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FINAL
2011-2012 ANNUAL MONITORING REPORT
LONG-TERM GROUNDWATER MONITORING PROGRAM
MARCH AIR RESERVE BASE AND
FORMER MARCH AIR FORCE BASE, CALIFORNIA

Prepared for:

Air Force Civil Engineer Center (AFCEC)
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December 09, 2013

DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE SAN ANTONIO LACKLAND TEXAS

9 December 2013

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JERRY W BINGHAM, P.E.
Environmental Program Manager

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Final 2011-2012 Annual Monitoring Report, Long-Term Groundwater Monitoring Program, March Air Reserve Base and Former March Air Force Base, CA

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14. ABSTRACT
This Annual Monitoring Report presents a detailed evaluation of data trends of historical groundwater data, with emphasis on data collected during the fourth quarter of 2011 and the second quarter of 2012. Data from both the AFRC and AFRPA/AFCEC groundwater monitoring programs are presented. Groundwater elevation and flow direction as well as water quality data are evaluated. The performance of several remediation systems is also evaluated. Recommendations for further groundwater sampling in 2012-2013 and well destruction are presented.

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TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

The following Tables, Figures, and Appendices are located after Section 5.0:

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES *(Continued)*

(Files for Appendices A through G are on Compact Disk [CD])

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

>	greater than
<	less than
/	normal/field duplicate
↑	increasing trend
↓	decreasing trend
↔	unchanged trend
μg/L	micrograms per liter
°C	degrees Celsius
‘	feet
™	trademark
A	annual
ADR	Analytical Data Report
AECOM	AECOM Technical Services, Inc.
AF	Air Force
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFCEE	Air Force Center for Engineering and the Environment
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
AGMR	Annual Groundwater Monitoring Report
AL	lower alluvial
AMR	Annual Monitoring Report
AOC	area of concern
ARB	Air Reserve Base
AU	upper alluvial
Ave	Avenue
Base	March Air Reserve Base and Former March Air Force Base
BD	bedrock
bgs	below ground surface
Bldg	building
Blvd	Boulevard
BTEX	Benzene, toluene, ethylbenzene, and xylenes
btoc	below top of casing
CA	California
CD	compact disk
CDPH	California Department of Public Health
CDRL	Contract Deliverables Requirements List
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	contaminant of concern
COCR	chain-of-custody record
CPT	cone penetrometer test
CTCL	carbon tetrachloride

LIST OF ACRONYMS AND ABBREVIATIONS *(Continued)*

D	dedicated equipment
DCA	dichloroethane
DCE	dichloroethene
DO	dissolved oxygen
DPE	dual-phase extraction
DQO	data quality objective
Dr	Drive
e.g.	for example (*exempli gratia*)
Earth Tech	Earth Tech, Inc.
EGETS	Expanded Groundwater Extraction and Treatment System
EISB	enhanced *in situ* bioremediation
ENE	east-northeast
EVO	emulsified vegetable oil
Expy	Expressway
ft	feet
feet bgs	feet below ground surface
GAC	granular activated carbon
GCG	groundwater cleanup goal
GETS	groundwater extraction and treatment system
gpm	gallons per minute
GW	groundwater
HS	HydraSleeve™
HSU	hydrostratigraphic unit
I-215	Interstate 215
ID	identification
i.e.	that is (*id est*)
Int'l	International
IT Corporation	International Technology Corporation
IRP	Installation Restoration Program
JP-4	jet propellant number 4
LTM	long-term groundwater monitoring
MAROS	Monitoring and Remediation Optimization System
MCL	maximum contaminant level
MDL	method detection limit
mg/L	milligrams per liter
MS	machined steel
mS/cm	micoSiemens per centimeter

LIST OF ACRONYMS AND ABBREVIATIONS *(Continued)*

msl	mean sea level
MTBE	methyl tert-butyl ether
mV	millivolts
MWH	MWH Americas, Inc.
N	north
NA	not applicable; not available
ND	non-dedicated equipment; not detected
NE	not encountered; not established
NM	not measured
No.	number
NP	none promulgated
NS	not sampled
NW	northwest
NTU	nephelometric turbidity units
OU	Operable Unit
OU 1	Operable Unit 1
OU 2	Operable Unit 2
ORP	oxidation-reduction potential
OWS	oil-water separator
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PET	petroleum (non-CERCLA) site
pH	negative logarithm of the hydrogen ion concentration
PHG	Public Health Goal
POL	petroleum, oil, and lubricants
ppm	parts per million
PQL	practical quantitation limit
PVC	polyvinyl chloride
Q	quarter
QA/QC	quality assurance/quality control
QPP	Quality Program Plan
RBE	Regional Basin Evaluation
Rd	Road
Ref	reference
RI/FS	Remedial Investigation/Feasibility Study
RL	reporting limit
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board

LIST OF ACRONYMS AND ABBREVIATIONS *(Continued)*

S	semiannual
SA	semi-annually
SC	specific conductance
SE	southeast
SS	stainless steel
SSW	south-southwest
St	Street
SVE	soil vapor extraction
SW	southwest
TCE	trichloroethene
Tetra Tech	Tetra Tech, Inc.
TOC	top of casing
TPH	total petroleum hydrocarbons
TX	Texas
UCL	upper confidence limit
UCR	University of California, Riverside
UNKN	unknown
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
W	west
Wire	wire wrap

EXECUTIVE SUMMARY

This Annual Monitoring Report (AMR) for the 2011–2012 annual monitoring period at March Air Reserve Base (ARB) (Base) was prepared for the Air Force Reserve Command (AFRC) and the Air Force Civil Engineer Center (AFCEC) to present field activities, results, and an evaluation of current groundwater conditions at March ARB as part of ongoing long-term groundwater monitoring (LTM) programs on the Base. Monitoring recommendations have been made to continue to optimize the LTM programs.

WORK PERFORMED

Groundwater field activities from the 2011–2012 annual monitoring period (August 2011 through July 2012) included a semiannual and annual Basewide potentiometric survey, semiannual and annual free-phase product measurements, and semiannual and annual collection of groundwater samples. During the 2011–2012 annual monitoring period, a total of 204 conventional monitoring wells, 23 intervals in six Westbay™ wells, and 21 extraction wells were sampled. One well (18VW11) was destroyed during the 2011–2012 annual monitoring period; however, this well was located at Petroleum Site 18 and the well destruction activities are discussed in a separate document for the petroleum sites (AECOM Technical Services, Inc. 2013a).

Following field activities, an evaluation of groundwater conditions was completed including contaminant plume assessments at the Base boundary.

RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Groundwater Elevations

Based on groundwater elevation data collected for both LTM programs, groundwater levels continued to rise in portions of the Base. Groundwater level changes ranged from a decrease of 17.9 feet (4PZ10 at Site 4) to an increase of 11.5 feet (east of Site 31 at off-base well OBMW02B). Between May 2011 and May 2012, groundwater levels increased an average of 0.2-foot (not including production well data). The average depth to groundwater on-Base in May 2012 was approximately 20 feet below ground surface (bgs) (not including production well data). In the majority of the flightline area (Sites 8, 18, and 33), depth to groundwater was measured at less than 13 feet bgs. Since 2000, groundwater levels have increased an average of 1.4 feet per year across the Base with the highest rate of increase (greater than 2 feet per year) in the northwestern portion of the Base and southeast in the off-Base area.

Groundwater Monitoring

OU 1 Summary: Based on data collected and evaluated for the 2012 annual monitoring round, groundwater within the Operable Unit (OU) 1 Plume does not yet comply with cleanup goals for carbon tetrachloride (CTCL), cis-1,2-dichloroethene (DCE), tetrachloroethene (PCE), and trichloroethene (TCE). Contamination trends, within the OU 1 Plume and south of the off-Base plume, indicate a southeasterly migration. The off-Base PCE plume in the lower alluvial unit has expanded in size since 2000 to encompass monitoring wells 5MW36 and OBMW08B, while the lower alluvial unit TCE plume is expanding to the south along the Base boundary to monitoring well OU1MW13. However, the off-Base TCE plume in the upper alluvial unit has decreased significantly in size compared to 2000. The upper and lower alluvial CTCL plume sizes have remained generally similar in extent from 2000 to 2012, except that in 2012, the OU 1 upper alluvial CTCL plume was connected to the OU 2 CTCL plume based on an interpretation of the Site 8 source areas.

Concentrations of PCE, TCE, and CTCL in the Expanded Groundwater Extraction and Treatment System (EGETS) and nearby monitoring wells appear to have stabilized, with no notable increases since 2006. Based on the comparison of plumes in 2000 and 2012, the EGETS, as currently operating, appears to be intercepting the majority of the on-Base plume and minimizing migration off-Base. Few changes between the 2007 and 2012 plumes were noted; except for dispersion of the upper alluvial PCE plume along the southern Base boundary and off-Base and dispersion of the lower alluvial CTCL plume off-Base.

Site 4 Summary: Based on data collected and evaluated for the 2012 annual monitoring round, groundwater at Site 4 does not yet comply with the cleanup goals for cis-1,2-DCE, PCE and TCE. A comparison of the extent of contamination in 2000 and 2012 at Site 4 shows that the upper alluvial plume has dispersed since 2000, with concentrations of PCE increasing in wells to the west and north of Site 4. Apparent changes to the plume are also likely due to changes in the LTM program including the installation of monitoring wells and the associated reinterpretation of the plume extent. Apparent changes in the bedrock PCE plume are minimal with changes in the interpreted extent, primarily related to the installation of monitoring wells and acquisition of new data since 2000. Bedrock well 4MW31 was installed in 2008 to monitor upgradient groundwater conditions, and confirmed that there was no upgradient source for the PCE plume west of Site 4.

Site 7 Summary: Based on data collected and evaluated for the 2012 annual monitoring round, groundwater at Site 7 does not yet comply with cleanup goals for benzene, CTCL, cis-1,2-DCE, and

TCE. The TCE plume at Site 7 has not changed in shape since wells were installed in 2007 to define the plume, but concentrations of TCE have decreased at the site. Cis-1,2-DCE was detected in extraction well EX05A at concentrations above the maximum contaminant level (MCL) in May 2012, and in extraction well OU1GEW04 below the MCL; indicating at least partial dechlorination of TCE at the site. CTCL concentrations have slowly been increasing in wells along the Base boundary over time, and this trend appears to be related to downgradient migration of the OU 1 and OU 2 Plumes. Benzene was detected above its MCL in two upper alluvial wells.

Site 31 Summary: Based on data collected and evaluated for the 2012 annual monitoring round, groundwater at Site 31 does not yet comply with the cleanup goal for TCE. The upper alluvial Site 31 TCE plume extends from Site 31B at 31BGEW02 off-Base to 5MW31, and includes small TCE plumes at Site 31A (represented by 31MW04, 31PW03PRC, and 29MW01). The plume at 31MW04 rebounded and then decreased in May 2012; concentrations have decreased in most areas of the plume. Compared to 2000 data, TCE concentrations downgradient from Site 31B have decreased.

OU 2 Summary: Benzene, CTCL, cis-1,2-DCE, 1,2-dichloroethane (DCA), ethylbenzene, methyl tert-butyl ether (MTBE), TCE, and vinyl chloride were detected in wells from OU 2. A diffuse OU 2 Plume consisting of PCE, TCE, and CTCL emanates from Buildings 355, 373, 434, and 453 (Expanded Site 8 Area) and Site 36. The plumes extend downgradient to Site 33 and, in the case of CTCL, the upper alluvial plume extends southeast of Site 33 to the OU 1 Plume. Upper alluvial TCE and cis-1,2-DCE concentration trends at Buildings 355/373 are generally decreasing following the implementation of an enhanced *in situ* bioremediation (EISB) pilot study at this site. In general, concentrations of TCE in the lower alluvial unit appear to be decreasing downgradient. CTCL in the upper alluvial unit has commingled with the OU 1 Plume and has decreased in concentration. Concentrations of CTCL and TCE have increased in 453MW02 (immediately downgradient from 453MW01); however, CTCL concentrations are approximately an order of magnitude lower than at 453MW01. Increasing concentrations of CTCL and TCE at the downgradient well 453MW01 indicate that the groundwater contamination is not limited to the former source area

Site 8, Building 2300: TCE concentrations at 5M8MW02 continue to decrease since the well was installed in 1993.

Site 8, Building 2307: The upper alluvial hot spot represented by 2307MW01 had previously demonstrated a decreasing PCE trend; however, the PCE concentration has increased in 2010, following termination of active site remediation; then decreased slightly in 2012. PCE concentrations increased downgradient at 2307MW03 when compared to 2000; then decreased in 2012. The presence of TCE and cis-1,2-DCE indicates that PCE biodegradation may be occurring; however, no vinyl chloride has been detected at the site.

Site 36 Summary: Petroleum hydrocarbons are found in wells adjacent to the former source area (dry well) in the upper alluvial unit; the highest concentrations of petroleum hydrocarbons were detected in samples from 36DP05D and 36DP06D, although concentrations have decreased. TCE concentrations have decreased significantly at Site 36, which had a historical high in 6M36MW07 in 1996, and a maximum concentration above the TCE MCL in 2MW09 in 2012. Concentrations of cis-1,2-DCE are highly variable in several wells with historically high TCE levels, indicating degradation. The 2012 maximum concentration of cis-1,2-DCE detected in 36DP05D, indicated a significant decrease in 2010; however, the concentration increased in 36DP05D in May 2012. Additionally, vinyl chloride was detected in 36DP05D, 36DP06D, 6M36MW07, and 6M36MW11, indicating anaerobic reductive dechlorination of DCE isomers. Neither cis-1,2-DCE nor vinyl chloride appear to be accumulating in Site 36 wells, indicating that dechlorination may be complete or other attenuation mechanisms may be occurring. Changes in constituent of concern concentrations over the last year can be attributed to the EISB pilot study conducted at this site.

1.0 INTRODUCTION

This Annual Groundwater Monitoring Report (AGMR) presents an evaluation of current groundwater conditions at March Air Reserve Base (ARB), California, during the 2011–2012 annual reporting period (August 2011 through July 2012). Data were collected as part of the ongoing long-term groundwater monitoring (LTM) programs for the Air Force Reserve Command (AFRC) and the Air Force Civil Engineer Center (AFCEC) (sites formerly managed by the Air Force Real Property Agency [AFRPA]). Groundwater monitoring at March ARB and Former March AFB was conducted during the fourth quarter 2011 and second quarter 2012. This report was prepared by AECOM Technical Services, Inc. (AECOM) for AFCEC in accordance with Task Order 0007, Contract FA8903-09-D-8547.

1.1 SITE LOCATION AND BACKGROUND

March ARB is located at the northern end of the Perris Valley, east of the city of Riverside, in Riverside County. The Base is located immediately east of Interstate 215 (I-215), approximately 60 miles east of Los Angeles and 90 miles north of San Diego (Figure 1-1). The former Air Force Base (AFB) covered an area of more than 6,700 acres. The Defense Base Closure and Realignment Commission recommended March AFB for realignment in 1993. AFRC retained the approximately 2,700-acre cantonment area, designated as March ARB (Figure 1-2), for military use. AFRPA has transferred the remaining Federally-owned former Base property to a local reuse authority, so that the property can be developed for commercial or municipal use.

Forty-eight Installation Restoration Program (IRP) sites have been identified at the former March AFB. Most of these sites are organized into four primary operable units (OUs), as listed in Table 1-1. OU 1 sites are located in the eastern portion of the Main Base. OU 2 sites are dispersed through the northern and central portions of the Main Base and West March (west of I-215). OU 4 includes IRP sites and areas of concern (AOC) that are not included in OU 1 and OU 2 and do not have associated groundwater contamination. Site 33, which at one time comprised OU 3, has been reclassified as a petroleum site and not a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site, and therefore is presented in a separate document (AECOM Technical Services, Inc. [AECOM] 2013a).

The AFRC LTM Program includes groundwater monitoring at the Basewide groundwater plume (including the OU 1 and OU 2 Plumes) on the active March ARB (Figure 1-3); the plumes emanate from sites within the cantonment area, and the sites listed below:

- Site 2;
- Site 8 – Buildings 2300, 2307, 355/373, 434, and 453;
- Site 18;
- Site 31;
- Site 33; and
- Site 36.

The AFCEC/AFRPA LTM Program includes two sites (Sites 4 and 7) located outside the cantonment area in the former March AFB area. Site and monitoring well locations are shown on Figure 1-3; off-Base water supply well locations are shown on Figure 1-4. Groundwater extraction, injection, and monitoring wells associated with the OU 1 Expanded Groundwater Extraction and Treatment System (EGETS) are shown on Figure 1-5.

Data for Site 18 (originally included in OU 1) and Site 33 (originally included in OU 3) are not presented in this report, as these sites are impacted by petroleum hydrocarbons, including free-phase product. Because these sites are regulated as petroleum sites under the State Compliance Program, rather than under the CERCLA program, they are presented in a separate document (AECOM 2013a). However, chlorinated solvent plumes at, or encroaching onto, Sites 18 and 33 are monitored and discussed as part of the OU 2 Plume. This report does not present Basewide OU (i.e., OU 4) monitoring because there is no ongoing groundwater monitoring at these sites. Additionally, this report does not present Site 6 landfill monitoring, or Site 24 landfill monitoring data. Data evaluation and recommendations for Site 6 are presented in a separate document. Site 24 landfill monitoring is conducted under the Formerly Used Defense Sites program by the United States Army Corps of Engineers and presented in separate documents.

1.2 MONITORING PROGRAM OVERVIEW AND OBJECTIVES

Monitoring wells, Westbay™ wells, piezometers, extraction wells, and injection wells are located at March ARB. Well construction data, including the aquifer unit in which each well is screened, are provided in Appendix A. Well locations are shown on Figure 1-3. In addition, several private water supply wells are located in the vicinity of the Base, as shown on Figures 1-3 and 1-4. The Westbay™ wells have sampling intervals at multiple depths. Each Westbay™ completion includes up to six sampling intervals, each of which has a unique well identification number. Wells are assigned to a site, depending on use. If a well is used to investigate, monitor, or treat a groundwater plume emanating from a source area, the well is assigned to that site.

Current LTM requirements for the March ARB and the former March AFB LTM Programs are summarized in the *Final 2010-2011 AMR* (MWH Americas, Inc. [MWH] 2012a). Under the March ARB LTM Program, groundwater samples are collected from up to 212 monitoring wells, 21 extraction wells, and 24 Westbay™ sampling intervals at varying frequencies (excluding wells at Site 18, which are monitored as a petroleum-only site and discussed in a separate document [AECOM 2013a]). These wells are primarily located within the cantonment area, which covers much of the Main Base; others are located east of the former Base boundary where groundwater contaminants of concern (COCs) migrated before implementation of remedial measures. In addition, the March ARB LTM Program includes sampling of monitoring wells located within, or adjacent to, plumes emanating from sites within the cantonment area. Numerous monitoring wells, including Westbay™ sampling intervals and five water supply wells located off-Base were also sampled as part of the LTM Program. For the former March AFB LTM Program managed by AFCEC, wells outside the cantonment area were sampled; these wells monitor Site 4 (LF006) and Site 7 (FT007).

The overall objectives of the March ARB and former March AFB LTM Programs are as follows:

- Monitor variations in groundwater elevations and flow patterns.
- Assess the degree and extent of contamination.
- Assess short- and long-term variations in groundwater analytical data.
- Provide current groundwater analytical data to evaluate the effectiveness of ongoing remedial actions.

- Provide current groundwater data for assessing potential impacts to human health and the environment (especially the groundwater resource).
- Monitor compliance with applicable cleanup goals, water quality standards, and approved decision documents.

These objectives support *OU 1 Record of Decision* (ROD) (Earth Tech 1995) requirements that the OU 1 Plume (consisting of several chlorinated solvent site plumes) be prevented from migrating off-Base, that off-Base plume maximum concentrations decrease, and not threaten off-Base private water supplies (Earth Tech, Inc. [Earth Tech] 1995). OU 1 monitoring results are compared with groundwater cleanup goals established in the *OU 1 ROD* (Earth Tech 1995). The action levels for the sites in OU 2 are the lower of either Federal or State maximum contaminant levels (MCLs) and California Department of Public Health (CDPH) notification levels for COCs without promulgated MCLs.

Activities performed during monitoring events include potentiometric water level surveys, free-phase product measurements, and groundwater sample collection. Sampling frequency was based on results from the Monitoring and Remedial Optimization System (MAROS) evaluation conducted using 2009 data (MWH 2010a).

1.3 REPORT ORGANIZATION

The remainder of this report is organized as follows:

- Section 2.0, Summary of Groundwater Monitoring Program Activities, describes field and analytical procedures from the annual monitoring event.
- Section 3.0, Conceptual Site Model, describes lithology and groundwater characteristics at the Base, including groundwater levels and precipitation.
- Section 4.0, OU 1 Sites Groundwater Data Assessments, describe data and interpretations for source areas in OU 1 and the off-Base OU 1 Plume.
- Section 5.0, OU 2 Sites Groundwater Data Assessment, describes data and interpretations for the OU 2 Plume and OU 2 source areas.
- Section 6.0, Conclusions and Recommendations, includes a discussion of the groundwater plumes from a Basewide perspective, a summary of primary conclusions and

recommendations from Sections 4.0 and 5.0, and the proposed monitoring schedule for 2012-2013.

- Section 7.0, References, includes all reference documents used in compiling this report.
- Appendix A, Well Construction Data, includes a summary of construction data for groundwater monitoring wells, piezometers, extraction wells, and private water supply wells.
- Appendix B, Daily Quality Control Reports, includes a compilation of daily quality control reports for the annual monitoring event that describe sampling operations and quality control activities.
- Appendix C, Monitoring Well Sampling Logs, includes a compilation of the groundwater sampling forms from the annual sampling activities.
- Appendix D, Full Data Tables, includes tabulated data for all wells sampled during the 2011-2012 annual monitoring period.
- Appendix E, Historical Data Tables, includes a compilation of all historical data for the indicator compounds and primary COCs at March ARB up through July 2011. These tables were previously presented in the *2010-2011 AGMR* (MWH 2012). Data collected as part of the 2011-20112 monitoring are included in Appendix D.
- Appendix F, Analytical Data Report (ADR), describes data review and validation results for samples collected in support of the annual monitoring event.
- Appendix G, Historical Groundwater Elevation Data, includes all groundwater elevation data collected at March ARB from 1992 through the present.

2.0 SUMMARY OF GROUNDWATER MONITORING PROGRAM ACTIVITES

The following section describes field activities for the 2012 annual monitoring round conducted at March ARB. The Fourth Quarter 2011 groundwater monitoring event was discussed in the *Fourth Quarter 2011 Long-Term Groundwater Monitoring Informal Technical Information Report* (MWH 2011b). The 2012 annual monitoring round was conducted from 30 April to 13 June 2012. Additional sampling conducted in September 2012 is discussed in the *2012-2013 CG049 Semiannual Groundwater Monitoring Informal Technical Information Report* (AECOM 2013b) since this sampling occurred past this reporting period for wells normally included in the AGMRs. Daily field activities are documented in the Daily Quality Control Reports included in Appendix B. Field program activities included Basewide potentiometric water level surveys, free-phase product measurements, and collection of groundwater samples. Requirements for field procedures, laboratory analyses, and quality assurance/quality control (QA/QC) procedures are described in the approved *Final Revised Quality Program Plan* (QPP) (MWH 2010b). All field activities were performed in accordance with the Health and Safety Plan included as Part II of the Revised QPP.

2.1 POTENTIOMETRIC SURVEY

The potentiometric water level survey for the annual monitoring event was conducted from 30 April to 24 May 2012. Water levels for the Westbay™ wells were measured on 11 June through 13 June 2012, during sample collection.

Water level measurements from monitoring, extraction, and injection wells were taken from the top of the well casing to the nearest 0.01-foot using an electronic water level indicator. If extraction was occurring, repeated measurements were made to identify the average depths to water, which were recorded to the nearest appropriate significant digit (generally to the nearest 0.1-foot). Water levels were not measured directly in the Westbay™ wells; instead, measurements of the pressure fluid in the sampling interval were collected and converted to piezometric levels using the methodology described in the *Revised QPP* (MWH 2010b). Data collected during the potentiometric survey are summarized in Table 2-1. These data were used to create potentiometric surface maps for the Base (Figures 2-1 through 2-3 for Fourth Quarter 2011 and Figures 2-4 through 2-6 for Second Quarter 2012). Figures 2-1 and 2-4 show the upper alluvial unit, Figures 2-2 and 2-5 show the lower alluvial unit, and Figures 2-3 and 2-6 show the bedrock unit.

Cones of depression at the extraction wells (4MW01, 4EX01, and 4EX02) are noted in the water levels collected from neighboring wells when the extraction wells are active, but do not typically appear to impact the potentiometric surface in the upper alluvium (Figures 2-1 and 2-4) near the operating extraction wells. There is a localized impact near the active extraction wells near Site 4 in the lower alluvial unit (Figures 2-2 and 2-5) and as well as in the bedrock unit (Figures 2-3 and 2-6). Groundwater elevations in the northern portion of the landfill show that the landfill waste is submerged up to 13.3 feet (at Well 4MW23) in groundwater.

Groundwater pumping at Site 4 is continuing and the Site 4 remedy has been successful in reducing contaminant concentrations. Approximately 3.65 pounds of COCs were removed from groundwater at Site 4 during the 2011–2012 monitoring period (AECOM 2013c), and approximately 48.6 pounds of COCs have been removed since the extraction wells started operating. At the present time, 4MW01, 4EX01, and 4EX02 are operating and are sampled semiannually.

During the potentiometric survey, groundwater wells were also checked for the presence of free product, or floating nonaqueous phase-liquid and free-product gauging. During the 2012 annual monitoring round, free product was detected at Site 18. Sites 18 and 33 are discussed in a separate document for petroleum sites (AECOM 2013a).

2.2 SAMPLE COLLECTION AND ANALYSIS

Sample collection for the 2012 annual monitoring round was conducted from 21 May 2012 to 13 June 2012. A total of 204 conventional monitoring wells, 23 intervals in six Westbay^{TM} wells, and 21 extraction wells were sampled by MWH as part of various LTM and operation, maintenance, and monitoring programs at March ARB sites; it did not include the petroleum sites. The five water supply wells (Bowers, Clark1, Mendez, Nodarse, and Terao) were sampled by MWH. A list of the wells sampled and the sampling rationale are provided in Table 2-2. The Indian Street and Perry #1 Street water supply wells were sampled by Eastern Municipal Water District for selected COCs on 11 January and 09 April 2012, respectively; these data are included in this report. Sampling activities are described below.

2.2.1 WESTBAY™ WELLS

Sampling collection at the Westbay™ wells was completed in accordance with the manufacturer's guidance and the procedures described in the *Revised QPP* (MWH 2010b). Groundwater samples were collected using a sampling probe equipped with a vacuum sample container. The probe was lowered to the desired sampling port and then opened to allow the container to be filled. Once the pressure in the sample container equilibrated to formation pressure, the sampling port was closed and the sampling probe was disengaged from the port. The sampling probe was then retrieved from the well and used to fill the sample containers provided by the laboratory. The remaining water in the probe was used to measure temperature, specific conductance (SC), negative logarithm of the hydrogen ion concentration (pH), dissolved oxygen (DO), and turbidity. Westbay™ water quality measurements were recorded on field data logs and are included in Table 2-3. The logs are included in Appendix C.

2.2.2 CONVENTIONAL MONITORING WELLS

All sampling operations at conventional monitoring wells were completed in accordance with the revised QPP (MWH 2010b). A total of 177 wells were sampled using HydraSleeve™ samplers, and 30 wells were sampled using a low-flow sampling method with either a dedicated pump or a portable submersible pump.

2.2.2.1 HydraSleeve™ Sampling

Wells sampled using HydraSleeve™ samplers were sampled based on location and the approximate length of time required for water in the wells to equilibrate (based on the time required for water to move 1-foot in the formation).

To collect groundwater samples, a disposable, whole-volume HydraSleeve™ sampler was lowered into each of the wells, using a disposable tether and a reusable 5-ounce or 8-ounce weight, to a predetermined sample depth identified in the *Revised QPP* (MWH 2010b) (Table 2-2). The samplers were left in the wells for their equilibration periods (three days to 14 days or longer) to allow groundwater conditions to restabilize within the screened interval. After three days to 14 days, the sampler was pulled up, and the valve was opened to allow collection of groundwater samples. The sampler was pulled up at a rate of at least 1-foot per second. Once the HydraSleeve™ sampler was removed, a plastic discharge tube was inserted into the plastic sampler and the groundwater sample was collected directly into pre-cleaned and pre-preserved containers supplied by the laboratory. Measurements of temperature, pH, SC, DO, oxidation-reduction potential (ORP), and turbidity were taken and recorded on groundwater sample collection logs, which are included in Appendix C. Water quality measurements for each conventional monitoring well are included in Table 2-4.

2.2.2.2 Low-Flow Sampling

Groundwater samples were collected from 20 conventional wells using dedicated pumps as part of the LTM Programs. For wells without dedicated pumps, a decontaminated pump was inserted into the well so that the pump intake was positioned adjacent to the well screen. Each well was purged at a flow rate of approximately 0.2 gallons per minute (gpm) to 0.5 gpm. Measurements of temperature, pH, SC, DO, turbidity, and depth to water were taken every five minutes and recorded on groundwater sample collection logs, which are included in Appendix C. Purging continued until a minimum of six readings had been taken and field parameters stabilized according to the criteria presented in the *Revised QPP* (MWH 2010b). In addition, a turbidity goal of 10 nephelometric turbidity units (NTUs), or less, was set for all samples. In instances when the turbidity exceeded the goal, a stabilization criterion of 10 percent between consecutive readings was applied. Final water quality measurements for conventional monitoring wells are included in Table 2-4. Once purging was completed, groundwater samples were collected directly from the purge line into pre-cleaned and pre-preserved containers supplied by the laboratory.

2.2.3 EXTRACTION WELLS

Extraction wells were sampled for operation monitoring and LTM. Prior to sample collection from extraction wells at Sites 31 and 36 and OU 1, the inactive wells were operated for four to eight hours to bring formation water into the screen and maintain the extraction pumps. Samples from active and inactive extraction wells at Sites 31 and 36 and OU 1 were collected directly into pre-preserved containers from sample ports installed in extraction well piping.

2.2.4 WATER SUPPLY WELLS

To protect public health, all accessible active production wells located in the vicinity of March ARB groundwater plumes are sampled annually or semiannually. Groundwater samples from water supply wells were collected directly from sample ports installed in the supply well piping. Samples were collected directly into pre-preserved containers using the lowest flow rate possible to reduce aeration of the samples and possible loss of preservative. Immediately before sampling, the sample line was purged briefly (approximately one minute to two minutes) to clear it and allow it to flow freely.

2.2.5 SAMPLE ANALYSIS

Immediately after collection, each sample was labeled with a unique sample identification number and placed in a cooler containing ice. Samples were transported to EMAX Laboratories, Inc., of Torrance, California, under chain of custody procedures described in the *Revised QPP* (MWH 2010b). A completed chain of custody record (COCR) accompanied each sample shipment. Copies of each COCR are available in the AECOM project files.

All groundwater samples collected for the LTM Program were analyzed for volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method 8260B. All samples, with the exception of those collected from selected wells at Site 36, were analyzed for a reduced analyte list consisting of 17 compounds, as approved by the USEPA (USEPA 1999) and specified in the *Revised QPP* (MWH 2010b). Samples from Site 36 were analyzed for a 61-compound VOC list (due to the wide range of COCs at these sites) in order to be consistent with ongoing monitoring at Site 36. Appendix F summarizes the field sample identifications and analytes for each sample and provides a cross-reference with laboratory identifications. Additionally, for Site 36, Stoddard solvent range hydrocarbons using USEPA Method 8015B was also analyzed (Appendix F).

2.2.6 DATA PRESENTATION

Analytical results are presented in three types of tables in this report as well as on data summary figures:

- Tabulated summaries of detected contaminant concentrations for OU 1 and OU 2 including Sites 4, 8 (Buildings 2300 and 2307), 31, and 36 for the entire 2011–2012 reporting period;
- Full data tables, including all analytical data for the Second Quarter 2011 (Appendix D); and
- Historical data for each well for indicator compounds from which trends can be observed (Appendix E).

These data were evaluated using multiple methods, including comparison to data quality objectives (DQO) defined in the *Revised QPP* (MWH 2010b) and evaluation of plume extent changes from 2000, 2007, and 2012. Trend evaluations are based on historical data (Appendix E).

2.2.7 FIELD QUALITY ASSURANCE/QUALITY CONTROL

Field QA/QC activities included equipment calibration, equipment decontamination, and collection of QA/QC samples.

Sampling equipment, including the water quality meter (Horiba™ Model U-10 or U-22 or Myron UltraMeter) and MiniRae™ photoionization detector, were calibrated daily. All calibration activities were performed in accordance with the manufacturers' suggested procedures. Equipment calibration results were recorded in field logbooks and equipment calibration forms.

Non-dedicated groundwater sampling and monitoring equipment was decontaminated prior to use and after each sample was collected. This equipment included the non-dedicated pump and sample tubing, water quality meter, and water level and dual-phase indicators, acrylic bailer, and other sampling equipment. All decontamination procedures were performed in compliance with the procedures outlined in the *Revised QPP* (MWH 2010b). Tools used to measure water levels and free product were thoroughly scrubbed with a detergent solution and rinsed, between measurements, with distilled water to remove residual contamination.

The field QA/QC program for the annual monitoring round included the following samples:

- Field duplicate;
- Performance evaluation;
- Matrix spike/matrix spike duplicate;
- Equipment rinsate blank;
- Trip blank; and
- Temperature blank.

Field QA/QC program results are discussed in the ADR in Appendix F.

2.3 DATA VALIDATION PROCEDURES

Laboratory Data Consultants, Inc., of Carlsbad, California, was subcontracted to perform independent, third-party data validation. The analytical data were reviewed to assess the laboratories' adherence to the project-specific requirements, and the quality and usability of the data. Data were reviewed against the QC and calibration requirements specified in the *Revised QPP* (MWH 2010b). A detailed presentation of procedures used for data validation and data validation results are provided in the ADR (Appendix F).

2.4 WELL DECOMMISSIONING

2.4.1 SITE 18

One well (18VW11) was decommissioned during the 2011-2012 annual monitoring period. This well was located at Site 18 (former Engine Test Cell) and the well destruction activities are discussed in a separate document for the petroleum sites (AECOM 2013a).

2.4.2 BUILDING 550

The California Regional Water Quality Control Board (RWQCB), Santa Ana Region, issued a No Further Action Determination letter to AFCEC confirming completion of site investigation activities and remedial action in April 2011. The letter was subject to the 16 groundwater monitoring wells (550MW1 through 550MW16) and 3 extraction wells (550EX1 through 550EX3) still present at the site to be properly decommissioned in accordance with State and County guidelines. A *Groundwater Monitoring/Extraction Well Decommissioning Work Plan* (AECOM 2011) was submitted and approved February 2012. This document describes the work conducted to complete the RWQCB request. The well decommissioning activities are discussed in the *Groundwater Monitoring/Extraction Well Decommissioning and Closure Report, Building 550* (AECOM 2012).

2.5 WASTE MANAGEMENT

Waste materials generated during groundwater sampling activities included purged groundwater, decontamination water, personal protective equipment, and disposable field supplies. Groundwater and decontamination water generated during purging was contained in a 300-gallon storage tank on the sampling vehicle and then transferred to the Site 31 treatment facility, where it was treated and discharged to OU 1 discharge facilities (injection wells, Heacock Storm Drain, and/or sanitary sewer).

3.0 CONCEPTUAL SITE MODEL

This section discusses the hydrogeologic conceptual site model, local precipitation, groundwater elevations and flow direction, and rising groundwater levels at the March ARB.

3.1 HYDROGEOLOGIC CONCEPTUAL SITE MODEL

March ARB sits at the north end of Perris Valley, at the transition between the Perris Erosional Surface and the Paloma Depositional Surface (University of California, Riverside [UCR] 2000). The eastern portion of March ARB is located on this depositional surface, and is underlain by sediments of varied thickness that have filled in the Perris Groundwater Basin. To the west, under West March, bedrock is exposed at the ground surface (Morton and Cox 2001). Overall, the generally flat topography of March ARB slopes slightly to the southeast.

