS-25	Y	Y	0.053		mg/l	6.3	mg/L	N
	RS-27	Y	Y	0.027		mg/l	6.3	mg/L	N

NOTES AND ABBREVIATIONS:

A - Screening Reference Value not developed for this analyte.

* first time analyzed for the detected analyte

J - Estimated value. Result may receive a J flag for the following reasons:

- Routinely indicates that the analyte was detected at a level less than the RL and greater than of equal to the MDL.

- In rare instances indicates that minor quality control deficiencies have slightly compromised result accuracy.

mg/L - milligram per liter

ug/L - microgram per liter

pCi/L - picocurie per liter

SL - Screening Level (See Table 8 for details)

TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	C-08	C-08	DD-139	DD-140	DD-141	DD-142	DD-143	DD-144	DD-145
				Sample Name	C-08_032117_01_L	C-08_032117_36_L	DD-139_030917_01_L	DD-140_030817_01_L	DD-141_031617_01_L	DD-142_031317_01_L	DD-143_031617_01_L	DD-144_032017_01_L	DD-145_032017_01_L
				Sample Date	3/21/2017	3/21/2017	3/9/2017	3/8/2017	3/16/2017	3/13/2017	3/16/2017	3/20/2017	3/20/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	FD	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.64 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	11 J	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 UJ	0.27 U	0.27 U	0.27 U	1.1 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.88 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.92 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.52 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	8 U	2 U
Acetone	T	8260B	ug/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	7.6 U	1.9 U
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.64 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 UJ	0.19 U	0.19 U	0.19 U	0.19 U	0.76 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.64 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	1.4	1.3	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	14	0.15 U
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.64 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 UJ	0.32 UJ	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	1.3 U	0.32 U
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	4.6	0.2 U	0.8 U	0.2 U
Toluene	T	8260B	ug/L	0.54 J	0.54 J	0.17 U	1.1	0.17 U	0.17 U	0.17 U	0.68 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.63 J	0.15 U
Trichloroethene	T	8260B	ug/L	2.5	2.4	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	170	0.61 J
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 UJ	0.29 U	0.29 U	0.29 U	0.29 U	1.2 U	0.29 U
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.4 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.76 U	0.19 U

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter

--- - Not analyzed

FD - Field Duplicate

N - Normal Sample

TA DEN - Test America Denver, Colorado

TA IRV - Test America Irvine, California

TA STL - Test America St. Louis

U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.

J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.

UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.

D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.

T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	DS-43	DS-44	DS-44	DS-45	DS-46	DS-47	PZ-005	PZ-041	PZ-098
				Sample Name	DS-43_031317_01_L	DS-44_031617_01_L	DS-44_031617_36_L	DS-45_030917_01_L	DS-46_030817_01_L	DS-47_031517_01_L	PZ-005_030717_01_L	PZ-041_030917_01_L	PZ-098_030717_01_L
				Sample Date	3/13/2017	3/16/2017	3/16/2017	3/9/2017	3/8/2017	3/15/2017	3/7/2017	3/9/2017	3/7/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Shallow	Shallow	Shallow
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	FD	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 U	0.27 UJ	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Acetone	T	8260B	ug/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.8 J	1.9 U	1.9 U	1.9 U	1.9 U
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Tetrachloroethene	T	8260B	ug/L	0.57 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.28 J	0.2 U	0.2 U	0.2 U
Toluene	T	8260B	ug/L	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.32 J	0.17 U	0.17 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	1.1	0.16 U	1.5	0.16 U	1.2	
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 UJ	0.29 U	0.29 U	0.29 U	0.29 UJ	0.29 U	
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	

NOTES AND ABBREVIATIONS
ug/L - micrograms per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
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J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	PZ-098	PZ-100	PZ-103	PZ-104	PZ-105	PZ-108	PZ-109	PZ-116	PZ-120
				Sample Name	PZ-098_030717_36_L	PZ-100_030717_01_L	PZ-103_030717_01_L	PZ-104_030717_01_L	PZ-105_030617_01_L	PZ-108_030617_01_L	PZ-109_031317_01_L	PZ-116_031017_01_L	PZ-120_031017_01_L
				Sample Date	3/7/2017	3/7/2017	3/7/2017	3/7/2017	3/6/2017	3/6/2017	3/13/2017	3/10/2017	3/10/2017
				Geological Unit	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	FD	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	1.6 U	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	4.2 U	0.42 U	0.42 U	0.76 J
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	2.7 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	2.2 U	0.22 U	0.22 U	0.44 J
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.26 J	0.23 U	0.23 U	2.3 U	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.3 U	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 U	2 U	2 U	2 U	20 U	2 U	2 U	2 U
Acetone	T	8260B	ug/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	1.9 U	1.9 U	4.5 J
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	1.6 U	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	0.19 U	0.19 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	1.6 U	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	19	1.9	0.15 U	2
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	1.6 U	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	3.2 U	0.32 U	0.32 U	0.32 U
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2 U	42	0.2 U	0.2 U
Toluene	T	8260B	ug/L	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	1.7 U	0.17 U	0.17 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	1.5 U	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	1.2	0.16 U	0.53 J	1.8	7.9	160	4.9	0.16 U	13
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	2.9 U	0.29 U	0.29 U	0.29 U
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	0.19 U	0.19 U	0.19 U

NOTES AND ABBREVIATIONS
ug/L - micrograms per liter
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FD - Field Duplicate
N - Normal Sample
TA DEN - Test America Denver, Colorado
TA IRV - Test America Irvine, California
TA STL - Test America St. Louis
U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	PZ-122	RD-07	RD-07	RD-14	RD-14	RD-14	RD-17	RD-17	RD-19
			Sample Name	PZ-122_031417_01_L	RD-07_031317_01_L	RD-07_031317_36_L	RD-14_032017_01_L	RD-14_032017_01_L	RD-14_032017_36_L	RD-17_032217_01_L	RD-17_032217_36_L	RD-19_032317_01_L
			Sample Date	3/14/2017	3/13/2017	3/13/2017	3/20/2017	3/20/2017	3/20/2017	3/22/2017	3/22/2017	3/23/2017
			Geological Unit	Shallow	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA IRV	TA IRV	TA DEN	TA DEN	TA DEN
			Sample Type	N	N	FD	N	N	FD	N	FD	N
Analyte	**Fraction**	**Method**	**Units**									
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	---	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	---	---	0.42 U	0.42 U	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 U	---	---	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	---	---	0.22 U	0.22 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.23 U	0.23 U	---	---	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	0.0017 U	0.0017 U	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	---	---	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 U	2 U	2 U	---	---	2 U	2 U	2 U
Acetone	T	8260B	ug/L	1.9 U	1.9 U	1.9 U	1.9 U	---	---	1.9 U	1.9 U	1.9 U
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	---	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	---	---	0.19 U	0.19 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	---	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	2.6	2.8	0.15 U	---	---	0.15 U	0.15 U	0.15 U
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	---	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 U	0.32 U	0.32 U	---	---	0.32 UJ	0.32 UJ	0.32 UJ
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	---	---	0.2 U	0.2 U	0.2 U
Toluene	T	8260B	ug/L	0.17 U	0.17 U	0.17 U	0.17 U	---	---	0.17 U	0.17 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	---	---	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	1.6	29	31	0.43 J	---	---	0.71 J	0.7 J	0.16 U
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 U	---	---	0.29 U	0.29 U	0.29 U
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	---	---	0.1 U	0.1 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	---	---	0.19 U	0.19 U	0.19 U

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter

--- - Not analyzed

FD - Field Duplicate

N - Normal Sample

TA DEN - Test America Denver, Colorado

TA IRV - Test America Irvine, California

TA STL - Test America St. Louis

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J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.

UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.

D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.

T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-20	RD-21	RD-22	RD-23	RD-24	RD-27	RD-29	RD-30	RD-30
			Sample Name	RD-20_030717_01_L	RD-21_032117_01_L	RD-22_031417_01_L	RD-23_031417_01_L	RD-24_031317_01_L	RD-27_032217_01_L	RD-29_031717_01_L	RD-30_031517_01_L	RD-30_031517_36_L
			Sample Date	3/7/2017	3/21/2017	3/14/2017	3/14/2017	3/13/2017	3/22/2017	3/17/2017	3/15/2017	3/15/2017
			Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
			Sample Type	N	N	N	N	N	N	N	N	FD
Analyte	**Fraction**	**Method**	**Units**									
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.23 U	0.6 J	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Acetone	T	8260B	ug/L	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.6 J	1.9 U	4.5 J	3.1 J
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	8.3	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	2.9	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	1	0.15 U	1.4	0.15 U	0.15 U	0.24 J	0.32 J	0.3 J
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 UJ	0.32 U	0.32 U	0.32 U	0.32 UJ	0.32 U	0.32 U	0.32 U
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	T	8260B	ug/L	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.24 J	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	0.16 U	27	0.16 U	34	0.16 U	0.16 U	4.4	3.2	3.2
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U

NOTES AND ABBREVIATIONS
ug/L - micrograms per liter
--- - Not analyzed
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TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-33A	RD-33B	RD-33C	RD-34A	RD-34A	RD-34B	RD-34C	RD-54A	RD-54B
			Sample Name	RD-33A_031317_01_L	RD-33B_032217_01_L	RD-33C_032217_01_L	RD-34A_032317_01_L	RD-34A_032317_36_L	RD-34B_032317_01_L	RD-34C_031717_01_L	RD-54A_032017_01_L	RD-54B_032117_01_L
			Sample Date	3/13/2017	3/22/2017	3/22/2017	3/23/2017	3/23/2017	3/23/2017	3/17/2017	3/20/2017	3/21/2017
			Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
			Sample Type	N	N	N	N	FD	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**									
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	0.16 U	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	---	0.42 U	0.42 U	0.42 U	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 U	---	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.47 J	0.22 U	0.22 U	0.22 U	---	0.22 U	0.22 U	0.22 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.56 J	0.23 U	0.23 U	0.23 U	---	0.23 U	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	---	0.13 U	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	0.22 U	0.22 U	0.22 U	0.22 U	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U	2 U
Acetone	T	8260B	ug/L	1.9 U	1.9 U	1.9 U	1.9 U	---	1.9 U	4.1 J	1.9 U	1.9 U
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	0.16 U	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	---	0.19 U	0.19 U	0.19 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	0.16 U	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	1.9	0.15 U	0.15 U	0.59 J	---	0.15 U	0.15 U	2.2 J	0.15 U
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	---	0.16 U	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 UJ	0.32 UJ	0.32 UJ	---	0.32 UJ	0.32 U	0.32 U	0.32 UJ
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	T	8260B	ug/L	0.59 J	0.17 U	0.17 U	0.17 U	---	0.17 U	0.17 U	0.17 U	0.69 J
trans-1,2-Dichloroethene	T	8260B	ug/L	2.1	0.15 U	0.15 U	0.16 J	---	0.15 U	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	0.8 J	0.16 U	0.16 U	2.3	---	0.16 U	0.16 U	3.9 J	0.16 U
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 U	---	0.29 U	0.29 U	0.29 U	0.29 U
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	---	0.1 U	0.1 U	0.1 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	---	0.19 U	0.19 U	0.19 U	0.19 U

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter

--- - Not analyzed

FD - Field Duplicate

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D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.

T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-54C	RD-59A	RD-59B	RD-59C	RD-63	RD-64	RD-65	RD-96	RD-97
				Sample Name	RD-54C_031717_01_L	RD-59A_032417_01_L	RD-59B_032417_01_L	RD-59C_032417_01_L	RD-63_031717_01_L	RD-64_031617_01_L	RD-65_031717_01_L	RD-96_032117_01_L	RD-97_031317_01_L
				Sample Date	3/17/2017	3/24/2017	3/24/2017	3/24/2017	3/17/2017	3/16/2017	3/17/2017	3/21/2017	3/13/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth Artesian	Chatsworth Artesian	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.61 J	0.22 U	3.3	0.22 U	0.22 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.23 U	0.23 U	0.85 J	0.23 U	9.2	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.19 J	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 UJ	2 UJ	2 UJ	2 U	2 U	2 U	2 U	2 U	2 U
Acetone	T	8260B	ug/L	19	1.9 UJ	1.9 UJ	1.9 UJ	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	4.7	5	7.4	0.15 U	0.15 U	0.15 U
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 UJ	0.32 UJ	0.32 UJ	0.32 U	0.32 U	0.32 U	0.32 U	0.32 UJ	0.32 U
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	T	8260B	ug/L	1.3	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.66 J	12	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	6.2	25	47	0.16 U	0.16 U	0.16 U
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U

NOTES AND ABBREVIATIONS

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TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-98	RS-18	RS-25	RS-27	RS-28	RS-54	SP-19A	SP-19B	SP-424A
				Sample Name	RD-98_031717_01_L	RS-18_030817_01_L	RS-25_032817_01_L	RS-27_032817_01_L	RS-28_031517_01_L	RS-54_030917_01_L	SP-19A_033017_01_L	SP-19B_033017_01_L	SP-424A_032817_01_L
				Sample Date	3/17/2017	3/8/2017	3/28/2017	3/28/2017	3/15/2017	3/9/2017	3/30/2017	3/30/2017	3/28/2017
				Geological Unit	Chatsworth	Shallow	Shallow	Shallow	Shallow	Shallow			
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	11000	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	42 U	0.42 U	0.42 U	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 UJ	0.27 U	0.27 U	0.27 U	27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	1700	0.22 U	0.22 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	1300	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	13 U	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	---	---	---	---	---	---	0.22 U	0.22 U	0.22 U
2-Butanone (MEK)	T	8260B	ug/L	2 U	2 U	2 UJ	2 UJ	2 U	200 U	2 U	2 U	2 UJ
Acetone	T	8260B	ug/L	2.7 J	1.9 U	1.9 UJ	1.9 UJ	7.3 J	190 U	1.9 UJ	1.9 UJ	1.9 UJ
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	16 U	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	19 UJ	0.19 U	0.19 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	16 J	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	15 U	0.15 U	0.15 U	0.15 U
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	16 U	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	90 J	0.32 U	0.32 U	0.32 U
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	20 U	0.2 U	0.2 U	0.2 U
Toluene	T	8260B	ug/L	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	17 U	0.17 U	0.17 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	15 U	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	1.4	0.49 J	0.16 U	0.16 U	0.16 U	1200	0.16 U	0.16 U	0.16 U
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	29 UJ	0.29 U	0.29 U	0.29 U
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	10 U	0.1 U	0.1 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	19 U	0.19 U	0.19 U	0.19 U

NOTES AND ABBREVIATIONS

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TABLE 10
VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	SP-424A	SP-424B	SP-424C	SP-900A	SP-900B	SP-T02B	SP-T02D
			Sample Name	SP-424A_032817_36_L	SP-424B_032817_01_L	SP-424C_032917_01_L	SP-900A_032717_01_L	SP-900B_032717_01_L	SP-T02B_032317_01_L	SP-T02D_033117_01_L
			Sample Date	3/28/2017	3/28/2017	3/29/2017	3/27/2017	3/27/2017	3/23/2017	3/31/2017
			Geological Unit							
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
			Sample Type	FD	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**							
1,1,1-Trichloroethane	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,1,2-Trichloro-1,2,2-trifluoroethane	T	8260B	ug/L	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
1,1,2-Trichloroethane	T	8260B	ug/L	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethane	T	8260B	ug/L	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1-Dichloroethene	T	8260B	ug/L	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,2,3-Trichloropropane	T	524.2	ug/L	---	---	---	---	---	---	---
1,2-Dichloroethane	T	8260B	ug/L	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
1,4-Dioxane	T	8260B SIM	ug/L	0.22 U	0.22 U	0.22 U	---	---	---	---
2-Butanone (MEK)	T	8260B	ug/L	2 UJ	2 UJ	2 U	2 UJ	2 UJ	2 U	2 U
Acetone	T	8260B	ug/L	1.9 UJ	1.9 UJ	1.9 U	1.9 UJ	1.9 UJ	5.6 J	1.9 U
Benzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Carbon Tetrachloride	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Chloroform	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
cis-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Ethylbenzene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Methylene Chloride	T	8260B	ug/L	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 UJ	0.32 U
Tetrachloroethene	T	8260B	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	T	8260B	ug/L	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
trans-1,2-Dichloroethene	T	8260B	ug/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Trichloroethene	T	8260B	ug/L	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Trichlorofluoromethane	T	8260B	ug/L	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 UJ
Vinyl chloride	T	8260B	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Xylenes (Total)	T	8260B	ug/L	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter

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D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.

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TABLE 11
PERCHLORATE ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	DD-139	DD-141	DD-141	PZ-098	PZ-100	RD-21	RD-22	RD-23	RD-24
				Sample Name	DD-139_030917_01_L	DD-141_031617_01_L	DD-141_031617_36_L	PZ-098_030717_01_L	PZ-100_030717_01_L	RD-21_032117_01_L	RD-22_031417_01_L	RD-23_031417_01_L	RD-24_031317_01_L
				Sample Date	3/9/2017	3/16/2017	3/16/2017	3/7/2017	3/7/2017	3/21/2017	3/14/2017	3/14/2017	3/13/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Shallow	Shallow	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	FD	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Perchlorate	T	6860	ug/L	0.04	0.25	0.24	0.69	3.5	1.9	0.004 U	0.004 U	0.004 UJ	

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TABLE 11
PERCHLORATE ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-33A	RD-33B	RD-33C	RD-33C	RD-54A	RD-54B	RD-54C	RD-59A	RD-59B
				Sample Name	RD-33A_031317_01_L	RD-33B_032217_01_L	RD-33C_032217_01_L	RD-33C_032217_36_L	RD-54A_032017_01_L	RD-54B_032117_01_L	RD-54C_031717_01_L	RD-59A_032417_01_L	RD-59B_032417_01_L
				Sample Date	3/13/2017	3/22/2017	3/22/2017	3/22/2017	3/20/2017	3/21/2017	3/17/2017	3/24/2017	3/24/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth Artesian
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	FD	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Perchlorate	T	6860	ug/L	0.013 J	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.016	0.004 U

NOTES AND ABBREVIATIONS

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TABLE 11
PERCHLORATE ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-59C	RD-64	RD-96	RS-18	RS-54	SP-19A	SP-19B	SP-424A	SP-424A
				Sample Name	RD-59C_032417_01_L	RD-64_031617_01_L	RD-96_032117_01_L	RS-18_030817_01_L	RS-54_030917_01_L	SP-19A_033017_01_L	SP-19B_033017_01_L	SP-424A_032817_01_L	SP-424A_032817_36_L
				Sample Date	3/24/2017	3/16/2017	3/21/2017	3/8/2017	3/9/2017	3/30/2017	3/30/2017	3/28/2017	3/28/2017
				Geological Unit	Chatsworth Artesian	Chatsworth	Chatsworth	Shallow	Shallow				
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	N	N	N	FD
Analyte	**Fraction**	**Method**	**Units**										
Perchlorate	T	6860	ug/L	0.004 U	0.088	0.004 U	1.1	2.2	0.011	0.0095	0.01	0.01

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TABLE 11
PERCHLORATE ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	SP-424B	SP-424C	SP-900A	SP-900B
			Sample Name	SP-424B_032817_01_L	SP-424C_032917_01_L	SP-900A_032717_01_L	SP-900B_032717_01_L
			Sample Date	3/28/2017	3/29/2017	3/27/2017	3/27/2017
			Geological Unit				
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN
			Sample Type	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**				
Perchlorate	T	6860	ug/L	0.0075	0.014 J	0.043	0.12

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TABLE 12
FUEL HYDROCARBONS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	DD-141	DD-141	DD-143	DD-143	DD-143	DD-143	DD-145	DD-145	DD-145
				Sample Name	DD-141_031617_01_L	DD-141_031617_01_L	DD-143_031617_01_L	DD-143_031617_01_L	DD-143_031617_36_L	DD-143_031617_36_L	DD-145_031517_01_L	DD-145_031517_01_L	DD-145_031517_36_L
				Sample Date	3/16/2017	3/16/2017	3/16/2017	3/16/2017	3/16/2017	3/16/2017	3/15/2017	3/15/2017	3/15/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN
				Sample Type	N	N	N	N	FD	FD	N	N	FD
Analyte	**Fraction**	**Method**	**Units**										
Diesel Range Organics [C10-C28]	T	8015B	ug/L	---	510	---	16 UJ	---	17 UJ	---	120	---
Gasoline Range Organics (GRO)-C6-C10	T	8015B	ug/L	10 U	---	10 U	---	10 U	---	10 U	---	10 U

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TABLE 12
FUEL HYDROCARBONS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	PZ-041	PZ-041	PZ-103	PZ-103	PZ-105	PZ-105	PZ-116	PZ-116	PZ-122
				Sample Name	PZ-041_030917_01_L	PZ-041_030917_01_L	PZ-103_030717_01_L	PZ-103_030717_01_L	PZ-105_030617_01_L	PZ-105_030617_01_L	PZ-116_031017_01_L	PZ-116_031017_01_L	PZ-122_031417_01_L
				Sample Date	3/9/2017	3/9/2017	3/7/2017	3/7/2017	3/6/2017	3/6/2017	3/10/2017	3/10/2017	3/14/2017
				Geological Unit	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
				Lab Name	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN
				Sample Type	N	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Diesel Range Organics [C10-C28]	T	8015B	ug/L	---	17 U	---	17 U	---	180	---	16 U	---
Gasoline Range Organics (GRO)-C6-C10	T	8015B	ug/L	10 U	---	10 U	---	10 U	---	10 U	---	10 U	---

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J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.

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T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 12
FUEL HYDROCARBONS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	PZ-122	RD-14	RD-14	RD-19	RD-19	RD-22	RD-22	RD-23	RD-23
				Sample Name	PZ-122_031417_01_L	RD-14_032017_01_L	RD-14_032017_01_L	RD-19_032317_01_L	RD-19_032317_01_L	RD-22_031417_01_L	RD-22_031417_01_L	RD-23_031417_01_L	RD-23_031417_01_L
				Sample Date	3/14/2017	3/20/2017	3/20/2017	3/23/2017	3/23/2017	3/14/2017	3/14/2017	3/14/2017	3/14/2017
				Geological Unit	Shallow	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL
				Sample Type	N	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Diesel Range Organics [C10-C28]	T	8015B	ug/L	180 J	---	16 UJ	---	17 UJ	---	16 UJ	---	17 U
Gasoline Range Organics (GRO)-C6-C10	T	8015B	ug/L	---	10 U	---	10 U	---	10 U	---	10 U	---	---

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter

--- - Not analyzed

FD - Field Duplicate

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D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.

T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 12
FUEL HYDROCARBONS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-30	RD-30	RD-34A	RD-34A	RD-64	RD-64	RD-96	RD-96	RD-96
			Sample Name	RD-30_031517_01_L	RD-30_031517_01_L	RD-34A_032317_01_L	RD-34A_032317_01_L	RD-64_031617_01_L	RD-64_031617_01_L	RD-96_032117_01_L	RD-96_032117_01_L	RD-96_032117_36_L
			Sample Date	3/15/2017	3/15/2017	3/23/2017	3/23/2017	3/16/2017	3/16/2017	3/21/2017	3/21/2017	3/21/2017
			Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
			Lab Name	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN	TA STL	TA DEN
			Sample Type	N	N	N	N	N	N	N	N	FD
Analyte	**Fraction**	**Method**	**Units**									
Diesel Range Organics [C10-C28]	T	8015B	ug/L	---	17 U	---	16 UJ	---	17 UJ	---	18 UJ	---
Gasoline Range Organics (GRO)-C6-C10	T	8015B	ug/L	10 U	---	10 U	---	10 U	---	10 U	---	10 U

NOTES AND ABBREVIATIONS

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TABLE 12
FUEL HYDROCARBONS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-96	RS-28	RS-28
			Sample Name	RD-96_032117_36_L	RS-28_031517_01_L	RS-28_031517_01_L
			Sample Date	3/21/2017	3/15/2017	3/15/2017
			Geological Unit	Chatsworth	Shallow	Shallow
			Lab Name	TA STL	TA DEN	TA STL
			Sample Type	FD	N	N
Analyte	**Fraction**	**Method**	**Units**			
Diesel Range Organics [C10-C28]	T	8015B	ug/L	18 UJ	---	890
Gasoline Range Organics (GRO)-C6-C10	T	8015B	ug/L	---	10 U	---

NOTES AND ABBREVIATIONS

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TABLE 13
INORGANIC ANALYTES ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	DD-143	DD-143	DD-145	PZ-005	PZ-103	PZ-104	PZ-105	PZ-122	PZ-122
				Sample Name	DD-143_031617_01_L	DD-143_032317_01_L	DD-145_031517_01_L	PZ-005_030717_01_L	PZ-103_030717_01_L	PZ-104_030717_01_L	PZ-105_030617_01_L	PZ-122_031417_01_L	PZ-122_031417_36_L
				Sample Date	3/16/2017	3/23/2017	3/15/2017	3/7/2017	3/7/2017	3/7/2017	3/6/2017	3/14/2017	3/14/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
				Lab Name	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL
				Sample Type	N	N	N	N	N	N	N	N	FD
Analyte	**Fraction**	**Method**	**Units**										
Fluoride	T	300.0	mg/L	0.33 J	---	0.41 J	0.45 J	0.47 J	0.38 J	0.46	0.32 J	0.31 J	
Nitrate as N	T	300.0	mg/L	---	0.007 U	1.5	27	24	0.025	4.5	1.6	1.5	

NOTES AND ABBREVIATIONS

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T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 13
INORGANIC ANALYTES ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-14	RD-19	RD-19	RD-34A	RD-34B	RD-34C	RD-59A	RD-59B	RD-59B
				Sample Name	RD-14_032017_01_L	RD-19_032317_01_L	RD-19_032317_36_L	RD-34A_032317_01_L	RD-34B_032317_01_L	RD-34C_031717_01_L	RD-59A_032417_01_L	RD-59B_032417_01_L	RD-59B_032417_36_L
				Sample Date	3/20/2017	3/23/2017	3/23/2017	3/23/2017	3/23/2017	3/17/2017	3/24/2017	3/24/2017	3/24/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth Artesian	Chatsworth Artesian
				Lab Name	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL
				Sample Type	N	N	FD	N	N	N	N	N	FD
Analyte	**Fraction**	**Method**	**Units**										
Fluoride	T	300.0	mg/L	0.27	0.34	0.34	0.33	0.58	0.4	0.67	0.71	0.74
Nitrate as N	T	300.0	mg/L	---	---	---	---	---	---	---	---	---

NOTES AND ABBREVIATIONS

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T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 13
INORGANIC ANALYTES ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-59C	SP-19A	SP-19B	SP-424A	SP-424A	SP-424B	SP-424C
				Sample Name	RD-59C_032417_01_L	SP-19A_033017_01_L	SP-19B_033017_01_L	SP-424A_032817_01_L	SP-424A_032817_36_L	SP-424B_032817_01_L	SP-424C_032917_01_L
				Sample Date	3/24/2017	3/30/2017	3/30/2017	3/28/2017	3/28/2017	3/28/2017	3/29/2017
				Geological Unit	Chatsworth Artesian						
				Lab Name	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL	TA STL
				Sample Type	N	N	N	N	FD	N	N
Analyte	**Fraction**	**Method**	**Units**								
Fluoride	T	300.0	mg/L	0.67	0.8	1	2	2.3	2.1	2.4
Nitrate as N	T	300.0	mg/L	---	---	---	---	---	---	---

NOTES AND ABBREVIATIONS

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TABLE 14
RADIOCHEMISTRY ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	DD-141			DD-143			DD-144			DS-44			DS-47			PZ-116			PZ-120			PZ-122			RD-14		
			Sample Name	DD-141_031617_01_L			DD-143_031617_01_L			DD-144_031517_01_L			DS-44_031617_01_L			DS-47_031517_01_L			PZ-116_031017_01_L			PZ-120_031017_01_L			PZ-122_031417_01_L			RD-14_032017_01_L		
			Sample Date	3/16/2017			3/16/2017			3/15/2017			3/16/2017			3/15/2017			3/10/2017			3/10/2017			3/14/2017			3/20/2017		
			Geological Unit	Chatsworth			Chatsworth			Chatsworth			Chatsworth			Chatsworth			Shallow			Shallow			Shallow			Chatsworth		
			Lab Name	TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL		
			Sample Type	N			N			N			N			N			N			N			N			N		
Analyte	**Fraction**	**Method**	**Units**	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC
Actinium-228	T	901.1	pCi/L	9.75 U	20.2	54.1	53.3 U	53.7	58.1	---	---	---	26.2 U	44.5	69.1	8.19 U	24	54.1	18.4 U	29.6	65.5	-2.95 U	8.64	93.3	37.5 U	65.4	87.4	16.5 U	13	64.4
Actinium-228	D	901.1	pCi/L	14.3 U	24.8	54.1	0.454 U	1.64	104	---	---	---	6 U	15.4	67.1	31.3 U	71.2	80.4	3.63 U	10.1	86.2	29.5 U	54.8	65.5	22.5 U	38.5	106	6.51 U	13.6	86.6
Americium-241	T	901.1	pCi/L	4.67 U	24.6	41.4	5.32 U	23.1	38.9	---	---	---	8.04 U	22.9	38.3	-8.37 U	27.9	46.6	11.9 U	32.8	54.8	9.05 U	28.8	48.2	7 U	41.7	69.6	6.87 U	22.5	37.7
Americium-241	D	901.1	pCi/L	3.54 U	23.2	39.2	10.2 U	28.5	47.8	---	---	---	-1.44 U	20.9	35.2	0.829 U	24.3	40.7	4.36 U	10.7	17.7	-5.83 U	31.2	52.5	6.36 U	39.7	66.1	9.75 U	27.6	46.1
Antimony-125	T	901.1	pCi/L	1.39 U	2.46	33.1	9.4 U	23.4	24.2	---	---	---	-20 U	23.4	41.5	9.82 U	21.8	28.8	22 U	41.2	43.6	17.8 U	31.1	33.9	19.7 U	38	43.4	-5.08 U	22.6	35.7
Antimony-125	D	901.1	pCi/L	10.9 U	21.5	25.5	12 U	24	32.2	---	---	---	1.26 U	2.57	34.1	-10.7 U	32.3	39.6	11.2 U	18.4	39.6	22.5 U	18.7	43.6	8.15 U	44.5	49.6	2.07 U	2.07	51
Barium-133	T	901.1	pCi/L	1.94 U	4.83	26.6	-6.64 U	14.7	24.7	---	---	---	7.7 U	14.1	21.2	4.41 U	18.7	31.6	8.39 U	34.1	50.7	1.29 U	3.05	46.1	-4.02 U	45	75.2	8.16 U	16.9	21.8
Barium-133	D	901.1	pCi/L	7.81 U	17.1	25.3	2.1 U	2.57	23.6	---	---	---	1.89 U	4.15	22.6	4.81 U	28.2	42.2	-3.64 U	8.02	33.7	8.92 U	19.8	43.9	-4.15 U	18.2	74	-8.36 U	26.7	44.8
Cesium-134	T	901.1	pCi/L	8.86 U	16.3	24.1	-1.11 U	2.02	26.8	---	---	---	-0.523 U	1.16	29.4	4.65 U	9.31	30.2	5.4 U	9.83	44.5	-5.68 U	19.5	43.3	6.34 U	17.1	63.8	9.16 U	16.4	17.2
Cesium-134	D	901.1	pCi/L	6.53 UJ	4.05	24.4	1.91 UJ	4.02	27.4	---	---	---	4.85 UJ	8.88	22.1	-4.16 U	13.2	38	-0.997 U	2.2	30.9	4.85 U	10.6	40.3	12.3 U	29.6	58.9	-5.37 UJ	15.7	38.9
Cesium-137	T	901.1	pCi/L	6.98 U	6.95	8	8.46 U	7.82	8.6	---	---	---	-1.86 U	12.5	14.9	-2.6 U	11.2	13.8	4.17 U	17.1	20.5	-8.82 U	16.7	19.9	5.97 U	11.5	13.8	-5.97 U	11.5	13.8
Cesium-137	D	901.1	pCi/L	-2.11 U	11.1	13.8	0.212 U	15.4	18.9	---	---	---	10.4	4.37	3.19	0.433 U	9.76	11.9	-8.22 U	14.8	16.9	3.68 U	14.1	17.1	-11.6 U	20.8	23.4	-7.44 U	15.2	17.5
Cobalt-57	T	901.1	pCi/L	-0.429 U	0.683	9.57	7.43	6.04	7.37	---	---	---	-1 U	2.57	8.99	1.58 U	6.02	8.22	3.45 U	6.04	13	2.67 U	6.99	9.46	7.99 U	12.6	12.5	1.93 U	8.21	8.22
Cobalt-57	D	901.1	pCi/L	0.84 U	4.06	8.73	-4.58 U	9.54	12.2	---	---	---	0.547 U	6.08	7.94	-1.14 U	6.14	10.4	3.42 U	7.01	8.94	0.929 U	5.26	11.8	1.39 U	10.2	13.1	-0.019 U	0.0285	11
Cobalt-60	T	901.1	pCi/L	-4.26 U	9.9	15.9	1.38 U	3.83	16.9	---	---	---	-0.682 U	15.1	14.3	3.41 U	5.99	10.4	10.7	7.87	8.55	3.99 U	14.2	16.5	-0.646 U	1.05	21.5	0.678 U	3.24	5.38
Cobalt-60	D	901.1	pCi/L	-5.97 U	6.66	18	7.19 U	6.72	8.55	---	---	---	0.341 U	10.8	13	5.29 U	11.4	13	-3.36 U	14.6	15.1	-0.548 U	17.5	21.5	0.97 U	7.83	20.1	0.837 U	12.3	14.3
Europium-152	T	901.1	pCi/L	-16 U	32.3	41.6	14.2 U	26.7	33.2	---	---	---	2.6 U	4.02	37.1	20.6 U	21.6	30.8	-26.1 U	50.1	61.5	15.1 U	31	37.9	-19.1 U	41.9	53.6	2.02 U	6.15	33.3
Europium-152	D	901.1	pCi/L	14.5 U	20.2	25.1	1.61 U	3.1	52.1	---	---	---	2.96 U	10.5	34	22.6 U	35	35.9	15 U	29.5	35.9	-13.9 U	41.6	52.1	5.15 U	41.1	50.5	1.97 U	30	38.3
Europium-154	T	901.1	pCi/L	-2.67 U	3.79	92.2	-32.9 U	82.7	91.1	---	---	---	24.9 U	48.4	72.7	-61.1 U	110	122	33.8 U	60.7	67.1	-49 U	94.2	106	-49 U	105	116	-42.5 U	82.2	92.2
Europium-154	D	901.1	pCi/L	-55.3 U	100	111	-4.39 U	31.2	89.2	---	---	---	-32 U	77.4	84.7	6.12 U	16.3	84.7	-35 U	77.6	84.7	-9.61 U	28.1	120	19.6 U	29.2	90.8	-11.3 U	72.6	82.5
Europium-155	T	901.1	pCi/L	-11.5 U	26.5	35.7	12.1 U	25.5	32.7	---	---	---	12.6 U	26.3	33.7	8.63 U	25.3	34.3	6.58 U	33.4	43.5	-14 U	32.6	41.9	14.5 U	39.5	52.8	-7.55 U	24.2	32.9
Europium-155	D	901.1	pCi/L	3.24 U	23.2	31.9	-3.43 U	30.3	39.8	---	---	---	-12.4 U	26.8	34.2	-12.8 U	32.1	40.9	-12.4 U	26.8	34.2	15.2 U	32.2	41.3	1.13 U	40.3	51.7	-2.14 U	33.6	43.5
Gross Alpha	T	900.0	pCi/L	11.2	5.12	6.29	5.5 U	5.94	9.59	---	---	---	14.5	5.41	6.07	5.93	3.69	5.14	40.9	12.6	12.6	10.3	4.24	4.72	7.22	3.94	5.03	6.18	3.52	4.87
Gross Alpha	D	900.0	pCi/L	6.97	4.55	6.43	5.25 U	4.55	6.89	---	---	---	8.5	3.65	4.2	4.45	2.83	3.95	31.7	11.4	11.6	7.2 U	5.21	7.58	14.7	6.25	7.25	6.16	3.27	4.37
Gross Beta	T	900.0	pCi/L	11.8	2.84	2.93	11.6	3.48	4.23	---	---	---	7.76	2.36	2.79	6.85	2.23	2.73	15.7	5.19	6.42	8.19	2.7	3.46	5.58	2.42	3.28	4.97	1.72	2.19
Gross Beta	D	900.0	pCi/L	6.08	1.93	2.31	6.91	2.37	2.95	---	---	---	4.85	1.51	1.75	5.52	1.36	1.44	15.5	6.94	9.66	10.2	4.08	5.51	2.72 U	2.73	4.17	5.04	1.69	2.08
Manganese-54	T	901.1	pCi/L	-6.43 U	12.1	20.3	3.69 U	8.31	14.3	---	---	---	-2.35 U	11.8	20.5	-1.11 U	8.43	15	-5.61 U	14.4	24.7	3.79 U	13.4	23.1	-8.82 U	14.9	24.8	-1.8 U	7.59	13.5
Manganese-54	D	901.1	pCi/L	1.44 U	11.6	20.3	-3.88 U	12	21	---	---	---	0.558 U	9.88	17.4	-8.45 U	12.7	21.1	3.3 U	7.71	13.2	5.61 U	13.9	23.9	-11.1 U	16.5	27.4	-1.57 U	14.5	25.1
Potassium-40	T	901.1	pCi/L	17.7 U	116	169	-117 U	187	245	---	---	---	-96.1 U	224	275	39.9 U	119	169	95.4 U	114	177	-49.5 U	201	257	156	105	144	44.8 U	86.5	144
Potassium-40	D	901.1	pCi/L	-58.8 U	158	209	-73.8 U	199	267	---	---	---	-95.7 U	140	204	30.2 U	130	188	-74.7 U	162	219	-26.6 U	205	267	-248 U	131	292	6.4 U	128	189
Radium-226	T	903.0	pCi/L	2.17	0.338	0.129	1.68	0.289	0.121	---	---	---	0.437	0.142	0.135	0.573	0.151	0.101	0.136	0.091	0.12	0.346	0.15	0.155	0.169	0.12	0.168	0.57	0.151	0.114
Radium-226	D	903.0	pCi/L	1.45	0.262	0.126	1.19	0.229	0.0832	---	---	---	0.216	0.0943	0.0906	0.458	0.148	0.137	0.0175 U	0.0587	0.111	-0.0113 U	0.0495	0.108	0.234	0.0991	0.102	0.47	0.143	0.123
Radium-228	T	904.0	pCi/L	4.08	0.635	0.464	4.13	0.623	0.4	---	---	---	0.312 U	0.25	0.393	0.732	0.289	0.39	0.48	0.256	0.37	0.129 U	0.303	0.525	0.336 U	0.359	0.585	0.77	0.298	0.395
Radium-228	D	904.0	pCi/L	1.87	0.369	0.327	3	0.488	0.353	---	---	---	0.339 U	0.254	0.399	0.435	0.248	0.366	0.28 U	0.223	0.35	0.239 U	0.219	0.351	0.24 U	0.21	0.333	0.78 UJ	0.264	0.337
Sodium-22	T	901.1	pCi/L	-3.05 U	9.65	17	-2.19 U	8.9	16	---	---	---	-11.3 U	12.5	20.1	0.938 U	6.7	12.6	-1.11 U	12.8	23.8	5.64 U	7.33	11.9	5.63 U	8.91	15	2.34 U	6.99	12.6
Sodium-22	D	901.1	pCi/L	-10.1 U	11.6	18.8	11.1	7.14	8.22	---	---	---	1.26 U	7.55	13.8	-2.31 U	8.81	15.7	-1.89 U	7.65	13.8	-7.8 U	13.9	23.8	6.92 U	10.6	17.8	-1.46 U	14.3	16
Strontium-90	T	905.0	pCi/L	-0.027 U	0.188	0.343	-0.0603 U	0.178	0.333	---	---	---	0.0764 U	0.235	0.408	0.0485 U	0.169	0.295	-0.0929 U	0.145	0.283	-0.00929 U	0.161	0.294	-0.0563 U	0.199	0.362	0.113 UJ	0.254	0.434
Strontium-90	D	905.0	pCi/L	-0.0645 U	0.126	0.246	0.271 U	0.208	0.325	---	---	---	0.0479 U	0.148	0.259	-0.00318 U	0.123	0.227	-0.183 U	0.161	0.317	0.091 U	0.167	0.285	0.569	0.248	0.355	-0.214 U	0.212	0.404
Tritium	T	906.0	pCi/L	---	---	---	---	---	---	-13.1 U	102	178	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Uranium-233/234	T	A-01-R	pCi/L	2.35	0.437	0.107	2.74	0.477	0.106	---	---	---	3.13	0.517	0.112	2.84	0.492	0.132	16.1	1.72	0.118	3.98	0.618	0.0947	6.09	0.813	0.0918	1.72	0.357	0.164
Uranium-233/234	D	A-01-R	pCi/L	2.18	0.417	0.122	2.82	0.49	0.127	---	---	---	3.1	0.52	0.124	2.41	0.452	0.0942	19.1	2.02	0.195	4.07	0.647	0.131	6.01	0.826	0.118	2.06	0.407	0.175
Uranium-235/236	T	A-01-R	pCi/L	0.0697 U	0.081	0.111	0.069 U	0.0802	0.11	---	---	---	0.19	0.125	0.0944	0.095 U	0.0903	0.0968	0.595	0.239	0.147	0.289	0.16	0.102	0.393	0.186	0.126	0.129	0.0981	0.0553
Uranium-235/236	D	A-01-R	pCi/L	0.0989	0.0888	0.0593	0.0701 U	0.103	0.177	---	---	---	0.181	0.121	0.0603	0.204	0.134	0.101	1.01	0.33	0.188	0.264	0.161	0.128	0.353	0.179	0.0662	0.0984	0.0884	0.059
Uranium-238	T	A-01-R	pCi/L	1.67	0.356	0.0772	2.17	0.414	0.0885	---	---	---	2.77	0.478	0.0968	1.97	0.392	0.0776	14.8	1.61	0.109	3.86	0.605	0.0817	6.01	0.806	0.101	1.8	0.365	0.142
Uranium-238	D	A-01-R	pCi/L	1.89	0.386	0.152	2.19	0.42	0.121	---	---	---	3.08	0.527	0.232	1.82	0.383	0.0812	17.3	1.86	0.18	3.77	0.616	0.123	6.22	0.845	0.0856	1.77	0.374	0.174

NOTES AND ABBREVIATIONS

pCi/L - picocuries per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
MDC - Minimal Detectable Concentration
TA STL - Test America St. Louis
Q - Result Qualifier
U - Analyzed for, but not detected above reported sample quantitation limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 14
RADIOCHEMISTRY ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-17			RD-19			RD-27			RD-27			RD-30			RD-33A			RD-33B			RD-33C			RD-34A		
			Sample Name	RD-17_032217_01_L			RD-19_032317_01_L			RD-27_032217_01_L			RD-27_032217_36_L			RD-30_031517_01_L			RD-33A_031317_01_L			RD-33B_032217_01_L			RD-33C_032217_01_L			RD-34A_032317_01_L		
			Sample Date	3/22/2017			3/23/2017			3/22/2017			3/22/2017			3/15/2017			3/13/2017			3/22/2017			3/22/2017			3/23/2017		
			Geological Unit	Chatsworth			Chatsworth			Chatsworth			Chatsworth			Chatsworth			Chatsworth			Chatsworth			Chatsworth			Chatsworth		
			Lab Name	TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL		
			Sample Type	N			N			N			FD			N			N			N			N			N		
Analyte	**Fraction**	**Method**	**Units**	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC
Actinium-228	T	901.1	pCi/L	4.99 U	98.7	118	-59.9 U	125	141	23.8 U	34.6	54.1	13.5 U	29.1	55.2	20.4 U	36.4	51.4	29.5 U	54.8	65.5	-4.35 U	14.4	86.2	-25.6 U	70.7	80.4	11.4 U	23	69.4
Actinium-228	D	901.1	pCi/L	40.8 U	37.5	58.1	2.57 U	5.32	80.6	24.9 U	30.4	69.1	22.1 U	26.4	64.4	11.8 U	39.9	82.8	-4.68 U	13.3	93.7	-5.2 U	10.6	82.8	17.1 U	14.3	74.1	16.3 U	24.2	69.4
Americium-241	T	901.1	pCi/L	8.12 U	35.1	58.9	10 U	27.9	46.7	6.03 U	19.9	33.5	-7.25 U	23.6	39.7	-1.65 U	23.6	39.9	-11.8 U	33.3	55.7	1.7 U	10.8	18.1	-15.2 U	18.3	38.8	6.81 U	21	35.3
Americium-241	D	901.1	pCi/L	10.6 U	29.1	48.6	3.72 U	23.3	39.2	8.99 U	24.6	41.2	-7.52 U	25	41.9	-9.22 U	29.7	49.7	-7.52 U	26	43.5	6.34 U	21.3	35.8	-17.5 U	20.3	36.5	2.9 U	18.9	32
Antimony-125	T	901.1	pCi/L	23 U	27.2	52.5	3.99 U	31.6	41.1	16.7 U	18.1	31.8	-16.5 U	31.4	40.7	-13.9 U	22.9	33.2	-24.5 U	39.1	54.4	17.1 U	16.2	20.3	10.1 U	26.8	27.4	1.11 U	21.1	27.7
Antimony-125	D	901.1	pCi/L	12.1 U	37.8	45.3	0.646 U	25.4	34.4	3 U	11.4	35.7	-6.09 U	27.7	31.8	0.823 U	1.48	42.2	8.49 U	17.4	31.8	1.41 U	4.9	31.9	5.04 U	15.2	30.3	2.55 U	18.6	27.7
Barium-133	T	901.1	pCi/L	-10.1 U	35.9	60.2	-7.85 U	20.2	34.2	9.85 U	14	18.5	6.53 U	14.1	24.1	-0.344 U	2.01	29.5	-8.68 U	20.9	35.2	6.9 U	14.7	21.8	0.588 U	0.717	25.6	-2.37 U	12.4	21.3
Barium-133	D	901.1	pCi/L	9.02 U	15.3	48.7	1.95 U	4.86	31.5	-0.826 U	1.72	25	-3.83 U	9.27	28.3	4.97 U	13.8	42.2	1.94 U	4.03	25.3	7.3 U	12.5	16.4	5.39 U	10.2	17.1	5.91 U	15	19.5
Cesium-134	T	901.1	pCi/L	6.7 U	10.5	54.3	-6.9 U	15.2	38	3.8 U	7.11	21	6.62 U	10.7	16.6	-5.61 U	16.6	28	1.63 U	1.91	37.1	-1.6 U	4.24	27.5	6.55 U	10.1	15.1	6.17 U	14.3	20.9
Cesium-134	D	901.1	pCi/L	-3.78 UJ	8.66	44.6	0.745 U	1.67	28.6	8.04 U	14.3	24.3	-1.88 U	3	27.9	6.07 U	11.6	34.4	4.55 U	4.92	28.6	5.86 UJ	14.8	16.7	16.5 U	14.8	17.8	-1.98 U	4.28	24.3
Cesium-137	T	901.1	pCi/L	6.3 U	12.7	15.1	-5.73 U	15.5	18.9	-6.65 U	14.2	17	3.98 U	10.6	13.2	-5.85 U	11.9	14.3	-3.75 U	27.4	17.1	-5.34 U	13.5	15.6	4.56 U	8.43	9.89	0.15 U	8.56	11
Cesium-137	D	901.1	pCi/L	3.04 U	11.7	13.9	-1.62 U	11.1	13.8	-2.2 U	10.6	12.8	-6.77 U	12.9	15.5	-6.57 U	15.8	19	3.19 U	6.37	8	4.83 U	9.44	11.7	-1.15 U	10.6	12.7	4.54 U	8.17	9.94
Cobalt-57	T	901.1	pCi/L	-5.41 U	11.2	14.3	3.48 U	7.29	9.41	0.469 U	4.95	8.48	1.43 U	6.48	8.88	-0.97 U	2.5	8.12	-3.16 U	7.62	9.86	3.31 U	4.06	5.65	2.92 U	6.01	7.7	1.97 U	4.29	7.48
Cobalt-57	D	901.1	pCi/L	-0.451 U	8.99	11.6	-0.959 U	2.57	9.57	4.39 U	6.13	7.05	-3.26 U	7.38	9.91	0.186 U	7.26	10	4.66 U	3.4	4.67	2.38 U	6.18	8.1	0.448 U	6.44	8.4	2.22 U	4.75	6.45
Cobalt-60	T	901.1	pCi/L	14.2	8.89	8.55	2.43 U	5.16	8.55	4.5 U	4.2	5.38	3.38 U	10.3	12.4	1.08 U	2.38	15.4	6.89 U	13.9	16.5	2.59 U	6.54	10.3	3.33 U	8.43	10.3	0.459 U	8.05	10.3
Cobalt-60	D	901.1	pCi/L	-9.54 U	24.5	22.9	2.96 U	6.3	10.4	2.54 U	6.01	14.3	0.609 U	8.06	10.4	2.46 U	10.1	12.4	1.24 U	7.67	13.5	5.22 U	10.6	12.4	5.13 U	4.75	6.23	-0.216 U	7.94	10.3
Europium-152	T	901.1	pCi/L	12.5 U	40	50.3	21.1 U	35.7	37.9	9.34 U	19.3	25.1	21.2 U	10.8	37.9	7.64 U	23.9	30	25.4 U	15.6	46.6	-5.95 U	25.3	31.9	4.25 U	22.4	28.6	6.95 U	16.6	33.6
Europium-152	D	901.1	pCi/L	23.3 U	28.4	41.7	6.51 U	17.3	32.1	26.9 U	27.1	35.8	4.31 U	26.3	30.8	7.14 U	29.7	39.3	14.2 U	26.2	28.1	16.1 U	9.43	36.4	22.7 U	13.3	24.7	16.3 U	15.4	30
Europium-154	T	901.1	pCi/L	-46 U	105	120	53.7 U	30.3	67.1	-41.2 U	75.6	84.9	-4.08 U	57.3	71.2	-1.9 U	9.88	62.5	-3.2 U	26.4	106	16.7 U	30.4	70.6	10.2 U	25.2	78	15.8 U	41.2	52.6
Europium-154	D	901.1	pCi/L	-4.93 U	10.9	113	-45.7 U	94.2	105	2.54 U	5.58	91.1	-52.1 U	94.6	105	20.4 U	59.6	71.2	-45.2 U	82.4	92.2	-4.08 U	70	84.7	7.79 U	19	70.6	10.3 U	16.3	78.4
Europium-155	T	901.1	pCi/L	36.6 U	38.3	47.6	-16.6 U	35.6	45.6	-3.02 U	26.1	35.7	4.16 U	22.2	32.1	-7.25 U	22.9	34.1	-17.1 U	36.2	46.3	3.58 U	23.8	31	0.189 U	22.6	29.6	-14.3 U	21.5	33.7
Europium-155	D	901.1	pCi/L	12 U	29.7	38	-12.7 U	29.1	39.1	-14.1 U	29.5	37.6	-6.04 U	23.8	32.4	-10.7 U	25.5	38	0.431 U	26.6	36.6	-9.98 U	24.4	33.7	-12.9 U	26.9	34.2	0.385 U	21.2	29.5
Gross Alpha	T	900.0	pCi/L	5.2	3.44	4.95	43.3	10.4	6.87	3.36	1.87	2.47	4.87	2.65	3.53	16.2	5.69	5.79	6.61	3.42	4.46	0.672 U	1.12	1.94	1.89 U	2.04	3.28	10.3	5.27	6.81
Gross Alpha	D	900.0	pCi/L	7.03 J	3.46	4.14	34.6	9.89	8.19	5.49	2.99	3.96	4.52	2.25	2.65	10.2	4.78	6.05	5.51	3.15	4.19	0.875 UJ	1.32	2.23	3.26	2.21	3.13	17.6	6.47	5.94
Gross Beta	T	900.0	pCi/L	5.86 J	1.64	1.86	18 J	4.27	4.3	4.77 J	1.07	1.06	4.14 J	1.35	1.65	11.5	3.2	3.81	6.69	2.3	3.02	2.55 J	0.789	0.952	4.35 J	1.14	1.29	8.01 J	2.49	2.97
Gross Beta	D	900.0	pCi/L	6.34 J	2.14	2.63	12.9 J	4.05	4.68	3.47 J	1.4	1.83	3.04 J	1.39	1.91	5.41	1.88	2.33	4.18	1.9	2.64	3.04 J	0.88	1.05	4.71 J	1.38	1.57	10.5 J	3.52	4.2
Manganese-54	T	901.1	pCi/L	0.869 U	10.5	19.1	-5.64 U	12.6	21.7	-6.24 U	10.4	17.4	-4.2 U	8.37	23.8	-1.95 U	9.03	15.6	6.03 U	12.1	20.8	-4.44 U	12.6	21.4	-6.24 U	9.99	16.7	-1.8 U	7.94	12.7
Manganese-54	D	901.1	pCi/L	-2.75 U	11.2	19.4	-7.64 U	12.3	20.6	4.25 U	7.73	13.1	3.71 U	10.2	17.5	0.126 U	13.4	23.6	2.55 U	5.55	9.7	6.06 U	12.1	20.4	-4.47 U	9.18	15.6	3.22 U	6.84	11.7
Potassium-40	T	901.1	pCi/L	-26.6 U	205	267	1.11 U	161	227	25.1 U	117	169	-74.5 U	132	205	-65.9 U	106	180	-184 U	171	331	-36.1 U	123	188	-42.7 U	122	188	0.342 U	124	161
Potassium-40	D	901.1	pCi/L	-98.6 U	207	261	-101 U	117	226	-30.1 U	174	228	59.6 U	89.1	144	-15.5 U	175	233	-58.8 U	158	209	-71.3 U	169	233	-36.1 U	146	204	-40.7 U	119	161
Radium-226	T	903.0	pCi/L	1.43	0.26	0.11	1.41	0.244	0.11	1.42	0.24	0.0907	1.27	0.226	0.0993	0.291	0.115	0.117	0.661	0.164	0.11	0.551	0.162	0.148	1.21	0.223	0.112	0.535	0.149	0.121
Radium-226	D	903.0	pCi/L	1.16	0.223	0.106	1.53	0.257	0.113	1.08	0.204	0.105	1.31	0.244	0.115	0.341	0.127	0.12	0.882	0.188	0.0962	0.435	0.134	0.104	1.37	0.238	0.0919	0.539	0.143	0.11
Radium-228	T	904.0	pCi/L	1.67	0.395	0.422	3.26	0.539	0.439	2.16	0.43	0.397	1.45	0.362	0.395	0.498	0.247	0.35	1.59	0.366	0.392	0.424	0.263	0.395	2.18	0.428	0.394	0.889	0.31	0.396
Radium-228	D	904.0	pCi/L	0.907 UJ	0.282	0.346	2.6	0.456	0.389	1.82	0.358	0.333	1.46	0.333	0.337	0.34 U	0.269	0.425	1.33	0.323	0.349	0.431 UJ	0.246	0.366	1.66	0.375	0.408	1	0.312	0.392
Sodium-22	T	901.1	pCi/L	-0.372 U	7.4	15	0.372 U	10.4	20	0.469 U	4.74	9.47	5.31 U	4.37	6.53	0 U	1.3	13.9	-1.86 U	10.7	20	-6.08 U	9.35	15.7	5.66	3.81	4.63	-3.25 U	7.91	13.9
Sodium-22	D	901.1	pCi/L	0 U	6.54	16	4.5 U	5.83	9.47	-0.244 U	7.02	13.5	-1.88 U	6.89	12.6	7.09	5.06	6.53	-0.469 U	6.6	12.6	2.36 U	6.47	11.9	3.56 U	6.7	11.6	0.217 U	6.05	11.6
Strontium-90	T	905.0	pCi/L	-0.451 UJ	0.455	0.839	0.0623 UJ	0.31	0.542	-0.0535 UJ	0.321	0.56	-0.0783 UJ	0.292	0.515	0.232 U	0.221	0.357	0.192 U	0.19	0.307	0.0671 UJ	0.248	0.436	-0.305 UJ	0.283	0.522	0.233 UJ	0.337	0.563
Strontium-90	D	905.0	pCi/L	-0.0292 UJ	0.17	0.313	0.0979 UJ	0.178	0.302	0.13 UJ	0.206	0.347	0.0481 UJ	0.246	0.427	0.0487 U	0.158	0.276	0.141 U	0.164	0.269	-0.0997 UJ	0.171	0.319	0.121 UJ	0.173	0.289	0.024 UJ	0.257	0.449
Tritium	T	906.0	pCi/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Uranium-233/234	T	A-01-R	pCi/L	1.88	0.369	0.0826	18	1.84	0.0949	0.95	0.257	0.0959	0.924	0.261	0.0504	5.27	0.733	0.115	2.64	0.468	0.125	0.0799 U	0.0792	0.109	0.129	0.0957	0.097	3.52	0.567	0.118
Uranium-233/234	D	A-01-R	pCi/L	1.79	0.372	0.114	16.4	1.72	0.0774	1.32	0.306	0.0743	1.5	0.326	0.0451	4.67	0.695	0.124	2.67	0.49	0.125	0.00387 U	0.0337	0.0958	0.162	0.104	0.0864	4.5	0.649	0.0865
Uranium-235/236	T	A-01-R	pCi/L	0.0872 U	0.0829	0.0888	0.778	0.253	0.0924	0.0579 U	0.067	0.0579	0.0314 U	0.061	0.117	0.196	0.128	0.0971	0.0447 U	0.071	0.123	-0.00452 U	0.00905	0.0875	-0.00976 U	0.0138	0.109	0.175	0.125	0.115
Uranium-235/236	D	A-01-R	pCi/L	0.0994	0.0893	0.0596	0.856	0.271	0.0597	0.11	0.0945	0.0924	0.0374 U	0.053	0.0561	0.277	0.159	0.105	0.0492 U	0.0782	0.135	0.0385 U	0.0546	0.0578	0 U	0.0096	0.0576	0.231	0.135	0.0577
Uranium-238	T	A-01-R	pCi/L	1.21	0.285	0.0442	14.9	1.57	0.046	0.766	0.231	0.116	0.734	0.231	0.0812	6.08	0.808	0.0779	1.86	0.378	0.077	0.105	0.0835	0.0897	0.0431 U	0.0549	0.0758	3.76	0.59	0.0495
Uranium-238	D	A-01-R	pCi/L	1.41	0.323	0.0893	15.5	1.64	0.0479	0.885	0.245	0.0741	0.837	0.235	0.0726	5.16	0.741	0.108	1.69	0.374	0.0983	0.0541 U	0.0629	0.0866	0.077	0.0691	0.0462	4.35	0.635	0.0863

NOTES AND ABBREVIATIONS

pCi/L - picocuries per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
MDC - Minimal Detectable Concentration
TA STL - Test America St. Louis
Q - Result Qualifier
U - Analyzed for, but not detected above reported sample quantitation limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 14
RADIOCHEMISTRY ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-34B			RD-34C			RD-54A			RD-59A			RD-59B			RD-59B			RD-59C			RD-64			RD-64		
			Sample Name	RD-34B_032317_01_L			RD-34C_031717_01_L			RD-54A_032017_01_L			RD-59A_032417_01_L			RD-59B_032417_01_L			RD-59B_032417_36_L			RD-59C_032417_01_L			RD-64_031617_01_L			RD-64_031617_36_L		
			Sample Date	3/23/2017			3/17/2017			3/20/2017			3/24/2017			3/24/2017			3/24/2017			3/24/2017			3/16/2017			3/16/2017		
			Geological Unit	Chatsworth			Chatsworth			Chatsworth			Chatsworth			Chatsworth Artesian			Chatsworth Artesian			Chatsworth Artesian			Chatsworth			Chatsworth		
			Lab Name	TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL		
			Sample Type	N			N			N			N			N			FD			N			N			FD		
Analyte	**Fraction**	**Method**	**Units**	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC
Actinium-228	T	901.1	pCi/L	11.3 U	21.2	78.4	21.5 U	22.8	49.7	4.45 U	6.26	101	53.3 U	53.7	58.1	23.8 U	43.2	69.1	24.6 U	45.1	69.1	23.2 U	48.1	69.1	34.2 U	29.3	58.1	10.9 U	39.2	61.2
Actinium-228	D	901.1	pCi/L	9.98 U	86.2	104	51.3	37.3	37.4	20.5 U	29	58.1	18.5 U	15.5	89.2	-33 U	68.7	80.6	24.8 U	13.8	74.1	0 U	42.4	104	15 U	71.5	87.1	6.27 U	39.5	93.3
Americium-241	T	901.1	pCi/L	0.852 U	23.6	40	-1.23 U	21.2	35.8	7.66 U	21.9	36.8	9.85 U	27.5	46	-9.43 U	25.3	42.3	0.284 U	25.3	42.8	-5.32 U	27.3	45.9	-8.88 U	25.4	42.5	-2.48 U	18.7	31.8
Americium-241	D	901.1	pCi/L	10 U	26	43.6	-3.44 U	21.3	36.1	-10.1 U	28.5	47.5	13.1 U	35.9	59.7	-8.21 U	26.4	44.2	-0.839 U	22.2	37.5	11.2 U	30.9	51.7	-12.5 U	34.3	57.2	7.35 U	24.4	41
Antimony-125	T	901.1	pCi/L	16.4 U	31.2	32.4	8.55 U	24.5	28.9	-8.01 U	10.2	42.8	4.66 U	4.71	45.3	6.97 U	28	30.6	-6.47 U	21.1	30.6	13.2 U	25.8	34.1	3.69 U	30.5	34.1	2.39 U	6.22	29.1
Antimony-125	D	901.1	pCi/L	13.6 U	25.1	43.6	14 U	22.1	24.2	-2.62 U	24.6	32.4	2.7 U	5.27	43.9	-0.168 U	0.484	34.4	9.26 U	17.5	39.6	10.9 U	27.3	41.1	11.8 U	30.6	46	4.19 U	8.75	39.1
Barium-133	T	901.1	pCi/L	-8.13 U	16.4	27.4	7.64 U	12.2	16.9	4.47 U	9.75	25.3	-0.583 U	27.1	45.7	1.58 U	1.74	32.9	0.835 U	1.41	32.6	-0.407 U	0.739	31.4	12.1 U	13.6	19.6	11.4 U	11.9	20.2
Barium-133	D	901.1	pCi/L	-4 U	6.15	30.2	5.76 U	11.2	16.9	-0.776 U	1.12	28.4	-1.37 U	2.61	59.9	-1.83 U	4.23	30.7	-1.38 U	16	27.2	0.821 U	2.91	38.2	-2.98 U	18.9	32.4	-3.4 U	9.88	33.8
Cesium-134	T	901.1	pCi/L	7.9 U	11.6	21.4	7.18 U	7.65	20.9	8.69 U	15.6	24	-4.76 U	16.8	43.5	-4.89 U	12.8	29.4	0 U	2.84	28	-5.2 U	16	27	-0.177 U	0.157	26.8	1.39 U	1.46	13.3
Cesium-134	D	901.1	pCi/L	13 U	16.1	21	13.6 UJ	8.84	14.7	0.376 UJ	0.554	26	4.48 U	29.9	50.1	1.52 U	2.04	26.9	7.85 U	14.2	25.7	9.31 U	16.7	35.8	3.72 UJ	3.53	32.1	4.73 UJ	17.2	29.8
Cesium-137	T	901.1	pCi/L	0 U	1.44	13.9	-0.289 U	7.97	9.89	3.21 U	9.65	11.6	3.55 U	11.7	13.9	-0.169 U	10.4	12.8	4.69 U	8.64	10.2	-4.4 U	12.7	14.9	2.71 U	9.59	11.6	-2.25 U	9.58	11.9
Cesium-137	D	901.1	pCi/L	-2.76 U	17.4	18.9	3.18 U	8.28	9.89	4.06 U	8.56	10.2	-5.1 U	14.1	16.9	-3.41 U	12.7	15.5	3.03 U	9.99	11.9	3.43 U	12.4	15.1	6.3 U	12.7	15.1	3.78 U	7.79	9.82
Cobalt-57	T	901.1	pCi/L	-1.69 U	7.34	9.5	-0.498 U	6.35	8.29	0.394 U	7.38	9.63	-4.97 U	10.2	12.9	-4 U	8.21	10.5	2.08 U	7.16	9.25	2.76 U	7.5	9.63	-1.94 U	4.11	12.1	2.24 U	5.76	7.06
Cobalt-57	D	901.1	pCi/L	3.48 U	7.29	9.41	-3.46 U	7.09	9.04	0.709 U	2.82	9.63	2 U	7.76	10.5	2.73 U	6.19	8.35	2.2 U	4.47	8.62	-2.26 U	9.42	12.2	2.86 U	7.94	10.3	-2.42 U	7.08	9.6
Cobalt-60	T	901.1	pCi/L	-11.3 U	6.35	21.1	1.52 U	8.85	13	2.35 U	5.62	14.3	13.5	10.9	10.9	3.3 U	7.72	14.3	-5.75 U	15.5	16.9	1.4 U	3.31	14.3	-4.23 U	9.11	16.9	0.619 U	2.28	13.2
Cobalt-60	D	901.1	pCi/L	-0.161 U	12.6	16.5	2.91 U	5.75	10.3	3.62 U	9.34	10.9	-6.97 U	14.6	17.4	-0.365 U	11	13.5	0.763 U	2.31	13	-13.3 U	8.56	31.5	-10.2 U	8.52	25.3	-3.38 U	14.1	16.5
Europium-152	T	901.1	pCi/L	1.38 U	4.99	37.1	-11.9 U	26.6	33	0.986 U	26.8	34.5	28.5 U	30.8	37.1	-1.66 U	3.1	41.7	17.2 U	27.4	30.3	-9.86 U	32.5	40.6	11.8 U	25.4	31.7	7.13 U	22.3	30
Europium-152	D	901.1	pCi/L	6.33 U	7.16	53.8	-4.35 U	6.9	38.6	8.43 U	7.97	37.1	16.2 U	32.2	39.7	4.52 U	24.7	28.1	17.4 U	15.2	31.9	-2.77 U	39.3	50.3	3.55 U	5.85	52.1	-6.39 U	32.8	43.3
Europium-154	T	901.1	pCi/L	-29.5 U	82.4	91.1	-47.6 U	84.4	90.8	-35.2 U	74.8	82.5	-56.4 U	98.7	106	25 U	53.8	61	37.4 U	44.3	61	21.8 U	36.9	45.9	20.4 U	64.1	72.7	2.3 U	2.89	78.4
Europium-154	D	901.1	pCi/L	-61.3 U	107	120	-19.4 U	70	78	-56.4 U	98.7	106	22.2 U	32.4	71	18.4 U	35.7	42.9	28.8 U	40.2	52.2	-61.4 U	118	133	6.75 U	66.7	106	-3.28 U	5.81	106
Europium-155	T	901.1	pCi/L	-9.86 U	27.8	35.7	-0.943 U	21.5	28.2	3 U	28.6	37.1	-18.3 U	38.1	48.4	-6 U	28.7	37.1	-0.214 U	26.1	34.2	4.29 U	28.6	37.1	12.1 U	25.5	32.7	-7.45 U	24.9	29
Europium-155	D	901.1	pCi/L	-11.4 U	32	41.3	10.4 U	21.6	27.8	-12.2 U	27.1	34.7	-13.6 U	38.8	43.5	-9.27 U	27.1	36.6	-6.6 U	26.9	34.6	10.3 U	32.5	42.1	-11.1 U	35.9	46.3	9.11 U	24	34.2
Gross Alpha	T	900.0	pCi/L	0.295 U	0.709	1.29	4.63	2.31	2.79	21	6.1	5.69	8.48 J	5.45	7.89	2.65 UJ	2.41	3.72	1.18 UJ	2.23	3.92	1.86 UJ	2.32	3.83	6.53	4.11	5.71	9.19	4.64	5.96
Gross Alpha	D	900.0	pCi/L	0.939 U	0.761	1.1	1.69 U	1.46	2.07	5.62	3.22	4.31	3.63 U	4.95	8.27	0.651 U	2.91	5.3	3.15 U	2.72	4.17	-0.279 U	2.2	4.29	5.8	3.43	4.42	3.28 U	2.79	4.05
Gross Beta	T	900.0	pCi/L	1.81	0.687	0.898	2.01	1.01	1.39	11.2	2.78	2.95	3.41	2.14	3.17	2.72	1.26	1.73	1.96	1.21	1.8	2.63	1.24	1.72	5.13	1.91	2.42	4.15	1.83	2.4
Gross Beta	D	900.0	pCi/L	1.88	0.652	0.776	4.61	1.27	1.44	6.39	1.88	2.15	4.2	2.47	3.66	3.71	1.73	2.51	4.98	1.6	1.95	2.54	1.22	1.74	5.27	1.98	2.58	4.45	1.83	2.42
Manganese-54	T	901.1	pCi/L	0.172 U	7.96	14.5	1.54 U	7.39	13.1	-1.72 U	9.34	16.5	-0.233 U	12.2	21.5	-0.344 U	8.87	15.9	3.52 U	10.8	18.6	-3.35 U	10.6	18.3	5.2 U	9.52	16.1	-7.65 U	6.71	19.1
Manganese-54	D	901.1	pCi/L	5.36 U	9.33	15.9	5.09 U	8.93	15	3.78 U	7.2	12.3	6.65 U	10.6	17.6	-6.24 U	10.7	18	3.08 U	9.37	16.1	1.15 U	11.7	21.1	-9.54 U	14.5	24.2	2.05 U	9.76	17.2
Potassium-40	T	901.1	pCi/L	-65.3 U	170	228	-56 U	121	188	6.4 U	128	189	-137 U	149	261	-47.9 U	149	210	-47.9 U	149	210	21.8 U	130	189	-47.9 U	149	210	-70.4 U	128	197
Potassium-40	D	901.1	pCi/L	95.4 U	114	177	3.68 U	127	188	-117 U	187	245	-4.22 U	145	180	47.3 U	120	169	-90.8 U	141	204	154 U	126	177	-18.7 U	158	227	-62 U	170	233
Radium-226	T	903.0	pCi/L	0.173	0.0936	0.116	0.758	0.176	0.0981	1.44	0.261	0.109	0.542	0.152	0.122	0.689	0.156	0.0892	---	---	---	0.677	0.165	0.109	1.57	0.271	0.114	1.47	0.259	0.115
Radium-226	D	903.0	pCi/L	0.151	0.0812	0.0973	0.393	0.131	0.121	0.832	0.185	0.114	0.426	0.122	0.0902	0.701	0.155	0.0807	0.689	0.158	0.101	0.58	0.142	0.0964	1.33	0.241	0.0748	1.16	0.222	0.072
Radium-228	T	904.0	pCi/L	0.202 U	0.242	0.398	0.958	0.323	0.411	1.87	0.419	0.415	0.486	0.268	0.397	1.23	0.297	0.313	---	---	---	0.772	0.302	0.403	1.74	0.406	0.419	1.83	0.371	0.312
Radium-228	D	904.0	pCi/L	0.179 U	0.233	0.386	0.688 UJ	0.259	0.344	0.376 U	0.249	0.383	0.0238 U	0.255	0.446	0.51	0.224	0.31	0.453	0.263	0.396	0.51	0.231	0.327	1.22	0.302	0.332	1.68	0.387	0.434
Sodium-22	T	901.1	pCi/L	2.68 U	7.51	13.5	-6.71 U	9.43	15.7	-3.17 U	7.61	13.5	12.4	6.15	5.39	1.22 U	7.22	13.5	5.61 U	8.08	13.5	5.04 U	6.27	10.1	5.85	4.18	5.39	0 U	5.81	14.2
Sodium-22	D	901.1	pCi/L	-0.372 U	7.4	15	-4.4 U	8.06	13.8	-4.88 U	10.6	18.2	2.82 U	6.59	11.6	1.64 U	6.84	12.6	0.21 U	4.3	8.68	0.743 U	7.51	15	-2.97 U	10.9	20	-3.54 U	10.6	18.9
Strontium-90	T	905.0	pCi/L	0.336 UJ	0.339	0.551	0.108 U	0.284	0.489	0.0371 UJ	0.35	0.621	-0.00518 UJ	0.197	0.35	0.409 UJ	0.557	0.924	0.341 UJ	0.356	0.58	0.445 UJ	0.331	0.517	0.0944 U	0.175	0.298	0.0238 U	0.157	0.28
Strontium-90	D	905.0	pCi/L	0.118 UJ	0.192	0.324	0.127 U	0.216	0.363	0.0558 U	0.207	0.36	0.161 UJ	0.231	0.386	0.334 UJ	0.3	0.481	-0.0368 UJ	0.213	0.387	0.189 UJ	0.245	0.406	0.287	0.178	0.268	0.252 U	0.218	0.35
Tritium	T	906.0	pCi/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Uranium-233/234	T	A-01-R	pCi/L	0.0282 U	0.0587	0.115	0.169 U	0.128	0.17	2.32	0.422	0.0999	2.08	0.4	0.115	0.37	0.162	0.107	0.221	0.125	0.115	0.384	0.164	0.118	1.99	0.39	0.109	2.36	0.434	0.123
Uranium-233/234	D	A-01-R	pCi/L	0.0184 U	0.0436	0.0911	0.17	0.108	0.0509	2.72	0.478	0.114	1.99	0.394	0.138	0.423	0.182	0.167	0.277	0.133	0.0461	0.245	0.127	0.0932	2.22	0.432	0.113	2.63	0.476	0.119
Uranium-235/236	T	A-01-R	pCi/L	0.01 U	0.0426	0.112	0.0192 U	0.0384	0.0575	0.13	0.0991	0.0559	0.0812 U	0.0873	0.118	0.0401 U	0.0567	0.0601	-0.0095 U	0.0135	0.106	0.00488 U	0.0425	0.121	0.129	0.102	0.0925	0.0824 U	0.0886	0.12
Uranium-235/236	D	A-01-R	pCi/L	-0.00458 U	0.00917	0.0887	0.0845 U	0.0848	0.0634	0.215	0.134	0.0969	0.0635 U	0.101	0.178	-0.0148 U	0.0171	0.122	-0.00478 U	0.00958	0.0926	0 U	0.00938	0.0563	0.105	0.0946	0.0632	0.119	0.103	0.101
Uranium-238	T	A-01-R	pCi/L	0.0402 U	0.057	0.0901	0.108 U	0.111	0.17	1.62	0.34	0.0924	1.4	0.317	0.0947	0.0723 U	0.073	0.09	0.145	0.0978	0.0854	0.145	0.101	0.0968	1.44	0.321	0.0742	1.29	0.303	0.0753
Uranium-238	D	A-01-R	pCi/L	0.0147 U	0.0294	0.0441	0.0339 U	0.0678	0.13	2.11	0.409	0.0993	1.61	0.347	0.118	0.134	0.096	0.0884	0.107	0.0817	0.046	0.135	0.097	0.1	1.14	0.295	0.104	1.31	0.316	0.0806

NOTES AND ABBREVIATIONS

pCi/L - picocuries per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
MDC - Minimal Detectable Concentration
TA STL - Test America St. Louis
Q - Result Qualifier
U - Analyzed for, but not detected above reported sample quantitation limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 14
RADIOCHEMISTRY ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-87						RD-88						RD-90					
			Sample Name	RD-87_032817_01_L						RD-88_032817_01_L						RD-90_030817_01_L					
			Sample Date	3/28/2017						3/28/2017						3/8/2017					
			Geological Unit	Chatsworth						Chatsworth						Chatsworth					
			Lab Name	TA STL						TA STL						TA STL					
			Sample Type	N						N						N					
Analyte	Fraction	Method	Units	Result	Q	Total Uncertainty		MDC		Result	Q	Total Uncertainty		MDC		Result	Q	Total Uncertainty		MDC	
Actinium-228	T	901.1	pCi/L	---		---		---		4.48	UJ	4.21		87.4		---		---		---	
Actinium-228	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Americium-241	T	901.1	pCi/L	---		---		---		5.92	U	21.1		35.5		---		---		---	
Americium-241	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Antimony-125	T	901.1	pCi/L	---		---		---		7.97	U	16.1		27.2		---		---		---	
Antimony-125	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Barium-133	T	901.1	pCi/L	---		---		---		7.9	U	13.1		18.3		---		---		---	
Barium-133	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Cesium-134	T	901.1	pCi/L	---		---		---		4.07	U	7.84		21		---		---		---	
Cesium-134	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Cesium-137	T	901.1	pCi/L	---		---		---		1.14	U	9.37		11.9		---		---		---	
Cesium-137	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Cobalt-57	T	901.1	pCi/L	---		---		---		1.02	U	4.99		6.9		---		---		---	
Cobalt-57	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Cobalt-60	T	901.1	pCi/L	---		---		---		-5.97	U	14.3		18		---		---		---	
Cobalt-60	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Europium-152	T	901.1	pCi/L	---		---		---		10	U	7.32		33.3		---		---		---	
Europium-152	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Europium-154	T	901.1	pCi/L	---		---		---		18.9	U	45.2		57		---		---		---	
Europium-154	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Europium-155	T	901.1	pCi/L	---		---		---		6.69	U	23		31.4		---		---		---	
Europium-155	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Gross Alpha	T	900.0	pCi/L	---		---		---		---		---		---		---		---		---	
Gross Alpha	D	900.0	pCi/L	---		---		---		---		---		---		---		---		---	
Gross Beta	T	900.0	pCi/L	---		---		---		---		---		---		---		---		---	
Gross Beta	D	900.0	pCi/L	---		---		---		---		---		---		---		---		---	
Manganese-54	T	901.1	pCi/L	---		---		---		-6.24	U	10.5		17.7		---		---		---	
Manganese-54	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Potassium-40	T	901.1	pCi/L	---		---		---		-85.9	U	176		226		---		---		---	
Potassium-40	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Radium-226	T	903.0	pCi/L	---		---		---		---		---		---		---		---		---	
Radium-226	D	903.0	pCi/L	---		---		---		---		---		---		---		---		---	
Radium-228	T	904.0	pCi/L	---		---		---		---		---		---		---		---		---	
Radium-228	D	904.0	pCi/L	---		---		---		---		---		---		---		---		---	
Sodium-22	T	901.1	pCi/L	---		---		---		-5.63	U	8.91		15		---		---		---	
Sodium-22	D	901.1	pCi/L	---		---		---		---		---		---		---		---		---	
Strontium-90	T	905.0	pCi/L	---		---		---		---		---		---		---		---		---	
Strontium-90	D	905.0	pCi/L	---		---		---		---		---		---		---		---		---	
Tritium	T	906.0	pCi/L	3240		349		148		1050		163		147		38300		3440		151	
Uranium-233/234	T	A-01-R	pCi/L	---		---		---		---		---		---		---		---		---	
Uranium-233/234	D	A-01-R	pCi/L	---		---		---		---		---		---		---		---		---	
Uranium-235/236	T	A-01-R	pCi/L	---		---		---		---		---		---		---		---		---	
Uranium-235/236	D	A-01-R	pCi/L	---		---		---		---		---		---		---		---		---	
Uranium-238	T	A-01-R	pCi/L	---		---		---		---		---		---		---		---		---	
Uranium-238	D	A-01-R	pCi/L	---		---		---		---		---		---		---		---		---	

			Well Identifier	RD-93						RD-94						RD-94					
			Sample Name	RD-93_031417_01_L						RD-94_031417_01_L						RD-94_031417_36_L					
			Sample Date	3/14/2017						3/14/2017						3/14/2017					
			Geological Unit	Chatsworth						Chatsworth						Chatsworth					
			Lab Name	TA STL						TA STL						TA STL					
			Sample Type	N						N						FD					
Analyte	Fraction	Method	Units	Result	Q	Total Uncertainty		MDC		Result	Q	Total Uncertainty		MDC		Result	Q	Total Uncertainty		MDC	
Actinium-228	T	901.1	pCi/L	---		---		---		-81	U	114		151		---		---		---	
Actinium-228	D	901.1	pCi/L	---		---		---		79.6		51.7		51.4		---		---		---	
Americium-241	T	901.1	pCi/L	---		---		---		14.6	U	46.1		76.7		---		---		---	
Americium-241	D	901.1	pCi/L	---		---		---		4.4	U	39.5		66		---		---		---	
Antimony-125	T	901.1	pCi/L	---		---		---		4.32	U	28.4		62.5		---		---		---	
Antimony-125	D	901.1	pCi/L	---		---		---		8.15	U	30		43.9		---		---		---	
Barium-133	T	901.1	pCi/L	---		---		---		3.34	U	53.6		89.6		---		---		---	
Barium-133	D	901.1	pCi/L	---		---		---		5.96	U	30.7		68		---		---		---	
Cesium-134	T	901.1	pCi/L	---		---		---		-3.56	U	6.66		80.2		---		---		---	
Cesium-134	D	901.1	pCi/L	---		---		---		16.5	U	12.9		56.3		---		---		---	
Cesium-137	T	901.1	pCi/L	---		---		---		-11.8	U	22.2		26.2		---		---		---	
Cesium-137	D	901.1	pCi/L	---		---		---		2.4	U	14.5		17.5		---		---		---	
Cobalt-57	T	901.1	pCi/L	---		---		---		0.0198	U	0.0319		15.4		---		---		---	
Cobalt-57	D	901.1	pCi/L	---		---		---		5.71	U	11.6		11.4		---		---		---	
Cobalt-60	T	901.1	pCi/L	---		---		---		0.307	U	21.7		24.7		---		---		---	
Cobalt-60	D	901.1	pCi/L	---		---		---		-4.72	U	16.2		19.1		---		---		---	
Europium-152	T	901.1	pCi/L	---		---		---		41.4	U	39.6		59.1		---		---		---	
Europium-152	D	901.1	pCi/L	---		---		---		1.79	U	13.2		51		---		---		---	
Europium-154	T	901.1	pCi/L	---		---		---		12.2	U	114		131		---		---		---	
Europium-154	D	901.1	pCi/L	---		---		---		4.71	U	14.7		97		---		---		---	
Europium-155	T	901.1	pCi/L	---		---		---		5.57	U	40		57		---		---		---	
Europium-155	D	901.1	pCi/L	---		---		---		-17.3	U	31		50.8		---		---		---	
Gross Alpha	T	900.0	pCi/L	---		---		---		54.2		15.1		14.1		---		---		---	
Gross Alpha	D	900.0	pCi/L	---		---		---		42.5		13.1		12.8		---		---		---	
Gross Beta	T	900.0	pCi/L	---		---		---		26.1		6.67		7.53		---		---		---	
Gross Beta	D	900.0	pCi/L	---		---		---		14.8		4.86		5.88		---		---		---	
Manganese-54	T	901.1	pCi/L	---		---		---		-12.2	U	16.6		32.6		---		---		---	
Manganese-54	D	901.1	pCi/L	---		---		---		6.41	U	13.2		22.2		---		---		---	
Potassium-40	T	901.1	pCi/L	---		---		---		-193	U	205		353		---		---		---	
Potassium-40	D	901.1	pCi/L	---		---		---		4.91	U	165		197		---		---		---	
Radium-226	T	903.0	pCi/L	---		---		---		0.61		0.158		0.114		---		---		---	
Radium-226	D	903.0	pCi/L	---		---		---		0.625		0.156		0.0908		---		---		---	
Radium-228	T	904.0	pCi/L	---		---		---		1.16		0.334		0.391		---		---		---	
Radium-228	D	904.0	pCi/L	---		---		---		1.07		0.322		0.392		---		---		---	
Sodium-22	T	901.1	pCi/L	---		---		---		7.68	U	12.7		21.5		---		---		---	
Sodium-22	D	901.1	pCi/L	---		---		---		1.52	U	9.7		17.4		---		---		---	
Strontium-90	T	905.0	pCi/L	---		---		---		-0.193	U	0.176		0.35		---		---		---	
Strontium-90	D	905.0	pCi/L	---		---		---		0.131	U	0.182		0.304		---		---		---	
Tritium	T	906.0	pCi/L	5460		546		165		1740		231		175		1500		205		162	
Uranium-233/234	T	A-01-R	pCi/L	---		---		---		18.5		1.93		0.145		---		---		---	
Uranium-233/234	D	A-01-R	pCi/L	---		---		---		17.1		1.81		0.137		---		---		---	
Uranium-235/236	T	A-01-R	pCi/L	---		---		---		0.65		0.248		0.123		---		---		---	
Uranium-235/236	D	A-01-R	pCi/L	---		---		---		0.535		0.221		0.105		---		---		---	
Uranium-238	T	A-01-R	pCi/L	---		---		---		18.5		1.93		0.099		---		---		---	
Uranium-238	D	A-01-R	pCi/L	---		---		---		16.6		1.76		0.0972		---		---		---	

			Well Identifier	RD-95						RD-96						RD-98					
			Sample Name	RD-95_030817_01_L						RD-96_032117_01_L						RD-98_031717_01_L					
			Sample Date	3/8/2017						3/21/2017						3/17/2017					
			Geological Unit	Chatsworth						Chatsworth						Chatsworth					
			Lab Name	TA STL						TA STL						TA STL					
			Sample Type	N						N						N					
Analyte	Fraction	Method	Units	Result	Q	Total Uncertainty		MDC		Result	Q	Total Uncertainty		MDC		Result	Q	Total Uncertainty		MDC	
Actinium-228	T	901.1	pCi/L	---		---		---		55.4		39.9		40.8		14.6	U	36.2		93.3	
Actinium-228	D	901.1	pCi/L	---		---		---		-20	U	100		118		16.3	U	17.7		70.6	
Americium-241	T	901.1	pCi/L	---		---		---		-7.7	U	26.1		43.6		-8.06	U	25.5		42.7	
Americium-241	D	901.1	pCi/L	---		---		---		10.2	U	26.4		44.3		6.92	U	22.1		37.2	
Antimony-125	T	901.1	pCi/L	---		---		---		10	U	23.5		23.6		8.91	U	18.5		31.9	
Antimony-125	D	901.1	pCi/L	---		---		---		6.72	U	14.7		43.6		12.4	U	23.1		31.9	
Barium-133	T	901.1	pCi/L	---		---		---		2.42	U	3.35		28.1		4.74	U	11.8		30.1	
Barium-133	D	901.1	pCi/L	---		---		---		3.5	U	8.38		27		0.717	U	2.08		29.9	
Cesium-134	T	901.1	pCi/L	---		---		---		-1.39	U	2.67		25.7		-1.91	U	3.87		28.6	
Cesium-134	D	901.1	pCi/L	---		---		---		-5.84	UJ	13.8		33.3		-6.49	UJ	17.2		29.1	
Cesium-137	T	901.1	pCi/L	---		---		---		1.14	U	11.8		14.7		-0.398	U	11.4		14.6	
Cesium-137	D	901.1	pCi/L	---		---		---		-0.778	U	12.5		17.1		-1.79	U	9.04		11.7	
Cobalt-57	T	901.1	pCi/L	---		---		---		-2.6	U	7.09		9.57		2.62	U	6.09		8.26	
Cobalt-57	D	901.1	pCi/L	---		---		---		-4.37	U	9.1		11.7		0.806	U	6.21		8.57	
Cobalt-60	T	901.1	pCi/L	---		---		---		-6.45	U	6.86		15.9		3.99	U	14.2		16.5	
Cobalt-60	D	901.1	pCi/L	---		---		---		-7.9	U	7.36		25.3		-5.22	U	14.4		16.5	
Europium-152	T	901.1	pCi/L	---		---		---		19.1	U	13.1		29.5		16.4	U	25.1		27.7	
Europium-152	D	901.1	pCi/L	---		---		---		14.7	U	29.9		37.9		0	U	18		37.9	
Europium-154	T	901.1	pCi/L	---		---		---		10.7	U	28.3		67.8		8.16	U	70.5		84.7	
Europium-154	D	901.1	pCi/L	---		---		---		15.8	U	25.3		89.2		-3.47	U	7.22		84.7	
Europium-155	T	901.1	pCi/L	---		---		---		4.75	U	24		32.9		10.4	U	22.6		32.1	
Europium-155	D	901.1	pCi/L	---		---		---		-15.2	U	35		44.9		4.16	U	21.4		31	
Gross Alpha	T	900.0	pCi/L	---		---		---		8.84		4.81		6.55		13.8		4.35		3.97	
Gross Alpha	D	900.0	pCi/L	---		---		---		10.8	J	4.46		5.03		7.45		3.01		2.63	
Gross Beta	T	900.0	pCi/L	---		---		---		9.92	J	2.63		3.1		246		25.7		2.08	
Gross Beta	D	900.0	pCi/L	---		---		---		8.84	J	2.84		3.6		235		24.5		1.65	
Manganese-54	T	901.1	pCi/L	---		---		---		3.6	U	6.18		10.5		-8.09	U	12.6		22.4	
Manganese-54	D	901.1	pCi/L	---		---		---		-5.84	U	14.3		24.5		-7.33	U	9.87		26.6	
Potassium-40	T	901.1	pCi/L	---		---		---		81.8	U	92.9		144		-134	U	166		257	
Potassium-40	D	901.1	pCi/L	---		---		---		-18.7	U	158		227		-65.1	U	134		205	
Radium-226	T	903.0	pCi/L	---		---		---		1.21		0.227		0.101		0.212		0.094		0.0973	
Radium-226	D	903.0	pCi/L	---		---		---		1.01		0.209		0.116		0.14		0.0764		0.0814	
Radium-228	T	904.0	pCi/L	---		---		---		2.05		0.418		0.403		13.5		1.45		0.282	
Radium-228	D	904.0	pCi/L	---		---		---		1.58	J	0.338		0.33		13.1		1.42		0.378	
Sodium-22	T	901.1	pCi/L	---		---		---		-4.45	U	9.85		17		-2.36	U	8.68		15.9	
Sodium-22	D	901.1	pCi/L	---		---		---		11.1		7.14		8.22		-1.18	U	6.14		11.9	
Strontium-90	T	905.0	pCi/L	---		---		---		-0.0791	UJ	0.285		0.505		114		9.59		0.327	
Strontium-90	D	905.0	pCi/L	---		---		---		0.0655	UJ	0.201		0.349		114		9.58		0.344	
Tritium	T	906.0	pCi/L	19600		1790		153		---		---		---		---		---		---	
Uranium-233/234	T	A-01-R	pCi/L	---		---		---		5.17		0.718		0.142		4.77		0.676		0.126	
Uranium-233/234	D	A-01-R	pCi/L	---		---		---		5.57		0.751		0.103		5.39		0.746		0.128	
Uranium-235/236	T	A-01-R	pCi/L	---		---		---		0.228		0.15		0.166		0.196		0.129		0.118	
Uranium-235/236	D	A-01-R	pCi/L	---		---		---		0.226		0.135		0.0931		0.207		0.136		0.125	
Uranium-238	T	A-01-R	pCi/L	---		---		---		4.88		0.688		0.104		2.11		0.402		0.086	
Uranium-238	D	A-01-R	pCi/L	---		---		---		4.81		0.679		0.0747		1.7		0.361		0.0783	

NOTES AND ABBREVIATIONS

pCi/L - picocuries per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
MDC - Minimal Detectable Concentration
TA STL - Test America St. Louis
Q - Result Qualifier
U - Analyzed for, but not detected above reported sample quantitation limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 14
RADIOCHEMISTRY ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RS-18			RS-25			RS-28			SP-19A			SP-19B			SP-424A			SP-424B			SP-424C			SP-424C		
			Sample Name	RS-18_030817_01_L			RS-25_032817_01_L			RS-28_031517_01_L			SP-19A_033017_01_L			SP-19B_033017_01_L			SP-424A_032817_01_L			SP-424B_032817_01_L			SP-424C_032917_01_L			SP-424C_040317_01_L		
			Sample Date	3/8/2017			3/28/2017			3/15/2017			3/30/2017			3/30/2017			3/28/2017			3/28/2017			3/29/2017			4/3/2017		
			Geological Unit	Shallow			Shallow			Shallow																				
			Lab Name	TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL			TA STL		
			Sample Type	N			N			N			N			N			N			N			N			N		
Analyte	**Fraction**	**Method**	**Units**	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC
Actinium-228	T	901.1	pCi/L	43.5 U	36.6	43.7	19.1 UJ	15.7	23.5	6.66 U	47.3	58.1	-4.7 UJ	8.5	130	-7.1 UJ	12.4	93.3	20.8 UJ	37.9	80.4	12.1 UJ	41.6	103	22.5 UJ	27.3	74.1	35.6 U	53	74.1
Actinium-228	D	901.1	pCi/L	18 U	42.5	55.2	12.5 U	13.7	69.4	-12.9 U	21.7	141	59.8	47.8	49.7	23.3 U	22.3	73	5.16 U	74.8	93.3	0.831 U	0.885	99.6	19.5 U	35.1	51.4	-20.9 U	56.6	68.4
Americium-241	T	901.1	pCi/L	9.43 U	25.7	42.9	-7.43 U	25.2	42.3	-2.56 U	27.8	46.9	11.8 U	32.6	54.5	8.06 U	25.2	42.2	-21.2 U	23.8	54.9	-0.94 U	28.9	48.8	-0.555 U	23	38.7	2.57 U	30.5	51
Americium-241	D	901.1	pCi/L	7.25 U	23.1	38.9	-8.18 U	22.5	37.7	-12.6 U	34.8	58.1	3.6 U	25.3	42.3	5.45 U	25.3	42.6	11.4 U	35.5	59.3	8.76 U	29.4	49.1	9.23 U	26.4	44.2	2.74 U	13.8	19.6
Antimony-125	T	901.1	pCi/L	8.19 U	15.5	34.1	-7.77 U	8.69	33.1	-0.743 U	3.86	38.7	23.7 U	43.1	41.1	8.48 U	22.2	29.8	13.8 U	25.8	34.1	10.5 U	20.7	27.4	10 U	25.6	34.1	3.51 U	7.31	41.6
Antimony-125	D	901.1	pCi/L	13.4 U	21.4	24.9	9.91 U	20.5	26.1	8.85 U	21.3	46	16.4 U	29.3	27.4	9.87 U	20.2	33.1	22.9 U	22.5	51.6	6.98 U	30.5	36.9	1.8 U	3.37	37.8	6.44 U	22.8	22.5
Barium-133	T	901.1	pCi/L	2.83 U	4.14	31.4	9.51 U	13.6	26.5	4.45 U	12.1	33.2	-2.86 U	5.98	56.3	10.8 U	27	40.2	5.14 U	29.8	49.9	-1.94 U	4.55	52.5	-0.816 U	19.5	33	-1.98 U	4.95	59.1
Barium-133	D	901.1	pCi/L	-4.18 U	15.1	25.8	-1.71 U	16	27.4	-1.93 U	3.66	46	-2.1 U	4.46	48.6	-3.8 U	25.4	42.8	12.1 U	26.7	70	1.47 U	3.39	49.6	5.77 U	22.5	38.2	-5.29 U	20.2	33.7
Cesium-134	T	901.1	pCi/L	5.42 U	9.73	28.9	11.1 U	10.1	26.4	2.63 U	8.83	30.9	-0.653 U	3.26	48.5	2.78 U	4.57	37.8	1.35 U	7.88	41.1	7.35 U	17.4	41.6	-2.14 U	17.5	29.7	-2.64 U	10.7	48.6
Cesium-134	D	901.1	pCi/L	0 U	5.45	27.7	-2.19 U	5.04	27.4	-5.64 U	14.4	44.7	4.32 U	7.72	40	-1.07 U	2.55	35.7	-6.12 U	35.6	59.6	2.04 U	4.05	40.8	-5.33 U	21.1	35.5	7.31 U	13.7	27.2
Cesium-137	T	901.1	pCi/L	0.846 U	10.5	12.8	-6.38 U	12.2	14.7	-6.6 U	14.4	16.7	5.91 U	14.4	17.1	-8.82 U	16.7	19.9	-2.02 U	12.7	15	-3.59 U	15.5	19	-7.89 U	14.3	16.3	0.577 U	12.6	15
Cesium-137	D	901.1	pCi/L	0.398 U	10.2	13.2	1.2 U	10.2	12.8	-4.24 U	20.5	18.9	-3.18 U	11.5	13.5	5.04 U	9.78	11.9	-2.59 U	13.7	17	0.162 U	11.7	14.7	-3 U	11.1	13.6	-4.14 U	8.27	9.8
Cobalt-57	T	901.1	pCi/L	-1.53 U	4.62	9.87	-3.38 U	7.62	10.2	-4.22 U	8.65	11	4.2 U	12.6	12.4	-0.186 U	6.95	9.6	0.846 U	8.25	10.6	3.62 U	8.29	10	3.11 U	6.39	8.17	-0.896 U	8.11	10.5
Cobalt-57	D	901.1	pCi/L	2.63 U	7.77	8.57	-1.02 U	2.35	7.61	-1.36 U	9.37	12.2	-2.69 U	8.39	10.7	-1.07 U	7.01	9.57	1.48 U	3.37	13.5	-3.62 U	8.17	10.9	-0.108 U	6.5	8.95	-2.14 U	5.41	7.21
Cobalt-60	T	901.1	pCi/L	1.34 U	3.2	16.9	3.53 U	8.58	10.4	4.19 U	6.43	10.9	5.01 U	3.48	21.5	2.05 U	3.7	19.7	5.29 U	11.4	13	6 U	10.8	12.4	-5.32 U	11.3	15.1	-0.717 U	4.43	16.9
Cobalt-60	D	901.1	pCi/L	0.565 U	5.67	16.5	1.09 U	0.969	13.2	3.21 U	6.8	21.5	7.31 U	9.05	10.3	3.32 U	6.51	13.5	6.76 U	14.6	16.5	9.38 U	9.56	10.4	1.79 U	3.57	13.2	-3.41 UJ	10.4	11.4
Europium-152	T	901.1	pCi/L	17.7 U	17.9	39.4	3.27 U	6.32	33.3	12.4 U	23.4	34.5	18.5 U	35	44.6	4.85 U	9.71	42	16.5 U	15.6	43.5	14.1 U	26.1	42	31	22.8	27.4	5.95 U	34.9	43.5
Europium-152	D	901.1	pCi/L	10.7 U	31.2	29.7	5.17 U	24.6	28.7	20.2 U	38.8	40.3	7.09 U	22.7	34	7.4 U	23.4	34.4	-18.8 U	41.5	53.4	3.81 U	26.7	35.5	4.2 U	23.6	33.6	9.42 U	12.2	25
Europium-154	T	901.1	pCi/L	16.8 U	31.2	45.9	-42.5 U	82.2	92.2	3.26 U	6.21	82.5	3.11 U	14.9	106	-61.2 U	111	124	-25.2 U	88.2	96.5	24.3 U	38.5	84.7	-9.09 U	28.6	78	6.8 U	69	78
Europium-154	D	901.1	pCi/L	7.26 U	12.4	96.1	42.2	22.9	22.2	57.9 U	48.7	67.1	-20.4 U	93	102	6.07 U	48.9	67.8	36 U	55.4	96.1	12.3 U	17.9	92.2	12.7 U	23.9	62.5	32.7 U	28.1	42.5
Europium-155	T	901.1	pCi/L	12.1 U	25.5	32.7	1.94 U	24.3	33.4	13 U	27.1	34.7	-10.3 U	40.3	51.9	-5.74 U	27.2	36.2	-1.13 U	31.4	40.6	-14 U	32.1	48.2	-7.92 U	26.6	34.2	-11.3 U	36.8	47
Europium-155	D	901.1	pCi/L	-12.3 U	26.4	37.1	-1.26 U	20.7	29	-10 U	37.9	48.9	3.39 U	31.5	40.6	-13.5 U	30.9	41.5	26.8 U	27.6	36.8	-12.1 U	32.8	44	-15.9 U	11.4	37.8	14.9 U	12.8	16.8
Gross Alpha	T	900.0	pCi/L	7.21	3.34	4.17	---	---	---	6.62	3.34	4.18	9.08 U	6.95	10.5	28.2	10.2	9.29	3.94 U	3.46	5.33	3.53 U	3.32	5.19	2 U	3.02	5.13	3.12 U	2.84	4.37
Gross Alpha	D	900.0	pCi/L	5.06 U	3.57	5.18	---	---	---	3.02	1.95	2.66	8.7 U	6.58	9.9	13.9 U	9.67	14.1	5.01 U	4.06	6.11	1.81 U	2.34	3.88	5.36	3.49	4.99	3.99 U	3.21	4.74
Gross Beta	T	900.0	pCi/L	3.41	1.28	1.64	---	---	---	7.14	2.03	2.26	5.52	3.24	4.82	14.7	4.69	5.44	3.73	1.73	2.42	3.3	1.56	2.16	4.73	1.67	2.15	3.86	1.43	1.84
Gross Beta	D	900.0	pCi/L	0.0361 UJ	1.54	2.65	---	---	---	5.06	1.16	1.15	6.32	2.89	4.02	9.83	4.4	6.06	5.81	1.79	2.13	2.34 U	1.6	2.47	2.49	1.41	2.03	1.17 U	1.29	2.03
Manganese-54	T	901.1	pCi/L	4.25 U	6.66	11.2	2.34 U	6.94	12.2	-0.773 U	12	21.1	-5.96 U	18.3	31.3	1.65 U	11.2	19.8	-8.82 U	13.1	21.7	-9.84 U	13.3	27.8	-8.05 U	11.8	19.5	2.12 U	13	22.3
Manganese-54	D	901.1	pCi/L	-9.29 U	9.88	25.9	2 U	8.85	15.4	0.383 U	11.2	20.4	-8.45 U	13	21.6	-8.05 U	13.5	22.6	1.46 U	16.3	28.4	-6.74 U	11.8	19.7	1.17 U	7.3	13	-1.77 U	7.83	13.4
Potassium-40	T	901.1	pCi/L	65.3 U	105	166	-93.3 U	175	226	34.6 U	179	228	1.11 U	161	227	-109 U	245	233	-90.8 U	141	204	-62 U	170	233	-42.7 U	122	188	-16.2 U	167	219
Potassium-40	D	901.1	pCi/L	-24.6 U	174	233	-9.33 U	95.6	139	-50.2 U	202	267	-90.8 U	141	204	2.9 U	114	169	-96.3 U	196	257	-31.6 U	137	190	108 U	112	139	-127 U	110	160
Radium-226	T	903.0	pCi/L	0.0921 U	0.0776	0.114	---	---	---	0.177	0.092	0.106	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Radium-226	D	903.0	pCi/L	0.064 U	0.0685	0.108	---	---	---	0.132	0.0931	0.127	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Radium-228	T	904.0	pCi/L	0.375 U	0.278	0.435	---	---	---	0.194 U	0.288	0.482	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Radium-228	D	904.0	pCi/L	0.441	0.227	0.324	---	---	---	0.785	0.351	0.498	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Sodium-22	T	901.1	pCi/L	3.9 U	5.99	10.1	-2.58 U	7.04	12.6	-12.3 U	13.5	21.9	0 U	2.23	23.8	-3.25 U	8.86	15.9	2.31 U	6.46	11.6	1.18 U	8.44	15.9	-1.26 U	7.55	13.8	7.55 UJ	8.56	13.8
Sodium-22	D	901.1	pCi/L	-1.48 U	8.5	15.9	1.08 U	4.56	8.75	1.86 U	7.83	15	11.3	5.45	4.63	6.33	4.26	5.18	11.7 U	8.9	12.4	-3.98 U	10.8	18.8	3.47 U	6.72	11.6	4.5 U	5.26	8.52
Strontium-90	T	905.0	pCi/L	-0.0829 U	0.166	0.312	---	---	---	2.08	0.378	0.351	-0.0691 UJ	0.155	0.289	0.0867 UJ	0.157	0.266	0.0136 UJ	0.159	0.283	-0.0737 UJ	0.189	0.345	0.0608 UJ	0.208	0.363	-0.0279 UJ	0.154	0.283
Strontium-90	D	905.0	pCi/L	-0.0266 U	0.143	0.265	---	---	---	2.62	0.399	0.284	0.136 U	0.186	0.309	0.109 U	0.189	0.318	0.178 U	0.155	0.246	-0.093 U	0.136	0.264	-0.121 U	0.202	0.372	0.0262 U	0.166	0.292
Tritium	T	906.0	pCi/L	---	---	---	---	---	---	---	---	---	-80.2 U	89.4	162	-124 U	87.6	163	23.4 U	87.7	151	-58.1 U	81.8	149	-23 U	83.3	147	-84.7 U	88.5	161
Uranium-233/234	T	A-01-R	pCi/L	2.51	0.451	0.112	---	---	---	1.21	0.308	0.0839	3.26	0.525	0.0856	3.83	0.601	0.142	1.24	0.3	0.111	1.28	0.298	0.0452	1.11	0.286	0.154	1.1	0.294	0.0985
Uranium-233/234	D	A-01-R	pCi/L	2.77	0.509	0.16	---	---	---	1.58	0.374	0.148	4.03	0.613	0.0486	3.36	0.564	0.0989	1.1	0.28	0.0876	0.993	0.257	0.0445	1.14	0.294	0.0944	1.55	0.361	0.12
Uranium-235/236	T	A-01-R	pCi/L	0.112	0.0966	0.0945	---	---	---	0.0378 U	0.0621	0.104	0.128	0.102	0.092	0.161	0.118	0.1	0.0194 U	0.0388	0.0582	0.112	0.0923	0.0562	0.00484 U	0.0422	0.12	0.0602 U	0.0768	0.106
Uranium-235/236	D	A-01-R	pCi/L	0.0735 U	0.106	0.178	---	---	---	0.0993 U	0.107	0.145	0.101	0.0906	0.0605	0.0714 U	0.114	0.2	0.117	0.0958	0.0584	0.0922	0.0829	0.0553	0.042 U	0.0594	0.0629	0.0112 U	0.0475	0.125
Uranium-238	T	A-01-R	pCi/L	2.56	0.455	0.0969	---	---	---	1.42	0.335	0.0838	1.23	0.295	0.108	2.2	0.428	0.125	0.758	0.227	0.0753	0.552	0.189	0.0727	0.64	0.211	0.122	0.536	0.201	0.0983
Uranium-238	D	A-01-R	pCi/L	2.5	0.48	0.17	---	---	---	1.29	0.33	0.0907	1.49	0.336	0.1	2.28	0.445	0.0987	0.808	0.235	0.0755	0.769	0.223	0.0444	0.606	0.208	0.0505	0.463	0.192	0.128

NOTES AND ABBREVIATIONS

pCi/L - picocuries per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
MDC - Minimal Detectable Concentration
TA STL - Test America St. Louis
Q - Result Qualifier
U - Analyzed for, but not detected above reported sample quantitation limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 14
RADIOCHEMISTRY ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	SP-T02B			SP-T02D		
			Sample Name	SP-T02B_032317_01_L			SP-T02D_033117_01_L		
			Sample Date	3/23/2017			3/31/2017		
			Geological Unit						
			Lab Name	TA STL			TA STL		
			Sample Type	N			N		
Analyte	Fraction	Method	Units	Result Q	Total Uncertainty	MDC	Result Q	Total Uncertainty	MDC
Actinium-228	T	901.1	pCi/L	---	---	---	-17.7 UJ	66.4	76.6
Actinium-228	D	901.1	pCi/L	---	---	---	-3.31 U	10.4	119
Americium-241	T	901.1	pCi/L	---	---	---	-2.06 U	26.4	44.5
Americium-241	D	901.1	pCi/L	---	---	---	5.64 U	28.8	48.5
Antimony-125	T	901.1	pCi/L	---	---	---	9.99 U	27.2	35.6
Antimony-125	D	901.1	pCi/L	---	---	---	7.91 U	15.9	39.1
Barium-133	T	901.1	pCi/L	---	---	---	2.59 U	3.73	37
Barium-133	D	901.1	pCi/L	---	---	---	2.01 U	3.54	48.9
Cesium-134	T	901.1	pCi/L	---	---	---	-2.04 U	4.08	32.2
Cesium-134	D	901.1	pCi/L	---	---	---	14.1 U	11.1	38.4
Cesium-137	T	901.1	pCi/L	---	---	---	-3.15 U	11.7	14.3
Cesium-137	D	901.1	pCi/L	---	---	---	-3.78 U	13.8	17
Cobalt-57	T	901.1	pCi/L	---	---	---	2.92 U	5.85	7.87
Cobalt-57	D	901.1	pCi/L	---	---	---	0.868 U	6.78	9.32
Cobalt-60	T	901.1	pCi/L	---	---	---	5.11 U	3.38	5.88
Cobalt-60	D	901.1	pCi/L	---	---	---	4.67 U	7.08	12.4
Europium-152	T	901.1	pCi/L	---	---	---	16.2 U	32.3	31.3
Europium-152	D	901.1	pCi/L	---	---	---	17.4 U	37.7	40.7
Europium-154	T	901.1	pCi/L	---	---	---	-7.16 U	9.14	91.2
Europium-154	D	901.1	pCi/L	---	---	---	-49 U	94.2	106
Europium-155	T	901.1	pCi/L	---	---	---	-8.69 U	24.4	31.9
Europium-155	D	901.1	pCi/L	---	---	---	3.45 U	25	36.2
Gross Alpha	T	900.0	pCi/L	22.1	7.63	7.89	18.5	6	4.98
Gross Alpha	D	900.0	pCi/L	29.3	8.74	7.9	8.2	4.99	6.97
Gross Beta	T	900.0	pCi/L	11.9	3.17	3.43	11.9	2.8	2.6
Gross Beta	D	900.0	pCi/L	10.6	3.36	3.98	9.36	2.53	2.83
Manganese-54	T	901.1	pCi/L	---	---	---	-3.32 U	10	13.5
Manganese-54	D	901.1	pCi/L	---	---	---	-0.917 U	9.97	18.4
Potassium-40	T	901.1	pCi/L	---	---	---	-9.33 U	95.6	139
Potassium-40	D	901.1	pCi/L	---	---	---	-41.9 U	137	205
Radium-226	T	903.0	pCi/L	---	---	---	---	---	---
Radium-226	D	903.0	pCi/L	---	---	---	---	---	---
Radium-228	T	904.0	pCi/L	---	---	---	---	---	---
Radium-228	D	904.0	pCi/L	---	---	---	---	---	---
Sodium-22	T	901.1	pCi/L	---	---	---	2.6 U	7.8	13.9
Sodium-22	D	901.1	pCi/L	---	---	---	-1.77 U	10.3	18.9
Strontium-90	T	905.0	pCi/L	---	---	---	-0.0392 UJ	0.134	0.251
Strontium-90	D	905.0	pCi/L	---	---	---	-0.0915 U	0.164	0.308
Tritium	T	906.0	pCi/L	---	---	---	713	141	160
Uranium-233/234	T	A-01-R	pCi/L	---	---	---	5.99	0.79	0.116
Uranium-233/234	D	A-01-R	pCi/L	---	---	---	5.7	0.789	0.135
Uranium-235/236	T	A-01-R	pCi/L	---	---	---	0.479	0.196	0.0575
Uranium-235/236	D	A-01-R	pCi/L	---	---	---	0.293	0.162	0.103
Uranium-238	T	A-01-R	pCi/L	---	---	---	5.75	0.766	0.095
Uranium-238	D	A-01-R	pCi/L	---	---	---	5.37	0.756	0.0828

NOTES AND ABBREVIATIONS

pCi/L - picocuries per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
MDC - Minimal Detectable Concentration
TA STL - Test America St. Louis
Q - Result Qualifier
U - Analyzed for, but not detected above reported sample quantitation limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	C-08	DD-139	DD-140	DD-141	DD-142	DD-142	DD-143	DD-144	DD-145
				Sample Name	C-08_032117_01_L	DD-139_030917_01_L	DD-140_030817_01_L	DD-141_031617_01_L	DD-142_031317_01_L	DD-142_031317_36_L	DD-143_031617_01_L	DD-144_031517_01_L	DD-145_031517_01_L
				Sample Date	3/21/2017	3/9/2017	3/8/2017	3/16/2017	3/13/2017	3/13/2017	3/16/2017	3/15/2017	3/15/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	FD	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Aluminum	T	6010C	mg/L	0.021	0.19	0.11	1.2 J+	0.21 J+	0.17	1.8 J+	3.7 J+	0.5 J+
Aluminum	D	6010C	mg/L	0.018 U	0.018 U	0.028	0.02	0.018 U	0.018 U	0.02	0.54	0.018 U
Antimony	T	6020A	mg/L	0.0004 U	0.00077 J+	0.0004 UJ	0.0004 U	0.0004 UJ	0.0004 UJ	0.0004 U	0.0011 J+	0.00048 J+
Antimony	D	6020A	mg/L	0.0004 U	0.0008 J+	0.0004 UJ	0.0004 UJ	0.0004 UJ	0.0004 UJ	0.0004 UJ	0.0004 U	0.0004 U
Arsenic	T	6020A	mg/L	0.0021	0.00058	0.0032	0.001	0.00033 U	0.00033 U	0.0013	0.0022	0.0009
Arsenic	D	6020A	mg/L	0.002	0.00047	0.003	0.00057	0.00033 U	0.00033 U	0.00086	0.00033 U	0.00044
Barium	T	6020A	mg/L	0.05	0.041 J+	0.027 J+	0.09 J-	0.037 J+	0.037 J+	0.051 J-	0.1 J+	0.05 J+
Barium	D	6020A	mg/L	0.051 J+	0.039 J+	0.025	0.081	0.034	0.033	0.04	0.067	0.047 J+
Beryllium	T	6020A	mg/L	0.00008 UJ	0.00008 UJ	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00023	0.00008 U
Beryllium	D	6020A	mg/L	0.00008 UJ	0.00008 UJ	0.00008 U	0.00008 U	0.00008 UJ	0.00008 UJ	0.00008 U	0.00008 U	0.00008 UJ
Boron	T	6010C	mg/L	0.027	0.034	0.024	0.0044 U	0.42	0.43	0.065	0.15	0.081
Boron	D	6010C	mg/L	0.025	0.033	0.025	0.087	0.47	0.48	0.083	0.13	0.071
Cadmium	T	6020A	mg/L	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 UJ	0.00027 UJ
Cadmium	D	6020A	mg/L	0.00027 U	0.00027 UJ	0.00027 U	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 UJ	0.00027 UJ
Calcium	T	6010C	mg/L	100	98	84	110 J-	94	94	140 J-	130 J+	130
Calcium	D	6010C	mg/L	98	98	93	110	110	120	150	110	120
Chromium	T	6020A	mg/L	0.0027	0.0005 U	0.0005 U	0.0033	0.0005 U	0.0005 U	0.0032	0.0056	0.001
Chromium	D	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
Cobalt	T	6020A	mg/L	0.00031 J+	0.0016 J+	0.0014 J+	0.0019	0.00013	0.00013	0.00083	0.002 J+	0.00078 J+
Cobalt	D	6020A	mg/L	0.0003	0.00028 J+	0.0011	0.00062	0.000054 U	0.000054 U	0.00011	0.00048	0.00044
Copper	T	6020A	mg/L	0.00056 U	0.00058 J+	0.00056 UJ	0.0027 J-	0.00056 UJ	0.00056 UJ	0.0012 J-	0.0038 J+	0.0009 J+
Copper	D	6020A	mg/L	0.00056 U	0.0015 J+	0.0012	0.0015	0.00056 UJ	0.00056 UJ	0.00056 U	0.00056 U	0.0011
Iron	T	6010C	mg/L	0.089	0.48	0.57	2.1	0.34 J-	0.31 J-	3	26 J+	2.3 J+
Iron	D	6010C	mg/L	0.022 U	0.022 U	0.14	0.14 J+	0.022 U	0.022 U	0.28 J+	4.4	0.059
Lead	T	6020A	mg/L	0.00018 U	0.00033 J+	0.00026 J+	0.001	0.00018 UJ	0.00018 UJ	0.00088	0.0018 J+	0.00037 J+
Lead	D	6020A	mg/L	0.00018 U	0.00018 UJ	0.00018 U	0.00018 U	0.00018 UJ	0.00018 UJ	0.00018 U	0.0002	0.00018 U
Magnesium	T	6010C	mg/L	6.7	14	20	24	19	19	30	23	16
Magnesium	D	6010C	mg/L	6.5	14	20	23	21	22	31	21 J+	15 J+
Manganese	T	6020A	mg/L	0.01 J+	0.044 J+	0.045 J+	0.11	0.028	0.027	0.11	0.27 J+	0.047 J+
Manganese	D	6020A	mg/L	0.0086	0.00031 UJ	0.032 J+	0.075	0.007 J+	0.0075 J+	0.069	0.14 J+	0.022 J+
Mercury	T	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Mercury	D	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Molybdenum	T	6020A	mg/L	0.0019	0.0024	0.0022	0.0016	0.0022	0.0025	0.0042	0.0021 J+	0.0018 J+
Molybdenum	D	6020A	mg/L	0.002	0.0025	0.0026	0.0016	0.0024 J+	0.0025 J+	0.004	0.0012 J+	0.0019 J+
Nickel	T	6020A	mg/L	0.002 J+	0.0025	0.0027 J+	0.0044	0.00046	0.00056	0.0019	0.0055 J+	0.0029 J+
Nickel	D	6020A	mg/L	0.0012	0.002	0.0026	0.0031	0.0003	0.0003 U	0.00036	0.0018	0.002
Potassium	T	6010C	mg/L	3.2	4.4	5.6	6	4.2 J+	4 J+	5.7	7.2	6
Potassium	D	6010C	mg/L	3 J-	4.5	5.6	5.4	4.3	4.3	5.8	5.7 J+	4.9 J+
Selenium	T	6020A	mg/L	0.0007 U	0.001	0.0007 U	0.0013	0.0049	0.0051	0.0007 U	0.0007 U	0.00075

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	C-08	DD-139	DD-140	DD-141	DD-142	DD-142	DD-143	DD-144	DD-145
			Sample Name	C-08_032117_01_L	DD-139_030917_01_L	DD-140_030817_01_L	DD-141_031617_01_L	DD-142_031317_01_L	DD-142_031317_36_L	DD-143_031617_01_L	DD-144_031517_01_L	DD-145_031517_01_L
			Sample Date	3/21/2017	3/9/2017	3/8/2017	3/16/2017	3/13/2017	3/13/2017	3/16/2017	3/15/2017	3/15/2017
			Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
			Sample Type	N	N	N	N	N	FD	N	N	N
Analyte	**Fraction**	**Method**	**Units**									
Selenium	D	6020A	mg/L	0.0007 U	0.00089	0.0007 U	0.0014	0.0049	0.005	0.0007 U	0.0007 U	0.00073
Silver	T	6020A	mg/L	0.000033 UJ	0.000033 U	0.000033 U	0.000033 U	0.000033 UJ	0.000033 UJ	0.000033 U	0.000033 UJ	0.000033 UJ
Silver	D	6020A	mg/L	0.000033 U	0.000033 U	0.000033 U	0.000033 UJ	0.000033 U	0.000033 U	0.000033 UJ	0.000033 U	0.000033 U
Sodium	T	6010C	mg/L	38	32	43 J+	67 J+	130 J+	130 J+	62 J+	70 J+	91
Sodium	D	6010C	mg/L	39	32 J+	42 J+	68	140	150	68	66 J+	81 J+
Strontium	T	6010C	mg/L	0.37	0.28	0.25	0.26	0.25	0.25	0.29	0.3	0.61
Strontium	D	6010C	mg/L	0.36	0.29	0.25	0.28	0.29	0.31	0.34	0.25	0.5
Thallium	T	6020A	mg/L	0.00005 U	0.00005 UJ	0.00005 U	0.000066	0.00005 UJ	0.00005 UJ	0.00005 U	0.00011 J+	0.00005 UJ
Thallium	D	6020A	mg/L	0.00005 U	0.00005 UJ	0.00005 U	0.000055	0.00005 UJ	0.00005 UJ	0.00005 U	0.00005 U	0.00005 U
Tin	T	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 UJ	0.00077 UJ
Tin	D	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U
Vanadium	T	6020A	mg/L	0.0005 U	0.0042	0.0043	0.0059	0.0005 U	0.0005 U	0.0043	0.012	0.003
Vanadium	D	6020A	mg/L	0.0005 U	0.0033	0.0036	0.0017	0.0005 U	0.0005 U	0.0005 U	0.0013	0.0016
Zinc	T	6020A	mg/L	0.025 J+	0.0049 J+	0.006	0.02	0.003 J+	0.0023 J+	0.037	0.016	0.0031
Zinc	D	6020A	mg/L	0.021	0.0041	0.0055	0.009	0.0022 J+	0.002 UJ	0.0031	0.0021	0.0042

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
TA DEN - Test America Denver, Colorado
TA IRV - Test America Irvine, California
TA STL - Test America St. Louis
U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample. "J+" indicates value is biased high. "J-" indicates value is biased low.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	DS-43	DS-44	DS-44	DS-45	DS-46	DS-47	PZ-005	PZ-103	PZ-104
				Sample Name	DS-43_031317_01_L	DS-44_031617_01_L	DS-44_031617_36_L	DS-45_030917_01_L	DS-46_030817_01_L	DS-47_031517_01_L	PZ-005_030717_01_L	PZ-103_030717_01_L	PZ-104_030717_01_L
				Sample Date	3/13/2017	3/16/2017	3/16/2017	3/9/2017	3/8/2017	3/15/2017	3/7/2017	3/7/2017	3/7/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Shallow	Shallow	Shallow
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	FD	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Aluminum	T	6010C	mg/L	0.35 J+	1.1 J+	1 J+	0.072	0.11	0.11 J+	2.4	0.76	2.5
Aluminum	D	6010C	mg/L	0.018 U	0.06	0.071	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
Antimony	T	6020A	mg/L	0.0004 UJ	0.0004 U	0.0004 U	0.00076 J+	0.0004 UJ	0.00057 J+	0.0004 U	0.0004 U	0.0004 U
Antimony	D	6020A	mg/L	0.0004 UJ	0.0004 UJ	0.0004 U	0.00075 J+	0.0004 UJ	0.0004 U	0.0004 U	0.0004 U	0.0004 U
Arsenic	T	6020A	mg/L	0.00094	0.00071	0.0008	0.0009	0.00033 U	0.00087	0.0015	0.0005	0.0061
Arsenic	D	6020A	mg/L	0.00033 U	0.00033 U	0.00033 U	0.001	0.00033 U	0.00066	0.0008	0.00033 U	0.0048
Barium	T	6020A	mg/L	0.11 J+	0.05 J-	0.048	0.039 J+	0.05 J+	0.049 J+	0.082	0.065	0.072
Barium	D	6020A	mg/L	0.092	0.038	0.037	0.038 J+	0.046	0.044 J+	0.063	0.057	0.044
Beryllium	T	6020A	mg/L	0.00008 U	0.00008 U	0.00008 U	0.00008 UJ	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00012
Beryllium	D	6020A	mg/L	0.00008 UJ	0.00008 U	0.00008 U	0.00008 UJ	0.00008 U	0.00008 UJ	0.00008 U	0.00008 U	0.00008 U
Boron	T	6010C	mg/L	0.14	0.0044 U	0.0044 U	0.26	0.036	0.039	0.15	0.065	0.12
Boron	D	6010C	mg/L	0.15	0.1	0.099	0.26	0.037	0.034	0.15	0.065	0.13
Cadmium	T	6020A	mg/L	0.00027 UJ	0.00027 U	0.00027 U	0.00027 UJ	0.00027 U	0.00027 UJ	0.00075	0.00027	0.00027 U
Cadmium	D	6020A	mg/L	0.00027 UJ	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 UJ	0.00027 U	0.00027 U	0.00027 U
Calcium	T	6010C	mg/L	83	93 J-	85 J-	110	100	80	110	140	260
Calcium	D	6010C	mg/L	100	94	96	120	110	72	120	150	280
Chromium	T	6020A	mg/L	0.00095	0.0021	0.002	0.00067	0.0005 U	0.0005 U	0.0036	0.004	0.0053
Chromium	D	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00069	0.0028	0.0005 U
Cobalt	T	6020A	mg/L	0.00047	0.00081	0.00087	0.00098 J+	0.0033 J+	0.00089 J+	0.00084	0.00048	0.0085
Cobalt	D	6020A	mg/L	0.00022	0.00011	0.000094	0.00083 J+	0.0031	0.000063	0.00012	0.000074	0.0066
Copper	T	6020A	mg/L	0.00056 UJ	0.0033 J-	0.0034 J-	0.0014 J+	0.00056 UJ	0.00079 J+	0.0055	0.0016	0.0023
Copper	D	6020A	mg/L	0.00056 UJ	0.00056 U	0.00062	0.0014 J+	0.00085	0.00056 U	0.0022	0.00075	0.00056 U
Iron	T	6010C	mg/L	12 J-	1.7	1.7	0.15	12	0.27 J+	2.9	1.1	3.8
Iron	D	6010C	mg/L	2.2	0.096 J+	0.11	0.022 U	0.28	0.022 U	0.022 U	0.022 U	0.022 U
Lead	T	6020A	mg/L	0.00079 J+	0.00057	0.0006	0.00018 UJ	0.00018 UJ	0.00025 J+	0.0009	0.00037	0.0012
Lead	D	6020A	mg/L	0.00018 UJ	0.00018 U	0.00018 U	0.00018 UJ	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U
Magnesium	T	6010C	mg/L	24	20	18	34	15	19	18	8.8	47
Magnesium	D	6010C	mg/L	26	19	19	34	15	18 J+	16	8.6	46
Manganese	T	6020A	mg/L	0.22	0.041	0.041	0.031	0.67 J+	0.011 J+	0.035 J+	0.021 J+	1.7 J+
Manganese	D	6020A	mg/L	0.15 J+	0.0075	0.0081	0.00031 UJ	0.62 J+	0.00031 UJ	0.0097 J+	0.00049 J+	1.6 J+
Mercury	T	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 UJ	0.000027 UJ	0.000027 UJ
Mercury	D	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Molybdenum	T	6020A	mg/L	0.0023	0.0069	0.0065	0.0015 J+	0.00072	0.0058 J+	0.0014	0.0024	0.0018
Molybdenum	D	6020A	mg/L	0.0025 J+	0.008	0.0075	0.0015	0.00014 U	0.0052 J+	0.0015	0.0023	0.0021
Nickel	T	6020A	mg/L	0.00091	0.0016	0.0019	0.0032	0.009 J+	0.0015 J+	0.0028	0.0021	0.0089
Nickel	D	6020A	mg/L	0.00033	0.00048	0.00039	0.0035	0.0092	0.0011	0.0011	0.0012	0.006
Potassium	T	6010C	mg/L	5.9 J+	4.5	4	4	4.5	5	2.4	1.6	13
Potassium	D	6010C	mg/L	5.9	3.9	4.1	4.2	4.4	4.6 J+	1.9	1.5	12
Selenium	T	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0033	0.0007 U	0.0007 U	0.0014	0.0024	0.0007 U