Subsurface investigations at the Main Base show that most of the underlying sediments consist of laterally-discontinuous, interbedded fine- to medium-grained sands, silts, and lean clays, with minor amounts of gravel. The uppermost stratigraphic units drape gently over bedrock highs but are not affected by variations in the bedrock surface; deeper units tend to truncate against bedrock highs. Bedrock predominantly consists of quartz diorite (tonalite), which in turn is covered by a mantle of highly to completely weathered bedrock, often described in lithologic logs as "decomposed granite."

The bedrock surface map presented in the gravimetric survey conducted by the UCR is indicated as "complex bedrock scour surface morphology," which is represented by various bedrock channels and ridges (UCR 2000). A map of the bedrock surface is included on Figure 3-1. Bedrock crops out west of I-215 and south of Site 18 and is present approximately 350 feet bgs in the southeast corner of the base. The primary bedrock channel, known as the Perris Bedrock Channel, is present approximately 1-mile east of the Base boundary, based on geologic and topographic maps of the area. The Perris Bedrock Channel most likely represents a paleo-tributary of the San Jacinto River, located 5 miles to 6 miles southeast of March ARB (Morton and Matti 2001; Morton 2001). Depths to bedrock within this channel near March ARB are 800 feet to 900 feet bgs (UCR 2000).

The I-215 Bedrock Channel, a secondary channel identified along the eastern side of I-215, drains toward the south-southeast and into the Perris Bedrock Channel. The depths to bedrock within this northwest-southeast trending channel range from 300 feet near the northern Base boundary to 600 feet near the southern boundary. Another secondary channel, the Storm Drain Channel, drains from the central area of the eastern Base boundary into the Perris Bedrock Channel (Figure 3-1). The 2008 installation of wells northwest of Site 4 (4MW31) and southeast of the northern EGETS (OU1MW25 and OU1MW27) provided additional data regarding the depths to bedrock in these locations. At 4MW31, the bedrock elevation map indicates that weathered bedrock should be encountered at depths greater than 200 feet bgs; however, bedrock was actually encountered at this location at a depth of 70 feet bgs. Bedrock in the vicinity of OU1MW25 and OU1MW27 was predicted at approximately 135 feet to 150 feet bgs, respectively, but was actually encountered at 65 feet and 55 feet bgs, respectively. These results indicate a potential error in estimated bedrock elevations (Figure 3-1) of 70 feet to 130 feet.

Several bedrock highs have been identified within March ARB, including the Graeber Bedrock Ridge, which is northwest and southeast of Site 31, and the Runway Bedrock Ridge, which is south of Site 18 and parallel to the runway. The bedrock is also shallower beneath the northern portion of the Base, forming a saddle with the northern end of the Graeber Bedrock Ridge to the south (Tetra Tech, Inc. [Tetra Tech] 2001a). These bedrock highs divide several shallow scoured bedrock channels that drain into the I-215 Bedrock Channel (Figure 3-1).

Bedrock observed in sonic drilling cores from the *Regional Basin Evaluation* (RBE) (Tetra Tech 2001a) and several subsequent site investigations is reportedly dry, implying that the competent bedrock acts as a lower aquifer boundary (Tetra Tech 2001a). However, borehole data from OU1MW15, OU1MW16, OU1MW25, and OU1MW27 at the eastern Base boundary (Earth Tech 2004) indicate that relatively unweathered bedrock is fractured in at least some areas, and that water occurs in a fracture-flow system below the weathered bedrock. A review of older boring logs also indicates the presence of groundwater in fractured rock, particularly beneath Site 4. A cross section for the eastern Base boundary was included as Figure 1-6 in the *Final 2005 - 2006 Annual Monitoring Report* (MWH 2007a).

The mantle of weathered bedrock has been observed in most deep borings. The thickness of the highly weathered bedrock ranges from 10 feet to 200 feet (Tetra Tech 2001a). This relatively dense material is characterized by angular, sand-size quartz particles in a clay matrix developed from decomposition of the other minerals (plagioclase, hornblende, and biotite) within the parent rock. Locally, a highly fractured but predominantly unweathered interval occurs within the weathered or decomposed granite.

These intervals are characterized by angular, gravel-sized particles of the parent rock with little clay. The extent of these zones is unknown, but they do produce groundwater during drilling and sampling operations.

Alluvial sediments consist primarily of poorly-sorted silts and sands derived from the nearby granitic sources west and north of March ARB. Alluvial fill within the bedrock channels predominantly consists of detrital clay interlayered with sand and gravel deposits. This stratigraphic sequence indicates a fluvial origin, with sand and gravel deposits representing high-energy channel flow and finer-grained sediments resulting from overbank or floodplain conditions. However, thick clay deposits near the base of the Perris Bedrock Channel indicate that the primary source of flow from the main channel was blocked and infilled with alluvial fan deposits, particularly in the northern part of the Perris Basin (Tetra Tech 2001a). Silt is also observed in areas where minor tributary channels join larger channels. In addition, thick sequences of alluvial fan deposits gradually filled the channels and eventually the basin in general. These alluvial fan deposits consist of interlayered silty sands and silts with relatively thin sands and gravels, deposited as channels that were formed and then abandoned during later depositional episodes. The sands and gravels occur in thin intervals ranging from 2 feet to 5 feet within the fan deposits; however, these intervals are not necessarily laterally continuous and may end within a distance of 10 feet or less.

As a result of the depositional environment, fine-grained sediments are more predominant in areas around the bedrock highs and in the northern part of the Perris Bedrock Channel. Closer to the bedrock channels, the sandy units become more predominant and hydraulic conductivities increase. Shallow sediments in the northern and western parts of the Main Base consist of relatively low permeability old alluvial fan deposits with local, thin water-bearing sands (Morton 2001; Morton and Matti 2001b).

The following hydrogeologic conceptual site model was described in the *Final Remedial Process Optimization Report, OU 1 Remedy* (MWH 2007b). This approach included identification of units based on vertical stratification of the plume and preferential contaminant transport pathways. In the northern area of the Base, vertical stratification is controlled in part by the presence of low permeability strata, or previously identified aquitards. However, in the southern part of the Base, vertical stratification of the plumes is not as distinct as in the northern part of the Base, and is most likely controlled primarily by increasing horizontal hydraulic conductivity and corresponding vertical anisotropy. In addition, contamination between both shallow and deep alluvial units confirms migration across the low permeability zones. As a result of this evaluation, plume maps in this report are presented for an upper alluvial aquifer unit plume, a lower alluvial aquifer unit plume, and a bedrock hydrostratigraphic unit plume.

The upper alluvial plume represents contamination at the original source areas (e.g., Sites 31 and 36) and lateral migration from these source areas into a coalescing diffuse plume. In the northern area of the plume, this corresponds to an approximate depth of 60 feet bgs within the alluvium because of the presence of the low permeability aquitards. As these aquitards pinch out toward the southeast, vertical migration increases so that the plumes have lower and consistent concentrations to an approximate depth of up to 100 feet to 120 feet bgs.

The lower alluvial plumes represent concentrations present between the upper alluvial plume and the weathered bedrock surface. These plumes generally represent low contaminant concentrations that have migrated vertically due to diffusion. At several locations, former source areas can be identified by the presence of lower alluvial hot spots because groundwater elevations at the time of releases were at least 50 feet deeper than current groundwater elevations.

The bedrock unit includes both highly weathered and fractured bedrock. This unit has a relatively low overall hydraulic conductivity, generally less than 1-foot per day. Based on sonic borings at Sites 2 and 8, groundwater primarily occurs within less weathered material that consists of highly fractured granitic rock with a consistency of angular gravel. Sonic borings drilled in other areas of less fractured and weathered rock did not encounter groundwater. In the area along the Base boundary (Sites 4 and 31), groundwater does occur in fractured rock. Bedrock plumes also occur where bedrock is relatively shallow, such as Building 2300, Site 4, and Site 31. Therefore, plumes portrayed in the bedrock are laterally discontinuous and have variable concentrations across relatively short distances.

In addition to evaluating vertical stratification of the plumes, hydraulic conductivity values in all hydrostratigraphic units were assessed to identify potential preferential contaminant transport pathways. Hydraulic conductivity values derived from slug and pump tests and evaluation of well development data were mapped regardless of depth. The areas of relatively high hydraulic conductivity (i.e., greater than or equal to 10 feet per day) were then found to correspond with areas of diffuse plumes with low contaminant concentrations. In contrast, areas of relatively low hydraulic conductivity (i.e., generally less than or equal to 1-foot per day) were characterized by small plumes of high contaminant concentrations at source areas. Areas of low hydraulic conductivity are shown on Figure 3-1.

The occurrence of the high hydraulic conductivity areas corresponded with several secondary and tertiary bedrock channels, including the Meyer and Storm Drain Bedrock Channels; there was no correlation between the deeper bedrock channels and areas of high hydraulic conductivity. Based on the depositional environment, it appears that the areas of high hydraulic conductivity most likely correspond to channel deposits from braided streams that occurred during infilling of the Perris sub-basin. These channel deposits provide preferential transport pathways where contaminant concentrations disperse and form extended diffuse plumes. In areas of low hydraulic conductivity, migration is slow and the plumes are retarded close to source areas. Site-specific conditions are discussed in Section 4.0.

Currently, groundwater occurs at depths between 3 feet and 72 feet bgs across the Base and off-Base areas. Localized groundwater levels rose approximately 40 feet to 50 feet between 1970 and 1984 (CH2M Hill 1984). Since 1992, groundwater levels have risen steadily at a rate of 2 feet per year in the central part of March ARB. Since 2000, groundwater levels have risen up to 8 feet per year off-Base (MWH 2012b). Rising water levels are attributed to changes in land use from primarily agricultural to primarily suburban (mixed residential/commercial use); the filling of Perris Reservoir approximately 3 miles southeast of the Base; and changes to groundwater extraction such as the cessation of pumping at former Base water supply wells and reduced pumping at the Box Springs wells located 1.4 miles north of March ARB.

Groundwater generally flows toward the southeast beneath most of the Base. In the northern part of the cantonment area, groundwater flows to the south-southwest. To date, localized changes in groundwater flow patterns have been attributed primarily to changes in groundwater extraction associated with remedial operations. Seasonal changes have been observed only with infiltration along the Heacock Storm Drain along the northern section of the eastern Base boundary, where this regional drainage channel is unlined.

3.2 PRECIPITATION

During the 2011–2012 annual groundwater monitoring period, a precipitation total of 5.42 inches was recorded in Riverside, California. The majority of this precipitation fell in November 2011 (Figure 3-2). These data represent a decrease in precipitation since the 2010-2011 period, when 14.13 inches of rain was reported. Riverside records an annual rainfall average of 10.2 inches each year; the 2011-2012 annual monitoring round recorded approximately half of the annual average.

3.3 GROUNDWATER ELEVATIONS AND FLOW DIRECTION

Groundwater elevations at March ARB and off-Base areas during the 2011–2012 annual monitoring round ranged from 1,392.97 feet above mean sea level (msl) at 5MW33 to 1,524.07 feet msl at 5M11MW02 in the upper alluvial unit (Figure 2-4). Across much of the Base, groundwater flow is to the southeast, except in the northwestern portion of the Base (Sites 2 and 27 and Buildings 2300 and 2307), where groundwater generally flows to the south to southwest. This trend can be seen in the upper alluvial unit (Figures 2-1 and 2-4), the lower alluvial unit (Figures 2-2 and 2-5) and the bedrock unit (Figures 2-3 and 2-6). Before 2003, groundwater flowed to the north and northwest in the northwestern portion of the Base. The change in groundwater flow direction in this area appears to be related to the shutdown of water supply wells that had been operational in the Box Springs area 1.4 miles north of the Base along with the cessation of pumping on-Base wells in the early 1990's.

The change in groundwater levels across the Base and the eastern off-Base area from May 2010 to May 2011 ranged from a decrease of approximately 17.9 feet at 4PZ10 to an increase of approximately 11.5 feet at OBMWO2B (Table 2-1). On average, groundwater levels increased approximately 0.2-foot between May 2011 and May 2012 (not including production well data). In some cases, significant groundwater level changes are due to the operational status of nearby extraction and injection wells.

3.4 RISING GROUNDWATER LEVELS

Groundwater levels across the Base and in off-Base areas have risen in elevation from between 11 feet and 89 feet after IRP site monitoring wells were installed across the Base and off-Base areas in 1992

(Appendix G). The areas with the greatest increases in groundwater elevations since 1993 are the northwestern portion of the Base where a groundwater level increase of approximately 59 feet was noted in 28MW01 and the southeastern off-Base area where an increase of approximately 89 feet was noted in 5MW20. The area with the smallest groundwater level increase since 1992 is the northeastern portion of the off-Base area (east of Site 4), measured in 4MW05, where water levels have increased approximately 11.7 feet.

On Base, the average depth to groundwater in May 2012 was approximately 20 feet bgs. In the majority of the flightline area (Sites 8, 18, and 33), depth to groundwater ranged from 3.1 feet bgs (in one well at Site 18) to 28.9 feet bgs (at a Site 8 well near Building 2300), with a large portion of the flightline with depths to groundwater of less than 13 feet bgs.

3.5 BASEWIDE CONTAMINANTS OF CONCERN

Based on data collected and evaluated for the 2011-2012 annual monitoring round, groundwater within the OU 1 Plume does not yet comply with cleanup goals for PCE, TCE, CTCL, and cis-1,2-DCE. Groundwater within the OU 2 Plume does not yet comply with cleanup goals for PCE, TCE, and CTCL. Figures 3-3 through 3-5 presents the basewide PCE, TCE, and CTCL plumes in the upper alluvial, lower alluvial, and bedrock units, respectively.

4.0 OU 1 SITES GROUNDWATER DATA ASSESSMENTS

OU 1 includes groundwater contaminant plumes at Sites 4, 7, and 31 (Figure 1-2). In addition, groundwater plumes from Sites 4 and 31 have commingled to form a large VOC plume, referred to as the OU 1 Plume, which has migrated beyond the eastern Base boundary. Site 31 and the OU 1 Plume are included in the March ARB LTM Program; Sites 4 and 7 are included in the March AFB LTM Program. The *OU 1 ROD* (Earth Tech 1995) was approved in 1996. Cleanup goals established in the *OU 1 ROD* (Earth Tech 1995) are summarized in Table 4-1. Remedial action was initiated for the source areas at Sites 4 and 31 in 1992 and 1995, respectively. In addition, the groundwater and extraction system (GETS) was installed in 1991 along the Base boundary as a containment system for the OU 1 Plume to keep it from migrating off-Base. An interim soil vapor extraction (SVE) remedy was implemented at Site 7 in July 2011, following a pilot study completed in November 2010 (MWH 2011a).

The commingled OU 1 Plume underlies portions of the cantonment area, the northeast part of the former AFB, and private property east of the Base. Primary COCs include TCE, PCE, and CTCL. Historical data are included in Appendix E.

The GETS was installed in 1991, to operate as an interim remedy to prevent further migration of the TCE and PCE plumes. The initial system was designed to treat groundwater at a rate of 100 gpm with the extraction system comprising extraction wells EX01 through EX08. Monitoring Well 4MW01 was converted to an extraction well in 1992 and added to the GETS. In 1996, five extraction wells (OU1GEW01 through OU1GEW05) were installed and added to the system, now referred to as the Expanded GETS (EGETS). Subsequent additions to the EGETS include extraction wells OU1TW02 and OU1TW03 in April 1996, extraction well OU1MW12 in 1998, and extraction wells 4EX01 and 4EX02 in late 2001. Extraction wells EX07 and EX08 were converted to monitoring wells in 1997. Currently, the EGETS is in partial operation, with some wells no longer operating. Extraction and injection wells that are currently not in operation are monitored by adjacent monitoring wells. The status of these wells is discussed further in Section 4.4.3.

Groundwater extracted along the Base boundary is conveyed to the Site 31 treatment facility, where it is treated using granular activated carbon (GAC). Discharge facilities for water treated at the Site 31 treatment facility include: 1) five injection wells, 2) the Heacock transfer station and regional storm drain, and 3) a direct connection to the Western Waste Recycling Facility located in West March. The injection system (wells OU1TW01, OU1RW01, OU1RW02, OU1RW03, and OU1RW04) was intended to create a hydraulic barrier preventing the movement of contaminated groundwater off-Base and maintaining flow into the extraction wells. Injection wells were not in operation during the entire 2011-2012 monitoring period. All treated groundwater was released to the Heacock storm drain during the dry season.

The Basewide conceptual hydrogeologic model is described in Section 3.1. The OU 1 Plume is underlain by the alluvial and bedrock hydrostratigraphic units. Alluvial materials range from 40 feet deep (at OU1MW02) to 920 feet deep southeast of the Base (RBEMW01A-E). The OU 1 Plume is located in areas of high and low hydraulic conductivity. The areas of high hydraulic conductivity in OU 1 are located at Sites 9, 15, and 34; the northern portion of Site 7; and southeast of the southern portion of the EGETS wellfield.

Monitoring wells are separated into four categories: water supply wells, water supply guard wells, plume perimeter guard wells, and plume monitoring wells (MWH 2010b). Each category of well addresses different DQOs developed based on USEPA (2000) guidance. The DQOs for each well type are established in the *Revised QPP* (MWH 2010b).

4.1 SITE 4

Located along the eastern boundary of the former March AFB (Figure 1-2), Site 4 is a former landfill of approximately 10.2 acres (Tetra Tech 2000a) outside the cantonment area and north of Site 31. Alluvial sediments are present at Site 4 to a depth of approximately 50 feet to 70 feet bgs, where weathered bedrock is encountered (Tetra Tech 2001b). Competent bedrock is present at approximately 170 feet bgs. Groundwater is present in both the alluvium and in weathered and fractured bedrock. Site 4 is located in an area of low hydraulic conductivity (Figure 3-1). West of the northern portion of Site 4, however, is a region with higher hydraulic conductivity, which may allow for the dispersion of the Site 4 plume to the west and northwest.

The suspected sources of contamination at Site 4 include sanitary wastes, construction rubble, and debris accepted by the landfill from 1955 to 1968. Small amounts of medical waste and empty fuel containers were also found in the landfill (Tetra Tech 2000a). During the OU 1 Remedial

Investigation/Feasibility Study (RI/FS), low levels of chlorinated solvents were detected in soil and soil gas. PCE, TCE, cis-1,2- DCE, and vinyl chloride were also detected in groundwater (Earth Tech 1994). Only PCE and TCE have been detected consistently, with maximum historical concentrations of 260 micrograms per liter (μg/L) (4MW01) and 85 μg/L (4MW07), respectively, as reported in the *OU 1 ROD* (Earth Tech 1995). Cis-1,2-DCE and vinyl chloride, degradation products of PCE and TCE, were detected at maximum historical concentrations of 21 μg/L (4MW23) and 8 μg/L (4MW23), respectively (Earth Tech 1995).

Remedial activities completed at Site 4 include a landfill cap and groundwater extraction and treatment. In 1995, the International Technology Corporation (IT Corporation) placed an engineered cap on the landfill (Tetra Tech 2001b). The waste in the landfill extends 30 feet below the top of the engineered landfill cap in the northern portion of the site, and 28 feet below the landfill cap in the southern portion of the site (bottom of waste elevations range between 1,495 feet and 1,497 feet above msl). Subsequently, four groundwater extraction wells were installed at Site 4. Extraction wells 4MW01 and OU1TW03 (Figure 1-5) capture groundwater contamination from the southern end of the landfill. Extraction wells 4EX01 and 4EX02, which became operational in late 2001, were installed to capture groundwater from the center of the landfill. Three Site 4 extraction wells (4EX01, 4EX02, and 4MW01) and one extraction well associated with the Site 4 groundwater plume (OU1TW03) are typically operating year-round. The average extraction rates for the Second Quarter 2012 are presented in Table 4-2.

4.1.1 GROUNDWATER ELEVATIONS AND FLOW DIRECTION

Overall, groundwater flow is to the southeast across Site 4, with flow deflected toward the operating extraction wells, as part of the EGETS, along the Base boundary (Figures 2-4 through 2-6). Directly east of the Base, groundwater movement is toward the south along the Perris Bedrock Channel. Near the EGETS, localized flow patterns are generally toward the operating extraction wells.

Static groundwater elevations at Site 4 were recorded as approximately 16.5 feet to 27 feet below the top of the landfill and approximately 6.5 feet to 17 feet below natural grade. Therefore, the groundwater surface is locally above the bottom of the waste in the northern and central areas of the landfill (north of 4PZ05) by up to 13.3 feet (at 4MW23), as of May 2012. Groundwater at the north end of the landfill reached the bottom of the landfill waste in 1998. Groundwater levels have decreased by an average of 0.5-foot between May 2011 and May 2012, but overall increased by approximately 0.9-foot per year since 2000. Some seasonal changes have also been observed at Site 4 after rainfall events as a result of infiltration along the partially-lined Heacock Storm Drain, which parallels the eastern Base boundary. Following 2.4 inches of rainfall and flooding of the Heacock Drain on 22 December 2010, water levels rose up to approximately 3.6 feet and after a month remained approximately 2.5 feet above the pre-rainfall water level at the southern end of the landfill (Appendix G). Water levels maintained this increase and continued to rise through the Second Quarter of 2011, then decreased 0.5-foot by May 2012.

4.1.2 SITE 4 GROUNDWATER DATA ASSESSMENT

This section discusses groundwater data for Site 4, including an examination of VOCs in extraction wells and PCE, TCE, and cis-1,2-DCE plumes. Analytical results for Site 4 COCs are summarized by well in Table 4-3. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E.

Extraction Wells. Two operating extraction wells (4EX01 and 4EX02) and two connected monitoring wells (4MW01 and OU1TW03) were sampled and analyzed for VOCs. These samples were collected to provide operating data to monitor extraction system performance and calculate mass removal; however, the primary objective of the EGETS is not mass removal, but containment at the former Base boundary. Operation of the extraction wells and the EGETS are reported in the *Annual Process Monitoring Report, OU 1 Sites* (AECOM 2013c) and summarized in this document.

As shown in Table 4-3, PCE was detected above the cleanup goal of 5 μg/L in all four extraction wells in November 2011 and May 2012. TCE and cis-1,2-DCE were also detected above its cleanup goals (5 μg/L and 6 μg/L, respectively) in only 4MW01 in November 2011 and May 2012. PCE was detected at a maximum concentration of 24 μg/L at 4MW01, lower than the historical maximum concentration of 260 μg/L in December 1992 at this well. TCE was detected at a maximum concentration of 7.1 μg/L at 4MW01 in May 2012, less than the historical maximum concentration of 40 μg/L in December 1992 and January 1993 at this well. Cis-1,2-DCE, a breakdown product of PCE and TCE, was detected at a maximum concentration of 13 μg/L at 4MW01 in May 2012, less than the historical maximum concentration of 53 μg/L in July 1993 at this well.

Plume Perimeter and Plume Monitoring Wells. Monitoring wells and piezometers from Site 4 were sampled and analyzed for VOCs as shown on Table 4-3. PCE, TCE, and cis-1,2-DCE, were detected above the respective MCLs in alluvial and bedrock wells in May 2012. Maximum concentrations of PCE, TCE, and cis-1,2-DCE were detected in bedrock well OU1MW04 at 95 μg/L, 27 μg/L and 49 μg/L, respectively (Table 4-3). Vinyl chloride, also a PCE and TCE breakdown product, was only detected in OU1MW05 at a maximum concentration of 0.20 μg/L (Table 4-3).

4.1.2.1 PCE Plume

PCE plumes are present in the alluvial and bedrock hydrostratigraphic units at Site 4.

Upper Alluvial. The maximum PCE concentration detected in an upper alluvial monitoring well during the 2011–2012 annual monitoring round was 12 μg/L in OU1MW06 (Table 4-3). The upper alluvial PCE plume at Site 4 currently extends northwest (upgradient) from extraction well 4EX01 to encompass monitoring Wells 4MW12, 4MW20, and 4MW21 (Figure 4-1); these wells were last sampled in July 2011. These wells were not sampled during the 2011-2012 monitoring period; however, they were sampled in September 2012. These analytical results were reported in the *2012-2013 CG049 Semiannual Groundwater Monitoring Informal Technical Information Report* (AECOM 2013b). The extent of the plume west of 4MW12 and 4MW21 is approximate since concentrations in 4MW12 (8.4 μg/L) and 4MW21 (8.7 μg/L) are greater than 5 μg/L and there are no upper alluvial wells present to the west to monitor. Monitoring well 4MW31 was installed in 2008 to monitor upgradient groundwater conditions; although a bedrock well, grab samples collected during well installation confirmed that there was no upgradient source for the upper alluvial Site 4 PCE plume west of Site 4. As shown on Figure 4-1, the plume perimeter does not extend to wells and piezometers located at the northern end of the landfill (4MW23, 4PZ01, and 4PZ03). Analytical results from off-Base wells also indicate that the plume does not extend east of Site 4, although concentrations detected in 5MW31 indicate that a PCE plume is located downgradient from Site 31B (Figure 4-1) (Section 4.2.2).

Comparison of the upper alluvial PCE plumes of 2000, 2007, and 2012 (Figure 4-2) indicates that concentrations of PCE have increased in 4MW12 and 4MW20 (last sampled in July 2011), indicating migration of the Site 4 plume to the west and northwest due to dispersion. Concentrations in 4MW21 have remained relatively steady, although in 2006 through 2008, PCE in 4MW21 decreased to below the MCL and rising back above MCL in May 2012. In addition, changes in the interpretations of historical groundwater gradients to the west and delineation of the primary source area in the southern part of the landfill have led to a more recent interpretation of a continuous plume between Site 4 and monitoring wells 4MW12 and 4MW21.

Lower Alluvial. The PCE plume present in the lower alluvial unit at Site 4 extends from the central portion of Site 4 (4PZ08) to the south (OU1MW05) and southwest toward Site 31 (31BDEW05D) (Figure 4-3). The maximum PCE concentration detected during the 2011–2012 annual monitoring round was 16 μg/L in OBMW10B. The area impacted by the lower alluvial PCE plume at Sites 4 and 31 is consistent with the 2000 plume, except that the concentrations of PCE at 31BDEW05D, and 31BGEW02 and 4PZ05 have decreased to below its MCL, contracting the plume (Figure 4-4). The primary difference between the 2007 and 2012 lower alluvial PCE plumes is the northern extent, which is based largely on a smaller monitoring network in 2007, and decreased concentrations southwest of Site 4 (Figure 4-4). PCE concentrations at 31BDEW05D have also decreased to below its MCL between 2007 and 2012. The extent of the lower alluvial plume at Site 4 is defined to the west and southeast by shallow bedrock where the lower alluvial unit is not continuous (Figure 3-1).

Bedrock. The bedrock PCE plume is located within the southern portion of Site 4 and extends from 4EX02 southeast to OBMW02B (Figure 4-5). The maximum PCE concentration detected in bedrock during the 2012 annual monitoring round was 95 μg/L in monitoring well OU1MW04, adjacent to extraction Well 4MW01. PCE was detected at or above the MCL in two off-Base wells (OBMW02B and OBMW10A) at concentrations of 5.3 μg/L and 32 μg/L, respectively (Section 4.4.2). Off-Base Wells OU1MW25 (1.9 μg/L) and OU1MW27 (1.3 μg/L) provide PCE plume definition southeast and downgradient from Site 4 (Section 4.4.2.5). Compared to 2000 (Figure 4-6), the apparent bedrock PCE plume in 2012 has decreased in extent to the west and south to no longer include Extraction Well OU1MW16. The change in plume geometry is also because of better plume definition from the addition of monitoring wells and Site 4 extraction wells over time. The bedrock PCE plume in 2012 is similar to the 2007 plume, except that it no longer extends north to 4MW27A or south to OU1MW16A, and PCE concentrations at OU1MW04 are now less than 100 μg/L (Figure 4-6).

4.1.2.2 TCE Plume

TCE is present at concentrations above the MCL in the alluvial and bedrock units at Site 4 in areas with historically high PCE concentrations (Table 4-3). Detected concentrations and increasing concentration trends of TCE present at Site 4 are likely due to natural degradation of PCE.

TCE was detected above the MCL of 5 μg/L during the 2012 annual monitoring round in groundwater samples collected from one lower alluvial well (OBMW10B) and two bedrock wells (4MW01 and OU1MW04) in the Site 4 area (Figures 4-7 through 4-12). The 2012 detection of TCE at OBMW10B (9.4 μg/L) represents an increase in concentrations above the MCL since 2006. TCE was detected at a concentration greater than the MCL at 4MW26A for the first time since December 2004, and represents a significant increase from 4.5 μg/L in June 2010 to 23 μg/L in July 2011. Well 4MW26A was not sampled during the 2011-2012 annual monitoring period. Concentrations of TCE at 4PZ08 have fluctuated over time with the maximum concentration of 10 μg/L detected in July 2011; this well was not sampled during the 2011-2012 annual monitoring period. TCE concentrations in OBMW10B have been increasing since the well was first sampled in 1998, and the 2012 concentration (9.4 μg/L) indicates a slight increase from the historical maximum of 8.7 μg/L from June 2009. TCE concentrations at Wells 4MW01 and OU1MW04 have remained relatively steady (Appendix E).

4.1.2.3 Cis-1,2-DCE Plume

Cis-1,2-DCE is present at concentrations above the MCL in the bedrock units at Site 4 (Table 4-3). Elevated concentrations of the breakdown product cis-1,2-DCE are typically encountered in areas of historically high PCE and TCE concentrations due to anaerobic degradation of these chlorinated hydrocarbons. Therefore, separate plume maps have not been prepared for cis-1,2-DCE.

During the 2011-2012 annual monitoring period, cis-1,2-DCE was detected above the MCL of 6 μg/L in 2 wells in the Site 4 area (bedrock Wells 4MW01 and OU1MW04). Concentrations of cis-1,2-DCE have generally increased in the upper alluvial piezometers 4PZ03, 4PZ06, and 4PZ1 (piezometer locations shown on Figure 4-1), lower alluvial piezometer 4PZ08 (piezometer location shown on Figure 4-3), and bedrock Well 4MW26A (well location shown on Figure 4-5) (Appendix E). Cis-1,2-DCE concentrations in OU1MW04 have generally increased since the well was installed in 1995, but have been decreasing recently from the historical maximum (61 μg/L) in July 2009 to 49 μg/L in May 2012. Concentrations of cis-1,2-DCE in lower alluvial Well OU1MW05 have increased since 2001, but have been generally decreasing from the historical maximum of 24 μg/L in June 2008 to 3.0 μg/L in May 2012. Cis-1,2-DCE concentrations in Extraction Wells 4EX01, 4EX02, 4MW01, and upper alluvial Well OU1PZ08 (located at the southern end of the landfill) are generally decreasing (Appendix E).

4.1.2.4 Vinyl Chloride Plume

During the 2011-2012 annual monitoring period, vinyl chloride was not detected at a concentration greater than the MCL of 0.5 μg/L (Table 4-3).

4.1.3 REMEDIAL SYSTEM PERFORMANCE AND ROD COMPLIANCE

Groundwater extraction began at Site 4 in 1992 at 4MW01 as part of the GETS and an engineered landfill cap was placed at the site in 1995 by IT Corporation (Tetra Tech 2001b). Extraction Wells 4EX01 and 4EX02 became operational in 2001 and were included in the remedial operations at Site 4.

The highest PCE and TCE concentrations have typically been observed in 4MW01. PCE and TCE concentrations have decreased in 4MW01 from maximum concentrations of 260 μg/L and 40 μg/L, respectively, in December 1992 (Appendix E) to concentrations of 24 μg/L and 7.1 μg/L, respectively, during the 2012 annual monitoring round (Table 4-2 and Table 4-3). The average extraction rate at 4MW01 for the Second Quarter 2012 was 11.1 gpm (Table 4-2). In Extraction Well 4EX01, concentrations of PCE, TCE, and cis-1,2-DCE, have generally declined since this extraction well became operational in 2001; however, concentrations have remained relatively unchanged since 2007. In extraction well 4EX02, concentrations of PCE, TCE, and cis-1,2-DCE continue to decrease over time, and vinyl chloride concentrations have gradually decreased to below the site cleanup goal of 0.5 μg/L from a maximum concentration of 2 μg/L in June 2005. Average extraction rates for the Second Quarter 2012 at 4EX01 and 4EX02 were 15.8 gpm and 18.5 gpm, respectively (Table 4-2).

Cones of depression at the extraction wells (4MW01, 4EX01, and 4EX02) are noted in the water levels collected from neighboring wells when the extraction wells are active, but do not typically appear to impact the potentiometric surface in the upper alluvium (Figures 2-1 and 2-4) near the operating extraction wells. There is a localized impact near the active extraction wells near Site 4 in the lower alluvial unit (Figures 2-2 and 2-5) and as well as in the bedrock unit (Figures 2-3 and 2-6). Groundwater elevations in the northern portion of the landfill show that the landfill waste is submerged up to 13.3 feet (at 4MW23) in groundwater.

Groundwater pumping at Site 4 is continuing and thus the Site 4 remedy has been successful in reducing contaminant concentrations. Approximately 3.65 pounds of COCs were removed from groundwater at Site 4 during the 2011–2012 monitoring period (AECOM 2013c), and approximately 48.6 pounds of

COCs have been removed since the extraction wells started operating. At the present time, 4MW01, 4EX01, and 4EX02 are operating and are sampled semiannually.

Containment at the former Base boundary was assessed by evaluating capture using the groundwater flow and transport model and using trends from downgradient monitoring wells. Based on the groundwater model particle tracking results presented in the *2008-2009 Basewide AMR* (MWH 2010a), capture is achieved by the Site 4 groundwater extraction wells. In addition, trends in downgradient, off-Base wells have remained steady or decreased slightly since the Site 4 extraction wells became operational (Table 4-4 and Appendix E). The maximum concentration of PCE in an off-Base well (OBMW10A) was 59 μg/L in October 2000, which has slowly decreased to the current concentration of 32 μg/L during May 2012. The persistence of contaminant concentrations in off-base wells (Figure 4-6) indicates that the plume has been slow to dissipate in the fractured bedrock, which has relatively low hydraulic conductivity. Historically, neither cis-1,2-DCE nor vinyl chloride have been detected above the respective MCL in off-Base wells (Appendix E).

4.1.4 SOURCE ASSESSMENT

Because of rising groundwater elevations at the Base and submersion of the waste at the Site 4 landfill, the remedy was reevaluated by Earth Tech for AFRPA and no further action was recommended. The Air Force determined that the submerged waste is not a continuing source of groundwater contamination (Earth Tech 2007a), as shown on upper alluvial Figures 4-1 and 4-7. Based on the MAROS evaluation and recommendations from the groundwater model (MWH 2007b), groundwater sampling was conducted at 14 additional monitoring wells to determine if Site 4 is a continuing contaminant source area. If Site 4 is a continuing source area, contaminant concentrations in the upper alluvial wells would be expected to have increasing trends over time, particularly where groundwater is directly in contact with landfill waste materials or immediately downgradient from submerged waste materials. Analytical data from 1996 to the present are summarized in Table 4-4.

Four upper alluvial wells have increasing concentrations of PCE, but none of these wells are located in the northern portion of Site 4 where the landfill waste is submerged. The concentration of PCE at 4PZ07 increased from 1 μg/L in 2000 to 6.3 μg/L in August 2008, but has decreased since 2008 to 3.7 μg/L in July 2011 (Appendix E). Piezometer 4PZ07 is located immediately adjacent to extraction well 4EX02, which is also partially screened in the upper alluvial unit; therefore, the previously increasing PCE concentrations were likely related to extraction at 4EX02. Piezometer 4PZ07 was not sampled during the 2011-2012 annual monitoring event. The other upper alluvial wells in the northern portion of Site 4 (monitoring well 4MW23 and piezometers 4PZ01, 4PZ03, 4PZ04, and 4PZ09) have either trends of decreasing PCE concentrations or no apparent trends.