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	DS-43	DS-44	DS-44	DS-45	DS-46	DS-47	PZ-005	PZ-103	PZ-104
			Sample Name	DS-43_031317_01_L	DS-44_031617_01_L	DS-44_031617_36_L	DS-45_030917_01_L	DS-46_030817_01_L	DS-47_031517_01_L	PZ-005_030717_01_L	PZ-103_030717_01_L	PZ-104_030717_01_L
			Sample Date	3/13/2017	3/16/2017	3/16/2017	3/9/2017	3/8/2017	3/15/2017	3/7/2017	3/7/2017	3/7/2017
			Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Shallow	Shallow	Shallow
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
			Sample Type	N	N	FD	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**									
Selenium	D	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0031	0.0007 U	0.0007 U	0.0011	0.0025	0.0007 U
Silver	T	6020A	mg/L	0.000033 UJ	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 UJ	0.000033 U	0.000036	0.000033 U
Silver	D	6020A	mg/L	0.000033 U	0.000033 UJ	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U
Sodium	T	6010C	mg/L	140 J+	52 J+	49 J+	42	55 J+	37	89	93	250
Sodium	D	6010C	mg/L	150	55	56	44 J+	55 J+	36 J+	85	93	260
Strontium	T	6010C	mg/L	0.29	0.24	0.22	0.33	0.31	0.25	0.59	1	1.6
Strontium	D	6010C	mg/L	0.34	0.27	0.27	0.35	0.3	0.22	0.53	0.97	1.6
Thallium	T	6020A	mg/L	0.00005 UJ	0.00005 U	0.00005 U	0.00005 UJ	0.00005 U	0.00005 UJ	0.00005 U	0.00005 U	0.00005 U
Thallium	D	6020A	mg/L	0.00005 UJ	0.00005 U	0.00005 U	0.00005 UJ	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Tin	T	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 UJ	0.00077 U	0.00077 U	0.00077 U
Tin	D	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U
Vanadium	T	6020A	mg/L	0.0016	0.0037	0.0036	0.0055	0.0005 U	0.0035	0.0059	0.0023	0.0062
Vanadium	D	6020A	mg/L	0.0005 U	0.0005 U	0.00051 J-	0.0053	0.0005 U	0.0034	0.00089	0.0005 U	0.0005 U
Zinc	T	6020A	mg/L	0.0035 J+	0.0054	0.0057	0.0036 J+	0.0029	0.0062	0.016	0.0069	0.013
Zinc	D	6020A	mg/L	0.002 UJ	0.002 U	0.002 U	0.0044	0.0037	0.0033	0.0053	0.003	0.002 U

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
TA DEN - Test America Denver, Colorado
TA IRV - Test America Irvine, California
TA STL - Test America St. Louis
U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample. "J+" indicates value is biased high. "J-" indicates value is biased low.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	PZ-105	PZ-116	PZ-120	RD-07	RD-19	RD-21	RD-22	RD-23	RD-33A
				Sample Name	PZ-105_030617_01_L	PZ-116_031017_01_L	PZ-120_031017_01_L	RD-07_031317_01_L	RD-19_032317_01_L	RD-21_032117_01_L	RD-22_031417_01_L	RD-23_031417_01_L	RD-33A_031317_01_L
				Sample Date	3/6/2017	3/10/2017	3/10/2017	3/13/2017	3/23/2017	3/21/2017	3/14/2017	3/14/2017	3/13/2017
				Geological Unit	Shallow	Shallow	Shallow	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Aluminum	T	6010C	mg/L	0.4	0.079	0.11	0.018 UJ	0.018 U	0.47	0.059 J+	0.16 J+	0.018 U
Aluminum	D	6010C	mg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.038	0.05	0.018 U
Antimony	T	6020A	mg/L	0.0014	0.00085 J+	0.001 J+	0.00041 J+	0.0004 U	0.0004 UJ	0.0004 U	0.0004 U	0.0004 UJ
Antimony	D	6020A	mg/L	0.0014	0.00062 J+	0.00065 J+	0.0004 UJ	0.0004 U	0.0004 U	0.0033	0.0004 U	0.0004 UJ
Arsenic	T	6020A	mg/L	0.00099	0.00087	0.0019	0.00033 U	0.00033 U	0.00068	0.00075	0.00037	0.0016
Arsenic	D	6020A	mg/L	0.001	0.0013	0.0018	0.00033 U	0.00033 U	0.00048	0.00057	0.00038	0.0015
Barium	T	6020A	mg/L	0.03	0.038 J+	0.018 J+	0.031 J+	0.081	0.039	0.055 J+	0.034 J+	0.047 J+
Barium	D	6020A	mg/L	0.027	0.024 J+	0.014 J+	0.031	0.083	0.036	0.054	0.033	0.048
Beryllium	T	6020A	mg/L	0.00008 U	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.000087	0.00008 U	0.00008 UJ
Beryllium	D	6020A	mg/L	0.00008 U	0.00008 UJ	0.00022 J+	0.00008 U	0.00008 U	0.00008 UJ	0.00008 U	0.00008 U	0.00008 UJ
Boron	T	6010C	mg/L	0.14	0.1	1	0.078	0.11	0.053	0.034	0.022	0.021
Boron	D	6010C	mg/L	0.15	0.1	1.1	0.086	0.1	0.052	0.046	0.048	0.02
Cadmium	T	6020A	mg/L	0.00027 U	0.00055 J+	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 UJ	0.00027 U	0.00027 U	0.00027 UJ
Cadmium	D	6020A	mg/L	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 UJ
Calcium	T	6010C	mg/L	100	120	76	77	190	95	150	95	55
Calcium	D	6010C	mg/L	120	170	85	95	180 J+	91	140	85	64
Chromium	T	6020A	mg/L	0.0013	0.0018	0.002	0.0005 U	0.0005 U	0.00092	0.012	0.03	0.0005 U
Chromium	D	6020A	mg/L	0.00091	0.0014	0.0017	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
Cobalt	T	6020A	mg/L	0.00031	0.00029 J+	0.00033 J+	0.000054 UJ	0.000063	0.00065	0.00036 J+	0.00019 J+	0.000087
Cobalt	D	6020A	mg/L	0.000054 U	0.00013 J+	0.00023 J+	0.000054 U	0.000054 U	0.000055	0.00033	0.000054 U	0.000097
Copper	T	6020A	mg/L	0.00091	0.0017 J+	0.005 J+	0.00056 UJ	0.00061	0.0025	0.0012 J+	0.0011 J+	0.00056 UJ
Copper	D	6020A	mg/L	0.00078	0.0014 J+	0.003 J+	0.00056 UJ	0.0012	0.0026	0.0013	0.00056 U	0.00056 UJ
Iron	T	6010C	mg/L	0.59	0.17	0.18	0.022 UJ	0.058	1.3	0.38	0.28	0.065 J-
Iron	D	6010C	mg/L	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.2	0.022 U	0.04
Lead	T	6020A	mg/L	0.00022	0.00018 UJ	0.0012 J+	0.00018 UJ	0.00018 U	0.0023	0.00087 J+	0.00021 J+	0.00021 J+
Lead	D	6020A	mg/L	0.00018 U	0.00018 UJ	0.00018 UJ	0.00018 UJ	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 UJ
Magnesium	T	6010C	mg/L	19	41	16	12	41 J	6.3	22	5.8	13
Magnesium	D	6010C	mg/L	20	61	18	14	38	6.1	20	5.2	14
Manganese	T	6020A	mg/L	0.021 J+	0.047	0.14	0.0012	0.0025	0.021 J+	0.038 J+	0.0041 J+	0.015
Manganese	D	6020A	mg/L	0.0019 J+	0.00031 UJ	0.00031 UJ	0.00073	0.0039	0.00061	0.035 J+	0.0014 J-	0.015 J+
Mercury	T	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Mercury	D	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Molybdenum	T	6020A	mg/L	0.018	0.012 J+	0.0069 J+	0.0011	0.00069	0.0022	0.0019	0.0018	0.0012
Molybdenum	D	6020A	mg/L	0.018	0.011	0.0074	0.0011	0.00073	0.0021	0.0019	0.0018	0.00014 UJ
Nickel	T	6020A	mg/L	0.00091	0.0022	0.0043	0.00034 J+	0.0028	0.0012	0.0083 J+	0.0047 J+	0.00087
Nickel	D	6020A	mg/L	0.00042	0.00095	0.0035	0.00031 J+	0.0031	0.00085	0.0061	0.0015	0.00076
Potassium	T	6010C	mg/L	5.9	11	2.9	3.3 J+	7 J-	2.4	4.2 J+	2.7 J+	3.7 J+
Potassium	D	6010C	mg/L	6	9.1	3.2	3.2	6.6 J-	2 J-	4 J+	2.7 J+	3.4
Selenium	T	6020A	mg/L	0.0012	0.0048	0.0007 U	0.0014	0.0007 U	0.0029	0.0007 U	0.0007 U	0.0007 U

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	PZ-105	PZ-116	PZ-120	RD-07	RD-19	RD-21	RD-22	RD-23	RD-33A
				Sample Name	PZ-105_030617_01_L	PZ-116_031017_01_L	PZ-120_031017_01_L	RD-07_031317_01_L	RD-19_032317_01_L	RD-21_032117_01_L	RD-22_031417_01_L	RD-23_031417_01_L	RD-33A_031317_01_L
				Sample Date	3/6/2017	3/10/2017	3/10/2017	3/13/2017	3/23/2017	3/21/2017	3/14/2017	3/14/2017	3/13/2017
				Geological Unit	Shallow	Shallow	Shallow	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Selenium	D	6020A	mg/L	0.0013	0.0065	0.00085	0.0014	0.0007 U	0.0033	0.0007 U	0.0007 U	0.0007 U	
Silver	T	6020A	mg/L	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 UJ	0.000033 U	0.000056	0.000033 UJ	
Silver	D	6020A	mg/L	0.000033 U	0.000033	0.000033 U	0.000033 U	0.000033 U	0.00067	0.000033 U	0.000033 U	0.000033 U	
Sodium	T	6010C	mg/L	90	160	84	36 J+	91	58	57 J+	37 J+	45 J+	
Sodium	D	6010C	mg/L	95	200 J+	89 J+	40	91	59	53 J+	34 J+	47	
Strontium	T	6010C	mg/L	0.47	0.53	0.21	0.19	0.41	0.25	0.8	0.3	0.33	
Strontium	D	6010C	mg/L	0.49	0.64	0.23	0.23	0.4	0.25	0.74	0.28	0.37	
Thallium	T	6020A	mg/L	0.000051	0.00005 UJ	0.00005 UJ	0.00005 UJ	0.00005 U	0.00005 U	0.00005 UJ	0.000068 J+	0.00005 UJ	
Thallium	D	6020A	mg/L	0.00005 U	0.00005 UJ	0.000071 J+	0.00005 UJ	0.000062	0.00005 U	0.00005 U	0.00005 U	0.00005 UJ	
Tin	T	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	
Tin	D	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.0014	0.00077 U	0.00077 U	
Vanadium	T	6020A	mg/L	0.0017	0.0011	0.0025	0.0005 U	0.0005 U	0.0029	0.0005 U	0.00063	0.0005 U	
Vanadium	D	6020A	mg/L	0.00077	0.00075	0.0024	0.0005 U	0.0005 U	0.0012	0.0005 U	0.0005 U	0.0005 U	
Zinc	T	6020A	mg/L	0.0059	0.0067 J+	0.065 J+	0.015 J+	0.19 J+	0.04 J+	0.059	0.024	0.086 J+	
Zinc	D	6020A	mg/L	0.011	0.002 U	0.028	0.014 J+	0.19	0.017	0.063	0.017	0.021 J+	

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
TA DEN - Test America Denver, Colorado
TA IRV - Test America Irvine, California
TA STL - Test America St. Louis
U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample. "J+" indicates value is biased high. "J-" indicates value is biased low.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-33B	RD-33C	RD-33C	RD-34A	RD-34B	RD-34C	RD-54A	RD-59A	RD-59B
				Sample Name	RD-33B_032217_01_L	RD-33C_032217_01_L	RD-33C_032217_36_L	RD-34A_032317_01_L	RD-34B_032317_01_L	RD-34C_031717_01_L	RD-54A_032017_01_L	RD-59A_032417_01_L	RD-59B_032417_01_L
				Sample Date	3/22/2017	3/22/2017	3/22/2017	3/23/2017	3/23/2017	3/17/2017	3/20/2017	3/24/2017	3/24/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth Artesian
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	FD	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Aluminum	T	6010C	mg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 UJ	2	0.018 U	0.018 U
Aluminum	D	6010C	mg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 UJ
Antimony	T	6020A	mg/L	0.0004 UJ	0.0004 UJ	0.0004 UJ	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 UJ	0.0004 U
Antimony	D	6020A	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.00044	0.0004 U	0.0004 U
Arsenic	T	6020A	mg/L	0.00033 U	0.00033 U	0.00033 U	0.00033 U	0.00033 U	0.00033 U	0.005	0.0011 J-	0.00033 UJ
Arsenic	D	6020A	mg/L	0.00033 U	0.00033 U	0.00033 U	0.00033 U	0.00033 U	0.00033 U	0.0012	0.0013	0.00033 U
Barium	T	6020A	mg/L	0.031	0.075	0.077	0.035	0.008 J+	0.057	0.058	0.067 J-	0.042 J-
Barium	D	6020A	mg/L	0.032	0.074	0.074	0.035	0.0079 J+	0.057	0.046 J+	0.068	0.043 J+
Beryllium	T	6020A	mg/L	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 U	0.00018	0.00008 UJ	0.00008 UJ
Beryllium	D	6020A	mg/L	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 UJ	0.00008 UJ
Boron	T	6010C	mg/L	0.02	0.032	0.032	0.091	0.019	0.0044 U	0.025	0.085	0.069
Boron	D	6010C	mg/L	0.017	0.029	0.028	0.12	0.019	0.022	0.021	0.096	0.068
Cadmium	T	6020A	mg/L	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 U	0.00027 U	0.00027 U	0.00027 UJ	0.00027 UJ
Cadmium	D	6020A	mg/L	0.00027 U	0.00027 U	0.00027 U	0.00027 U	0.00027 U	0.00027 UJ	0.00027 U	0.00027 UJ	0.00027 UJ
Calcium	T	6010C	mg/L	24	68	69	160	2.8	45 J-	100	130	56
Calcium	D	6010C	mg/L	24	66	67 J+	140 J+	2.9 J+	48	100 J+	130	52
Chromium	T	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0051	0.0005 UJ	0.0005 U
Chromium	D	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
Cobalt	T	6020A	mg/L	0.000054 U	0.0001	0.000054 U	0.00065	0.000072	0.00065	0.0054	0.000054 U	0.000054 U
Cobalt	D	6020A	mg/L	0.000054 U	0.000054 U	0.000054 U	0.00025	0.000054 U	0.000054 U	0.000054 U	0.00008	0.000054 U
Copper	T	6020A	mg/L	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 UJ	0.025	0.0017 J-	0.0045 J-
Copper	D	6020A	mg/L	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.0026	0.0032
Iron	T	6010C	mg/L	0.51	1.7	1.9	0.54	0.28	4.3	14	0.022 U	0.085
Iron	D	6010C	mg/L	0.13	0.94	0.97	0.2	0.022 U	2	0.022 U	0.022 U	0.29
Lead	T	6020A	mg/L	0.00018 U	0.00037	0.00049	0.00018 U	0.00018 U	0.0011	0.019	0.00018 U	0.00018 U
Lead	D	6020A	mg/L	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00024	0.00018 U
Magnesium	T	6010C	mg/L	6.9 J	15 J	15 J	38 J	0.35 J	16	8.4	37 J+	16 J+
Magnesium	D	6010C	mg/L	6.3	14	14	38	0.38	17	7.9	38 J+	15 J+
Manganese	T	6020A	mg/L	0.023 J+	0.17 J+	0.17 J+	0.081	0.0042	0.05	0.6 J+	0.055 J-	0.023 J
Manganese	D	6020A	mg/L	0.048	0.17	0.16	0.027	0.00091	0.048	0.0015	0.052	0.024
Mercury	T	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.00023	0.000027 U	0.000027 U
Mercury	D	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Molybdenum	T	6020A	mg/L	0.0021	0.0012	0.0014	0.0004	0.0025	0.0012	0.0018	0.0018	0.0012 J-
Molybdenum	D	6020A	mg/L	0.0023	0.0014	0.0016	0.00053	0.0034	0.0014	0.0011	0.0021	0.0014
Nickel	T	6020A	mg/L	0.0003 U	0.0003 U	0.0003 U	0.0017	0.0003 U	0.00055	0.006 J+	0.00092 J-	0.0003 U
Nickel	D	6020A	mg/L	0.0003 U	0.0003 U	0.00054	0.0018	0.0003 U	0.00034	0.00069	0.0013 J-	0.0003 U
Potassium	T	6010C	mg/L	3.2 J-	3.6 J-	3.7 J-	4.7 J-	2.4 J-	3.2	3.4	4.5	3.2 J+
Potassium	D	6010C	mg/L	2.8 J-	3.4 J-	3.4 J-	4.2 J-	2.5 J-	3.2	2.6	4.6 J+	3.2 J+
Selenium	T	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-33B	RD-33C	RD-33C	RD-34A	RD-34B	RD-34C	RD-54A	RD-59A	RD-59B
				Sample Name	RD-33B_032217_01_L	RD-33C_032217_01_L	RD-33C_032217_36_L	RD-34A_032317_01_L	RD-34B_032317_01_L	RD-34C_031717_01_L	RD-54A_032017_01_L	RD-59A_032417_01_L	RD-59B_032417_01_L
				Sample Date	3/22/2017	3/22/2017	3/22/2017	3/23/2017	3/23/2017	3/17/2017	3/20/2017	3/24/2017	3/24/2017
				Geological Unit	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth	Chatsworth Artesian
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	FD	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Selenium	D	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0026	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U
Silver	T	6020A	mg/L	0.000033 UJ	0.000033 UJ	0.000033 UJ	0.000033 U	0.000033 U	0.000033 U	0.000033 J+	0.000033 UJ	0.000033 U	
Silver	D	6020A	mg/L	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	
Sodium	T	6010C	mg/L	44	44	45	63	38	40 J+	36	150 J+	100 J+	
Sodium	D	6010C	mg/L	42	45	45	69	42	43	37 J+	150	100 J+	
Strontium	T	6010C	mg/L	0.12	0.42	0.43	0.32	0.014	0.22	0.3	0.8	0.58	
Strontium	D	6010C	mg/L	0.11	0.42	0.42	0.31	0.015	0.26	0.31	0.83	0.6	
Thallium	T	6020A	mg/L	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	
Thallium	D	6020A	mg/L	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.000055	0.000059	0.00005 U	
Tin	T	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	
Tin	D	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	
Vanadium	T	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0058	0.0005 U	0.0005 U	
Vanadium	D	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 UJ	0.00055	0.0011	0.0005 U	
Zinc	T	6020A	mg/L	0.002 UJ	0.094 J+	0.088 J+	0.06 J+	0.043 J+	0.79	0.43	0.002 UJ	0.0025 J-	
Zinc	D	6020A	mg/L	0.002 U	0.0031	0.002 U	0.069	0.002 U	0.029	0.22	0.0066 J-	0.0033	

NOTES AND ABBREVIATIONS
ug/L - micrograms per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
TA DEN - Test America Denver, Colorado
TA IRV - Test America Irvine, California
TA STL - Test America St. Louis
U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample. "J+" indicates value is biased high. "J-" indicates value is biased low.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	RD-59B	RD-59C	RD-64	RD-96	RD-96	RS-18	RS-25	RS-27	RS-54
				Sample Name	RD-59B_032417_36_L	RD-59C_032417_01_L	RD-64_031617_01_L	RD-96_032117_01_L	RD-96_032117_36_L	RS-18_030817_01_L	RS-25_032817_01_L	RS-27_032817_01_L	RS-54_030917_01_L
				Sample Date	3/24/2017	3/24/2017	3/16/2017	3/21/2017	3/21/2017	3/8/2017	3/28/2017	3/28/2017	3/9/2017
				Geological Unit	Chatsworth Artesian	Chatsworth Artesian	Chatsworth	Chatsworth	Chatsworth	Shallow	Shallow	Shallow	Shallow
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	FD	N	N	N	FD	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**										
Aluminum	T	6010C	mg/L	0.018 U	0.018 U	0.018 UJ	0.018 U	0.018 U	0.018 U	6.1	1.6	0.027
Aluminum	D	6010C	mg/L	0.018 UJ	0.018 UJ	0.018 U	0.018 U	0.018 U	0.018 U	0.018	0.078	0.018 U
Antimony	T	6020A	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 UJ	0.0004 UJ	0.0004 UJ	0.00046	0.00085	0.0047 J+
Antimony	D	6020A	mg/L	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 UJ	0.0004 U	0.00086	0.0052 J+
Arsenic	T	6020A	mg/L	0.00033 UJ	0.00033 UJ	0.0017	0.00046	0.00043	0.00051	0.0014	0.0044	0.00052
Arsenic	D	6020A	mg/L	0.00033 U	0.00033 U	0.0016	0.00056	0.00047	0.00053	0.00038	0.0046	0.00049
Barium	T	6020A	mg/L	0.042 J-	0.051 J-	0.061	0.042	0.041	0.047 J+	0.21	0.044	0.051 J+
Barium	D	6020A	mg/L	0.039 J+	0.052	0.061	0.037 J+	0.039	0.048	0.18	0.033	0.048 J+
Beryllium	T	6020A	mg/L	0.00008 UJ	0.00008 UJ	0.00008 U	0.00008 UJ	0.00008 UJ	0.00008 U	0.00008 UJ	0.00008 UJ	0.00008 UJ
Beryllium	D	6020A	mg/L	0.00008 UJ	0.00008 UJ	0.00008 U	0.00013 J+	0.00008 UJ	0.00008 U	0.00008 U	0.00008 U	0.00008 UJ
Boron	T	6010C	mg/L	0.068	0.075	0.0044 U	0.027	0.027	0.082	0.058	0.29	0.34
Boron	D	6010C	mg/L	0.068	0.076	0.053	0.023	0.021	0.081	0.055	0.28	0.35
Cadmium	T	6020A	mg/L	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 U	0.0012	0.00027 UJ
Cadmium	D	6020A	mg/L	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 U	0.00027 U	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 UJ
Calcium	T	6010C	mg/L	56	34	120 J-	110	110	71	85	68	100
Calcium	D	6010C	mg/L	52	32	130	100	94	79	80	55	110
Chromium	T	6020A	mg/L	0.0005 U	0.0005 U	0.0018	0.0005 U	0.0005 U	0.0005 U	0.0049	0.002	0.053
Chromium	D	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00051	0.0005 U	0.0023
Cobalt	T	6020A	mg/L	0.000054 U	0.000054 U	0.00059	0.00028 J+	0.00028	0.00038 J+	0.0018 J+	0.00089 J+	0.047 J+
Cobalt	D	6020A	mg/L	0.000054 U	0.000054 U	0.00056	0.000063	0.000054 U	0.00034	0.000054 J+	0.00047 J+	0.046 J+
Copper	T	6020A	mg/L	0.00056 UJ	0.00071 J-	0.00056 UJ	0.00056 U	0.00056 U	0.0007 J+	0.0037	0.0049	0.017 J+
Copper	D	6020A	mg/L	0.00056 U	0.00056 U	0.0012	0.00099	0.00081	0.00064	0.00075	0.0024	0.0044 J+
Iron	T	6010C	mg/L	0.078	0.022 U	0.043	0.028	0.04	0.022 U	7.6	2.3	0.58
Iron	D	6010C	mg/L	0.022 U	0.022 UJ	0.022 U	0.022	0.022 U	0.022 U	0.023	0.14	0.055
Lead	T	6020A	mg/L	0.00018 U	0.00019	0.00018	0.00018 U	0.00018 U	0.00018 J+	0.0019	0.0016	0.022 J+
Lead	D	6020A	mg/L	0.00018 U	0.00022	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.0066 J+
Magnesium	T	6010C	mg/L	16 J+	12 J+	12	36	36	15	38	12	17
Magnesium	D	6010C	mg/L	15 J+	11 J+	12	33	31	15	34	11	18
Manganese	T	6020A	mg/L	0.025 J	0.017 J	0.0073	0.037 J+	0.037 J+	0.00031 UJ	0.071	0.11	0.071
Manganese	D	6020A	mg/L	0.022	0.017	0.0068	0.0071	0.0055	0.00062 J+	0.0009	0.07	0.00031 UJ
Mercury	T	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Mercury	D	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U
Molybdenum	T	6020A	mg/L	0.0013 J-	0.00097 J-	0.0018	0.001	0.00094	0.0022	0.0011	0.00067	0.012 J+
Molybdenum	D	6020A	mg/L	0.0013	0.0013	0.0018	0.0013	0.0013	0.00014 U	0.0011	0.00014 U	0.011
Nickel	T	6020A	mg/L	0.0003 U	0.0003 U	0.0028	0.0022	0.002	0.0013 J+	0.003	0.0041	0.24
Nickel	D	6020A	mg/L	0.0003 U	0.0003 UJ	0.0028	0.00098	0.00088	0.0013	0.00055 J+	0.0033 J+	0.23
Potassium	T	6010C	mg/L	3.3 J+	2.5 J+	3.7	4.9	5	0.81	4 J-	1.2 J-	1.7
Potassium	D	6010C	mg/L	3.1 J+	0.24 UJ	3.8	4.6 J-	4.3 J-	0.88	3.4	1.4	1.8
Selenium	T	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0034	0.0011	0.0007 U	0.003

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

			Well Identifier	RD-59B	RD-59C	RD-64	RD-96	RD-96	RS-18	RS-25	RS-27	RS-54
			Sample Name	RD-59B_032417_36_L	RD-59C_032417_01_L	RD-64_031617_01_L	RD-96_032117_01_L	RD-96_032117_36_L	RS-18_030817_01_L	RS-25_032817_01_L	RS-27_032817_01_L	RS-54_030917_01_L
			Sample Date	3/24/2017	3/24/2017	3/16/2017	3/21/2017	3/21/2017	3/8/2017	3/28/2017	3/28/2017	3/9/2017
			Geological Unit	Chatsworth Artesian	Chatsworth Artesian	Chatsworth	Chatsworth	Chatsworth	Shallow	Shallow	Shallow	Shallow
			Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
			Sample Type	FD	N	N	N	FD	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**									
Selenium	D	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0035	0.00098	0.0007 U	0.0026
Silver	T	6020A	mg/L	0.000033 U	0.000033 U	0.000033 U	0.000035 J+	0.000033 UJ	0.000033 U	0.000033 U	0.000054	0.000033 U
Silver	D	6020A	mg/L	0.000033 U	0.000062	0.000033 U	0.000033 U	0.00042	0.000033 U	0.000033 U	0.000033 U	0.000033 U
Sodium	T	6010C	mg/L	110 J+	140 J+	60 J+	49	49	23 J+	55	26	80
Sodium	D	6010C	mg/L	100 J+	140 J+	67	48	45	23 J+	55	27	81 J+
Strontium	T	6010C	mg/L	0.59	0.63	0.48	0.26	0.26	0.23	0.47	0.34	0.32
Strontium	D	6010C	mg/L	0.6	0.68	0.59	0.25	0.23	0.23	0.46	0.32	0.33
Thallium	T	6020A	mg/L	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.000063	0.00005 U	0.00005 UJ
Thallium	D	6020A	mg/L	0.00005 U	0.00005 U	0.00005 U	0.000074	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 UJ
Tin	T	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U
Tin	D	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U
Vanadium	T	6020A	mg/L	0.0005 U	0.0005 U	0.0016	0.00056	0.00051	0.0005 U	0.01 J+	0.0047 J+	0.0005 U
Vanadium	D	6020A	mg/L	0.0005 U	0.0005 U	0.0016 J-	0.0006	0.00074	0.00073	0.0005 UJ	0.0005 UJ	0.0005 U
Zinc	T	6020A	mg/L	0.0089 J-	0.0053 J-	0.35	0.002 UJ	0.002 UJ	0.0023	0.053	0.027	0.82 J+
Zinc	D	6020A	mg/L	0.0052	0.0045	0.37	0.0032	0.0034	0.002 U	0.033	0.0046	0.8

NOTES AND ABBREVIATIONS

ug/L - micrograms per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
TA DEN - Test America Denver, Colorado
TA IRV - Test America Irvine, California
TA STL - Test America St. Louis
U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample. "J+" indicates value is biased high. "J-" indicates value is biased low.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	SP-19A	SP-19B	SP-424A	SP-424B	SP-424C	SP-424C	SP-T02B	SP-T02D
				Sample Name	SP-19A_033017_01_L	SP-19B_033017_01_L	SP-424A_032817_01_L	SP-424B_032817_01_L	SP-424C_032917_01_L	SP-424C_040317_01_L	SP-T02B_032317_01_L	SP-T02D_033117_01_L
				Sample Date	3/30/2017	3/30/2017	3/28/2017	3/28/2017	3/29/2017	4/3/2017	3/23/2017	3/31/2017
				Geological Unit								
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**									
Aluminum	T	6010C	mg/L	0.07	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.57 J+	0.018 U
Aluminum	D	6010C	mg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.049	0.018 U	
Antimony	T	6020A	mg/L	0.0004 UJ	0.0004 UJ	0.0004 U	0.0004 U	0.0004 U	0.0004 UJ	0.00084	0.00049	
Antimony	D	6020A	mg/L	0.0004 UJ	0.0004 UJ	0.0004 U	0.0004 U	0.0004 UJ	0.0004 U	0.00076	0.0011	
Arsenic	T	6020A	mg/L	0.00094	0.0004	0.00033 U	0.00033 U	0.00036	0.00038	0.0017 J-	0.00087	
Arsenic	D	6020A	mg/L	0.0011	0.00048	0.00033 U	0.00033 U	0.00043	0.00033 U	0.0019 J-	0.00093	
Barium	T	6020A	mg/L	0.043 J-	0.043 J+	0.038	0.041	0.03 J-	0.031	0.028 J-	0.027	
Barium	D	6020A	mg/L	0.042 J+	0.043 J+	0.037	0.042	0.03	0.032 J+	0.026	0.027	
Beryllium	T	6020A	mg/L	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 U	0.000083 J+	0.00008 U	
Beryllium	D	6020A	mg/L	0.00008 U	0.00011	0.00008 U	0.00008 U	0.00008 UJ	0.00008 UJ	0.00008 UJ	0.00008 UJ	
Boron	T	6010C	mg/L	0.091	0.13	0.064	0.063	0.069	0.067	0.16	0.27	
Boron	D	6010C	mg/L	0.093	0.13	0.062	0.065	0.068	0.064	0.16	0.13	
Cadmium	T	6020A	mg/L	0.00027 U	0.00027 U	0.00027 U	0.00027 U	0.00027 U	0.00027 UJ	0.00027 UJ	0.00027 UJ	
Cadmium	D	6020A	mg/L	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 UJ	0.00027 UJ	
Calcium	T	6010C	mg/L	120	250	88	84	84	86	140 J+	290	
Calcium	D	6010C	mg/L	120	250	85	82	83	79	140	130	
Chromium	T	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0015	0.0005 U	
Chromium	D	6020A	mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	
Cobalt	T	6020A	mg/L	0.00052	0.00031	0.00015 J+	0.00026 J+	0.0017	0.0019	0.0064	0.0027 J+	
Cobalt	D	6020A	mg/L	0.00046	0.00037	0.00016 J+	0.00029 J+	0.0017	0.0018	0.0047	0.0027	
Copper	T	6020A	mg/L	0.00056 UJ	0.00056 UJ	0.00056 U	0.00056 U	0.00056 UJ	0.00056 U	0.0038 J-	0.00056 U	
Copper	D	6020A	mg/L	0.00056 UJ	0.00056 UJ	0.00056 U	0.00056 U	0.00056 UJ	0.00056 U	0.00056 U	0.00056 U	
Iron	T	6010C	mg/L	0.46	0.24	0.039	0.043	0.095	0.077	0.95	2.8	
Iron	D	6010C	mg/L	0.28	0.22	0.028	0.13	0.073	0.022 U	0.12	0.022 U	
Lead	T	6020A	mg/L	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.0005	0.0002	
Lead	D	6020A	mg/L	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	0.00018 U	
Magnesium	T	6010C	mg/L	37	85	25	23	23	24	49 J+	73	
Magnesium	D	6010C	mg/L	38	85	25	24	23	23	48	0.011 U	
Manganese	T	6020A	mg/L	0.033 J-	0.028 J-	0.31	0.24	0.074 J-	0.075	0.12 J-	0.044	
Manganese	D	6020A	mg/L	0.032	0.029	0.32	0.24	0.075	0.074	0.12	0.042	
Mercury	T	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	
Mercury	D	7470A	mg/L	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	0.000027 U	
Molybdenum	T	6020A	mg/L	0.0038	0.001	0.0013	0.0012	0.0011	0.0013	0.0015 J-	0.0017	
Molybdenum	D	6020A	mg/L	0.0038	0.0011	0.0014	0.0013	0.0012	0.0012	0.0017	0.0018	
Nickel	T	6020A	mg/L	0.0012	0.00063	0.0003 U	0.00061	0.0003 U	0.0003 U	0.0033	0.0014	
Nickel	D	6020A	mg/L	0.001	0.00075	0.0003 UJ	0.00055 J+	0.0003 U	0.0003 U	0.0026	0.0015	
Potassium	T	6010C	mg/L	3.8	5.9	3.1 J-	2.9 J-	3.6	3.3 J-	6.9 J+	8.3	
Potassium	D	6010C	mg/L	3.4	5.6	3.4	3.4	3.3	3 J-	6.9 J+	5.8 J-	
Selenium	T	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	

TABLE 15
METALS ANALYTICAL RESULTS, 2017 - AREA IV
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA

				Well Identifier	SP-19A	SP-19B	SP-424A	SP-424B	SP-424C	SP-424C	SP-T02B	SP-T02D
				Sample Name	SP-19A_033017_01_L	SP-19B_033017_01_L	SP-424A_032817_01_L	SP-424B_032817_01_L	SP-424C_032917_01_L	SP-424C_040317_01_L	SP-T02B_032317_01_L	SP-T02D_033117_01_L
				Sample Date	3/30/2017	3/30/2017	3/28/2017	3/28/2017	3/29/2017	4/3/2017	3/23/2017	3/31/2017
				Geological Unit								
				Lab Name	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN	TA DEN
				Sample Type	N	N	N	N	N	N	N	N
Analyte	**Fraction**	**Method**	**Units**									
Selenium	D	6020A	mg/L	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	0.0007 U	
Silver	T	6020A	mg/L	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000052	0.000033 U	
Silver	D	6020A	mg/L	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	0.000033 U	
Sodium	T	6010C	mg/L	210	210	79	78	88	92	53	41 J	
Sodium	D	6010C	mg/L	210	210	82	84	87	86	57	49	
Strontium	T	6010C	mg/L	0.88	1.8	0.41	0.39	0.42	0.44	0.32 J+	2	
Strontium	D	6010C	mg/L	0.9	1.8	0.41	0.39	0.41	0.41	0.32	0.3	
Thallium	T	6020A	mg/L	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	
Thallium	D	6020A	mg/L	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	
Tin	T	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	
Tin	D	6020A	mg/L	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	0.00077 U	
Vanadium	T	6020A	mg/L	0.0005 U	0.0005 U	0.0005 UJ	0.0005 UJ	0.0005 U	0.0005 UJ	0.0023	0.0005 U	
Vanadium	D	6020A	mg/L	0.0005 UJ	0.0005 UJ	0.0005 UJ	0.0005 UJ	0.0005 UJ	0.0005 UJ	0.00068	0.0005 UJ	
Zinc	T	6020A	mg/L	0.0035	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.0062 J-	0.012	
Zinc	D	6020A	mg/L	0.002 U	0.0027	0.002 U	0.0027	0.002 U	0.002 U	0.002 UJ	0.0053	

NOTES AND ABBREVIATIONS
ug/L - micrograms per liter
--- - Not analyzed
FD - Field Duplicate
N - Normal Sample
TA DEN - Test America Denver, Colorado
TA IRV - Test America Irvine, California
TA STL - Test America St. Louis
U - Analyzed for, but not detected above reported sample quantitation limit. Result shown is the Method Detection Limit.
J - Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample. "J+" indicates value is biased high. "J-" indicates value is biased low.
UJ - Analyzed for, but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise. Result shown is the Method Detection Limit.
D - Dissolved fraction. Result represents sample analyzed after filtration following normal analytical procedures.
T - Total fraction. Result represents particulates captured on sample filter and analyzed following normal analytical procedures.

FIGURES

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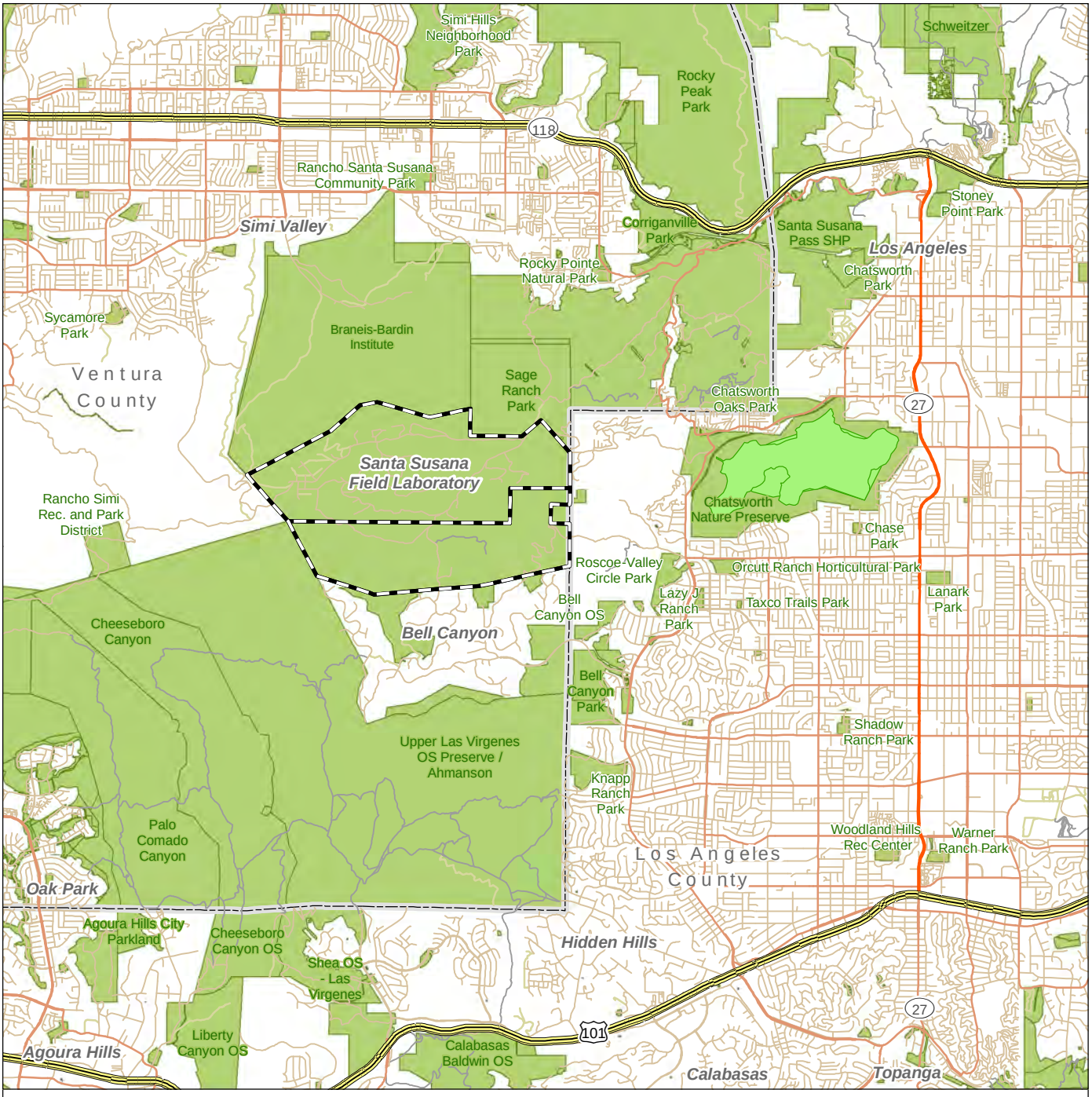


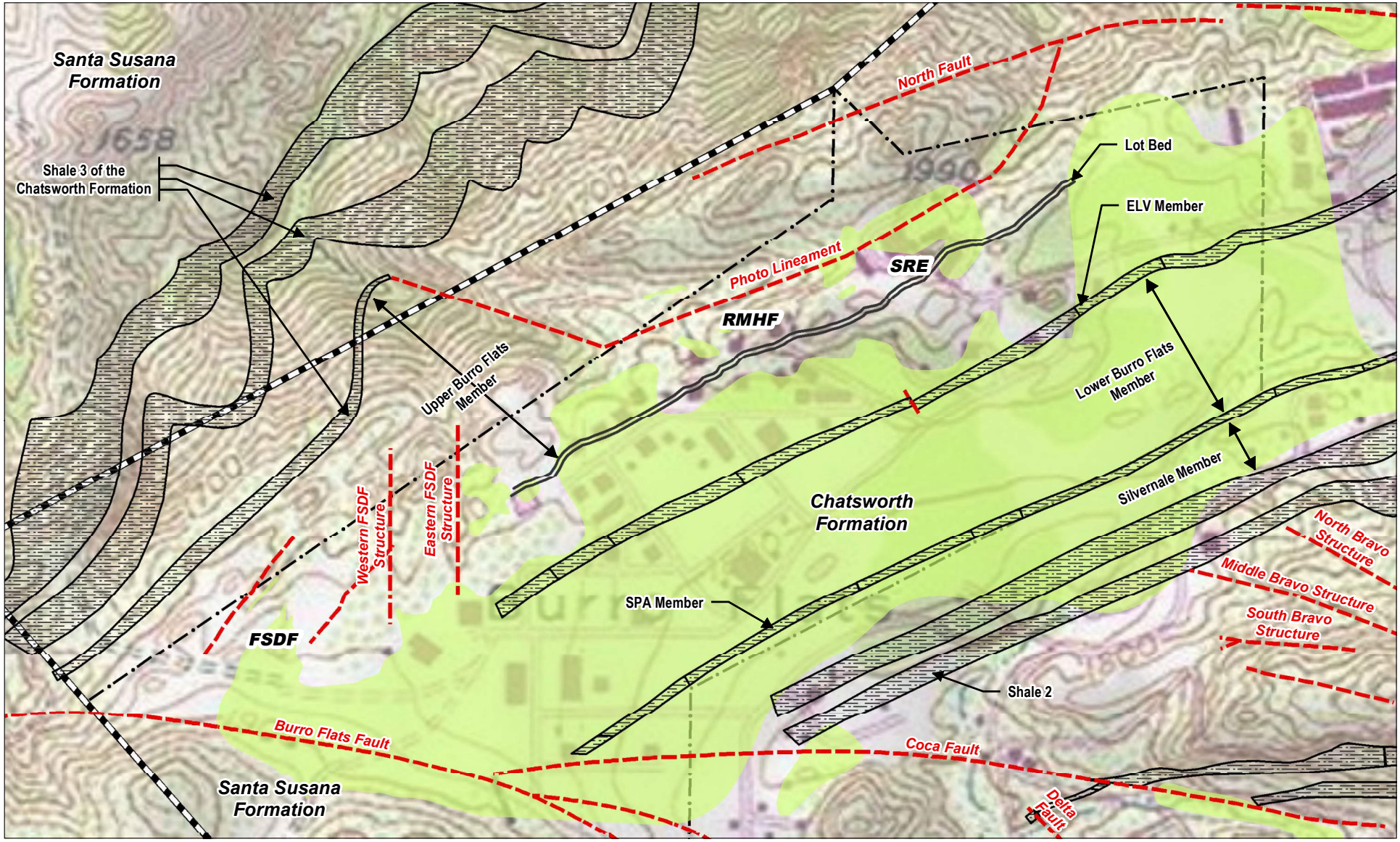
Notes:
- Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.

Service Layer Credits:
- Park and Open Space Source: California Protected Areas Database (CPAD - www.calands.org), Santa Monica Mountains Conservancy, Mountains Recreation and Conservation Authority, National Park Service (2013); Protected Areas Database, US Geological Survey Gap Analysis Program, 2011; Ventura County Resource Management Agency, 2014.
- Street Source: Esri, TomTom, 2007.
- Census County Boundary Source: United States Census Bureau, TIGER/Line Shapefiles, August 2014.

NORTHWIND INC.

G:\Projects\Greenville\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 1_SSFL_2017GWAnnual_Facility_Location_20180130.mxd

FIGURE 1
Facility Location Map



LEGEND

Fault
Lot Bed
Shale
Alluvium
Area IV Boundary
SSFL Property Boundary

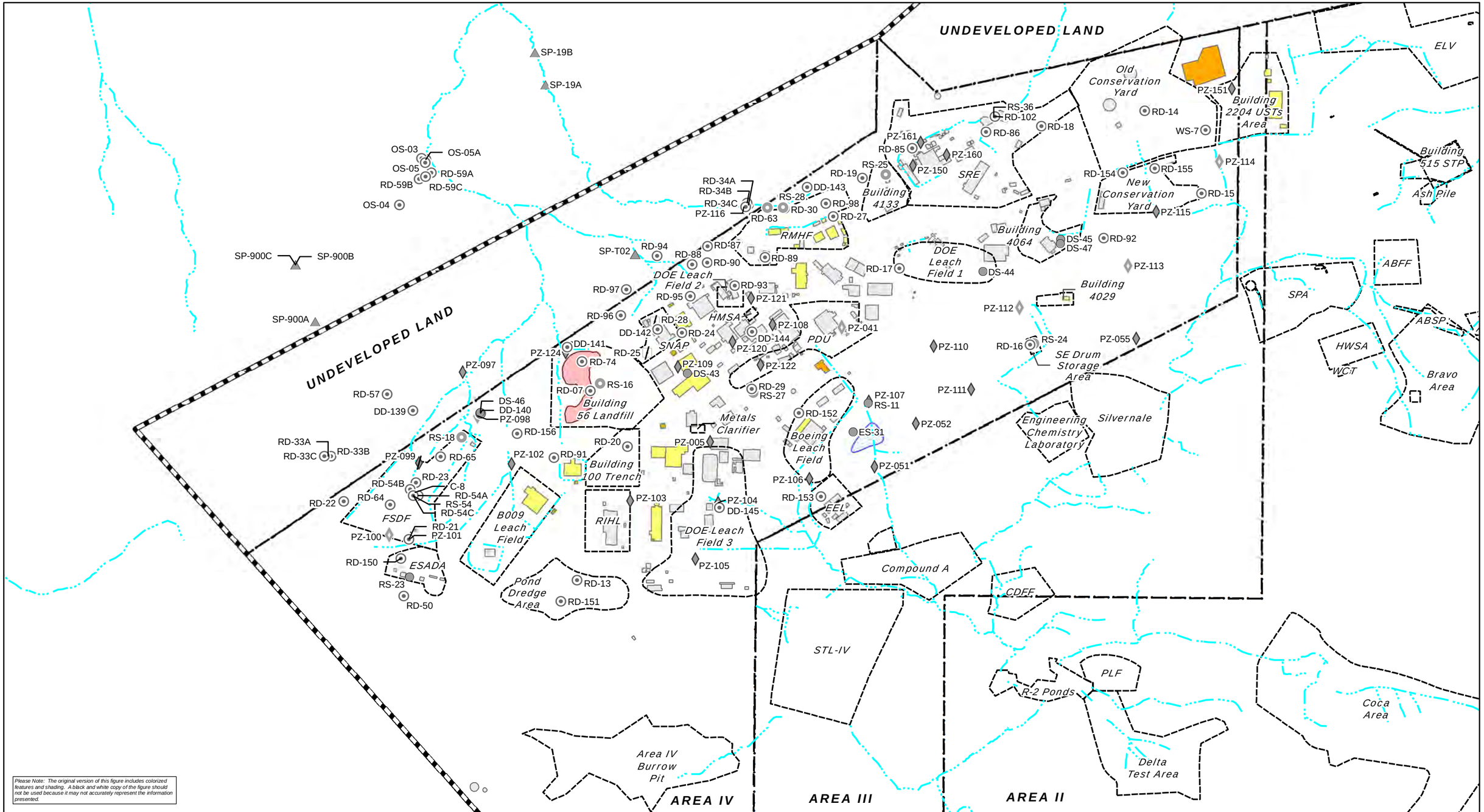
Notes:
- Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
- Geologic data provided by Boeing, March 2018.
- Topo Source: Copyright:© 2013 National Geographic Society, i-cubed

N

0 350 700 Feet

FIGURE 2

Area IV Geologic Map



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- RI Site Boundary
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.

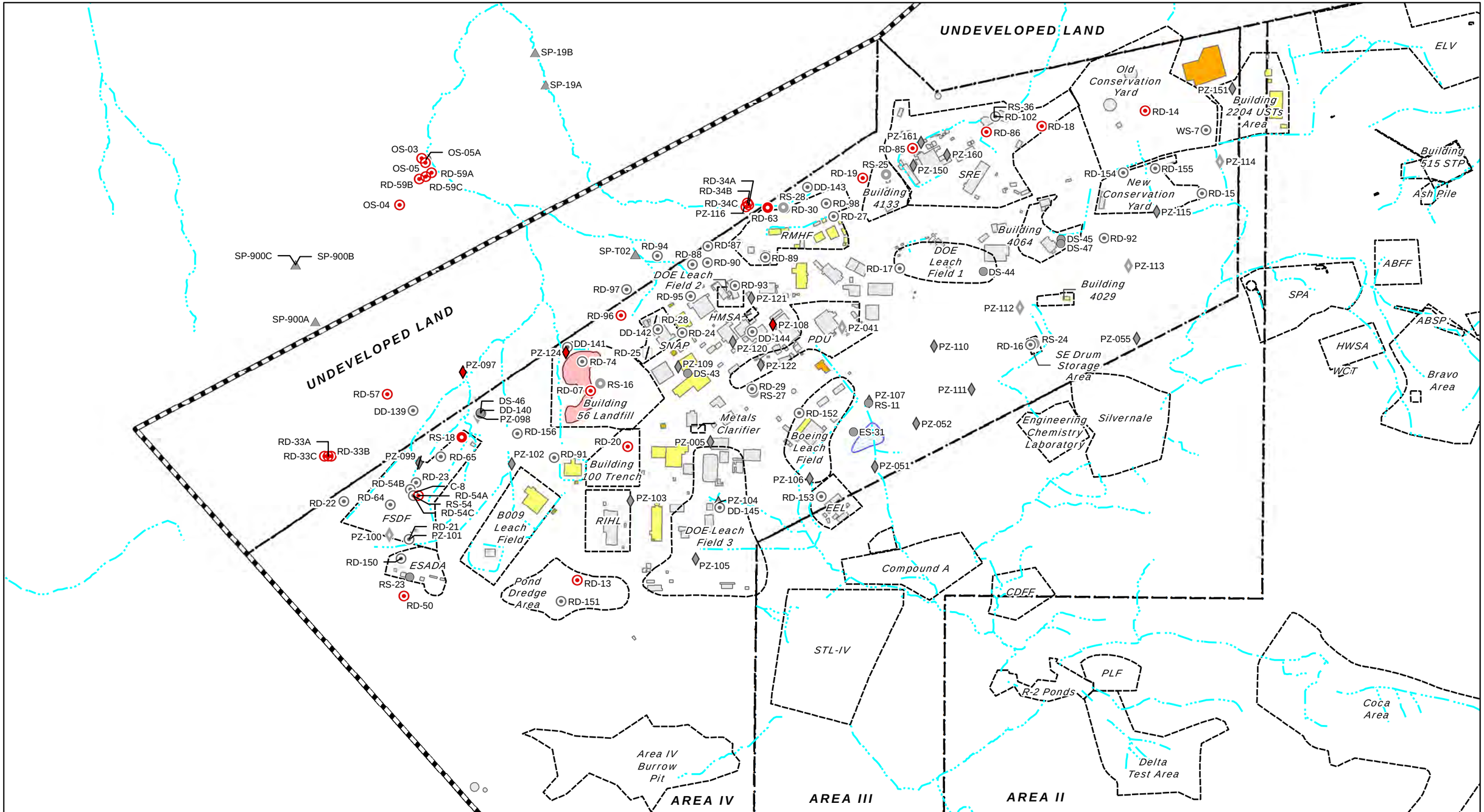
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
LOCATION OF WELLS, PIEZOMETERS, AND SEEPS
FIGURE 3

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 3_SSFL_2017GWAnnual_Well_PZ_Seep_Locs_11x17_20180130.mxd



Legend

Symbol Color for Site-wide and LUFT Program Monitoring Locations

- Site-wide Program

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- RI Site Boundary
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.