Upper Alluvial. The upper alluvial wells with increasing PCE concentrations are located upgradient (4MW20) from Site 4 or in the southern portion of Site 4 (OBMW10D, 4PZ06, and OU1PZ09). These increasing PCE concentrations appear to be unrelated to submerged waste, as waste is not present cross-gradient or upgradient from Site 4 and waste in the southern portion of Site 4 has yet to be submerged by groundwater. Increasing TCE concentrations are present in OBMW10D (last sampled in July 2011) and 4PZ06 (last sampled in July 2011), both wells are located in the southern Site 4 area. The 2011 TCE concentration from OBMW10D (5.1 μg/L) is greater than the MCL. The remaining upper alluvial wells exhibit stable or decreasing TCE concentration trends.

Lower Alluvial. Increasing PCE trends are not present in any of the lower alluvial wells located in the northern portion of Site 4 where landfill waste is submerged nor in the southern portion of Site 4. PCE concentrations at 4PZ08 increased from 36 μg/L in 2000 to 78 μg/L in February 2008, and then decreased to 25 μg/L in July 2011 (this piezometer was not sampled in during the 2011-2012 annual monitoring period). TCE concentrations at 4PZ08 increased from 2 μg/L in 2000 to 10 μg/L in 2011. Piezometer 4PZ08 is located in the immediate vicinity of extraction well 4EX02; therefore, the elevated concentrations may be influenced by extraction in this area. An increasing TCE trend is also present at OBMW10B, where concentrations increased from 3.7 μg/L in 1998 to 9.4 μg/L in 2012. Decreasing PCE trends are present at 4PZ05 and 4PZ10, where waste is submerged, and at 4PZ12 and OBMW10C, located in the southern portion of the site. Decreasing and stable TCE trends are present in the remaining lower alluvial wells.

Bedrock. No increasing PCE trends were noted in bedrock wells. Monitoring well 4MW26A previously exhibited increasing PCE concentrations, but the concentration of PCE decreased from 30 μg/L in June 2010 to 1.5 μg/L in July 2011; this well was not sampled during the 2011-2012 annual monitoring round. TCE concentrations in 4MW26A indicated an opposite trend by increasing from 4.5 μg/L in June 2010 to 23 μg/L in July 2011. Monitoring well 4MW26A is located in the southern portion of Site 4 between extraction wells 4EX01 and 4EX02; therefore, PCE and TCE concentration trends are likely influenced by the flow of groundwater toward the extraction well. PCE concentrations in other bedrock wells have been generally decreasing or stable since at least 2004, but remain above the MCL in 4EX01, 4EX02, 4MW01, OBMW10A, and OU1MW04. TCE concentrations in the remaining bedrock wells indicate stable or decreasing trends, with the exception of 4MW26A (Table 4-4).

4.2 SITE 31

Site 31, located east of Graeber Street, is on the eastern side of Building 1211 (Figure 1-2). Soil and groundwater contamination at the site occurred after solvents were reportedly discharged to the ground surface. Floor drains from maintenance shops may have also leaked solvents into the subsurface. Site 31 consists of two main source areas with differing geological characteristics. The source area at the south end of Building 1211 is referred to as Site 31A; the area northeast of the Cryogenics Liquid Oxygen Facility in Building 1254 is referred to as Site 31B (Earth Tech 1994). Groundwater contamination at Site 31 is primarily TCE, PCE, and 1,1-DCE. Historical data for indicator compounds and primary COCs are included in Appendix E.

Site 31A is underlain by relatively coarse-grained sediments, and the depth to weathered bedrock is between 75 feet and 160 feet (Tetra Tech 2001a). Site 31B is underlain by relatively fine-grained sediments, and weathered bedrock occurs at approximately 80 feet bgs. Hydraulic conductivity at Site 31A is generally high, but to the east at Site 31B, hydraulic conductivity is low, as with the majority of OU 1.

As part of the remedy for the Site 31 source areas (Figure 3-1), six dual-phase extraction (DPE) wells (destroyed in 2009), one groundwater extraction well, and 10 air injection wells (destroyed in 2005) were installed (MWH 2010c). At Site 31B, five DPE wells (all but one destroyed in 2009), three groundwater extraction wells, 11 air injection wells (destroyed in 2005), and one SVE well (destroyed in 2005) were installed. The Site 31 treatment facility, synonymously known as the EGETS, located between Sites 31A and 31B, treated the extracted vapor and groundwater using GAC. Remedial progress at Site 31A is documented in *Active Remediation Complete Report, March ARB IRP Site 31A* (AFRC 2002). The SVE wells operated from October 1996 to October 1997, except one well at Site 31A that operated until January 1999. SVE wells were turned off as TCE and PCE concentrations in vapor reached non-detectable levels. Most groundwater extraction wells at Sites 31A and 31B met active remediation goals and rebound criteria, and are no longer sampled. Extraction wells 31AGEW01, 31BGEW02, and 31BGEW03 were shut down after meeting active remediation goals (Earth Tech 1997) in 2006, 2007, and July 2011. Extraction well 31 BGEW03 rebounded above the rebound criteria and was restarted in January 2012.

4.2.1 GROUNDWATER ELEVATIONS AND FLOW DIRECTION

In the vicinity of Site 31 and the EGETS, localized groundwater flow patterns are generally to the southeast (Figures 2-1 through 2-6). Groundwater elevations at Site 31 ranged from approximately 1,481 feet to 1,497 feet above msl. Groundwater levels have decreased by an average of 0.25 feet at Site 31 since May 2011 (Table 2-1). The groundwater gradient across the site, in the upper alluvial unit, is approximately 0.008-foot per foot (ft/ft) at Site 31A and 0.012 ft/ft in the vicinity of Site 31B, both to the southeast (Figure 2-4).

4.2.2 SITE 31 GROUNDWATER DATA ASSESSMENT

Groundwater samples were collected from monitoring wells, inactive extraction wells, and active groundwater extraction well as shown on Table 4-5. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. TCE was detected above its cleanup goal in several wells in Site 31, with a maximum concentration of 110 μg/L in 31BGEW03, downgradient of Site 31B. Overall, TCE concentrations have decreased from the historical maximum of 1,400 μg/L in 1993 in 31PW01 (Appendix E).

Concentrations of PCE decreased to below its respective MCLs (5 μg/L) in May 2012 (Table 4-5). PCE was detected in Well 31BDEW05D at a concentration of 3.0 μg/L in May 2012, a decrease from the historical maximum of 27 μg/L from 1999; this well has been below its MCL since May 2011. Additionally, a comparison of the 2000 and 2012 plumes (Figure 4-2) indicates the PCE plume that existed at Site 31A (31MW06, 31MW08, 31PW03PRC, and 5M8MW05) is no longer present at concentrations greater than its MCL. In 31BGEW03, 1,1-DCE concentrations increased to above its respective MCL (6 μg/L) for the September and November 2011 sampling rounds (7.6 μg/L and 6.9 μg/L, respectively), and the January 2012 sampling round (12 μg/L); then decreased below the MCL to 3.2 μg/L for the May 2012 annual sampling round. The maximum concentration of 1,1-DCE detected during this sampling event represents a decrease in 1,1-DCE concentrations from the site historical maximum of 260 μg/L in 1993 (31PW01) (Appendix E).

Upper Alluvial TCE. Currently, the upper alluvial Site 31 TCE plume extends from Site 31B near extraction well 31BGEW02 (between monitoring wells 31BMW02 and OU1MW19) southeast and off-Base to 5MW31 (Figure 4-7). Compared to the extent of the plume in 2000 (Figure 4-8), concentrations downgradient from Site 31B have decreased, and the concentrations have decreased in most areas of the plume, eliminating the hot spots (concentrations greater than 100 μg/L) at 31BGEW02 and OU1OW01. There are also small TCE plumes at Site 31A (represented by 31MW04 and 31PW03PRC). The plume at Site 31A appears unchanged except that concentrations rebounded in 31MW04 to110 μg/L in 2009 and then, decreased to 5.3 μg/L in 2012 (Appendix E). Concentrations detected in 2012 were similar to those detected in 2007 (Figure 4-8), except that TCE concentrations have decreased on-Base at OU1OW01 and increased at off-Base wells 5MW31 and OBMW03 (Table 4-7 and Figure 4-7). TCE concentrations in 5MW31 have continued to exceed its MCL since May 2010 with a concentration of 7.3 μg/L in 2012. TCE concentrations in OBMW03 were 6.2 μg/L in 2007, 9.1 μg/L in 2008, 14 μg/L in 2009, and 12 μg/L in 2010. TCE increased in OBMW03 from non-detect in May 2011 to 9.9 μg/L in 2012.

Lower Alluvial TCE. TCE concentrations in the lower alluvial unit at Site 31 are below the MCL, except for TCE at 28 μg/L in inactive extraction well 31BGEW02 (Figure 4-9). The lower alluvial plume appears to be small, primarily because there is a bedrock high just east of the well; therefore, contamination at Site 31B is more prevalent in the bedrock unit. A comparison of the 2012 TCE plume with the 2000 TCE plume (Figure 4-10) indicates that the TCE plume in the lower alluvial unit at Site 31 has decreased in size and no longer includes 31BDEW05D, the same comparison of TCE in the lower alluvial unit in 2007 and 2012 indicates no significant changes (Figure 4-10).

Bedrock TCE. The TCE plume in the bedrock unit (Figure 4-11) is primarily located at, and downgradient from, Site 31B. The maximum concentration of TCE in the Site 31 plume was detected at rebound well 31BGEW03 at 110 μg/L during the 2011 Fourth Quarter monitoring round and decreasing to 46 μg/L during the 2012 annual monitoring round (Table 4-5). The plume extends from Site 31B at 31BGEW03 southeast to off-Base well 4MW08, with a TCE concentration of 4.3 μg/L. The southeastern extent of the plume is not well-defined, although TCE concentrations in downgradient well 4MW08 did not exceed the cleanup goal. The 2000 and 2012 plumes (Figure 4-12) are not comparable because most of the wells that define the bedrock plume downgradient from Site 31 were installed after 2000. A comparison of the 2007 and 2012 plumes indicates that concentrations at OU1MW16A and OU1MW16B have decreased since 2007 but that the plume now extends further southeast to 4MW08 (Figure 4-12).

4.2.3 REMEDIAL SYSTEM PERFORMANCE AND ROD COMPLIANCE

During a 1995 treatability study using SVE, 240 pounds of TCE, 41 pounds of PCE, and 178 pounds of benzene, toluene, ethylbenzene, and xylenes (BTEX) were removed from the soil vapor at Sites 31A and 31B (Earth Tech 1996 and 1999). Rebound tests conducted in 1998 showed minimal rebound and concentrations were not detectable by May 1998. After further data evaluation, the Air Force and regulatory agencies agreed that active remediation at Site 31A was complete (AFRC 2002).

Groundwater extraction wells at Site 31A were shut down in 1998 and 1999 after operational samples indicated TCE concentrations were less than 100 μg/L, which met the criterion for termination of active source remediation (Earth Tech 1997). Wells were placed in a rebound test program until 2002, when the site moved into a LTM Program. In June 2005, TCE was detected at a concentration of 260 μg/L in 31AGEW01, and groundwater extraction was reinitiated. Extraction well 31AGEW01 was shut down to study rebound in August 2006 after the TCE concentration had decreased to 19 μg/L in the June 2006 sample and was 0.98 μg/L in the May 2012 sample (Table 4-7). This well currently is used for site monitoring.

The Site 31B SVE wells operated from October 1996 to November 1999. SVE wells were turned off because of low VOC concentrations. During system operation, 26 pounds of TCE, 6 pounds of PCE, and 1 pound of other VOCs were removed from the soil vapor at Site 31B (Earth Tech 1999). Groundwater extraction wells located in the central portion of Site 31B were shut down in 1999 and 2000 after operational samples showed TCE concentrations of less than 50 μg/L, which met the criterion for termination of active source remediation (Earth Tech 1997). Extraction Well 31BGEW01 was placed back into operation in August 2001 after rebound samples indicated that the concentrations were greater than the 50 μg/L active remediation standard. Concentrations in 31BGEW01 decreased and the well was shut down in 2002. Well 31BGEW02, located downgradient from Site 31B, was operational from 1996 through 2005 and 2006 through early 2008, and was placed in rebound mode after TCE was detected at 23 μg/L in a sample collected in November 2007. Since being placed into rebound mode, TCE concentrations in 31BGEW02 have ranged between 11 μg/L and 34 μg/L with a May 2012 concentration of 28 μg/L (Appendix E).

Another extraction well (31BGEW03) was installed 225 feet south of 31BGEW02 to remediate high concentrations of TCE detected in groundwater grab samples collected from test boreholes drilled in 1996 (Earth Tech 2002). Extraction well 31BGEW03 began operation in August 2002 at a production rate of approximately 8 gpm. The average extraction rate for the Second Quarter 2012 was 8.7 gpm (Table 4-2). Since extraction began, TCE concentrations have decreased from 350 μg/L to 46 μg/L in May 2012 (Appendix E). In July 2011, extraction ceased at 31BGEW03 and the well was placed into rebound and in January 2012, the well was placed back online, yielding a concentration of 46 μg/L in May 2012 (Table 4-7).

The Site 31 remedy has been successful in removing a significant amount of groundwater contamination (Earth Tech 1997 and 1999; AECOM 2013c). Approximately 1.19 pounds of COCs were removed from groundwater at Site 31B during the 2011-2012 annual monitoring period and approximately 35.2 pounds since remedial action began (AECOM 2013c). Decreasing concentrations in the majority of the wells at Site 31 and downgradient areas indicate that the system has been effective. At the present time, all extraction wells have been turned off except Extraction Wells 31BGEW03 and OU1MW16A. Extraction Wells 31AGEW01 and 31BGEW02 are sampled annually. OU1MW16A began operation as an Extraction Well on 01 May 2009. To date, TCE concentrations have decreased from 190 μg/L (May 2009) to 42 μg/L (May 2012) in this well since extraction began (Appendix E).

4.3 SITE 7

Site 7 is located southeast of Runway 12-30 and west of Heacock Street (Figure 1-2). The site is the former location of a fire training area and disposal/burn site. The facility was active from 1961 through 1978 (Engineering Science 1988; Earth Tech 1994), although it is possible that fire training activities began at the site in 1954 (CH2M Hill 1984). At least three fire training pits were identified in aerial photographs from 1973. These fire training pits were enclosed by berms but were not lined. Other disturbed areas at the site are also evident on the aerial photographs of the area, but do not appear to have the distinctive characteristics of a burn pit (i.e., dark staining of the ground and a derelict plane).

Before 1972, Site 7 was reportedly used as a disposal/burn site for up to 100,000 gallons per year of oil, solvent, and jet fuel wastes generated at the Base. Only recovered jet propellant number 4 (JP-4) was burned at the site after 1972 until the facility closed in 1978, at which point another fire training facility was constructed north of the site (Site 15). It is assumed, based on the large volume of waste liquids burned at the site, that the bermed training pits were used as storage areas for these wastes between burning exercises (CH2M Hill 1984).

The site received a no-further-action determination in 1994 (Earth Tech 1994). However, TCE concentrations at two extraction wells downgradient from Site 7 (EX05A and OU1GEW04) began to increase in 2000 to maximum concentrations of 130 μg/L (EX05A) in November 2007 and 190 μg/L (OU1GEW04) in November 2008. Based on these increasing concentrations, the site was investigated as AOC 48 in 2007. Site 7 has since been reopened based on the identification of a source area during the AOC 48 investigation (MWH 2008). The new source area was identified upgradient from extraction well EX05A in the approximate location of monitoring wells OU1MW20 and OU1MW21, with visible soil contamination noted to approximately 47 feet bgs in the borehole for monitoring well OU1MW20. Groundwater samples collected across the site during the supplemental investigation did not indicate the presence of any other source areas at Site 7. An evaluation of remedial alternatives for Site 7 was conducted and presented in the Final Focused Feasibility Study, Site FT007, OU 1 (MWH 2010d) with SVE as the recommended alternative. An SVE pilot study was conducted at Site 7 in November 2010 and an SVE system was installed in February 2011 and started operation in June 2011 (MWH 2011a).

Site 7 is underlain by predominantly cemented silty sands and silts with weathered bedrock at an approximate depth of 170 feet bgs (MWH 2008). During the AOC 48 investigation, groundwater conditions were noted to be semi-confined with groundwater first encountered at approximately 47 feet to 55 feet bgs and rising almost immediately to 35 feet bgs. The latest average water level is 30.5 feet bgs at Site 7.

4.3.1 SITE 7 GROUNDWATER DATA ASSESSMENT

Groundwater samples were collected from extraction wells and monitoring wells at Site 7 as shown in Table 4-6. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. Benzene, CTCL, cis-1,2-DCE, and TCE were detected above the respective cleanup goals and MCLs (Tables 4-6 and 4-7). TCE was detected at a maximum of 89 μg/L from extraction Well EX05A in May 2012. CTCL was detected at a maximum concentration of 0.55 μg/L in Well 7MW03. Although CTCL was detected above its MCL (0.5 μg/L) in one of the Site 7 monitoring wells, it is important to note that CTCL does not appear to be associated with the Site 7 source area.

Upper Alluvial. The TCE plume at Site 7 is present only in the upper alluvial unit (MWH 2008). A small TCE plume is located at Site 7 with the highest concentrations located at extraction Wells EX05A (89 μg/L) and OU1GEW04 (29 μg/L) (Figure 4-13) in May 2012. Based on July 2011 data, TCE contamination appears to be contained on-Base as indicated by the results from monitoring wells OU1MW22 and OU1MW23 (0.54 μg/L and 0.48 μg/L, respectively [Appendix E]); however, these two wells were not sampled during the 2012 annual monitoring round. Monitoring wells OU1MW22 and OU1MW23 were sampled in September 2012 and the analytical results were reported in the *2012-2013 CG049 Semiannual Groundwater Monitoring Informal Technical Information Report* (AECOM 2013b). The 2000 and 2012 plumes (Figure 4-14) are not comparable because most of the wells that define the plume at Site 7 were not installed until 2007. A comparison of the 2007 and 2012 TCE plumes indicates that concentrations in groundwater at the source area have decreased significantly since the original investigation (Figure 4-14).

Concentrations of cis-1,2-DCE greater than its MCL (6 μg/L) were detected in the 2012 sample collected from EX05A. Cis-1,2-DCE was first detected in EX05A in May 2009 at a concentration of 120 μg/L and increased slightly to 150 μg/L by 2012. Similarly, cis-1,2-DCE was first detected at a concentration greater than its MCL in OU1GEW04 in May 2009 at 6.3 μg/L and has fluctuated since that time, being detected below its MCL in May 2012 at a concentration of 2.2 μg/L. Cis-1,2-DCE was detected above its MCL for the first time at OU1MW20 in July 2011 at a concentration of 51 μg/L; this well was not sampled during the 2011-2012 annual monitoring event. This well was sampled in September 2012 and the analytical results were reported in the *2012-2013 CG049 Semiannual Groundwater Monitoring Informal Technical Information Report* (AECOM 2013b). Increasing concentrations of cis-1,2-DCE at the source area (OU1MW20) and the downgradient extraction wells (EX05A and OU1GEW04) indicate the degradation of TCE. To date, no other TCE daughter products have been detected in Site 7 groundwater wells.

CTCL and PCE concentrations have slowly been increasing in wells along the Base boundary over time, and this trend appears to be related to downgradient migration of the OU 1 and OU 2 Plumes. In May 2012, CTCL was detected above its MCL (0.5 μg/L) in 7MW03 (0.55 μg/L). Since OU1MW22 and OU1MW23 were installed in November 2007, PCE concentrations in these wells have been detected just below or at its MCL of 5 μg/L (Figure 4-15 and Appendix E) and CTCL has been detected at concentrations just below or just above its MCL of 0.5 μg/L.

Benzene was detected above its MCL of 1 μg/L in two upper alluvial wells (5MW04 [Table 4-6] and 7MW01 [Table 4-7]) at Site 7 with a maximum concentration of 3.6 μg/L. The 2012 benzene concentration detected in 5MW04 is the second time a benzene concentration has been greater than its MCL since 1988; however, benzene has only been detected in this well five times since the well was installed in 1986 (Appendix E). Benzene was detected in EX05A at a concentration of 0.69 μg/L. Prior to 2011, concentrations of benzene at 7MW01 had been increasing since 2000 to a concentration of 6.7 μg/L in 2010 and decreased to 3.6 μg/L in 2012 (Table 4-7).

4.4 OU 1 PLUME AND REMEDY

Wells sampled for the OU 1 Plume included extraction wells, water supply wells, water supply guard wells, plume perimeter guard wells, and plume monitoring wells. Data from these wells were evaluated using DQOs established for each well type in the *Revised QPP* (MWH 2010b).

Laboratory analytical data for OU 1 are presented in Table 4-7. This table includes detected concentrations for the entire 2011–2012 annual monitoring reporting period. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E.

4.4.1 GROUNDWATER ELEVATIONS AND FLOW DIRECTION

Water levels for the OU 1 Plume area were measured semiannually during the 2011–2012 annual monitoring reporting period. Basewide potentiometric surface maps are presented for the Fourth Quarter 2011 (Figures 2-1 through 2-3) and Second Quarter 2012 (Figures 2-4 through 2-6).

Overall, groundwater flow within the OU 1 Plume is to the southeast. In the vicinity of Site 31 and the EGETS, localized flow patterns are generally toward the operating extraction wells and away from the injection wells; however, all injection wells were off at the time of the 2012 annual water level survey. Average extraction rates for the Second Quarter 2012 are presented in Table 4-2. No injecting occurred during the 2011-2012 annual monitoring period. Directly east of the Base, groundwater movement is towards the south along the Perris Bedrock Channel (Figure 3-1).

In May 2012, groundwater elevations ranged from approximately 1,508 feet msl at the north end of the OU 1 Plume area to approximately 1,434 feet msl southeast of the base (Table 2-1 and Figures 2-4 through 2-6). Outside the zone of influence of the extraction wells, the hydraulic gradient is approximately 0.008 ft/ft toward the southeast in the northern portion of the OU 1 Plume, east of the extraction wells. In the southern off-Base portion of the OU 1 Plume, the hydraulic gradient is approximately 0.010 ft/ft toward the south-southeast (Figures 2-4 through 2-6).

Since 2000, groundwater levels have risen an average rate of 2.3 feet per year within OU 1, with some local variation attributed to groundwater extraction rates. Changes in groundwater levels between May 2011 and May 2012 ranged from decreases of 9.16 feet (4MW26A) to increases of 11.54 feet (OBMW02B), with an average increase of 0.2-foot in OU 1. To date, localized changes in groundwater flow patterns have been attributed primarily to changes in groundwater extraction associated with remedial operation; seasonal changes are minimal except along the Heacock Drain during rain events (Tetra Tech 2000a and 2001a).

4.4.2 OU 1 PLUME GROUNDWATER DATA ASSESSMENT

4.4.2.1 Extraction Wells

The 18 extraction wells (eight active and 10 inactive) that make up the EGETS were sampled and analyzed for VOCs. Well locations are shown on Figure 1-5. The ten inactive extraction wells generally have concentrations of COCs less than twice the respective MCLs. These extraction wells are also monitored by adjacent monitoring wells. Groundwater monitoring for operation of the EGETS is further described in Section 4.4.3. These samples were collected to provide operating data to monitor extraction system performance and calculate mass removal; however, the primary objective of the EGETS is not mass removal, but containment at the Base boundary. Analytical results for the detected OU 1 Plume COCs are summarized by well in Table 4-7.

CTCL, cis-1,2-DCE, PCE, and TCE were detected above cleanup goals in several EGETS extraction wells (EX03, EX04, EX05, OU1GEW03, OU1GEW04, OU1MW12, OU1TW02, OU1TW03, 4EX01, 4EX02, 4MW01, and OU1MW16A), as shown in Table 4-7. Outside of Site 4 PCE plume, PCE was detected at concentrations greater than its MCL in four EGETS wells at a maximum concentration of

7.3 μg/L at OU1GEW03 in May 2012. TCE concentrations were highest in the southern EGETS area (OU1GEW04) and downgradient of Site 31B (EX05A) adjacent to Site 7. The concentration of TCE in OU1GEW04 continued to decrease from 190 μg/L in November 2008 to 29 μg/L in May 2012 (Appendix E). The concentration of TCE in OU1MW16A continued to decrease from the historical maximum of 320 μg/L in June 2007 to 42 μg/L in May 2012 (Appendix E). Cis-1,2-DCE continued to be detected above the cleanup goal in 4MW01 and Site 7 area extraction well EX05A with a maximum concentration of 150 μg/L at EX05A in May 2012. CTCL was detected in the southern EGETS area, north of Site 7, with a maximum concentration of 0.8 μg/L at Well EX04 in May 2012.

4.4.2.2 Water Supply Wells

Seven operating off-Base water supply wells were sampled during the 2011–2012 annual monitoring round. Water supply well locations are shown on Figure 1-4. For clarity, public water supply wells are referred to by the well's street location (i.e., Perry #1 and Indian), and private water supply wells are referred to by the name of the property owner at the time sampling began (i.e., Bowers, Clark #1, Mendex, Nodarse, and Terao). Private water supply wells that have been shut down (i.e., Lee, Johnson, and Francis) were not sampled.

Detected concentrations of VOCs in samples from the water supply wells are summarized in Table 4-7. Other than water supply wells Bowers and Nodarse, wells for which no constituents were detected in the groundwater samples are not listed in Table 4-7. However, this information is presented in the full data tables in Appendix D. During the 2011–2012 annual monitoring reporting period, TCE was detected in water supply well Indian at a maximum concentration of 1.3 μg/L, and in the Perry #1 well at 0.71 μg/L. Trace concentrations of chloroform were detected in water supply wells Clark #1 (1.0 μg/L), Mendez (0.22 μg/L), and Terao (0.92 μg/L). During the 2011-2012 annual monitoring round, 1,2-dichloroethane (DCA) was detected in Clark #1 at a concentration of 0.30 μg/L. No VOCs were detected in samples from water supply wells Bowers and Nodarse.

According to the project DQOs, if the 95 percent upper confidence limit (UCL) concentration for a COC or indicator compound is within 50 percent of the MCL in samples collected from off-Base water supply wells, then remedial options will be evaluated (MWH 2010b). The water supply wells were evaluated and the 95 percent UCL calculations revealed that the 95 percent UCLs were all below 50 percent of the MCLs. Therefore, no action, other than continued monitoring, is required.

4.4.2.3 Water Supply Guard Wells

Four conventional monitoring wells (5MW23, 5MW32, 5MW33, and 5MW34) and Westbay™ intervals OBMW06A through OBMW06C and RBEMW01A and RBEMW01B are designated as OU 1 water supply guard wells (Table 2-2). The well locations are shown on Figures 3-3 and 3-4. These wells and Westbay™ intervals are located upgradient from off-Base water supply wells. The water supply guard wells are monitored semiannually or annually based on the extent of the historical dataset and location of the wells relative to the plume and groundwater gradient.

TCE concentrations were detected in 5MW23, 5MW33, and OBMW06B at concentrations of 0.42 μg/L, 0.30 μg/L, and 1.2 μg/L, respectively (Table 4-7). Chloroform concentrations were detected in OBMW06A (0.25 μg/L) and OBMW06B (0.26 μg/L). No other COCs were detected in the water supply guard wells. The 95 percent UCL calculations of COC data for the guard wells were not within 10 percent of the COC MCLs (Table 4-8); therefore, these concentrations do not trigger any decisions by the project team.

4.4.2.4 OU 1 Perimeter Guard Wells

Eight conventional monitoring wells (Wells 4MW13, 4MW16, 4MW18, 23MW02, OBMW01A, OBMW01B, OBMW10D, and RBEMW03B) and nine discrete intervals at three Westbay™ wells (RBEMW07A, RBEMW07B, RBEMW11B, RBEMW11D, RBEMW13A, RBEMW13B, RBEMW13C, RBEMW13D, and RBEMW13E) located outside the OU 1 Plume boundary are designated as OU 1 Plume perimeter guard wells as shown on Table 2-2. The well locations are shown on Figures 3-3 through 3-5. These wells are sampled annually to monitor the potential movement of the plume boundary. Concentrations detected in groundwater samples collected during the 2011–2012 monitoring round are summarized in Table 4-7. The full data tables are presented in Appendix D.

Low levels of benzene, CTCL, chloroform, cis-1,2-DCE, ethylbenzene, methyl tert-butyl ether (MTBE), PCE, TCE, toluene, m- & p-xylene, and o-xylene were detected in nine plume perimeter guard wells (Table 4-7). TCE was detected in 4MW13, 4MW18, 23MW02, OBMW10D, RBEMW11B, and RBEMW11D with a maximum TCE concentration of 3.5 μg/L in 23MW02, which is less than the MCL of 5 μg/L. PCE was detected in 4MW13, 4MW16, 4MW18, OBMW01A, and OBMW01B with a maximum concentration of 4.0 μg/L in 4MW18. Cis-1,2-DCE was detected in 4MW18 and OBMW10D at concentrations of 1.2 μg/L and 0.69 μg/L, respectively. Benzene was detected in 23MW02 at a concentration of 4.4 μg/L. CTCL was detected in 23MW02 at an estimated concentration of 0.37 μg/L. Chloroform was detected in 4MW16, 23MW02, OBMW01A, OBMW01B, and RBEMW13A with a maximum concentration of 0.46 μg/L in OBMW01A. MTBE, Toluene, m- & p-xylenes and o-xylenes were detected in 23MW02 with maximum concentrations of 2.6 μg/L, 4.0 μg/L, 2.2 μg/L, and 1.3 μg/L respectively.

4.4.2.5 Plume Monitoring Wells

Not including the wells sampled for Sites 4, 7, and 31 (Tables 4-3, 4-6, and 4-5, respectively), a total of 70 wells (66 annually and 4 semiannually) were sampled during the 2011–2012 annual monitoring period to monitor the OU 1 Plume and EGETS effectiveness, as determined by cleanup standards and other applicable, relevant, and appropriate requirements established in the *OU 1 ROD* (Earth Tech 1995). Well locations are shown on Figures 3-3 through 3-5. OU 1 COC concentrations detected during the 2011–2012 annual monitoring period are summarized in Table 4-7.

As shown in Table 4-7, COCs were detected in numerous groundwater samples collected from the OU 1 monitoring wells. Concentrations detected were initially compared to the OU 1 cleanup goals listed in Table 4-1. COCs detected above these goals during the 2011–2012 annual monitoring round include benzene, CTCL, 1,1-DCE, cis-1,2-DCE, PCE, and TCE (Tables 4-3 through 4-7). The following table illustrates in which aquifer unit, and for which constituent, groundwater cleanup goals were exceeded.

COC Exceeding OU 1 Cleanup Goal	**Hydrostratigraphic Unit**		
	Upper Alluvial	Lower Alluvial	Bedrock
Benzene	X	X	
CTCL	X	X	X
1,1-DCA	X		X
cis-1,2-DCE	X		X
PCE	X	X	X
TCE	X	X	X

The following subsections generally discuss the OU 1 Plume distribution with respect to the primary COCs PCE, TCE, cis-1,2-DCE, and CTCL. More detailed discussions of COC distribution at Sites 4, 31, and 7 are presented in Sections 4.1 through 4.3.

PCE Plumes

Upper Alluvial. The PCE plume for the upper alluvial unit is depicted on Figure 4-15. Within the upper alluvial unit (excluding Site 4), an elongated PCE plume is located in the southern OU 1 area. The southern upper alluvial PCE plume extends from northwest of the Base boundary (southeast of 15MW03 [5.3 μg/L in May 2012]) to the southeast to OBMW05B (5.6 μg/L, last sampled in May 2011), with a maximum concentration of 7.3 μg/L at OU1GEW03, located along the Base boundary. The extent of this southern PCE plume is not well-defined southeast of OBMW05B, except by the plume perimeter RBEMW11A located 2,800 feet to the southeast.

Comparison of the upper alluvial PCE plumes of 2000 and 2012 (Figure 4-16) indicates that PCE concentrations in the southern upper alluvial plume are decreasing in wells at the northern edge of the plume (5MW01, 9MW01, EX01, and OU1GEW02), and are now less than twice the MCL (Appendix E). Concentrations of PCE are increasing slightly in 7MW03, 7MW04, 15MW02, 15MW03, EX04, and OU1MW22 as downgradient dispersion occurs, as indicated by a comparison between the 2007 and 2012 plumes; however, PCE concentrations remain less than 10 μg/L (Figures 4-15 and 4-16). At the southeastern extent of the PCE plume (OBMW05B), PCE concentrations have been decreasing since 2004 and PCE has not been detected in downgradient RBEMW11A nor at concentrations greater than the reporting limit in cross-gradient RBEMW02B (Appendix E).

Lower Alluvial. PCE is present in the lower alluvial unit, with isolated concentrations greater than the MCL detected at the base boundary (OU1GEW03 [Figure 4-3]) and off- Base at 5MW36 (last sampled in May 2011) and OU1MW24A (Table 4-7 and Appendix E). Extraction well OU1GEW03 is adjacent to Site 7 and these well locations are shown on Figure 4-17. The maximum PCE concentration detected during the 2011-2012 annual monitoring round in the lower alluvial southern OU 1 Plume was 7.3 μg/L in extraction well OU1GEW03 (located adjacent to Site 7), a decrease from 9.8 μg/L in 2010. In comparison to the 2000 and 2007 data, the plume at OU1GEW03 has remained relatively unchanged in concentration, but may almost extend to OU1MW24A (installed in 2009). The plume at OU1GEW03 is defined to the southeast and the off-Base area by 5MW07, OBMW05A (last sampled in May 2011), OBMW07A, and OBMW07B, which have PCE concentrations below its MCL. OBMW05A was inaccessible during the 2011-2012 annual sampling event due to construction activities.

Concentrations of PCE at lower alluvial well 5MW36 (located off-Base to the south of Site 7) increased to above its MCL between 2000 and 2012 (from 0.7 μg/L in 1996 to 5.4 μg/L in 2011) (Appendix E). However, a decreasing trend has developed since 2004, when the concentration at 5MW36 was a maximum of 11 μg/L.

Bedrock. PCE was also detected outside the Site 4 plume in bedrock well 5MW29 (near extraction well OU1GEW02) at a concentration of 4.4 μg/L in May 2012 (Table 4-7). The extent of the plume in this vicinity has not been well-defined in the bedrock unit, but the low concentrations do not warrant continued investigation (Appendix E).

TCE Plumes

Upper Alluvial. The northern and southern OU 1 TCE plume maps for the upper alluvial unit are depicted on Figures 4-7 and 4-13, respectively. As TCE concentrations in the surrounding wells decreased, the contiguous, commingled OU 1 Plume has been reduced to smaller areas that remain above the TCE MCL. Listed below are several locations where TCE occurs at concentrations above its MCL, both on and off-Base, formerly drawn and connected as a larger plume in 2000:

- Site 31 to off-Base Well 5MW31;
- Isolated occurrences on-Base at 29MW01, 31MW04, and 31PW03PRC;
- Site 7, from OU1MW20 to OU1MW23;
- An isolated occurrence off-Base at OU1MW18; AND
- At the southern EGETS, from extraction OU1MW12 to off-Base Well 5MW08.

The maximum TCE concentration detected during the 2012 annual monitoring round was 29 μg/L in Extraction Well OU1GEW04, located at the Base boundary at Site 7 (Figure 4-13). Excluding the TCE plumes at Sites 31 and 7 (discussed in Sections 4.2 and 4.3, respectively), the maximum TCE concentration detected was 10 μg/L at OU1MW12 (Table 4-7). Off-Base, the maximum TCE concentration detected was 7.6 μg/L in 5MW08 (Figure 4-13).

Compared to the extent of the plume in 2000 (Figures 4-8 and 4-14), on-Base TCE concentrations between Site 31 are and the southern TCE plume area have decreased to below the MCL in 2012. However, TCE concentrations continue to exceed the groundwater cleanup goal (5 μg/L) at

31BGEW02, 31BGEW03, 31PW03PRC, and OU1MW19 (Figure 4-8). Additionally, a plume at Site 31A appears to have reemerged at 31MW04 between 2000 and 2012 (TCE was detected at 6.1 μg/L in 1998, increased to 22 μg/L in December 2011; and has since decreased to 5.3 μg/L in May 2012), although concentrations remain below active remediation goals (Appendix E). TCE concentrations at Extraction Well 31AGEW01 have decreased from a maximum concentration of 260 μg/L in June 2005 to 0.98 μg/L in May 2012 (Table 4-7 and Appendix E), and this well remains off-line.

The southern TCE plume within the upper alluvial unit has decreased in size substantially because of decreasing concentration trends (Figure 4-14). Areas where the TCE concentrations are greater than its MCL are smaller areas at 5MW08 (7.6 μg/L) 29MW01 (6.4 μg/L), EX05A (89 μg/L), OU1GEW04 (29 μg/L), OU1MW18 (5.7 μg/L), and OU1MW12 (10 μg/L). Some of the change in the apparent plume shape between 2000, 2007, and 2012 is related to further definition of the TCE plume at Site 7 and declining concentrations in off-base wells. The TCE concentrations detected off-Base have also decreased so that the MCL plumes no longer include 5MW18, OBMW04A, OBMW05B, OU1MW24B, and RBEMW02B (Figure 4-14). This decrease in the southern plume indicates that the EGETS has contained the upper alluvial OU 1 Plume, and natural attenuation of the plume is occurring, likely through physical processes because only low concentrations of degradation products (e.g., cis-1,2-DCE and vinyl chloride) have been detected.

TCE concentrations at Well 29MW01 increased from 1.2 μg/L in June 2001 to 23 μg/L in May 2011, and then decreased to 6.4 μg/L in May 2012. Concentrations of TCE have fluctuated at 29MW01 since 2003 from 15 μg/L (December 2007) to 47 μg/L (June 2008) (Appendix E). Based on the discontinuous detections downgradient, this TCE plume does not appear to be contiguous with other plume fragments (Figure 4-11).

Lower Alluvial. The TCE plume in the lower alluvial unit is primarily located off-Base (Figure 4-17). The shape of the plume is likely a result of the patterns of bedrock ridges and subsurface channels in this area. Higher concentrations of TCE are located in areas of low hydraulic conductivity. Concentrations in 5MW07 are relatively steady and do not indicate that contamination continues to migrate off-Base (Appendix E). Two off-Base areas (at OBMW05A [13 μg/L] last sampled in May 2011] and OBMW09B) of the plume appear to have concentrations greater than 10 μg/L divided by the new lower alluvial well OU1MW24A (Figure 4-17).

Compared to 2000, the off-Base TCE lower alluvial plume maintains a similar shape with approximately the same extent (Figure 4-18). There are also TCE concentrations above its MCL in southernmost on-Base well OU1MW13 and off-Base at well OBMW08B (Figure 4-17). In 2000, the maximum concentration of TCE off-Base was 29 μg/L in OBMW09B, which by 2012 had decreased to 13 μg/L in OBMW09B. A major change in concentration distribution was noted in the 2011 plume, which is due to installation of OU1MW24A in 2009 and subsequent interpretation of the plume (MWH 2012a). Note that this plume is located in an area of relatively low hydraulic conductivity; therefore, the persistence of TCE concentrations is potentially related to slow advection and plume dispersion.

Based on samples collected from lower alluvial wells since the startup of the EGETS, most on-Base and off-Base wells exhibited decreasing trends in 2012; however, 5MW02, OBMW05A, and OBMW09A exhibit increasing TCE trends since 2000 (Appendix E). Concentrations of TCE at 5MW07 have increased overall since 1996, but have decreased since 2004 with the lowest concentration (12 μg/L) detected in June 2010 and May 2012.

Bedrock. The TCE plume in the bedrock unit (Figure 4-11) is primarily located at, and downgradient from, Site 31B. During the 2012 annual monitoring round, the maximum concentration of TCE in the bedrock OU 1 Plume was 75 μg/L, detected at OU1MW16B (Table 4-7). Concentrations greater than the OU 1 cleanup goal were also noted at 31BGEW03, the southern end of Site 4 (OU1MW04), and along the Base boundary (OU1MW15A, OU1MW25, 5MW28, and 5MW29).

Compared to 2000, TCE concentrations in the area between Sites 4 and 31B have decreased to below its MCL, which creates the appearance of two plumes in this area in 2012 (Figure 4-12). The plume extends off-Base to 4MW08 and OU1MW25. The plume observed at 29OW01 in 2000 is not present in 2012 because the TCE concentration has decreased from 5.7 μg/L in 2000 to 2.3 μg/L in 2012 (Appendix E). The concentrations of the plumes at 5MW29 and 9MW02 have also decreased since 2000. When compared to the 2007 TCE bedrock plume, the 2012 plume indicates that concentrations on-Base have decreased at OU1MW16A, but that the plume has extended off-Base to Well 4MW08. The concentration at OU1OW02 has also decreased from 11 μg/L in 2007 to 5.1 μg/L in 2012 (Figure 4-11).

Cis-1,2-DCE Plume

Cis-1,2-DCE is present at concentrations above its MCL in the upper alluvial and bedrock units (Table 4-7). Elevated concentrations of the breakdown product, cis-1,2-DCE, are typically encountered in areas of historically high PCE and TCE concentrations because of degradation of these chlorinated hydrocarbons. Therefore, separate plume maps have not been prepared for cis-1,2-DCE.

Cis-1,2-DCE was detected above its MCL of 6 μg/L for the first time in upper alluvial extraction wells EX05A and OU1GEW04, near Site 7, in 2009, and cis-1,2-DCE in EX05A continues to be above its MCL in 2012. The maximum concentration of cis-1,2-DCE was detected at EX05A at a concentration of 150 μg/L in May 2012, a significant increase from the non-detect in 2008. As discussed in Section 4.3, cis-1,2-DCE exceeded its MCL in OU1MW20 (51 μg/L, last sampled in May 2011) at Site 7; and at the same time, TCE concentrations have decreased in this well, indicating that dechlorination of TCE to cis-1,2-DCE may be occurring at Site 7.

Concentrations of cis-1,2-DCE exceeded the MCL in two bedrock wells (4MW01 and OU1MW04) from the Site 4 area (Table 4-7).

CTCL Plumes

CTCL was detected above the OU 1 cleanup standard (0.5 μg/L) in groundwater samples collected from wells screened in the alluvial and bedrock units (Table 4-7). The maximum concentrations of CTCL detected during the 2012 annual monitoring round within the OU 1 Plume were 0.8 μg/L in the upper alluvial unit (extraction well EX04), 0.9 μg/L in the lower alluvial unit (OU1MW24A), and 1.6 μg/L in the bedrock unit (OU1MW10) (Table 4-7).

Upper Alluvial. The CTCL plume in the upper alluvial unit, depicted on Figure 4-19, extends from Site 33 (south of PANMW10) to the OU 1 off-Base Plume (OU1MW24B). Based on results from the *Expanded Site 8 Supplemental Remedial Investigation* (RI) (Earth Tech 2007b), the OU 2 portion of the plume has been interpreted as connected. Compared to the plume in 2000, the upper alluvial CTCL plume has been connected with the OU 2 Plume, the plume no longer incorporates extraction well OU1GEW05, and has contracted downgradient (Figure 4-20). In 2012, the off-Base portion of the plume has decreased in size. CTCL was detected in 2000 as a small plume located at 29MW01, but was no longer detected in 2012. Concentrations in downgradient well OBMW05B have varied, with concentrations detected above its MCL in 2000 and 2011. However, concentrations were just below its MCL in 2006, 2007, and 2012 (Figure 4-20).

Lower Alluvial. The CTCL plume in the lower alluvial unit in OU 1 is depicted on Figure 4-21. The maximum on-Base concentration in this plume was 0.79 μg/L, detected in 5MW02 and OU1GEW03, although most of the plume area is off-Base. The maximum off-Base concentration was 0.9 μg/L in OU1MW24A. Compared to the 2000 plume, the lower alluvial CTCL plume has dispersed downgradient (Figure 4-22). Concentrations are decreasing throughout the plume, except concentrations at OU1MW13, which have remained steadily above the groundwater cleanup goal since December 1999 (Appendix E).

Bedrock. The CTCL plume in bedrock is depicted on Figure 4-23. CTCL was detected above the OU 1 cleanup goal in one bedrock well (OU1MW10 at 1.6 μg/L) during the 2012 annual sampling round. A comparison of the plumes over time indicates that CTCL concentrations have decreased in OU1MW10 since 2000 (Figure 4-24), but concentrations have remained steadily above the groundwater cleanup goal since March 1998 and has been decreasing is size.

Benzene Plume

Significant benzene concentrations in OU 1 are restricted to Site 18, which is discussed in a separate document (AECOM 2013a). Benzene was detected in two upper alluvial wells (5MW04 and 7MW01) within the OU 1 Plume area with a maximum concentration of 3.9 μg/L in 7MW01 (Table 4-7). (Appendix E).

Vinyl Chloride: Vinyl chloride was not detected above the MCL during the 2012 annual monitoring round (Table 4-3).

4.4.3 REMEDIAL SYSTEM PERFORMANCE AND ROD COMPLIANCE

The EGETS consists of 17 groundwater extraction wells and five injection wells (Figure 1-5) designed to prevent further off-base migration of the OU 1 Plume and to attempt to decrease maximum concentrations in the off-base plume (Table 4-2). Extraction well locations extend from approximately 500 feet north of Gentian Avenue (4EX02 at the center of Site 4) to approximately 200 feet north of Mariposa Avenue (OU1MW12, south of Site 7). Contaminated groundwater is extracted from water-bearing zones along the eastern Base boundary. Injection wells (OU1TW01, OU1RW01, OU1RW02, OU1RW03, and OU1RW04) were installed to create a hydraulic barrier, designed to prevent the movement of contaminated groundwater off base and to maintain flow into extraction wells. These injection wells also separate the northern and southern EGETS extraction wells. The Heacock Drain is also unlined from north of Site 4 to Site 29 (OU1GEW01), which provides additional infiltration into the upper alluvial unit. Well construction data for all the EGETS extraction and injection wells are provided in Appendix A.

During the Fourth Quarter of 2006, with the concurrence of the regulatory agencies, AFRC turned off 10 extraction wells (EX01 through EX04, EX06, OU1GEW01, OU1GEW02, OU1GEW03, OU1GEW05, and OU1MW12) and four injection wells (OU1RW01 through OU1RW04) were turned off as part of the partial operation of the EGETS, while seven extraction wells (4EX01, 4EX02, 4MW01, EX05A, OU1GEW04, OU1TW02, and OU1TW03) and one injection well (OU1TW01) remained active. These wells were turned off because the concentrations were below two times the respective MCLs (AFRC 2006). These wells are sampled semiannually and are restarted if a significant increase in contaminant concentrations (greater than two times the respective MCLs) is observed (MWH 2010b). A significant increase in contamination in monitoring wells associated with the inactive extraction and injection wells (discussed in Section 4.4.3.1) would also trigger the restart of the extraction and injection wells.

Extraction and injection rates are listed in Table 4-2. There is little notable drawdown in the area of the active extraction wells. Because of the rising water levels, when active, there is also little groundwater mounding at the three inactive injection wells (OU1TW01, OU1RW03, and OU1RW04) in the southern OU 1 area. These injection wells were subsequently turned off with the concurrence of the regulatory agencies because groundwater modeling indicated little impact to the EGETS and Base boundary containment from the injection wells.

4.4.3.1 Partial EGETS Monitoring Wells

The following monitoring wells were selected to monitor base boundary conditions following the shutdown of several EGETS wells (as shown on Figure 1-5):

- OU1OW02, associated with injection Well OU1RW01;
- OU1OW03, associated with injection Well OU1RW02;
- OU1OW04 and 5MW16, associated with injection Well OU1RW03;
- 29MW01 and 29MW04, associated with injection Well OU1RW04;

- OBMW04A, associated with extraction Well EX01;
- OU1MW09, associated with extraction Well EX02;
- 5MW02, associated with extraction Well EX03;
- OU1MW10, associated with extraction Well EX04;
- OU1MW11, associated with extraction Well EX06;
- OU1MW08, associated with extraction Well OU1GEW01;
- 5MW30, associated with extraction Well OU1GEW02;
- 5MW07, associated with extraction Well OU1GEW03;
- EX07, associated with extraction Well OU1GEW05; and
- EX08, associated with extraction Well OU1MW12.

The Second Quarter 2012 average flow rates and concentrations of primary COCs (PCE, TCE, cis-1,2-DCE, and CTCL) collected during the 2012 annual monitoring round from the EGETS wells are presented in Table 4-2. The full list of detected analytes for these wells is presented in Table 4-7. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E.

Concentrations of TCE, PCE, and CTCL in monitoring wells were evaluated to monitor effectiveness of the EGETS capture in active and inactive extraction and injection wells (Table 4-9). In general, no notable changes in concentrations of COCs occurred in the inactive extraction wells and associated monitoring wells between November 2006 (when the extraction wells were active) and May/June 2012 (when the extraction wells had been inactive for approximately 5.5 years) (Table 4-9). COC concentrations generally remained less than two times the MCL, except at 5MW07, OU1MW10, and OU1MW12. Concentrations greater than two times their MCLs precipitated the following changes to partial operation of the EGETS:

- Based on continued TCE concentrations greater than two times its MCL at Well OU1MW12, groundwater extraction resumed at this well in July 2009, remaining active in 2012.
- EGETS extraction well OU1TW02 was shut down in the First Quarter 2012 because the COC concentrations were less than two times the respective MCLs.

Twelve extraction wells (31AGE01 through 31AGE03, EX01 through EX04, EX06, OU1GEW01 through OU1GEW03, and OU1GEW05) and all five injection wells (OU1RW01 through OU1RW04, OU1TW01, and OU1TW02) are inactive, while seven extraction wells (4EX01, 4EX02, 4MW01, EX05A, OU1GEW04, OU1MW12, and OU1TW03) were operating during the 2011-2012 monitoring period.

Although TCE concentrations at 5MW07 and CTCL concentrations at Well OU1MW10 are more than two times the respective MCLs, these concentrations are consistent with historical concentrations at these locations; therefore, groundwater extraction has not resumed at the associated extraction wells (Table 4-9). COC concentrations and the need to restart any of the EGETS wells will be reevaluated following the semiannual monitoring event in December 2013 and presented in the Fourth Quarter 2013 Semiannual Groundwater Monitoring Report to be prepared by AECOM.

4.4.3.2 Off-Base Trends

Maximum concentrations of TCE, PCE, and CTCL in off-Base wells were evaluated to help determine the effectiveness of the EGETS capture. This evaluation showed that concentrations of TCE, PCE, and CTCL have generally decreased since 1996, when the EGETS was constructed. A summary of trends as a result of pumping in the Site 4 vicinity is discussed in Section 4.1. A summary of these overall trends in off-Base wells is provided below:

- The maximum historical concentration of PCE of 11.6 μg/L (Well OBMW05B) was detected in November 2003 and June 2004, and is less than the current maximum concentration in May 2012 of 7.3 μg/L in 5MW31. PCE concentrations in Well 5MW31 started increasing in May 2010.
- The maximum historical TCE concentration of 41 μg/L (Well 5MW14) was detected in September 1993 and is greater than the current maximum concentration in May 2012 of 13 μg/L at 5MW07.
- The maximum historical CTCL concentration of 2.7 μg/L (Well 5MW36) was detected in July 1999 and was greater than the current maximum concentration in May 2012 of 1.6 μg/L (Well OU1MW10).

Although the maximum off-Base concentrations of CTCL and TCE have decreased overall, there have been instances of increasing concentrations of PCE, TCE, and CTCL. Typically, these increasing concentration trends are small and are commensurate with dispersion of the OU 1 Plume to the south and southeast in the direction of groundwater flow. Therefore, while maximum concentrations in the off-Base plume have generally decreased, the size of the plume exceeding the OU 1 cleanup goals has increased along the downgradient perimeter, particularly within the lower alluvial and bedrock units.

5.0 OU 2 SITES GROUNDWATER DATA ASSESSMENT

OU 2 includes localized groundwater plumes at Site 8 (including Building 2300, Building 2307, Buildings 355/373, Building 434, Building 453, and the solvent contamination near Site 2 and Site 36 (Figure 1-2). In addition, the groundwater plume originating at Site 8 has commingled to incorporate the localized plumes at Site 8, and extends across Site 33; this localized plume is referred to as the OU 2 Plume. Site 8, Site 36, and the OU 2 Plume are included in the March ARB LTM Program. Interim remedial actions and/or treatability studies have been initiated at Site 36 and Site 8, and Building 2307; however, no decision documents have been approved for these sites. Therefore, groundwater contaminant concentrations have been compared with State and Federal MCLs and CDPH notification levels at OU 2 sites. These water quality standards are summarized in Table 5-1.

5.1 OU 2 GROUNDWATER PLUME

Primary COCs include PCE, TCE, cis,1,2-DCE, and CTCL and have been detected in several upper and lower alluvial monitoring wells south and southwest of Site 2, north and east (upgradient) from Site 36, and in Sites 8 and 33. Investigations in this area have identified former source areas at Buildings 434 and 453 and continuing source areas at Buildings 355/373 and Site 36.

5.1.1 GROUNDWATER ELEVATIONS AND FLOW DIRECTION

Water levels for the OU 2 Plume area were measured semiannually during the 2011-2012 annual monitoring reporting period. A Basewide potentiometric surface map for the Fourth Quarter of 2011 is presented on Figure 2-1 for the upper alluvial unit, Figure 2-2 for the lower alluvial unit and Figure 2-3 for the bedrock unit. The Basewide potentiometric surface map for the 2012 annual monitoring round is included as Figure 2-4 for the upper alluvial unit, Figure 2-5 for the lower alluvial unit and Figure 2-6 for the bedrock unit.

Groundwater elevations in the OU 2 Plume area ranged from approximately 1,490 feet to 1,523 feet msl in May 2012 and have risen by an average of 0.45-foot since May 2011 (Table 2-1). Changes in groundwater levels ranged from a decrease of 0.62-foot (RBEMW04A) up to an increase of 2.25 feet (36VEP03D). In the OU 2 Plume area, the hydraulic gradient varies. In the northern portion of the OU 2 Plume (Buildings 434 and 453), the hydraulic gradient in the unit is approximately 0.04 ft/ft toward the southeast (Figure 2-4), but immediately decreases to approximately 0.005 ft/ft from

Building 453 to Site 33. On the flightline at Site 33, the hydraulic gradient is approximately 0.004 ft/ft (Figure 2-4).

5.1.2 PLUME ASSESSMENT

Concentrations detected were initially compared to the water quality standards listed in Table 5-1 for OU 2 monitoring wells. All data from the 2011-2012 annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. COCs detected above these goals during the 2011-2012 annual monitoring period in OU 2 wells include benzene, CTCL, 1,2-DCA, cis-1,2-DCE, ethylbenzene, MTBE, TCE, and vinyl chloride (Table 5-2). The following table illustrates in which alluvial unit and for which constituent groundwater cleanup goals were exceeded, excluding COCs detected solely at Site 36. As of June 2012, the bedrock unit is not impacted above the OU2 Water Quality Standards, in the OU2 Plume area.

COC Exceeding OU 2 Water Quality Standard	**Hydrostratigraphic Unit**	
	Upper Alluvial	Lower Alluvial
Benzene	X	X
CTCL		X
1,2-DCA	X	X
cis-1,2-DCE	X	X
Ethylbenzene	X	
MTBE	X	
PCE	X	
TCE	X	X
Vinyl chloride	X	

The following subsections generally discuss the OU 2 COC plume distribution with respect to the primary COCs PCE, TCE, cis-1,2-DCE, and CTCL. COC distribution at Buildings 355/373, 434, and 453, Site 2, Site 8 (Building 2300), Site 8 (Building 2307), and Site 36 are discussed in more detail later in this section.

5.1.2.1 PCE Plume

During the 2012 annual monitoring round, PCE was detected above the MCL (5 μg/L). In 2000, PCE was detected in wells across the OU 2 area (Site 36, Buildings 355/373, and Site 33). However, as of

June 2012, PCE has been limited to a small area at Site 8, Building 2307 (Section 5.3.2). The maximum PCE concentration detected during the 2011-2012 annual monitoring round was 190 μg/L at 2307MW01 (Table 5-3).

5.1.2.2 TCE Plumes

Upper Alluvial Unit. The OU 2 TCE Plume for the upper alluvial unit is depicted on Figure 5-1. TCE plumes in OU 2 are present at Buildings 355/373 and 453 (Site 8). The maximum TCE concentration detected during the 2011-2012 annual monitoring round was 430 μg/L at 6M8MW27 (Buildings 355/373) (Table 5-2). Historically, at Buildings 355/373, maximum TCE concentrations were noted at 6M8MW17, with an overall maximum TCE concentration of 2,100 μg/L detected in 2008 (Appendix E).

OU 2 TCE plumes above its MCL are located at Site 8 Buildings 355/373 (extending to PANMW09) and at Site 8 Building 453 (extending downgradient toward 5M36MW05) with an isolated plume around PANMW13 (Figure 5-1). Compared to 2000, the plume at Site 33 has decreased to below its MCL. A comparison of the 2007 and 2012 plumes indicates that the Site 33 TCE plume has continued to decrease in size (Figure 5-2). A comparison of TCE concentrations in 2000 and 2012 indicates that the plume at Site 36 has decreased substantially in size and concentration so that it is no longer detected greater than its MCL (Section 5.4).

Anaerobic degradation of TCE to cis-1,2-DCE and vinyl chloride has been noted since the injection of emulsified vegetable oil (EVO) (as an electron donor) during the enhanced *in* situ bioremediation (EISB) pilot study (MWH 2011b). Following the EISB pilot study, TCE concentrations decreased from 480 μg/L in March 2010 (pre-injection) to 0.28 μg/L in May 2012 (approximately two years after injection) at 6M8MW17, located within the treated area. The 2012 TCE maximum concentration of 430 μg/L was detected at 6M8MW27, immediately downgradient of 6M8MW17 and the EISB treatment area. Concentrations at 6M8MW27 have fluctuated between 210 μg/L (December 2010) and 740 μg/L (April 2010) since the well was installed in March 2010 and do not appear to have been impacted by the upgradient EISB treatment.

At the former source area at Building 434, a TCE concentration of 160 μg/L was detected in 434MW01 in May 2012, a decrease from the historical maximum of 350 μg/L in 2009 (Table 5-1 and

Appendix E). Discrete-depth groundwater samples collected during the Site 8 Supplemental RI showed that the concentrations attenuate over very short distances (Earth Tech 2007b).

Lower Alluvial Unit. The majority of the lower alluvial OU 2 TCE plume extends from Building 453 southeastward to 6M36MW06 (5.9 μg/L) (Figure 5-3). Two separate areas in the OU 2 Plume (Building 453 and Site 33 [at PANMW28 and PANMW47]) are present. Another smaller plume is located on the east side of Site 2 (6M2MW09 and 6M2MW10). The maximum TCE concentration detected in the unit during the 2011-2012 annual monitoring round was 150 μg/L from 6M2MW09 (Table 5-2), compared to a historical maximum of 257 μg/L in 2004 (Appendix E).

Concentrations in the upgradient area of the plume (6M8MW12 and 6M8MW13) remain elevated above its MCL, although TCE concentrations have decreased since 1996 (Appendix E). Concentrations of TCE at PANMW28 have decreased since 1996, but have remained steady since 2001 with a decrease to 11 μg/L in 2012. TCE concentrations at PANMW47 have remained steady since well installation in 2006 (Appendix E). TCE concentrations at PANMW27 have been decreasing since May 2001 (140 μg/L), but were detected below its MCL for the second time since 1993 (3.7 μg/L in June 2012) (Appendix E). The southeastern extent of the OU 2 TCE Plume is defined by new Monitoring Well PANMW48A, where TCE was detected below its MCL at 3.2 μg/L in June 2012 (Table 5-2); however, groundwater samples collected during the Site 8 Supplemental RI showed that concentrations less than its MCL extend downgradient south to the OU 1 Plume, forming the Basewide plume (Earth Tech 2007b).

Comparisons of the 2000, 2007, and 2012 TCE plumes (Figure 5-4) indicate that the lower alluvial OU 2 Plume extent has decreases significantly in size and concentrations have decreased below its MCL in 6M36MW01, PANMW17, and PANMW27; therefore, separating the 2000 and 2007 TCE plumes into two separate TCE plumes in 2012. Additionally, TCE concentrations at RBEMW08 have decreased below its MCL since 2008 (3.6 μg/L). Elsewhere (2MW05, 6M8MW12, 6M36MW06, and PANMW27), concentrations have declined. Additionally, the TCE plume at Site 2 has decreased significantly in size since 2000 and now only includes two wells (6M2MW09 and 6M2MW10), which are adjacent to each other and screened at slightly different depths.

5.1.2.3 Cis-1,2-DCE Plume

Cis-1,2-DCE is present at concentrations above its MCL in both the lower and upper alluvial units, primarily at the Buildings 355/373 source area (Table 5-2). Elevated concentrations of cis-1,2-DCE are typically encountered within the PCE and TCE plume footprints; therefore, separate plume maps have not been prepared for cis-1,2-DCE. However, in PANFP04 and PANMW37, located at Site 33, cis-1,2-DCE concentrations do not appear to be associated with current TCE plumes, but are likely the result of TCE being reductively dechlorinated in areas where reducing conditions have been induced by degradation of dissolved fuel constituents at Site 33.

Cis-1,2-DCE was detected above its MCL of 6 μg/L in seven upper alluvial wells (6M8MW15, 6M8MW17, 6M8MW19, 6M8MW24, 6M8MW27, PANFP04, and PANMW37) and one lower alluvial well (6M2MW09) in the OU 2 area (Table 5-2). The maximum concentration of cis-1,2-DCE was

1,300 μg/L in upper alluvial 6M8MW19 in June 2012 (Table 5-2). Concentrations of cis-1,2-DCE are increasing at 6M8MW19, where active biodegradation has been occurring at the Buildings 355/373 source area (Appendix E). Monitoring well 6M8MW27 was installed in March 2010, but cis-1,2-DCE concentrations have remained relatively stable in this well since installation with a decrease from May 2011 (1,100 μg/L) to June 2012 (940 μg/L). The concentrations of cis-1,2-DCE at PANMW09 are likely related to the TCE plume originating at Buildings 355/373, and increased from 0.48 μg/L in June 2004 to 9.5 μg/L in May 2011, then decreased to 5.9 μg/L in May 2012. Cis-1,2-DCE concentrations at PANMW37 was first detected in June 2007 and increased to 32 μg/L in June 2009, but have since decreased to 6.7 μg/L in June 2012 (Appendix E). Concentrations of cis-1,2-DCE have fluctuated at PANFP04 between 100 μg/L (June 2007) and 1.8 μg/L (June 2009), with a detection of 7.3 μg/L in June 2012. The concentrations of cis-1,2-DCE at lower alluvial RBEMW08, downgradient of Buildings 355/373, continue to decrease from the maximum concentration of 350 μg/L in 1998 to 3.3 μg/L in May 2012 (Appendix E).

5.1.2.4 CTCL Plumes

CTCL was detected above its MCL (0.5 μg/L) in groundwater samples collected from wells screened in the lower alluvial unit. The maximum concentrations of CTCL detected during the 2011-2012 annual monitoring round within the OU 2 Plume was 18 μg/L (453MW01) in the lower alluvial unit (Table 5-2).

Upper Alluvial Unit. The CTCL Basewide plume in the upper alluvial unit, depicted on Figure 4-19, extends southeast from OU 2 (south of PANMW10 at 0.50 μg/L) off-Base east of OU 1. The OU 1 and OU 2 CTCL plumes are drawn connected based on discrete-depth groundwater samples collected during the Site 8 Supplemental RI (Earth Tech 2007b). This plume is also discussed in Section 4.4.

Increasing CTCL trends are noted in PANMW10 and PANMW23 (Figure 4-20 and Appendix E). Decreasing CTCL trends are present in 28MW07, 6M8MW25, PANCP13, PANMW16, and RBEMW04B (Appendix E).

Lower Alluvial Unit. The CTCL plume in the lower alluvial unit within the OU 2 Plume area (Figure 5-5) is primarily located at Building 453 and Site 33, although the source of the Site 33 plume is presumed to be the Expanded Site 8 Area, now referred to as the OU 2 Plume. The CTCL plume source in the OU 2 area is located at Building 453, where the highest concentrations of CTCL have been detected. The maximum concentration of CTCL detected in the Building 453 plume was 18 μg/L at 453MW01 in May 2012 (Table 5-2). The Building 453 plume extends from 6M36MW08 downgradient towards 6M36MW06. There is an isolated plume surrounding 2MW07 to the east. A separate isolated plume is located at Site 33 with a maximum concentration of 2.8 μg/L at PANMW47.

Based on a comparison of concentrations in 2000 and 2012 (Figure 5-6), the CTCL plume in OU 2 has decreased in size and concentration within most areas, and disappeared at Site 2. The OU 2 Plume has also decreased to the area around Building 453. In 2000, the OU 2 Plume encompassed the area from Building 453 and 2MW07 to Site 33. The installation of new monitoring wells has resulted in differing plume interpretations from 2000, 2007, and 2012, including identification of the former source area at Building 453 during the *Site 8 Supplemental RI* (Earth Tech 2007b).

5.1.3 BUILDINGS 355/373 GROUNDWATER DATA ASSESSMENT

Groundwater at Buildings 355/373 is characterized by elevated concentrations of TCE, cis-1,2-DCE, and vinyl chloride; the analytical results are included in Table 5-2. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. The maximum TCE concentration detected at the site during the 2011-2012 annual monitoring period was 430 μg/L in 6M8MW27 in June 2012. Cis-1,2-DCE concentrations detected at the site during the 2011-2012 annual monitoring round was 1,400 μg/L in 6M8MW19 in October 2011. Concentrations of cis-1,2-DCE have decreased in 6M8MW17 from 1,700 μg/L in August 2010 to 1.2 μg/L in June 2012. Concentrations of TCE have decreased since June 2009 likely due to the injection of EVO as part of the EISB pilot study (Appendix E). The presence of cis-1,2-DCE indicates the degradation of TCE at the site, coupled with the recent presence of vinyl chloride at a concentration of 2.9 μg/L in June 2012, which suggests that anaerobic dechlorination has occurred. Concentrations of TCE, however, have been decreasing at 6M8MW19, north of the pilot study's treatment area, from 270 μg/L in March 2001 (when the well was installed) to 180 μg/L in October 2011. The plumes emanating from Buildings 355/373 continue to impact areas downgradient of the site, extending to PANMW09, where concentrations have increased from 1 μg/L in November 1994 to 11 μg/L in May 2011, then decreased to 5.4 μg/L in May 2012 (Figure 5-1).

Following the Draft Final Site 8 Area Supplemental RI and Focused Feasibility Study (Earth Tech 2007b), an evaluation of enhanced *in situ* bioremediation was recommended. An EISB pilot study was concluded in November 2011 following the plans identified in the *Final Enhanced In Situ Bioremediation Pilot Study Work Plan – Site 8, Buildings 355/373 Area and Site 36* (MWH 2009). Details of the pilot study implementation and interim results were presented in the *Interim Enhanced In Situ Bioremediation Pilot Study Report* (MWH 2011b).

5.1.4 BUILDINGS 434 GROUNDWATER DATA ASSESSMENT

A summary of 2011-2012 analytical results for site-specific COCs is provided in Table 5-2. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. Groundwater at Building 434 is characterized by elevated concentrations of TCE. Only one well is currently installed at Building 434 to monitor the former source area. The maximum TCE concentration detected at the site during the 2011-2012 annual monitoring round was 160 μg/L in 434MW01 (Table 5-2), a decrease from the historical maximum of 350 μg/L in June 2009 (Appendix E). CTCL concentrations have decreased at the site from 23 μg/L in June 2006 to non-detect since October 2009, indicating that Building 434 is not a continuing source of CTCL in groundwater.

5.1.5 BUILDING 453 GROUNDWATER DATA ASSESSMENT

A summary of 2011-2012 analytical results for site-specific COCs is provided in Table 5-2. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. Groundwater at Building 453 is characterized by elevated concentrations of CTCL, 1,2-DCA, and TCE. The maximum TCE and CTCL concentrations detected at the site during the 2011-2012 annual monitoring round were 91 μg/L and 18 μg/L, respectively, in 453MW01. Concentrations of TCE at 453MW01 have decreased from 370 μg/L in June 2006 to 91 μg/L in May 2012 (Appendix E). CTCL concentrations have decreased slightly from 32 μg/L in June 2006 to 18 μg/L in May 2012 at 453MW01, with a maximum concentration of 54 μg/L in August 2008. TCE and CTCL concentrations decrease between 453MW01 (91 μg/L and 18 μg/L, respectively) to downgradient well 453MW02 (34 μg/L and 8.8 μg/L, respectively).

Both TCE and CTCL were both detected in 453MW02 above the respective MCLs, and CTCL concentrations are approximately an order of magnitude lower than at 453MW01 (Table 5-2). However, concentrations of CTCL and TCE, in 453MW01, have increased from 6.3 μg/L and 29 μg/L, respectively, in June 2007 to 18 μg/L and 91 μg/L, respectively, in May 2012 (Appendix E). These increasing concentrations of CTCL and TCE at the downgradient well indicate that the groundwater contamination is not limited to the former source area, as shown on Figures 5-3 and 5-5.

5.1.6 SITE 2 GROUNDWATER DATA ASSESSMENT

Samples were collected for COCs at Site 2 (and adjacent Site 27) from 16 groundwater monitoring wells during the 2011-2012 annual monitoring round (Table 5-2). Historical data tables are included in Appendix E. Concentrations of benzene, CTCL, cis-1,2-DCE, 1,2-DCA, and TCE were detected above the respective MCLs. During the 2011-2012 annual monitoring round, benzene was detected above its MCL in three wells with a maximum concentration of 760 μg/L in extraction well 2EW01 (Table 5-2). Concentrations of CTCL were detected slightly above its MCL in one lower alluvial well (2MW07) at a concentration of 0.61 μg/L (Table 5-2). Concentrations of TCE were detected above its MCL in two lower alluvial wells (6M2MW09 and 6M2MW10) in the eastern portion of Site 2 (Table 5-2). The lower alluvial TCE plume is shown on Figure 5-3. These concentrations result from the migration of the OU 2 TCE plume north because of previous groundwater extraction activities and previous groundwater flow directions. Compared to the 2000 plume, the extent of TCE at Site 2 has decreased significantly and is restricted to two wells adjacent to inactive extraction well 2EW02 (Figure 5-4).

5.2 SITE 8, BUILDING 2300

Site 8 encompasses several facilities parallel to the flightline, including facilities for maintenance and repair of jet engines and other aircraft equipment, communications equipment, and firefighting equipment (Figure 1-2). The OU 2 RI identified isolated plumes of soil gas and groundwater contaminated with TCE in the northwestern portion of Site 8, adjacent to Building 2300.

The site-specific conceptual hydrogeologic model for Site 8, Building 2300, consists of a few relatively thin, interconnected water-bearing strata in the upper alluvial hydrogeologic unit between 1,490 feet and 1,470 feet above msl (50 feet to 70 feet bgs), just above the bedrock surface. Groundwater historically flowed to the west and northwest, but currently flows to the southwest. A bedrock high is present northeast of Building 2300. North and west of Site 8, the elevation of the bedrock surface decreases dramatically and thick sequences of relatively transmissive water-bearing strata of the lower alluvial unit are present near the Base boundary and along the I-215 bedrock channel. Building 2300 is located in an area of low hydraulic conductivity in weathered bedrock (Figure 3-1).

Groundwater contamination at Building 2300 consists of a TCE plume present in the bedrock hydrogeologic unit (Figure 5-7), which is currently defined by 5M8MW02, located at the northwestern corner of the parking area. A maximum TCE concentration of 3,000 μg/L was detected in 1993 from 5M8MW02.