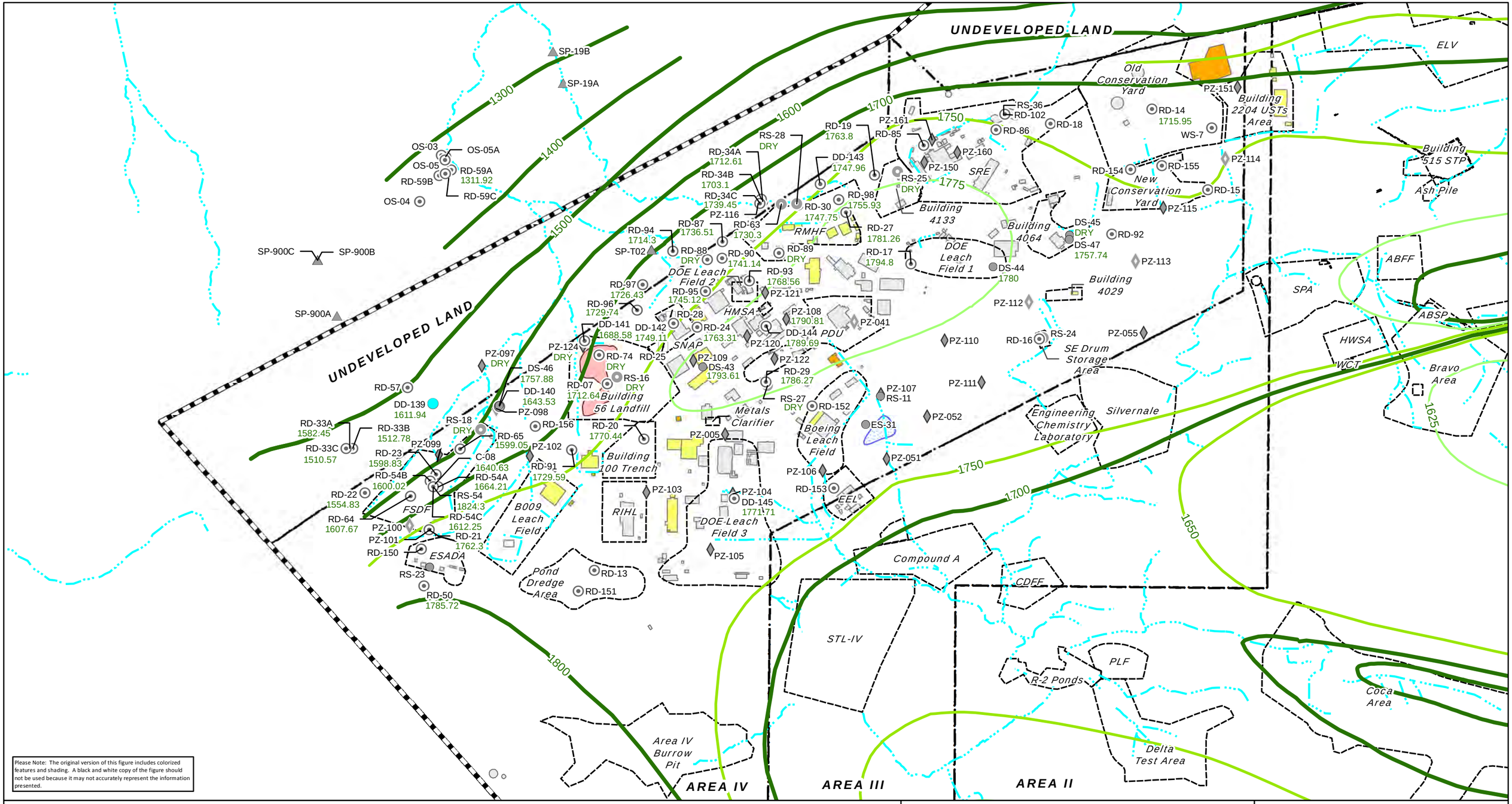
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
SITE-WIDE PROGRAM MONITORING LOCATIONS
FIGURE 4

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 4_SSFL_2017GWAnnual_SWP_MW_Locs_11x17_2018130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- RI Site Boundary
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Approximate Groundwater Elevation Contours (feet above sea level)

- 25-foot Contour
- 50-foot Contour
- 100-foot Contour
- 1724.99 Groundwater Level Elevation in feet above mean sea level

Notes:
Original GIS layers provided by MWH/Boeing; Updated by North Wind Inc. as needed
Information used to develop the groundwater elevation contours includes topography; the approximate elevations of identified seeps and springs; water levels measured in seep piezometers gauged during 2017; historical water level data for wells and piezometers not gauged during 2017; and the recognition that groundwater level discontinuities coincide with certain fault segments and other geologic structures. Elevations at DD-139 and RS-54 were anomalous

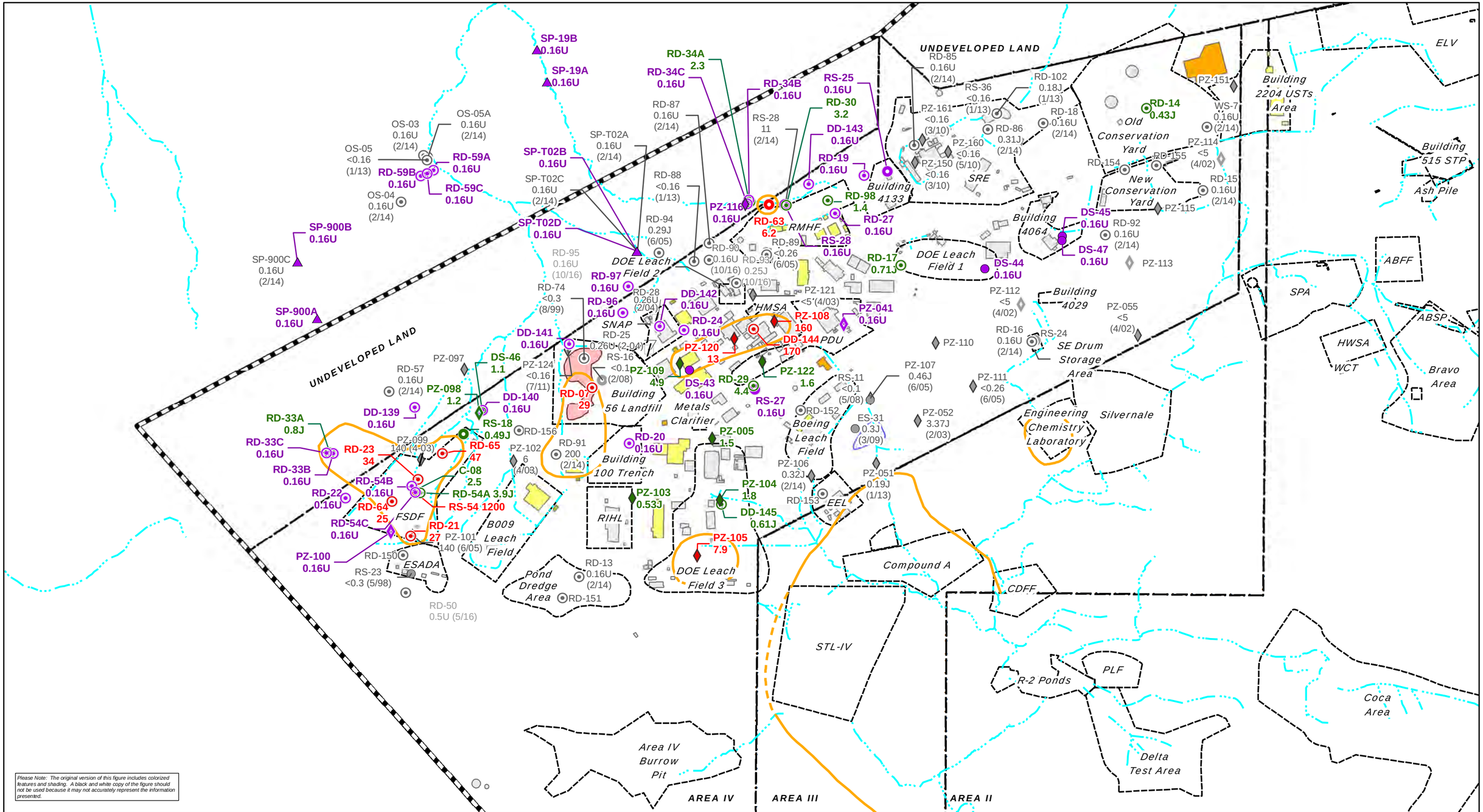
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
GROUNDWATER ELEVATION CONTOUR MAP, OCTOBER 2017
FIGURE 5

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 5_SSFL_2017_Q4_GW_Contours_11x17_chatsworth.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- Trichloroethene in Groundwater above Primary MCL of 5 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

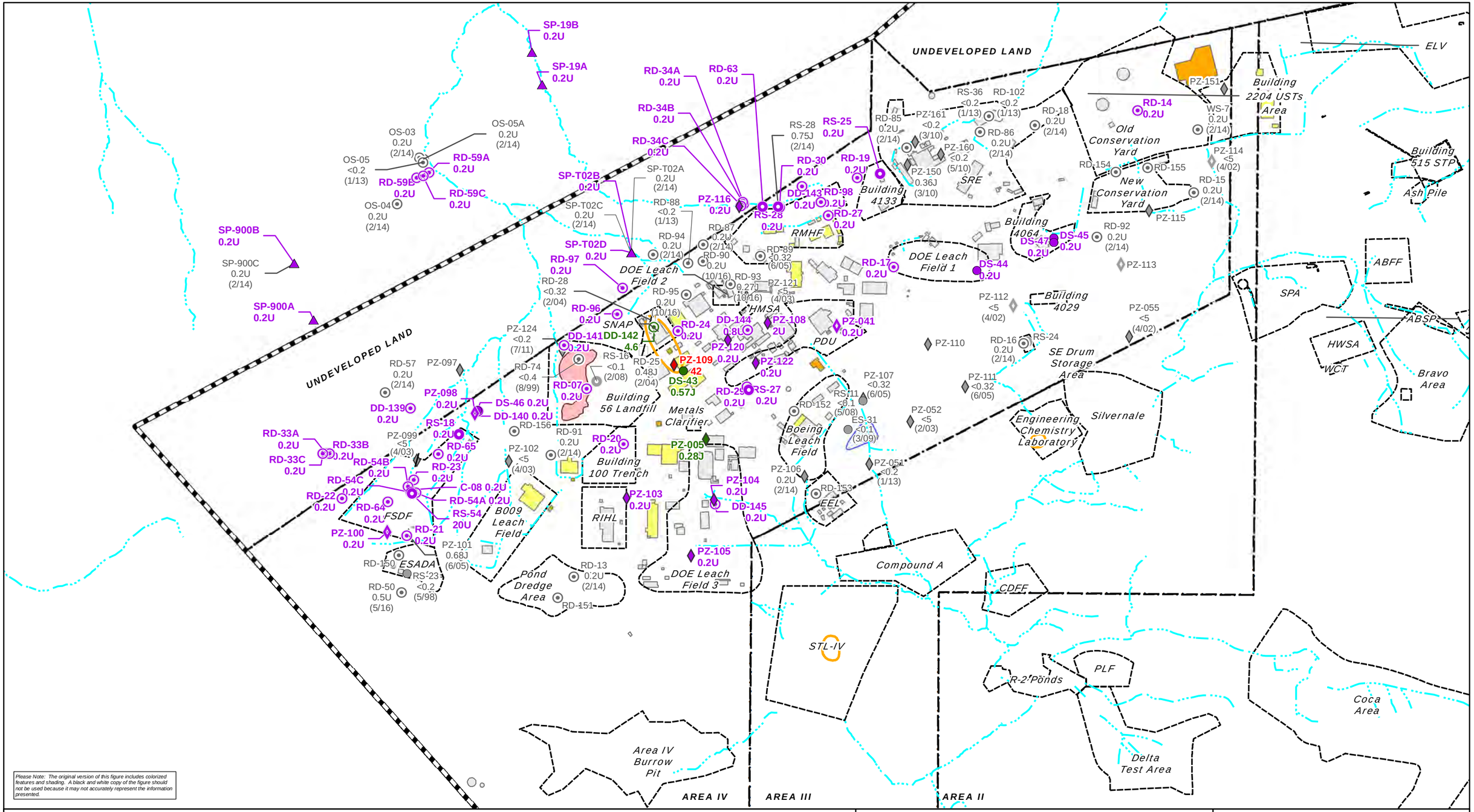
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
EXTENT OF TRICHLOROETHENE IN GROUNDWATER, 2017
FIGURE 6

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 6_SSFL_2017GWAnnual_TCE_11x17_20180130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above screening level
- Detected below screening level
- Not Detected
- Available Well/Piezometer

Areas of Impacted Groundwater

- Tetrachloroethene in Groundwater above Primary MCL of 5 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
GIS layers provided by MWH/Boeing.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

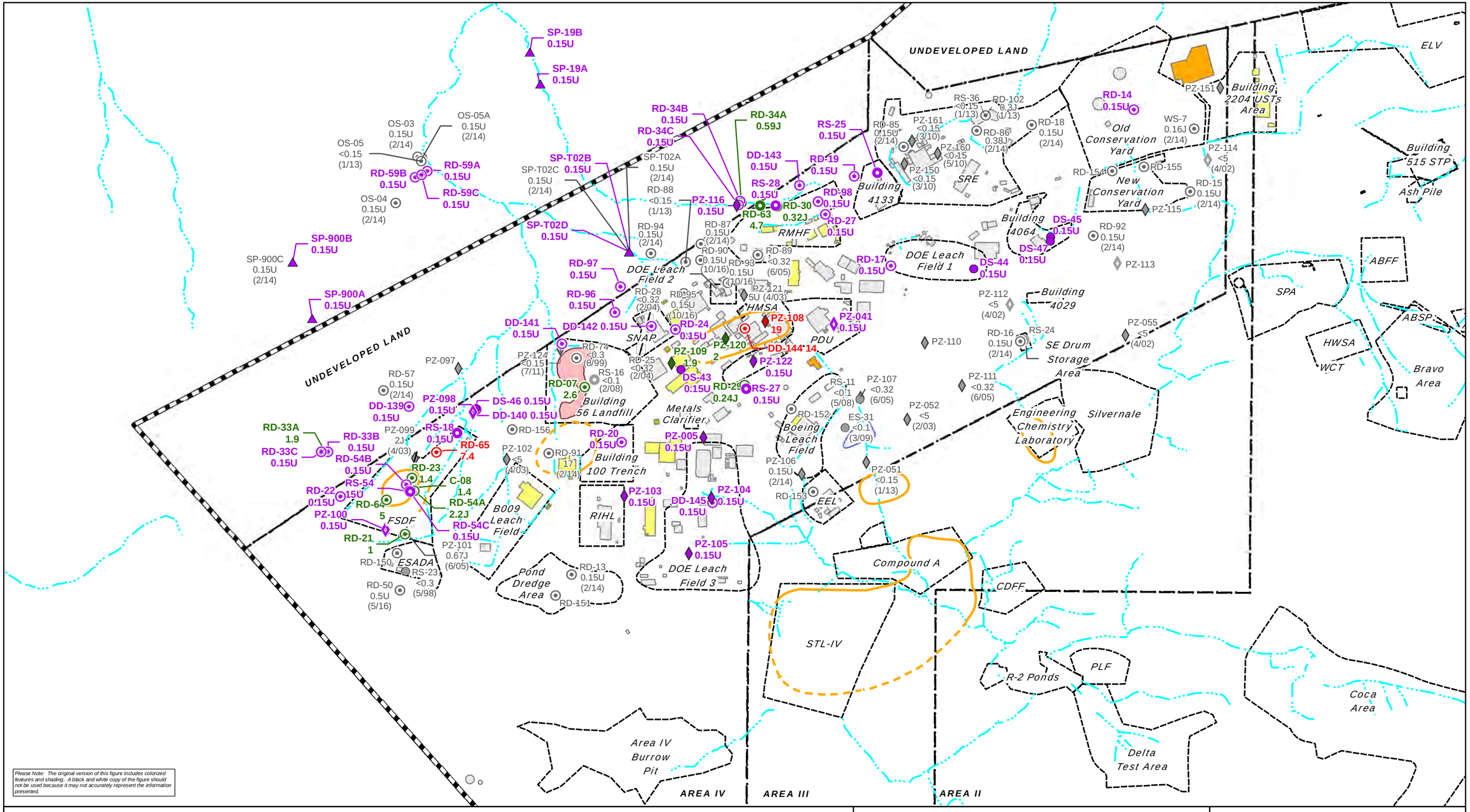
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
EXTENT OF TETRACHLOROETHENE IN GROUNDWATER, 2017
FIGURE 7

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 7_SSFL_2017GWAnnual_PCE_11x17_20180130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above screening level
- Detected below screening level
- Not Detected
- Available Well/Piezometer

Areas of Impacted Groundwater

- cis-1,2-Dichloroethene in Groundwater above Cal MCL of 6 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

1 inch = 550 feet

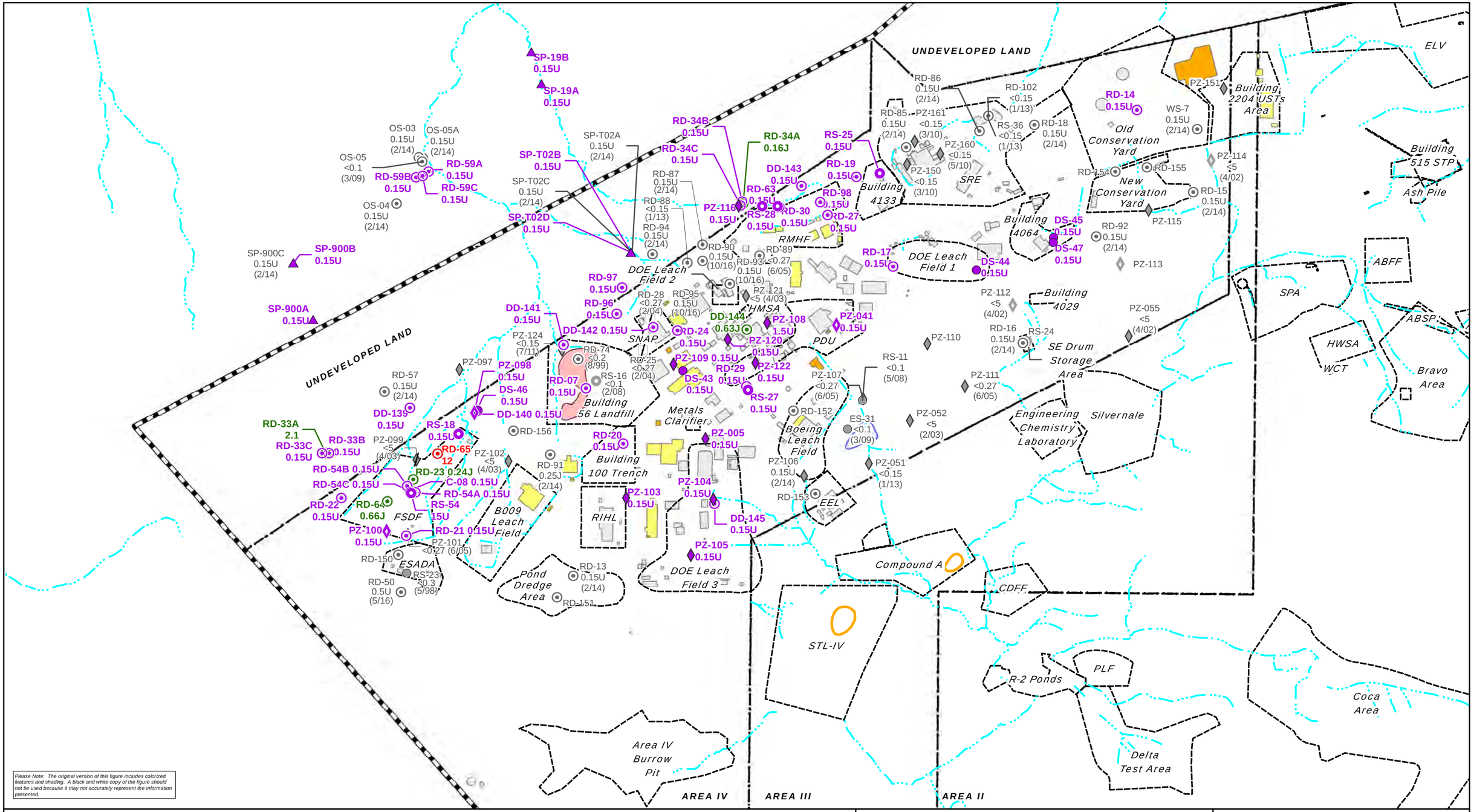
0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV

EXTENT OF CIS-1,2-DICHLOROETHENE IN GROUNDWATER, 2017
FIGURE 8

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 8_SSFL_2017GWAnnual_cis12DCE_11x17_20180130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above screening level
- Detected below screening level
- Not Detected
- Available Well/Piezometer

Areas of Impacted Groundwater

- trans-1,2-Dichloroethene in Groundwater above Cal MCL of 10 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

1 inch = 550 feet

0 275 550 825 1,100 Feet

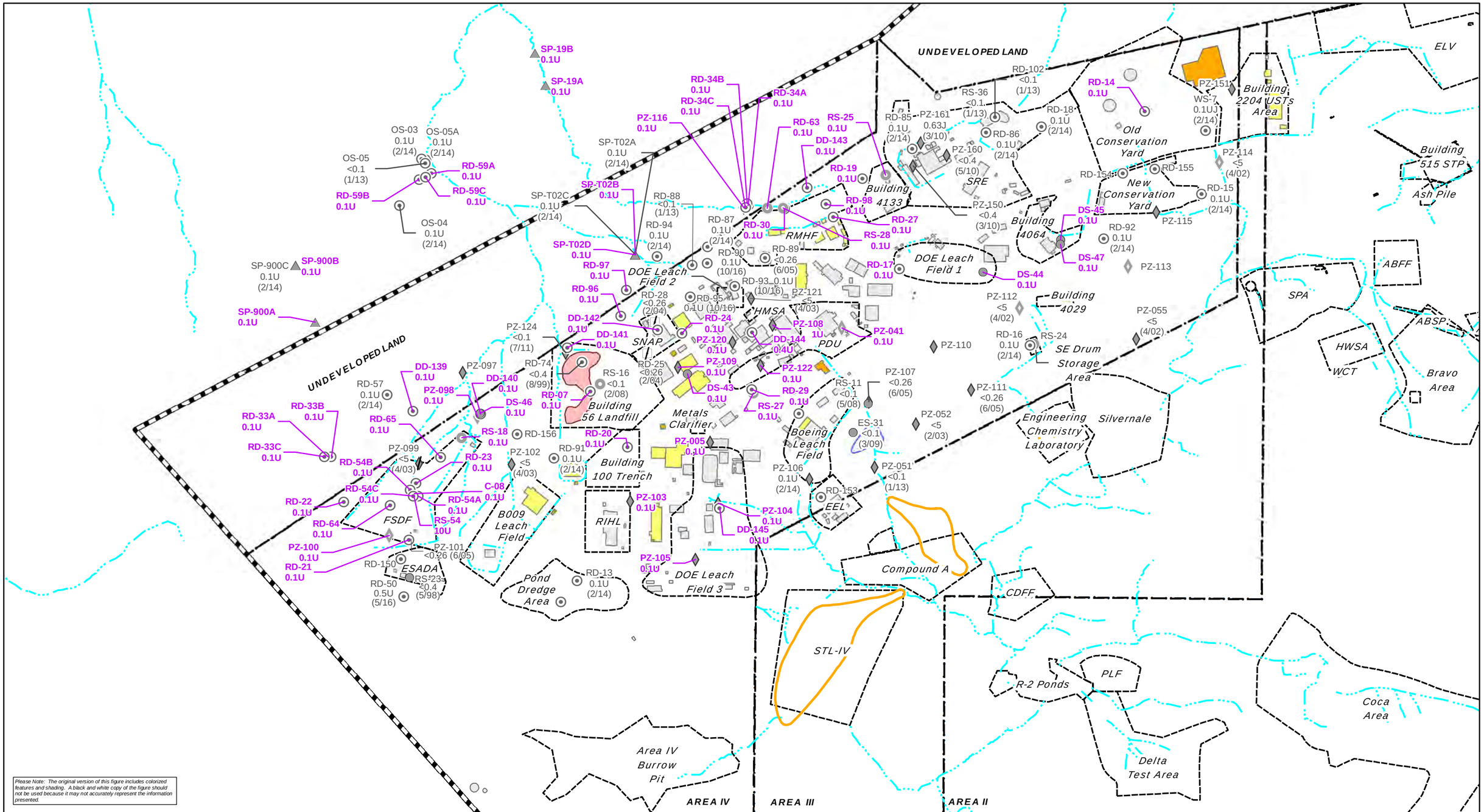
NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV

EXTENT OF TRANS-1,2-DICHLOROETHENE IN GROUNDWATER, 2017

FIGURE 9

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 9_SSFL_2017GWAnnual_trans12DCE_11x17_20180212.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color fo 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- Vinyl Chloride in Groundwater above Cal MCL of 0.5 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

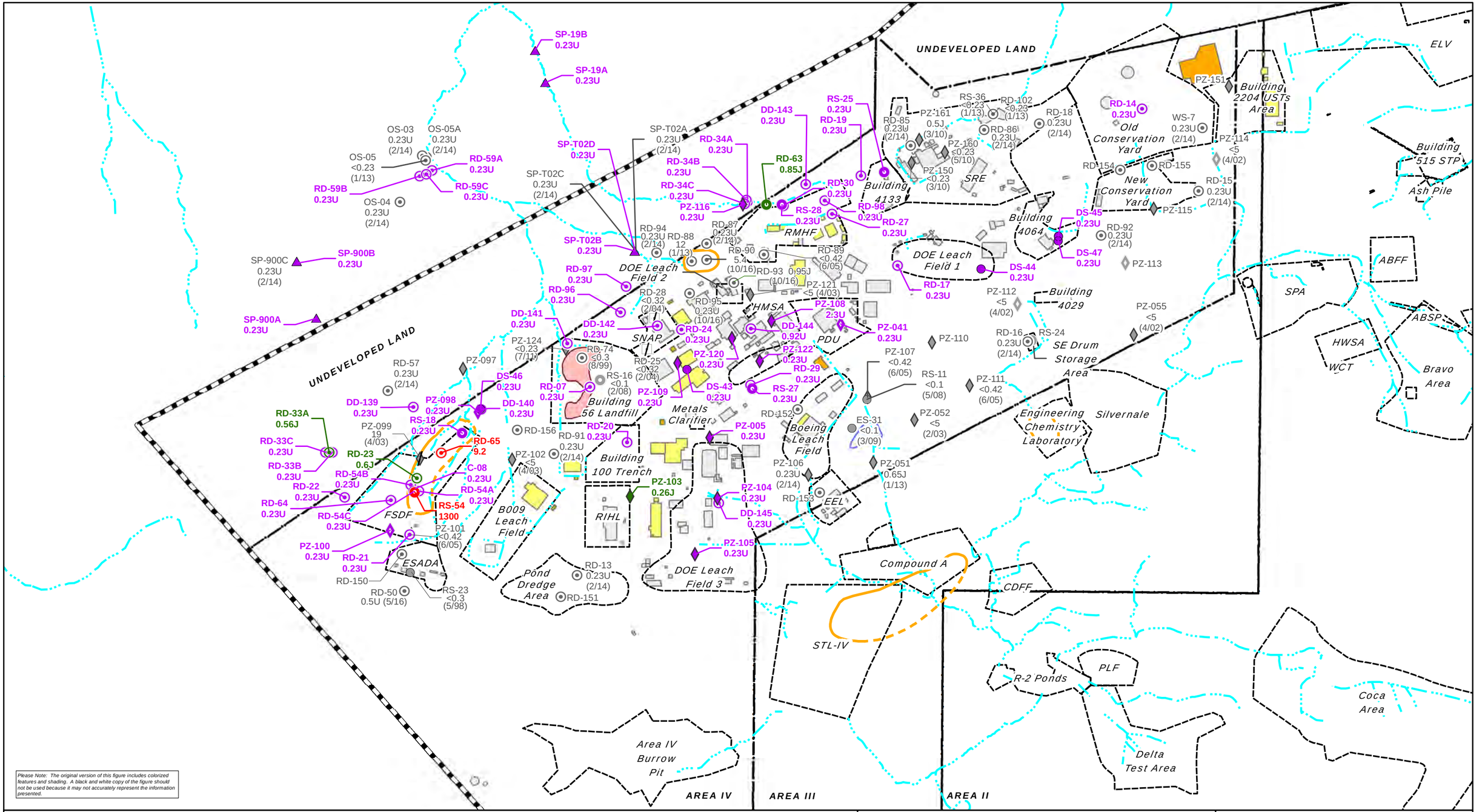
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
EXTENT OF VINYL CHLORIDE IN GROUNDWATER, 2017
FIGURE 10

G:\Projects\Greenville\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 10_SSFL_2017GWAnnual_VinylChloride_11x17_20180130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color fo 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- 1,1-Dichloroethene in Groundwater above Cal MCL of 6 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

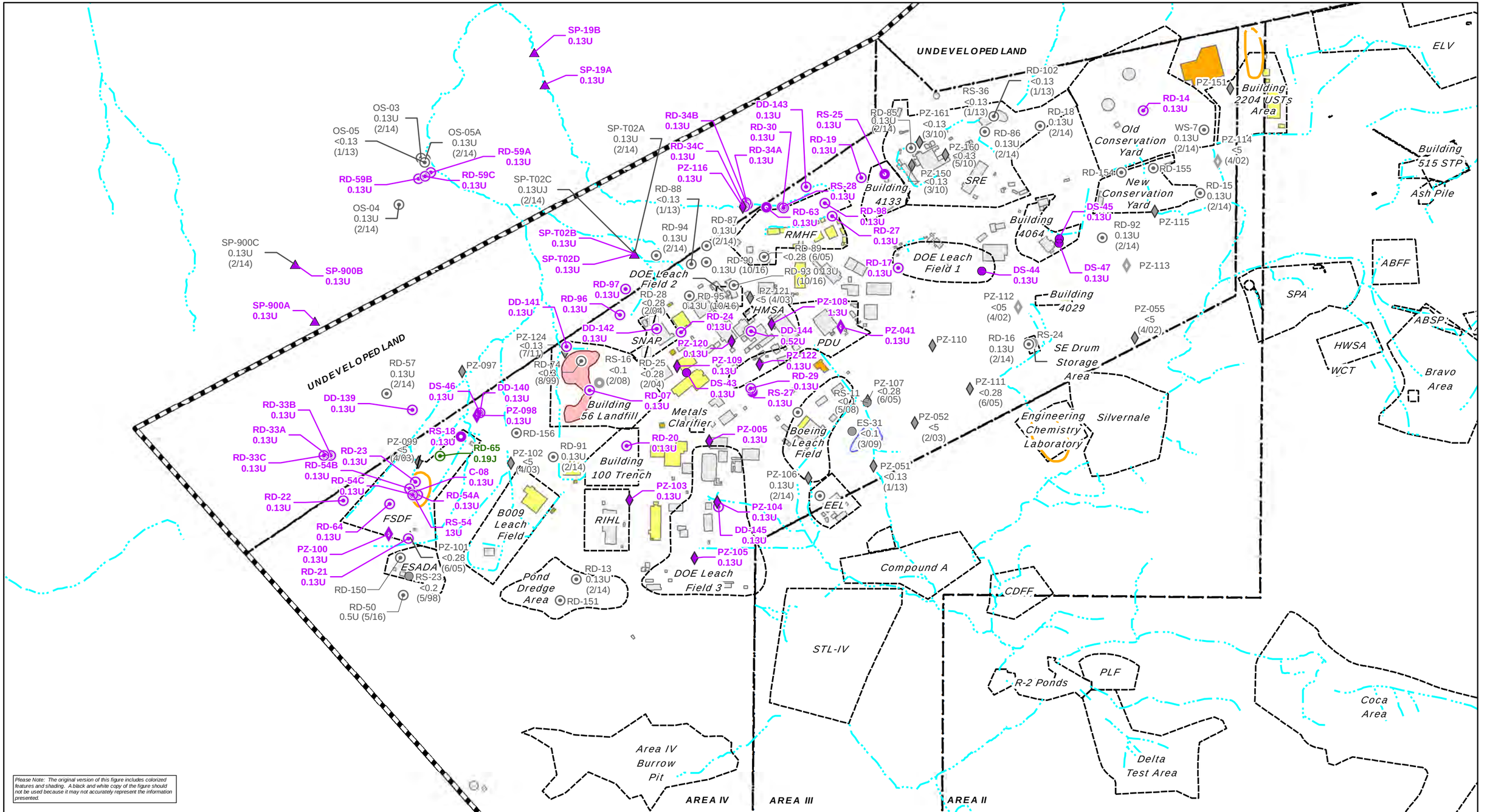
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
EXTENT OF 1,1-DICHLOROETHENE IN GROUNDWATER, 2017
FIGURE 11

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 11_SSFL_2017GWAnnual_11DCE_11x17_20180212.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- 1,2-Dichloroethane in Groundwater above Cal MCL of 0.5 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

1 inch = 550 feet

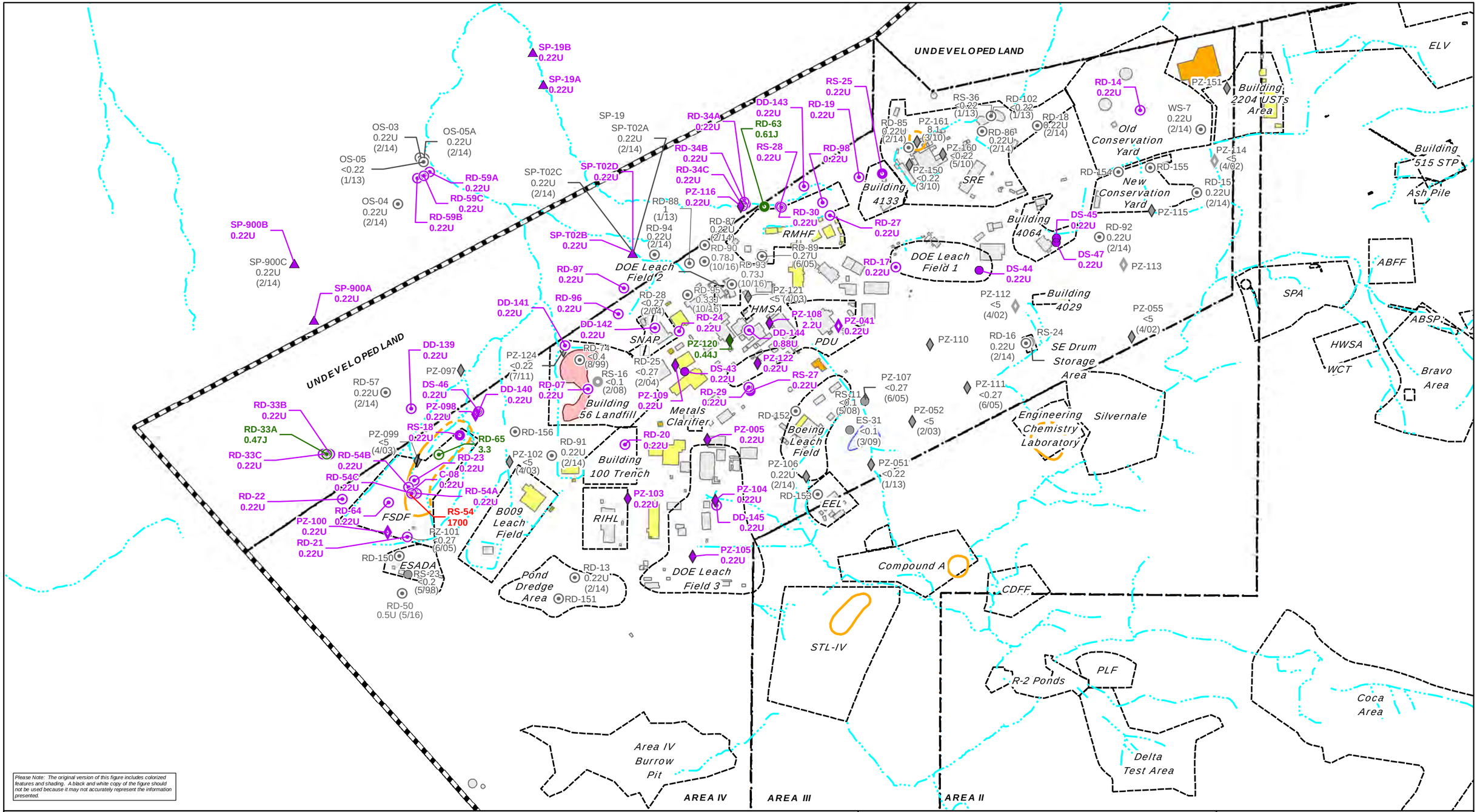
0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV

EXTENT OF 1,2-DICHLOROETHANE IN GROUNDWATER, 2017
FIGURE 12

G:\Projects\Greenville\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 12_SSFL_2017GWAnnual_12DCA_11x17_20180130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color fo 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- 1,1-Dichloroethane in Groundwater above Cal MCL of 5 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

1 inch = 550 feet

0 275 550 825 1,100 Feet

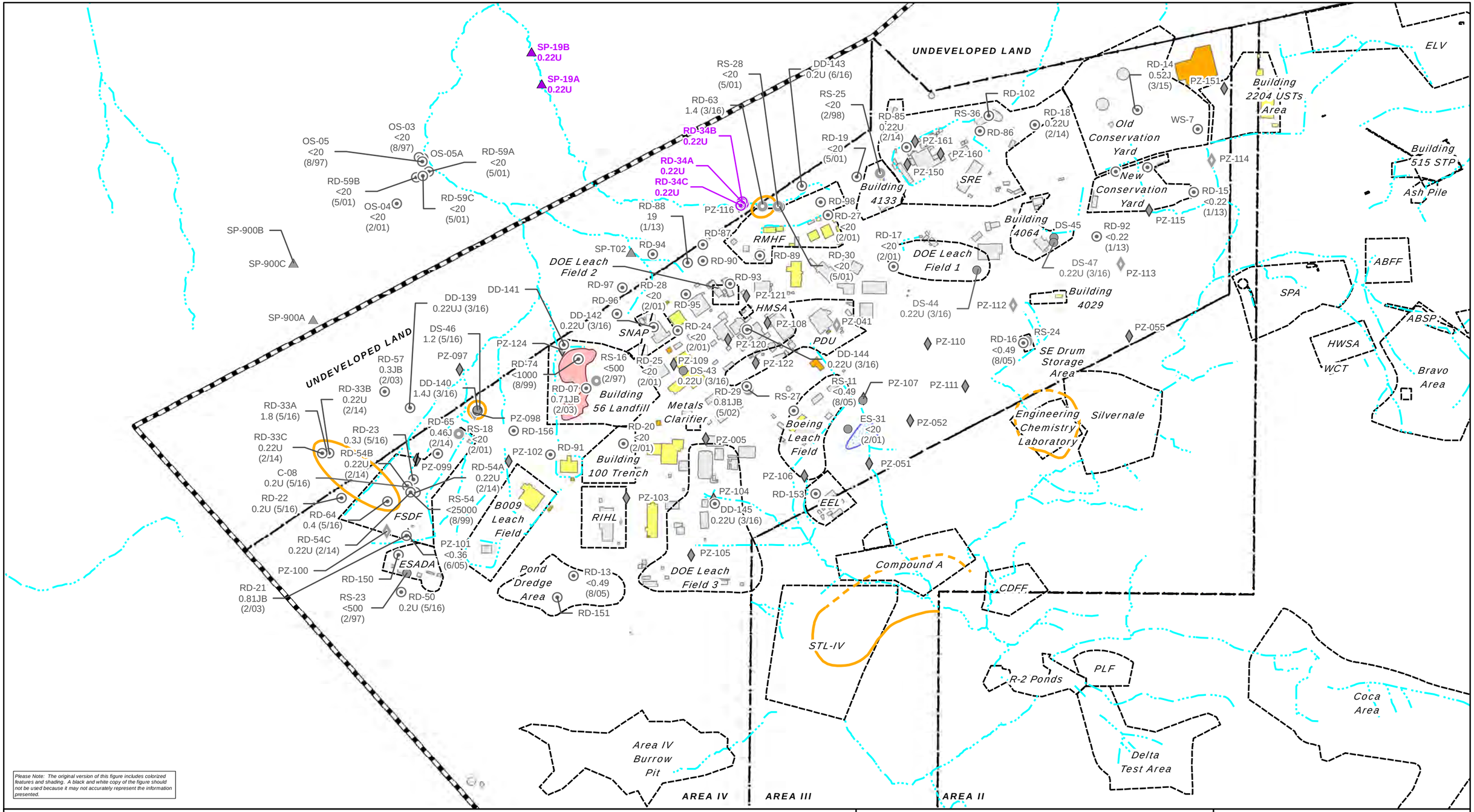
NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV

EXTENT OF 1,1-DICHLOROETHANE IN GROUNDWATER, 2017

FIGURE 13

G:\Projects\Greenville\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 13_SSFL_2017GWAnnual_11DCA_11x17_20180130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- 1,4-Dioxane in Groundwater above Primary MCL of 1 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

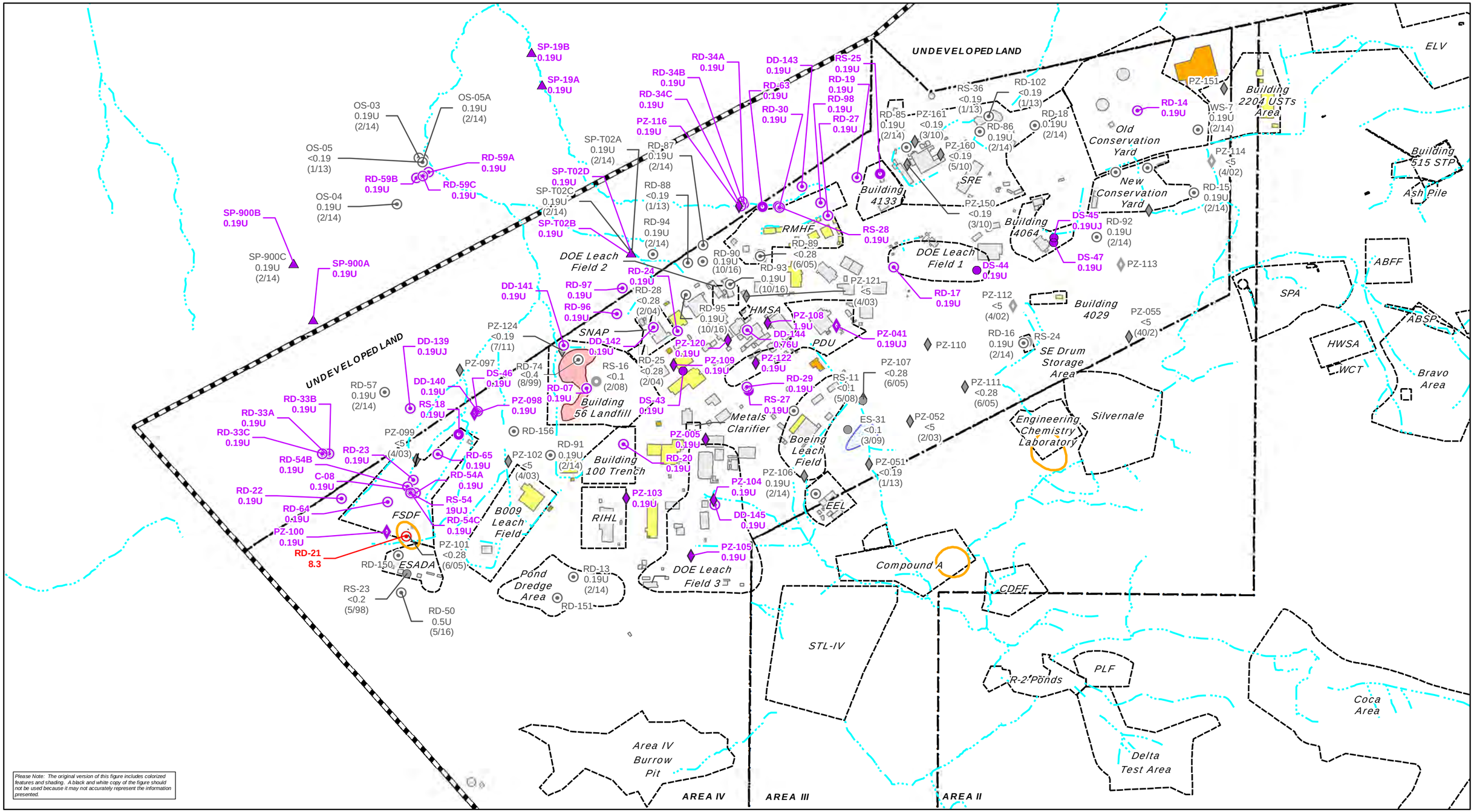
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
EXTENT OF 1,4-DIOXANE IN GROUNDWATER, 2017
FIGURE 14

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 14_SSFL_2017GWAnnual_14Dioxane_11x17_20180212.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- Carbon Tetrachloride in Groundwater above Cal MCL of 0.5 ug/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

1 inch = 550 feet

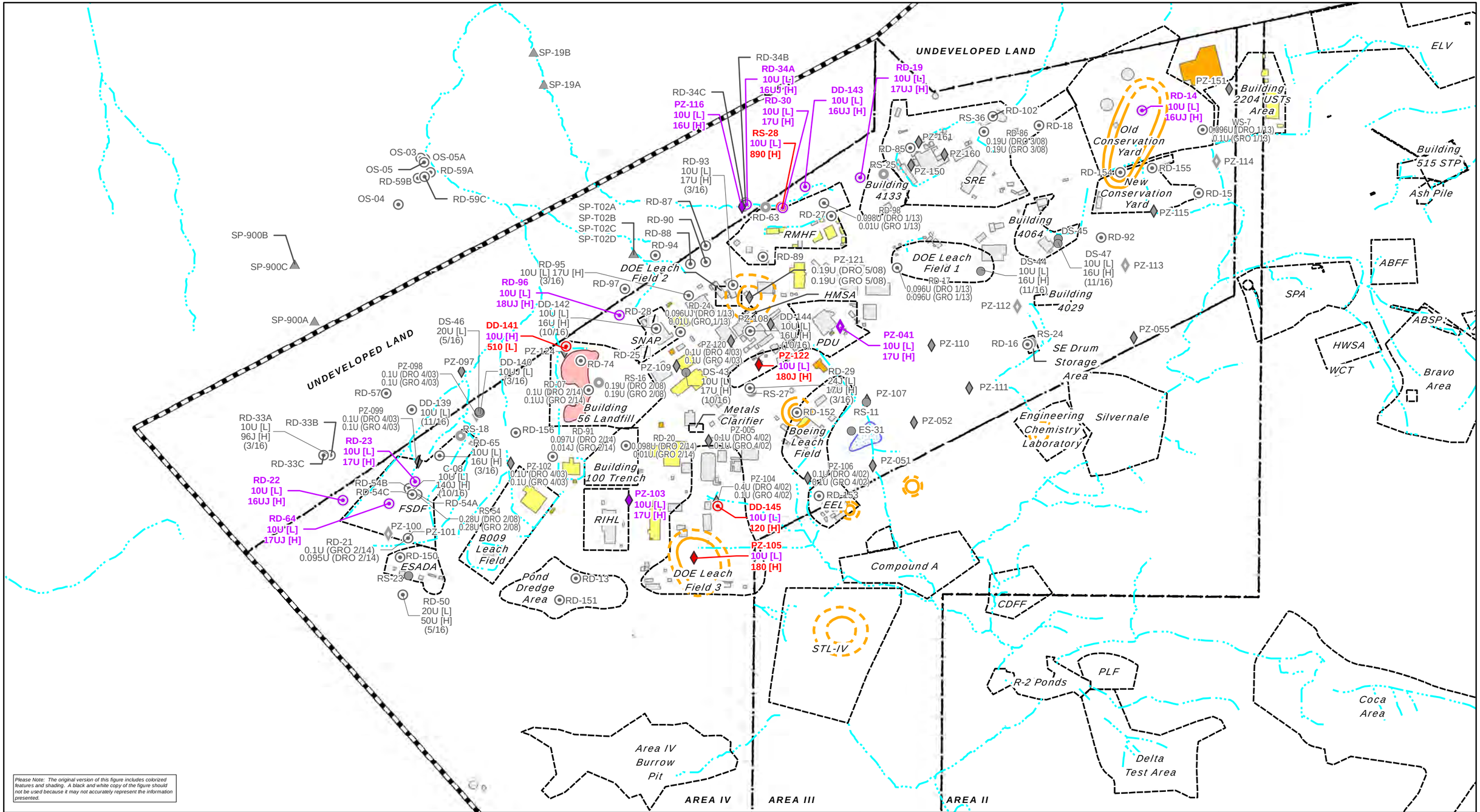
0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV

EXTENT OF CARBON TETRACHLORIDE IN GROUNDWATER, 2017
FIGURE 15

G:\Projects\Greenville\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 15_SSFL_2017GWAnnual_CarbonTetrachloride_11x17_20180130.mxd



Legend

Symbol Color fo 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- TPH in Groundwater above Taste/Odor Threshold of 100 ug/L for Heavy TPH, and reporting limit of 5 ug/L for Light TPH

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in micrograms per liter (ug/L) detected in 2017 at each location. Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses. Only primary results shown. Historical TPH results are identified as GRO or DRO on the figure. For 2017, sample results have been identified as Light or Heavy in order to address the overlap in carbon ranges. The Light category consists of EFH C12-C14, EFH C8-C11, GRO C5-C12, GRO C6-C12, and GRO C6-C10. The Heavy category consists of DRO C10-C28, EFH C15-C20, EFH C21—C30, and EFH C30-C40. The GRO from the historical results is considered to be a Light TPH and the DRO is considered to be a Heavy TPH.

1 inch = 550 feet

0 275 550 825 1,100 Feet

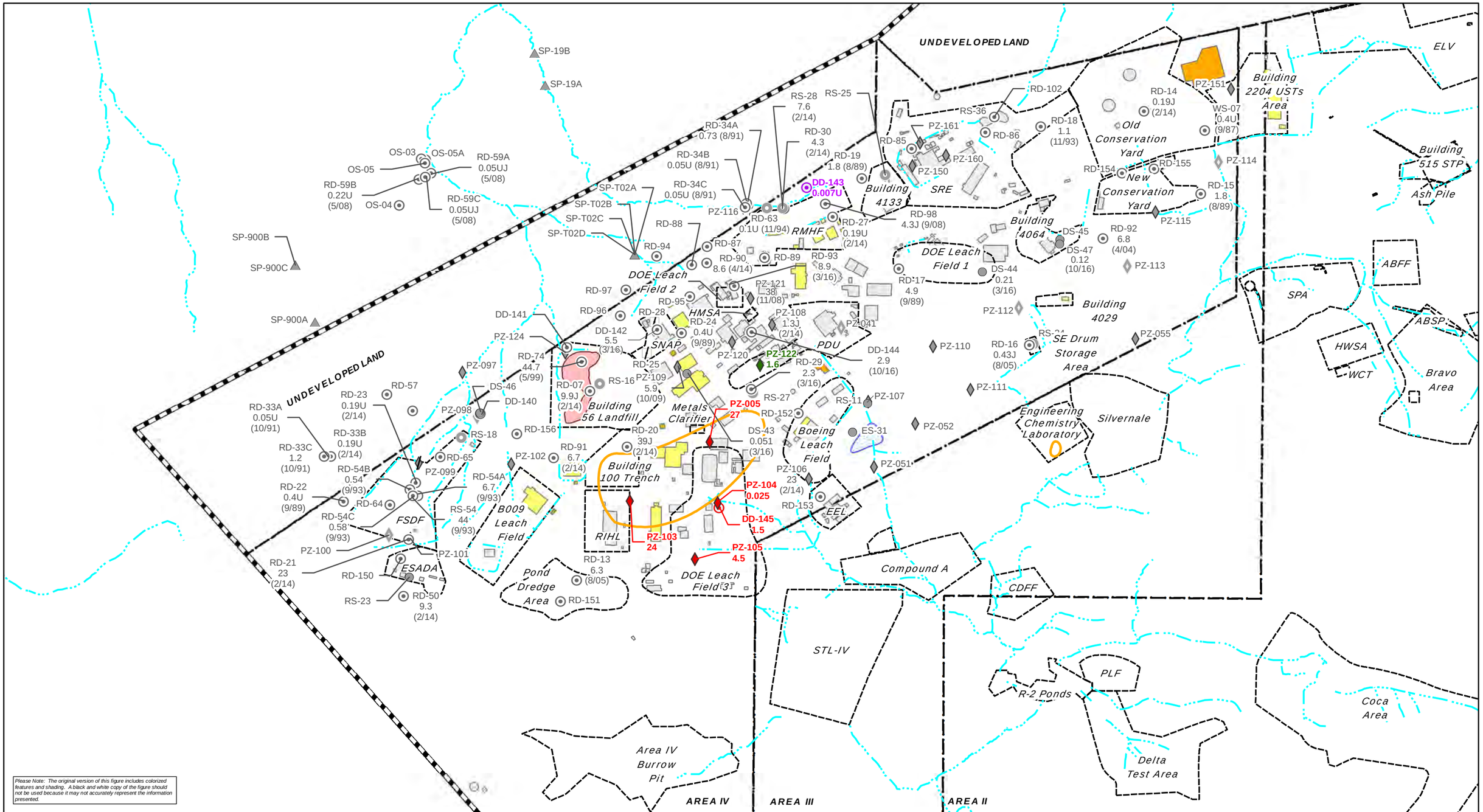
NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV

EXTENT OF TOTAL PETROLEUM HYDROCARBONS C4-C30 IN GROUNDWATER, 2017

FIGURE 16

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 16_SSFL_2017GWAnnual_TPH_11x17_20180212.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- Nitrate-NO3 in Groundwater above Cal MCL of 45 mg/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in milligrams per liter (mg/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

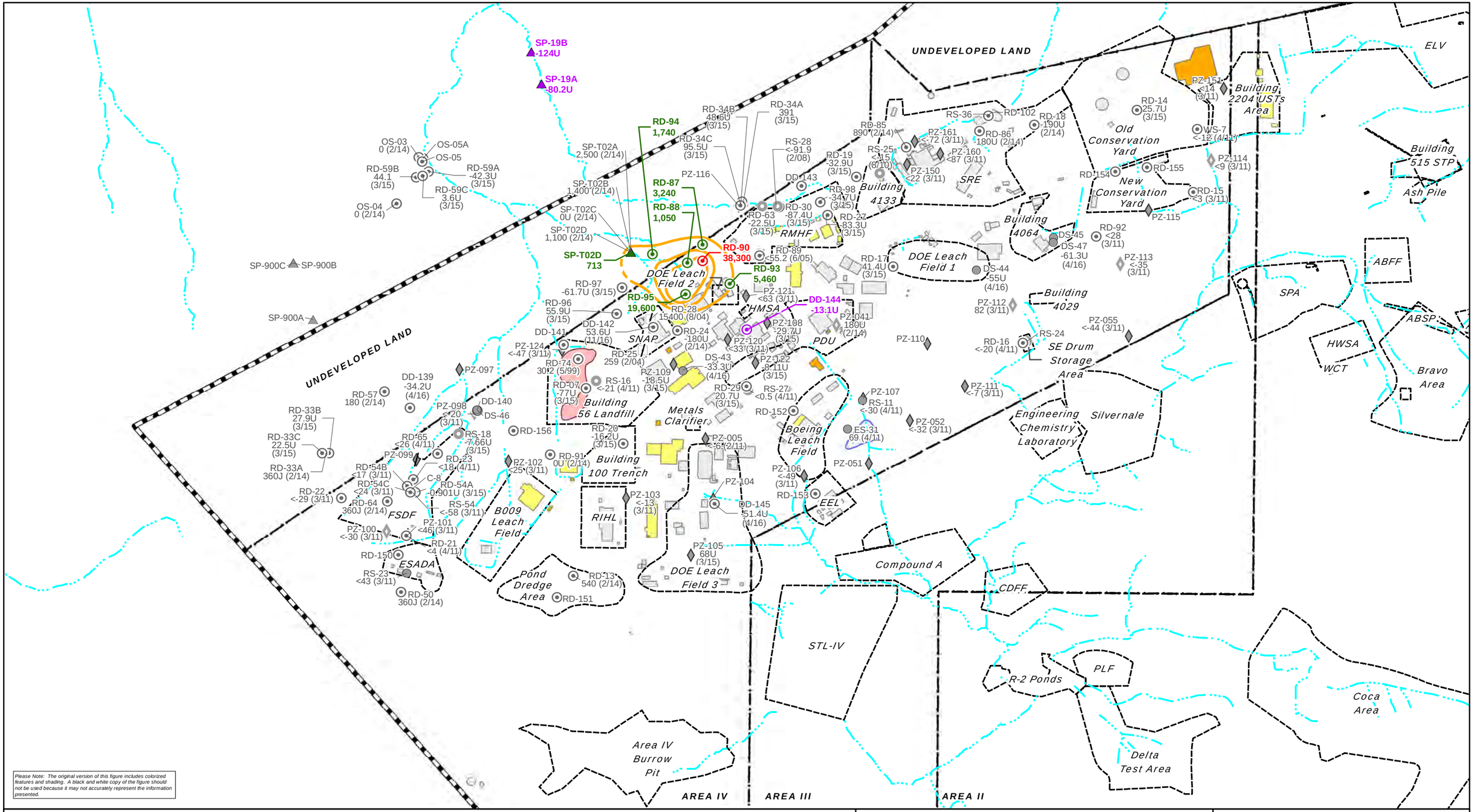
1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
EXTENT OF NITRATE IN GROUNDWATER, 2017
FIGURE 17

G:\Projects\Greenville\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 17_SSFL_2017GWAnnual_Nitrate_11x17_20180130.mxd



Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Legend

Symbol Color for 2017 Groundwater Results

- Detected above MCL
- Detected above detection limit, below MCL
- Not detected above detection limits (ND)
- Well/Piezometer not sampled/analyzed

Areas of Impacted Groundwater

- Tritium in Groundwater above Primary MCL of 20,000 pCi/L (boundary dashed where inferred)

Well Type and Groundwater Zone

Groundwater Monitoring Wells

- Groundwater Monitoring Well, Perched
- Groundwater Monitoring Well, Near Surface
- Groundwater Monitoring Well, Chatsworth Formation

Piezometers

- Piezometer, Perched
- Piezometer, Near Surface

Seeps/Springs

- Seep/spring

Other

- Abandoned Well
- Abandoned Piezometer
- Corehole

Basemap

- Drainage
- Area IV Boundary
- SSFL Property Boundary

Structures

- Existing Landfill
- Existing Structure
- Existing Substation
- Former Pond
- Demolished Structure

Notes:
Original GIS layers provided by MWH/Boeing; updated by CDM Smith as needed.
Values posted beneath well identifiers are maximum concentrations in picocuries per liter (pCi/L) detected in 2017 at each location.
Values posted at location with no 2017 results are for the most recent analytical result with collection date shown in parentheses.
Only primary results shown.

1 inch = 550 feet

0 275 550 825 1,100 Feet

NORTHWIND INC.

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
AREA IV
EXTENT OF TRITIUM IN GROUNDWATER, 2017
FIGURE 18

Y:\ETEC\Project\SSFL Annual Groundwater Report\2017\Fig 18_SSFL_2017GWAnnual_Tritium_11x17_20180212.mxd

APPENDIX A
Monitoring Well and Piezometer Construction Data

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TABLE A-1
WELL CONSTRUCTION DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
C-08	IV								1842.23	
SHALLOW WELLS										
DS-43	IV	84	14	0 - 10	6	0 - 28	0 - 28		1809.52	02/10/16
			9-7/8	10-28	---	---				
			5-7/8	28 - 84	---	---		Open Hole		
			3-11/16	84 - 93	---	---		Open Hole		
DS-44	IV	91	14	0 - 10	6	0 - 19	0 - 19		1851.21	01/20/16
			9-7/8	10 - 19	---	---				
			5-7/8	19 - 91	---	---		Open Hole		
DS-45	IV	75	14	0 - 9	6	0 - 18	0 - 18		1866.58	01/28/16
			9-7/8	9 - 18	---	---				
			5-7/8	18 - 75	---	---		Open Hole		
			3-11/16	75 - 95	---	---		Open Hole		
DS-46	IV	52	14	0 - 5	6	0 - 37	0 - 37		1797.79	02/24/16
			9-7/8	5 - 37	---	---				
			5-7/8	37 - 52	---	---		Open Hole		
DS-47	IV	145	14	0 - 10	6	0 - 19	0 - 19		1867.94	03/17/16
			9-7/8	10 - 19	---	---				
			5-7/8	19 - 145	---	---		Open Hole		
RS-11	IV	17.5	16	0 - 17.5	4	0 - 17.5	0 - 9	10 - 17.5	1790.39	06/10/85
RS-16	IV	20.5	16	0 - 20.5	4	0 - 20.5	0 - 14.5	16.5 - 20.5	1811.05	06/11/85
RS-18	IV	13	16	0 - 13	4	0 - 13	0 - 6	7.5 - 13	1802.86	06/12/85
RS-19	I	15	16	0 - 15	4	0 - 15	0 - 4.8	4.8 - 15	1812.42	09/12/85
RS-20	I	20.5	16	0 - 20.5	4	0 - 20.5	0 - 8.5	10.5 - 20.5	1823.77	09/12/85
RS-21	II	29	16	0 - 29	4	0 - 24.6	0 - 3.5	14.5 - 24.6	1767.36	10/23/85
RS-22	II	31	16	0 - 31	4	0 - 31	0 - 4	21 - 31	1771.23	10/23/85
RS-23	IV	13	12	0 - 13	4	0 - 13	0 - 6.8	8 - 13	1887.25	08/23/88
RS-24	IV	8.5	12	0 - 8.5	4	0 - 8.5	0 - 3	4 - 8.5	1809.24	08/25/88
RS-25	IV	13.5	Trenched	0 - 13.5	4	0 - 13.5	0 - 2	8.5 - 13.5	1862.71	08/25/88
RS-27	IV	9	8	0 - 9	4	0 - 9	0 - 3	5 - 9	1804.78	08/02/88
RS-28	IV	19	8	0 - 19	4	0 - 19	0 - 9	14 - 19	1768.59	08/17/89
RS-36	IV	19.5	9-5/8	0 - 19.5	12	0 - 15	0 - 15		1817.73	11/21/11
					9-5/8	---	---	Open Hole		
RS-54	IV	38	11-1/4	0 - 7	6-1/4	0 – 7	0 - 7		1846.66	08/09/93
			5-7/8	7 - 38	---	---		Open Hole		
ES-31	IV	25	12	0 - 25	6	0 - 25	0 - 9.7	11.6 - 25	1787.01	01/29/87
CHATSWORTH FORMATION										
DD-139	IV	206	14	0 - 10	6	0 - 19	0 - 19		1793.01	03/04/16
			9-7/8	10 - 19	---	---				
			5-7/8	19 - 206	---	---		Open Hole		
DD-140	IV	167	14	0 - 10	6	0 - 60	0 - 60		1798.16	02/23/16
			9-7/8	10 - 60	---	---				
			5-7/8	60 - 167	---	---		Open Hole		
DD-141	IV	133	14	0 - 10	6	0 - 19.5	0 - 19.5		1762.79	06/29/16
			9-7/8	10 - 19.5	---	---				
			5-7/8	19.5 -133	---	---		Open Hole		
DD-142	IV	91	14	0 - 10	6	0 - 34	0 - 34		1812.22	02/05/16
			9-7/8	10 - 34	---	---				
			5-7/8	34 - 91	---	---		Open Hole		
DD-143	IV	100	14	0 - 10	6	0 - 19.7	0 - 19.7		1789.74	06/15/16
			9-7/8	10 - 19.7	---	---				
			5-7/8	19.7 -100	---	---		Open Hole		
DD-144	IV	71	14	0 - 15	6	0 - 38	0 - 38		1810.69	02/02/16
			9-7/8	15 - 38	---	---				
			5-7/8	38 - 71	---	---		Open Hole		
DD-145	IV	82	14	0 - 3	6	0 - 27	0 - 27		1798.90	02/12/16
			9-7/8	3 - 27	---	---				
			5-7/8	27 - 82	---	---		Open Hole		

TABLE A-1
WELL CONSTRUCTION DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-07	IV	300	15 8-5/8	0 - 25 25 - 300	10-1/8 ---	0 - 25 ---	0 - 25	Open Hole	1812.82	01/08/86
RD-13	IV	160	12 6-1/2	0 - 30 30 - 160	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1840.01	07/25/89
RD-14	IV	125	12 6-1/2	0 - 30 30 - 125	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1824.18	07/27/89
RD-15	IV	152	12 6-1/2	0 - 30 30 - 152	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1817.70	07/27/89
RD-16	IV	220	12 6-1/2	0 - 30 30 - 220	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1808.99	08/15/89
RD-17	IV	125	12 6-1/2	0 - 30 30 - 125	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1836.30	08/10/89
RD-18	IV	240	12 6-1/2	0 - 30 30 - 240	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1839.51	07/28/89
RD-19	IV	135	12 6-1/2	0 - 30 30 - 135	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1853.16	07/31/89
RD-20	IV	127	12 6-1/2	0 - 30 30 - 127	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1819.52	07/27/89
RD-21	IV	175	12 6-1/2	0 - 30 30 - 175	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1866.96	08/11/89
RD-22	IV	440	12 6-1/2	0 - 30 30 - 440	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1853.41	08/15/89
RD-23	IV	440	12 6-1/2	0 - 30 30 - 440	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1838.19	08/16/89
RD-24	IV	150	12 6-1/2	0 - 30 30 - 150	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1809.93	08/09/89
RD-25	IV	Well abandoned April 2004 as part of Building 4059 demolition								
RD-27	IV	150	12 6-1/2	0 - 30 30 - 150	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1841.67	08/10/89
RD-28	IV	Well abandoned April 2004 as part of Building 4059 demolition								
RD-29	IV	100	12 6-1/2	0 - 30 30 - 100	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1806.29	08/10/89
RD-30	IV	75	12 6-1/2	0 - 30 30 - 75	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1768.69	08/11/89
RD-33A	UL-N	320	17-1/2 11 5-1/2	0 - 11 11 - 100 100 - 320	12-1/8 6-1/4 ---	0 - 11 0 - 100 ---	0 - 11 0 - 100	Open Hole	1792.97	09/27/91
RD-33B	UL-N	415	17-1/2 11 6-1/4	0 - 20 20 - 360 360 - 415	12-1/8 6-1/4 ---	0 - 20 0 - 360 ---	0 - 20 20 - 360	Open Hole	1793.72	09/27/91
RD-33C	UL-N	520	17-1/2 11 6-1/4	0 - 10 10 - 480 480 - 520	12-1/8 6-1/4 ---	0 - 10 0 - 480 ---	0 - 10 0 - 480	Open Hole	1793.61	09/21/91
RD-34A	UL-N	60	12-1/4 6-1/2	0 - 16 16 - 60	8-1/4 ---	0 - 16 ---	0 - 16	Open Hole	1761.91	07/25/91
RD-34B	UL-N	240	17-1/2 11 6-1/4	0 - 30 30 - 180 180 - 240	12-1/8 6-1/4 ---	0 - 30 0 - 180 ---	0 - 30 0 - 180	Open Hole	1762.51	08/11/91
RD-34C	UL-N	450	17-1/2 11 6-1/4	0 - 30 30 - 380 380 - 450	12-1/8 6-1/4 ---	0 - 30 0 - 380 ---	0 - 30 0 - 380	Open Hole	1762.79	08/10/91
RD-50	IV	195	12-3/4 6-1/4	0 - 18.5 18.5 - 195	8-1/4 ---	0 - 18.5 ---	0 - 18.5	Open Hole	1914.88	05/28/93
RD-54A	IV	278	17-1/2 11-1/4 5-7/8	0 - 19 19 - 119 119 - 278	12-1/8 6-1/4 ---	0 - 19 0 - 119 ---	0 - 19 0 - 119	Open Hole	1841.72	08/07/93
RD-54B	IV	437	17-1/2 11-1/4 5-7/8	0 - 19 19 - 379 379 - 437	12-1/8 6-1/4 ---	0 - 19 0 - 379 ---	0 - 19 0 - 379	Open Hole	1842.54	08/31/93

TABLE A-1
WELL CONSTRUCTION DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-54C	IV	638	17-1/2 11-1/4 6-1/4	0 - 20 20 - 558 558 - 638	12-1/8 6-1/4 ---	0 - 20 0 - 557 ---	0 - 20 0 - 557	Open Hole	1843.77	07/27/93
RD-57	UL-N	419	17-1/2 6-1/2	0 - 19.5 19.5 - 419	12-1/8 ---	0 - 19.5 ---	0 - 19.5	Open Hole	1774.15	02/23/94
RD-59A	OS	58	17-1/2 6-1/2	0 - 21 21 - 58	12-1/8 ---	0 - 21 ---	0 - 21	Open Hole	1340.59	05/19/94
RD-59B	OS	214	17-1/2 6-1/2	0 - 19.5 19.5 - 214	12-1/8 2	0 - 19.5 0 - 209	0 - 19.5 0 - 161	178 - 209	1342.49	07/02/94
RD-59C	OS	398	17-1/2 6-1/2	0 - 19 19 - 398	12-1/8 2	0 - 19 0 - 397	0 - 19 0 - 186 250 - 328	345.5 - 397	1345.41	07/02/94
RD-63	IV	230	12-3/4 6-1/2	0 - 20 20 - 230	8-1/4 ---	0 - 20 ---	0 - 20	Open Hole	1764.83	05/10/94
RD-64	IV	398	12-1/4 6-1/2	0 - 19 19 - 398	8-1/4 ---	0 - 19 ---	0 - 19	Open Hole	1857.04	05/19/94
RD-65	IV	397	12-3/4 6-1/2	0 - 19 19 - 397	8-1/4 ---	0 - 19 ---	0 - 19	Open Hole	1819.14	08/14/94
RD-74	IV	101	17-1/2 6-1/2	0 - 30 30 - 101	12 ---	0 - 30 ---	0 - 30	Open Hole	1810.90	01/21/99
RD-85	IV	90	13-3/8 5	0 - 20 20 - 90	8 ---	0 - 20 ---	0 - 20	Open Hole	1849.36	08/04/04
RD-86	IV	80	13-3/8 5	0 - 20 20 - 80	8 ---	0 - 20 ---	0 - 20	Open Hole	1832.16	08/09/04
RD-87	IV	60	13-3/8 5	0 - 20 20 - 60	8 ---	0 - 20 ---	0 - 20	Open Hole	1789.09	08/11/04
RD-88	IV	30	13-3/8 5	0 - 20 20 - 30	8 ---	0 - 20 ---	0 - 20	Open Hole	1774.62	08/16/04
RD-89	IV	50	13 3.8	0 - 30 30 - 50	8 ---	0 - 30 ---	0 - 30	Open Hole	1814.18	05/18/05
RD-90	IV	125	12-3/4 6	0 - 20 20 - 125	8 ---	0 - 20 ---	0 - 20	Open Hole	1784.75	03/11/04
RD-91	IV	140	12-3/4 6	0 - 20 20 - 140	8 ---	0 - 20 ---	0 - 20	Open Hole	1818.04	03/12/04
RD-92	IV	105	12-3/4 6	0 - 20 20 - 105	8 ---	0 - 20 ---	0 - 20	Open Hole	1833.74	03/16/04
RD-93	IV	60	13 3.8	0 - 20 20 - 60	8 ---	0 - 20 ---	0 - 20	Open Hole	1810.48	05/19/05
RD-94	UL, NW of IV	35	13 3.8	0 - 20.5 20.5 - 35	8 ---	0 - 20.5 ---	0 - 20.5	Open Hole	1744.38	05/15/05
RD-95	IV	80	13 3.8	0 - 50 50 - 80	8 ---	0 - 50 ---	0 - 50	Open Hole	1811.36	05/12/05
RD-96	IV	90	13 4	0 - 20 20 - 90	8 ---	0 - 20 ---	0 - 20	Open Hole	1805.49	05/03/06
RD-97	UL, NW of IV	74.5	13 4	0 - 20 20 - 74.5	8 ---	0 - 20 ---	0 - 20	Open Hole	1792.22	04/28/06
RD-98	IV	65	13-3/8 5-1/2	0 - 20 20 - 65	8-1/8 ---	0 - 20 ---	0 - 20 ---	Open hole	1808.73	06/04/08
RD-102	IV	100	10-5/8 4	0 - 30 30 - 100	6 ---	0 - 30 ---	0 - 30 ---	Open hole	1817.50	11/16/11
RD-150	IV	170	10 5.5	0-40 40-170	6 ---	0-40 ---	0-40	Open Hole	1877.64	04/26/16
RD-151	IV	130	10 5.5	0-40 40-130	6 ---	0-40 ---	0-40	Open Hole	1858.38	05/09/16
RD-152	IV	60	10 5.5	0-20 20-60	6 ---	0-20 ---	0-20	Open Hole	1798.88	04/29/16

TABLE A-1
WELL CONSTRUCTION DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-153	IV	55	10 5.5	0-20 20-55	6 ---	0-20 ---	0-20	 Open Hole	1776.26	05/11/16
RD-154	IV	145	10 5.5	0-40 40-145	6 ---	0-40 ---	0-40	 Open Hole	1827.62	05/23/16
RD-155	IV	115	10 5.5	0-40 40-115	6 ---	0-40 ---	0-40	 Open Hole	1820.72	05/17/16
RD-156	IV	170	10 5.5	0-40 40-170	6 ---	0-40 ---	0-40	 Open Hole	1819.88	06/09/16
WS-07	IV	700	15 10	0 - 400 400 - 700	12-1/8 ---	0 - 400 ---	Unknown	216 - 400 Open Hole	1826.19	1954
PRIVATE OFF-SITE WELLS AND SPRINGS										
OS-02	OS	700	Unknown	Unknown	10 ---	0 - 17 ---	0 - 17	 Open Hole	1237.01	03/18/59
OS-03	OS	100	Drilled with cable tools		8-1/4 ---	0 - 59 ---	0 - 30	30 - 60 Open Hole	1298.15	06/12/50
OS-04	OS	Well Construction Data Unresolved or Not Available							1334.00	
OS-05	OS	Well Construction Data Unresolved or Not Available								

Notes and Abbreviations:

Depth/intervals are measured in feet below land surface.

OS	Off-site	---	No casing installed over the borehole interval specified; open hole
UL-N	Undeveloped land in northern part of Facility	(v)	Top of well below land surface, installed inside zero-grade vault
UL-S	Undeveloped land in southern part of Facility	(WB)	Well completed with Westbay Multilevel System

TABLE A-2a
CONSTRUCTION DETAILS OF PIEZOMETER MONITORING SYSTEMS
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PIEZOMETER ID	LOCATION					PIEZOMETER DESIGN DETAILS						
	Area	SWMU	Northing	Easting	MP Elevation	Date Drilled	Total Depth	Screened Interval	Sand Interval	Bentonite Interval	Grout Interval	Concrete Interval
			[feet]	[feet]	[feet]	[m/d/y]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]
PZ-005	IV	Central Area IV	266634.9	1784877.3	1800.97	11/7/2000	45.0	15-25	11.5-26.5	8.5-11.5	2-8.5	0-2
PZ-041	IV	PDU	267315.8	1785662.0	1809.10	1/16/2001	29.6	19-29	17-29.6	14-17	2-14	0-2
PZ-051	IV	EEL	266485.8	1785857.0	1770.87	12/14/2000	27.0	5-15	3-16	2-3	N/A	0-2
PZ-052	IV	Eastern Area IV	266742.1	1786103.7	1790.72	12/15/2000	30.0	18.9-28.9	17-30	14-17	2-14	0-2
PZ-055	IV	Eastern Area IV	267253.6	1787421.3	1818.40	1/2/2001	29.5	19-29	17-29.5	14-17	2-14	0-2
PZ-056	IV	OCY S	268068.7	1788028.0	1805.86	12/19/2000	28.0	17-27	13-28	10-13	2-10	0-2
PZ-097	UDL	FSDF	267048.9	1783400.3	1761.87	10/15/2001	44.5	33-43	31-44.5	11.5-28	2-11.5	0-2
PZ-098	IV	FSDF	266788.9	1783488.8	1797.78	10/16/2001	37.5	24-34	21.5-37.5	19-21.5	2-19	0-2
PZ-099	IV	FSDF	Abandoned in place in 2006									
PZ-100	IV	FSDF	266078.3	1782962.2	1870.11	10/17/2001	16.5	5.67-15.67	4.67-16.5	2-4.67	N/A	0-2
PZ-101	IV	FSDF	266057.5	1783090.6	1869.71	10/17/2001	27	10-20	7-27	5-7	1.75-5	0-1.75
PZ-102	IV	Central Area IV	267080.8	1784684.4	1827.78	10/18/2001	59.2	48.5-59.2	45-59.2	43-45	2-43	0-2
PZ-103	IV	Central Area IV	266281.2	1784400.9	1815.93	10/22/2001	39	28.5-38.5	26-39	23.5-26	2-23.5	0-2
PZ-104	IV	Central Area IV	266270.2	1784924.2	1797.47	10/22/2001	38.5	18-28	16-30	13-16	2-13	0-2
PZ-105	IV	Central Area IV	265935.5	1784787.9	1803.87	10/23/2001	28	17-27	15-28	12-15	2-12	0-2
PZ-106	IV	EEL	266411.9	1785469.6	1784.17	10/23/2001	35	18-28	16-30.5	12.75-16	2-12.75	0-2
PZ-107	IV	Eastern Area IV	266876.4	1785822.0	1793.62	10/24/2001	11	5-10	4-11	2-4	N/A	0-2
PZ-108	IV	HMSA	268032.6	1785076.3	1763.01	10/24/2001	30	16-26	13-28.5	10-13	2-10	0-2
PZ-109	IV	Central Area IV	267332.4	1785248.2	1809.36	10/25/2001	36.5	25-35	22-36.5	19-22	2-19	0-2
PZ-110	IV	Eastern Area IV	267204.0	1786209.6	1818.90	10/25/2001	17.5	7-17	5-17.5	2-5	N/A	0-2
PZ-111	IV	Eastern Area IV	266948.4	1786433.9	1794.90	10/26/2001	20.0	7.5-17.5	5-20	N/A	N/A	N/A
PZ-112	IV	Eastern Area IV	267435.9	1786720.8	1829.14	10/26/2001	35.0	24-34	22-35	19-22	2-19	0-2
PZ-113	IV	Eastern Area IV	267682.9	1787367.8	1823.68	10/29/2001	15.0	7-15	5-15	2-5	N/A	0-2
PZ-114	IV	Old Con Yard S	268304.0	1787913.1	1818.19	10/30/2001	48.2	37-47	35-48.2	32-35	2-32	0-2
PZ-115	IV	Eastern Area IV	268006.8	1787536.5	1817.81	10/30/2001	40	25.5-37.5	25-40	22-25	2-22	0-2
PZ-116	UDL	RMHF	266501.1	1783693.0	1827.78	10/31/2001	34	22-32	20-34	17-20	2-17	0-2
PZ-120	IV	HMSA / SCTI	267230.1	1785009.7	1810.96	3/18/2003	26	15-25	12-26	9-12	2-9	0-2
PZ-121	IV	HMSA / SCTI	267491.6	1785120.7	1808.98	3/19/2003	33	15-25	12-28	8.4-12; 28-33	1.5-8.4	0-1.5
PZ-122	IV	HMSA / SCTI	267091.9	1785176.5	1810.80	3/19/2003	27.5	15.5-25.5	12-27.5	9-12	2-9	0-2
PZ-124	IV	B056 Landfill	267166.7	1784015.9	1764.11	3/21/2003	31	14.7-24.7	11.3-31	8.3-11.3	1-8.3	0-1

Notes and Abbreviations:

The difference between the total depth and the bottom of the sand interval was filled with sloughed native material and/or bentonite

[a] The screen for this port is perpendicular to the well casing and covers the open bottom end; therefore, the screened section is a discrete depth

bgs - Below ground surface
MP - Measuring point
UDL - undeveloped land

TABLE A-2b
CONSTRUCTION DETAILS OF PIEZOMETER MONITORING SYSTEMS
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Northing (feet)	Easting (feet)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Driller	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)	Wellhead Completion
PZ-150	268281.654	1786086.776	1849.92	1852.23	17.5	27.5	27.5	27.5	10 5/8	4	SCH40 PVC	0.020	SCH40 PVC	#3	14.5	27.5	Air Rotary	WDC	Cement-Bentonite Grout	11	14.5	Monument
PZ-151	268743.1285	1787988.758	1860.4	1862.60	69.5	79.5	80	82	8	2	SCH40 PVC	0.02	SCH40 PVC	#3	64	80	CME-85 HAS/HQ w/carbide bit	WDC	Cement-Bentonite Grout Bentonite chips # 60 Sand Bentonite chips	2 52 62 64	52 62 64 82	Monument
PZ-160	268345.039	1786286.124	1849.14	1851.41	17.0	27.0	27	27	10 5/8	4	SCH40 PVC	0.020	SCH40 PVC	#3	14	27	Air Rotary	WDC	Cement-Bentonite Grout	1	14	Monument
PZ-161	268418.806	1786132.353	1850.00	1852.23	18	28	28	28	10 5/8	4	SCH40 PVC	0.020	SCH40 PVC	#3	15	28	Air Rotary	WDC	Cement-Bentonite Grout	1	15	Monument

Notes and Abbreviations:

Northing and Easting Coordinates are in State Plane NAD 27, US Feet.
amsl - above mean sea level
bgs - below ground surface
SCH - schedule
PVC - polyvinyl chloride
TOC - top of casing
NM -not measured

APPENDIX B
Precipitation Data

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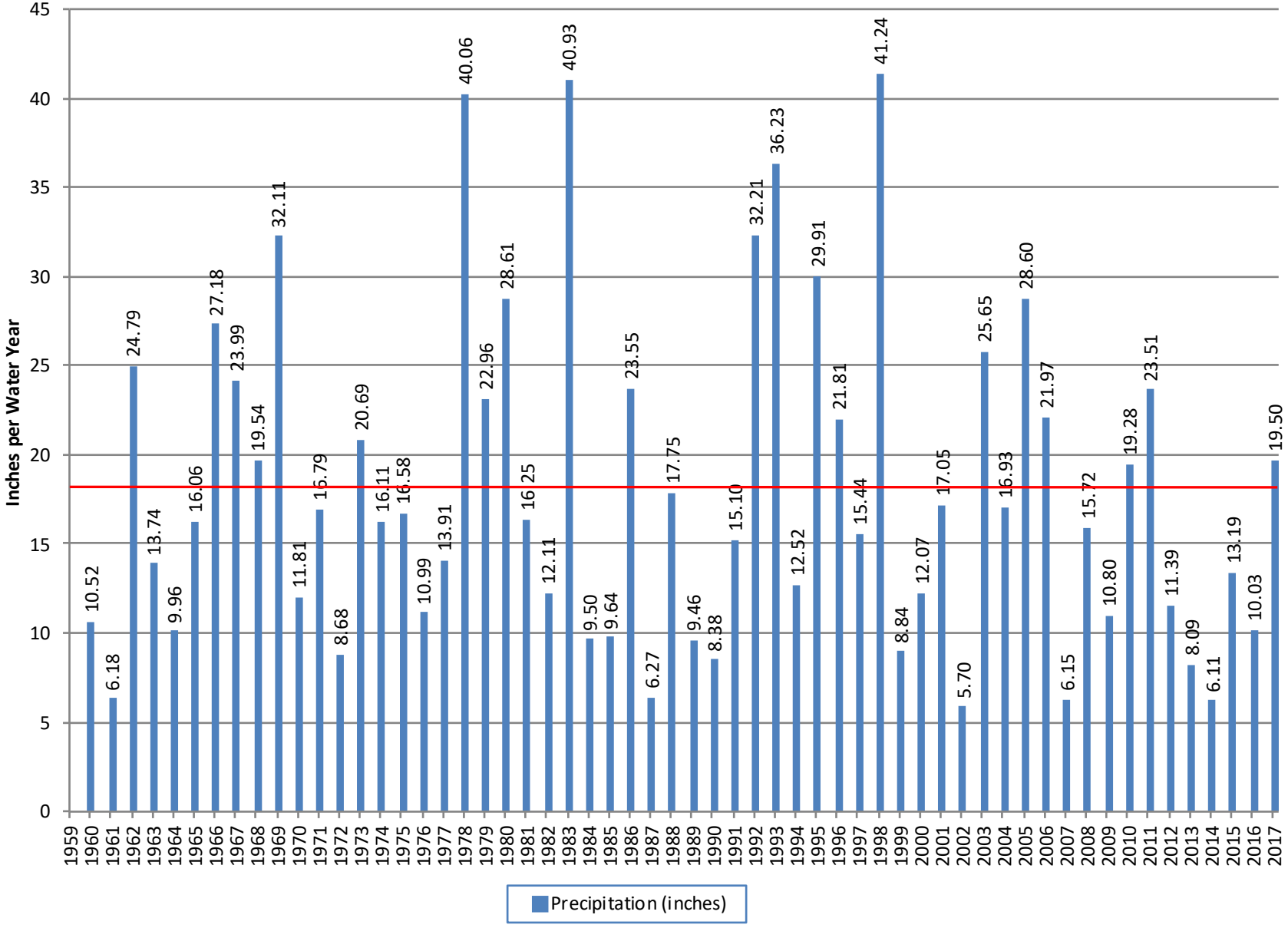
TABLE B-1
SUMMARY OF ANNUAL RAINFALL
MEASURED AT THE SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Water Year Ending in	Precipitation (inches)	Water Year Ending in	Precipitation (inches)
1960	10.52	1989	9.46
1961	6.18	1990	8.38
1962	24.79	1991	15.10
1963	13.74	1992	32.21
1964	9.96	1993	36.23
1965	16.06	1994	12.52
1966	27.18	1995	29.91
1967	23.99	1996	21.81
1968	19.54	1997	15.44
1969	32.11	1998	41.24
1970	11.81	1999	8.84
1971	16.79	2000	12.07
1972	8.68	2001	17.05
1973	20.69	2002	5.70
1974	16.11	2003	25.65
1975	16.58	2004	16.93
1976	10.99	2005	28.60
1977	13.91	2006	21.97
1978	40.06	2007	6.15
1979	22.96	2008	15.72
1980	28.61	2009	10.80
1981	16.25	2010	19.28
1982	12.11	2011	23.51
1983	40.93	2012	11.39
1984	9.50	2013	8.09
1985	9.64	2014	6.11
1986	23.55	2015	13.19
1987	6.27	2016	10.03
1988	17.75	2017	19.50
Average Annual Precipitation (1960-2017) =			**17.76**

NOTE: Precipitation reported annually for the period of October through September of the calendar year indicated.

Figure B-1
Annual Precipitation at the SSFL, 1960 through 2017



APPENDIX C
Water Level Hydrographs

List of Hydrographs

FSDF/ESADA
RD-21
RS-54

B4100 Trench
RD-20

Bldg 56 Landfill
RD-07

B4057/59/626
PZ-109

HMSA/PDU
PZ-120
RD-29

Tritium Plume
RD-90
RD-95

RMHF
RD-30
RD-63

OCY
RD-14

Bldg 65 Metals Clarifier
PZ-104
PZ-105

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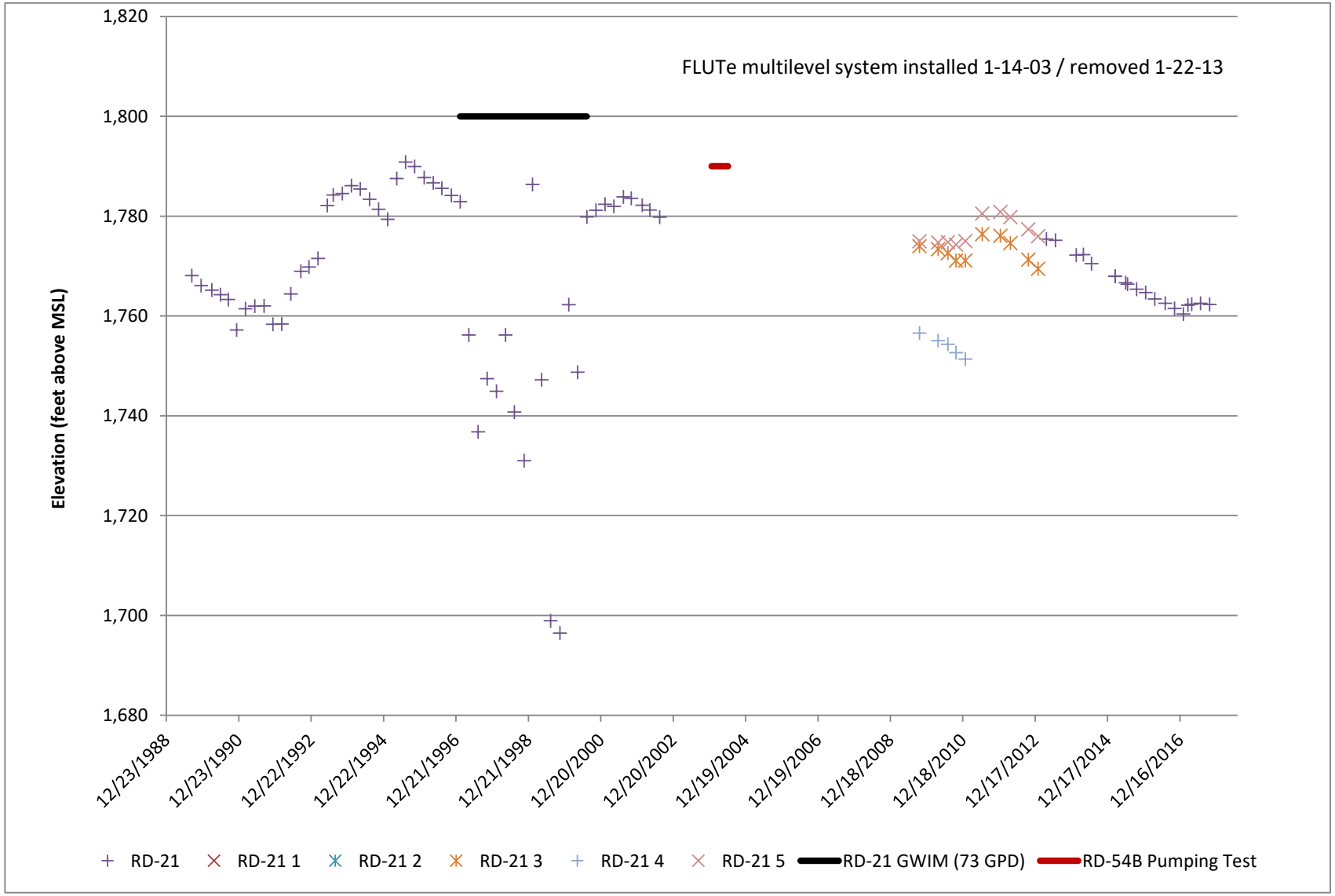
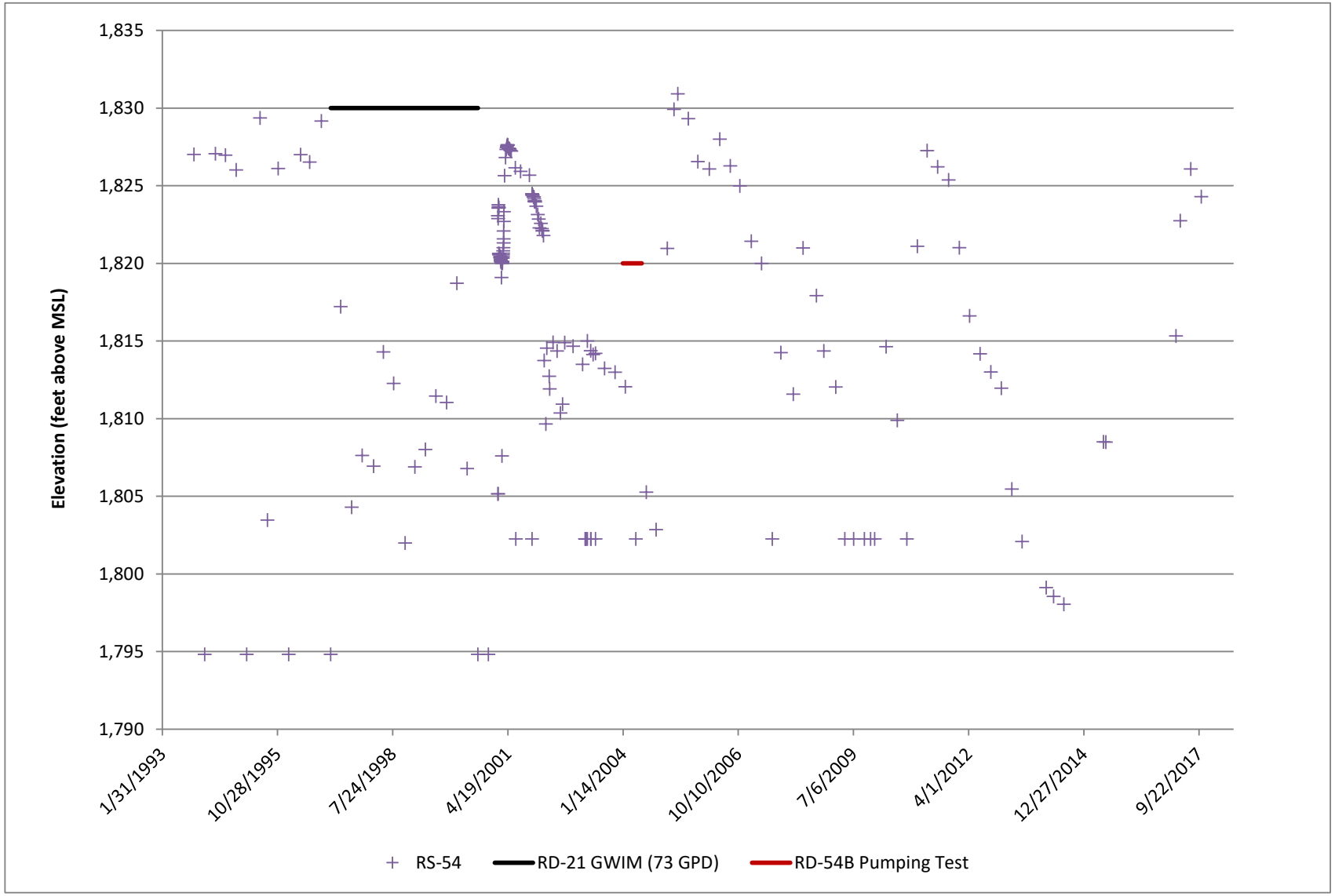
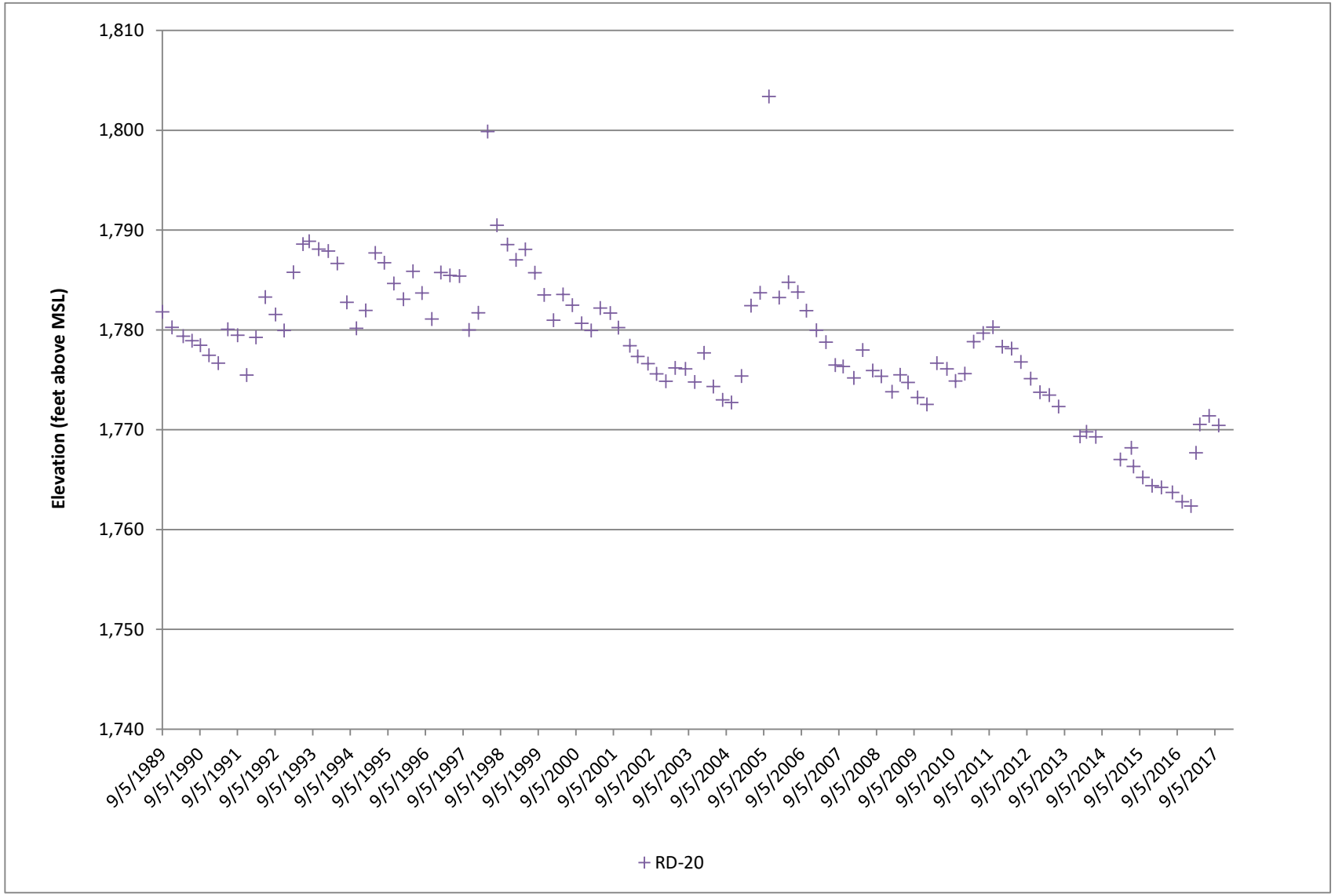
RD-21, FSDS/ESADA
Hydrograph



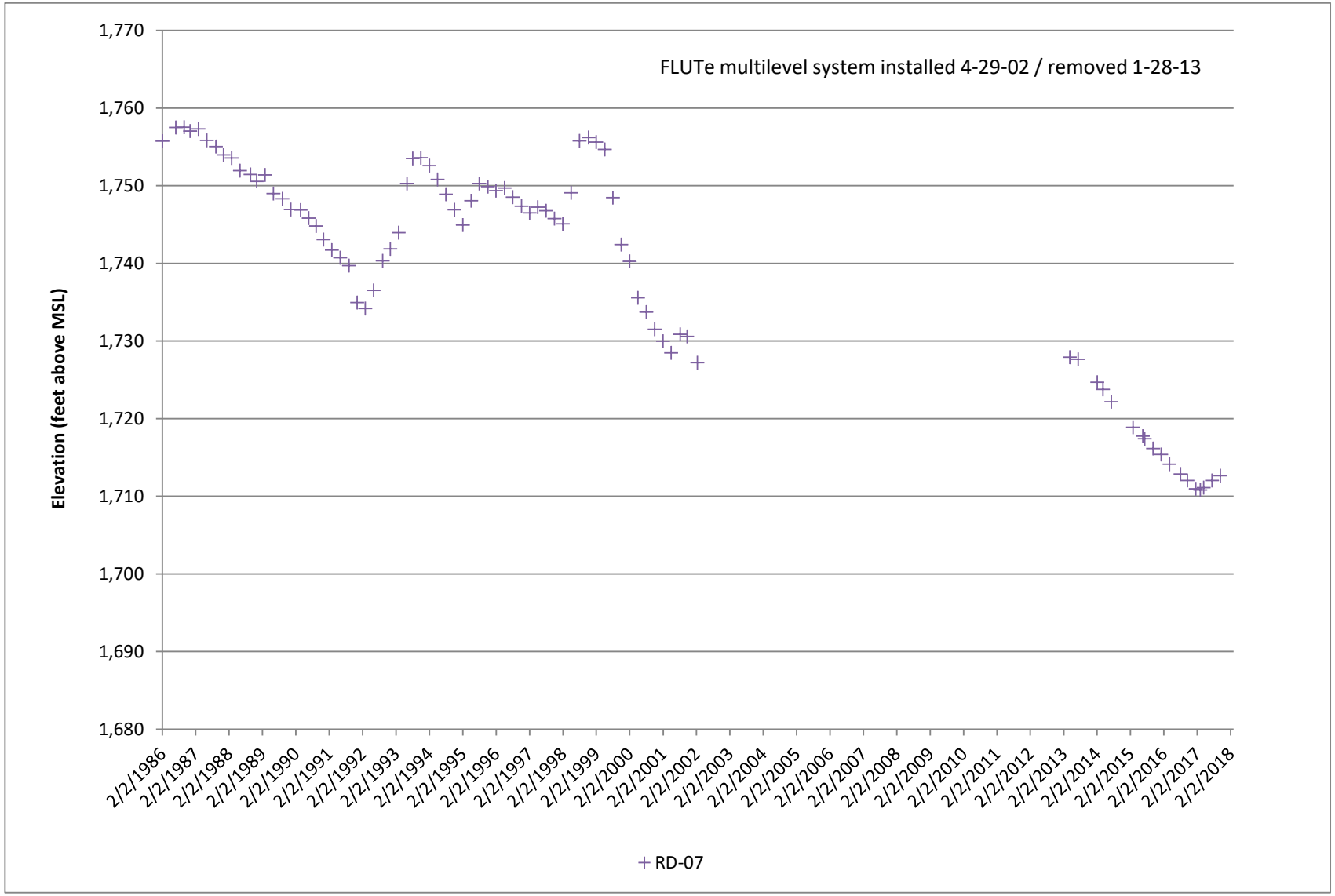
RS-54, FSDS/ESADA
Hydrograph



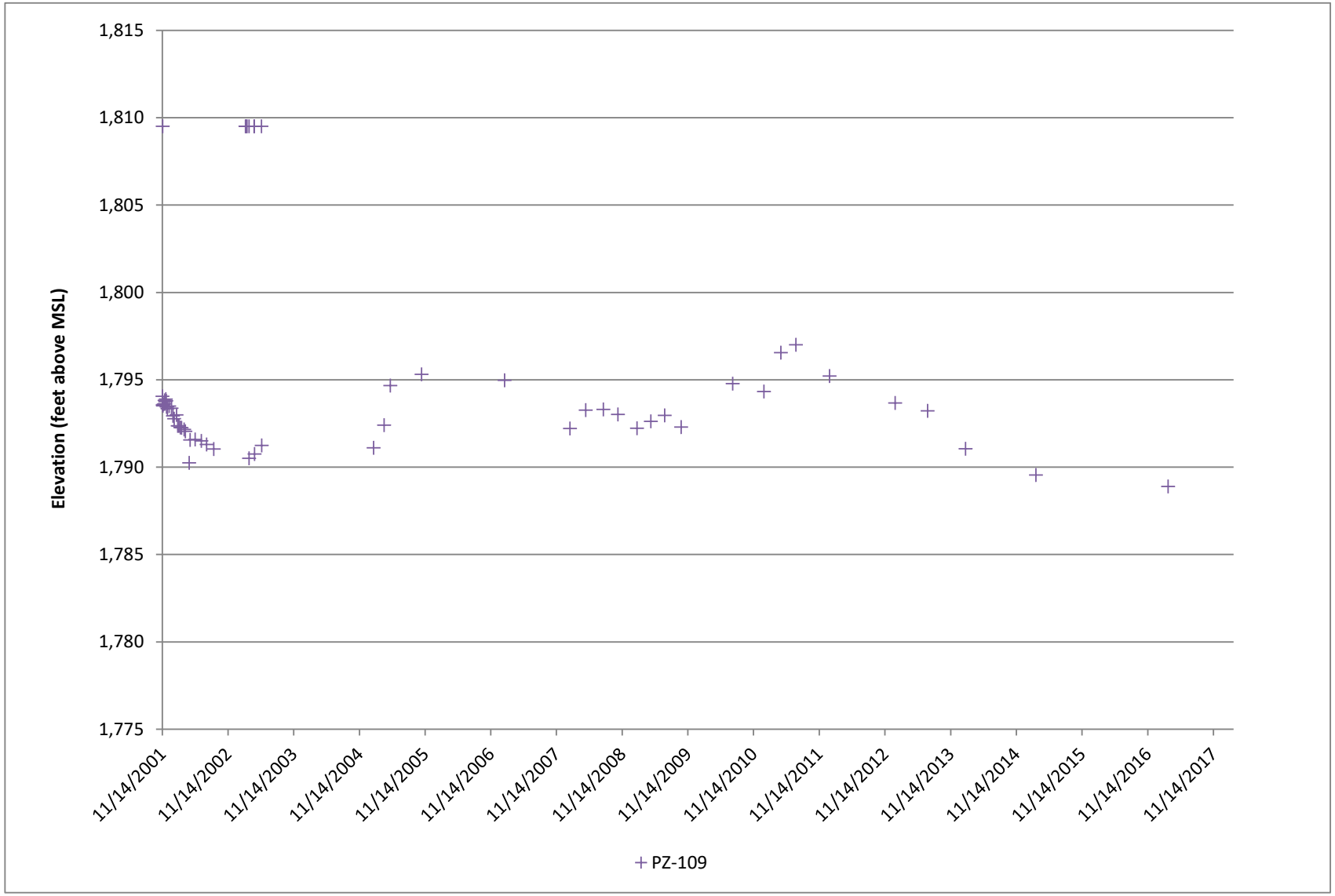
RD-20, B4100 Trench
Hydrograph



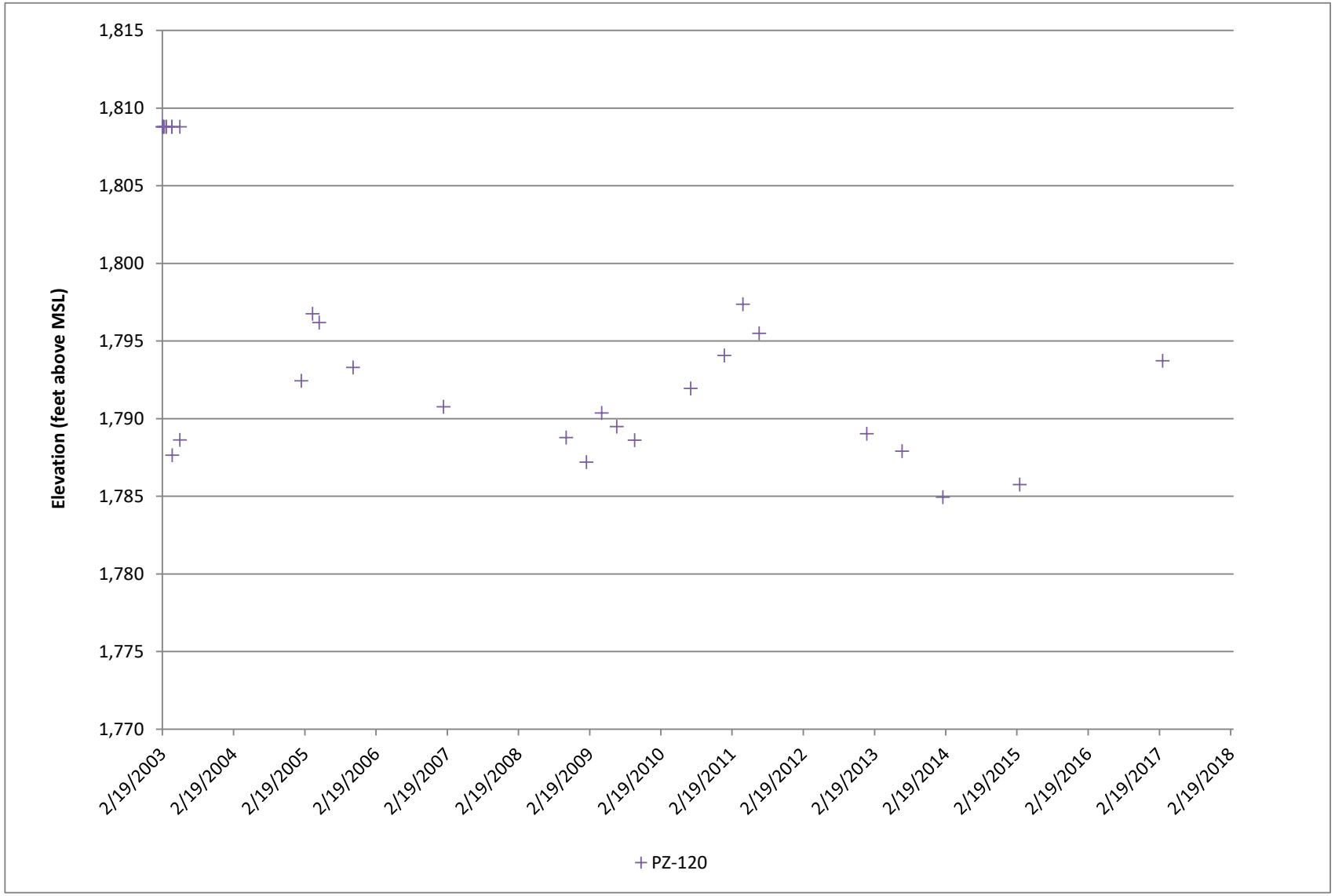
RD-07, Bldg 56 Landfill
Hydrograph



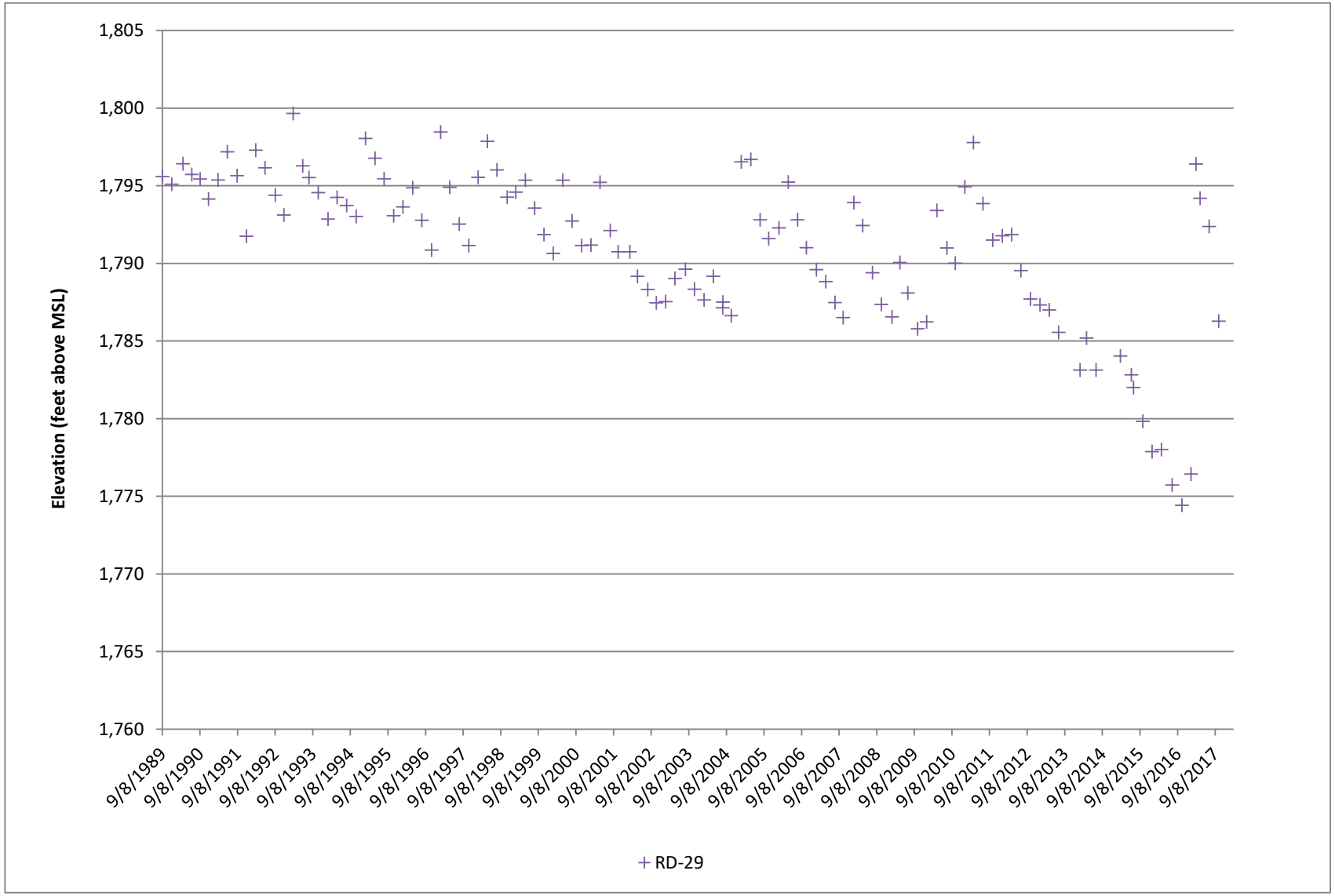
PZ-109, B4057/59/626
Hydrograph



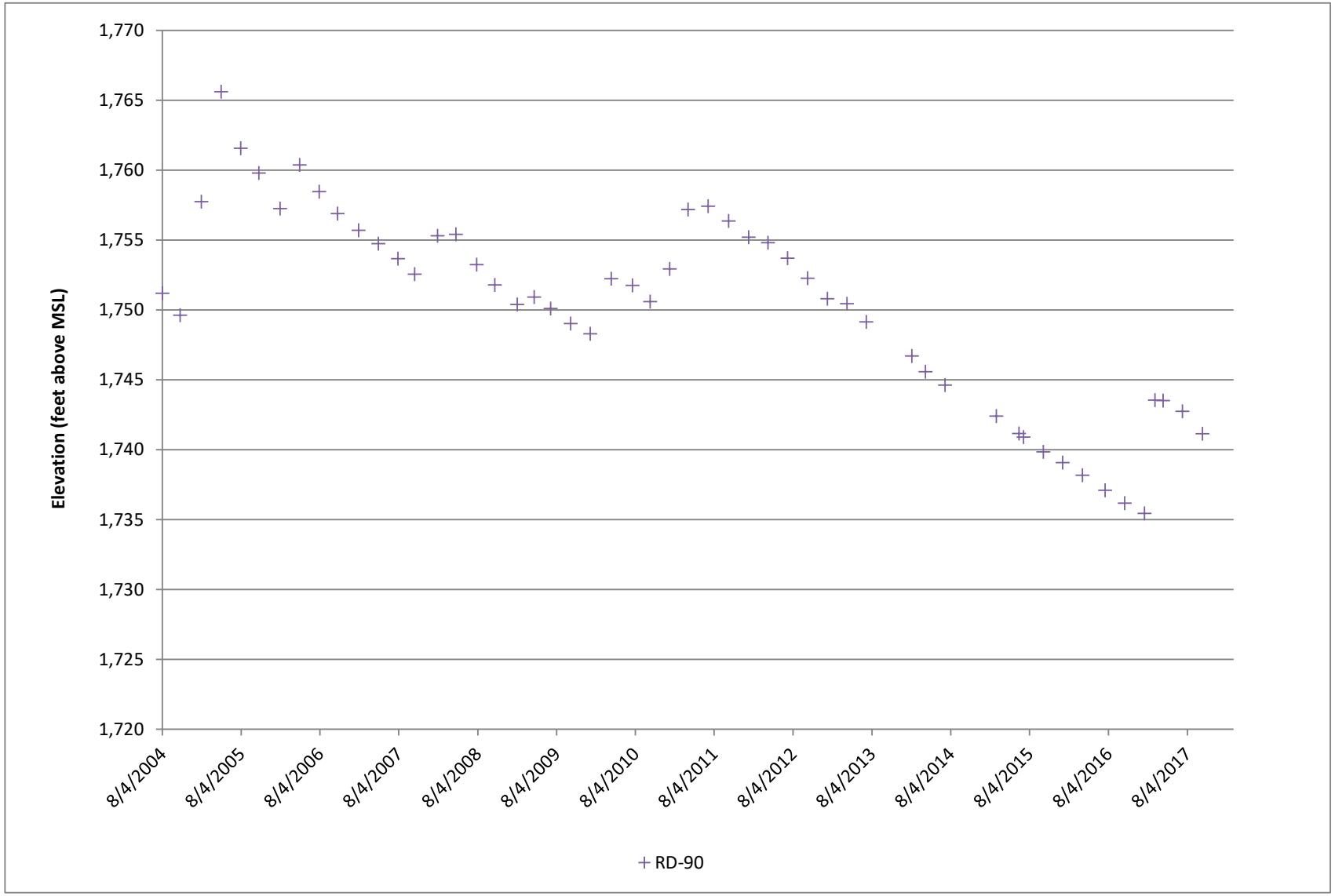
PZ-120, HMSA/PDU
Hydrograph



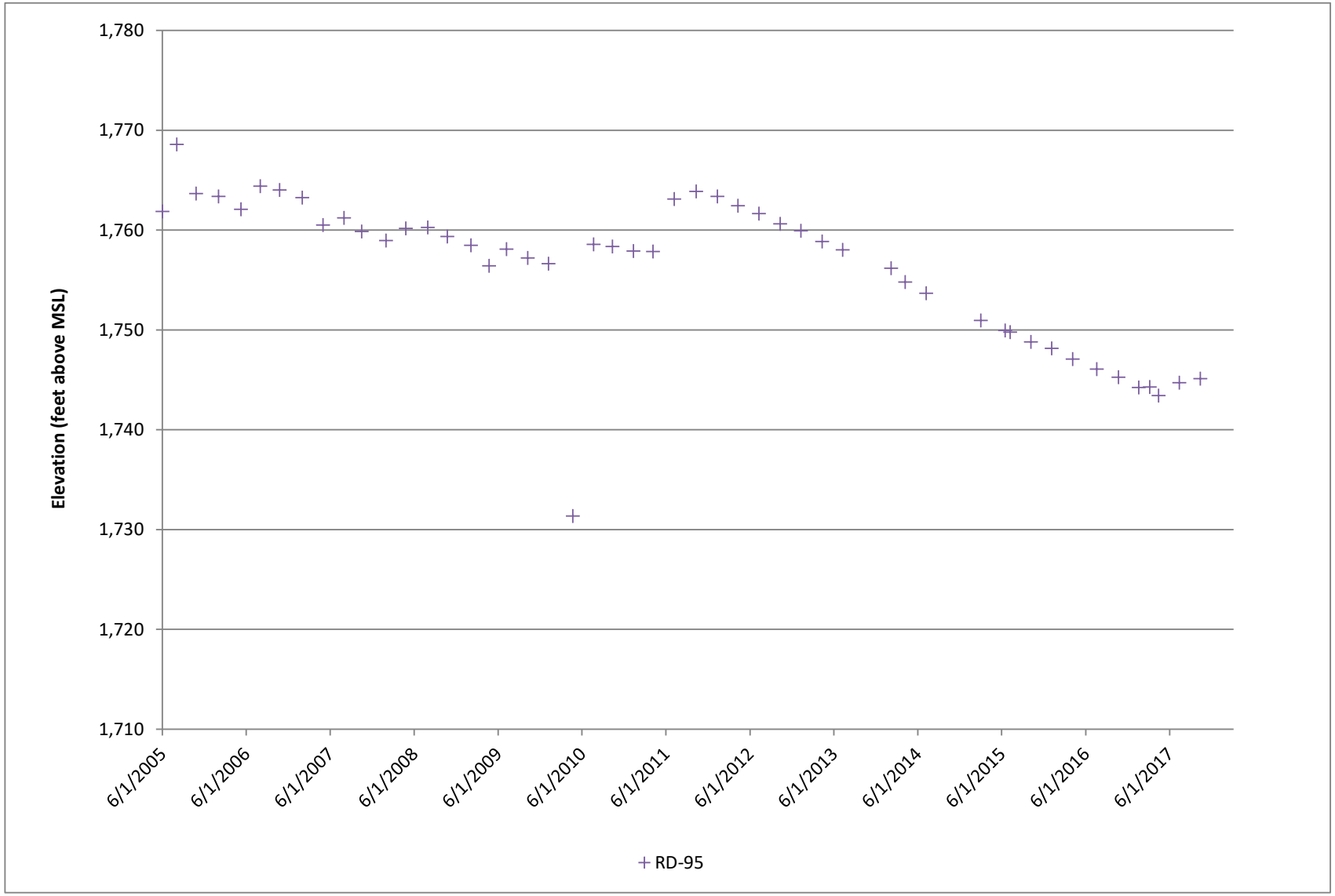
RD-29, HMSA/PDU
Hydrograph



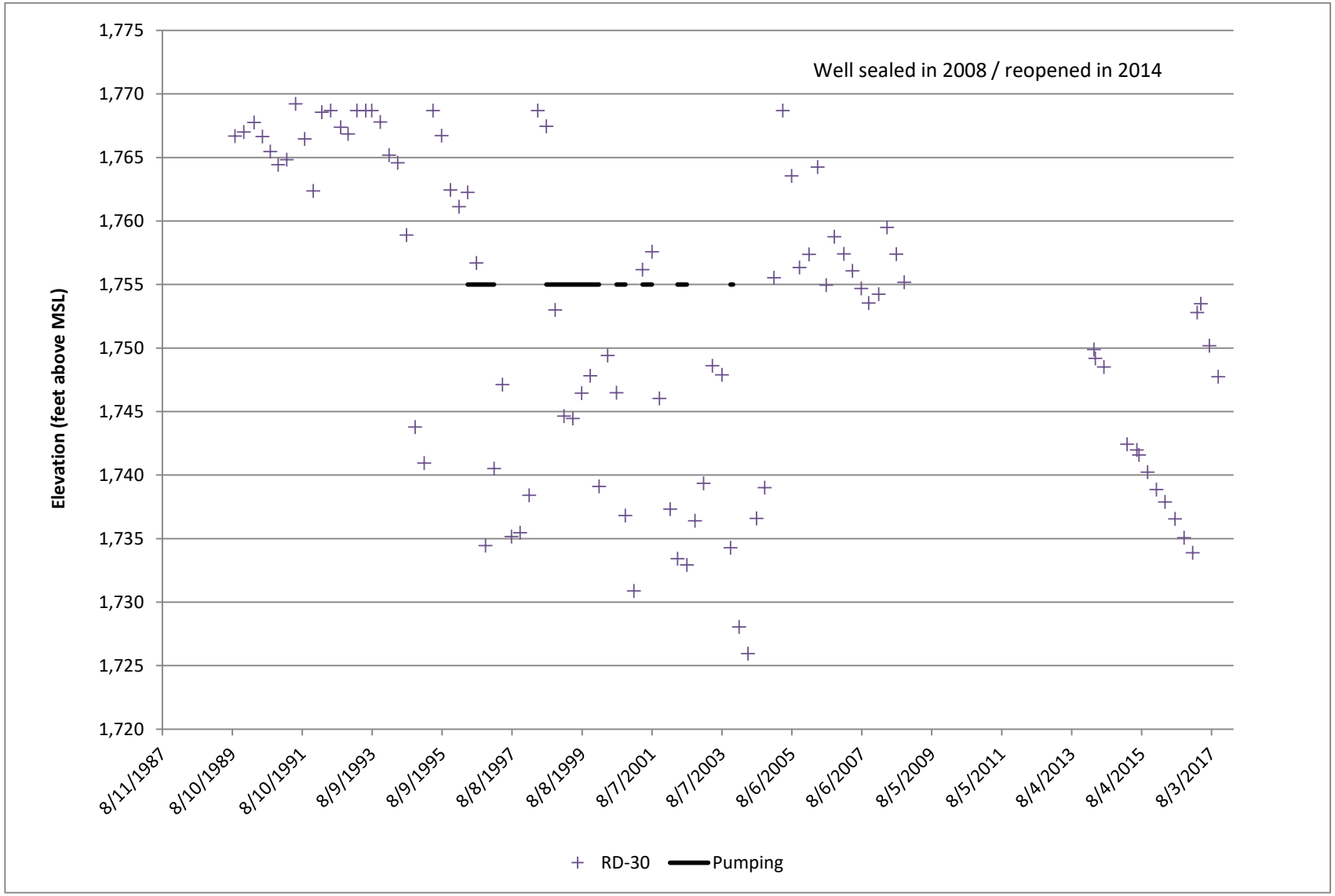
RD-90, Tritium Plume
Hydrograph



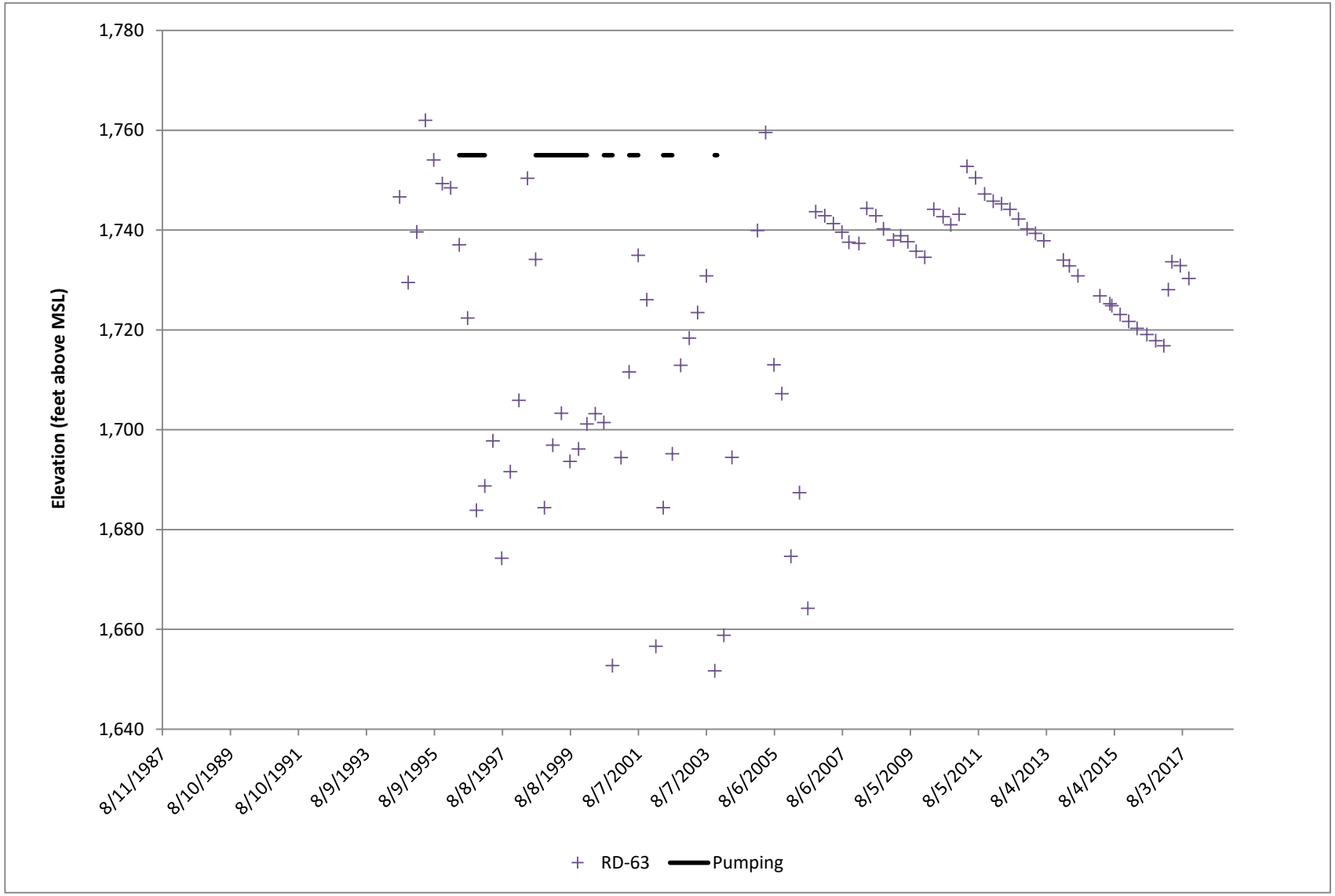
RD-95, Tritium Plume
Hydrograph



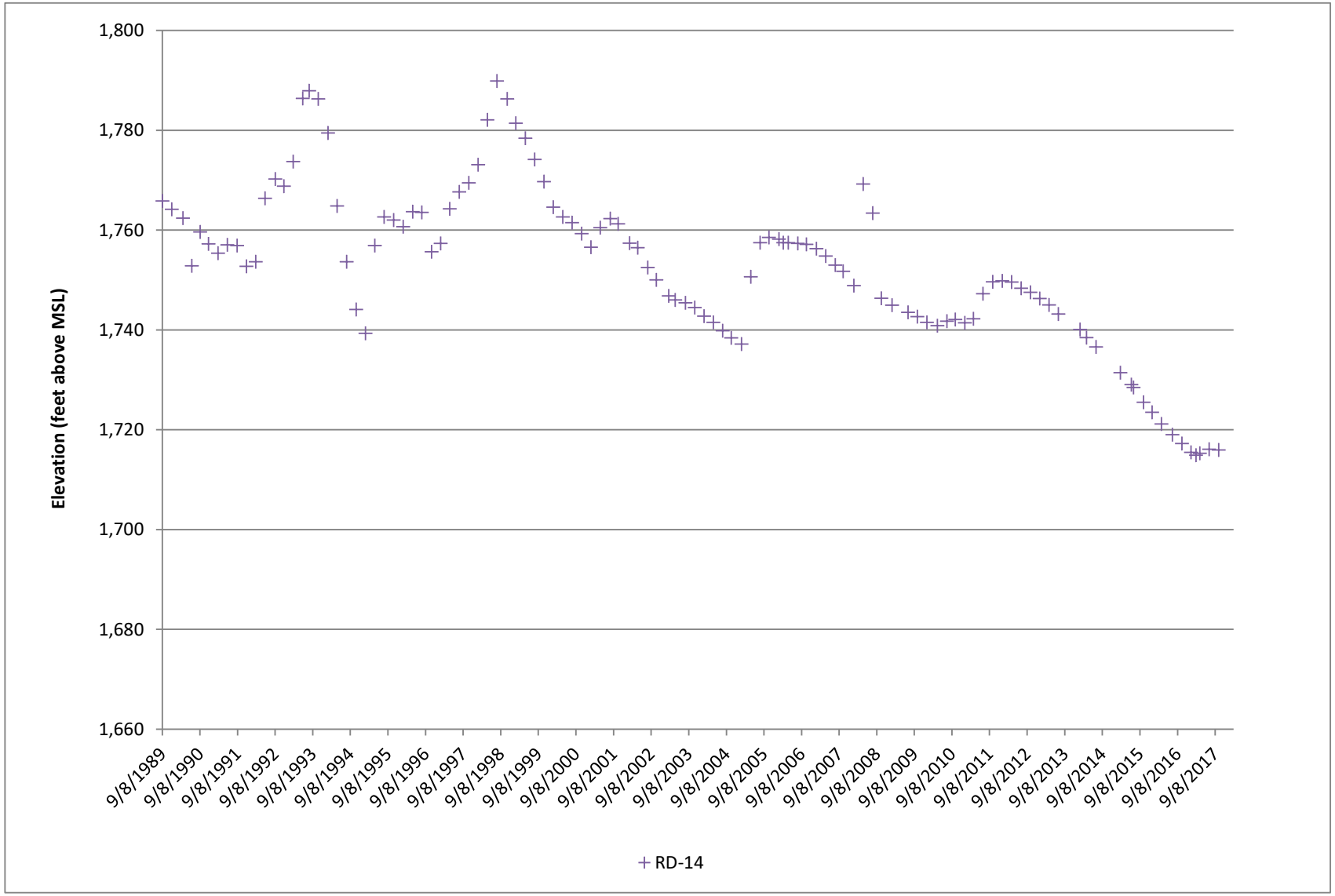
RD-30, RMHF
Hydrograph



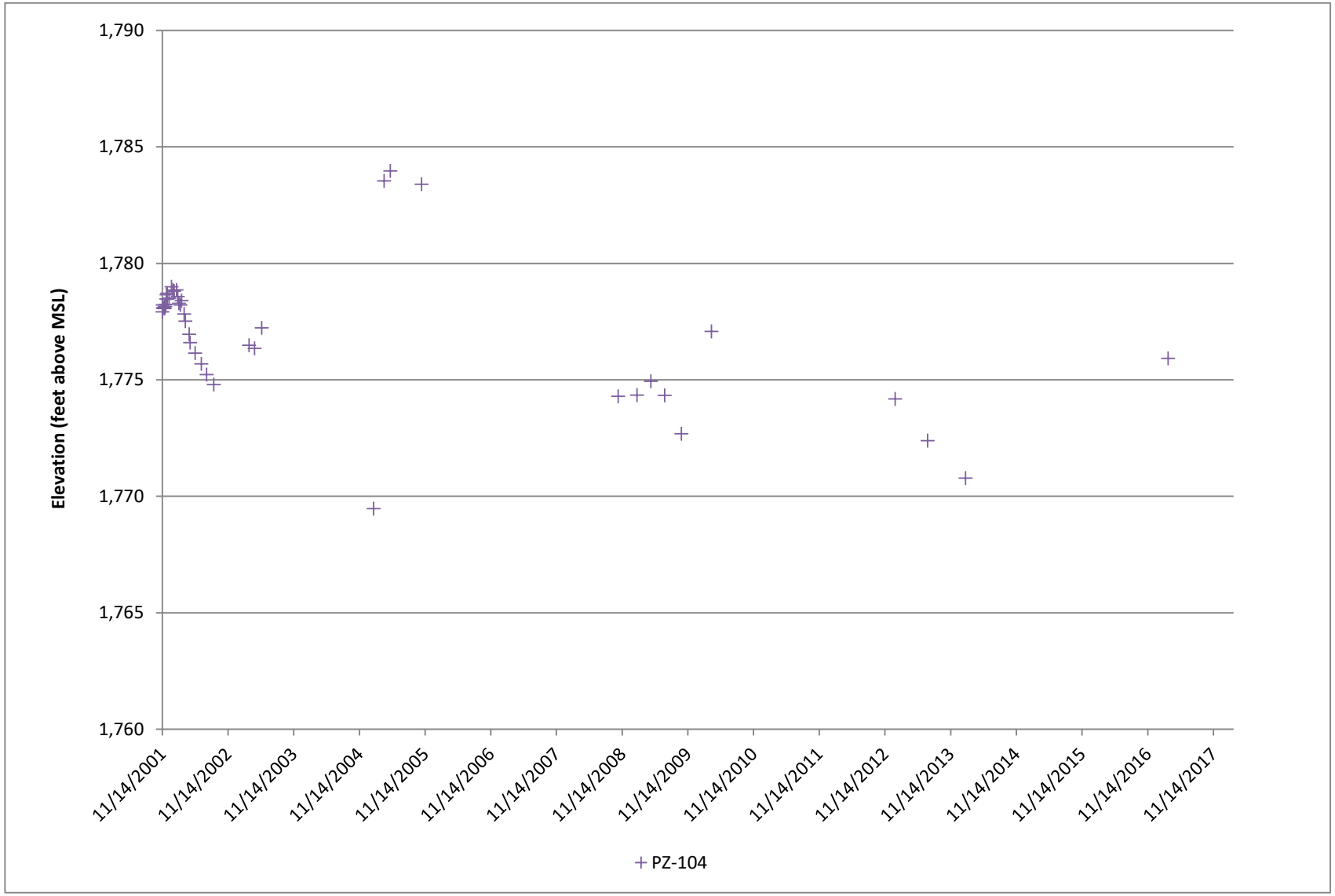
RD-63, RMHF
Hydrograph



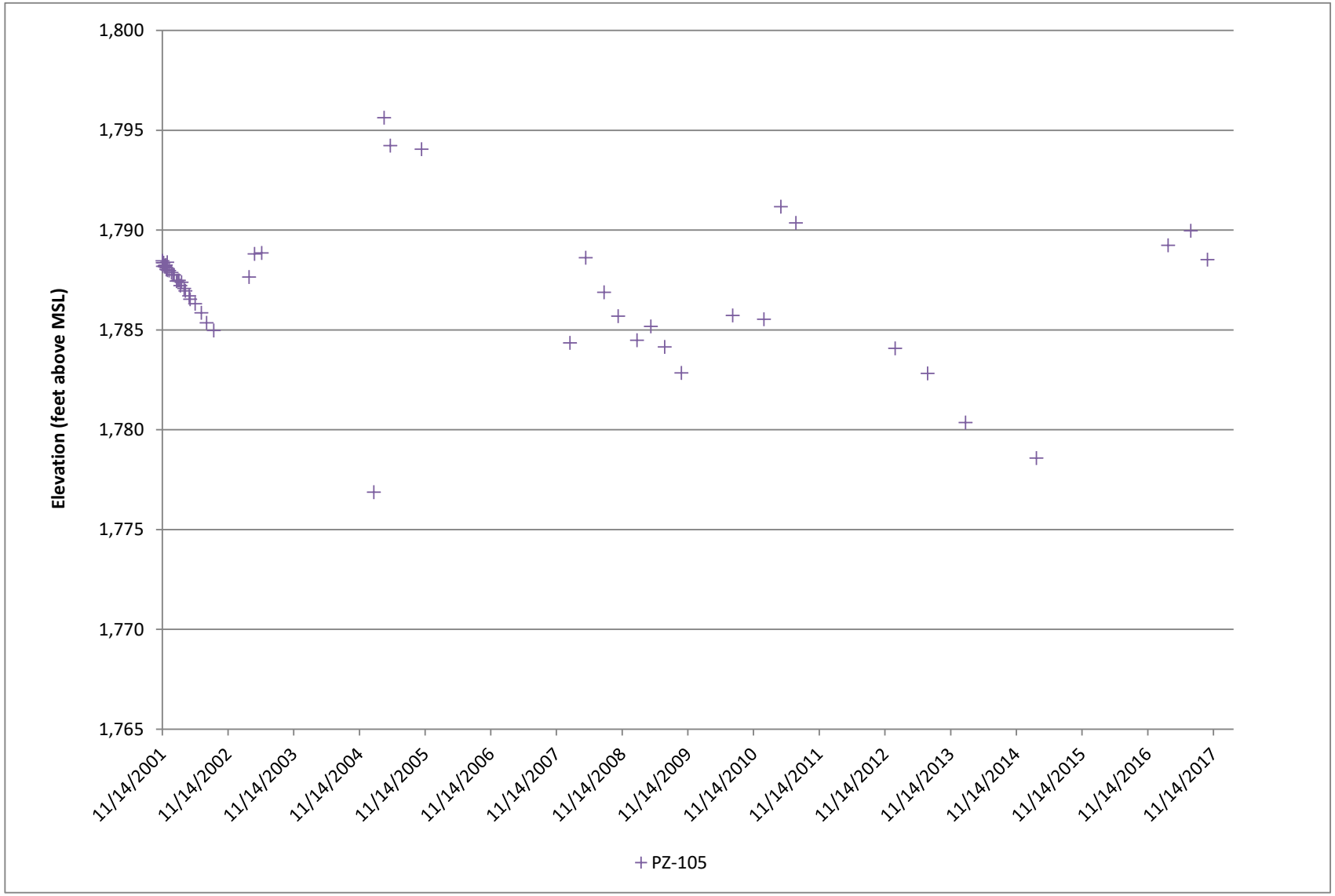
RD-14, OCY
Hydrograph



PZ-104, Bldg 65 Metals Clarifier
Hydrograph



PZ-105, Bldg 65 Metals Clarifier
Hydrograph



Appendix D

Time Series Plots of Analytical Data

Time series plots for trichlorothene (TCE), perchlorate, and tritium are presented in this Appendix. Only primary sample results for the following wells are presented in the plots.