Previous activities related to Site 8 have included soil gas surveys, geophysical surveys, soil boring and monitoring well installation, soil and groundwater sampling, and a sonic drilling program. During these activities, eight groundwater monitoring wells (5M8MW01, 5M8MW02, 5M8MW09, 5M11MW01, 5M11MW02, 6M2300MW01, 6M8MW10, and 6M8MW11) were installed in the vicinity of Site 8, Building 2300. Many of these wells, along with former guard wells at the northern Base boundary, are included in the March ARB LTM Program.

5.2.1 GROUNDWATER ELEVATION AND FLOW DIRECTION

Water levels for Building 2300 were measured across the sites in seven monitoring wells during the 2012 annual round. Potentiometric surface maps are presented on Figures 2-4 through 2-6.

Groundwater elevation measurements for the annual round (Second Quarter 2012) and two previous semiannual events are summarized in Table 2-1.

Groundwater elevations in Building 2300 wells ranged from approximately 1,519.95 to 1,522.67 feet above msl during the Second Quarter of 2012 or approximately 17.49 feet bgs to 21.88 feet bgs. Based on these data, groundwater levels at Building 2300 have risen an average of 1.3 feet since 2011, compared to the increase of 1.5 feet between May 2009 and May 2010. As shown on Figure 2-6, the groundwater gradient at Building 2300 is approximately 0.003 ft/ft to the southeast in the bedrock unit. Groundwater gradients at Building 2300 have been consistently to the south to southeast since 2007, but in 2006 and earlier, the gradient was to the southwest, due to the influence of previously operating water supply wells north of the Base.

5.2.2 GROUNDWATER DATA ASSESSMENT

Figure 5-7 presents the TCE plume in the bedrock unit at Building 2300, which is characterized by high concentrations at 5M8MW02 (190 μg/L in May 2012). Because there are no other bedrock wells in the vicinity, the nearby alluvial monitoring wells are also depicted on Figure 5-7 because bedrock in this part of the Base is encountered from approximately 65 feet to 95 feet bgs. TCE was also detected at 30 μg/L in upper alluvial monitoring 5M8MW07. Other COCs detected in groundwater samples from Building 2300 include chloroform, 1,2-DCA, cis, 1,2-DCE, PCE, and total trihalomethanes (Table 5-3). All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E.

The COCs detected at concentrations equal to or greater than their respective MCLs were 1,2-DCA cis-1,2-DCE, PCE, and TCE. TCE was detected at a maximum concentration of 190 μg/L in 5M8MW02, which represents a decrease from 290 μg/L in May 2011 (Appendix E). TCE was detected at 30 μg/L in May 2012 from downgradient well 5M8MW07, which is an increase from 21 μg/L in July 2010, (likely due to dispersion). 1,2-DCA was detected at a concentration of 2.2 μg/L in upper alluvial well 6M8MW11, which is a decrease from 5.8 μg/L in June 2007, when 1,2-DCA was first detected in this well (Appendix E). Concentrations of all detected analytes in samples collected from Building 2300 wells are summarized in Table 5-3. MCLs and water quality standards for OU 2 sites are listed in Table 5-1.

Concentrations of TCE in 5M8MW02 decreased from 3,000 μg/L in 1993 to the present concentration of 190 μg/L. TCE concentrations in 5M8MW09 have also decreased since February 2004 from 151 μg/L to non-detect since June 2009. Concentrations of TCE at downgradient 5M8MW07 have increased from 1.5 μg/L in June 2006 to 30 μg/L in May 2012 (Appendix E). A comparison of TCE concentrations in 2000, 2007, and 2012 (Figure 5-8) indicates that the TCE plume extent has remained generally static with decreasing concentrations at the hot spot and a shift in concentrations to the south with changing groundwater flow directions.

5.3 SITE 8, FORMER BUILDING 2307

The former Building 2307, located on the March ARB flightline, was built in 1970 as a large maintenance hangar and wash rack facility for jet aircraft (Figure 1-2). An OWS was installed on the southern side of the building to receive wastes generated by the wash rack facility. These wastes reportedly included solvents, waste oils, and waste fuel. During a site investigation, a dissolved groundwater plume containing PCE, TCE, and cis-1,2-DCE was identified beneath the former OWS, which was removed in 1994 (Tetra Tech 2000b). The building was later demolished and replaced with Building 2312.

The alluvial aquifer beneath the former Building 2307 has been divided into the upper (from approximately 1,495 feet to 1,475 feet above msl [45 feet to 65 feet bgs]) and lower (from approximately 1,470 feet to 1,455 feet above msl [70 feet to 85 feet bgs]) alluvial hydrostratigraphic units. These units are generally characterized by thin units of highly permeable silty sands, separated by silty sands of lower permeability. The former Building 2307 is located in an area of low hydraulic conductivity (Figure 3-1).

Groundwater contamination at the former Building 2307 is present predominantly in the upper alluvial unit, with PCE as the primary COC (Figure 5-9). The highest concentrations of PCE, TCE, and cis-1,2-DCE were detected near the former OWS in 2307MW01. In January 2006, 2310MW01 was installed northwest of Building 2312 to monitor concentrations in the former direction of groundwater flow.

5.3.1 GROUNDWATER ELEVATION AND FLOW DIRECTION

Water levels for Building 2307 were measured across the sites in seven monitoring wells during the 2011-2012 annual monitoring period. A potentiometric surface map is presented on Figure 2-4 for the upper alluvial unit. Groundwater elevation measurements for the annual monitoring round (Second Quarter 2012) and two previous semiannual events are summarized in Table 2-1.

Groundwater elevations in Building 2307 wells ranged from approximately 1,518.67 feet to 1,520.71 feet above msl during the Second Quarter of 2012, approximately 18.1 feet bgs. Based on these data, groundwater levels at Building 2307 have risen approximately 1.3 feet since 2011, similar to the increase between 2009 and 2010. Near the former Building 2307, the average groundwater gradient is 0.007 ft/ft toward the southwest. Before 2003, groundwater at the former Building 2307 flowed toward the north-northwest. This change in groundwater flow direction is likely due to the decrease in groundwater pumping north of March ARB in the Box Springs area.

5.3.2 FORMER BUILDING 2307 GROUNDWATER DATA ASSESSMENT

The PCE plume in the upper alluvial unit in 2012 is depicted on Figure 5-9. Concentrations of all detected analytes in samples collected from the former Building 2307 wells are summarized in Table 5-3. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. As shown on Figure 5-9, the upper alluvial plume is characterized by high concentrations of PCE, with the maximum PCE concentration detected at 2307MW01 (190 μg/L) in May 2012. COCs with concentrations exceeding compliance criteria in upper alluvial wells are cis-1,2-DCE, 1,2-DCA, PCE and TCE. MCLs and water quality standards for OU 2 sites are listed in Table 5-1.

PCE was detected in three upper alluvial wells (2307MW01, 2307MW03, and 2307MW06) above its MCL of 5 μg/L (Table 5-3). Concentrations of PCE in 2307MW01 have increased since 2003, when the PCE concentration was 81 μg/L; however, TCE concentrations were detected lower in June 2012 (190 μg/L) than the historical maximum of 470 μg/L in 1998 and 2009 (Appendix E). The downgradient extent of the upper alluvial PCE plume is defined by non-detected concentrations in 5M8MW03. Compared to 2000, the extent of the upper alluvial PCE plume at Building 2307 has decreased in 2012 so that it no longer includes 2307MW02 (Figure 5-10), but concentrations have rebounded at the plume core, most likely because of groundwater levels rising into a residual source. Additionally, PCE concentrations at 2307MW03 have increased from 16 μg/L in 2000 to 210 μg/L in 2011, then decreased to 95 μg/L in 2012. Little change has occurred in the upper alluvial PCE plume between 2007 and 2012, aside from the decreasing concentrations at 2307MW03.

TCE concentrations at 2307MW03 have increased since 2000 (non-detect) and 2007 (4.5 μg/L) to 17 μg/L in 2011, then decreased to 7.8 μg/L in 2012 (Appendix E). Concentrations of TCE at 2307MW03 appear to indicate that the plume is aligned to the southwest to southeast. TCE concentrations have decreased at 2307MW01 since 1998, when the maximum concentration was 100 μg/L (Appendix E), to 19 μg/L in 2011. The presence of TCE is most likely the result of PCE degradation near the former OWS.

Groundwater samples were collected from two lower alluvial wells at the former Building 2307 (5M8MW06 and 2307MW05). Chloroform, cis-1,2-DCE, PCE, TCE, and total trihalomethanes were detected in the samples, but at concentrations less than the respective MCLs (Table 5-3). Compared to 2000, the extent of the lower alluvial PCE plume at Building 2307 is no longer greater than its MCL in 2007 and 2012, with concentrations having decreased in 2307MW05 (from 61 μg/L to 4.5 μg/L in 2012) (Figure 5-11).

5.4 SITE 36 GROUNDWATER PLUME

Site 36 is adjacent to Building 458, at the northern corner of Graeber Street and Baucom Avenue (Figure 1-2). Building 458 was constructed in 1929 as an airplane hangar and was subsequently used as a maintenance shop for jet engines. During engine maintenance operations, sinks in the building were used to dispose of waste liquids. The sinks drained to a leach pit, also referred to as a dry well, located in a lawn area at the southeast corner of the building. The pit was approximately 5 feet in diameter and approximately 22 feet in depth. The Air Force closed the pit by filling it with grout in October 1996 (Tetra Tech 1997).

Several investigations have been conducted at Site 36 to characterize subsurface lithology and COC concentrations. The hydrogeologic conceptual model at Site 36 includes the upper and lower alluvial water-bearing units. The upper alluvial water-bearing unit consists of predominantly sandy silts and silty sands to a depth of approximately 70 feet bgs (1,455 feet above msl). The lower alluvial unit consists of predominantly silty materials with thin, interbedded sand units at approximately 1,435 feet above msl (90 feet bgs). Pump test data presented in the RBE (Tetra Tech 2001a) indicate an aquitard separates the upper and lower alluvial units at Site 36 and areas upgradient. The depth to bedrock is approximately 200 feet bgs. Site 36 is located in an area of low hydraulic conductivity surrounded by high hydraulic conductivity on all sides (Figure 3-1). Dispersion of COCs in groundwater at the site may be limited because of these strata of low hydraulic conductivity.

Up to 32 organic compounds have been detected historically in Site 36 groundwater, most notably Stoddard solvent, PCE, TCE, cis-1,2-DCE, and BTEX. Free product was detected in two extraction wells when they were installed in 1998. Historical data are included in Appendix E.

Alternative remedial approaches were evaluated as part of the Site 36 Focused Feasibility Study (Earth Tech 2007b). Based on a recommendation from the AFCEC, an evaluation of EISB was conducted and a pilot study was started in March 2010. The interim results were presented in a report in February 2011 (MWH 2011b).

5.4.1 GROUNDWATER ELEVATION AND FLOW DIRECTION

Water levels for Site 36 were measured semiannually across the site and the surrounding area monitoring wells (Table 2-1). Groundwater levels at Site 36 have risen an average of 0.33-foot since May 2011, compared to 1.9 feet between May 2010 and May 2011. The average depth to groundwater is approximately 16 feet bgs. The potentiometric surface map is presented on Figure 2-4 for the upper alluvial unit. The hydraulic gradient was approximately 0.002 ft/ft toward the south.

5.4.2 GROUNDWATER DATA ASSESSMENT

Groundwater samples were collected from 15 groundwater monitoring wells during the 2012 annual monitoring event to monitor COC concentrations at Site 36. Analytical results for the wells sampled at Site 36 during the 2011-2012 annual monitoring event are provided in Tables 5-4 and 5-5. COCs detected in groundwater include TPH-Stoddard solvent and a variety of chlorinated and aromatic hydrocarbons. Well locations are shown on Figure 5-1. MCLs and water quality standards for these compounds are listed in Table 5-1. All data from the annual sampling event are included in Appendix D. Historical data tables are included in Appendix E. COCs detected above the water quality standards include benzene, chlorobenzene, 1,4-dichlorobenzene, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, naphthalene, toluene, TCE, 1,2,4-trimethylbenzene, and vinyl chloride. The maximum historical and current concentrations of each of these COCs are listed in Table 5-5. Maximum concentrations of Stoddard solvent have decreased from 116 milligrams per liter (mg/L) in March 2000 to 7.5 mg/L in May 2012 (Appendix E).

The upper alluvial hydrostratigraphic unit is the most contaminated unit at Site 36, with the maximum concentrations of COCs detected adjacent to the source area, specifically in samples from 36DP01D, 36DP05D, and 6M36MW11 (Tables 5-4 and 5-5). The maximum concentrations of TPH-Stoddard solvent and Stoddard solvent components (1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene) were detected in 36DP05D. Concentrations have decreased from the maximum historical values, and no Stoddard solvent has been detected at the site perimeter (5M36MW04, 5M36MW05, 6M36MW09, or 6M36MW10) (Appendix E). This indicates that Stoddard solvent is limited to the original source area and naturally attenuates within the site boundaries. Historically, no Stoddard solvent has been detected in lower alluvial 6M36MW06 (Appendix E).

During the 2011-2012 annual monitoring period, benzene was detected at concentrations greater than its MCL in four upper alluvial wells (36DP05D, 36DP06D, 6M36MW07, and 6M36MW11), adjacent to the source area, at a maximum concentration of 94 μg/L in well 6M36MW11 in May 2012 (Table 5-4). This concentration is significantly lower than the historical maximum of 700 μg/L in December 1995 (Table 5-5).

TCE was detected at a concentration slightly greater than the MCL in upper alluvial 2MW09 at Site 36 in June 2012 (Table 5-4). The 2012 concentrations represent a significant decrease from the maximum historical concentration of 3,400 μg/L in 1996 (6M36MW07) (Table 5-5). A comparison of the TCE plumes from 2000, 2007, and 2012 in the upper alluvial unit indicates that the plume extent has decreased over time to where the upper alluvial TCE plume hardly exists in 2012 (Figures 5-1 and 5-2), which is a likely result of the EISB pilot study that started in March 2010.

Concentrations of cis-1,2-DCE are highly variable in several wells with historically high TCE levels. This breakdown product was detected at a maximum concentration of 25,600 μg/L in December 2005, and decreased to 4,300 μg/L in June 2009, but increased to 7,200 μg/L in 36DP05D in May 2012. Because concentrations are so variable, very few wells have distinguishable trends for cis-1,2-DCE; however, cis-1,2-DCE has historically been detected in 36DP06D, 36VEP02D, 36VEP03D, 36VEP04, 36VEP05, 36VEP06, 6M36MW01, 5M36MW04, 6M36MW07, 6M36MW09, and 6M36MW10

(Appendix E). Concentrations of trans-1,2-DCE, also a TCE breakdown product, have historically been detected above its MCL in 36DP05D, 36VEP05, 5M36MW04, 6M36MW07, and 6M36MW09 (Appendix E); trans-1,2-DCE was detected above its MCL in 6M36MW11 (21 μg/L) in May 2012 (Table 5-4).

The maximum concentration of vinyl chloride detected was 270 μg/L in 6M36MW11 in May 2012. Vinyl chloride was also detected at concentrations above the MCL during the 2011-2012 annual monitoring round in 36DP05D, 36DP06D, 6M36MW07, and 6M36MW11 adjacent to the former source area and within the EISB treatment area (Table 5-4). The presence of vinyl chloride at Site 36 is the result of TCE anaerobic dechlorination, primarily due to EISB treatment in these areas.

In the lower alluvial unit at Site 36, TCE was detected at a concentration of 5.9 μg/L in 6M36MW06 (Table 5-4). This value is consistent with historical data (Appendix E). The TCE plume in the lower alluvial unit, depicted on Figure 5-3, is part of the larger OU 2 Plume that spans from the area upgradient from Site 36 and to the high conductivity zone located under Site 33, as discussed in Section 5.1.2.2.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This section summarizes of the conclusions and recommendations from data presented in Sections 4.0 and 5.0. Included are summaries of the well sampling schedule, descriptions of the recommended changes to the sampling program, and recommendations for well destruction.

6.1 GROUNDWATER ELEVATIONS

Based on groundwater elevation data collected for both the March ARB and former March AFB programs, groundwater levels in general continued to rise (Figures 2-1 and 2-4). Groundwater level changes ranged from a decrease of 17.9 feet (at 4PZ10) to an increase of 11.5 feet (OBMW02B). In 2012, groundwater levels have increased an average of 0.2 foot compared to 2011. The average depth to groundwater on-Base in May 2012 was approximately 20 feet bgs. Groundwater flow directions have not changed significantly since the 2010-2011 reporting period.

Since 2000, groundwater levels have increased an average of about 1.4 feet per year with the highest rate of increase (greater than 2 feet per year) in the northwestern portion of the Base (28MW01) and southeast in the off-Base area (RBEMW11A). These increasing groundwater levels pose a potential threat to infrastructure.

6.2 BASEWIDE PLUME ASSESSMENT

Based on data collected and evaluated during the 2011-2012 annual monitoring event, concentrations of benzene, CTCL, 1,1-DCE, cis-1,2-DCE, PCE, and TCE exceeded OU 1 cleanup goals (Table 4-1) in monitoring and extraction wells from the alluvial and bedrock units. Concentrations of benzene, CTCL, cis-1,2-DCE, 1,2-DCA, ethylbenzene, MTBE, TCE, and vinyl chloride were detected and exceeded water quality standards and/or MCLs (Table 5-1) in wells from OU 2.

6.3 GROUNDWATER DATA SUMMARY

The following section summarizes the major findings for each site, and includes recommendations for investigation, monitoring, and/or remediation. Combined PCE, TCE, and CTCL MCL plumes for the different hydrostratigraphic units are presented on Figures 3-3 through 3-5.

6.3.1 OU 1 PLUME SUMMARY

Increasing contamination trends within the OU 1 Plume and to the south of the off-Base plume indicate a southeasterly migration of the off-Base plume. The off-Base PCE plume in the lower alluvial unit has expanded since 2000 to encompass 5MW36 (last sampled in May 2011) and OU1MW24A, while the lower alluvial unit TCE plume is expanding to the south along the base boundary to OU1MW13 (Figure 3-4). However, the off-Base TCE MCL plume in the upper alluvial unit has decreased significantly in size compared to 2000. The upper and lower alluvial CTCL plumes have remained generally similar from 2000 to 2012, except that by 2007 and 2012, the OU 1 upper alluvial CTCL plume appears to be commingled with the OU 2 CTCL plume, based on 2006 investigation results (Earth Tech 2007b) (Figures 6-1 and 6-2).

Concentrations of PCE, TCE, and CTCL appear to have stabilized, with no notable increases since 2006. TCE and CTCL concentrations at downgradient wells 5MW07 and OU1MW18, indicate relatively stable trends.

Dilution and/or degradation occur at a fast enough rate that only very low concentrations of COCs have been detected in guard wells upgradient from water supply wells. COCs were not detected in any of the off-Base water supply wells except for the Perry #1 and Indian Street wells. TCE has been detected at concentrations of approximately 1 μg/L since 1997 at Perry #1 and since installation in 2006 at the Indian Street well. Recommended changes to the monitoring well network and sampling frequencies are presented in Section 6.4.

6.3.1.1 Site 4 Summary

Based on the data collected and evaluated in 2012, groundwater at Site 4 does not comply with cleanup goals for PCE, TCE, and cis-1,2-DCE. PCE, TCE, and cis-1,2-DCE were detected at maximum concentrations of 24 μg/L, 7.1 μg/L, and 49 μg/L, respectively. The presence of TCE and cis-1,2-DCE may indicate initial adulteration or degradation of PCE.

In general, the MCL plumes for PCE in the upper alluvial unit have not changed significantly between 2007 and 2012 (Figure 6-1). The PCE and TCE MCL plumes in the lower alluvial and bedrock units haven't changed significantly since 2000.

The current monitoring well sampling network for Site 4 was expanded during the 2007 - 2008 monitoring period to evaluate the potential of a continuing source. This increased monitoring was superseded by the MAROS recommendations in 2009. The extent of this plume is not well defined southeast of 5MW31, except by the plume perimeter RBEMW07A located approximately 5,400 feet to the southeast.

Recommended changes to the monitoring well network and sampling frequencies are presented in Section 6.4.

6.3.1.2 Site 7 Summary

TCE concentrations at Site 7 have decreased significantly in the upper alluvial unit since the source area was identified in 2007. TCE concentrations in OU1GEW04 decreased from 140 μg/L in May 2009 to 29 μg/L in May 2012. Cis-1,2-DCE was detected in EX05A and OU1GEW04 at concentrations of 150 μg/L and 2.2 μg/L, respectively, in May 2012. Cis-1,2-DCE was also detected for the first time at a concentration greater than its MCL in OU1MW20 (last sampled in July 2011), at the southeastern edge of the source area. As part of the Site 7 investigation in 2007, two monitoring wells (OU1MW22 and OU1MW23) were installed downgradient from the extraction wells. TCE concentrations from OU1MW22 and OU1MW23 (last sampled in July 2011) are below its MCL. This additional plume delineation at Site 7 contributes to the apparent plume size decrease in the upper alluvial TCE plume (Figure 6-1).

Benzene concentrations were detected above its respective MCL at 5MW04 and 7MW01.

Recommended changes to the monitoring program are presented in Section 6.4.

6.3.1.3 Site 31 Summary

Based on the data collected and evaluated for the Second Quarter 2011-2012 annual monitoring round, groundwater at Site 31 does not comply with the cleanup goal for TCE. TCE was detected at a maximum concentration of 110 μg/L in 31BGEW03. In general, the MCL plumes for TCE in the upper alluvial unit have decreased since 2000. The MCL plumes for TCE in the lower alluvial and bedrock units have not changed significantly since 2000.

During the 2011-2012 annual monitoring period, concentrations of 1,1-DCE and PCE decreased to below their respective cleanup goals at Site 31.

Groundwater treatment at Site 31A was shut down in August 2006. Water from 31BGEW03 is transferred to and treated at the EGETS. Ten wells at the site are currently sampled to monitor the remaining contamination at Site 31A. No further changes to the monitoring program are required at this time.

One groundwater extraction well (31BGEW03) located downgradient of Site 31B was placed into rebound in July 2011. The well was placed back online in January 2012. Extraction well 31BGEW02 was placed into rebound in November 2007 after the active remediation goal set for Site 31B (Earth Tech 1997) was met and as of July 2012, the well was still in rebound status. TCE concentrations in 31BGEW03 have been reduced from 350 μg/L since startup of this well in 2002 to 46 μg/L in 2012.

Five wells at the site are currently sampled to monitor the remaining contamination at Site 31B.

Recommended changes to the monitoring program are presented in Section 6.4.

6.3.2 OU 2 Plume Summary

A diffused OU 2 Plume consisting of PCE, TCE, and CTCL emanates from Buildings 355/373, 434, 453, 2300, and 2307 and Site 36. The plumes in the upper and lower alluvial units extend downgradient to Site 33 and, in the case of CTCL, the plume extends southeast of Site 33 to the OU 1 Plume.

The maximum PCE concentration detected during the 2011-2012 annual monitoring round was 190 μg/L at 2307MW01. As of June 2012, PCE has been limited to a small area at Site 8, Building 2307. This marks a significant decrease in size for both the upper and lower alluvial PCE plumes since 2000 (Figures 6-1 and 6-2).

The maximum concentration of TCE detected in the upper alluvial unit was 430 μg/L at 6M8MW27 (Buildings 355/373). TCE hot spots in the upper alluvial unit are located at both Buildings 355/373 and Building 453. TCE concentrations at Buildings 355/373 are generally decreasing and associated with increasing concentrations of cis-1,2-DCE, which may indicate TCE degradation. TCE concentrations at Buildings 355/373 have decreased since the start of the EISB pilot study at the site.

The lower alluvial TCE plume extends from Building 453 southeast to include 6M36MW06. The maximum concentration of TCE was detected at 150 μg/L in 6M2MW09. In general, concentrations of TCE in the lower alluvial unit of the OU2 MCL plume appear to be decreasing and separated into two smaller plumes.

CTCL in the upper alluvial unit has commingled with the OU 1 Plume and has generally decreased in concentration. Notably, the hot spot from 2006 at upper alluvial well 434MW01 has not been present since 2011. The maximum concentration was detected at PANMW10 at 0.50 μg/L. The source of the lower alluvial CTCL plume appears to be at Building 453, with a maximum concentration of 18 μg/L at 453MW01.

Concentrations of CTCL and TCE increased in 453MW02 (immediately downgradient from 453MW01) from 6.3 μg/L and 29 μg/L, respectively, in June 2007 to 12 μg/L and 59 μg/L, respectively, in June 2011; then decreased to 8.8 μg/L and 34 μg/L, respectively, in June 2012.

Recommended changes for the OU 2 groundwater monitoring network are presented in Section 6.4.

6.3.3 SITE 8 AREA, BUILDINGS 355/373, 434, AND 453 SUMMARY

Concentrations of TCE and cis-1,2-DCE decreased between 2009 and 2012 at 6M8MW17 (Building 355/373 area), which indicate the EISB pilot study has impacted the contaminant plume at that location. TCE and cis-1,2-DCE concentrations remain elevated in the dispersed plume outside the EISB treatment area. Anaerobic degradation of TCE to cis-1,2-DCE and vinyl chloride has been apparent since the injection of EVO during the bioremediation (EISB) pilot study (MWH 2011b).

TCE concentrations at Building 434 continue to remain elevated, but recently decreased to 160 μg/L in May 2012 from the historical maximum of 350 μg/L in June 2009. CTCL concentrations have decreased from 23 μg/L in June 2006 and are no longer detected (less than 5 μg/L) in May 2011.

At Building 453, TCE and CTCL remain elevated and no clear concentration trends are apparent at 453MW01. Concentrations of CTCL and TCE at 453MW02 (immediately downgradient from 453MW01) have not significantly changed since June 2007.

6.3.4 SITE 8, BUILDING 2300 SUMMARY

TCE concentrations at the hot spot in 5M8MW02 (Building 2300) have decreased since the well was installed in 1993, from a historical maximum of 3,000 μg/L to 190 μg/L in May 2012. Very low concentrations of cis-1,2-DCE indicate that degradation of the TCE in groundwater via dechlorination is negligible.

6.3.5 SITE 8, BUILDING 2307 SUMMARY

Based on data collected and evaluated during the 2012 annual monitoring round, groundwater at the former Building 2307 does not comply with water quality standards for cis-1,2-DCE ; 1,2-DCA; PCE; and TCE. The presence of TCE may indicate that PCE degradation is occurring; however, no vinyl chloride and only low concentrations of cis-1,2-DCE have been detected at the site; concentrations of both would indicate further anaerobic degradation. The upper alluvial hot spot represented by 2307MW01 had previously demonstrated a decreasing PCE trend; however, the PCE concentration which has increased from 81 μg/L in 2003 to 260 μg/L in 2010; and decreased to 190 μg/L in 2012. A recent decreasing PCE trend was noted in 2307MW03, with PCE detected at 210 μg/L in 2011; then decreased to 95 μg/L in 2012. Other Building 2307 wells have relatively stable PCE and TCE concentrations.

6.3.6 SITE 36 SUMMARY

At Site 36, groundwater COCs consist of two chemical families: petroleum hydrocarbons, including Stoddard solvent; and chlorinated solvents, including TCE and associated breakdown products. Petroleum hydrocarbons are found in wells adjacent to the former source area (dry well) in the upper alluvial unit. The highest concentrations of petroleum hydrocarbons were detected in samples from 36DP05D. Concentrations of benzene, Stoddard solvent, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene have decreased from the maximum historical values. Stoddard solvent is limited to the original source area, is naturally attenuating, and does not migrate beyond site boundaries.

Following the implementation of the EISB pilot study at Site 36, TCE concentrations decreased to below its MCL in upper alluvial wells. In 2012, TCE was detected at a 5.9 μg/L in the upper alluvial

Well 6M36MW06. The maximum TCE concentration detected in 2012 was 5.9 μg/L in lower alluvial Well 6M36MW06. TCE concentrations have decreased significantly at Site 36, which had a historical high of 3,400 μg/L in 6M36MW07 in 1996.

Concentrations of cis-1,2-DCE are highly variable in several wells with historically high TCE levels. The 2012 maximum concentration of cis-1,2-DCE was detected at 3,800 μg/L in 36DP05D, a significant decrease from 11,000 μg/L in 2010; however, the concentration increased to 7,200 μg/L in 36DP05D in May 2012. Additionally, vinyl chloride concentrations in 36DP05D, 36DP06D, 6M36MW07, and 6M36MW11 indicate a complete anaerobic degradation pathway. Degradation of TCE and cis-1,2-DCE to vinyl chloride has been noted in wells across the site and generally located within the EISB treatment area.

6.4 RECOMMENDED SAMPLING SCHEDULE

In 2007, as part of the remedial process optimization of the OU 1 remedy (Earth Tech 1995), the LTM well network was evaluated using MAROS in conjunction with knowledge of March ARB hydrogeology. The MAROS process and the proposed changes to the sampling schedule were presented in the *Final Remedial Process Optimization Recommendations Report* (MWH 2007b). In general, these recommendations were accepted and implemented starting in the 2008 annual monitoring round. Sampling frequencies were again evaluated using MAROS in 2009 for the 2009-2010 and 2010-2011 monitoring periods (MWH 2010a).

Recommended sampling frequencies for the 2012-2013 annual monitoring period are presented in Table 6-1. Because of the timing of the Performance Based Remediation contract start up, AECOM has largely left the 2012-2013 recommendations in place from the *2010-2011 AGMR* (MWH 2012). AECOM proposes the following changes to upcoming monitoring after approval by the regulators and Air Force:

1. Combine the Annual Groundwater Monitoring Report and Annual Petroleum Sites (Sites 18 and 33) Monitoring Report into a single report since there are many overlapping and interconnected elements in the two reports.

2. Discontinue groundwater elevation monitoring at the wells presented in Table 6-2. The data from these wells are not necessary to construct the groundwater potentiometric maps.

3. Reduce the sampling and analysis frequency to biennial for the wells presented in Table 6-3. Adequate data are available to establish that there are no known COCs in these wells which have been above 50 percent of the cleanup levels in the last 2 years, and the data are not needed to contour contaminant plumes.

4. Instead of preparing separate plume figures for Site 4; Sites 4 and 31; Sites 4, 31 and 34; and OU 1; combine these into single basewide figures based on the three hydrostratigraphic units. This will better facilitate management of CG049 as a single site/OU from sources to the downgradient dilute plumes.

5. Halt monitoring of transducers in the area of Site 4. Starting in 2009, the transducers were installed in the wells shown in Table 6-4. The data collected from the transducers were used to monitor localized fluctuations in groundwater levels and flow direction caused by seasonal stormwater flow within the Heacock Channel. The data collected from 2009 to 2012 were inconclusive in explaining the groundwater contamination north and west of the Site 4 landfill.