TCE

FSDF/ESADA
RD-21
RD-33A
RD-54A
RD-54B
RD-54C
RD-64
RD-65
RS-18
RS-54

Bldg 56 Landfill
RD-07

B4057/59/626
PZ-109

RMHF
RD-30
RD-34A
RD-34B
RD-63
RD-98
RS-28

HMSA/PDU
PZ-108
PZ-120

OCY
RD-14

Bldg 65 Metals Clarifier
PZ-005
PZ-104
PZ-105

Bldg 4100/4009
RD-91

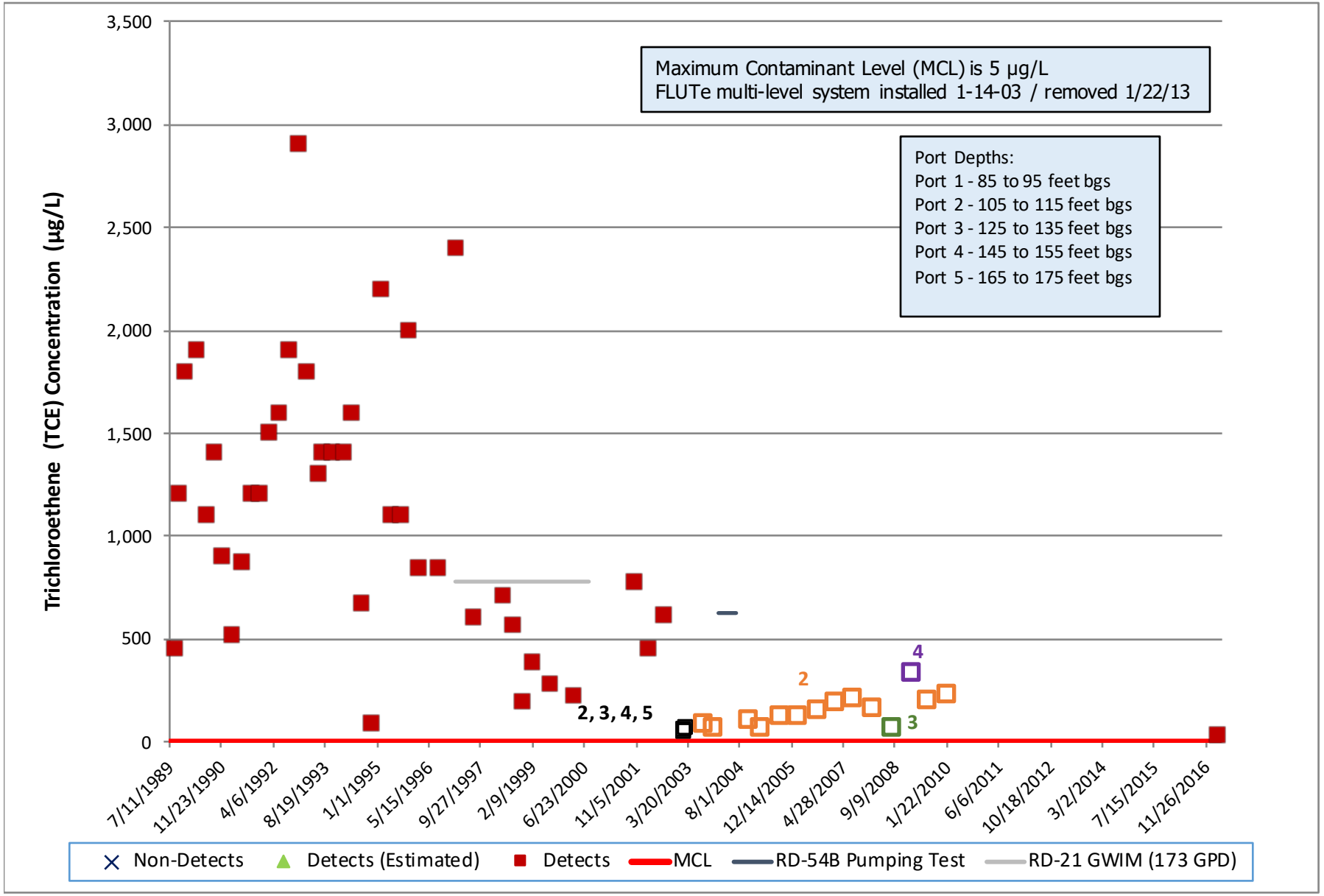
Perchlorate

FSDF/ESADA
RD-21
RD-54A
RS-18
RS-54

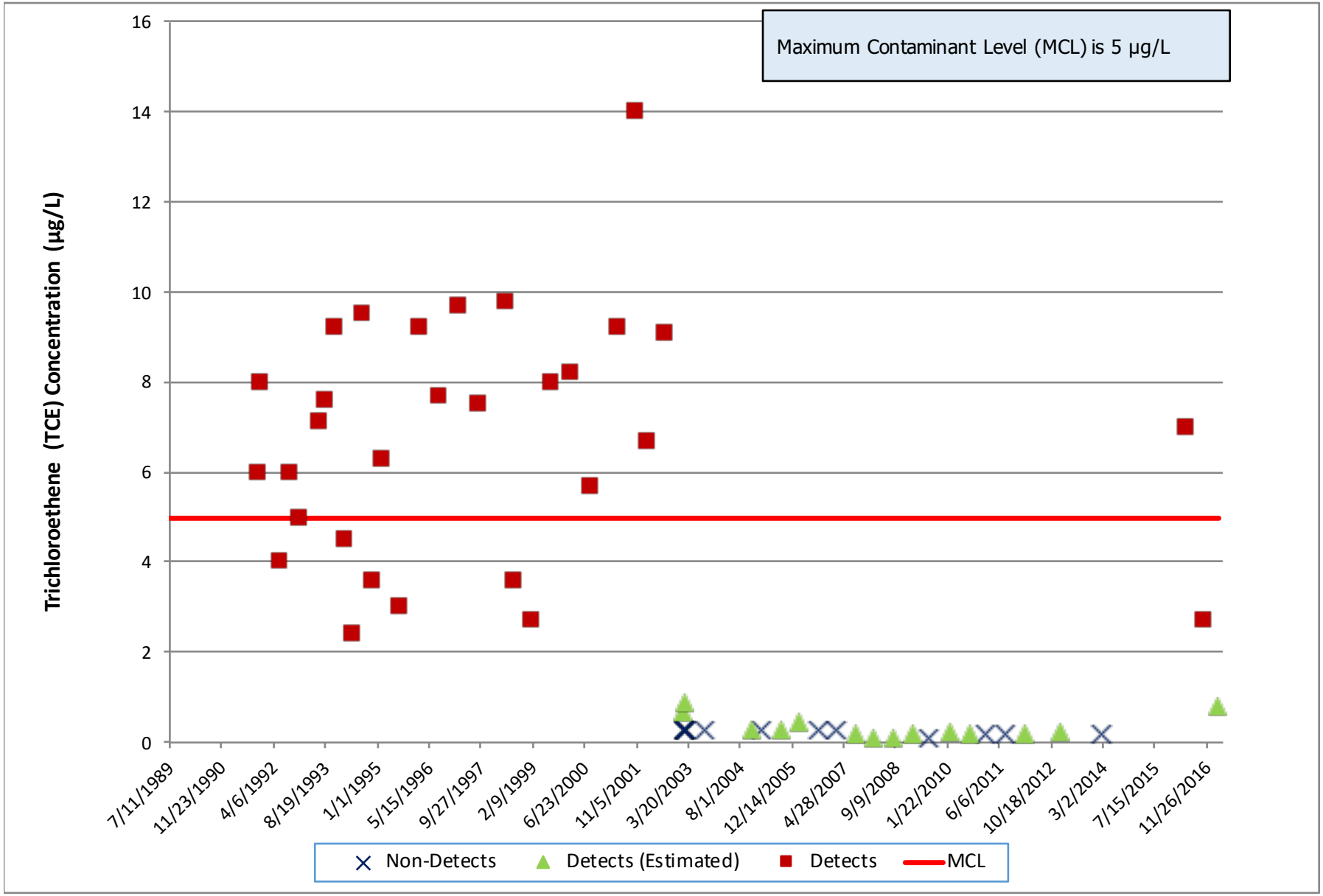
Appendix D ·Time Series Plots of Analytical Data

Tritium Plume
RD-34A
RD-88
RD-90
RD-93
RD-94
RD-95

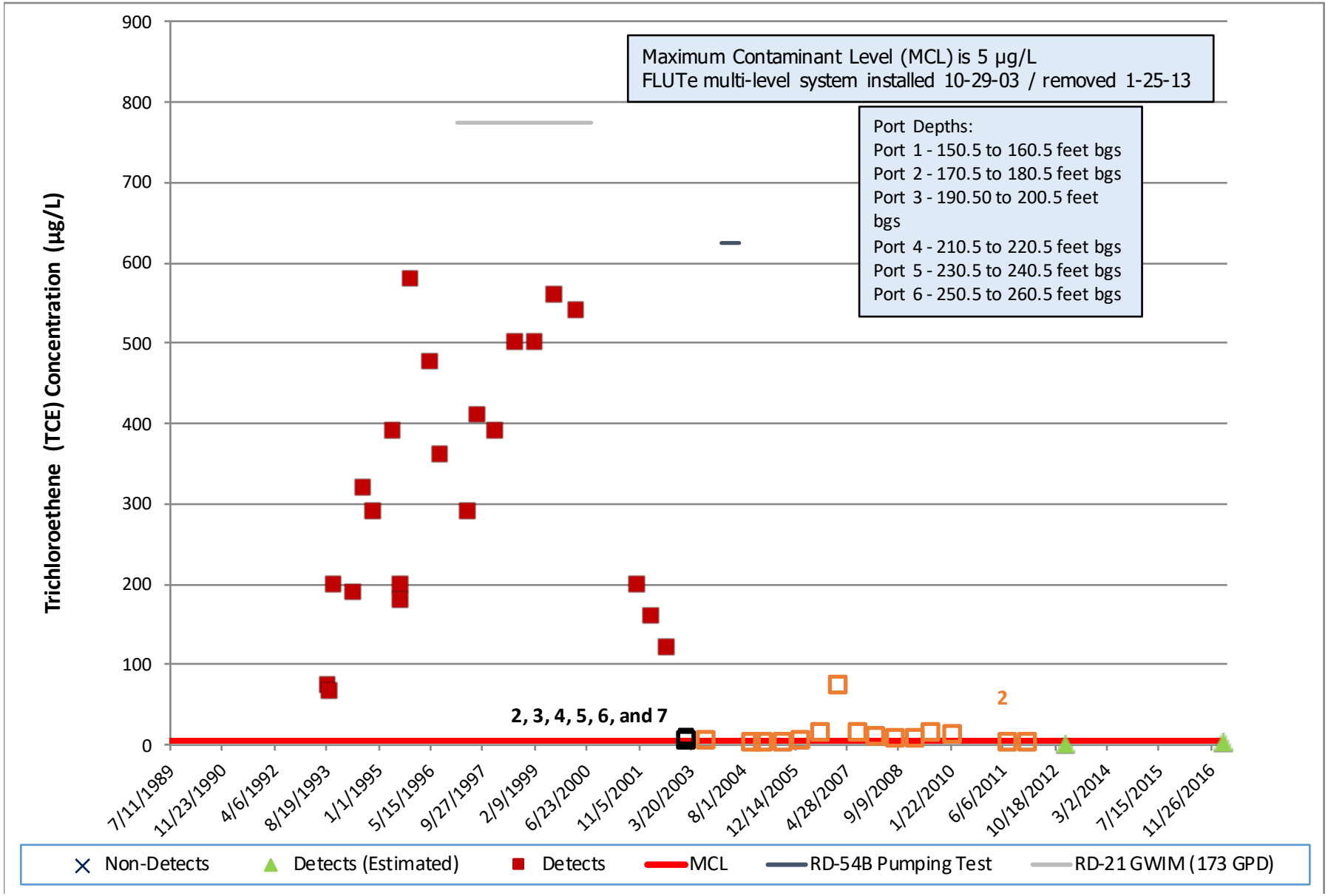
RD-21, FSDF/ESADA
Trichloroethene



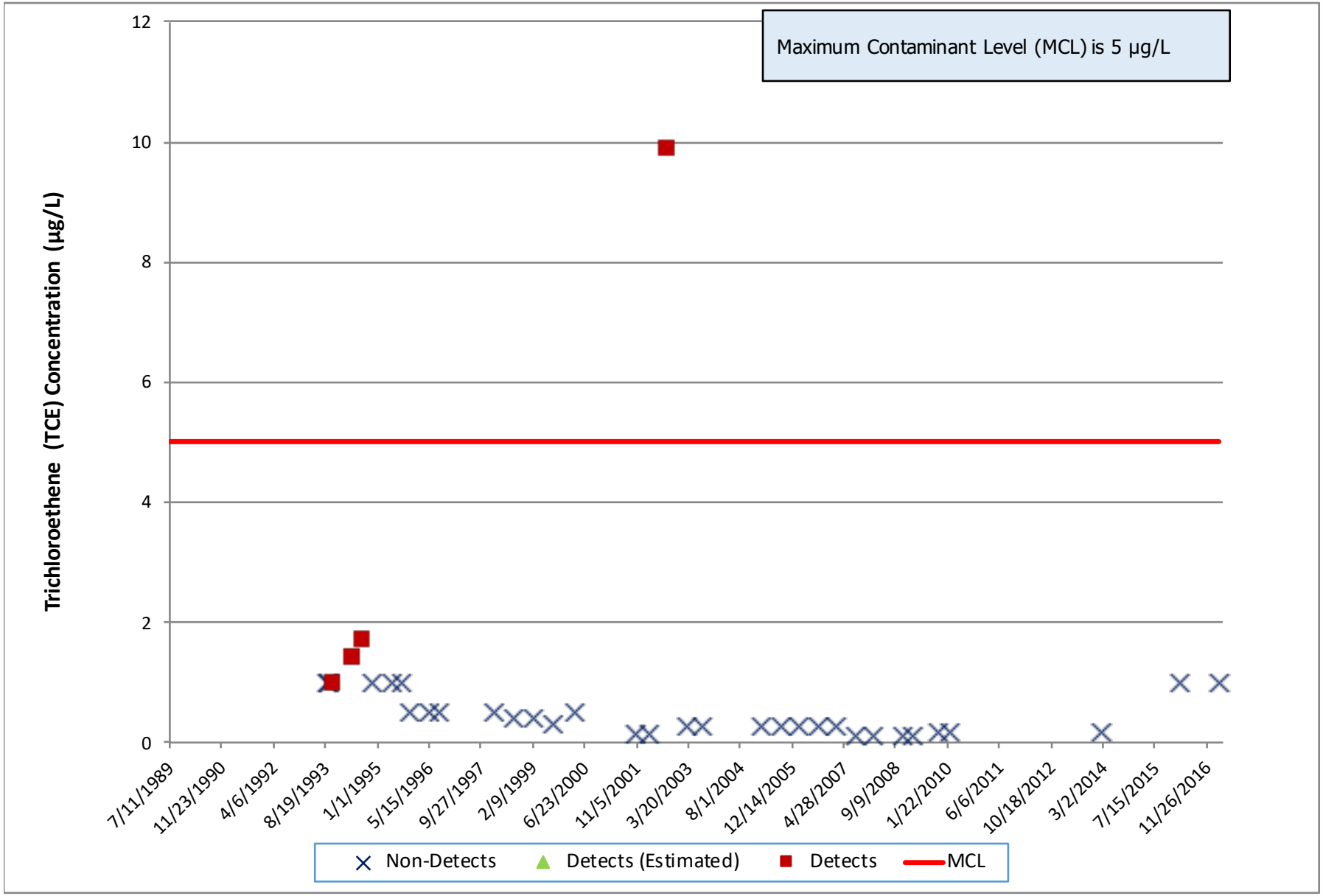
RD-33A,FSDF/ESADA
Trichloroethene



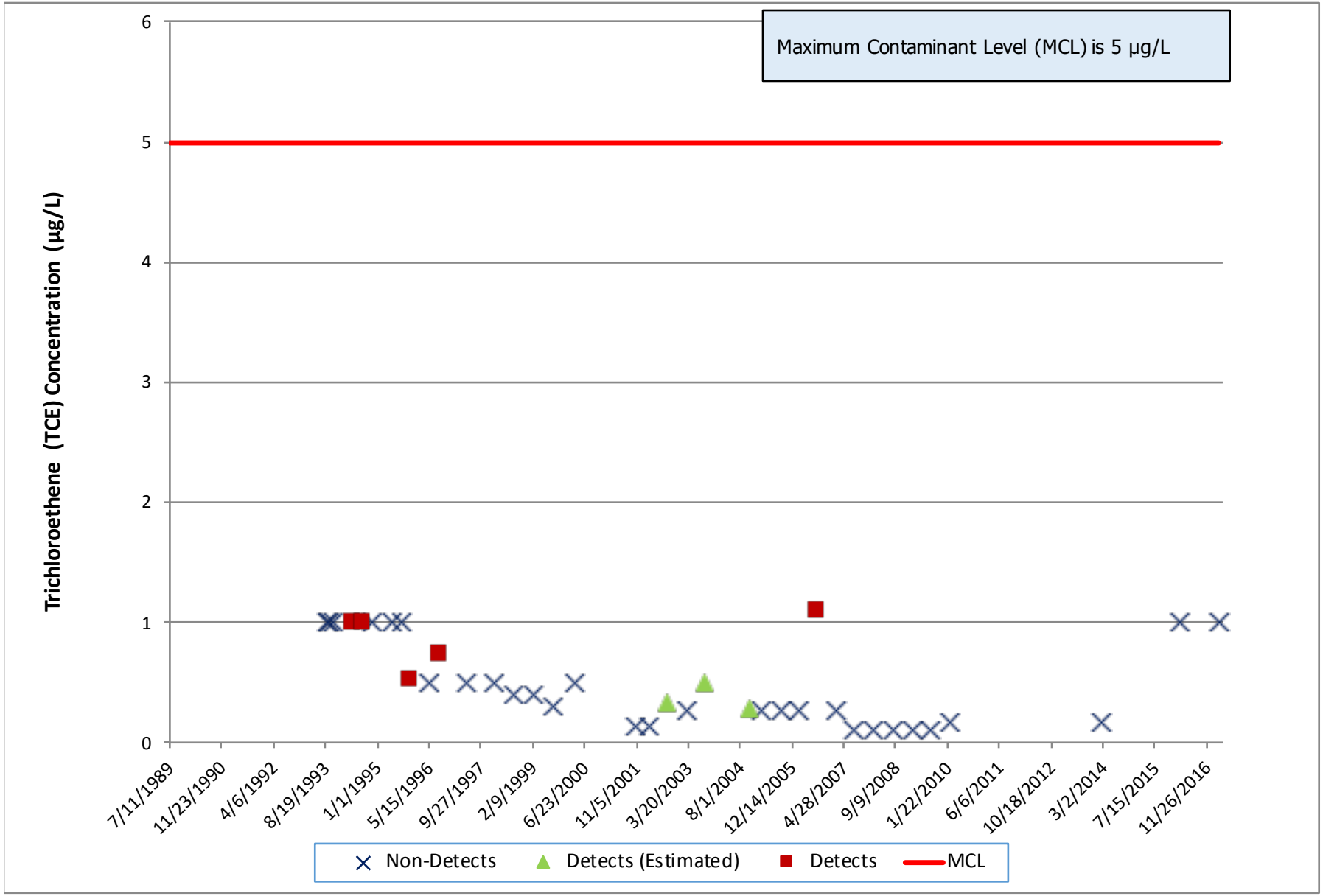
RD-54A FSDF/ESADA
Trichloroethene



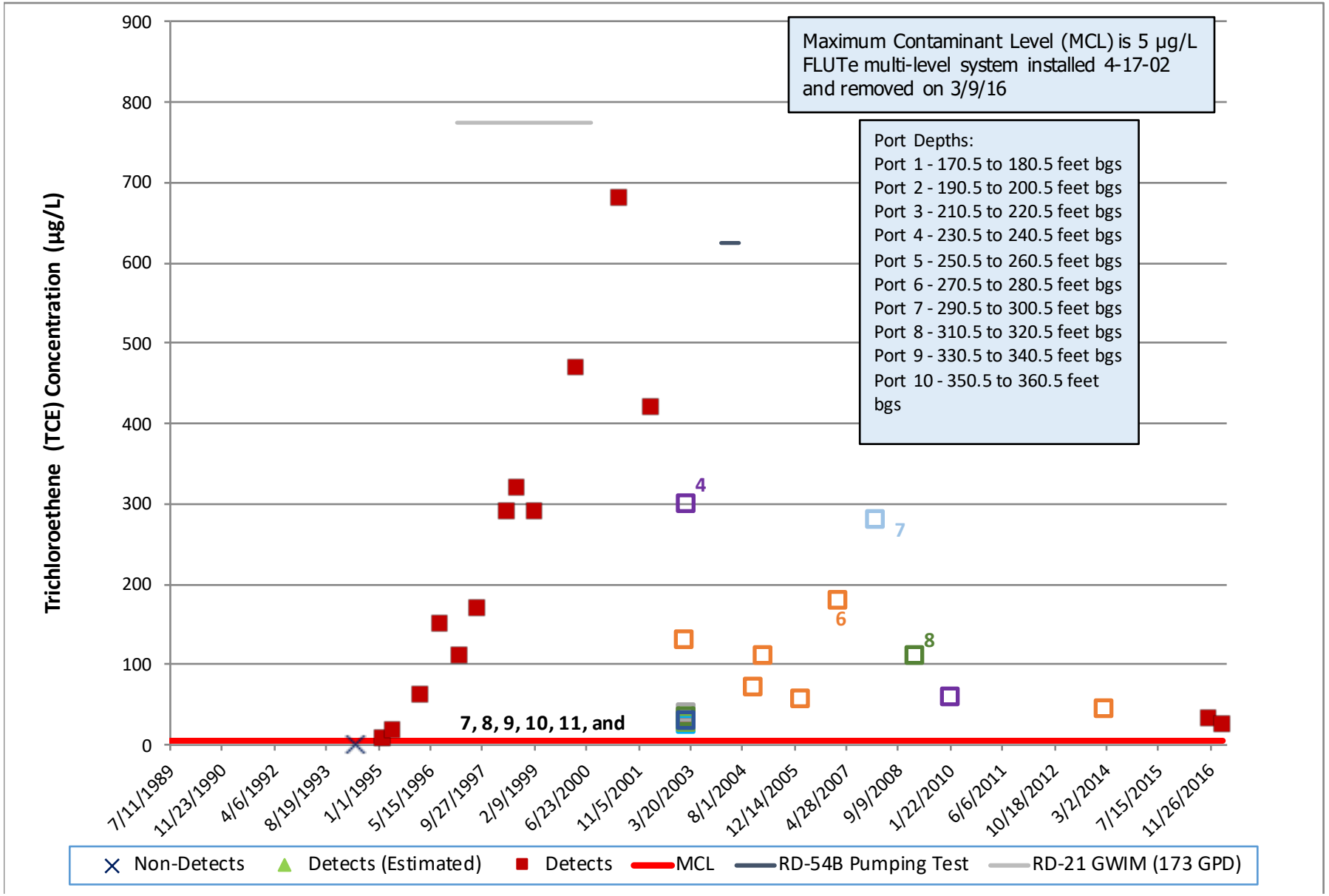
RD-54B, FSDF/ESADA
Trichloroethene



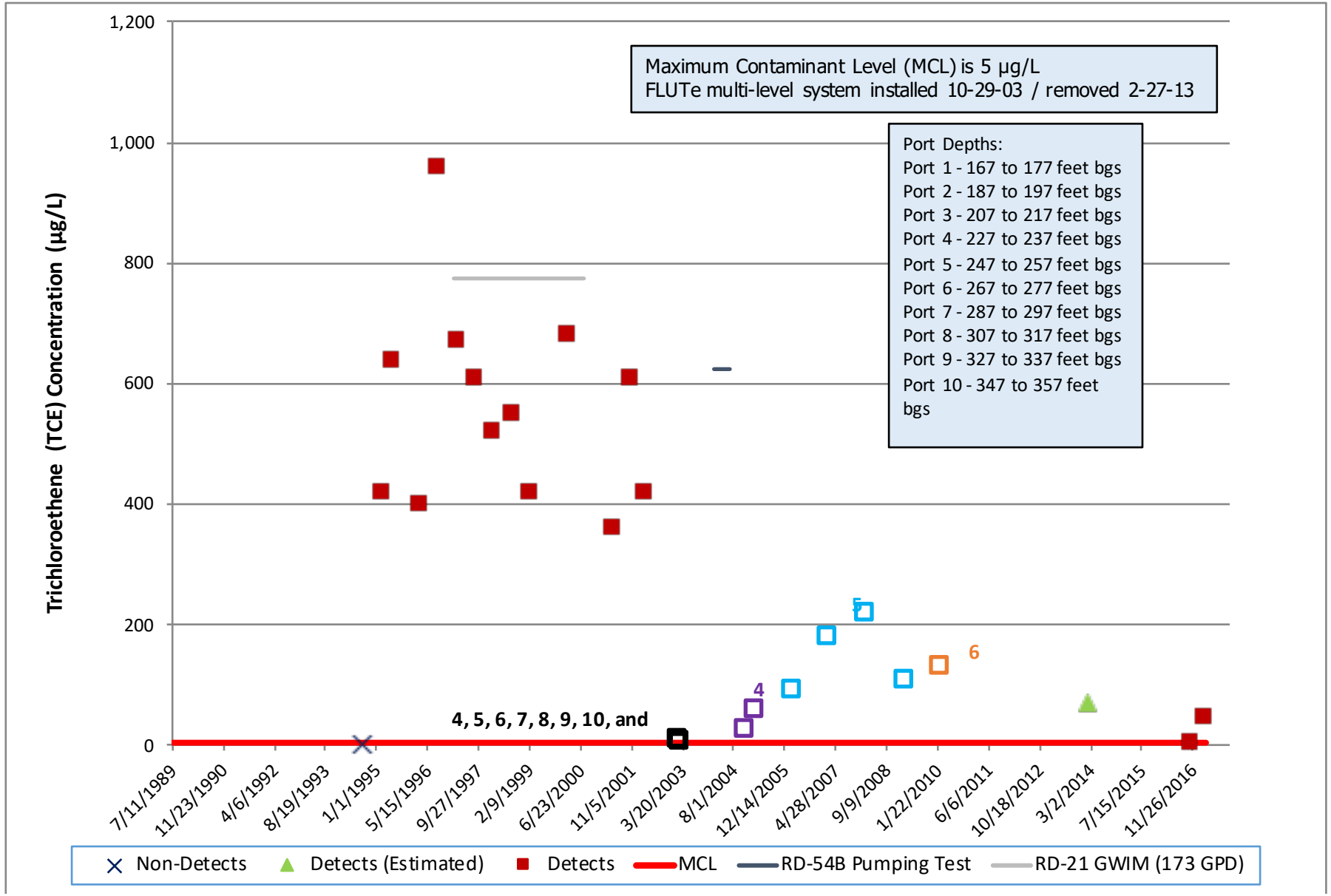
RD-54C, FSDF/ESADA
Trichloroethene



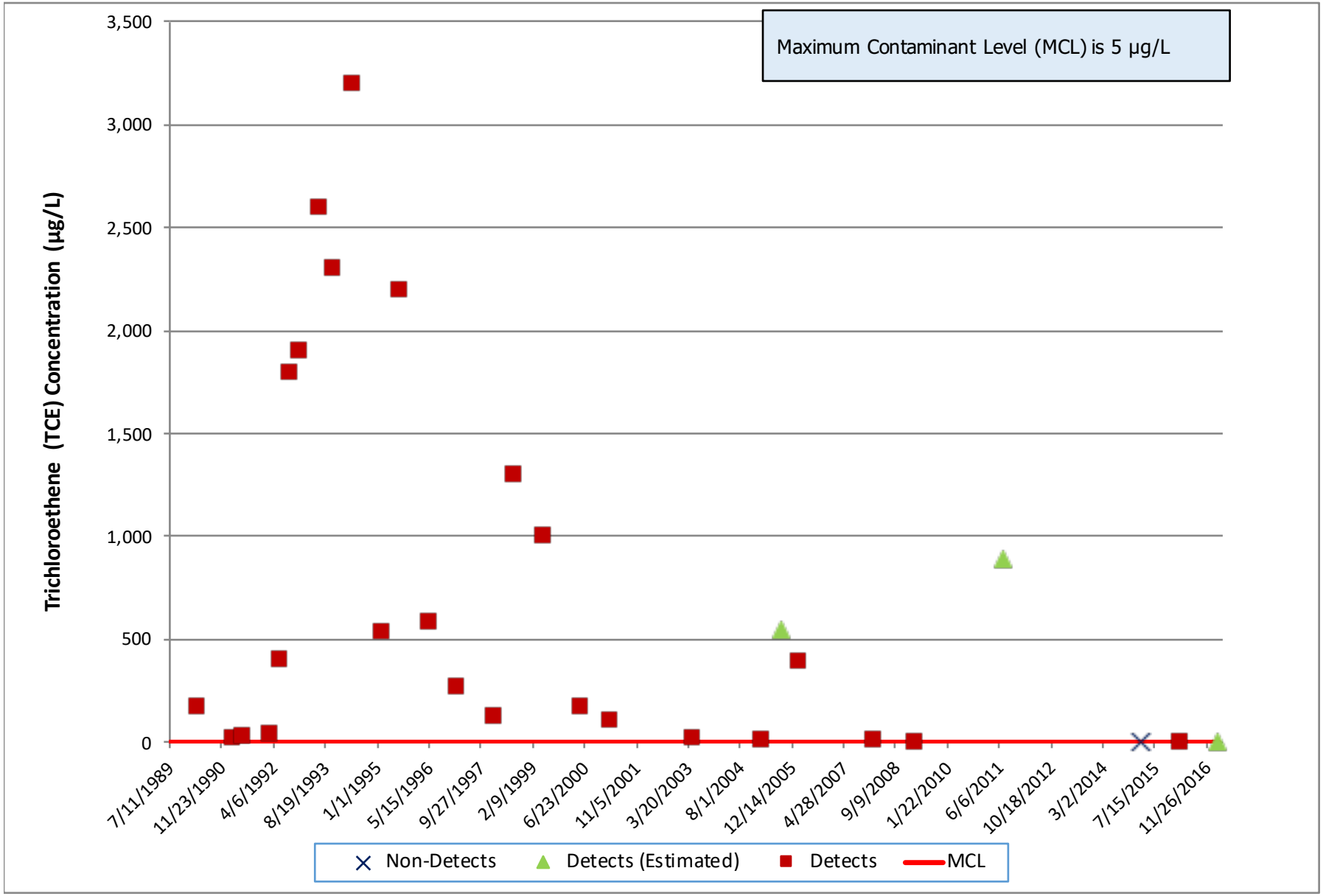
RD-64, FSDF/ESADA
Trichloroethene



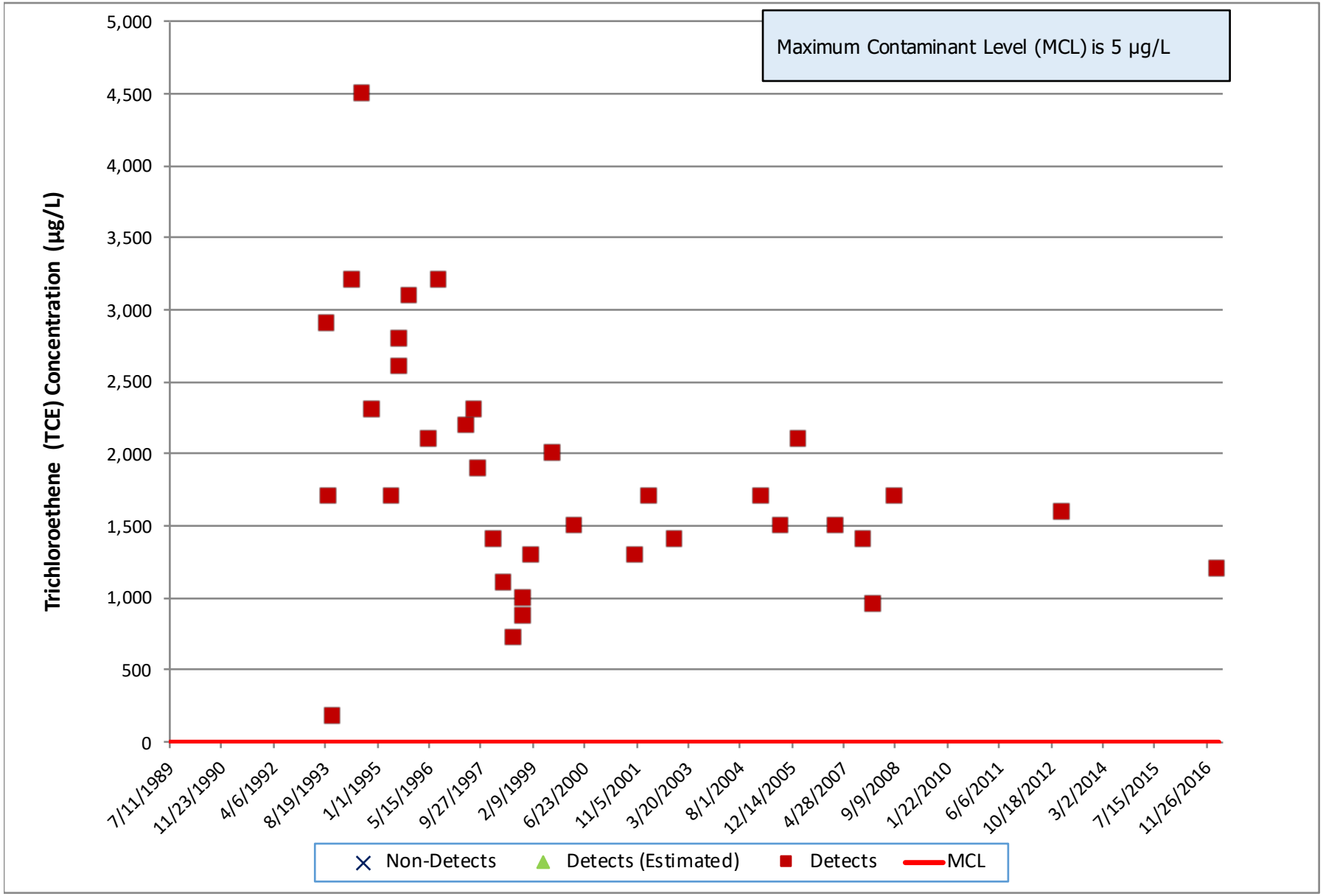
RD-65, FSDF/ESADA
Trichloroethene



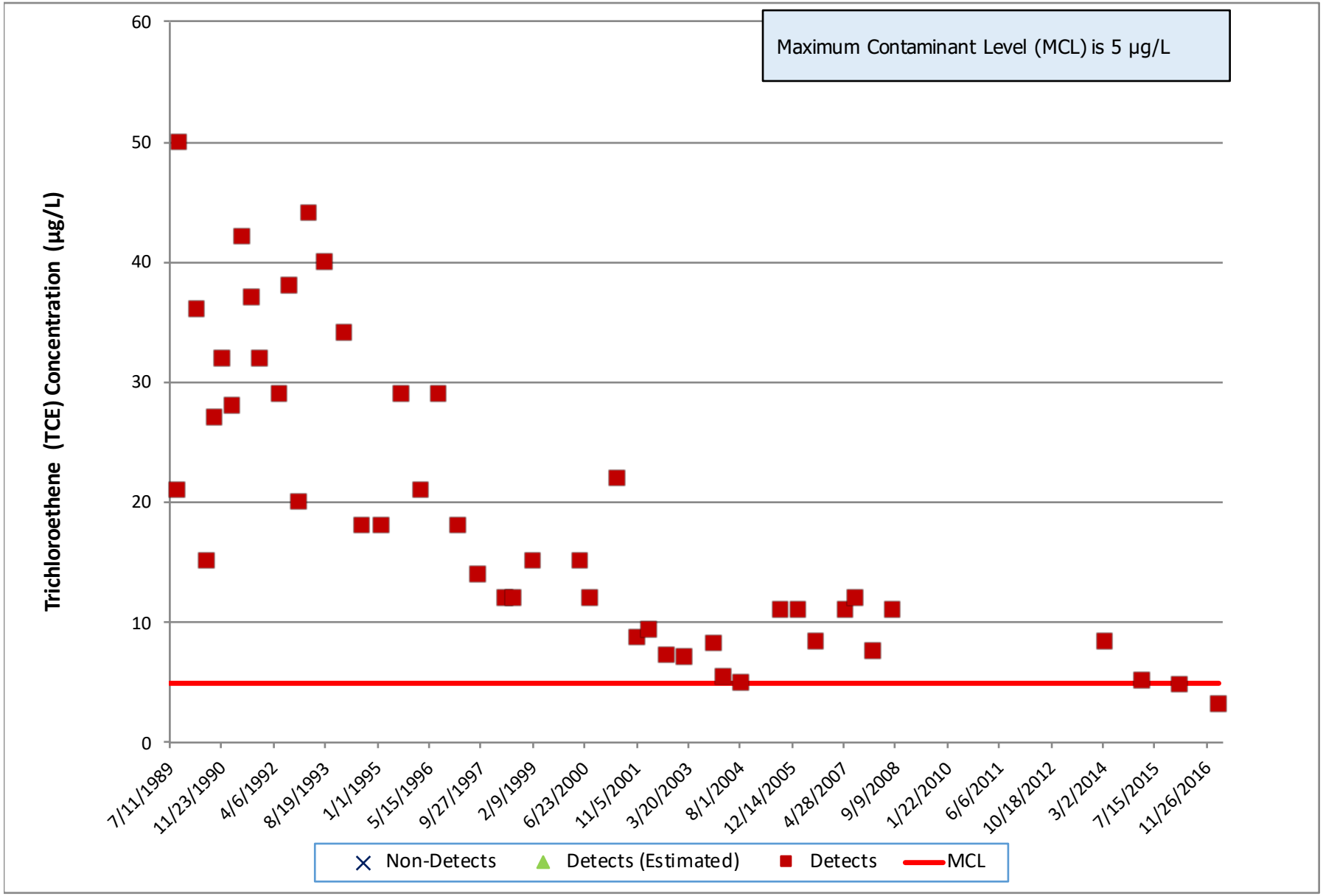
RS-18, FSDF/ESADA
Trichloroethene



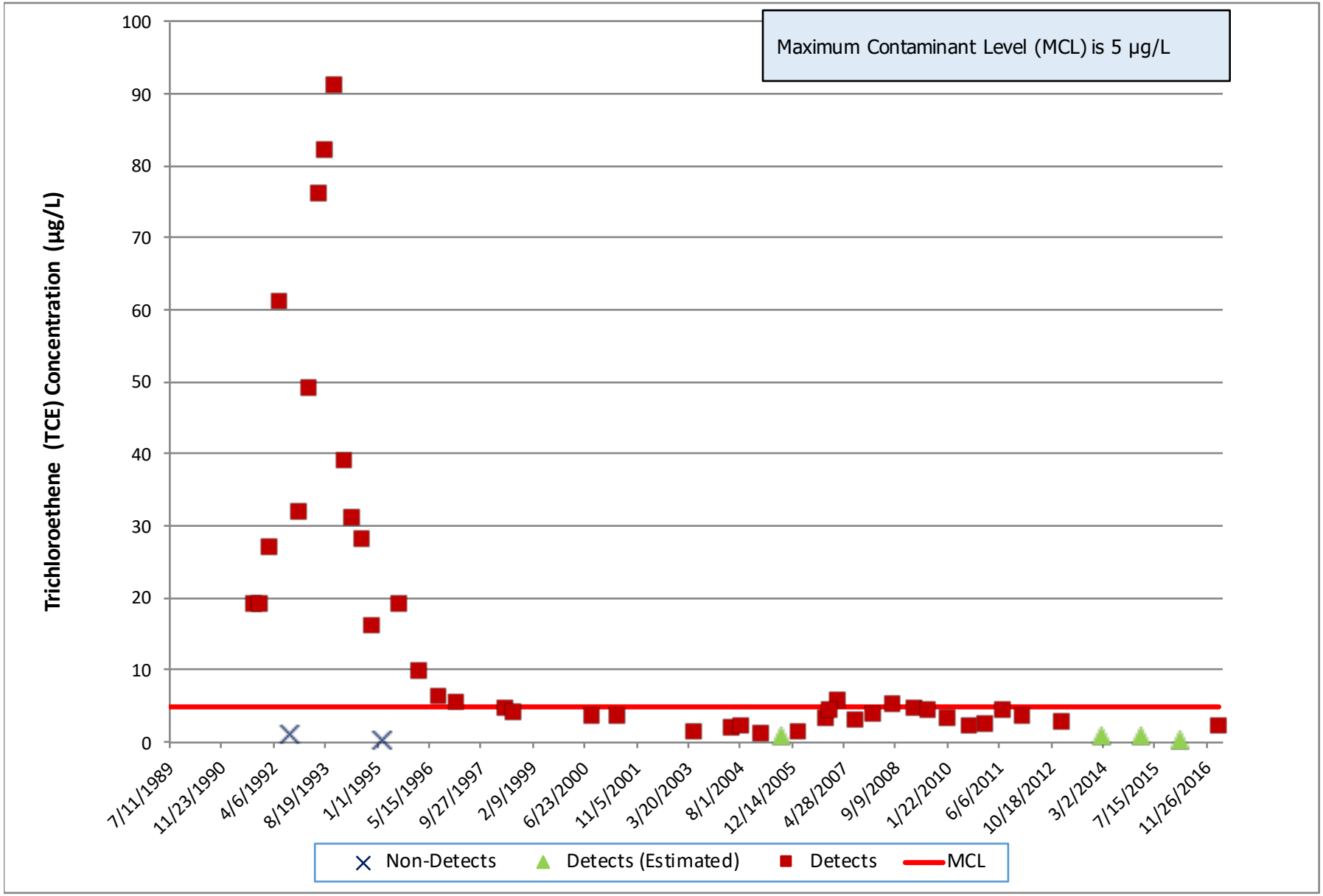
RS-54, FSDF/ESADA
Trichloroethene



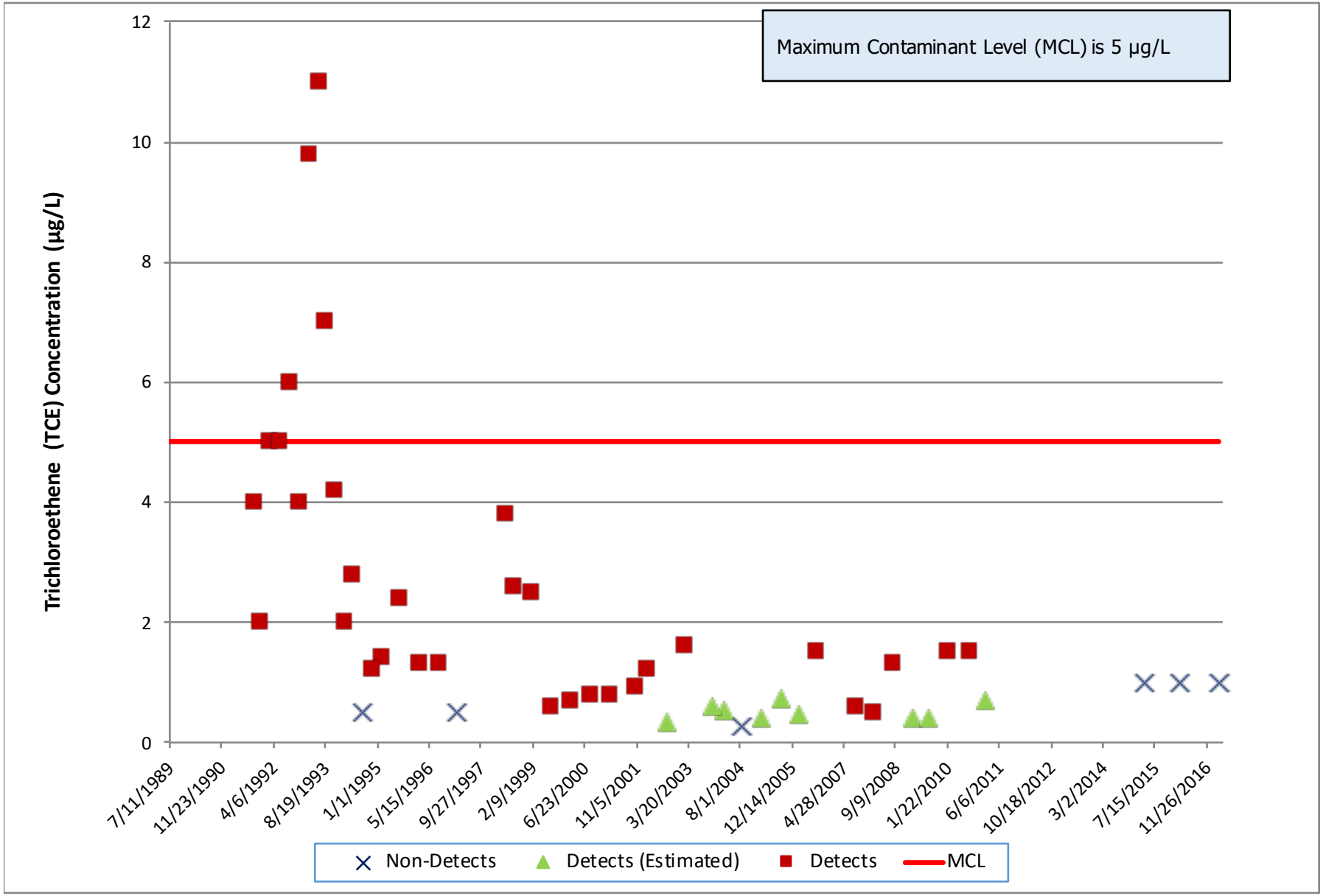
RD-30, RMHF
Trichloroethene



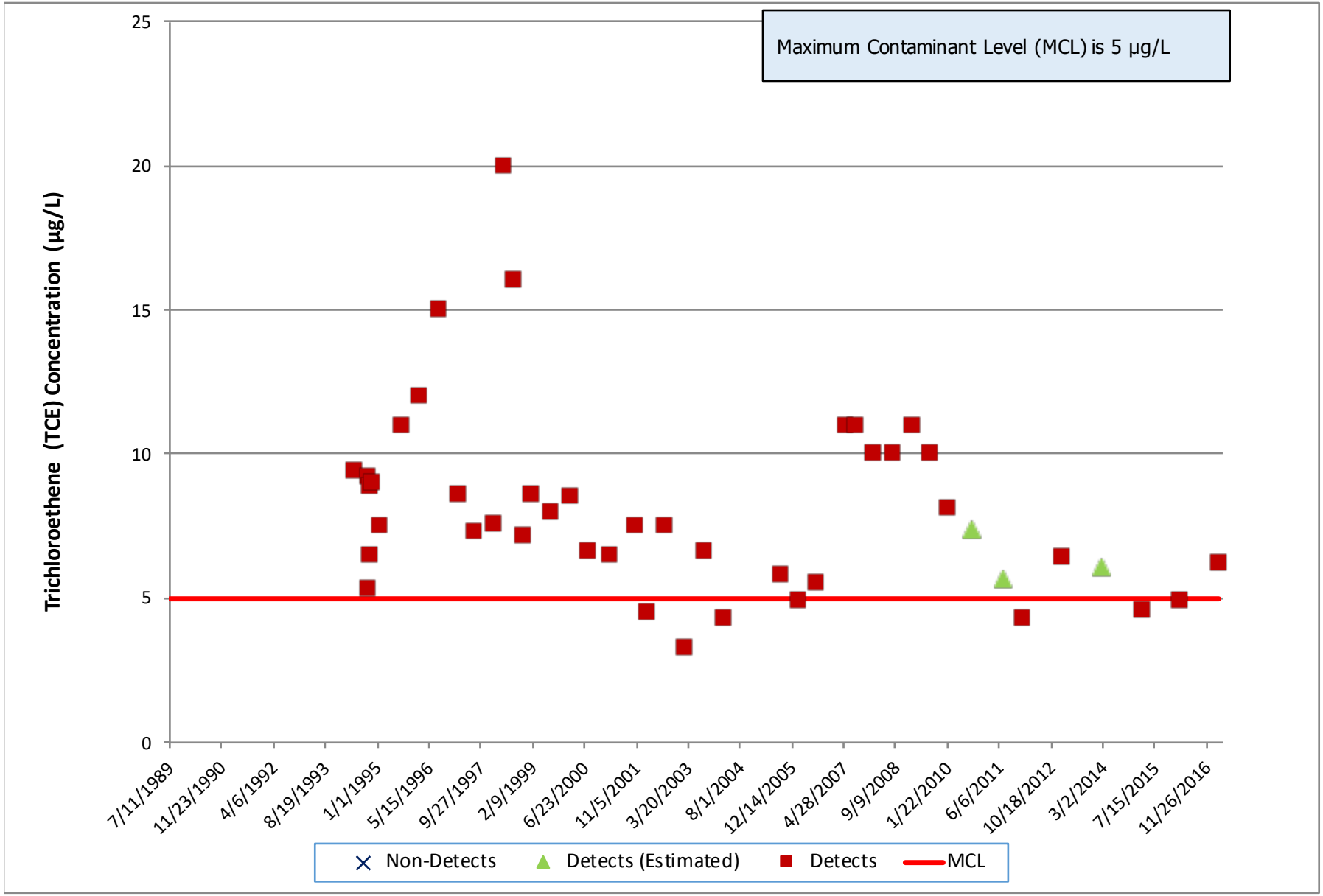
RD-34A, RMHF
Trichloroethene



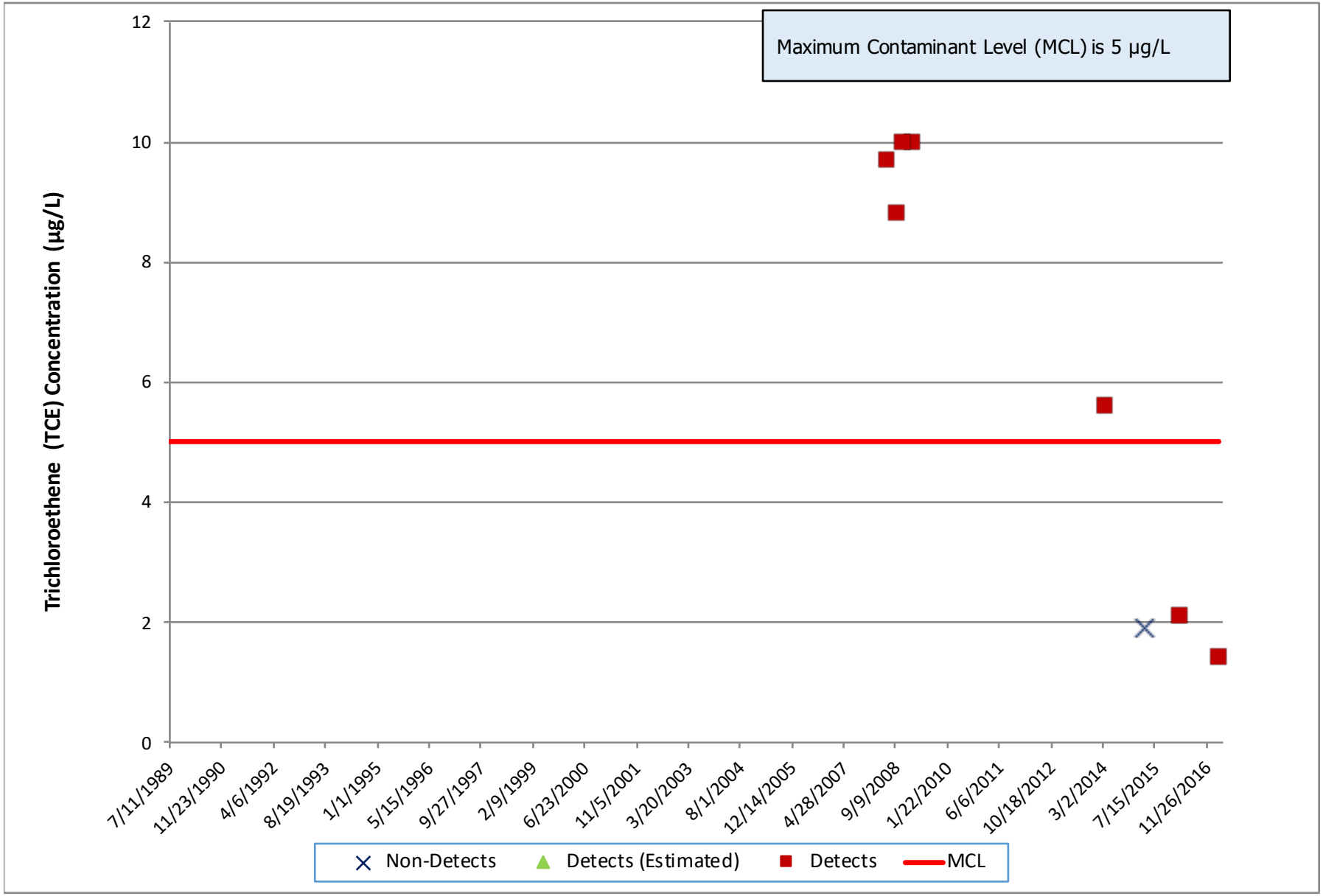
RD-34B, RMHF
Trichloroethene



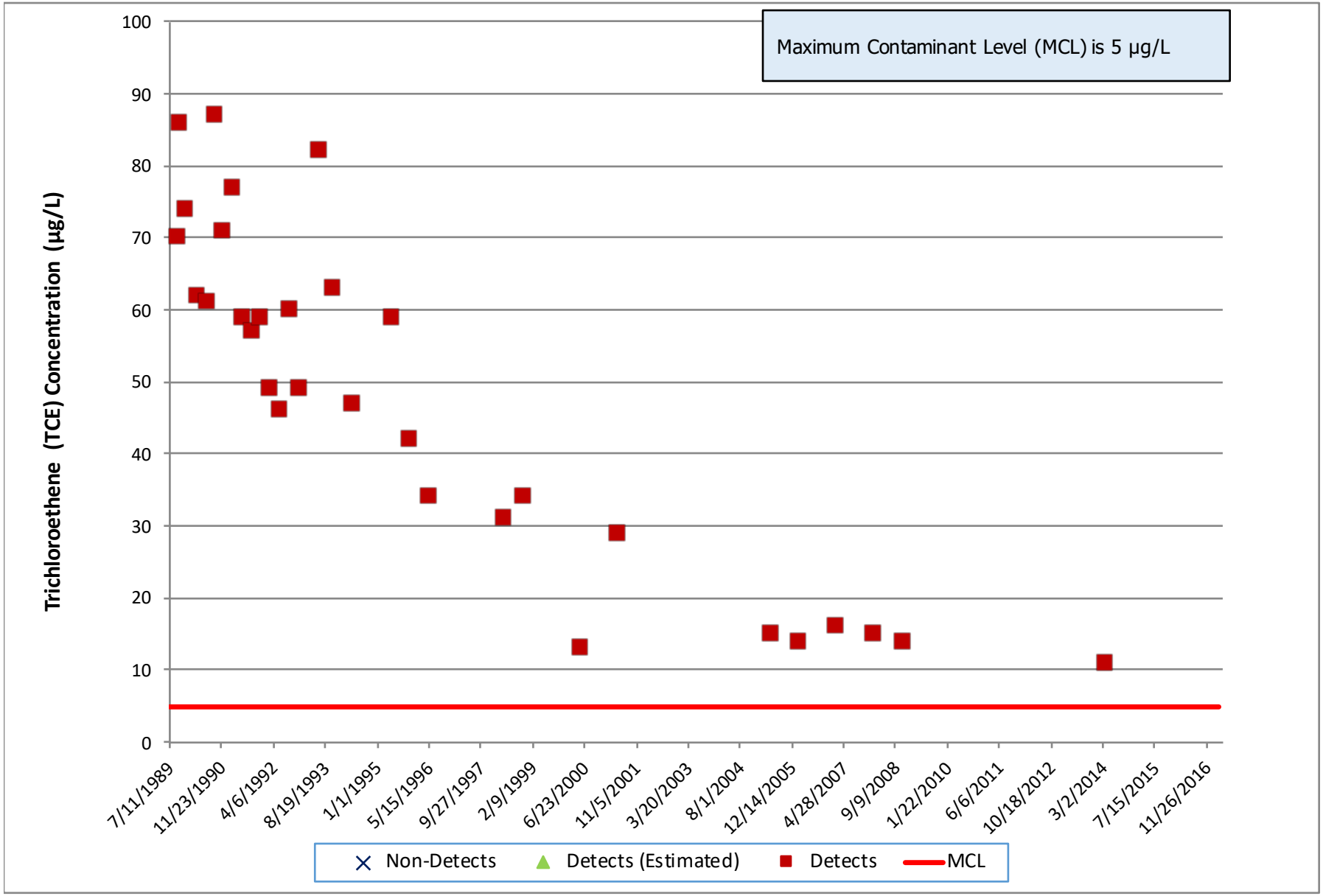
RD-63, RMHF
Trichloroethene



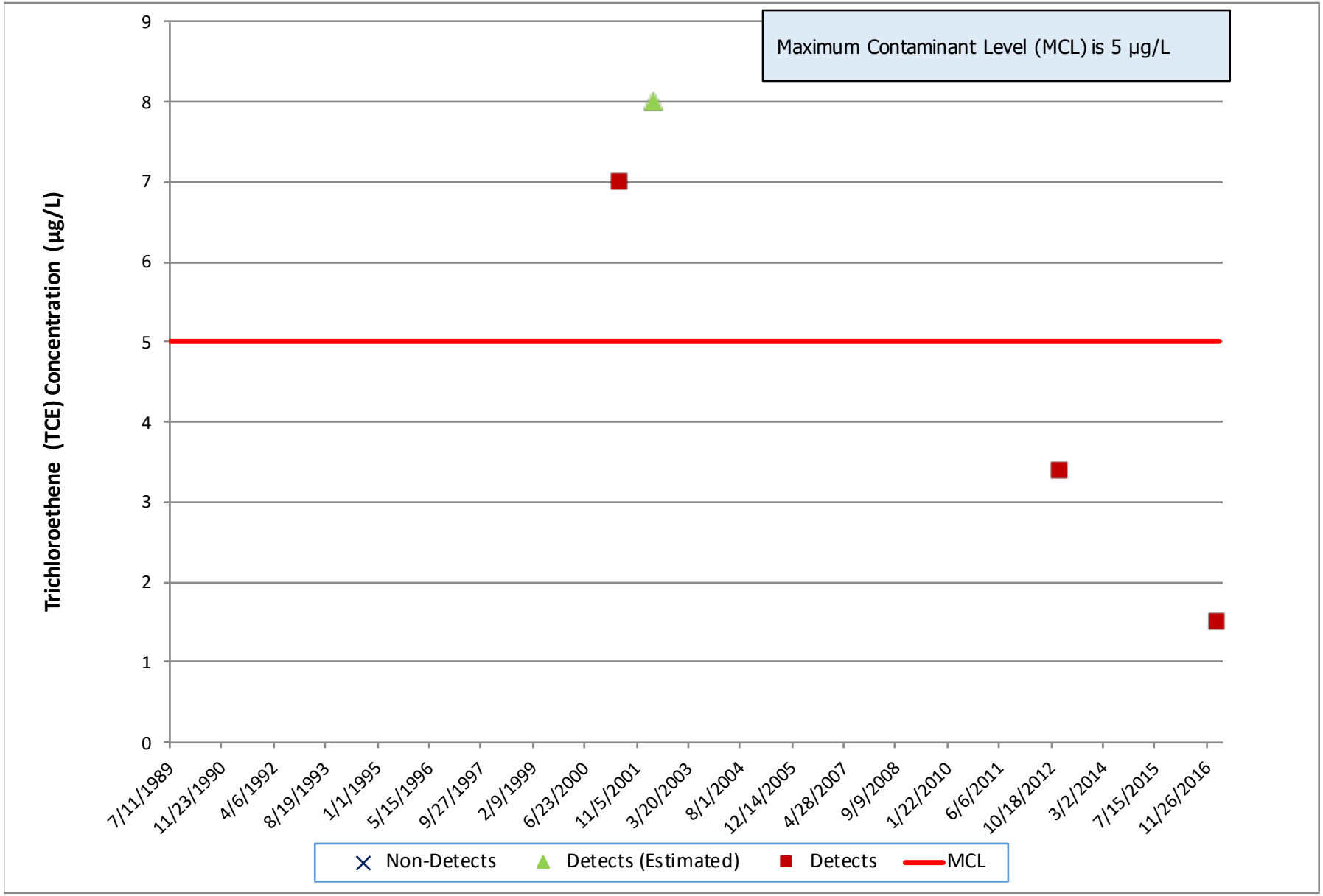
RD-98, RMHF
Trichloroethene



RS-28, RMHF
Trichloroethene



PZ-005, Bldg 65 Metals Clarifier
Trichloroethene



PZ-104, Bldg 65 Metals Clarifier
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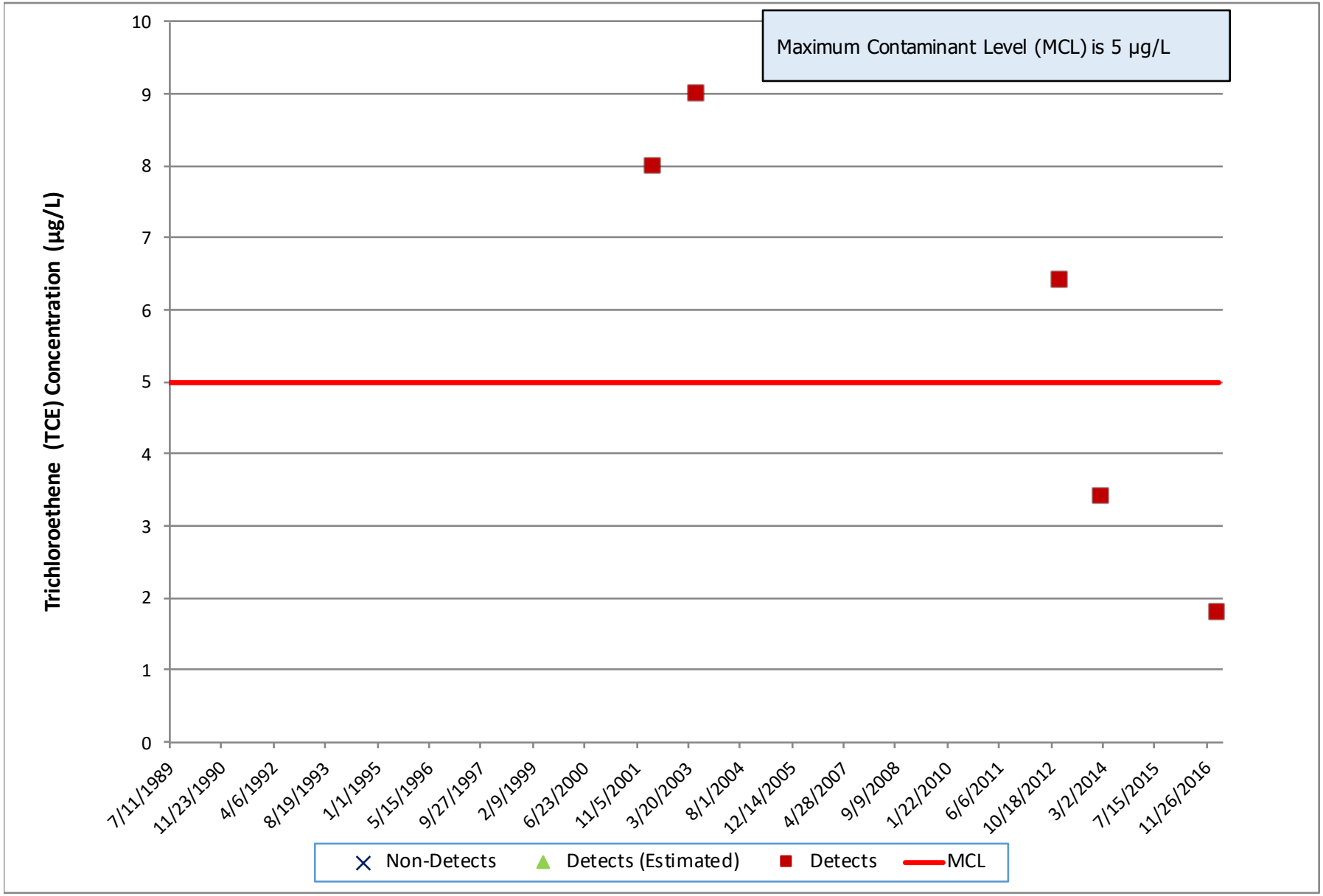
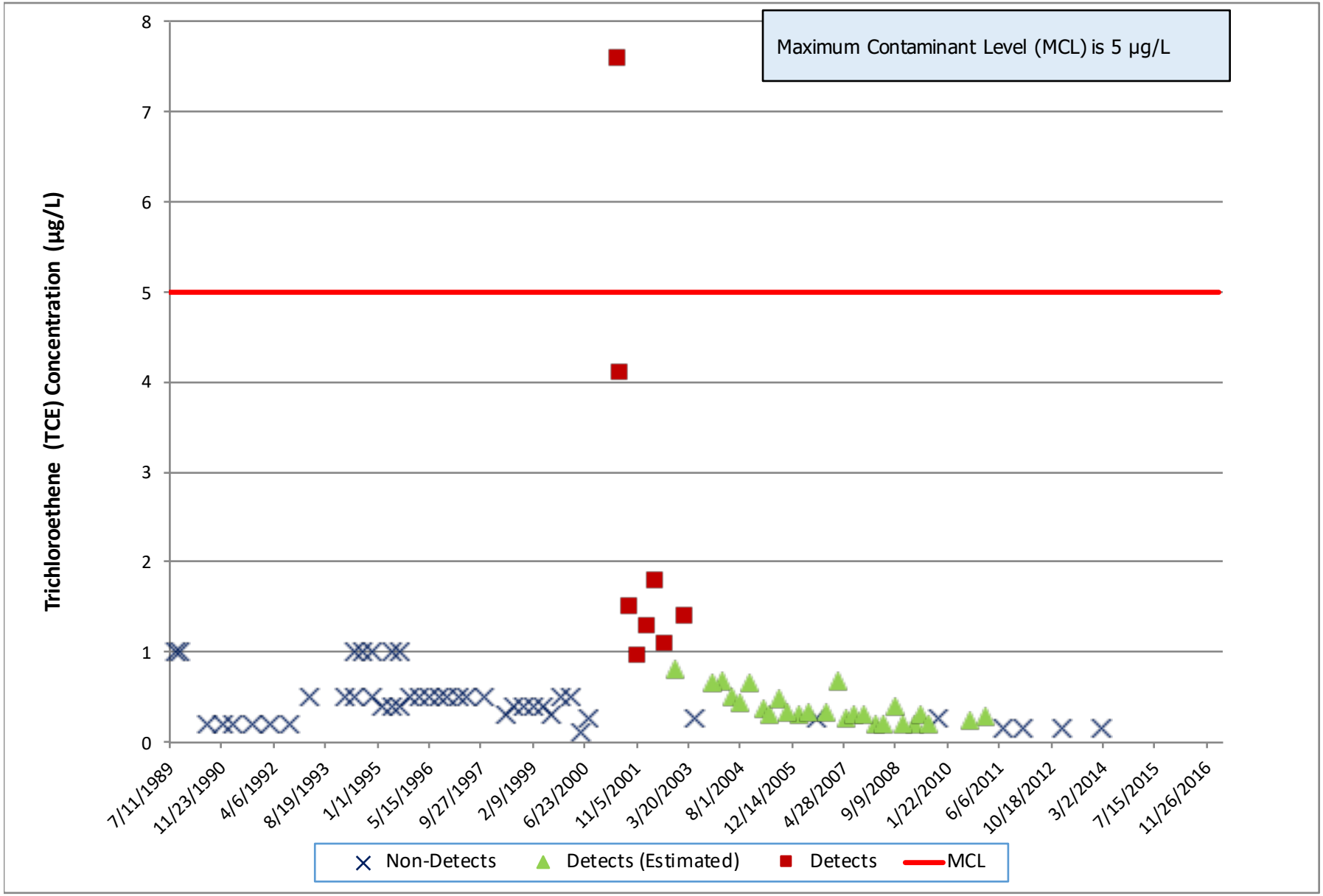
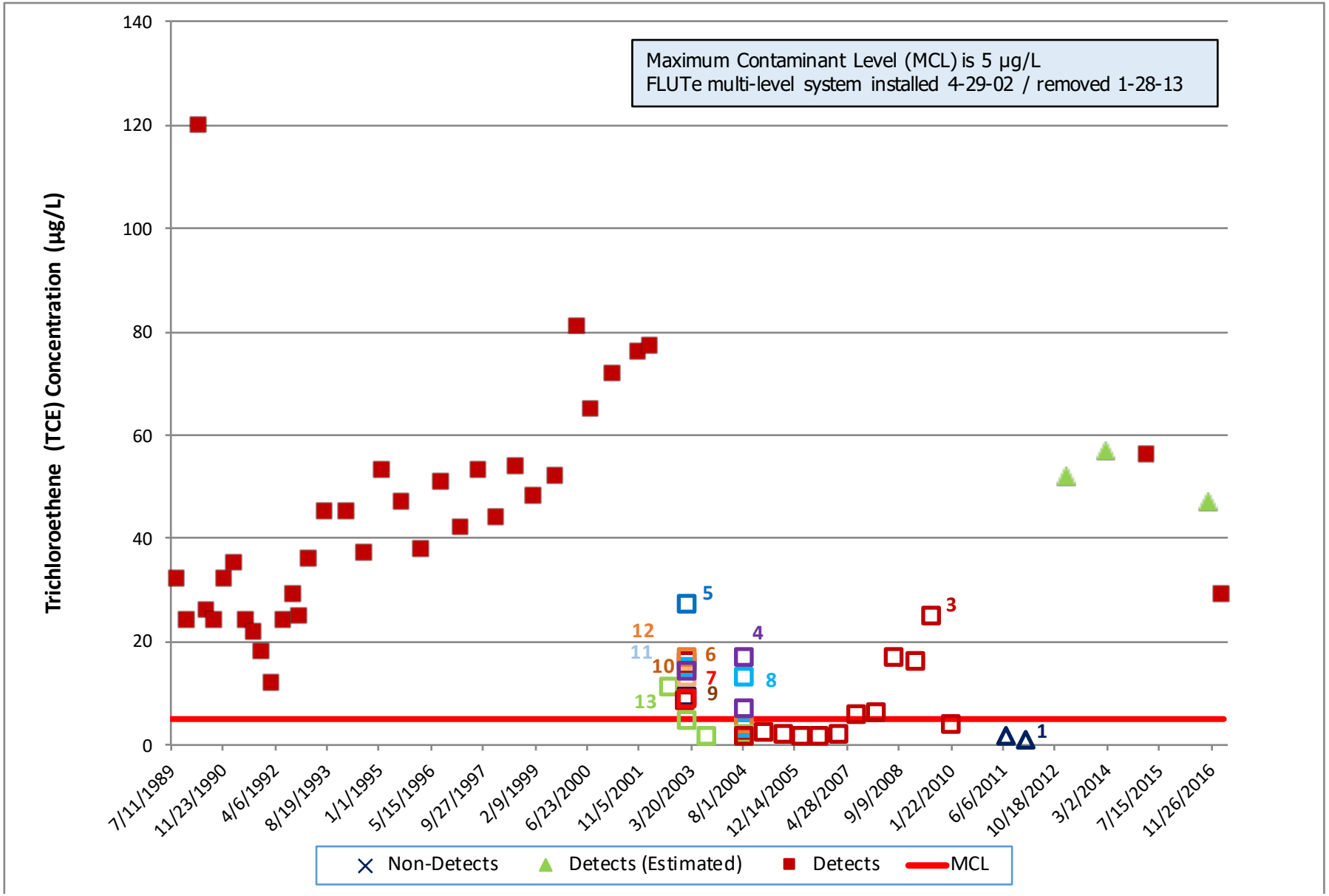