7.0 REFERENCES

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LIST OF TABLES

TABLE 1-1. INSTALLATION RESTORATION PROGRAM SITE LIST
MARCH ARB, CALIFORNIA
(Page 1 of 2)

OU	Site No.	IRP Site ID	Program	Description
1	**4**	**LF004**	**AFRPA**	**Landfill No. 6**
	5	LF005	AFRC	Landfill No. 3
	7	**FT007**	**AFRPA**	**Fire Training Area No. 2**
	9	SD009	AFRC	Main Oil Water Separator Facility
	10	SD010	AFRC	Flightline Drainage Channel
	13	SS013	AFRC	Tank Truck Spill Site
	14	SS014	AFRC	Jet Fuel Spill Site
	15	FT015	AFRC	Fire Training Area No. 3
	16	WP016	AFRC	Sludge Drying Beds
	29	FT029	AFRC	Fire Training Area No. 1
	31	**SS031**	**AFRC**	**Maintenance Facility**
	34	ST034	AFRC	Pritchard Refueling Facility
	38	OT038	AFRPA	Building 1305 PCB Spill
2	1	SS001	AFRC	Aircraft Isolation Area
	3	LF003	AFRPA	Landfill No. 5
	6	**LF006**	**AFRPA**	**Landfill No. 4**
	8	**OT008**	**AFRC**	**Flightline Shop Zone**
			AFRC	**Building 2300 Solvent Site**
			AFRC	**Building 2307 Oil Water Separator Facility**
			AFRC	**Building 355/373 Wash Rack**
			AFRC	**Building 434**
			AFRC	**Building 453**
	11	SS011	AFRC	Bulk Fuel Storage Area Spill
	12	SS012	AFRPA	Civil Engineering Storage Yard
	17	WP017	AFRPA	Swimming Pool Fill
	19	WP019	AFRPA	West March Sludge Drying Beds
	20	LF020	AFRPA	Landfill No. 7
	22	LF022	AFRPA	Landfill No. 2
	23	WP023	AFRPA	East March Effluent Pond
	24	LF024	AFRPA	Landfill No. 1
	25	WP025	AFRPA	Munitions Residual Burial Site
	26	WP026	AFRPA	Water Treatment Plant Sludge
	30	DP030	AFRPA	Construction Rubble Site
	35	ST035	AFRPA	15th AF Leaking Underground Storage Tanks
	36	**WP036**	**AFRC**	**Building 458 Leach Pit**
	37	OT037	AFRC	Building 317 PCB Spill
	39	ST039	AFRC	Building 2406 Former Gas Station
	40	LF040	AFRPA	Landfill No. 8
	42	OT042	AFRPA	Building 3404 PCB Contamination

TABLE 1-1. INSTALLATION RESTORATION PROGRAM SITE LIST
MARCH ARB, CALIFORNIA
(Page 2 of 2)

OU	Site No.	IRP Site ID	Program	Description
4	21	WP021	AFRPA	Courdes Effluent Pond
	41	ST041	AFRPA	Hawes Radio Relay Site
	44	SS044	AFRPA	Mercury in Soil Near Water Tower No. 407
	L	-	AFRPA	Building 2706 Swimming Pool/Disposal Site
	-	-	AFRPA	Water Tower 3410
	-	-	AFRPA	Water Tank 6601
	-	-	AFRPA	Former Base Hospital and Dental Clinic
PET	**2**	**WP002**	**AFRC**	**Waste Oil Tanks/Solvent Pit**
	12A*	SS012A	AFRPA	Building 550 Abandoned Gas Station
	18	**OT018**	**AFRC**	**Engine Test Cell**
	27	**ST027**	**AFRC**	**Building 422 Underground POL Storage Tanks**
	33	**ST033**	**AFRC**	**Panero Aircraft Refueling System**
	43	ST043	AFRPA	Automotive Refueling Area

Notes:

*	Site closed in April 2012 (AECOM 2012).
AECOM	AECOM Technical Services, Inc.
AF	Air Force
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
ARB	Air Reserve Base
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
ID	identification
IRP	Installation Restoration Program
No.	number
OU	Operable Unit
PCB	polychlorinated biphenyl
PET	petroleum (non-CERCLA) site
POL	petroleum, oil, and lubricants
UST	underground storage tank

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA, 2011-2012 ANNUAL MONITORING PERIOD AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS MARCH ARB, CALIFORNIA
(Page 1 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 1					
5M1MW02	1,516.74	1,517.70	17.71	1,517.94	1.20
Site 2					
2EW01	1,520.27	1,520.86	14.77	1,520.78	0.51
2EW02	1,519.66	1,520.13	14.02	1,520.12	0.46
2MW01	1,518.70	1,519.06	15.49	1,519.32	0.62
2MW05	1,517.23	1,517.71	15.15	1,518.06	0.83
2MW07	1,508.39	1,508.29	17.54	1,508.59	0.20
2MW08	1,508.90	1,508.79	17.33	1,508.99	0.09
2MW09	1,508.55	1,508.39	13.08	1,508.53	-0.02
2MW12	1,506.70	1,506.50	13.87	1,506.72	0.02
2MW13	1,523.21	1,523.92	20.46	1,523.94	0.73
2PW01PRC	1,519.59	1,520.02	14.31	1,520.01	0.42
2PW03PRC	1,518.79	1,519.38	14.58	1,519.55	0.76
2PW05PRC	1,518.73	1,519.29	14.26	1,519.48	0.75
2PW06PRC	1,518.83	1,519.42	14.21	1,519.57	0.74
5M2MW01	1,519.66	1,520.17	14.98	1,520.09	0.43
5M2MW02	1,519.52	1,519.98	15.03	1,519.94	0.42
5M2MW03	1,519.85	1,520.32	18.57	1,520.33	0.48
5M2MW04	1,520.07	1,520.54	15.19	1,520.48	0.41
5M2MW05A	1,519.66	1,520.04	15.74	1,520.10	0.44
5M2MW06	1,519.08	1,519.59	15.22	1,519.71	0.63
6M2MW07	1,518.80	1,519.34	15.99	1,519.53	0.73
6M2MW08	1,517.04	1,517.56	17.33	1,518.19	1.15
6M2MW09	1,519.44	1,519.96	17.40	1,519.92	0.48
6M2MW10	1,519.60	1,520.10	17.44	1,520.08	0.48
6M2MW12	1,519.45	1,520.01	16.14	1,519.96	0.51
Site 4					
4EX01	1,493.58	1,446.00	67.97	1,445.25	-48.33
4EX02	1,503.17	1,479.76	32.31	1,480.44	-22.73
4MW01	1,483.18	1,398.18	118.22	1,392.97	-90.21
4MW04	NM	1,511.95	NM	NM	--
4MW05	1,488.31	1,488.35	25.81	1,488.40	0.09
4MW06	1,488.93	1,489.05	25.36	1,488.93	0.00
4MW07	1,480.95	1,479.96	22.76	1,481.90	0.95
4MW08	1,460.74	1,460.46	34.43	1,462.55	1.81
4MW11	1,511.99	1,510.51	12.55	1,510.65	-1.34
4MW12	1,504.00	1,503.08	10.32	1,503.34	-0.66
4MW13	1,480.32	1,480.73	28.46	1,481.39	1.07
4MW14	1,494.25	1,493.38	13.81	1,493.90	-0.35
4MW15	1,474.32	1,473.09	19.03	1,482.14	7.82
4MW16	1,465.01	1,465.15	38.91	1,466.77	1.76
4MW18	1,474.54	1,474.95	30.07	1,475.86	1.32
4MW19	1,481.59	1,482.20	34.87	1,478.42	-3.17

**TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA**
(Page 2 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 4 (cont'd)					
4MW20	1,507.07	1,506.19	9.61	1,506.33	-0.74
4MW21	1,507.19	1,506.44	9.55	1,506.65	-0.54
4MW22	1,495.57	1,494.68	13.03	1,494.90	-0.67
4MW23	1,508.76	1,508.09	12.76	1,508.27	-0.49
4MW25A	1,492.08	1,483.84	26.51	1,482.92	-9.16
4MW26A	1,498.66	1,497.32	13.51	1,496.92	-1.74
4MW27A	1,502.29	1,500.88	10.76	1,500.55	-1.74
4MW28A	1,486.78	1,485.73	22.56	1,485.55	-1.23
4MW29	1,497.39	1,496.95	22.22	1,497.02	-0.37
4MW30	1,497.11	1,496.79	22.42	1,496.76	-0.35
4MW31	1,508.99	1,508.98	9.42	1,509.16	0.17
4PZ01	1,508.10	1,507.48	17.28	1,507.69	-0.41
4PZ02	1,507.90	1,507.32	17.71	1,507.57	-0.33
4PZ03	1,505.70	1,504.45	17.48	1,504.58	-1.12
4PZ04	1,499.68	1,498.33	22.20	1,498.48	-1.20
4PZ05	1,497.30	1,496.02	23.96	1,496.06	-1.24
4PZ06	1,489.23	1,488.59	NM	NM	--
4PZ07	1,505.24	1,502.40	8.27	1,502.76	-2.48
4PZ08	1,503.90	1,464.00	51.28	1,459.79	-44.11
4PZ09	1,504.06	1,502.17	18.01	1,502.38	-1.68
4PZ10	1,502.98	1,486.07	35.27	1,485.12	-17.86
4PZ11	1,492.18	1,489.87	28.53	1,490.04	-2.14
4PZ12	NM	1,487.54	31.20	1,487.50	--
4PZ13	1,494.65	1,490.84	18.81	1,490.88	-3.77
6M4MW24	1,513.20	1,511.47	17.53	1,511.64	-1.56
Site 5					
5MW01	1,469.52	1,468.14	25.68	1,469.19	-0.33
5MW02	1,464.37	1,463.06	28.74	1,463.76	-0.61
5MW03	1,459.05	1,456.51	34.80	1,456.62	-2.43
5MW04	1,454.40	1,453.31	36.77	1,453.23	-1.17
5MW05	1,475.74	1,474.60	18.99	1,477.38	1.64
5MW06	1,471.48	1,470.15	23.70	1,471.62	0.14
5MW07	1,450.28	1,449.45	33.49	1,450.22	-0.06
5MW08	1,434.01	1,434.31	47.63	1,434.29	0.28
5MW09	1,435.41	1,435.98	48.51	1,436.15	0.74
5MW10	1,457.53	1,457.65	31.85	1,457.65	0.12
5MW14	1,445.34	NM	38.22	1,447.59	2.25
5MW16	1,464.76	1,463.73	27.09	1,467.28	2.52
5MW18	1,450.94	1,450.52	38.10	1,451.78	0.84
5MW20	NM	1,440.75	40.16	1,442.02	--
5MW22	1,434.60	1,435.28	48.16	1,436.07	1.47
5MW23	NM	1,417.68	55.17	1,419.26	--
5MW28	1,471.76	1,470.44	23.61	1,471.97	0.21

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 3 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 5 (cont'd)					
5MW29	1,469.93	1,468.52	24.80	1,469.65	-0.28
5MW30	1,469.45	1,468.03	25.32	1,469.11	-0.34
5MW31	1,461.65	1,461.53	35.80	1,463.48	1.83
5MW32	1,419.57	1,419.83	52.38	1,421.03	1.46
5MW33	1,394.38	1,392.76	72.33	1,394.57	0.19
5MW34	1,397.56	1,397.91	68.13	1,397.86	0.30
5MW35	1,413.45	1,413.90	NM	NM	--
5MW36	1,413.84	1,414.31	NM	NM	--
Site 7					
7MW01	1,469.49	1,468.44	22.48	1,468.83	-0.66
7MW02	1,458.42	1,457.11	33.31	1,457.42	-1.00
7MW03	1,460.94	1,459.30	31.23	1,459.53	-1.41
7MW04	1,461.44	1,459.70	30.58	1,459.97	-1.47
OU1MW20	1,461.19	1,459.09	30.23	1,459.24	-1.95
OU1MW21	1,461.31	1,459.39	29.95	1,459.45	-1.86
OU1MW22	1,458.58	1,456.24	32.35	1,456.26	-2.32
OU1MW23	1,456.90	1,454.96	33.51	1,454.91	-1.99
Site 8					
2307MW04	NM	NM	18.31	1,520.50	--
2310MW01	1,519.84	1,520.88	18.64	1,521.17	1.33
5M8MW01	1,520.41	1,521.50	21.36	1,521.84	1.43
5M8MW05	1,498.56	1,497.89	9.48	1,498.35	-0.21
6M36MW08	1,517.57	1,518.06	11.69	1,518.41	0.84
6M8MW12	1,518.02	1,518.45	9.91	1,518.83	0.81
6M8MW13	1,517.98	1,518.36	11.43	1,518.71	0.73
6M8MW14	1,505.95	1,505.59	11.19	1,505.78	-0.17
6M8MW18	NM	1,505.88	12.07	1,506.08	--
Site 8 Building 355					
5M8MW04	1,506.10	1,505.79	11.99	1,505.91	-0.19
6M8MW15	1,506.24	1,505.86	11.69	1,506.07	-0.17
6M8MW16	NM	1,505.81	11.73	1,506.00	--
6M8MW17	1,505.84	1,505.46	11.23	1,505.64	-0.20
6M8MW19	1,505.93	1,505.73	12.31	1,505.76	-0.17
6M8MW20	1,505.56	1,505.16	11.33	1,505.36	-0.20
6M8MW24	1,504.97	1,504.65	10.77	1,504.79	-0.18
6M8MW25	1,502.84	1,502.37	8.03	1,502.57	-0.27
6M8MW27	1,505.69	1,505.28	10.65	1,505.49	-0.20
6M8MW28	1,505.71	1,505.38	10.57	1,505.50	-0.21

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 4 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 8 Building 434					
434MW01	1,518.12	1,518.31	14.05	1,518.63	0.51
Site 8 Building 453					
453MW01	1,510.65	1,510.78	18.35	1,510.97	0.32
453MW02	1,510.02	1,510.11	18.61	1,510.29	0.27
Site 8 Building 2300					
28MW01	1,519.56	1,521.02	28.91	1,521.56	2.00
5M8MW02	1,519.71	1,520.35	18.16	1,520.90	1.19
5M8MW07	1,519.23	1,519.79	17.62	1,520.22	0.99
5M8MW09	1,519.89	1,520.86	19.75	1,521.14	1.25
6M2300MW01	1,519.94	1,520.85	19.20	1,521.19	1.25
6M8MW10	1,521.17	1,522.33	21.88	1,522.67	1.50
6M8MW11	1,519.22	1,519.73	17.49	1,519.95	0.73
Site 8 Building 2307					
2307MW01	NM	NM	18.16	1,520.41	--
2307MW02	1,518.94	1,519.89	18.23	1,520.23	1.29
2307MW03	1,517.50	1,518.38	18.32	1,518.67	1.17
2307MW05	NM	NM	18.26	1,520.71	--
2307MW06	1,519.41	1,520.38	18.46	1,520.65	1.24
5M8MW03	1,517.36	1,518.39	17.49	1,518.80	1.44
5M8MW06	1,519.43	1,520.23	17.91	1,520.58	1.15
Site 9					
9MW01	1,478.36	1,476.98	17.71	1,478.53	0.17
9MW02	1,473.01	1,471.65	23.74	1,473.47	0.46
Site 11					
5M11MW01	1,521.26	1,522.56	23.51	1,522.92	1.66
5M11MW02	1,522.24	1,523.65	24.86	1,524.07	1.83
Site 15					
15MW01	1,471.87	1,470.47	21.17	1,471.20	-0.67
15MW02	1,467.81	1,466.48	25.83	1,467.05	-0.76
15MW03	1,475.48	1,474.09	19.87	1,474.95	-0.53
15MW04	1,459.55	1,458.48	34.47	1,458.90	-0.65

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 5 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 18					
18EX03	1,496.82	1,496.01	4.89	1,496.29	-0.53
18MW01	1,493.43	1,492.83	8.11	1,492.88	-0.55
18MW02	1,490.68	1,489.99	7.28	1,490.14	-0.54
18MW03	1,485.89	1,484.73	11.21	1,485.05	-0.84
18MW04	1,494.30	1,493.57	6.91	1,493.61	-0.69
18MW05	1,497.53	1,496.97	7.87	1,497.09	-0.44
18MW07	1,486.94	1,485.91	11.16	1,486.09	-0.85
18MW08	1,495.65	1,495.04	8.51	1,495.09	-0.56
18MW09	1,494.45	1,493.88	6.57	1,493.83	-0.62
18MW11	1,496.72	1,496.01	9.25	1,496.03	-0.69
18MW13	1,491.99	1,491.14	6.51	1,491.25	-0.74
18MW14	1,491.26	1,490.37	6.29	1,490.51	-0.75
18MW15	1,489.96	1,488.89	9.93	1,489.22	-0.74
18MW16	1,491.98	1,490.93	12.02	1,491.24	-0.74
18MW17	1,491.87	1,491.14	9.41	1,491.27	-0.60
18MW18	1,486.33	1,485.35	11.97	1,485.39	-0.94
18MW19	1,488.15	1,487.02	10.56	1,487.30	-0.85
18MW20	1,490.06	1,488.98	9.64	1,489.32	-0.74
18OW01D	1,493.68	1,492.85	3.79	1,493.13	-0.55
18OW01S	1,491.07	1,490.43	6.23	1,490.69	-0.38
18VW10D	1,495.15	1,494.25	6.59	1,494.39	-0.76
18VW10S	1,496.89	1,496.05	4.71	1,496.32	-0.57
18VW11	1,501.31	1,500.77	0.60	1,500.89	-0.42
18VW12D	1,498.43	1,497.77	3.12	1,497.92	-0.51
18VW12S	1,494.95	1,494.07	6.66	1,494.19	-0.76
28MW07	1,485.70	1,484.54	11.46	1,485.02	-0.68
Site 23					
23MW01	1,406.43	1,406.62	68.43	1,407.52	1.09
23MW02	1,410.64	1,411.08	64.15	1,412.21	1.57
Site 27					
5M27MW01	1,518.86	1,519.19	14.63	1,519.42	0.56
5M27MW02	1,519.04	1,519.62	15.29	1,519.53	0.49
5M27MW03	1,518.88	1,519.42	13.14	1,519.33	0.45
5M27MW04	1,518.63	1,518.79	13.49	1,519.16	0.53
6M27MW05A	1,518.68	1,519.26	15.64	1,519.24	0.56
Site 28					
28MW03	1,506.14	1,505.91	13.04	1,506.13	-0.01

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 6 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 29					
29MW01	1,478.61	1,477.37	16.85	1,481.04	2.43
29MW02	1,471.65	1,471.03	20.77	1,476.37	4.72
29MW03	1,473.37	1,472.66	20.86	1,477.88	4.51
29MW04	1,473.77	1,472.83	20.72	1,477.64	3.87
29OW01	1,473.59	1,472.74	20.70	1,478.17	4.58
29PW01	1,473.21	1,472.48	20.32	1,478.03	4.82
Site 31					
31BGEW01	1,492.84	1,492.03	15.61	1,492.15	-0.69
31BPZ01	1,491.87	1,490.98	16.62	1,491.00	-0.87
31MW01	1,492.03	1,492.10	14.76	1,492.81	0.78
31MW03	1,492.43	1,492.40	15.30	1,493.09	0.66
31PW01	1,494.16	1,493.28	13.45	1,493.80	-0.36
31PW05PRC	1,493.83	1,492.93	11.58	1,493.45	-0.38
31PW07PRC	1,494.02	1,493.12	11.86	1,493.61	-0.41
31PW08PRC	1,494.37	1,493.36	11.69	1,494.00	-0.37
Site 31A					
31AGEW01	1,493.72	1,492.82	14.78	1,493.30	-0.42
31MW02	1,497.69	1,496.95	10.92	1,497.44	-0.25
31MW04	1,494.51	1,493.68	13.53	1,494.08	-0.43
31MW05	1,479.78	1,478.33	20.33	1,481.43	1.65
31MW06	1,490.71	1,489.60	13.03	1,490.35	-0.36
31MW07	1,490.28	1,489.16	13.32	1,490.02	-0.26
31MW08	1,496.87	1,496.10	8.91	1,496.60	-0.27
31OW01	1,493.99	1,493.10	13.99	1,493.63	-0.36
31PW03PRC	1,493.77	1,492.89	12.11	1,493.41	-0.36
Site 31B					
31BDEW05D	1,490.76	1,489.91	17.58	1,490.06	-0.70
31BGEW02	1,489.57	1,488.73	17.81	1,488.75	-0.82
31BGEW03	1,487.77	1,486.77	92.11	1,413.91	-73.86
31BMW02	1,492.33	1,491.45	16.21	1,491.52	-0.81
Site 33					
28MW04	1,512.47	1,512.67	9.98	1,512.73	0.26
PANCP08	1,503.72	1,503.33	11.04	1,503.50	-0.22
PANCP11	1,502.97	1,502.55	10.34	1,502.73	-0.24
PANCP13	1,500.15	1,499.57	10.27	1,499.81	-0.34
PANEX01	1,506.87	1,506.68	11.92	1,506.85	-0.02
PANEX02	1,507.28	1,507.09	10.77	1,507.17	-0.11
PANEX03	1,506.69	1,507.06	8.57	1,506.58	-0.11
PANFP01	1,507.48	1,507.31	11.30	1,507.41	-0.07
PANFP03	1,505.29	1,504.97	10.41	1,505.12	-0.17
PANFP04	1,504.45	1,504.14	11.04	1,504.37	-0.08

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 7 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 33 (cont'd)					
PANFP05	1,505.88	1,505.61	9.94	1,505.66	-0.22
PANFP06	1,508.14	1,508.05	10.25	1,508.32	0.18
PANFP07	1,509.43	1,509.72	10.41	1,509.60	0.17
PANFP08	1,508.33	1,508.26	9.21	1,508.29	-0.04
PANHP04	1,511.21	1,511.20	10.41	1,511.45	0.24
PANHP06	1,507.57	1,507.48	12.35	1,507.97	0.40
PANMW01	1,506.48	1,506.24	11.22	1,506.43	-0.05
PANMW06	1,505.18	1,504.91	11.61	1,505.02	-0.16
PANMW07	1,504.11	1,503.79	10.31	1,503.91	-0.20
PANMW09	1,500.68	1,500.06	9.21	1,500.33	-0.35
PANMW10	1,499.17	1,498.51	9.37	1,498.81	-0.36
PANMW11	1,503.86	1,503.52	10.74	1,503.57	-0.29
PANMW12	1,511.33	1,511.48	8.79	1,511.53	0.20
PANMW13	1,508.88	1,509.06	13.55	1,509.09	0.21
PANMW14	1,505.30	1,505.00	11.72	1,505.10	-0.20
PANMW15	1,503.89	1,503.54	10.37	1,503.68	-0.21
PANMW16	1,498.10	1,497.38	11.33	1,497.68	-0.42
PANMW17	1,508.23	1,508.65	13.86	1,508.71	0.48
PANMW18	1,506.21	1,505.99	12.45	1,506.07	-0.14
PANMW19	1,506.40	1,506.20	12.36	1,506.28	-0.12
PANMW21	1,501.83	1,501.41	8.43	1,501.49	-0.34
PANMW23	1,503.77	1,503.21	9.82	1,503.54	-0.23
PANMW24	1,505.80	1,505.55	12.04	1,505.63	-0.17
PANMW25	1,513.70	1,513.80	11.40	1,514.11	0.41
PANMW26	1,504.89	1,504.72	11.31	1,504.72	-0.17
PANMW27	1,505.84	1,505.59	11.69	1,505.70	-0.14
PANMW28	1,504.22	1,503.89	10.79	1,504.04	-0.18
PANMW30	1,503.75	1,503.41	10.17	1,503.45	-0.30
PANMW32A	1,505.07	1,504.80	12.19	1,504.83	-0.24
PANMW33	1,505.59	1,505.37	10.23	1,505.40	-0.19
PANMW35	1,503.42	1,503.02	10.81	1,503.19	-0.23
PANMW36	1,504.05	1,503.68	11.51	1,503.85	-0.20
PANMW37	1,505.98	1,505.74	11.58	1,505.83	-0.15
PANMW39	1,502.87	1,502.45	12.40	1,502.52	-0.35
PANMW40	1,506.61	1,506.41	9.67	1,506.44	-0.17
PANMW41	1,507.85	1,508.37	11.15	1,508.34	0.49
PANMW42	1,508.24	1,508.07	10.07	1,508.12	-0.12
PANMW43	1,506.54	1,506.32	10.85	1,506.44	-0.10
PANMW44	1,507.27	1,507.04	10.27	1,507.18	-0.09
PANMW45	1,506.03	1,506.09	10.80	1,506.08	0.05
PANMW47	1,503.87	1,503.49	11.56	1,503.61	-0.26
PANMW48A	1,495.99	1,495.09	10.88	1,495.53	-0.46

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 8 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Site 33 (cont'd)					
PANOW02	1,503.08	1,502.62	9.57	1,502.82	-0.26
PANPZ02B	1,507.04	1,506.83	10.45	1,506.97	-0.07
PANTF05	1,506.28	1,506.69	13.37	1,506.26	-0.02
PANTF09	1,506.89	1,506.68	10.92	1,506.81	-0.08
Site 34					
34MW01	1,484.16	1,482.92	14.63	1,484.17	0.01
34MW02	1,484.40	1,483.17	15.06	1,484.40	0.00
34MW04	1,485.68	1,484.46	18.82	1,485.62	-0.06
34MW05	1,484.63	1,483.38	19.23	1,484.73	0.10
34MW06	1,484.31	1,483.06	12.83	1,484.34	0.03
Site 36					
36DP01D	1,509.38	1,509.48	15.81	1,509.61	0.23
36DP03D	1,509.42	1,509.50	16.24	1,509.67	0.25
36DP04D	1,509.51	1,509.60	16.58	1,509.74	0.23
36DP05D	1,509.33	1,509.50	16.99	1,509.59	0.26
36DP06D	1,509.15	1,509.47	16.77	1,509.64	0.49
36VEP01D	1,509.29	1,509.10	16.91	1,509.34	0.05
36VEP02D	1,509.46	1,509.56	15.10	1,509.72	0.26
36VEP03D	1,507.40	1,509.48	13.98	1,509.65	2.25
36VEP04	1,508.58	1,508.69	15.82	1,508.86	0.28
36VEP05	1,509.86	1,509.48	15.33	1,509.66	-0.20
36VEP06	1,509.37	1,509.49	15.13	1,509.64	0.27
5M36MW02	1,509.24	1,509.30	14.79	1,509.45	0.21
5M36MW03	1,509.70	1,509.81	15.95	1,509.92	0.22
5M36MW04	1,509.29	1,509.37	14.94	1,509.52	0.23
5M36MW05	1,509.98	1,510.08	16.54	1,510.23	0.25
6M36MW01	1,507.66	1,507.64	16.37	1,507.98	0.32
6M36MW06	1,508.97	1,509.01	17.52	1,509.16	0.19
6M36MW07	1,509.52	1,509.54	16.62	1,509.81	0.29
6M36MW09	1,509.43	1,509.51	15.33	1,509.64	0.21
6M36MW10	1,509.44	1,509.51	15.51	1,509.65	0.21
6M36MW11	1,509.25	1,509.89	16.72	1,509.70	0.45
Site 39					
39MW05	1,520.26	1,521.13	22.40	1,521.40	1.14
Building 550*					
550MW06	NM	1,522.69	NM	NM	--
550MW09	1,523.54	1,524.11	NM	NM	--
550MW11	NM	1,520.20	NM	NM	--
550MW12	NM	1,520.95	NM	NM	--
550MW13	NM	1,518.49	NM	NM	--
550MW14	NM	1,509.90	NM	NM	--
550MW15	NM	1,512.83	NM	NM	--
550MW16	NM	1,512.20	NM	NM	--

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 9 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
EGETS					
EX02	1,468.87	1,467.84	25.83	1,468.51	-0.36
EX04	1,462.03	1,460.37	30.98	1,460.73	-1.30
EX05A	1,459.61	1,463.50	40.35	1,452.44	-7.17
EX06	1,448.95	1,458.02	39.29	1,447.66	-1.29
OU1GEW01	1,474.96	1,473.84	20.87	1,476.51	1.55
OU1GEW02	1,469.90	1,468.54	25.60	1,469.65	-0.25
OU1GEW03	1,461.77	1,460.50	31.69	1,461.08	-0.69
OU1GEW04	1,456.53	1,454.05	36.83	1,453.90	-2.63
OU1GEW05	1,444.42	1,443.24	45.04	1,443.19	-1.23
OU1MW12	1,441.26	1,436.60	50.71	1,436.18	-5.08
OU1RW01	1,479.17	1,475.70	23.20	1,480.52	1.35
OU1RW02	1,476.21	1,475.66	20.82	1,481.80	5.59
OU1RW03	1,475.51	1,475.52	18.68	1,482.40	6.89
OU1RW04	1,475.94	1,474.79	20.68	1,479.72	3.78
OU1TW01D	1,478.51	1,477.28	21.27	1,480.25	1.74
OU1TW02	1,480.30	1,423.77	24.49	1,481.23	0.93
OU1TW03D	1,483.80	1,419.41	96.11	1,412.72	-71.08
OU 1 Plume					
EX07	1,447.09	1,445.98	45.97	1,445.94	-1.15
EX08	1,442.73	1,433.67	45.68	1,441.27	-1.46
OBMW01A	1,479.48	1,480.22	36.31	1,480.18	0.70
OBMW01B	1,480.18	1,480.95	35.56	1,481.03	0.85
OBMW02B	1,464.08	1,474.07	28.27	1,475.62	11.54
OBMW03	1,471.00	1,470.01	30.06	1,473.73	2.73
OBMW04A	NM	1,461.02	26.82	1,462.68	--
OBMW04B	1,462.40	1,461.11	26.66	1,462.89	0.49
OBMW05A	1,419.42	1,419.74	NM	NM	--
OBMW05B	1,428.93	1,429.57	NM	NM	--
OBMW06A	1,392.98	1,363.25	NM	NM	--
OBMW06B	1,380.91	1,424.93	NM	NM	--
OBMW06C	1,378.99	1,488.40	NM	NM	--
OBMW06D	1,378.40	1,572.03	NM	NM	--
OBMW06E	1,378.07	1,610.34	NM	NM	--
OBMW06F	1,374.11	1,673.40	NM	NM	--
OBMW07A	1,431.46	1,431.98	49.81	1,432.16	0.70
OBMW07B	1,431.63	1,432.06	49.95	1,432.30	0.67
OBMW08A	1,412.15	1,411.69	NM	NM	--
OBMW08B	1,411.40	1,463.64	NM	NM	--
OBMW08C	1,403.03	1,588.28	NM	NM	--
OBMW08D	1,392.91	1,645.21	NM	NM	--
OBMW09A	1,436.22	1,436.94	NM	NM	--

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 10 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
OU 1 Plume (cont'd)					
OBMW09B	1,436.10	1,436.82	44.43	1,437.65	1.55
OBMW10A	1,487.06	1,486.89	22.96	1,487.05	-0.01
OBMW10B	1,486.74	1,486.74	23.21	1,486.97	0.23
OBMW10C	1,486.79	1,486.79	22.95	1,486.99	0.20
OBMW10D	1,486.85	1,487.09	22.63	1,487.28	0.43
OU1MW01	1,478.45	1,477.16	22.18	1,480.34	1.89
OU1MW02	1,478.65	1,477.53	22.65	1,480.23	1.58
OU1MW03	1,477.49	1,476.34	23.84	1,479.53	2.04
OU1MW04	1,483.79	1,443.26	73.21	1,439.76	-44.03
OU1MW05	1,483.86	1,439.35	76.61	1,435.92	-47.94
OU1MW06	1,484.96	1,483.83	27.98	1,484.18	-0.78
OU1MW07	1,474.21	1,473.17	22.49	1,476.37	2.16
OU1MW08	1,472.39	1,471.04	23.99	1,472.78	0.39
OU1MW09	1,465.90	1,464.64	24.81	1,465.50	-0.40
OU1MW10	1,456.02	1,454.55	33.82	1,454.70	-1.32
OU1MW11	1,451.81	1,450.59	37.88	1,450.47	-1.34
OU1MW13	1,425.33	1,425.59	51.58	1,425.86	0.53
OU1MW14	1,461.27	1,461.49	24.70	1,461.72	0.45
OU1MW15A	1,478.69	1,477.87	22.59	1,481.01	2.32
OU1MW15B	1,478.49	1,477.65	22.72	1,480.85	2.36
OU1MW15S	1,478.42	1,477.71	22.92	1,480.76	2.34
OU1MW16A	1,477.27	NM	51.07	1,450.68	-26.59
OU1MW16B	1,479.23	1,475.32	24.16	1,477.60	-1.63
OU1MW16S	1,478.93	1,472.01	27.22	1,474.52	-4.41
OU1MW18	1,447.86	1,447.18	34.37	1,448.13	0.27
OU1MW19	1,487.02	1,486.15	17.34	1,485.75	-1.27
OU1MW24A	1,424.69	1,424.83	59.02	1,425.53	0.84
OU1MW24B	1,432.89	1,433.40	50.49	1,434.04	1.15
OU1MW25	1,471.44	1,470.54	31.01	1,474.14	2.70
OU1MW27	1,468.60	1,468.93	36.06	1,470.31	1.71
OU1OW01	1,478.42	1,477.55	23.62	1,479.98	1.56
OU1OW02	1,474.85	1,473.48	23.39	1,480.14	5.29
OU1OW03	1,473.32	1,472.24	17.44	1,483.94	10.62
OU1OW04	1,473.28	1,472.33	19.22	1,481.40	8.12
OU1PZ05	1,480.67	1,479.89	24.95	1,481.79	1.12
OU1PZ06	1,482.21	1,481.30	22.46	1,482.72	0.51
OU1PZ07	1,482.60	1,482.01	23.22	1,483.25	0.65
OU1PZ08	1,486.45	1,485.51	22.54	1,485.68	-0.77
OU1PZ09	1,483.91	1,483.61	24.94	1,484.34	0.43
OU1PZ10	1,483.96	1,483.27	28.39	1,483.75	-0.21

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 11 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)
Basewide					
RBEMW01A	1,409.92	1,407.64	NM	NM	--
RBEMW01B	1,399.05	1,397.19	NM	NM	--
RBEMW01C	1,385.42	1,383.74	NM	NM	--
RBEMW01D	1,385.38	1,383.08	NM	NM	--
RBEMW01E	1,374.52	1,370.70	NM	NM	--
RBEMW02A	1,420.33	1,420.67	57.23	1,421.63	1.30
RBEMW02B	1,428.19	1,428.78	49.38	1,429.58	1.39
RBEMW03A	1,454.59	1,455.62	40.92	1,456.88	2.29
RBEMW03B	1,447.70	1,449.16	47.73	1,450.24	2.54
RBEMW04A	1,490.71	1,489.64	10.31	1,490.09	-0.62
RBEMW04B	1,492.38	1,491.41	8.48	1,491.76	-0.62
RBEMW06A2A	1,518.92	1,515.33	NM	NM	--
RBEMW06A2B	1,518.81	1,519.89	NM	NM	--
RBEMW06A2C	1,518.34	1,551.55	NM	NM	--
RBEMW06A2D	1,516.97	1,629.74	NM	NM	--
RBEMW06A2E	1,516.38	1,668.07	NM	NM	--
RBEMW07A	1,436.89	1,465.59	NM	NM	--
RBEMW07B	1,437.59	1,511.57	NM	NM	--
RBEMW07C	1,437.46	1,437.62	NM	NM	--
RBEMW07D	1,435.05	1,435.21	NM	NM	--
RBEMW07E	1,435.29	1,435.82	NM	NM	--
RBEMW08	1,505.62	1,505.29	11.49	1,505.48	-0.14
RBEMW09A	1,511.81	1,484.04	NM	NM	--
RBEMW09B	1,511.88	1,496.86	NM	NM	--
RBEMW09C	1,513.82	1,525.97	NM	NM	--
RBEMW09D	1,513.02	1,590.31	NM	NM	--
RBEMW09E	1,512.85	1,641.20	NM	NM	--
RBEMW09F	1,506.56	1,721.50	NM	NM	--
RBEMW10A	1,502.16	1,502.29	NM	NM	--
RBEMW10B	1,500.57	1,510.21	NM	NM	--
RBEMW10C	1,499.50	1,573.66	NM	NM	--
RBEMW10E	1,496.50	1,496.75	NM	NM	--
RBEMW10F	1,495.16	1,495.57	NM	NM	--

TABLE 2-1. SUMMARY OF POTENTIOMETRIC DATA,
2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 12 of 12)

Well ID	2011Q2 Water Elevation (ft msl)	2011Q4 Water Elevation (ft msl)	2012Q2 Depth to Water (ft btoc)	2012Q2 Water Elevation (ft msl)	Difference in Water Elevation Between 2011Q2 and 2012Q2 (ft)

Notes:
* The California RWQCB, Santa Ana Region issued a NFA letter (April 2011) to AFCEC confirming completion of site investigation activities and remedial action at Building 550. The letter recommended decommissioning of groundwater monitoring and extraction wells associated with Building 550. The field activities were completed and the site was closed in April 2012 (AECOM 2012).