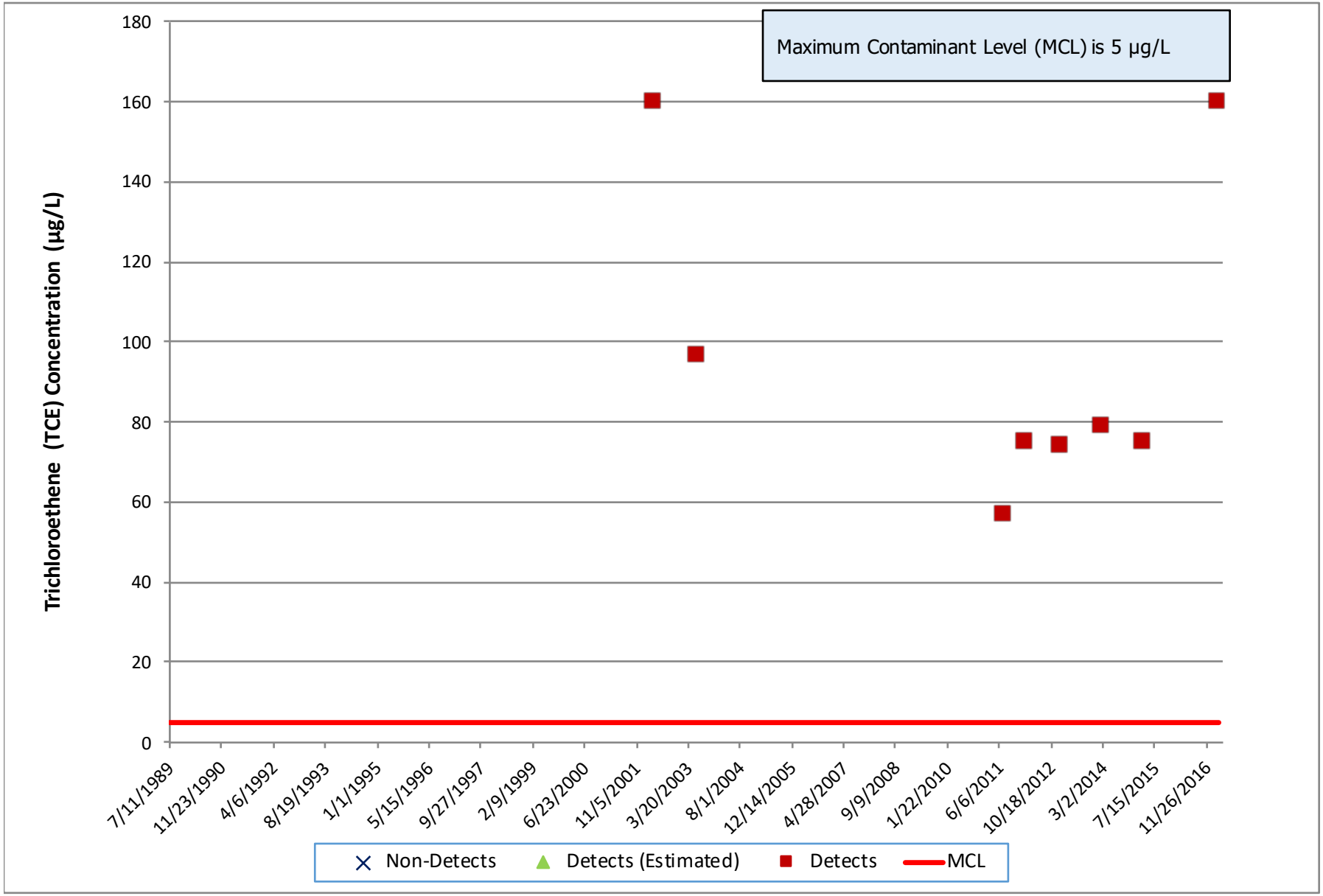
RD-13, Pond Dredge Area
Trichloroethene



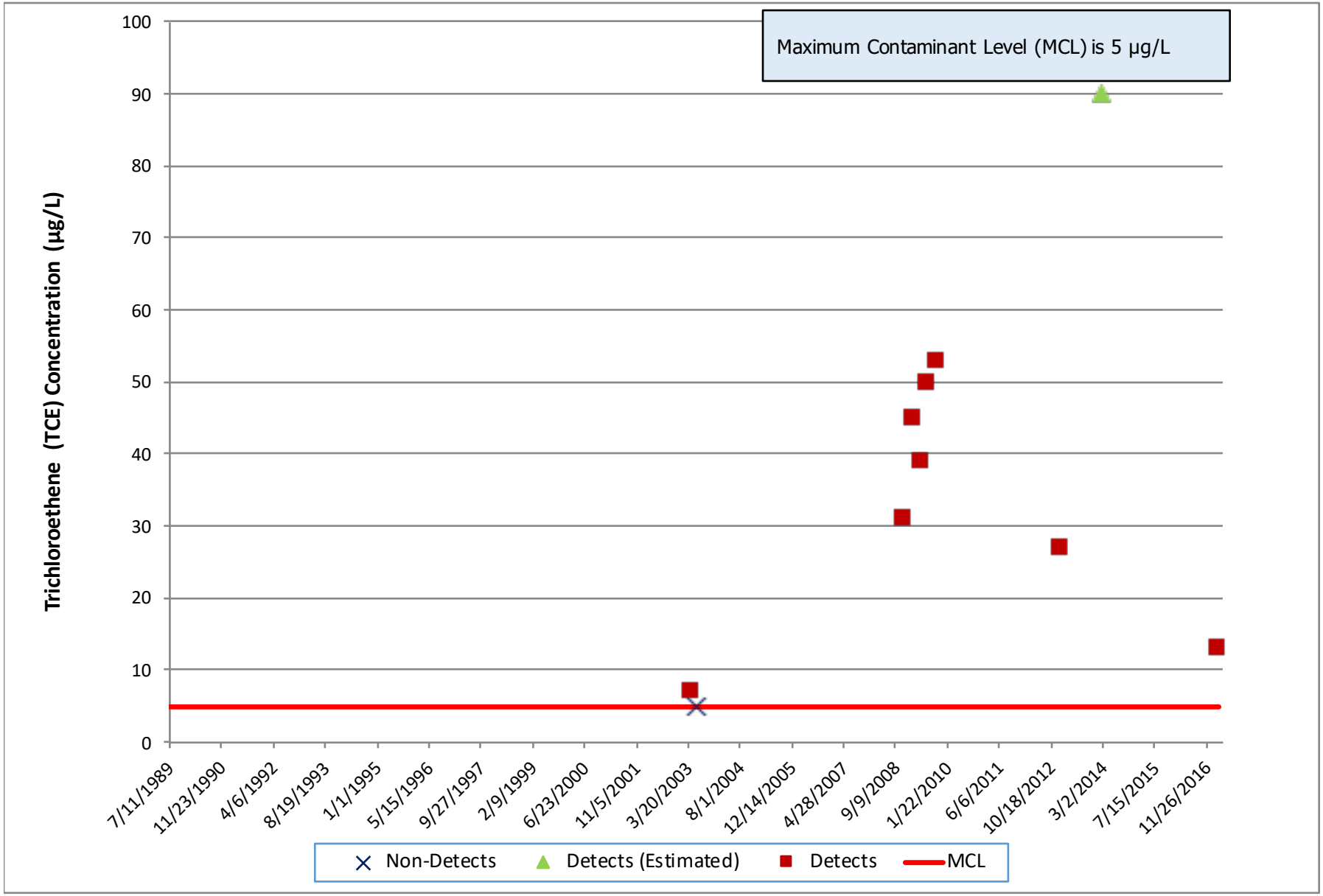
RD-07, Bldg 56 Landfill
Trichloroethene



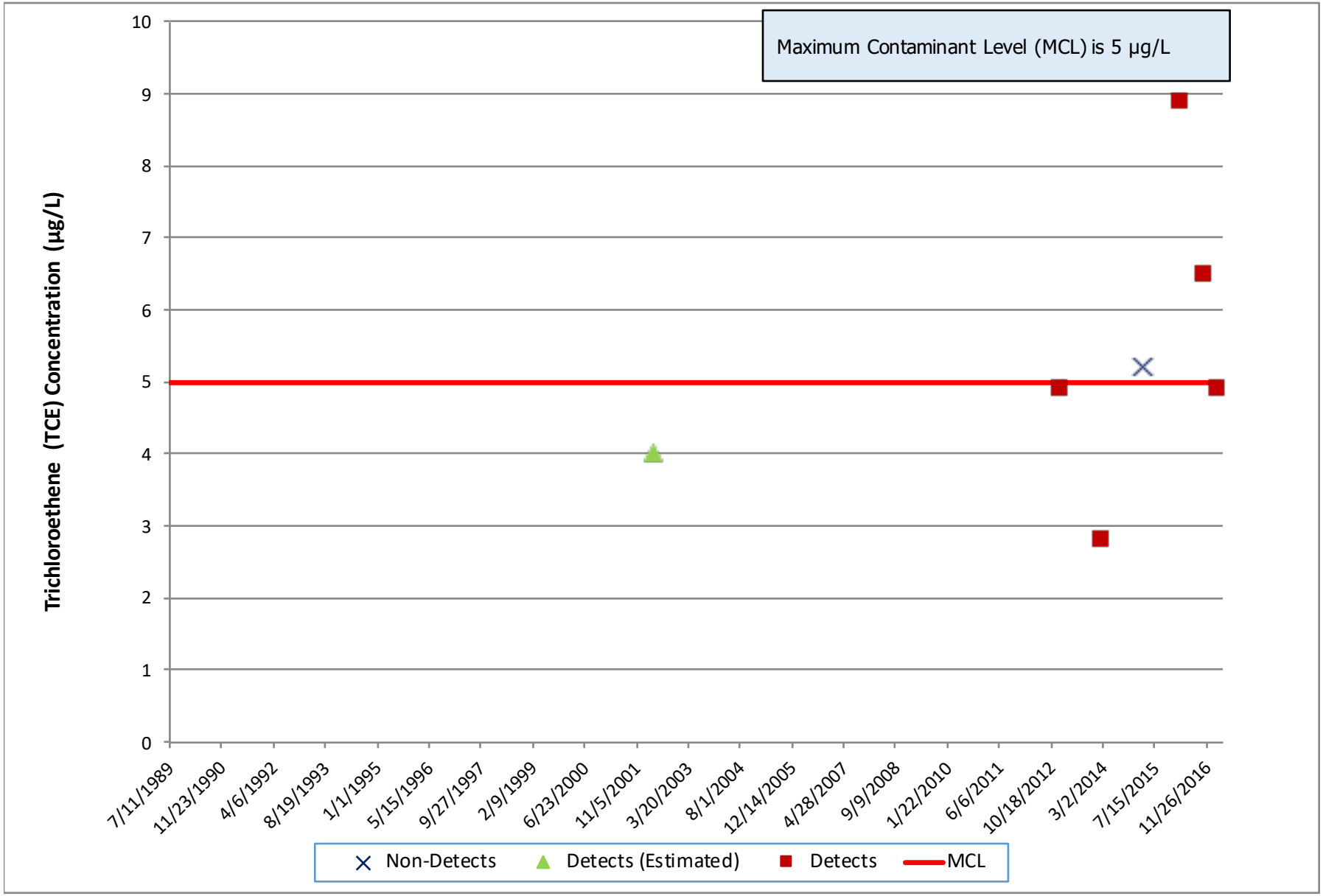
PZ-108, HMSA/PDU
Trichloroethene



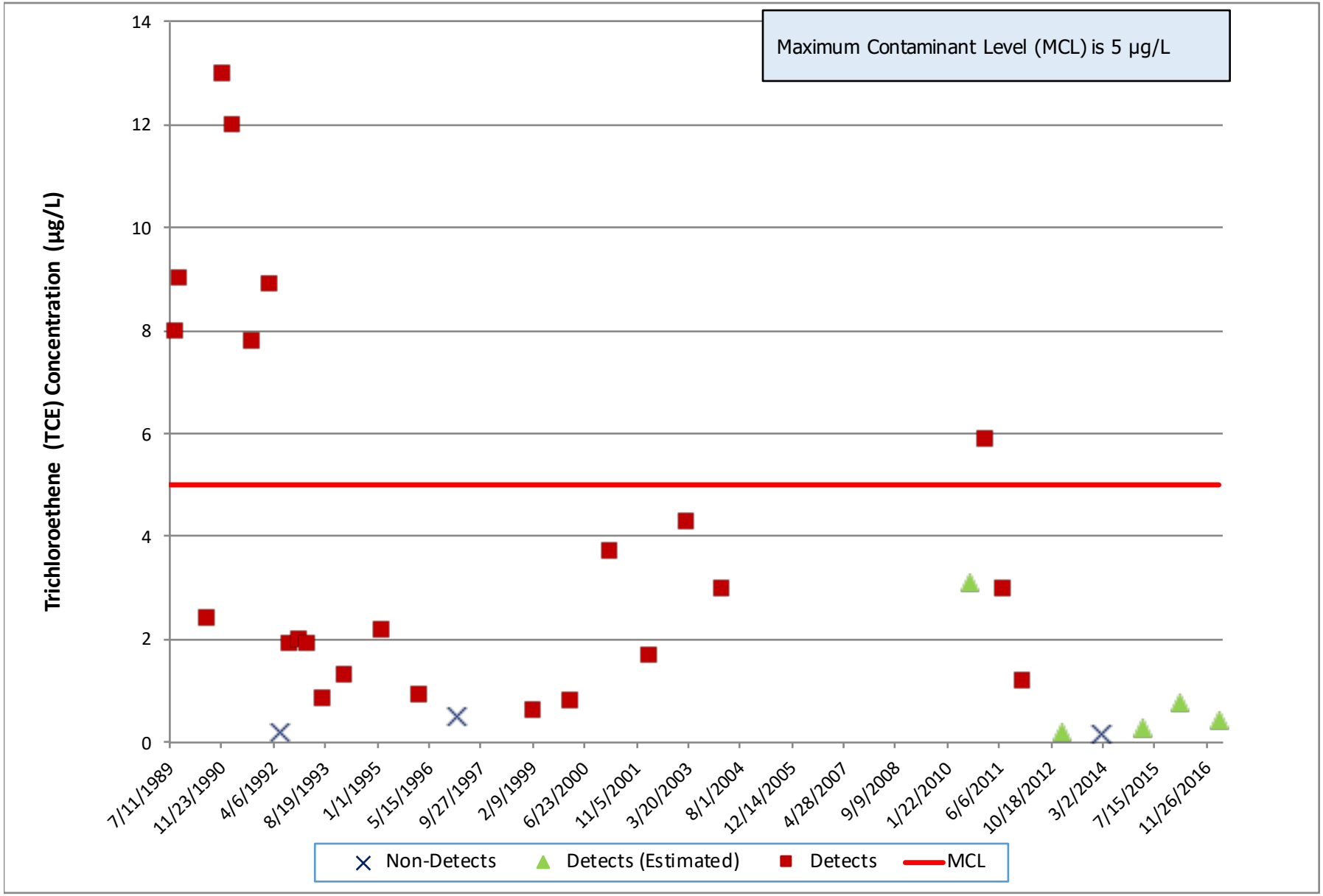
PZ-120, HMSA/PDU
Trichloroethene



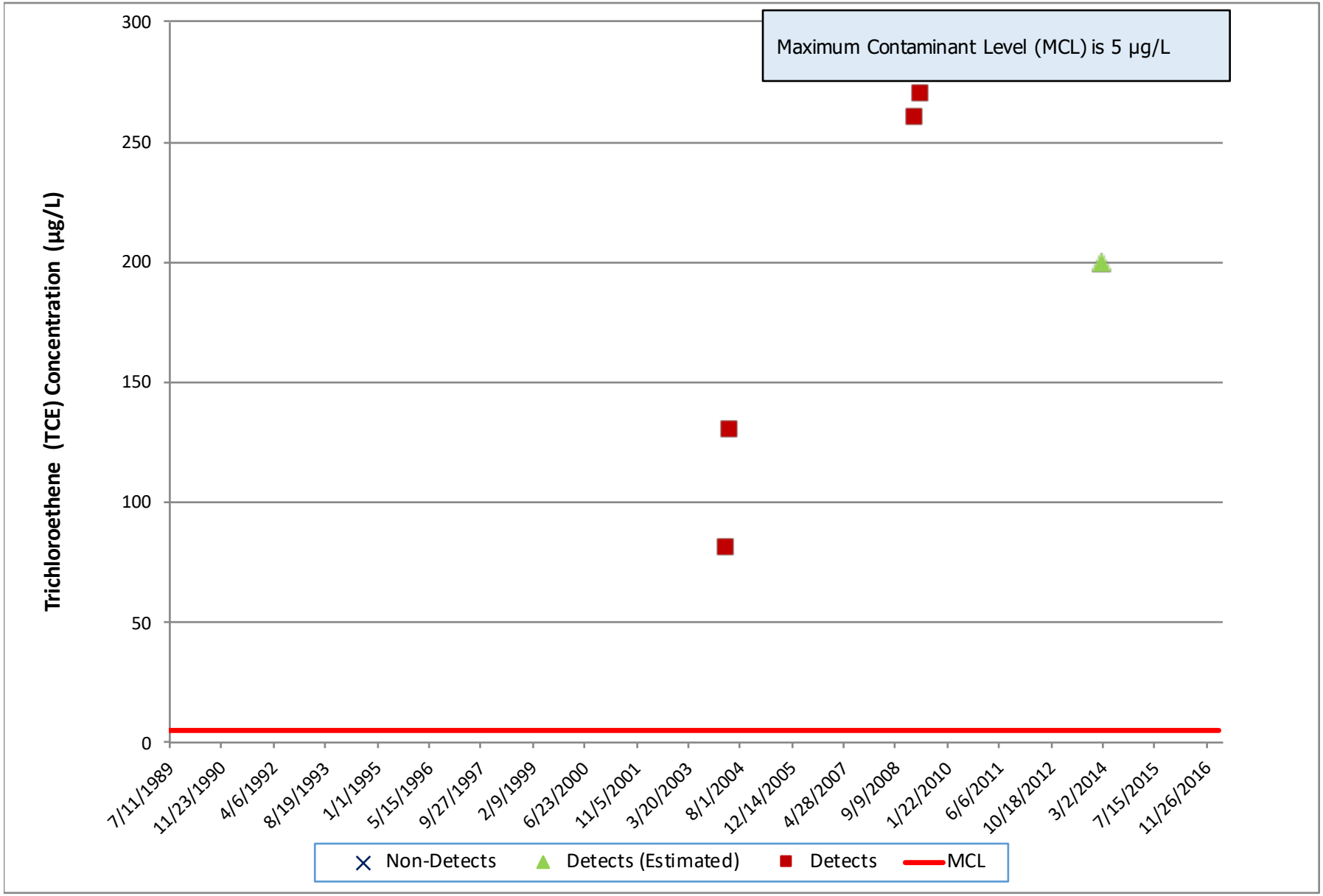
PZ-109, B4057/59/629
Trichloroethene



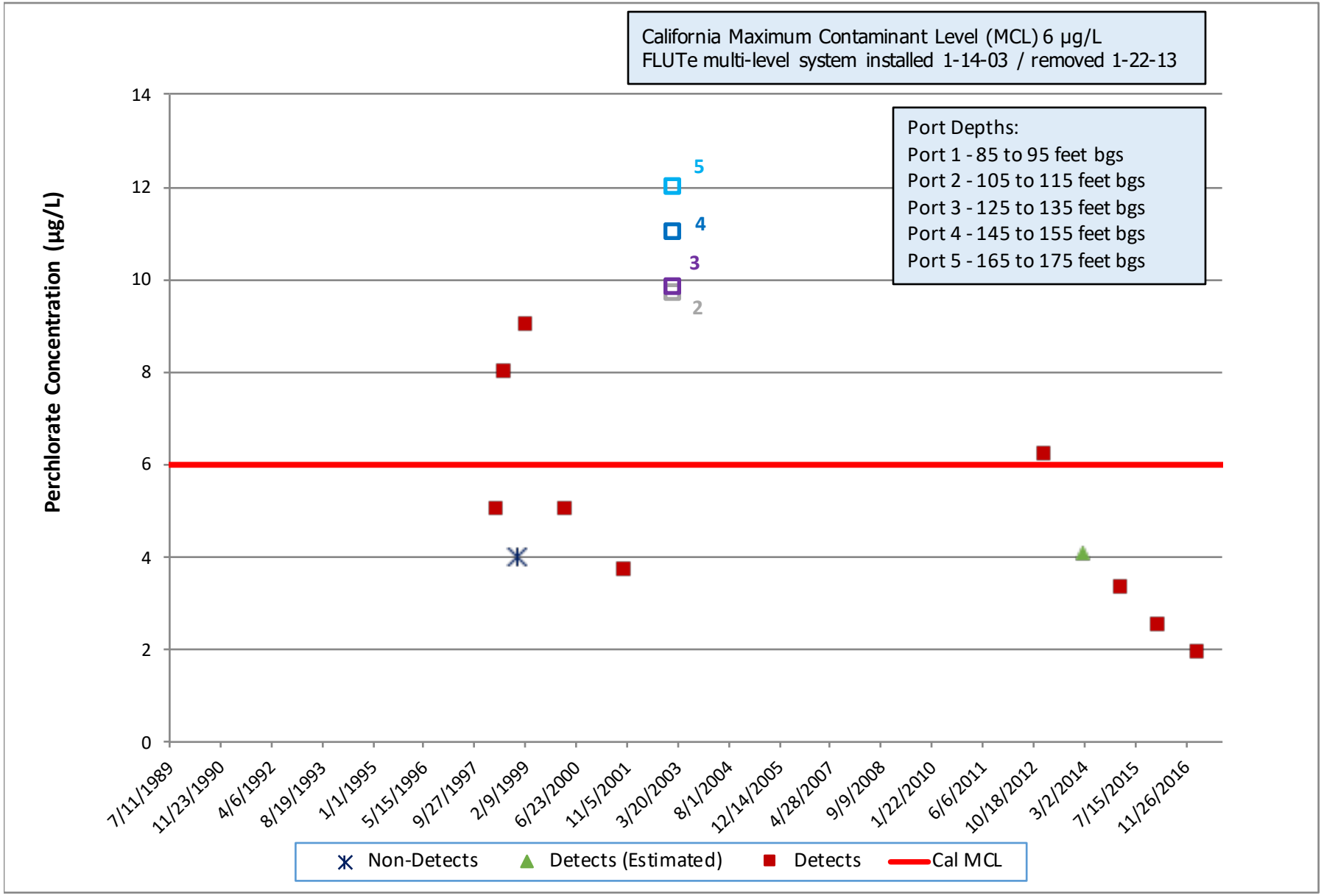
RD-14, OCY
Trichloroethene



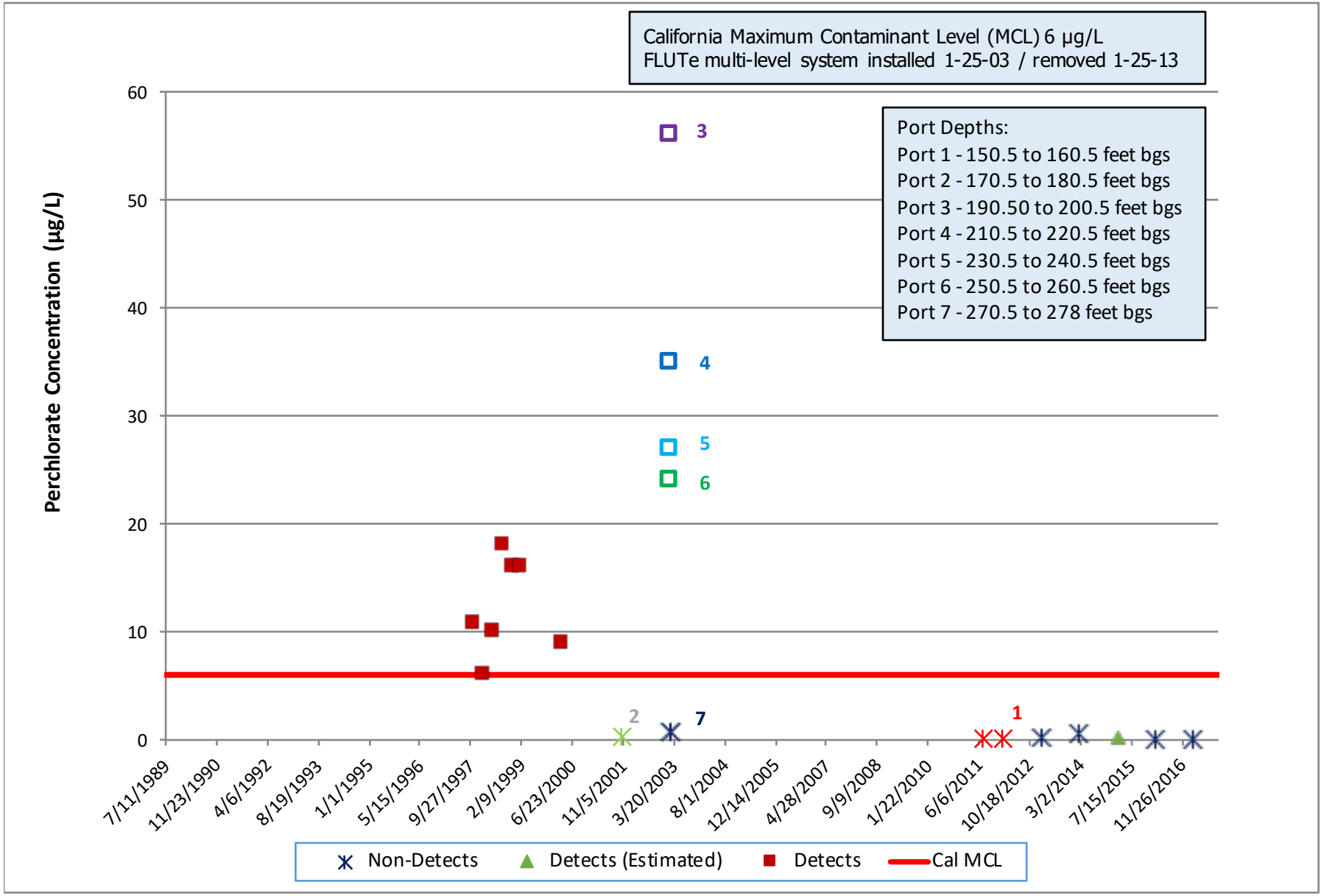
RD-91, Bldg 4100/4009
Trichloroethene



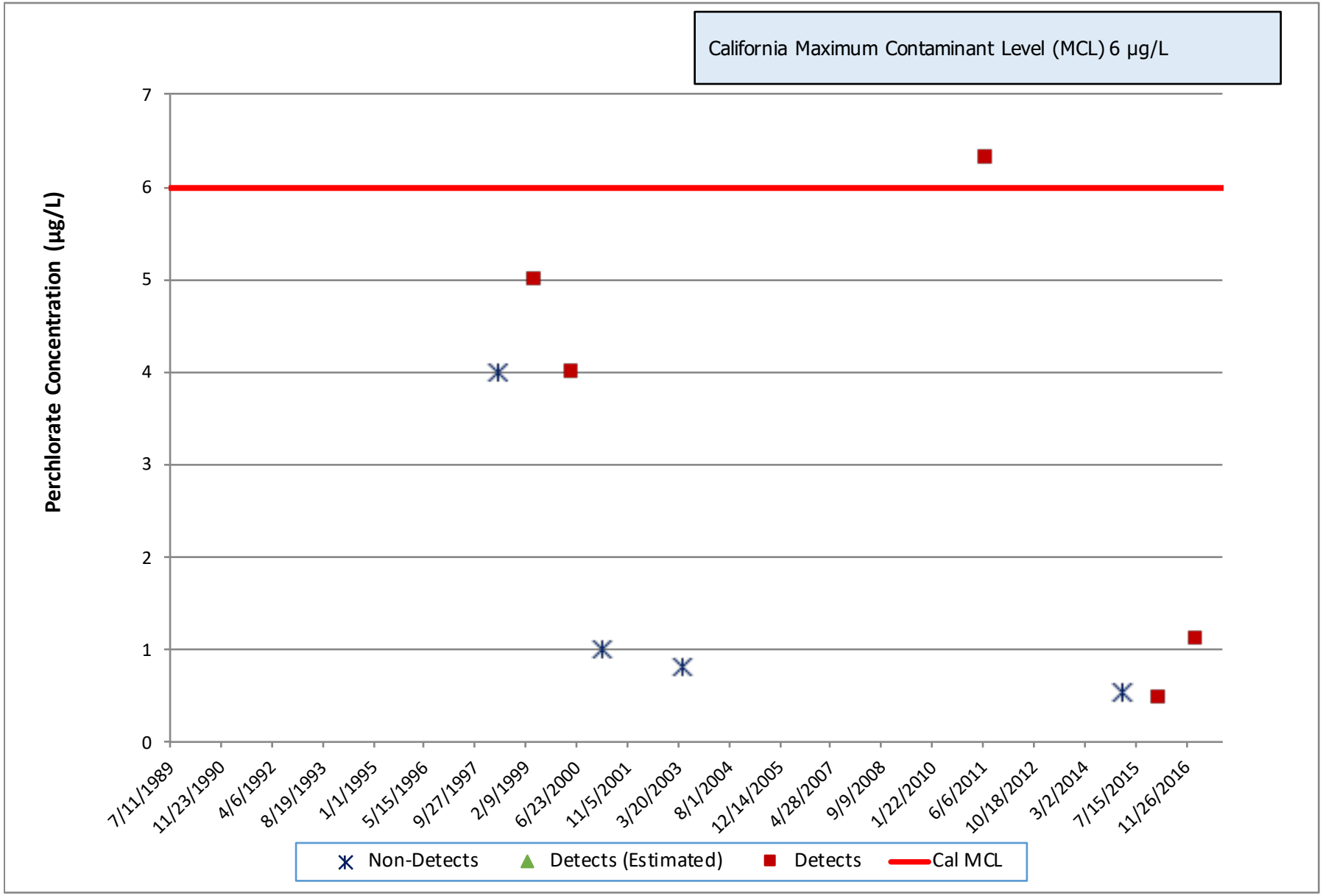
RD-21, FSDF/ESADA
Perchlorate



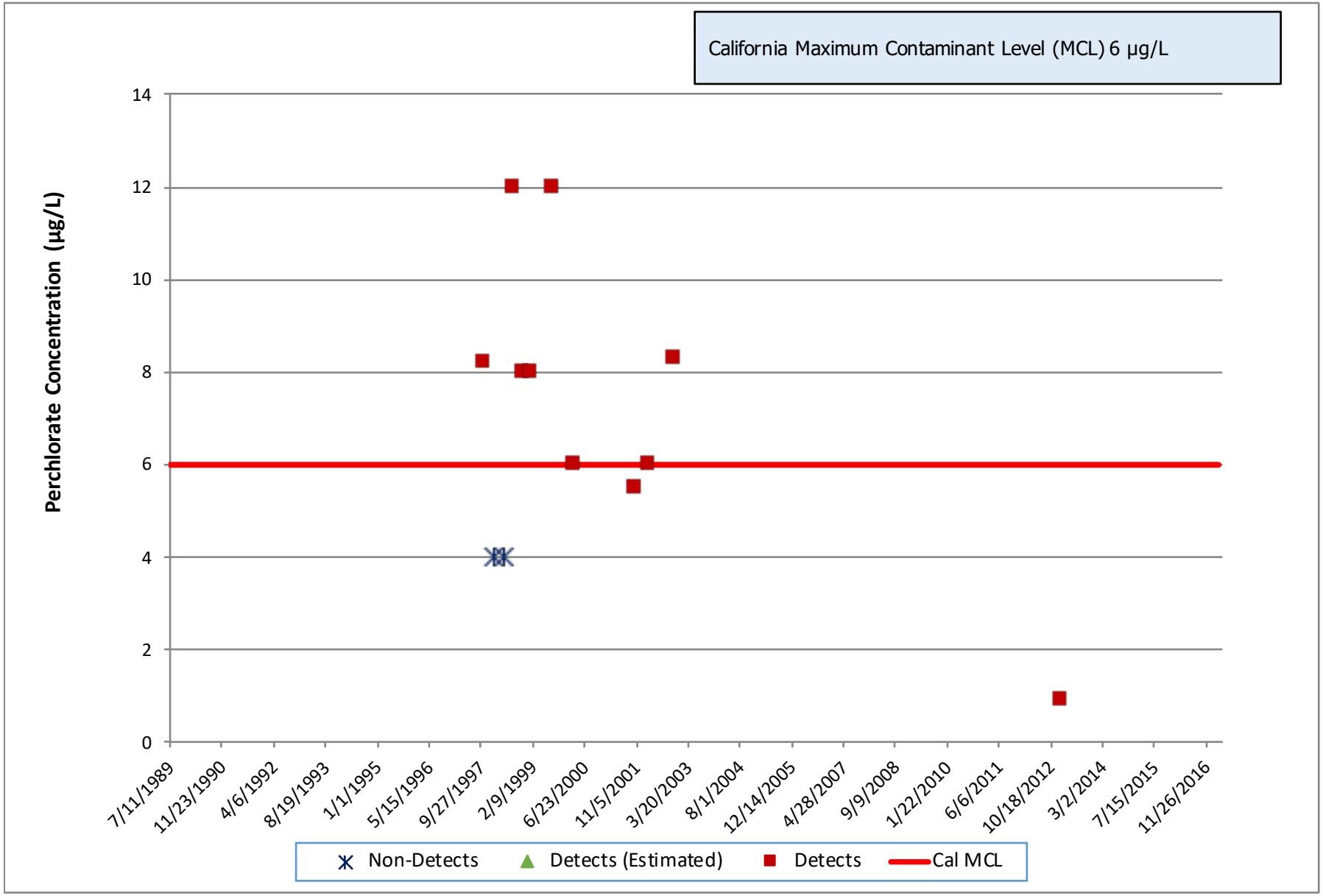
RD-54A, FSDF/ESADA
Perchlorate



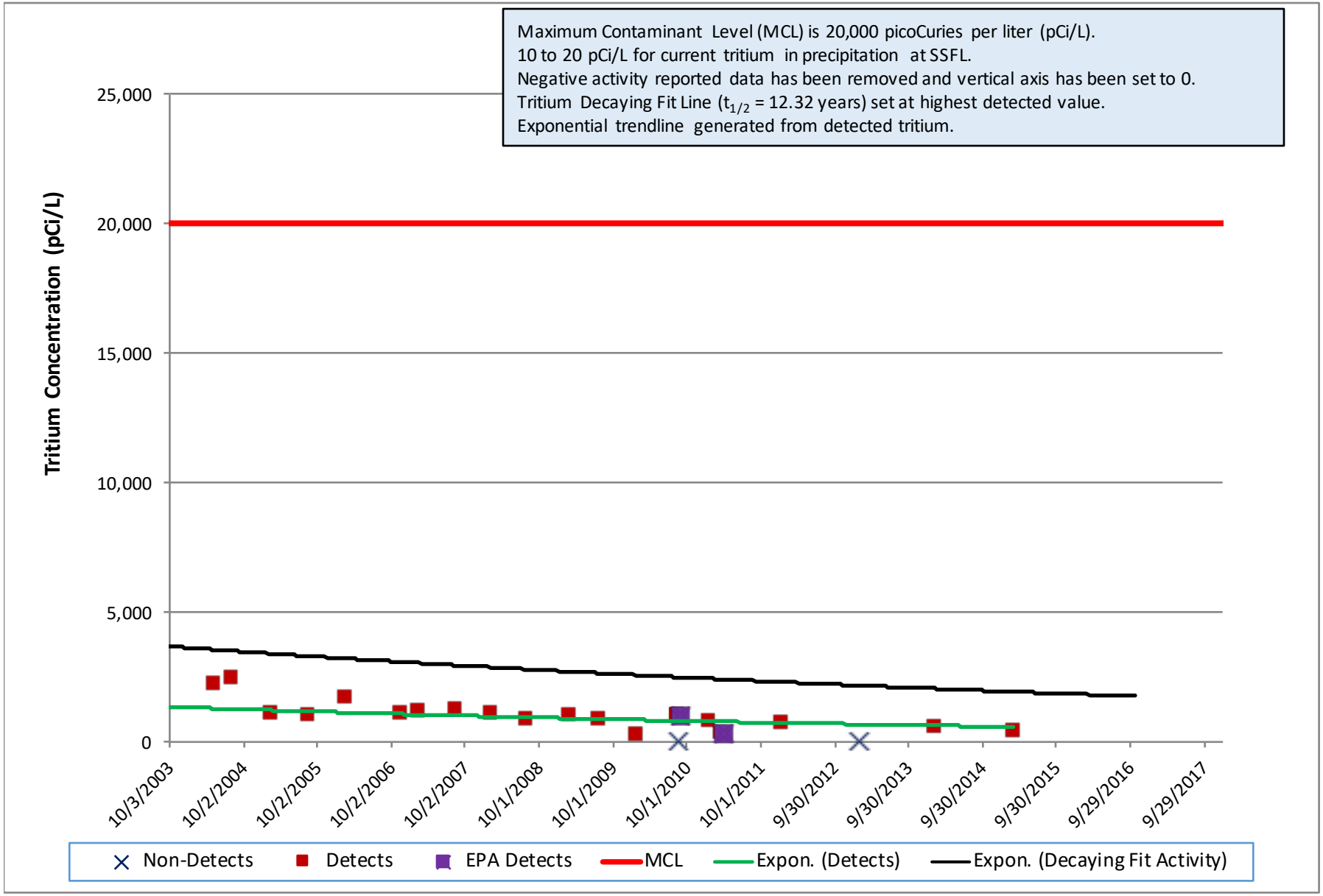
RS-18, FSDF/ESADA
Perchlorate



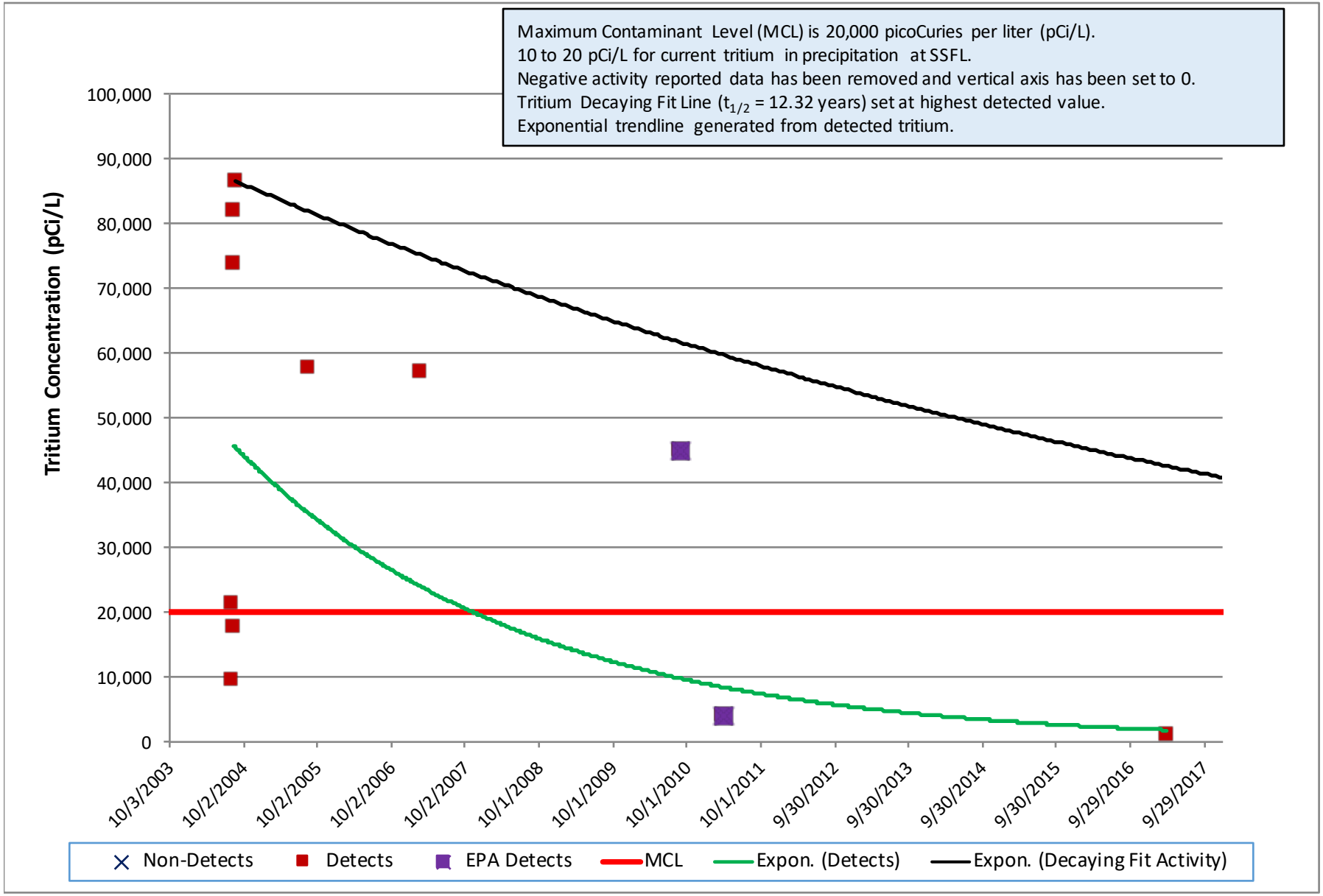
RS-54, FSDF/ESADA
Perchlorate



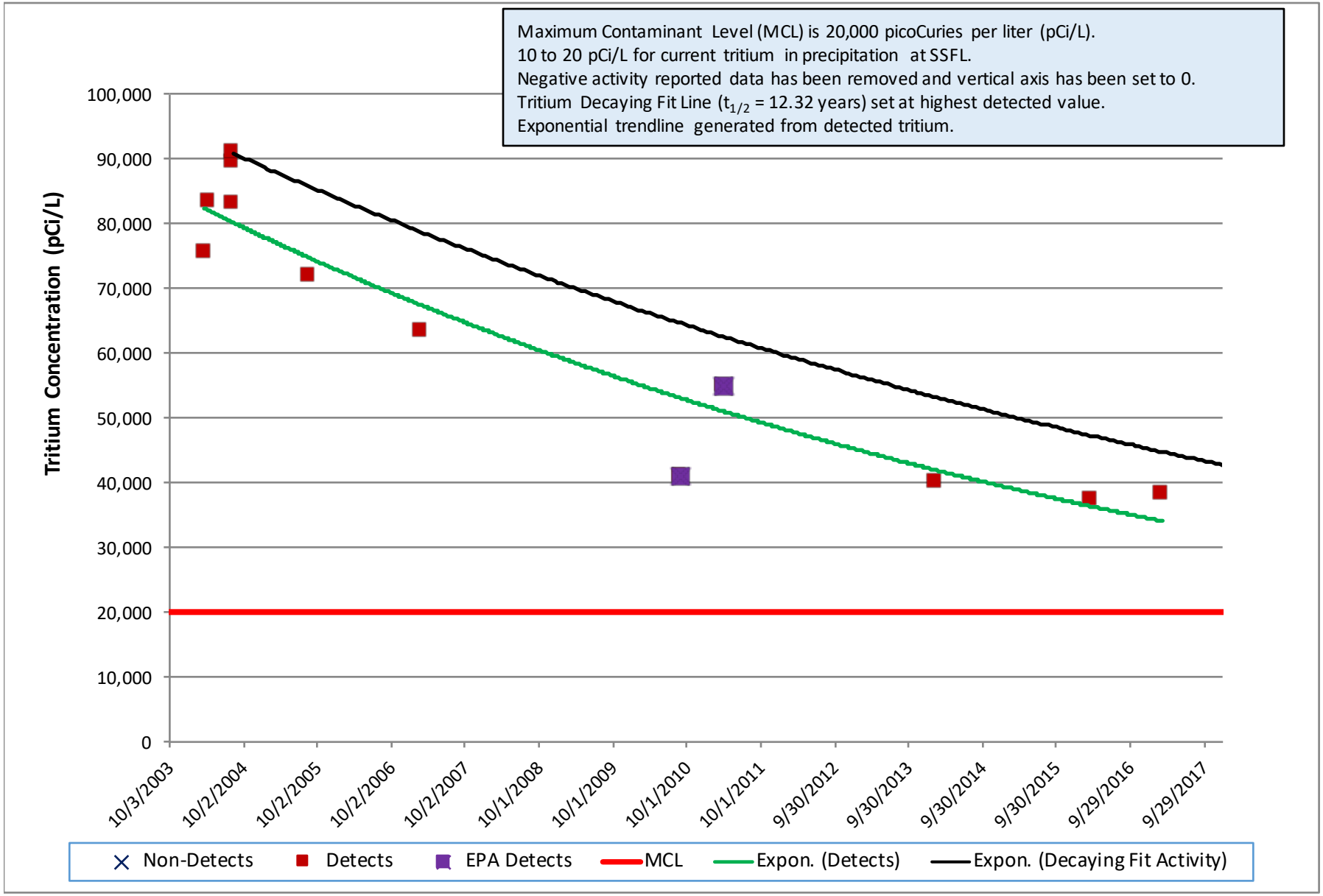
RD-34A, Tritium Plume
Tritium



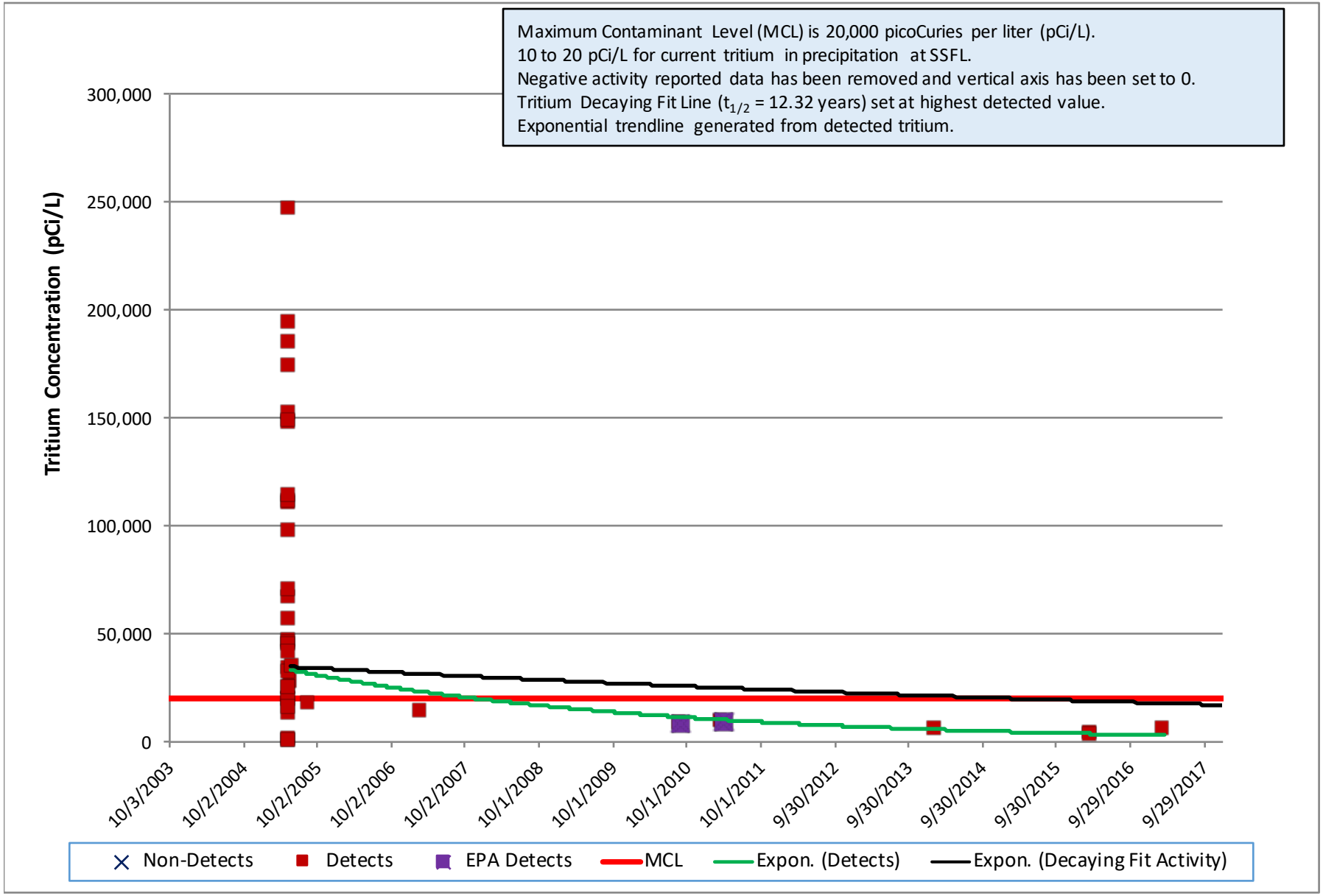
RD-88, Tritium Plume
Tritium



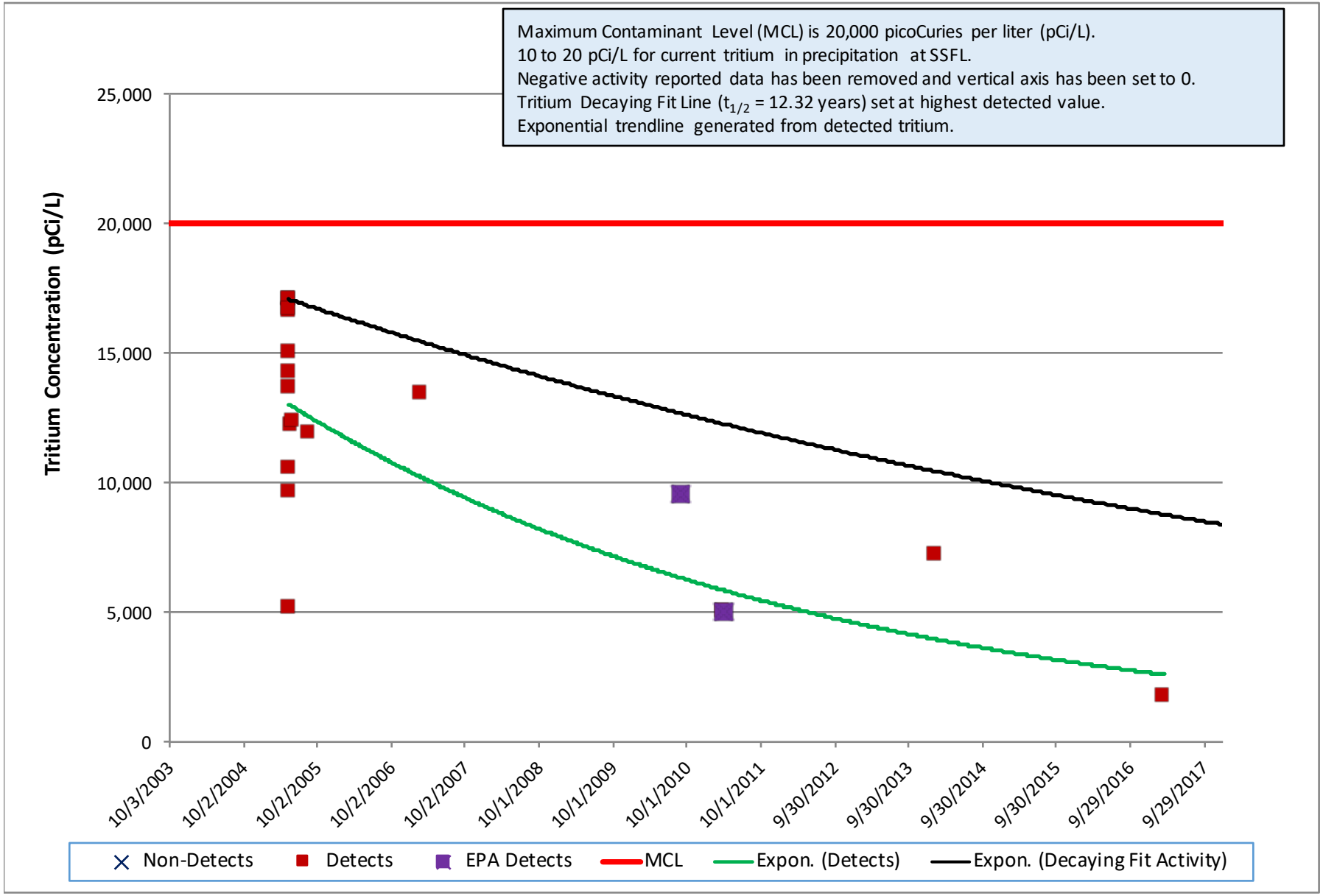
RD-90, Tritium Plume
Tritium



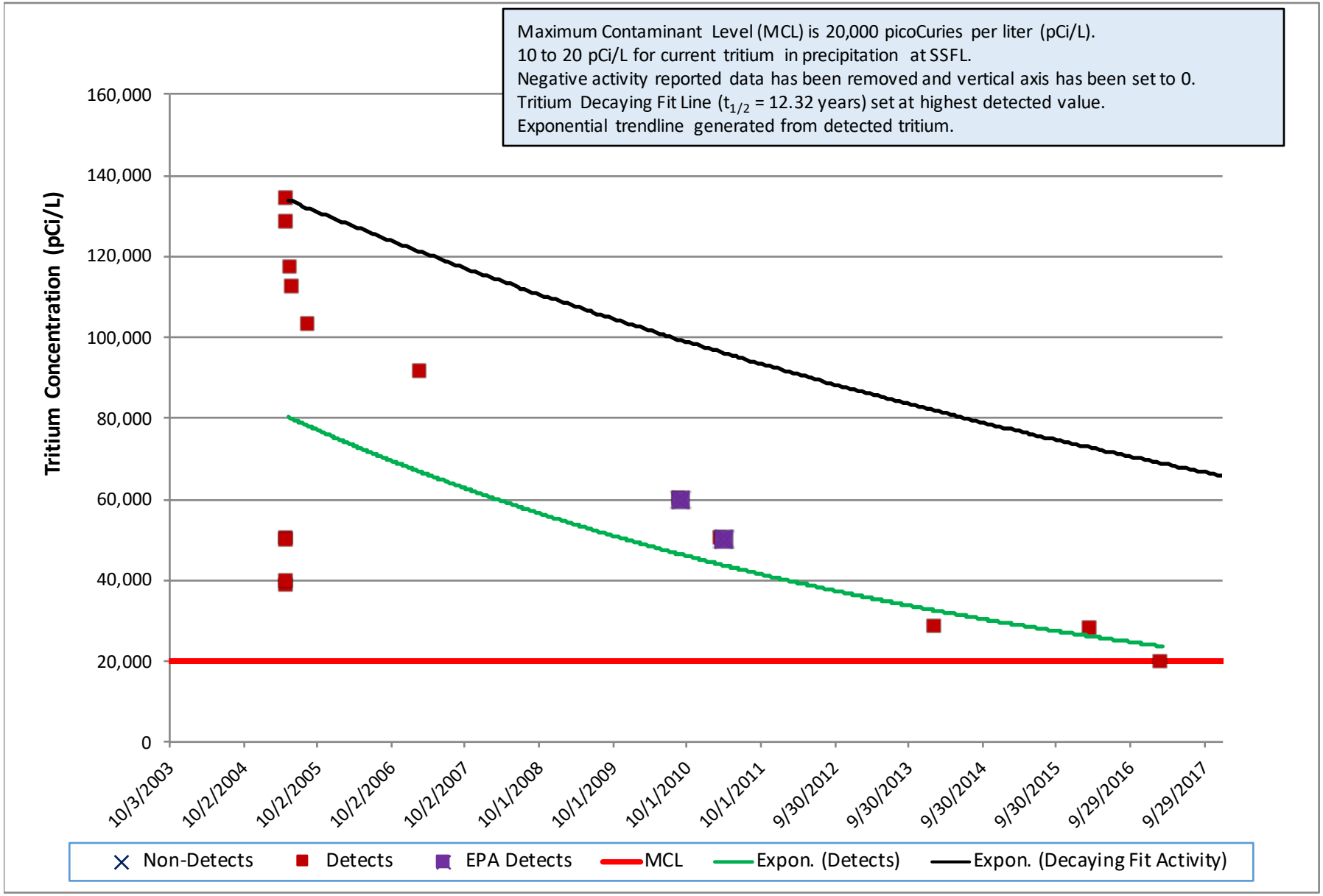
RD-93, Tritium Plume
Tritium



RD-94, Tritium Plume
Tritium



RD-95, Tritium Plume
Tritium



Appendix E
Quality Assurance Assessment

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Acronyms, Abbreviations, and Symbols

%D	percent difference or percent drift
%R	percent recovery
DQI	data quality indicator
DQO	data quality objective
DRO	diesel-range organic
EPA	United States Environmental Protection Agency
ETEC	Energy Technology Engineering Center
GRO	gasoline-range organic
ICP	inductively coupled plasma
ID	identification
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MS	matrix spike
MSD	matrix spike duplicate
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
QC	quality control
Ra-226	radium-226
Ra-228	radium-228
RAD	radiochemical
RPD	relative percent difference
RL	reporting limit
SDG	sample delivery group
SDS	serial dilution sample
SIM	selective ion monitoring
Sr-90	strontium-90

SSFL	Santa Susana Field Laboratory
U	uranium
VOC	volatile organic compound
WQSAP	Water Quality Sampling and Analysis Plan

Background

The following summarizes the inorganic, metals, organic, and radiochemical data validation completed for 20 United States Environmental Protection Agency (EPA) Level IV data packages containing results from the Santa Susana Field Laboratory (SSFL) Area IV in Ventura County, California. The data for this effort were acquired from sampling efforts completed from February 6, 2017, through April 4, 2017. All of the data for this summary were generated by Test America Laboratories.

The data were validated using the requirements and protocols outlined in the following documents and analytical methods:

- *Statement of Work Data Validation Services Santa Susana Field Laboratory Area IV, Ventura County, California.*
- Haley & Aldrich, 2010, *Report on Annual Groundwater Monitoring, 2009, Santa Susana Field Laboratory, Simi Hills, Ventura County, California.*
    - Haley & Aldrich, 2010a, *Appendix A, Site-Wide Water Quality Sampling and Analysis Plan, Revision 1, Santa Susana Field Laboratory, Ventura County, California,* December.
    - Haley & Aldrich, 2010b, *Appendix B, Groundwater Monitoring, Quality Assurance Project Plan, Revision 1, Santa Susana Field Laboratory, Ventura County, California,* December.
- U.S. EPA, 2008, *U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* OSWER 9240.1-48 EPA 540/R-08/01, February.
- U.S. EPA, 2010, *U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* OSWER 9240.1-45 EPA 540-R-04-004, October.
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA publication SW-846, Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), and V (2015).
- *Multi Agency Radiological Laboratory Analytical Protocols, MARLAP, Manual*, EPA 402-B-04-001A, July 2004.
- *Evaluation of Radiochemical Data Usability, ES/ER-MS-5,* April 1997.

The following provides an overview of the data set and findings of the data package validation effort.

Summary

The SSFL data set consists of 21 EPA Level IV sample delivery groups (SDGs) with a total of 156 water samples. SDGs J21515-1, J21600-1, and J21642-1 underwent a Level IV EPA validation and comprised more than 10% of the overall data per an analysis for this sampling effort. The remaining SDGs underwent a Level III EPA validation.

Table E-1 shows the number and type of samples collected for the SSFL Energy Technology Engineering Center (ETEC) groundwater 2017 sampling effort. Attachment 1 is a comprehensive sample ID table compiled from the provided chain-of-custody forms.

Table E-1. Samples collected for SSFL ETEC groundwater sampling, 2017.

Sample Type	Number of Samples
Field Samples	76 Samples (17 were designated on the chain-of-custody forms as MS/MSD)
Trip Blanks	20 Samples
Rinsates	37 Samples
Field Blank	1 Sample
Field Duplicates	22 Samples

The samples were analyzed for volatile organic compounds (VOCs), 1,4-dioxane, 1,2,3-trichloropropane, gasoline-range organics (GRO), diesel-range organics (DRO), and dissolved and total metals including mercury, perchlorate, nitrate, fluoride, and radiochemical (RAD) analyses (tritium and total/dissolved for the remaining RAD analyses). Table E-2 shows the requested analyses, analytical methods, and number of samples analyzed for each analysis compiled from the chain-of-custody forms.

Table E-2. Summary of analyses for SSFL ETEC groundwater sampling, 2017.

Analysis	Method		Number of Samples Analyzed
Volatile Organic Compounds	EPA SW-846 Method 8260B		124
1,4-Dioxane	EPA SW-846 Method 8260B Selective Ion Monitoring (SIM)		17
1,2,3-Trichloropropane	EPA Method 524.2 SIM		5
Gasoline-Range Organics	EPA SW-846 Method 8015B		44
Diesel-Range Organics	EPA SW-846 Method 8015B		32
Perchlorate	EPA SW-846 Method 6860		43
Nitrate as N	EPA Method 300.0		15
Fluoride	EPA Method 300.0		32
Metals (Total & Dissolved)	EPA SW-846 Method 6010C EPA SW-846 Method 6020A EPA SW-846 Method 7470A		75 Total Metals 75 Dissolved Metals
Radiochemical Analyses (Total & Dissolved)	Isotopic U	Method A-01-R U	54 Total Isotopic U 54 Dissolved Isotopic U
	Gamma Spectroscopy	EPA Method 900.1	56 Total Gamma Spectroscopy 55 Dissolved Gamma Spectroscopy
	Gross Alpha/Beta	EPA Method 900.0	55 Total Gross Alpha/Gross Beta 55 Dissolved Gross Alpha/Beta
	Strontium-90 (Sr-90)	EPA Method 905.0	54 Total Sr-90 54 Dissolved Sr-90
	Tritium	EPA Method 906.0	19 Tritium
	Radium-226 (Ra-226)	EPA Method 903.0	46 Total Ra-226 46 Dissolved Ra-226
	Radium-228 (Ra-228)	EPA Method 904.0	46 Total Ra-228 46 Dissolved Ra-228

Data Quality Summary

Anions (Fluoride and Nitrate as N) by EPA Method 300.0:

The SSFL anions data set consists of 15 water samples analyzed for nitrate as N and 32 water samples analyzed for fluoride, which resulted in 47 data points. All 47 data points are considered usable for evaluating site conditions and indicated that:

- 15 data points for nitrate as N and 21 data points for fluoride (36 data points, 76.6% of the total) were either non-detect and identified as "U" or were evaluated and remain unqualified. These results can be considered qualitative data.
- 11 fluoride data points (23.4% of the total) were qualified with a "UJ" or "J" validation flag and can be considered as quantitative data.

Perchlorate by EPA SW-846 Method 6860:

The SSFL perchlorate data set consists of 43 water samples. All 43 data points are considered usable for evaluating site conditions and indicated that:

- 36 perchlorate data points (83.7% of the total) were either non-detect and identified as "U" or were evaluated and remain unqualified. These results can be considered qualitative data.
- 3 perchlorate data points (7.0% of the total) were qualified with a "UJ" validation flag and can be considered quantitative data.
- 4 perchlorate data points (9.3% of the total) were qualified with a "J" validation flag and can be considered quantitative data.

Total and Dissolved Metals by EPA SW-846 Methods 6010C, 6020A, and 7470A:

The SSFL metals data set consists of 75 water samples analyzed for total metals and dissolved metals and resulted in 4,050 data points. All 4,050 data points are considered usable for evaluating site conditions and indicated that:

- 3,126 total and dissolved metals data points (77.2% of the total) were either qualified with a "U" validation flag due to blank detections, were non-detect, or were detected in the samples and can be considered as qualitative data.
- 924 total and dissolved metals data points (22.8% of the total) were qualified with a "UJ", "J+", "J-", or "J" validation flag and can be considered as quantitative data.

Gasoline-Range Organics (GRO) and Diesel-Range Organics (DRO) by EPA SW-846 Method 8015B:

The SSFL GRO and DRO data set consists of 44 GRO samples and 32 DRO samples, which resulted in 76 data points. All 76 data points are considered usable for evaluating site conditions and indicated that:

- All 44 GRO data points and 17 DRO data points (80.3% of the total) were either non-detect and identified as "U" or were evaluated and remain unqualified. These results can be considered as qualitative data.
- 15 DRO data points (19.7% of the total) were qualified with a "UJ" or "J" validation flag and can be considered as quantitative data.

1,4-Dioxane by EPA SW-846 Method 8260B SIM and 1,2,3-Trichloropropane by EPA Method 524.2:

The SSFL 1,4-dioxane data set consists of 17 water samples (this includes seep trip blank samples TB-032917 and TB-033017) and the 1,2,3-trichloropropane data set consists of 5 water samples. All 23 data points are considered usable for evaluating site conditions and indicated that:

- 5 data points for 1,2,3-trichloropropane (100%) of the total were non-detect and can be considered as qualitative data.
- 13 data points for 1,4-dioxane results (76.5% of the total) were non-detect or were qualified "U" due to trip blank detection and can be considered as qualitative data.
- 4 data points for 1,4-dioxane results (23.5% of the total) were qualified with a "J" or "UJ" and can be considered as quantitative data.

Volatile Organic Compounds by EPA SW-846 Method 8260B:

The SSFL VOC data set consists of 124 water samples (this includes seep trip blank samples TB032317, TB-032917, TB-033017, and TB-033117), which resulted in 2,604 data points. All 2,604 data points are considered usable for evaluating site conditions and indicated that:

- 2,421 data points (93% of the total) were non-detect, qualified "U" due to method, trip, or field blank detections, or were detections above the quantitation limit and can be considered qualitative data.
- 183 data points (7% of the total) were qualified "UJ" or "J" and can be considered quantitative data.

Radiochemical Analyses:

The SSFL radiochemical data set consists of 54 samples for total and dissolved isotopic uranium and strontium-90 (Sr-90), 56 samples for total gamma spectroscopy, 55 samples for dissolved gamma spectroscopy, 55 samples for total and dissolved gross alpha/gross beta, 19 samples for tritium, and 46 samples for total and dissolved radium-226 (Ra-226) and radium-228 (Ra-228), which resulted in 2,413 data points. All 2,413 data points are considered usable for evaluating site conditions and indicated that:

- 2,312 data points (95.8% of the total) were statistical non-detects or were considered as truly present in the samples and can be considered qualitative data.
- 101 data points (4.2% of the total) were qualified with a "UJ" or "J" validation flag and can be considered as quantitative data.

Trip Blanks and Field Blanks:

Twenty trip blank samples and one field blank sample were collected for the SSFL ETEC groundwater 2017 sampling effort and are listed in Table E-3.

Table E-3. Trip/field blanks for SSFL ETEC groundwater sampling, 2017.

Sample Delivery Group (SDG)	Sample ID	Analysis	Quality Control (QC) Type
J21364-1	PZ-105_030617_78_L	VOC, GRO	Trip Blank
J21385-1	PZ-098_030717_78_L	VOC, GRO	Trip Blank
J21402-1	RS-18_030878_01_L	VOC	Trip Blank
J21430-1	PZ-116_031017_78_L	VOC, GRO	Trip Blank
	PZ-041_030917_78_L	VOC, GRO	Trip Blank
J21458	PZ-109_031317_78_L	VOC	Trip Blank
J21469-1	RD-22_031417_78_L	VOC, GRO	Trip Blank
J21515-1	DS-47_031517_78_L	VOC, GRO	Trip Blank
J21521-1	DD-141_031617_78_L	VOC, GRO	Trip Blank
J21549-1	DD-144_032017_78_L	VOC	Trip Blank
J21574-1	RD-96_032117_78_L	VOC, GRO	Trip Blank
J21600-1	RD-33B_032217_78_L	VOC, GRO, 1,4-Dioxane	Trip Blank
J21600-2	TB-032317	VOC	Trip Blank
J21608-1	RD-59B_032317_78_L	VOC	Trip Blank
J21629-1	RS-27_032817_78_L	VOC	Trip Blank
	TB-032817	VOC	Trip Blank
J21642-1	RS-27_032917_78_L	VOC, GRO, 1,4-Dioxane, & 1,2,3-Trichloropropane	Trip Blank
	RS-27_032917_19_L	VOC, Metals, Perchlorate, GRO, DRO, RAD Analyses, Anions, 1,4-Dioxane, 1,2,3-Trichloropropane, & Tritium	Field Blank
	TB-032917	VOC, 1,4-Dioxane	Trip Blank
J21665-1	TB-033017	VOC, 1,4-Dioxane	Trip Blank
J21685-1	TB-033117	VOC	Trip Blank

The following compounds were detected in the trip blank and field blank samples:

- Acetone in samples PZ-105_030617_78_L, RS-18_030817_78_L, PZ-109_031317_78_L, RD-22-031417_78_L, RD-59B_032417_78_L, RS-27_032917_78_L, and RS-27_032917_19_L
- Methylene chloride in samples RD-96_032117_78_L, RS-27_032817_78_L, TB-032817, and TB-033017
- Perchlorate in RS-27_032917_19_L
- 1,4-dioxane in sample RD-33B_032217_78_L
- Total iron, total zinc, dissolved aluminum, and dissolved zinc in sample RS-27_032917_19_L.

The detections in the trip blanks and field blanks resulted in one 1,4-dioxane result qualified "U", 22 acetone results being qualified "U", and three acetone results being qualified as "UJ" due to trip blank detection and poor calibration. The remaining trip blank and field blank results were determined to be non-detect due to method blank detections. No further qualifications were warranted.

Field Duplicates:

Twenty-two pairs of field duplicates were collected during the SSFL ETEC groundwater 2017 sampling effort and are listed in Table E-4.

Table E-4. Field duplicates for SSFL ETEC groundwater sampling, 2017.

SDG#	Parent ID	Field Duplicate ID	Analysis
J21385-1	PZ-098_030717_01_L	PZ-098_030717_36_L	VOCs
J21458-1	RD-07_031317_01_L	RD-07_031317_36_L	VOCs
	DD-142_031317_01_L	DD-142_031317_36_L	Metals
	PZ-122_031417_01_L	PZ-122_031417_36_L	Nitrate as N & Fluoride
	RD-94_031417_01_L	RD-94_031417_36_L	Radiochemical Analyses & Tritium
J21515-1	RD-30_031517_01_L	RD-30_031517_36_L	VOCs
	DD-145_031517_01_L	DD-145_031517_36_L	GRO
J21521-1	DD-141_031617_01_L	DD-141_031617_36_L	Perchlorate
	DS-44_031617_01_L	DS-44_031617_36_L	VOCs
	DD-143_031617_01_L	DD-143_031617_36_L	GRO & DRO
	RD-64_031617_01_L	RD-64_031617_36_L	Metals
J21538-1	RD-64_031617_01_L	RD-64_031617_36_L	Radiochemical Analyses
J21549-1	RD-14_032017_01_L	RD-14_032017_36_L	1,2,3-Trichloropropane
J21574-1	C-08_032117_01_L	C-08_032117_36_L	VOCs
	RD-96_032117_01_L	RD-96_032117_36_L	Metals, GRO, & DRO
J21600-1	RD-17_032217_01_L	RD-17_032217_36_L	VOCs
	RD-27_032217_01_L	RD-27_032217_36_L	Radiochemical Analyses
	RD-33C_032217_01_L	RD-33C_032217_36_L	Metals
	RD-19_032317_01_L	RD-19_032317_36_L	Fluoride
	RD-34A_032317_01_L	RD-34A_032317_36_L	1,4-Dioxane
J21608-1	RD-59B_032317_01_L	RD-59B_032317_36_L	Metals, Fluoride, and Radiochemical Analyses
J21629-1	SP-424A_032817_01_L	SP-424A_032817_36_L	VOCs, Perchlorate, 1,4-Dioxane, Fluoride

The field duplicate precision for acetone (38.8% relative percent difference, RPD) in field duplicate pair RD-30_031517_01_L/RD-30_031517_36_L and total zinc (56.1% RPD) and dissolved iron (45% RPD) in field duplicate pair RD-59B_032417_01_L/RD-59B_032417_36_L exceeded the 35% RPD criterion. The remaining field duplicate precision criteria were met.

Data Validation Qualifications

Qualifications were assigned in accordance with the *U.S. EPA Contract Laboratory Program National Functional Guidelines* and resulted from preparation and chain-of-custody issues; poor initial and continuing calibration criteria; positive blank detections; poor laboratory control sample (LCS), laboratory control sample duplicate (LCSD), matrix spike (MS), matrix spike duplicate (MSD), and serial dilution sample (SDS) performance; and results reported below the quantitation limits. Table E-5 summarizes the findings and data qualifications assigned to SSFL ETEC Groundwater 2017 data results. Please refer to Attachment 2 for definitions of the data validation qualifiers.

Table E-5. Summary of data validation qualifications for SSFL ETEC groundwater sampling, 2017.

Analyte	Total #	Subtotal #	Qualification Type
Nitrate as N	15	15	"U" or No Qualification
Fluoride	32	21	"U" or No Qualification
		4	**UJ**
		7	**J**
Perchlorate	43	36	"U" or No Qualification
		3	**UJ**
		4	**J**
Metals	4050	3126	"U" or No Qualification
		529	**UJ**
		307	**J+**
		78	**J-**
		10	**J**
GRO	44	44	"U" or No Qualification
DRO	32	17	"U" or No Qualification
		14	**UJ**
		1	**J**
1,2,3-Trichloropropane	5	5	U
1,4-Dioxane	17	13	U
		2	**UJ**
		2	**J**
VOCs	2604	2421	"U" or No Qualification
		110	**UJ**
		73	**J**
Radiochemical Data (including Tritium)	2413	2312	"U" or Positively Detected in the Sample
		80	**UJ**
		21	**J**

Data Review Process

Data produced by the analytical laboratories were subject to multiple review steps to coincide with the start of distinct tasks. These steps were performed in a timely manner to ensure appropriate feedback and correction of errors. These steps included:

- Cross-reference check of sample chain-of-custody documents against the laboratory acknowledgement of sample receipt form. The laboratory acknowledgement of sample receipt was

typically transmitted to the data manager via e-mail 2 to 3 days after sample receipt and log-in and included a summary of the requested analyses to be performed per sample. Sample log-in errors were identified and corrected at this step.

- Tracking of sample collection, receipt, and laboratory SDG numbers on a sample tracking spreadsheet. This spreadsheet also included field QC sample information and well sample location coordinates.

- Laboratory consultation with the project chemists on data quality issues during sample analyses such as missed holding times, poor spike recoveries, etc. These issues were discussed between the project chemists and the laboratory and were resolved based on technical merit and determined if usable in the evaluation.

Upon receipt of the laboratory report (delivered via e-mail), a preliminary review of the data was performed. This review consisted of:

- Reconciliation of the reported analyses against the analyses that were requested on the chain-of-custody documents.

- Review of the laboratory case narratives. The case narrative identified and explained quality issues encountered during the analysis of the samples. Quality issues may include (but not be limited to) expired holding times, poor spike recoveries in matrix or batch-specific QC samples, instrument calibration exceedances, and blank contamination.

- Review of the laboratory-specific QC data. These data were provided by the laboratory in summary form. Any unanticipated deviations from the project or method-specific criteria were reconciled with the laboratory at this stage.

Data Quality Indicators

This section summarizes the validation performed. Individual SDG validation reports with specific sample details are provided in Attachment 2.

Achievement of the data quality objectives (DQOs) was determined in part by the use of data quality indicators (DQIs). The DQIs for measurement data are expressed in terms of what are collectively referred to as the PARCCS parameters (precision, accuracy, representativeness, comparability, completeness, and sensitivity). The DQIs provide a mechanism for ongoing control to evaluate and measure data quality throughout the project. These criteria are defined in the sections below.

Precision

Precision is the measurement of the ability to obtain the same value on re-analysis of a sample through the entire analytical process. The closer the measurement results, the greater the precision. Precision has nothing to do with accuracy or true values of the sample. Instead, it is focused on random errors inherent in the analysis that stem from the measurement process and are compounded by the non-homogeneous nature of some samples. Precision is measured by analyzing two portions of the sample (sample and duplicate) and then comparing the results. This comparison can be expressed in terms of relative percent difference (RPD). RPD is calculated as the absolute difference between the two measurements divided by the average of the two measurements.

$$RPD = \frac{[(A-B)/\underline{A+B}]}{2} \times 100$$

A condition with this formula is that it depends on the average of the two measurements, and the magnitude of the calculated RPD is intimately linked to the magnitude of the results. When sample results are close to the reporting limit (RL), the RPD is greater but does not necessarily indicate that the precision is out of control limits, just that the sample concentrations are low.

RPD as a measure of precision works very well in those cases where the same level of analyte is present in all samples; however, it does not work well as a quantitative tool when varying levels are present. Another option that is used for evaluating the differences between sample results that are close to the RL is calculating the absolute difference between the results. In this situation, the difference between the sample results is compared to the RL and if the difference is greater, the sample results are qualified as estimated "J/UJ." Sample results are also qualified as estimated “J/UJ” if the RPD is outside of criteria.

Because of the limitations with the use of RPDs for field duplicate precision evaluation, precision is also calculated on spike samples, either on an MS and MSD or on an LCS/LCSD. For spike samples, a known concentration of analyte has been added to each sample and evaluations of RPD can be made that are more applicable to variations in environmental measurements. The drawback is that the precision measurement is applicable only to the particular spike level used.

For the groundwater samples, precision was evaluated by reviewing RPD results for MS/MSDs, LCS/LCSDs, laboratory duplicates, and field duplicates.

Laboratory RPD control limits are presented in the Water Quality Sampling and Analysis Plan (WQSAP) (Haley & Aldrich 2010a) or are laboratory specific. For laboratory duplicates, if one or both of the sample results were less than five times the RL, a control limit of the absolute difference value equal to the RL was used for comparison. The field duplicate RPD criterion is 35%.

Based on laboratory and/or field duplicate precision criteria during the validation process, qualifiers were applied to applicable sample results.

Accuracy

Accuracy is a concept from quantitative analysis that attempts to address the question of how close the analytical result is to the true value of the analyte in the sample. Accuracy is determined through a spike procedure, where a known amount of the target analyte is added to a portion of the sample and then the sample and the spiked sample are analyzed. The quantitative measure of accuracy is percent recovery (%R), calculated as follows:

$$\text{Percent Recovery} = \frac{(\text{Total Analyte Found} - \text{Analyte Originally Present})}{\text{Analyte Added}} \times 100$$

Each measurement performed on a sample is subject to random and systematic error. Accuracy is related to the systematic error. Attempts to assess systematic error are always complicated by the inherent random error of the measurement.

Analytical accuracy for the entire data collection activity is difficult to assess because several sources of error exist. Errors can be introduced by any of the following:

- Sampling procedure

- Field contamination
- Sample preservation and handling
- Sample matrix
- Sample preparation
- Analytical techniques.

Accuracy is maintained to the extent possible by adhering to the EPA method and approved field and analytical standard operating procedures.

The following QC samples are used to assess laboratory accuracy:

- Matrix Spikes: These are samples with a known amount of a target analyte added to them. Analysis of the sample that has been spiked and comparison with the results from the unspiked sample (background) gives information about the ability of the test procedure to generate a correct result from the sample.
- Post-Digestion Spikes: Post-digestion spikes are performed after the sample has been prepared and is ready for analysis. These are also termed "analytical spikes." The technique is used in conjunction with an MS to provide data that can separate interferences produced as part of the sample preparation from interferences that are innate qualities of the sample.
- Laboratory Control Samples: LCSs consist of a portion of analyte-free water spiked with target analytes at a known concentration.
- Surrogates: Surrogate recovery is a QC measure limited to use in organics analysis. Surrogates are compounds added to every sample at the beginning of the sample preparation to monitor the success of the sample preparation and analytical procedures on an individual sample basis. Individual compounds used as surrogates are selected based on their ability to mimic the behavior of specific target analytes held to be particularly sensitive to the sample preparation manipulations.
- Interference Check Samples: Interference check sample analysis is a QC measure unique to metals analysis using inductively coupled plasma atomic emission spectrometry. This QC sample verifies the analytical instrument's ability to overcome interferences typical of those found in samples.
- Calibrations: Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for metals. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing calibrations demonstrate that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.
- Internal Standards: Internal standards measure the gas chromatograph/mass spectrometer sensitivity and response stability during each analysis.
- Serial Dilution: Serial dilutions are performed on at least one sample from every batch of analyses for metals to determine if physical or chemical interferences exist in the analyte determinations.

For the groundwater samples, accuracy was evaluated by reviewing the %R values and relative response factors of initial and continuing calibration (percent difference or percent drift [%D] for organic

analyses), the initial and continuing calibration recoveries for inorganic analyses, internal standards, surrogate spikes (organic analyses only), MS/MSD, LCS/LCSD, inductively coupled plasma (ICP) interferences, and by performing serial dilution checks during metals analyses, in conjunction with method blank, calibration blank, equipment rinsate blank, and trip blank results. These QC results assist in identifying the type and magnitude of effects that may have contributed to system error introduced from field and/or laboratory procedures.

Qualifiers were applied to applicable sample results during the validation process based on laboratory accuracy results. Results were qualified based on calibrations, surrogates, internal standards, ICP serial dilutions, LCS/LCSD recoveries, and MS/MSD recoveries.

Sample preservation, handling, and holding times are additional measures of accuracy of the data. Holding times are defined as the amount of time that elapses from collection of the sample in the field to the start of the analysis. Preservation is defined as techniques used to maintain the target analytes at concentrations representative of the source sampled.

In summary, sample results that have been qualified as estimated "J, J+, J-, or UJ" due to accuracy criteria are usable for project decisions. No sample results were rejected.

Blank Contamination

Blanks are used to determine the level of laboratory and field contamination introduced into the samples, independent of the level of target analytes found in the sample source. Sources of sample contamination can include the containers and equipment used to collect the sample; preservatives added to the sample; cross contamination from other samples in transport coolers and laboratory sample storage refrigerators; standards used to calibrate instruments; glassware and reagents used to prepare samples for analysis; airborne contamination in the laboratory preparation area; and the analytical instrument sample introduction equipment. Each analyte group has its own particular suite of common laboratory contaminants. Active measures must be performed to continually measure the ambient contamination level and steps taken to discover the source of the contamination and to eliminate or minimize the levels. Random spot contamination can also occur from analytes that are not common laboratory problems but that can arise as a problem for a specific project or over a short period of time. Field blanks, equipment blanks, trip blanks, and laboratory method blanks are analyzed to identify possible sources of contamination.

The data validation reports discuss the specific results that were qualified as non-detect “U” based on field and laboratory blank contamination.

Representativeness, Comparability, and Sensitivity

Representativeness, comparability, and sensitivity are achieved by using EPA-approved sampling procedures and analytical methodologies. By following the procedures described in the WQSAP and Appendix B, Groundwater Monitoring, Quality Assurance Project Plan (Haley & Aldrich 2010a, 2010b) for this sampling event and future sampling events, sample analysis should yield results representative of environmental conditions at the time of sampling. Similarly, reasonable comparability of analytical results for this and future sampling events can be achieved if approved EPA analytical methods and standardized reporting units are employed.

Representativeness

Representativeness is a qualitative term that expresses the degree to which the sample data accurately and precisely represent the environmental conditions corresponding to the location and depth interval of sample collection. Requirements and procedures for sample collection are designed to maximize sample representativeness.

Representativeness also can be monitored by reviewing field documentation and/or performing field audits. For this report, a detailed review was performed on the chain-of-custody forms, laboratory sample confirmation logs, and data validation packages.

The most significant measure of representativeness is the accuracy of the sampling network and selection of appropriate locations and depths, etc. Field sampling accuracy was attained through adherence to the approved WQSAP and Appendix B, Groundwater Monitoring, Quality Assurance Project Plan (Haley & Aldrich 2010a, 2010b) for sample location and collection and by using approved standard operating procedures for field data collection. The data should represent, as near as possible, the actual field conditions at the time of sampling.

Representativeness has been achieved by the performed field work and laboratory analyses. The analytical data generated are viewed to be a representative characterization of the project area. No sample results were rejected.

Comparability

Comparability is a qualitative term that expresses the confidence with which a data set can be compared with another. Strict adherence to standard sample collection procedures, analytical detection limits, reporting units, and analytical methods assures that data from like samples and sample conditions are comparable. This comparability is independent of laboratory personnel, data reviewers, or sampling personnel. Comparability criteria are met for the project if, based on data review, the sample collection and analytical procedures are determined to have been followed, or defined to show that variations did not affect the values reported.

To ensure comparability of data generated for the site, standard sample collection procedures were utilized by North Wind. Department of Toxic Substances Control–approved analytical methods were performed by Test America Laboratories. Similar methods and concentration levels to those used for previous sampling events also allow for comparable data. Utilizing such procedures and methods enables the current data to be comparable with previous and future data sets generated.

Sensitivity

Sensitivity is related to the ability to compare analytical results with project-specific levels of interest, such as risk-based screening levels or action levels. Analytical detection limits for the various sample analytes should be below the level of interest to allow an effective comparison.

Detection Limits

The method detection limit (MDL) study attempts to answer the question, "What is the lowest level of analyte in a sample that will result in a signal different than zero?" The study is based upon repetitive analysis of an interference-free sample spiked with a known amount of the target analyte. The MDL is a measure of the ability of the test procedure to generate a positive response for the target analyte in the absence of any other interferences from the sample.

The RL is generally defined as the lowest concentration at which an analyte can be detected in a sample and its concentration reported with a reasonable degree of accuracy and precision. For samples that do not pose a particular matrix problem, the RL is typically about three to five times higher than the MDL.

Laboratory results are reported according to rules that provide established certainty of detection and RLs. The result for an analyte is flagged with a "U" if that analyte was not detected, or qualified with a "J" flag if associated QC results fall outside the appropriate tolerance limits. Also, if an analyte is present at a concentration between the MDL and the RL, the analytical result is flagged with a "J," indicating an estimated quantity. Qualifying the result as an estimated concentration reflects increased uncertainty in the reported value.

Qualifiers were applied to applicable sample results by the laboratory and during the validation process based on sample results being reported as detected below the RL/MDL. Details of the validation and specific sample analytes qualified are discussed in the data validation reports.

In summary, for the collected groundwater samples, results for some of the analytes were qualified as estimated due to RL criteria. For the data validated in the 2017 groundwater sampling, RLs for a majority of the sample results were low enough to compare to the RL objectives stated in the WQSAP and Appendix B, Groundwater Monitoring, Quality Assurance Project Plan (Haley & Aldrich 2010a, 2010b). RLs above those stated in these documents are considered usable for project purposes.

Data Completeness

Completeness of the data collection program is defined as the percentage of samples planned for collection as listed in the WQSAP and Appendix B, Groundwater Monitoring, Quality Assurance Project Plan (Haley & Aldrich 2010a, 2010b) versus the actual number of samples collected during the field program (see Equation A).

Completeness for acceptable data is defined as the percentage of acceptable data obtained judged to be valid versus the total quantity of data generated (see Equation B). Acceptable data include both data that pass all the QC criteria (unqualified data) and data that may not pass all the QC criteria but had appropriate corrective actions taken (qualified but usable data).

Equation A.

$$\%\text{Completeness} = C \times \frac{100}{n}$$

Where:

C = actual number of samples collected
n = total number of samples planned

Equation B.

$$\%\text{Completeness} = V \times \frac{100}{n'}$$

Where:

V = number of measurements judged valid
n' = total number of measurements made

The overall completeness goal, as defined in the WQSAP and Appendix B, Groundwater Monitoring, Quality Assurance Project Plan (Haley & Aldrich 2010a, 2010b), for this sampling event is 90% for each analytical test for all project data.

The completeness goal achieved for acceptable data was 100% of the groundwater sample results for the number of measurements judged to be valid versus the total number of measurements made for all samples analyzed. No sample results were rejected. The completeness goal for the number of measurements judged to be valid was met for 2017 groundwater monitoring sampling. The data reported and not rejected are suitable for their intended use for characterization of groundwater in Area IV of SSFL.

Assessment of Data Usability and Reconciliation with the Site-Wide WQSAP Goals

One hundred percent of the data validated for the 2017 groundwater sampling, and reported in this quality assurance summary, are suitable for their intended use for site characterization. No sample results were rejected.

The RLs reported generally met the expected limits proposed by the analytical laboratories in their subcontract agreements with North Wind except for the analytes identified previously. Sample results that were qualified as estimated are usable for project decisions. Acetone in field duplicate pair RD-30_031517_01_L/RD-30_031517_36_L and total zinc and dissolved iron in field duplicate pair RD-59B_032417_01_L/RD-59B_032417_36_L exceeded the 35% RPD criteria. The remaining field duplicate precision criteria were met. Decisions based on results close to the RL should be made with a degree of caution.

The achievement of the completeness goal for the number of samples collected was met. The completeness goal for the number of sample results acceptable for use provides sufficient quality data to support project decisions for the wells that were sampled during this sampling event.

Attachment 1

SDG and Field Sample ID Table

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SDG	Well or Piezometer ID	Sample	Analyses	QC
J21339-1	PZ-105	PZ-105_030617_01_L	N, F	
	RS	PZ-105_030617_19R_L	N, F	Rinsate Blank
J21364-1	TB	PZ-105_030617_78_L	V, G	Trip Blank
	PZ-105	PZ-105_030617_01_L	V, M, G	
	PZ-108	PZ-108_030617_01_L	V	MS/MSD VOC
	RS	PZ-105_030617_19R_L	V, M, G	Rinsate Blank
	RS	PZ-108_030617_19R_L	V	Rinsate Blank
	PZ-103	PZ-103_030717_01_L	N, F	
	PZ-104	PZ-104_030717_01_L	N, F	
	PZ-005	PZ-005_030717_01_L	N, F	
	RS	PZ-005_030717_19R_L	N, F	Rinsate Blank
J21385-1	TB	PZ-098_030717_78_L	V,G	Trip Blank
	PZ-98	PZ-098_030717_01_L	V, P	
	PZ-98	PZ-098_030717_36_L	V	Field Duplicate of PZ-098_030717_01_L
	PZ-103	PZ-103_030717_01_L	V, M, G	
	PZ-100	PZ-100_030717_01_L	V, P	
	RD-20	RD-20_030717_01_L	V	
	PZ-104	PZ-104_030717_01_L	V, M	
	PZ-005	PZ-005_030717_01_L	V, M	
	RS	PZ-098_030717_19R_L	V, P	Rinsate Blank
	RS	PZ-005_030717_19R_L	V, M, G	Rinsate Blank
J21402-1	TB	RS-18_030817_78_L	V	Trip Blank
	RS-18	RS-18_030817_01_L	V, M, P, R	
	DS-46	DS-46_030817_01_L	V, M	
	DD-140	DD-140_030817_01_L	V, M	
	RS	RD-90_030817_19R_L	V, M, P, R, T	Rinsate Blank
	RS	RD-95_030817_19R_L	V, M, R, T	Rinsate Blank
	RD-90	RD-90_030817_01_L	T	
	RD-95	RD-95_030817_01_L	T	
J21430-1	TB	PZ-116_031017_78_L	V, G	Trip Blank
	PZ-116	PZ-116_031017_01_L	V, M, G	
	PZ-120	PZ-120_031017_01_L	V, M	
	RS	PZ-116_031017_19R_L	V, M, G	Rinsate Blank
	RS	PZ-120_031017_19R_L	V, M	Rinsate Blank
	TB	PZ-041_030917_78_L	V, G	Trip Blank
	PZ-041	PZ-041_030917_01_L	V, G	MS/MSD
	RS-54	RS-54_030917_01_L	V, M, P	

SDG	Well or Piezometer ID	Sample	Analyses	QC
	DS-45	DS-45_030917_01_L	V, M, R	
	DD-139	DD-139_030917_01_L	V, M, P	
	RS	DS-45_030917_19R_L	V, M, G, R	Rinsate Blank
	RS	DD-139_030917_19R_L	V, M, P	Rinsate Blank
J21440-1	PZ-116	PZ-116_031017_01_L	R	
	PZ-120	PZ-120_031017_01_L	R	
	RS	PZ-116_031017_19R_L	R	Rinsate Blank
	RS	PZ-120_031017_19R_L	R	Rinsate Blank
J21458-1	TB	PZ-109_031317_78_L	V	Trip Blank
	PZ-109	PZ-109_031317_01_L	V	
	RD-97	RD-97_031317_01_L	V	
	RD-07	RD-07_031317_01_L	V, M	
	RD-07	RD-07_031317_36_L	V	Field Duplicate of RD-07_031317_01_L
	RD-24	RD-24_031317_01_L	V, P	
	DS-43	DS-43_031317_01_L	V, M	
	DD-142	DD-142_031317_01_L	V, M	
	DD-142	DD-142_031317_36_L	M	Field Duplicate of DD-142_031317_01_L
	RD-33A	RD-33A_031317_01_L	V, M, P, R	
	RS	DS-43_031317_19R_L	V, M, P	Rinsate Blank
	RS	DD-142_031317_19R_L	V, M	Rinsate Blank
	RS	RD-33A_031317_19R_L	V, M, P, R	Rinsate Blank
	PZ-122	PZ-122_031417_01_L	N, F, R	
	PZ-122	PZ-122_031417_36_L	N, F	Field Duplicate of PZ-122_031417_01_L
	RS	PZ-122_031417_19R_L	N, F, R	Rinsate Blank
	RD-93	RD-93_031417_01_L	T	MS/MSD
	RD-94	RD-94_031417_01_L	R, T	
	RD-94	RD-94_031417_36_L	R, T	Field Duplicate of RD-94_031417_01_L
	RS	RD-94_031417_19R_L	R, T	Rinsate Blank
J21469-1	TB	RD-22_031417_78_L	V, G	Trip Blank
	RD-22	RD-22_031417_01_L	V, M, P, G	MS/MSD VOC
	PZ-122	PZ-122_031417_01_L	V, G	
	RS	PZ-122_031417_19R_L	V, G	Rinsate Blank
	RD-23	RD-23_031417_01_L	V, M, P, G	MS/MSD Perchlorate
	RS	RD-23_031417_19R_L	V, M, P, G	Rinsate Blank
	DD-145	DD-145_031517_01_L	N, F	MS/MSD

SDG	Well or Piezometer ID	Sample	Analyses	QC
	RS	DD-145_031517_19R_L	N, F	Rinsate Blank
J21515-1	DD-143	DD-143_031617_01_L	F	
	RS	DD-143_031617_19R_L	F	Rinsate Blank
	RD-30	RD-30_031517_01_L	V, G, R	MS/MSD DRO GRO
	RD-30	RD-30_031517_36_L	V	Field Duplicate of RD-30_031517_01_L
	DD-144	DD-144_031517_01_L	M, T	Resampled VOC 032017
	RS	DS-47_031517_19R_L	V, M, R	Rinsate Blank
	RS	DD-145_031517_19R_L	V, M, G, T	Rinsate Blank
	RS	RS-28_031517_19R_L	V, G, R	Rinsate Blank
	DS-47	DS-47_031517_01_L	V, M, R	MS/MSD Rad
	DD-145	DD-145_031517_01_L	M, G	
	DD-145	DD-145_031517_36_L	G	Field Duplicate of DD-145_031517_01_L (GRO)
	RS-28	RS-28_031517_01_L	V, G, R	
	TB	DS-47_031517_78_L	V, G	Trip Blank
J21521-1	DD-141	DD-141_031617_01_L	V, M, P, G	
	DD-141	DD-141_031617_36_L	P	Field Duplicate of DD-141_031617_01_L
	DS-44	DS-44_031617_01_L	V, M	
	DS-44	DS-44_031617_36_L	V	Field Duplicate of DS-44_031617_01_L
	DD-143	DD-143_031617_01_L	V, M, G	
	DD-143	DD-143_031617_36_L	G	Field Duplicate of DD-143_031617_01_L
	RS	DS-44_031617_19R_L	V, M, P, G	Rinsate Blank
	RS	RD-64_031617_19R_L	V, M, P, G	Rinsate Blank
	TB	DD-141_031617_78_L	V, G	Trip Blank
	RS	DD-143_031617_19R_L	V, M, G	Rinsate Blank
	RD-64	RD-64_031617_01_L	V, M, P, G	
	RD-64	RD-64_031617_36_L	M	Field Duplicate of RD-64_031617_36_L
	RD-29	RD-29_031717_01_L	V	
	RD-65	RD-65_031717_01_L	V	MS/MSD VOC
	RD-98	RD-98_031717_01_L	V	
	RD-63	RD-63_031717_01_L	V	Rinsate Blank
	RD-54C	RD-54C_031717_01_L	V, P	
	RS	RD-54C_031717_19R_L	V	Rinsate Blank

SDG	Well or Piezometer ID	Sample	Analyses	QC
	RD-34C	RD-34C_031717_01_L	V, M, F, D	
	RS	RD-34C_031717_19R_L	V	Rinsate Blank
J21538-1	DD-141	DD-141_031617_01_L	R	
	DS-44	DS-44_031617_01_L	R	
	DD-143	DD-143_031617_01_L	R	
	RS	DS-44_031617_19R_L	R	Rinsate Blank
	RS	RD-64_031617_19R_L	R	Rinsate Blank
	RS	DD-143_031617_19R_L	R	Rinsate Blank
	RD-64	RD-64_031617_01_L	R	
	RD-64	RD-64_031617_36_L	R	Field Duplicate of RD-64_031617_36_L
	RD-98	RD-98_031717_01_L	R	
	RD-34C	RD-34C_031717_01_L	R	
	RS	RD-34C_031717_19R_L	R	Rinsate Blank
J21549-1	DD-144	DD-144_032017_01_L	V	
	TB	DD-144_032017_78_L	V	Trip Blank
	DD-145	DD-145_032017_01_L	V	
	RS	DD-145_032017_19R_L	V	Rinsate Blank
	RD-14	RD-14_032017_01_L	V, G, R, F, TCP	MS/MSD (GRO/DRO, Fluoride, and TCP)
	RD-14	RD-14_032017_36_L	TCP	Field Duplicate of RD-14_032017_01_L
	RD-54A	RD-54A_032017_01_L	V, M, P, R	
	RS	RD-54A_032017_19R_L	V, M, P, R	Rinsate Blank
J21574-1	C-8	C-08_032117_01_L	V, M	
	C-8	C-08_032117_36_L	V	Field Duplicate of C-08_032117_01_L
	RD-54B	RD-54B_032117_L	V, P	
	RD-96	RD-96_032117_01_L	V, M, P, G, R	
	RD-96	RD-96_032117_36_L	M, G	Field Duplicate of RD-96_032117_01_L
	RD-21	RD-21_032117_01_L	V, M, P	
	RS	RD-21_032117_19R_L	V, M, P	Rinsate Blank
	TB	RD-96_032117_78_L	V, G	Trip Blank
	RD-33B	RD-33B_032217_01_L	R	
	RD-17	RD-17_032217_01_L	R	MS/MSD RAD
J21600-1	TB	RD-33B_032217_78_L	V,G, D	Trip Blank
	RD-33B	RD-33B_032217_01_L	V, M, P	MS/MSD Perchlorate
	RD-17	RD-17_032217_01_L	V	

SDG	Well or Piezometer ID	Sample	Analyses	QC
	RD-17	RD-17_032217_36_L	V	Field Duplicate of RD-17_032217_01_L
	RD-27	RD-27_032217_01_L	V, R	MS/MSD VOC
	RD-27	RD-27_032217_36_L	R	Field Duplicate of RD-27_032217_01_L
	RD-33C	RD-33C_032217_01_L	V, M, P, R	
	RD-33C	RD-33C_032217_36_L	M	Field Duplicate of RD-33C_032217_01_L
	RD-19	RD-19_032317_01_L	V, M, G, R, F	MS/MSD VOC
	RD-19	RD-19_032317_36_L	F	Field Duplicate of RD-19_032317_01_L
	RD-34A	RD-34A_032317_01_L	V, M, G, R, F, D	
	RD-34A	RD-34A_032317_36_L	D	Field Duplicate of RD-34A_032317_01_L
	RD-34B	RD-34B_032317_01_L	V, M, R, F, D,	MS/MSD- 1,4 D
	DD-143	DD-143_032317_01_L	N	
	RS	DD-143_032317_19R_L	N	Rinsate Blank
	RS	RD-34B_032317_19R_L	V, M, R, F, D,	Rinsate Blank
J21600-2	SP-T02B	SP-T02B_032317_01_L	V, M, R	
	TB	TB-032317	V	Trip Blank
J21608-1	TB	RD-59B_032317_78_L	V	Trip Blank
	RD-59B	RD-59B_032317_01_L	V, M, P, R, F	
	RD-59B	RD-59B_032317_36_L	M, F, R	Field Duplicate of RD-59B_032317_01_L
	RD-59C	RD-59C_032317_01_L	V, M, P, R, F	MS/MSD, Metals, RAD, Fluoride
	RD-59A	RD-59A_032317_01_L	V, M, P, R, F	
J21629-1	TB	RS-27_032817_78_L	V	Trip Blank
	RS-27	RS-27_032817_01_L	V, M	
	RD-87	RD-87_032817_01_L	T	
	RD-88	RD-88_032817_01_L	T, R	
	RS-25	RS-25_032817_01_L	V, M, R	
	SP-900A	SP-900A_032717_01_L	V, P	
	SP-900B	SP-900B_032717_01_L	V, P	
	SP-424A	SP-424A_032817_01_L	V, P, M, D, F, R. T	
	SP-424A	SP-424A_032817_36_L	V, P, D, F	Field Duplicate of SP-424A_032817_01_L
	SP-424B	SP-424B_032817_01_L	V, P, M, D, F, R, T	
	TB	TB-032817	V	Trip Blank

SDG	Well or Piezometer ID	Sample	Analyses	QC
J21642-1	TB	RS-27_032917_78_L	V, G, D, TCP	Trip Blank
	FB	RS-27_032917_19_L	V, M, P, G, R, N, F, TCP, D	Field Blank
	IDW	IDW_032917_01_L	V, M, P, G, R, N, F, D	
	SP-424C	SP-424C_032917_01_L	M, R, T	
	SP-424C	SP-424C_032917_01_L	V, P, F, D	MS/MSD
	TB	TB-032917	V, D	Trip Blank
J21665-1	SP-19A	SP-19A_033017_01_L	V, P, M, D, F, R, T	
	SP-19B	SP-19B_033017_01_L	V, P, M, D, F, R, T	
	TB	TB-033017	V, D	Trip Blank
J21685-1	SP-T02D	SP-T02D_033117_01_L	V, M, R, T	
	TB	TB-033117	V	Trip Blank
J21699-1	SP-424C	SP-424C_040317_36_L	M, R, T	

Note: Sample ID table compiled from the chain-of-custody forms
TB = trip blank
RS = rinsate
FB = field blank

T = tritium
V = volatile organic compounds (VOCs)
G = gasoline range organics (GRO) and/or diesel range organics (DRO)
M = metals, P = perchlorate
N = nitrate as N, F = fluoride
R = radiochemical analyses
D = 1,4-dioxane
TCP = 1,2,3-trichloropropane

Attachment 2

Data Validation Qualifier Definitions

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Inorganic Data Validation Qualifiers

Flag	Definition
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
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 analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

Organic Data Validation Qualifiers

Flag	Definition
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
NJ	Presumptively present at an estimated quantity (use with Tentatively Identified Compounds (TICs) only). A TIC is a compound not specified on the Target Compound List (TCL). A mass spectral library search is used to identify the compound.

Radiochemical Data Validation Qualifiers

Flag	Definition
	The analysis was performed, and radioactivity was detected (e.g., the radioanalytical result is statistically positive at the 95% confidence interval and is above its MDC). **NOTE:** *The radionuclide is considered to be present in the sample.*
U	The analysis was performed, but no radioactivity was detected (i.e., the radioanalytical result was not statistically positive at the 95% confidence interval and/or the result was below its MDC). The "U" qualifier flag is also applicable to any result reported as zero (0) (± an associated uncertainty). **NOTE:** *The radionuclide is not considered to be present in the sample.*
UJ	The analysis was performed, but the result is highly questionable due to analytical and/or laboratory quality control anomalies. The use of such a result is strongly discouraged. Analytical and quality control anomalies include such items as: significant blank contamination, known photopeak interferences and/or photopeak resolution problems, known matrix interferences, unacceptable laboratory control sample recoveries, serious instrument calibration problems, improper sample preservation, etc. The "UJ" qualifier flag could designate a possible false positive result in the case of a result that is statistically positive at the 95% confidence level. The "UJ" qualifier flag could indicate the result is considered an estimated non-detect (a non-detect that may be due to loss of analyte from lack of sample preservation, holding time exceedances, etc.). The specific use of the "UJ" flag is included by the validator in the text of the validation report. **NOTE:** *The radionuclide may or may not be present in the sample and the result is considered highly questionable.*
J	The analysis was performed, and radioactivity was detected (i.e., the radionuclide result is statistically positive at the 95% confidence interval and is above its MDC). However, the result is questionable due to analytical and/or laboratory quality control anomalies/ irregularities and should therefore be used only as an estimated (approximated) quantity. Analytical and/or quality control anomalies include such items as: laboratory duplicate imprecision, unsatisfactory analytical yields, insufficient laboratory control sample recoveries, unacceptable PE sample results, instrument calibration problems, improper sample preservation, etc. **NOTE:** *The radionuclide is considered to be present in the sample; however, the result may not be an accurate representation of the amount of activity actually present in the sample.*
R	The analysis result is unusable and was rejected due to severe analytical and/or quality control problems. **NOTE:** *The radionuclide may or may not be present, and the result is known to be inaccurate or imprecise.*