--	not calculated
AECOM	AECOM Technical Services, Inc.
AFCEC	Air Force Civil Engineer Center
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
ARB	Air Reserve Base
EGETS	expanded groundwater extraction and treatment system
ft	feet
ft btoc	feet below top of casing
ft msl	feet above mean sea level
ID	identification
NFA	No Further Action
NM	not measured
Q	quarter
RWQCB	Regional Water Quality Control Board

TABLE 2-2. MONITORING WELL LIST AND SAMPLING RATIONALE
2011-2012 MONITORING PERIOD
MARCH ARB, CALIFORNIA
(Page 1 of 7)

									Sampling Rationale				
Well ID	Site	HSU	Sample Depth (ft btoc)	Sampling Method	HydraSleeve™ Equilibration Period (days)	Sampling Frequency	2011Q4 Sampling Date	2012Q2 Sampling Date	Water Supply Guard Well	OU 1 Perimeter Guard Well	Water Supply Well	Basewide Plume Monitoring	Petroleum Plume Monitoring
AFRC LTM Program													
15MW01	Site 15	AU	57	HS	3	A		6/5/2012				X	
15MW02	Site 15	AU	58	HS	3	A		5/24/2012				X	
15MW03	Site 15	AU	48	HS	3	A		6/5/2012				X	
2307MW01	Site 8 Building 2307	AU	--	NS	14	A		6/6/2012				X	
2307MW02	Site 8 Building 2307	AU	67	HS	14	A		6/6/2012				X	
2307MW03	Site 8 Building 2307	AU	60	HS	14	A		6/6/2012				X	
2307MW05	Site 8 Building 2307	AL	--	NS	14	A		6/6/2012				X	
2307MW06	Site 8 Building 2307	AU	60	HS	14	A		6/6/2012				X	
23MW02	Site 23	AL	157	D	14	A		5/21/2012		X			
28MW04	Site 33	AL	90	HS	14	A		6/6/2012				X	
28MW07	Site 18	AU	76	HS	3	A		6/4/2012				X	
29MW01	Site 29	AU	54	HS	3	S	1/10/2012	5/30/2012				X	
29MW03	Site 29	BD	94	HS	9	A		6/1/2012				X	
29MW04	Site 29	AU	48	HS	9	A		5/30/2012				X	
29OW01	Site 29	BD	131	HS	9	A		6/1/2012				X	
2EW01	Site 2	AL	99	HS	14	A		6/5/2012					X
2EW02	Site 2	AL	91	HS	14	A		6/5/2012					X
2MW05	Site 2	AL	116	HS	3	A		5/30/2012				X	
2MW07	Site 2	AL	148	HS	7	A		5/24/2012				X	
2MW08	Site 2	AU	66	HS	7	A		5/24/2012				X	
2MW09	Site 2	AU	60	HS	8	A	11/2/2011	6/1/2012				X	
2PW01PRC	Site 2	AU	61	HS	14	A		6/5/2012				X	
2PW06PRC	Site 2	AL	157	HS	14	A		6/5/2012				X	
31BDEW05D	Site 31B	AU/AL	82	HS	3	A		6/4/2012				X	
31BMW02	Site 31B	AU	45	HS	3	A		6/4/2012				X	
31MW02	Site 31A	AU	54	HS	3	A		5/30/2012				X	
31MW04	Site 31A	AU	89	HS	3	Q	12/21/2011	5/30/2012				X	
31MW05	Site 31A	BD	59	HS	14	A		6/5/2012				X	
31MW06	Site 31A	AU	53	HS	7	A		5/31/2012				X	
31MW07	Site 31A	BD	106	HS	7	A		5/31/2012				X	
31MW08	Site 31A	AU	69	HS	3	A		5/30/2012				X	
31OW01	Site 31A	AU	73	HS	3	A		6/4/2012				X	
31PW03PRC	Site 31A	AU	102	HS	3	A		6/4/2012				X	
34MW02	Site 34	AL	80	HS	3	A		5/31/2012				X	
34MW04	Site 34	AU	45	HS	3	A		5/31/2012				X	
34MW06	Site 34	AU	41	HS	3	A		5/31/2012				X	
36DP01D	Site 36	AU	43	HS	7	A	10/4/2011	5/24/2012				X	
36DP03D	Site 36	AU	43	HS	7	A		5/24/2012				X	

TABLE 2-2. MONITORING WELL LIST AND SAMPLING RATIONALE
2011-2012 MONITORING PERIOD
MARCH ARB, CALIFORNIA
(Page 2 of 7)

									Sampling Rationale				
Well ID	Site	HSU	Sample Depth (ft btoc)	Sampling Method	HydraSleeve™ Equilibration Period (days)	Sampling Frequency	2011Q4 Sampling Date	2012Q2 Sampling Date	Water Supply Guard Well	OU 1 Perimeter Guard Well	Water Supply Well	Basewide Plume Monitoring	Petroleum Plume Monitoring
36DP04D	Site 36	AU	41	HS	7	A		5/24/2012				X	
36DP05D	Site 36	AU	55	ND	7	A	10/06/2011 & 11/01/2011	5/23/2012				X	
36DP06D	Site 36	AU	55	ND	7	A	10/05/2011 & 11/01/2011	5/23/2012				X	
36VEP01D	Site 36	AU	44	HS	7	A	11/1/2011	5/24/2012				X	
36VEP06	Site 36	AU	45	HS	7	A	10/31/2011	5/24/2012				X	
434MW01	Site 8 Building 434	AU	37	HS	3	S	12/21/2011	5/30/2012				X	
453MW01	Site 8 Building 453	AL	77	HS	3	S	12/21/2011	5/24/2012				X	
453MW02	Site 8 Building 453	AL	87	HS	3	S	12/21/2011	5/30/2012				X	
4MW07	Site 4	AU	42	D	14	A		5/21/2012				X	
4MW08	Site 4	BD	136	HS	14	A		6/6/2012	X				
4MW14	Site 4	AU	60	HS	3	A		5/30/2012				X	
4MW16	Site 4	AU	75	HS	14	A	12/22/2011	5/29/2012		X			
4MW18	Site 4	AU	58	D	4	A		5/24/2012		X			
5M11MW01	Site 11	AU	83	HS	14	A		6/7/2012				X	
5M1MW02	Site 1	AU	63	HS	3	A		6/6/2012				X	
5M27MW01	Site 27	AU	63	HS	14	A		6/6/2012				X	
5M27MW02	Site 27	AU	65	D	14	A		5/21/2012				X	
5M2MW05A	Site 2	AU	69	HS	4	A		6/5/2012				X	
5M2MW06	Site 2	AL	102	HS	3	A		6/5/2012				X	
5M36MW02	Site 36	AU	46	HS	14	A		5/24/2012				X	
5M36MW03	Site 36	AU	47	HS	14	A	11/2/2011	5/24/2012				X	
5M36MW04	Site 36	AU	55	D	7	A	11/2/2011	5/21/2012				X	
5M36MW05	Site 36	AU	52	HS	7	A		5/24/2012				X	
5M8MW02	Site 8 Building 2300	BD	72	HS	14	A		6/6/2012				X	
5M8MW03	Site 8 Building 2307	AU	59	HS	14	A		6/6/2012				X	
5M8MW04	Site 8 Building 355	AU	51	D	8	A		5/21/2012				X	
5M8MW05	Site 8	AU	49	HS	14	A		6/6/2012				X	
5M8MW06	Site 8 Building 2307	AL	72	HS	8	A		6/6/2012				X	
5M8MW07	Site 8 Building 2300	AU	67	HS	3	A		6/6/2012				X	
5M8MW09	Site 8 Building 2300	AU	73	HS	14	A		6/6/2012				X	
5MW01	Site 5	AU	69	HS	14	A		6/1/2012				X	
5MW02	Site 5	AL	127	HS	3	A		5/24/2012				X	
5MW03	Site 5	AU	77	HS	14	A		5/29/2012				X	
5MW04	Site 5	AU	75	HS	3	A	12/22/2011	5/29/2012				X	
5MW07	Site 5	AL	136	HS	14	A		5/30/2012				X	
5MW08	Site 5	AU/AL	102	HS	14	A		5/31/2012				X	
5MW09	Site 5	AU	78	HS	11	A		5/30/2012				X	

TABLE 2-2. MONITORING WELL LIST AND SAMPLING RATIONALE
2011-2012 MONITORING PERIOD
MARCH ARB, CALIFORNIA
(Page 3 of 7)

									Sampling Rationale				
Well ID	Site	HSU	Sample Depth (ft btoc)	Sampling Method	HydraSleeve™ Equilibration Period (days)	Sampling Frequency	2011Q4 Sampling Date	2012Q2 Sampling Date	Water Supply Guard Well	OU 1 Perimeter Guard Well	Water Supply Well	Basewide Plume Monitoring	Petroleum Plume Monitoring
5MW14	Site 5	AL	130	D	14	A		5/24/2012				X	
5MW16	Site 5	AU	77	HS	7	A		5/31/2012				X	
5MW18	Site 5	AU	83	HS	14	A		5/30/2012				X	
5MW23	Site 5	AL	225	HS	14	A		5/31/2012	X				
5MW28	Site 5	BD	131	HS	14	A		6/1/2012				X	
5MW29	Site 5	BD	99	HS	5	A		6/1/2012				X	
5MW30	Site 5	BD	157	HS	7	A		6/1/2012				X	
5MW31	Site 5	AU	75	D	3	A		5/21/2012				X	
5MW32	Site 5	AL	146	ND	3	A		5/31/2012	X				
5MW33	Site 5	AL	237	HS	14	A		5/30/2012	X				
5MW34	Site 5	AL	171	HS	5	A		5/30/2012	X				
6M2300MW01	Site 8 Building 2300	AU	57	HS	14	A		6/6/2012				X	
6M27MW05A	Site 27	AL	99	HS	14	A		6/5/2012				X	
6M2MW07	Site 2	AL	137	HS	14	A		6/5/2012				X	
6M2MW09	Site 2	AL	98	HS	14	A		6/5/2012				X	
6M2MW10	Site 2	AL	85	HS	14	A		6/5/2012				X	
6M2MW12	Site 2	AL	97	HS	8	A		6/5/2012				X	
6M36MW06	Site 36	AL	97	HS	7	A		5/24/2012				X	
6M36MW07	Site 36	AU	47	ND	3	A	10/05/2011 & 10/31/2011	5/23/2012				X	
6M36MW08	Site 8	AL	115	HS	3	A		5/24/2012				X	
6M36MW09	Site 36	AU	66	HS	7	A		5/24/2012				X	
6M36MW11	Site 36	AU	38	D	7	A	10/06/2011 & 10/31/2011 &	5/24/2012				X	
6M8MW10	Site 8 Building 2300	AU	82	HS	3	A		6/6/2012				X	
6M8MW11	Site 8 Building 2300	AU	75	HS	14	A		6/6/2012				X	
6M8MW12	Site 8	AL	124	HS	6	A		6/6/2012				X	
6M8MW13	Site 8	AL	114	D	3	A		5/21/2012				X	
6M8MW15	Site 8 Building 355	AU	44	HS	6	A	10/04/2011 & 11/03/2011	5/31/2012				X	
6M8MW16	Site 8 Building 355	AU	59	HS	3	A	11/3/2011	5/31/2012				X	
6M8MW17	Site 8 Building 355	AU	41	ND	3	S	10/04/2011 & 11/03/2011 &	6/1/2012				X	
6M8MW19	Site 8 Building 355	AU	34	ND	3	S	10/04/2011 & 12/22/2011	6/1/2012				X	
6M8MW20	Site 8 Building 355	AU	57	HS	3	A	10/03/2011 & 11/02/2011	6/1/2012				X	
6M8MW24	Site 8 Building 355	AU	37	HS	3	A		5/31/2012				X	
6M8MW25	Site 8 Building 355	AU	47	HS	3	A		5/31/2012				X	

TABLE 2-2. MONITORING WELL LIST AND SAMPLING RATIONALE
2011-2012 MONITORING PERIOD
MARCH ARB, CALIFORNIA
(Page 4 of 7)

									Sampling Rationale				
Well ID	Site	HSU	Sample Depth (ft btoc)	Sampling Method	HydraSleeve™ Equilibration Period (days)	Sampling Frequency	2011Q4 Sampling Date	2012Q2 Sampling Date	Water Supply Guard Well	OU 1 Perimeter Guard Well	Water Supply Well	Basewide Plume Monitoring	Petroleum Plume Monitoring
6M8MW27	Site 8 Building 355	AU	37	HS	14	S	10/03/2011 & 11/02/2011 &	6/1/2012				X	
6M8MW28	Site 8 Building 355	AU	52	HS	14	S	10/03/2011 & 12/22/2011	6/1/2012				X	
7MW01	Site 7	AU	54	HS	14	A	12/22/2011	5/29/2012				X	
7MW03	Site 7	AU	104	HS	14	A		5/29/2012				X	
7MW04	Site 7	AU	59	HS	14	A		5/29/2012				X	
9MW01	Site 9	AU	46	HS	3	A		6/7/2012				X	
9MW02	Site 9	BD	156	HS	3	A		6/1/2012				X	
BOWERS	Water Supply Well	AL	NA	D	--	S	1/10/2012	5/22/2012			X		
CLARK1	Water Supply Well	AL	NA	D	--	A		5/22/2012			X		
EX07	OU 1 Plume	AU	73	HS	14	A		5/30/2012				X	
EX08	OU 1 Plume	AU	75	HS	14	A		5/31/2012				X	
MENDEZ	Water Supply Well	AU/AL	NA	D	--	A		5/22/2012			X		
NODARSE	Water Supply Well	AL	NA	D	--	A		5/22/2012			X		
OBMW01A	OU 1 Plume	BD	152	D	14	A		5/21/2012		X			
OBMW01B	OU 1 Plume	AU	57	HS	14	A		5/31/2012		X			
OBMW02B	OU 1 Plume	BD	190	HS	3	A		5/24/2012				X	
OBMW03	OU 1 Plume	AU	65	HS	14	A	12/22/2011	5/30/2012				X	
OBMW04A	OU 1 Plume	AU	--	D	14	A		6/6/2012				X	
OBMW06A	OU 1 Plume	AU	145	Westbay	--	A		6/13/2012	X				
OBMW06B	OU 1 Plume	AL	270	Westbay	--	A		6/13/2012	X				
OBMW06C	OU 1 Plume	AL	365	Westbay	--	A		6/13/2012	X				
OBMW07A	OU 1 Plume	AL	227	HS	14	A		5/30/2012				X	
OBMW07B	OU 1 Plume	AL	169	HS	14	A		5/30/2012				X	
OBMW08A	OU 1 Plume	AL	150	Westbay	--	A		6/11/2012				X	
OBMW08B	OU 1 Plume	AL	225	Westbay	--	A		6/12/2012				X	
OBMW08C	OU 1 Plume	AL	325	Westbay	--	A		6/12/2012				X	
OBMW08D	OU 1 Plume	AL	500	Westbay	--	A		6/12/2012				X	
OBMW09B	OU 1 Plume	AL	157	HS	14	A		5/30/2012				X	
OBMW10A	OU 1 Plume	BD	217	HS	14	A		5/29/2012				X	
OBMW10B	OU 1 Plume	AL	168	HS	14	A		5/29/2012				X	
OBMW10C	OU 1 Plume	AL	122	HS	14	A		5/29/2012				X	
OBMW10D	OU 1 Plume	AU	42	HS	14	A		5/29/2012		X			
OU1MW01	OU 1 Plume	BD	85	D	14	A		5/21/2012				X	
OU1MW02	OU 1 Plume	AU	55	HS	14	A		6/5/2012				X	
OU1MW03	OU 1 Plume	BD	112	HS	14	A		6/5/2012				X	
OU1MW04	OU 1 Plume	BD	186	HS	3	A		5/30/2012				X	
OU1MW05	OU 1 Plume	AL	115	HS	3	A		5/30/2012				X	

TABLE 2-2. MONITORING WELL LIST AND SAMPLING RATIONALE
2011-2012 MONITORING PERIOD
MARCH ARB, CALIFORNIA
(Page 5 of 7)

									Sampling Rationale				
Well ID	Site	HSU	Sample Depth (ft btoc)	Sampling Method	HydraSleeve™ Equilibration Period (days)	Sampling Frequency	2011Q4 Sampling Date	2012Q2 Sampling Date	Water Supply Guard Well	OU 1 Perimeter Guard Well	Water Supply Well	Basewide Plume Monitoring	Petroleum Plume Monitoring
OU1MW07	OU 1 Plume	BD	82	HS	14	A		6/1/2012				X	
OU1MW08	OU 1 Plume	AU	70	HS	3	A		6/1/2012				X	
OU1MW09	OU 1 Plume	AU	82	HS	3	A		5/24/2012				X	
OU1MW10	OU 1 Plume	BD	173	HS	14	A		5/30/2012				X	
OU1MW11	OU 1 Plume	AL	140	HS	14	A		5/31/2012				X	
OU1MW13	OU 1 Plume	AL	122	HS	14	A		5/30/2012				X	
OU1MW14	OU 1 Plume	BD	136	HS	7	A		5/24/2012				X	
OU1MW15A	OU 1 Plume	BD	78	HS	3	S	12/22/2011	5/29/2012				X	
OU1MW15B	OU 1 Plume	BD	181	HS	3	A		5/29/2012				X	
OU1MW16B	OU 1 Plume	BD	221	HS	3	A		5/30/2012				X	
OU1MW18	OU 1 Plume	AU	92	HS	14	A		5/30/2012				X	
OU1MW19	OU 1 Plume	AU	67	HS	3	A		5/30/2012				X	
OU1MW24A	OU 1 Plume	AL	127	HS	14	S	12/22/2011	5/30/2012				X	
OU1MW24B	OU 1 Plume	AU	84	HS	14	S	12/22/2011	5/30/2012				X	
OU1MW25	OU 1 Plume	BD	122	HS	3	S	12/22/2011	5/24/2012				X	
OU1MW27	OU 1 Plume	BD	144	HS	3	A		5/24/2012				X	
OU1OW01	OU 1 Plume	AU	56	HS	3	A		5/30/2012				X	
OU1OW02	OU 1 Plume	BD	97	HS	14	A		6/5/2012				X	
OU1OW03	OU 1 Plume	BD	92	HS	14	A		6/5/2012				X	
OU1OW04	OU 1 Plume	BD	102	HS	9	A		6/5/2012				X	
OU1PZ05	OU 1 Plume	AU	55	ND	3	A		5/30/2012				X	
OU1PZ07	OU 1 Plume	AU	57	HS	3	A		5/30/2012				X	
OU1PZ08	OU 1 Plume	AU	64	HS	3	A		5/30/2012				X	
OU1PZ09	OU 1 Plume	AU	62	HS	3	A		5/30/2012				X	
OU1PZ10	OU 1 Plume	AU	59	HS	3	A		5/31/2012				X	
PANCP08	Site 33	AU	50	HS	3	A		5/31/2012					X
PANCP11	Site 33	AU	54	HS	3	A		5/31/2012				X	
PANCP13	Site 33	AU	53	HS	4	A		5/31/2012				X	
PANFP01	Site 33	AU	56	HS	14	A		6/4/2012					X
PANFP03	Site 33	AU	51	HS	3	A		6/4/2012				X	
PANFP04	Site 33	AU	51	HS	11	A		6/4/2012					X
PANFP07	Site 33	AU	56	HS	11	A		6/7/2012				X	
PANMW06	Site 33	AU	52	HS	4	A		5/31/2012					X
PANMW07	Site 33	AU	56	HS	4	S	12/22/2011	5/31/2012				X	
PANMW09	Site 33	AU	49	HS	3	A		5/31/2012				X	
PANMW10	Site 33	AU	53	HS	3	A		5/31/2012				X	
PANMW13	Site 33	AU	54	HS	14	A		6/7/2012				X	
PANMW14	Site 33	AL	78	HS	4	A		5/31/2012				X	
PANMW16	Site 33	AU	49	HS	5	A		5/31/2012				X	

TABLE 2-2. MONITORING WELL LIST AND SAMPLING RATIONALE
2011-2012 MONITORING PERIOD
MARCH ARB, CALIFORNIA
(Page 6 of 7)

									Sampling Rationale				
Well ID	Site	HSU	Sample Depth (ft btoc)	Sampling Method	HydraSleeve™ Equilibration Period (days)	Sampling Frequency	2011Q4 Sampling Date	2012Q2 Sampling Date	Water Supply Guard Well	OU 1 Perimeter Guard Well	Water Supply Well	Basewide Plume Monitoring	Petroleum Plume Monitoring
PANMW17	Site 33	AL	77	HS	14	A		6/7/2012				X	
PANMW18	Site 33	AU	53	HS	3	A		5/31/2012				X	
PANMW19	Site 33	AL	80	D	3	A		5/21/2012				X	
PANMW21	Site 33	AU	60	HS	14	A	11/2/2011	6/6/2012					X
PANMW23	Site 33	AU	47	HS	3	A		5/31/2012				X	
PANMW27	Site 33	AL	99	HS	3	A		6/4/2012				X	
PANMW28	Site 33	AL	85	HS	12	A		5/31/2012				X	
PANMW30	Site 33	AU	40	HS	14	A		6/6/2012					X
PANMW32A	Site 33	AU	43	HS	7	A		6/6/2012					X
PANMW33	Site 33	AU	43	HS	9	A		6/6/2012					X
PANMW35	Site 33	AU	43	HS	5	A		5/31/2012					X
PANMW36	Site 33	AU	43	HS	3	A		6/4/2012					X
PANMW37	Site 33	AU	46	HS	4	A		6/4/2012					X
PANMW40	Site 33	AU	45	ND	9	A		6/6/2012					X
PANMW41	Site 33	AU	32	HS	14	A		6/7/2012					X
PANMW43	Site 33	AU	27	HS	3	A		6/4/2012					X
PANMW45	Site 33	AU	30	HS	12	A		6/4/2012					X
PANMW47	Site 33	AL	128	HS	14	A		5/31/2012				X	
PANMW48A	Site 33	AL	82	HS	8	S	12/22/2011	6/7/2012				X	
PANOW02	Site 33	AU	62	HS	3	A		5/31/2012				X	
PANPZ02B	Site 33	AL	81	HS	3	A		6/4/2012				X	
RBEMW01A	OU 1 Plume	AL	149	Westbay	--	A		6/13/2012				X	
RBEMW01B	OU 1 Plume	AL	254	Westbay	--	A		6/13/2012	X				
RBEMW01C	OU 1 Plume	AL	394	Westbay	--	A		6/13/2012				X	
RBEMW01D	OU 1 Plume	AL	589	Westbay	--	A		6/13/2012				X	
RBEMW01E	OU 1 Plume	AL	774	Westbay	--	A		6/13/2012				X	
RBEMW02A	OU 1 Plume	AL	149	D	14	A		5/21/2012				X	
RBEMW02B	OU 1 Plume	AU	105	HS	14	A		5/31/2012				X	
RBEMW03A	OU 1 Plume	AL	182	HS	14	A		5/31/2012				X	
RBEMW03B	OU 1 Plume	AL	147	HS	14	A		5/31/2012		X			
RBEMW04A	Site 8	AL	147	HS	9	A		6/4/2012				X	
RBEMW04B	Site 8	AU	99	HS	9	A		6/4/2012				X	
RBEMW07A	OU 1 Plume	AU	116	Westbay	--	A		6/12/2012		X			
RBEMW07B	OU 1 Plume	AL	211	Westbay	--	A		6/12/2012		X			
RBEMW08	Site 8 Building 355	AL	82	HS	3	A		5/31/2012				X	
RBEMW11A	OU 1 Plume	AU	160	Westbay	--	A		6/12/2012				X	
RBEMW11B	OU 1 Plume	AL	215	Westbay	--	A		6/12/2012		X			
RBEMW11C	OU 1 Plume	AL	315	Westbay	--	A		6/12/2012		X			
RBEMW11D	OU 1 Plume	AL	420	Westbay	--	A		6/12/2012		X			

TABLE 2-2. MONITORING WELL LIST AND SAMPLING RATIONALE
2011-2012 MONITORING PERIOD
MARCH ARB, CALIFORNIA
(Page 7 of 7)

									Sampling Rationale				
Well ID	Site	HSU	Sample Depth (ft btoc)	Sampling Method	HydraSleeve™ Equilibration Period (days)	Sampling Frequency	2011Q4 Sampling Date	2012Q2 Sampling Date	Water Supply Guard Well	OU 1 Perimeter Guard Well	Water Supply Well	Basewide Plume Monitoring	Petroleum Plume Monitoring
RBEMW11E	OU 1 Plume	BD	565	Westbay	--	A		6/12/2012				X	
RBEMW13A	OU 1 Plume	AU	160	Westbay	--	A		6/13/2012		X			
RBEMW13B	OU 1 Plume	AL	240	Westbay	--	A		6/13/2012		X			
RBEMW13C	OU 1 Plume	AL	330	Westbay	--	A		6/13/2012		X			
RBEMW13D	OU 1 Plume	AL	515	Westbay	--	A		6/13/2012		X			
RBEMW13E	OU 1 Plume	AL	660	Westbay	--	A		6/13/2012		X			
TERAO	Water Supply Well	AL	NA	D	--	A		5/22/2012			X		
AFRC LTM Program Totals									**9**	**17**	**5**	**182**	**17**
AFRPA LTM Program													
4MW13	Site 4	AU	54	D	14	A		5/24/2012		X			
4MW22	Site 4	AU	49	D	14	A		5/23/2012				X	
OU1MW06	OU 1 Plume	AU	55	HS	3	S	12/21/2011					X	
AFRPA LTM Program Totals									**0**	**1**	**0**	**2**	**0**

Notes:
™ Trademark
-- not applicable
A annual
AFRC Air Force Reserve Command
AFRPA Air Force Real Property Agency
AL lower alluvial
ARB Air Reserve Base
AU upper alluvial
BD bedrock
btoc below top of casing
D dedicated equipment
ft feet
HS HydraSleeve™
HSU hydrostratigraphic unit
ID identification
LTM long-term monitoring
NA not applicable
ND non-dedicated equipment
NS not sampled
OU operable unit
Q quarter
S semiannual

TABLE 2-3. SUMMARY OF WATER QUALITY MEASUREMENTS IN WESTBAY™ WELLS
2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA

Well ID	Measure Date	ORP (mV)	Temperature (°C)	SC (mS/cm)	pH	Turbidity (NTU)	DO (ppm)
OBMW06A	6/13/2012	NM	23.49	1.057	7.43	4.9	7.21
OBMW06B	6/13/2012	NM	23.90	1.199	7.17	9.4	7.81
OBMW06C	6/13/2012	NM	24.13	1.007	7.51	13.4	7.88
OBMW08A	6/11/2012	NM	26.80	1.430	7.11	3.4	4.83
OBMW08B	6/12/2012	NM	24.95	1.185	6.97	3.8	6.23
OBMW08C	6/12/2012	NM	22.20	0.367	8.20	5.7	5.73
OBMW08D	6/12/2012	NM	23.55	0.420	7.99	455.3	5.28
RBEMW01A	6/13/2012	NM	23.91	1.289	7.40	5.4	4.13
RBEMW01B	6/13/2012	NM	24.31	1.045	7.75	8.5	7.28
RBEMW01C	6/13/2012	NM	24.16	0.578	8.31	3.6	5.43
RBEMW01D	6/13/2012	NM	23.71	0.385	9.04	6.6	5.93
RBEMW01E	6/13/2012	NM	23.62	0.347	8.73	5.3	6.03
RBEMW07A	6/12/2012	NM	24.54	1.637	7.45	7.1	6.98
RBEMW07B	6/12/2012	NM	26.56	1.485	7.46	4.8	8.44
RBEMW11A	6/12/2012	NM	24.43	1.059	7.46	4.8	7.93
RBEMW11B	6/12/2012	NM	24.93	1.180	7.61	4.0	8.55
RBEMW11C	6/12/2012	NM	24.77	0.298	8.29	4.2	5.54
RBEMW11D	6/12/2012	NM	24.48	0.199	9.21	5.9	7.39
RBEMW11E	6/12/2012	NM	24.25	0.251	9.46	15.5	6.98
RBEMW13A	6/13/2012	NM	24.54	1.291	6.96	5.7	7.92
RBEMW13B	6/13/2012	NM	24.19	1.002	7.48	4.8	8.73
RBEMW13C	6/13/2012	NM	24.27	0.873	8.22	3.0	7.82
RBEMW13D	6/13/2012	NM	23.89	0.319	9.07	3.2	6.69
RBEMW13E	6/13/2012	NM	24.63	0.359	8.84	3.8	6.87

Notes:

°C degrees Celsius
™ trademark
AFRC Air Force Reserve Command
ARB Air Reserve Base
DO dissolved oxygen
ID identifier
mS/cm microSiemens per centimeter
mV millivolts
NM not measured
NTU nephelometric turbidity units
ORP oxidation-reduction potential
pH negative logarithm of the hydrogen ion concentration
ppm parts per million
SC specific conductance

TABLE 2-4. SUMMARY OF WATER QUALITY MEASUREMENTS IN CONVENTIONAL WELLS, 2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 1 of 6)

Well ID	Measure Date	ORP (mV)	Temperature (°C)	SC (mS/cm)	pH	Turbidity (NTU)	DO (ppm)
15MW01	6/5/2012	116	23.39	2.454	6.80	37.6	1.46
15MW02	5/24/2012	97	24.42	1.872	6.79	5.2	5.39
15MW03	6/5/2012	123	23.05	2.079	6.79	1016	3.18
2307MW01	6/6/2012	27.7	23.36	1.114	6.58	4.9	1.27
2307MW02	6/6/2012	-78.4	23.71	0.832	7.05	17.0	1.13
2307MW03	6/6/2012	-49.3	22.70	1.366	6.55	30.3	0.60
2307MW05	6/6/2012	-20.2	22.77	1.407	6.73	102.2	1.54
2307MW06	6/6/2012	19	24.24	0.731	6.48	7.0	3.46
23MW02	5/21/2012	250.2	23.73	1.110	6.70	9.2	9.57
28MW04	6/6/2012	37.8	23.37	0.701	6.82	92.0	9.27
28MW07	6/4/2012	44	24.13	1.108	6.73	4.0	3.93
29MW01	5/30/2012	144.8	25.34	1.788	7.14	4.4	3.68
29MW03	6/1/2012	136	23.85	1.267	6.79	214	4.13
29MW04	5/30/2012	147.5	24.46	1.724	7.03	841.1	2.34
29OW01	6/1/2012	35	25.63	0.867	7.31	51.9	4.57
2EW01	6/5/2012	-156	24.66	1.517	7.22	138	0.29
2EW02	6/5/2012	-160	24.12	1.507	7.40	242	1.03
2MW05	5/30/2012	262.0	24.55	0.778	7.33	4.9	4.72
2MW07	5/24/2012	Insufficient volume for parameter readings.					
2MW08	5/24/2012	65	22.27	2.147	6.88	2.8	5.70
2MW09	6/1/2012	39	24.21	1.055	6.87	5.5	NM
2PW01PRC	6/5/2012	-24	23.91	1.182	7.10	1551	1.94
2PW06PRC	6/5/2012	-64	24.88	0.588	8.76	94.4	0.93
31BDEW05D	6/4/2012	127.2	22.99	1.959	7.01	5.4	2.16
31BMW02	6/4/2012	98.2	23.68	2.242	6.89	384.2	1.71
31MW02	5/30/2012	206.9	23.66	1.666	7.03	46.5	4.24
31MW04	12/21/2011	-52	15.9	0.804	7.66	NM	2.50
31MW04	5/30/2012	216.5	21.91	0.976	7.24	13.0	5.23
31MW05	6/5/2012	131	23.58	0.985	7.22	27.9	2.36
31MW06	5/31/2012	157.2	23.35	1.182	7.02	39.6	4.34
31MW07	5/31/2012	139.0	23.51	0.857	8.16	97.3	3.21
31MW08	5/30/2012	71.5	24.27	1.515	6.70	143.3	5.00
31OW01	6/4/2012	110.2	23.98	1.485	7.55	113.7	2.54
31PW03PRC	6/4/2012	64.2	23.77	1.291	9.53	44.3	2.88
34MW02	5/31/2012	173.6	23.53	0.782	6.93	690.6	3.13
34MW04	5/31/2012	200.0	22.65	1.361	6.92	2.8	5.53
34MW06	5/31/2012	169.8	23.42	1.347	6.74	37.9	3.72
36DP01D	5/24/2012	268.5	23.98	1.373	6.87	7.5	2.30
36DP03D	5/24/2012	274.8	24.47	1.238	7.20	6.8	4.24
36DP04D	5/24/2012	Readings not on log.					
36DP05D	5/23/2012	-103	24.29	1.974	6.66	44.4	0.61
36DP06D	5/23/2012	-173	24.46	5.930	6.89	67.2	0.48

TABLE 2-4. SUMMARY OF WATER QUALITY MEASUREMENTS IN CONVENTIONAL WELLS, 2011-2012 ANNUAL MONITORING PERIOD AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS MARCH ARB, CALIFORNIA

(Page 2 of 6)

Well ID	Measure Date	ORP (mV)	Temperature (°C)	SC (mS/cm)	pH	Turbidity (NTU)	DO (ppm)
36VEP01D	5/24/2012	234.7	23.41	6.087	6.63	49.7	2.27
36VEP06	5/24/2012	Insufficient volume for parameter readings.					
434MW01	12/21/2011	-17	18.5	1.11	6.71	NM	2.06
434MW01	5/30/2012	229.1	21.64	1.005	7.90	4.6	3.98
453MW01	12/21/2011	-12	17.6	1.61	6.53	NM	1.85
453MW01	5/24/2012	245.2	24.42	1.035	6.98	15.5	3.35
453MW02	12/21/2011	-10	17.3	1.28	6.03	0.0	8.65
453MW02	5/30/2012	230.9	22.33	1.185	6.93	4.3	6.25
4MW07	5/21/2012	-101.2	26.18	2.289	6.66	1.6	3.66
4MW08	6/6/2012	226	20.51	0.751	6.99	9.9	5.43
4MW13	5/24/2012	56	22.59	0.703	7.03	-0.4	2.98
4MW14	5/30/2012	217.6	24.13	0.879	7.22	10.4	5.0
4MW16	12/22/2011	103	18.5	1.310	7.5	20.3	7.65
4MW16	5/29/2012	231	24.06	1.663	7.06	5.5	5.83
4MW18	5/24/2012	96	21.71	1.461	7.01	4.9	4.43
5M11MW01	6/7/2012	168	22.96	1.204	6.42	5.9	0.92
5M1MW02	6/6/2012	67	24.97	1.724	6.42	187	NM
5M27MW01	6/6/2012	-102	26.39	0.918	6.65	12.4	3.13
5M27MW02	5/21/2012	-90.6	26.70	1.453	6.64	0.2	1.18
5M2MW05A	6/5/2012	-101	24.70	1.307	7.20	8.2	0.48
5M2MW06	6/5/2012	27	24.56	2.145	6.71	12.3	0.76
5M36MW02	5/24/2012	250.5	25.87	1.297	6.87	156.2	4.34
5M36MW03	5/24/2012	254.0	23.63	0.913	6.79	76.8	4.86
5M36MW04	5/21/2012	22.8	26.51	1.352	6.65	59.6	3.25
5M36MW05	5/24/2012	246.1	25.22	1.290	7.12	134	4.20
5M8MW02	6/6/2012	20	24.51	1.819	6.55	91.8	3.52
5M8MW03	6/6/2012	30.9	23.59	0.841	6.83	80.7	2.19
5M8MW04	5/21/2012	-57.6	26.74	2.847	6.42	2.1	3.26
5M8MW05	6/6/2012	285.7	20.68	0.867	6.89	860	3.40
5M8MW06	6/6/2012	423	23.31	1.984	6.63	433	1.50
5M8MW07	6/6/2012	-9	23.27	0.903	6.45	34.9	3.02
5M8MW09	6/6/2012	14	24.60	1.346	6.34	15.7	5.26
5MW01	6/1/2012	144	23.42	1.536	6.71	12.9	5.98
5MW02	5/24/2012	78	23.75	1.067	7.78	10.2	4.51
5MW03	5/29/2012	19	24.33	2.140	6.61	2.7	1.91
5MW04	12/22/2011	-41	18.1	1.690	7.8	>1000	2.09
5MW04	5/29/2012	-59	25.79	2.145	6.69	467	2.68
5MW07	5/30/2012	166	25.28	1.477	7.44	3.0	5.11
5MW08	5/31/2012	19	22.64	1.540	6.75	8.3	6.32
5MW09	5/30/2012	239	22.95	1.327	7.22	10.3	8.73
5MW14	5/24/2012	34	21.83	1.263	7.04	8.4	5.94
5MW16	5/31/2012	113	25.33	1.401	4.78	8.0	2.93

TABLE 2-4. SUMMARY OF WATER QUALITY MEASUREMENTS IN CONVENTIONAL WELLS, 2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 3 of 6)

Well ID	Measure Date	ORP (mV)	Temperature (°C)	SC (mS/cm)	pH	Turbidity (NTU)	DO (ppm)
5MW18	5/30/2012	216	23.23	1.361	6.94	5.1	6.47
5MW23	5/31/2012	212	22.47	1.122	7.72	2.3	6.99
5MW28	6/1/2012	158	22.76	0.929	6.95	3.5	3.63
5MW29	6/1/2012	147	23.51	1.304	6.95	427	4.83
5MW30	6/1/2012	118	23.74	0.555	8.59	8.1	3.19
5MW31	5/21/2012	154	22.58	1.374	6.72	5.5	2.82
5MW32	5/31/2012	225	22.24	2.264	7.38	3.9	7.74
5MW33	5/30/2012	189	23.43	1.541	7.10	747	6.07
5MW34	5/30/2012	200	23.25	1.251	7.12	174	6.83
6M2300MW01	6/6/2012	40	23.78	0.878	6.53	310.1	3.47
6M27MW05A	6/5/2012	-75	24.20	1.869	6.71	40.8	1.13
6M2MW07	6/5/2012	-89	25.46	1.710	6.79	6.8	0.67
6M2MW09	6/5/2012	-114	24.31	2.508	6.85	4.5	0.90
6M2MW10	6/5/2012	-107	23.99	3.558	6.66	3.2	0.98
6M2MW12	6/5/2012	-92	25.36	1.696	6.83	7.1	0.63
6M36MW06	5/24/2012	268.3	23.53	1.041	6.78	3.7	4.01
6M36MW07	5/23/2012	-135	25.02	2.510	7.09	9.7	1.06
6M36MW08	5/24/2012	208.0	24.39	0.849	7.00	8.1	3.21
6M36MW09	5/24/2012	251.7	25.08	1.106	6.86	157.1	4.32
6M36MW11	12/21/2011	-90	18.4	2.39	6.05	0.0	1.44
6M36MW11	5/24/2012	Insufficient volume for parameter readings.					
6M8MW10	6/6/2012	51	24.13	1.032	6.52	20.3	6.39
6M8MW11	6/6/2012	-59	23.81	1.181	6.82	42.5	3.98
6M8MW12	6/6/2012	71	26.66	0.822	6.80	18.2	3.21
6M8MW13	5/21/2012	31.3	25.09	1.419	6.93	4.7	2.32
6M8MW15	5/31/2012	97.1	25.20	0.520	7.14	4.3	3.98
6M8MW16	5/31/2012	115.7	24.88	1.161	6.74	6.6	6.98
6M8MW17	12/22/2011	-116	20.8	1.380	5.3	160	7.76
6M8MW17	6/1/2012	-134	25.01	1.917	6.41	112	4.63
6M8MW19	12/22/2011	-172	18.1	0.990	7.0	24.7	3.83
6M8MW19	6/1/2012	-85	22.93	0.955	6.57	9.9	6.07
6M8MW20	6/1/2012	134	23.74	1.408	6.70	4.2	6.98
6M8MW24	5/31/2012	71.8	24.43	1.488	6.76	50.1	5.70
6M8MW25	5/31/2012	84.9	23.70	1.468	6.58	14.1	6.50
6M8MW27	12/22/2011	-50	19.9	1.830	5.9	29.4	4.02
6M8MW27	6/1/2012	-77	25.14	1.264	6.83	7.8	5.87
6M8MW28	12/22/2011	121	19.7	1.520	7.3	7.10	11.95
6M8MW28	6/1/2012	8.2	24.98	1.450	6.58	11.7	4.53
7MW01	12/22/2011	-132	18.2	1.580	7.3	8.64	2.22
7MW01	5/29/2012	-103	25.85	1.877	6.66	19.5	2.03
7MW03	5/29/2012	63	24.66	1.959	6.65	487	2.51
7MW04	5/29/2012	62	24.53	2.337	6.60	129.0	3.60

TABLE 2-4. SUMMARY OF WATER QUALITY MEASUREMENTS IN CONVENTIONAL WELLS, 2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 4 of 6)

Well ID	Measure Date	ORP (mV)	Temperature (°C)	SC (mS/cm)	pH	Turbidity (NTU)	DO (ppm)
9MW01	6/7/2012	164	22.65	1.404	6.87	748	NM
9MW02	6/1/2012	134	21.84	0.807	8.31	6.6	2.31
BOWERS	5/22/2012	207.5	25.08	1.875	7.02	10.5	8.23
CLARK1	5/22/2012	210.0	22.46	1.251	6.91	2.7	6.82
EX07	5/30/2012	237	22.67	0.904	6.77	31.2	4.23
EX08	5/31/2012	204	23.84	1.815	6.80	187	5.85
MENDEZ	5/22/2012	147.2	21.06	1.445	7.60	43.5	4.54
NODARSE	5/22/2012	153.7	24.94	1.618	7.34	19.5	5.22
OBMW01A	5/21/2012	38	23.84	1.851	6.83	8.7	2.21
OBMW01B	5/31/2012	109	23.23	1.673	5.01	123	NM
OBMW02B	5/24/2012	87	22.20	0.980	7.45	10.6	3.33
OBMW03	12/22/2011	79	16.3	1.030	NM	415	4.20
OBMW03	5/30/2012	209	24.46	1.212	7.00	406	4.73
OBMW04A	6/6/2012	-31	21.36	0.871	6.70	9.3	3.23
OBMW07A	5/30/2012	165	23.09	0.825	10.70	17.3	2.74
OBMW07B	5/30/2012	166	23.24	1.180	8.57	8.9	2.43
OBMW09B	5/30/2012	203	24.02	1.026	6.96	1491	6.93
OBMW10A	5/29/2012	10	22.19	0.809	6.39	1554	1.75
OBMW10B	5/29/2012	-125	22.88	1.013	7.29	2.2	2.11
OBMW10C	5/29/2012	-118	22.17	0.909	7.05	5.0	2.19
OBMW10D	5/29/2012	-39	21.35	0.847	6.67	2.3	2.11
OU1MW01	5/21/2012	-42.4	27.68	1.368	6.83	8.0	3.07
OU1MW02	6/5/2012	142	23.16	1.421	7.06	516	1.84
OU1MW03	6/5/2012	111	23.13	1.417	7.14	1651	2.24
OU1MW04	5/30/2012	136.0	24.59	1.354	7.39	15.5	2.45
OU1MW05	5/30/2012	156.2	24.89	1.938	6.39	8.8	3.22
OU1MW06	12/21/2011	9	21.1	2.26	5.06	0.0	2.79
OU1MW07	6/1/2012	144	22.64	1.132	6.84	4.8	4.67
OU1MW08	6/1/2012	201	21.63	0.939	7.35	5.3	3.21
OU1MW09	5/24/2012	88	24.44	1.845	6.74	2.5	4.63
OU1MW10	5/30/2012	157	23.20	1.176	8.78	133	5.39
OU1MW11	5/31/2012	-3	24.05	0.561	7.54	2.3	3.04
OU1MW13	5/30/2012	246	22.55	1.175	7.24	2845	5.96
OU1MW14	5/24/2012	81	23.99	1.971	6.83	873	5.67
OU1MW15A	12/22/2011	107	14.9	1.390	7.9	15.5	6.52
OU1MW15A	5/29/2012	213	22.71	1.559	6.77	8.1	4.13
OU1MW15B	5/29/2012	-120	22.43	1.278	7.76	12.3	1.72
OU1MW16B	5/30/2012	113.6	23.59	1.384	7.06	525.7	5.72
OU1MW18	5/30/2012	172	22.99	1.357	6.93	2.4	6.36
OU1MW19	5/30/2012	152.4	25.69	1.682	6.79	4.1	5.48
OU1MW24A	12/22/2011	29.0	20.6	1.410	7.3	6.74	3.98
OU1MW24A	5/30/2012	184	23.06	1.632	6.91	8.2	7.89

TABLE 2-4. SUMMARY OF WATER QUALITY MEASUREMENTS IN CONVENTIONAL WELLS, 2011-2012 ANNUAL MONITORING PERIOD AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS MARCH ARB, CALIFORNIA

(Page 5 of 6)

Well ID	Measure Date	ORP (mV)	Temperature (°C)	SC (mS/cm)	pH	Turbidity (NTU)	DO (ppm)
OU1MW24B	12/22/2011	35	19.6	1.640	7.3	7.99	4.31
OU1MW24B	5/30/2012	187	23.79	1.913	6.72	4.5	6.53
OU1MW25	12/22/2011	92	14.6	0.720	7.9	9.35	2.65
OU1MW25	5/24/2012	85	22.59	0.848	7.24	10.8	3.29
OU1MW27	5/24/2012	91	22.50	1.446	7.00	7.7	5.97
OU1OW01	5/30/2012	145.0	24.37	2.162	6.90	16.5	7.08
OU1OW02	6/5/2012	177	21.83	1.499	6.93	4.2	2.07
OU1OW03	6/5/2012	161	21.82	1.490	7.06	3.8	2.62
OU1OW04	6/5/2012	168	21.22	1.488	6.92	3.1	3.57
OU1PZ05	5/30/2012	151.3	24.96	2.968	6.74	10.7	4.44
OU1PZ07	5/30/2012	154.4	24.82	3.126	6.74	34.3	4.17
OU1PZ08	5/30/2012	132.7	24.55	1.538	6.73	454.5	4.70
OU1PZ09	5/30/2012	148.2	24.34	2.430	6.78	45.3	5.07
OU1PZ10	5/31/2012	139	24.83	0.658	4.31	12.9	2.06
PANCP08	5/31/2012	-11.0	25.22	1.054	6.77	35.9	3.31
PANCP11	5/31/2012	101.9	25.32	1.285	6.65	1678.1	3.87
PANCP13	5/31/2012	85.3	27.23	1.501	6.62	1703.6	6.74
PANFP01	6/4/2012	-69	24.37	2.530	6.65	17.3	1.47
PANFP03	6/4/2012	80	24.59	1.529	6.96	8.9	2.15
PANFP04	6/4/2012	-87	24.84	1.042	6.86	150	4.33
PANFP07	6/7/2012	131	21.58	1.339	6.89	958	3.56
PANMW06	5/31/2012	70.0	24.77	1.297	6.72	36.8	3.38
PANMW07	12/22/2011	-32	15.9	1.390	7.4	201	4.70
PANMW07	5/31/2012	11.1	24.31	1.308	6.58	267.1	4.71
PANMW09	5/31/2012	31.7	24.14	0.606	6.88	834.6	6.02
PANMW10	5/31/2012	64.9	25.26	1.272	6.71	49.8	6.67
PANMW13	6/7/2012	173	22.43	1.611	6.58	1308	3.45
PANMW14	5/31/2012	85.1	24.93	1.276	6.71	6.8	2.79
PANMW16	5/31/2012	144.8	25.20	0.904	7.01	98.3	4.18
PANMW17	6/7/2012	137	22.41	1.531	8.74	9.8	3.43
PANMW18	5/31/2012	81.6	26.20	1.194	6.67	9.0	3.21
PANMW19	5/21/2012	-29.6	26.85	1.701	6.75	7.9	4.31
PANMW21	6/6/2012	93.8	22.26	1.002	6.64	12.6	0.62
PANMW23	5/31/2012	59.3	23.97	1.395	6.72	194.3	6.21
PANMW27	6/4/2012	-81	24.38	1.268	7.16	24.0	3.75
PANMW28	5/31/2012	-13.7	25.26	1.168	7.17	736.9	3.91
PANMW30	6/6/2012	110.3	22.97	0.684	6.82	6.0	1.25
PANMW32A	6/6/2012	111.7	23.13	0.921	6.94	35.2	1.69
PANMW33	6/6/2012	-51.7	23.88	0.968	6.75	8.6	1.14
PANMW35	5/31/2012	-63.2	26.08	1.403	6.73	117.2	3.85
PANMW36	6/4/2012	69	24.32	1.236	7.23	9.4	3.52
PANMW37	6/4/2012	-74	24.47	2.849	6.44	4.2	1.37

TABLE 2-4. SUMMARY OF WATER QUALITY MEASUREMENTS IN CONVENTIONAL WELLS, 2011-2012 ANNUAL MONITORING PERIOD AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS MARCH ARB, CALIFORNIA

(Page 6 of 6)

Well ID	Measure Date	ORP (mV)	Temperature (°C)	SC (mS/cm)	pH	Turbidity (NTU)	DO (ppm)
PANMW40	6/6/2012	-44.9	24.17	0.988	6.77	8.0	1.24
PANMW41	6/7/2012	201	22.56	2.060	6.81	2.7	0.97
PANMW43	6/4/2012	-62	25.05	6.194	6.37	5.2	1.18
PANMW45	6/4/2012	-102	24.98	1.246	6.83	8.8	3.08
PANMW47	5/31/2012	-74	25.20	1.343	6.49	614.7	4.51
PANMW48A	12/22/2011	119	16.5	1.650	7.3	5.80	6.78
PANMW48A	6/7/2012	161	22.45	1.450	7.16	3.7	6.43
PANOW02	5/31/2012	106.8	25.11	0.683	6.57	199.9	4.68
PANPZ02B	6/4/2012	-180	24.36	0.492	7.94	9.6	2.77
RBEMW02A	5/21/2012	152.0	24.02	1.576	6.81	63.9	5.87
RBEMW02B	5/31/2012	34	22.15	1.398	6.94	1.9	7.83
RBEMW03A	5/31/2012	43	24.63	0.253	9.89	7.3	2.23
RBEMW03B	5/31/2012	28	24.23	0.457	9.83	8.9	4.73
RBEMW04A	6/4/2012	61	24.51	0.576	6.93	595	4.01
RBEMW04B	6/4/2012	74	24.87	1.188	6.51	88	2.31
RBEMW08	5/31/2012	67.9	24.29	0.252	9.53	7.9	2.27
TERAO	5/22/2012	199.7	23.82	2.244	6.94	17.6	7.83

Notes:

>	greater than
°C	degrees Celsius
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
ARB	Air Reserve Base
DO	dissolved oxygen
ID	identification
mS/cm	microSiemens per centimeter
mV	millivolts
NM	not measured
NTU	nephelometric turbidity units
ORP	oxidation-reduction potential
pH	negative logarithm of the hydrogen ion concentration
ppm	parts per million
SC	specific conductance

TABLE 4-1. GROUNDWATER CLEANUP GOALS FOR OU 1
MARCH ARB, CALIFORNIA

Site	Contaminant of Concern	Groundwater Cleanup Goal (μg/L)
OU 1 Plume	benzene	1
	bis(2-ethylhexyl)phthalate	4
	carbon tetrachloride (CTCL)	0.5
	1,2-dichloroethane (1,2-DCA)	0.5
	1,1-dichloroethene (1,1-DCE)	6
	cis-1,2-dichloroethene (cis-1,2-DCE)	6
	methylene chloride	5
	phenolics, total recoverable	40
	tetrachloroethene (PCE)	5
	trichloroethene (TCE)	5
Site 4	bis(2-ethylhexyl)phthalate	4
	cis-1,2-dichloroethene (cis-1,2-DCE)	6
	methylene chloride	5
	tetrachloroethene (PCE)	5
	trichloroethene (TCE)	5
	vinyl chloride	0.5
Site 31	bis(2-ethylhexyl)phthalate	4
	1,1-dichloroethene (1,1-DCE)	6
	trichloroethene (TCE)	5

Notes:
μg/L micrograms per liter
OU operable unit

TABLE 4-2. OU 1 EXTRACTION AND INJECTION WELL OPERATIONAL DATA, 2012 ANNUAL MONITORING ROUND MARCH ARB, CALIFORNIA

				Analytical Concentration[b]			
Site	Well ID	Average Flow Rate[a] (gpm)	Depth to Water (ft btoc)	PCE (μg/L)	TCE (μg/L)	cis-1,2-DCE (μg/L)	Carbon Tetrachloride (μg/L)
Extraction Wells							
Site 4	4EX01	15.8	67.97	**11**	**1.7**	**2.7**	<0.50
	4EX02	18.5	32.31	**7.8**	**2.2**	**3.9**	<0.50
	4MW01	11.1	118.22	**24**	**7.1**	**13**	<0.50
Site 31A	31AGEW01	*Not Operating*	14.78	**0.84** F	**0.98** F	<1.0	<0.50
Site 31B	31BGEW02	*Not Operating*	17.81	**2.1**	**28**	<1.0	<0.50
	31BGEW03	8.7	92.11	**3.4**	**46**	**0.40** F	<0.50
EGETS	EX01	*Not Operating*	NM	**3.6**	**2.5**	<1.0	<0.50
	EX02	*Not Operating*	25.83	*Not Sampled*			
	EX03	*Not Operating*	NM	**5.6**	**2.4**	**0.28** F	**0.64**
	EX04	*Not Operating*	30.98	**6.5/6.4**	**3.4/3.4**[C]	**0.46** F/**0.41**[C] F	**0.80/0.78**[c]
	EX05A	26.4	40.35	**4.2**	**89**	**150**	**0.27** F
	EX06	*Not Operating*	39.29	**0.90** F	**2.6**	**0.25** F	<0.50
	OU1GEW01	*Not Operating*	20.87	**2.6**	**3.2**	<1.0	<0.50
	OU1GEW02	*Not Operating*	25.60	**3.5**	**4.0**	**0.22** F	<0.50
	OU1GEW03	*Not Operating*	31.69	**7.3**	**2.8**	**0.25** F	**0.79**
	OU1GEW04	10.8	36.83	**1.9**	**29**	**2.2**	<0.50
	OU1GEW05	*Not Operating*	45.04	**3.2**	**1.4**	<1.0	**0.42** F
	OU1MW12	25.6	50.71	**1.9**	**10**	<1.0	<0.50
	OU1TW02	*Not Operating*	24.49	**2.8**	**5.1**	**0.27** F	<0.50
	OU1TW03	7.0	96.11	**6.7/6.8**[c]	**1.9/1.9**[c]	**3.9/3.8**[c]	<0.50/<0.50[c]
OU 1	OU1MW16A	4.8	51.07	**2.8**	**42**	**1.2**	<0.50
Injection Wells							
EGETS	OU1RW01	*Not Operating*	23.20	*Not Sampled*			
EGETS	OU1RW02	*Not Operating*	20.82	*Not Sampled*			
EGETS	OU1RW03	*Not Operating*	18.68	*Not Sampled*			
EGETS	OU1RW04	*Not Operating*	20.68	*Not Sampled*			
EGETS	OU1TW01	*Not Operating*	21.27	*Not Sampled*			

Notes:
Bold indicates detected concentration.

(a) Average flow rates calculated from April, May, and June 2012 readings.
(b) All results have "(S)" qualifiers assigned, but have been removed to enhance readability. See definition below.
(c) Duplicate sample.

/	normal/field duplicate	gpm	gallons per minute
<	less than the displayed reporting limit	ID	identifier
μg/L	micrograms per liter	MDL	method detection limit
ARB	Air Reserve Base	NM	not measured
DCE	dichloroethene	OU	operable unit
EGETS	expanded groundwater extraction and treatment system	PCE	tetrachloroethene
ft btoc	feet below top of casing	RL	reporting limit
		TCE	trichloroethene

Laboratory-Assigned Qualifier:
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifier:
(S) Screening data (result not validated).

TABLE 4-3. SUMMARY OF ANALYTICAL RESULTS FOR SITE 4 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 1 of 3)

		EGETS Wells								
		4EX01 AU/BD		4EX02 AU/BD		4MW01 BD		OU1TW03 BD		
Analyte	GCG	11/16/2011	05/22/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012	05/22/2012[(a)]
Volatile Organics (μg/L)										
benzene	NE	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)
chloroform	NE	<0.50 (S)	**0.22** F (S)	**0.22** F (S)	**0.26** F (S)	**0.24** F (S)	**0.25** F (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
1,1-dichloroethane	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
cis-1,2-dichloroethene	6	**2.9** (S)	**2.7** (S)	**3.8** (S)	**3.9** (S)	**12** (S)	**13** (S)	**5.3** (S)	**3.9** (S)	**3.8** (S)
trans-1,2-dichloroethene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
tetrachloroethene (PCE)	5	**8.6** (S)	**11** (S)	**6.6** (S)	**7.8** (S)	**22** (S)	**24** (S)	**7.3** (S)	**6.7** (S)	**6.8** (S)
trichloroethene (TCE)	5	**1.4** (S)	**1.7** (S)	**1.9** (S)	**2.2** (S)	**6.7** (S)	**7.1** (S)	**2.5** (S)	**1.9** (S)	**1.9** (S)
vinyl chloride	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)

TABLE 4-3. SUMMARY OF ANALYTICAL RESULTS FOR SITE 4 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 2 of 3)

		Plume Monitoring Wells										
		4MW13 AU	4MW16 AU		4MW18 AU	4MW22 AU	OBMW01A BD	OBMW01B AU	OBMW10A BD	OBMW10B AL	OBMW10C AL
Analyte	GCG	05/24/2012	12/22/2011	05/29/2012	05/24/2012	05/23/2012	05/21/2012	05/31/2012	05/29/2012	05/29/2012	05/29/2012
Volatile Organics (μg/L)											
benzene	NE	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
chloroform	NE	< 0.50	**0.27** F (F)	**0.22** F (F)	< 0.50	< 0.50	**0.46** F (F)	**0.32** F (F)	**0.71**	< 0.50	< 0.50
1,1-dichloroethane	NE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-dichloroethene	6	< 1.0	< 1.0	< 1.0	**1.2**	< 1.0	< 1.0	< 1.0	**1.0**	**0.81** F (F)	**0.41** F (F)
trans-1,2-dichloroethene	NE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tetrachloroethene (PCE)	5	**0.52** F (F)	**1.2**	**1.0**	**4.0**	**3.3**	**0.83** F (F)	**0.22** F (F)	**32**	**16**	**12**
trichloroethene (TCE)	5	**0.27** F (F)	< 1.0	< 1.0	**2.3**	**0.66** F (F)	< 1.0	< 1.0	**2.8**	**9.4**	**1.3**
vinyl chloride	0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

TABLE 4-3. SUMMARY OF ANALYTICAL RESULTS FOR SITE 4 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 3 of 3)

		Plume Monitoring Wells (cont'd)							
		OBMW10D AU	OU1MW04 BD	OU1MW05 AL	OU1MW06 AU	OU1PZ08 AU	OU1PZ09 AU	OU1PZ10 AU	
Analyte	GCG	05/29/2012	05/30/2012	05/30/2012	12/21/2011	05/30/2012	05/30/2012	05/31/2012	05/31/2012[(a)]
Volatile Organics (µg/L)									
benzene	NE	<0.40	**0.23** F (F)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
chloroform	NE	<0.50	**0.87**	<0.50	<0.50	<0.50	**0.22** F (F)	<0.50	<0.50
1,1-dichloroethane	NE	<1.0	**0.45** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	**0.69** F (F)	**49**	**3.0**	**2.6**	**1.0**	**1.0**	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	**0.41** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tetrachloroethene (PCE)	5	<1.0	**95**	**3.1**	**12**	**5.7**	**7.1**	**0.31** F (F)	**0.30** F (F)
trichloroethene (TCE)	5	**1.1**	**27**	**0.74** F (F)	**1.7**	**0.65** F (F)	**1.2**	<1.0	<1.0
vinyl chloride	0.5	<0.50	<0.50	**0.20** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50

Notes:
(a) Field duplicate
Highlighted concentrations exceed Site 4 Groundwater Cleanup Goal

<	less than
µg/L	micrograms per liter
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
AL	lower alluvial aquifer unit
ARB	Air Reserve Base
AU	upper alluvial aquifer unit
BD	bedrock aquifer unit
EGETS	expanded groundwater extraction and treatment system
GCG	groundwater cleanup goal
MDL	method detection limit
NE	not established
PQL	practical quantitation limit
RL	reporting limit

Laboratory-Assigned Qualifier
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifiers
(F) The compound was positively identified but the associated numerical value is below the PQL.
(S) Screening data (result not validated).

TABLE 4-4. HISTORICAL SITE 4 PCE AND TCE DATA
MARCH ARB, CALIFORNIA
(Page 1 of 4)

Well ID	Hydro. Unit	Relative Position to Site 4	Waste Submerged	PCE (µg/L) 2Q96	2Q98	2Q00	2Q02	2Q04	2Q06	2Q08	4Q08	2Q09	4Q09	2Q10	4Q10	2Q11	4Q11	2Q12	PCE Trend
4MW06	AU	Downgradient, off-Base	no	1.2 J	1.7	0.76	0.44 F	1.1	0.97 F	0.62 F	--	0.4 F	--	0.34 F	--	0.21 F	--	--	↓
4MW11	AU	Upgradient	no	**5.4**	**5.5**	2	2	0.88 F	1.2	1.7	--	1.5	--	1.2 J	--	0.91 F	--	--	↓
4MW12	AU	Crossgradient	no	< 0.4	--	3	--	**13.1**	**11**	**11**	--	**11**	--	**9.7 / 11**	--	**8.4**	**--**	**--**	↔
4MW13	AU	Downgradient, off-Base	no	1.4 J	3	2.2	2.7	1.8	0.91 F	1.2	--	0.83 F	--	0.66 F	--	0.44 F	--	0.52 F (F)	↓
4MW19	AU	Downgradient, off-Base	no	1.8 J	1.8	1	1.1	1.1	1.2	1.3	--	1	--	--	--	0.85 F	--	--	↔
4MW20	AU	Upgradient	no	< 0.4	0.53 J	< 0.088	3.3	**9.8**	**9.6**	**8.7**	--	**15**	--	**12**	--	**10 / 11**	**--**	--	↑
4MW21	AU	Crossgradient	no	**15**	**20**	**18**	**8.9**	**11.8**	**7.5**	4.4	--	**14**	--	**7.1**	--	**8.7**	**--**	**--**	↓
4MW22	AU	Crossgradient	no	0.7 J	0.9 J	4.6	3.2	3.5	3.1	4.2	--	4.1	--	4.9	--	4.1	--	3.3	↔
4MW23	AU	Northern Site 4	yes	2.8J	1.8	3.4	1.8	0.75 F	2.1	0.35 F	--	0.24 F	--	0.32 F	--	< 1	--	--	↓
4MW29	AU	Downgradient, off-Base	no	--	--	< 0.088	0.7	--	--	0.21 F	--	< 1	--	< 1	--	< 1	--	--	↔
4PZ01	AU	Northern Site 4	yes	--	--	< 0.088	--	--	--	1.6	0.84 F	0.6 F	0.47 F	--	--	--	--	--	↓
4PZ03	AU	Northern Site 4	yes	--	--	**38**	--	--	1.5	0.86 F	1.7	2	2.3	2.2	**--**	3	--	--	↔
4PZ04	AU	Northern Site 4	yes	--	--	0.8 J	--	--	--	2	1.6	1.9	--	2.1	**--**	--	--	--	↔
4PZ06	AU	Southern Site 4	no	--	--	< 0.088	--	--	--	4.7	**7.5**	**27**	--	**39**	**--**	**38**	**--**	**--**	↑
4PZ07	AU	Northern Site 4	yes	--	--	1	--	--	--	**6.3**	**5.8**	4.4	--	4	**--**	3.5 / 3.7	--	--	↔
4PZ09	AU	Northern Site 4	yes	--	--	1	--	--	--	0.7 F	0.72 F	0.9 F	--	--	**--**	< 1	--	--	↔
4PZ11	AU	Southern Site 4	no	--	--	< 0.088	--	--	--	< 1	0.23 F	< 1	--	< 1	**--**	< 1	--	--	↔
4PZ13	AU	Southern Site 4	no	--	--	**9.5**	--	--	-	**16**	**17**	**13**	**15**	**12**	**--**	**12**	**--**	**--**	↔
6M4MW24	AU	Upgradient	no	1.1 J	0.79 J	< 0.088	1.3	--	--	--	--	--	--	--	--	--	--	--	↔
OBMW10D	AU	Southern Site 4	no	--	0.66 J	< 0.5	< 0.5	< 1	< 1	< 1	--	1.6	--	2.9	--	1.3	--	< 1.0	↑
OU1MW06	AU	Southern Site 4	no	0.6 J	**14**	--	--	--	--	-	**21**	**19**	**15**	**15**	**14**	**14**	**12**	**--**	↔
OU1PZ08	AU	Crossgradient	no	--	**14**	**28**	**19**	**20.3**	**6.5**	2.8	--	**8.7**	--	**7.1**	--	**7.3 / 6.7**	**--**	**5.7**	↓
OU1PZ09	AU	Crossgradient	no	--	< 0.5	0.98	< 0.5	< 1	1.7	**6.2**	--	**7.2**	--	**6.7**	--	4.6	--	**7.1**	↑
OU1PZ10	AU	Southern Site 4	no	--	2.2	3.4	0.63	< 1	0.205 F	3.6	--	**5.1**	--	**5.6**	--	4.8	--	0.31 F (F)/ 0.30 F (F)	↓

TABLE 4-4. HISTORICAL SITE 4 PCE AND TCE DATA
MARCH ARB, CALIFORNIA
(Page 2 of 4)

Well ID	Hydro. Unit	Relative Position to Site 4	Waste Submerged	PCE (μg/L)															PCE Trend
				2Q96	2Q98	2Q00	2Q02	2Q04	2Q06	2Q08	4Q08	2Q09	4Q09	2Q10	4Q10	2Q11	4Q11	2Q12	
4MW04	AL	Upgradient	no	< 0.4	--	--	--	--	--	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4MW05	AL	Downgradient, off-Base	no	0.9 J	1.1	0.7 J	1.1	1.1	1.1	1.8	--	2.9	--	2.5	--	1.3 / 1.4	--	--	↔
4MW25A	AL	Southern Site 4	no	--	--	**22**	**39**	**67.8**	**54**	**54**	**47**	**34**	**38**	**33**	--	**27**	--	--	↔
4MW30	AL	Downgradient, off-Base	no	--	--	< 1	0.75	0.47 F	0.43 F	0.3 F	--	0.44 F	--	0.41 F	--	0.34 F	--	--	↔
4PZ02	AL	Northern Site 4	yes	--	--	2	--	--	--	< 1	0.64 F	0.69 F	--	--	--	--	--	--	↔
4PZ05	AL	Southern Site 4	yes	--	--	3	--	3.7	1.9	2.6	1.9	2.7	--	0.77 F	--	0.27 F	--	--	↓
4PZ08	AL	Northern Site 4	yes	--	--	**36**	--	--	--	**78**	**57**	**53**	**37**	**39**	--	**25**	--	--	↓
4PZ10	AL	Northern Site 4	yes	--	--	**14**	--	--	--	**24**	**18**	**15**	**12**	**10**	--	**12**	--	--	↓
4PZ12	AL	Southern Site 4	no	--	--	**22**	--	**15.2**	--	**12**	**9.6**	**10**	**7.6**	**8**	--	**9.4**	--	--	↓
OBMW10B	AL	Southern Site 4	no	--	**31**	**23 J**	**21**	**31**	**24**	**30**	--	**28**	--	**25**	--	**23**	--	**16**	↔
OBMW10C	AL	Southern Site 4	no	--	**21**	**23 J**	**34**	**38.7**	**26**	**26**	--	**20**	--	**17**	--	**14**	--	**12**	↓
OU1MW05	AL	Southern Site 4	no	**13**	**14 J**	**6.9**	2.1	4.6	**9**	**19**	--	**15**	--	**15**	--	**6.9**	--	3.1	↔
4MW01	BD	Southern Site 4	no	**56**	**40**	**34**	**28**	**26.4**	**20**	**26**	**23**	**31**	**26**	**35**	**25**	**28**	**22** (S)	**24** (S)	↔
4MW26A	BD	Southern Site 4	no	--	--	**5**	**19**	**37.4**	**17**	**34**	--	**31**	--	**30**	--	**1.5**	--	--	↓
4MW27A	BD	Northern Site 4	yes	--	--	4	< 0.5	**8.2**	**7.6**	**7.1**	--	**7.2**	--	**6.1**	--	**4.5**	--	--	↔
4MW28A	BD	Southern Site 4	no	--	--	< 0.088	2.4	0.32 F	0.35 F	0.37 F	--	0.28 F	--	0.23 F	--	0.21 F	--	--	↔
4MW31	BD	Upgradient	no	--	--	--	--	--	--	0.17 F	--	0.46 F	--	1.1	--	0.86 F	--	--	↔
OBMW10A	BD	Southern Site 4	no	--	**37**	**46**	**20**	**43.7**	**28**	**44**	--	**45**	--	**44**	--	**44**	--	**32**	↔
OU1MW04	BD	Southern Site 4	no	**65**	**60**	**89**	**43**	**82.1**	**78**	**7.2**	**78**	**92**	**77**	**70**	--	**70**	--	**95**	↔
4EX01	AU/BD	Southern Site 4	no	--	--	--	**38**	**34.8**	**19**	**15**	**13**	**15**	**12**	**16**	**13**	**12**	**8.6** (S)	**11** (S)	↓
4EX02	AU/BD	Northern Site 4	yes	--	--	--	**14**	**3.2**	**4**	**11**	**6**	**9.7**	**7.1**	**7**	**7.4**	**6.3**	**6.6** (S)	**7.8** (S)	↓

TABLE 4-4. HISTORICAL SITE 4 PCE AND TCE DATA
MARCH ARB, CALIFORNIA
(Page 3 of 4)

Well ID	Hydro. Unit	Relative Position to Site 4	Waste Submerged	TCE (μg/L) 2Q96	2Q98	2Q00	2Q02	2Q04	2Q06	2Q08	4Q08	2Q09	4Q09	2Q10	4Q10	2Q11	4Q11	2Q12	TCE Trend
4MW06	AU	Downgradient, off-Base	no	< 0.6	< 0.5	0.43 F	< 0.5	< 1	< 1	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4MW11	AU	Upgradient	no	1 J	1.3	0.4 J	0.36 F	< 1	0.29 F	< 1	--	< 1	--	< 1 J	--	< 1	--	--	↔
4MW12	AU	Crossgradient	no	< 0.6	--	0.8 J	--	2	1.5	1.8	--	1.6	--	**11**	--	1.3	--	**--**	↔
4MW13	AU	Downgradient, off-Base	no	0.9 J	1.8	1	1.8	1.1	0.49 F	0.55 F	--	0.43 F	--	0.31 F	--	0.21 F	--	0.27 F (F)	↓
4MW19	AU	Downgradient, off-Base	no	< 0.6	< 0.5	< 0.057	< 0.5	< 1	< 1	< 1	--	1.6	--	--	--	< 1	--	--	↔
4MW20	AU	Upgradient	no	1.4 J	1.1	< 0.057	2	4.9	3.5	2.7	--	2.6	--	2.1	--	1.8 / 2	--	--	↔
4MW21	AU	Crossgradient	no	1.6 J	3	2.8	2.2	1.6	0.9 F	0.66 F	--	2	--	0.94 F	--	1.1	--	**--**	↔
4MW22	AU	Crossgradient	no	< 0.5	0.93 J	1	1.1	1	0.91 F	0.97 F	--	0.85 F	--	0.82 F	--	0.63 F	--	0.66 F (F)	↔
4MW23	AU	Northern Site 4	yes	< 0.6	0.64 J	0.8 J	0.3 F	< 1	< 1	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4MW29	AU	Downgradient, off-Base	no	--	--	< 0.057	< 0.5	--	--	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4PZ01	AU	Northern Site 4	yes	--	--	< 0.057	--	--	--	< 1	< 1	< 1	0.34 F	--	--	--	--	--	↔
4PZ03	AU	Northern Site 4	yes	--	--	**29**	--	--	**6.6**	3.6	3.9	3.7	3.3	2.8	--	3.2	--	--	↓
4PZ04	AU	Southern Site 4	yes	--	--	< 0.057	--	--	--	1.3	1.1	1.6	--	1.6	--	--	--	--	↔
4PZ06	AU	Southern Site 4	no	--	--	< 0.057	--	--	--	1.3	1.7	3.7	--	4.5	--	4.4	--	**--**	↑
4PZ07	AU	Northern Site 4	yes	--	--	1	--	--	--	2.3	1.7	1	--	0.86 F	--	0.68 F	--	--	↔
4PZ09	AU	Northern Site 4	yes	--	--	< 0.057	--	--	--	< 1	< 1	< 1	--	--	--	0.24 F	--	--	↔
4PZ11	AU	Southern Site 4	no	--	--	< 0.057	--	--	--	3.5	4.4	4.9	--	1.9	--	1.7	--	--	↓
4PZ13	AU	Southern Site 4	no	--	--	2.1	--	--	--	2.4	2.5	2.4	3.1	2.7	--	2.5	--	**--**	↑
6M4MW24	AU	Upgradient	no	< 0.6	< 0.5	< 0.057	< 0.5	--	--	--	--	--	--	--	--	--	--	--	↔
OBMW10D	AU	Southern Site 4	no	--	< 0.5	< 0.5	< 0.5	< 1	< 1	< 1	--	1.3	--	3.3	--	**5.1**	**--**	1.1	↑
OU1MW06	AU	Southern Site 4	no	< 0.6	4.1	--	--	--	--	--	2.3	2.3	1.9	1.8	1.8	1.8	1.7	**--**	↓
OU1PZ08	AU	Crossgradient	no	--	**13**	**16**	**15**	**9.8**	2.5	0.88 F	--	2.8	--	1.2	--	2.2 / 2	--	0.65 F (F)	↓
OU1PZ09	AU	Crossgradient	no	--	< 0.5	0.35 F	< 0.5	< 1	0.33 F	1.7	--	1.6	--	1.4	--	0.96 F	--	1.2	↑
OU1PZ10	AU	Southern Site 4	no	--	0.66 F	0.76	< 0.5	< 1	< 1	0.87 F	--	0.92 F	--	0.74 F	--	0.67 F	--	< 1.0/ < 1.0	↔

TABLE 4-4. HISTORICAL SITE 4 PCE AND TCE DATA
MARCH ARB, CALIFORNIA
(Page 4 of 4)

Well ID	Hydro. Unit	Relative Position to Site 4	Waste Submerged	TCE (µg/L) 2Q96	2Q98	2Q00	2Q02	2Q04	2Q06	2Q08	4Q08	2Q09	4Q09	2Q10	4Q10	2Q11	4Q11	2Q12	TCE Trend
4MW04	AL	Upgradient	no	< 0.6	--	--	--	--	--	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4MW05	AL	Downgradient, off-Base	no	< 0.6	< 0.5	< 0.057	< 0.5	< 1	< 1	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4MW25A	AL	Southern Site 4	no	--	--	3	4.4	**6.8**	4.3	4.3	4.3	2.8	3.5	3	--	2.6	--	--	↔
4MW30	AL	Downgradient, off-Base	no	--	--	< 1	< 0.5	< 1	< 1	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4PZ02	AL	Northern Site 4	yes	--	--	< 0.057	--	--	--	0.44 F	0.23 F	0.22 F	--	--	--	--	--	--	↔
4PZ05	AL	Southern Site 4	yes	--	--	< 0.057	--	1.1	1.9 M	2.4	1.8	2.2	--	2.2	--	2.4	--	--	↔
4PZ08	AL	Northern Site 4	yes	--	--	2	--	--	--	**6.7**	**6.4**	**5.5**	4.4	**5.6**	--	**10**	--	--	↑
4PZ10	AL	Northern Site 4	yes	--	--	0.6 J	--	--	--	1.4	1.5	1.3	1.2	0.95 F	--	0.95 F	--	--	↔
4PZ12	AL	Southern Site 4	no	--	--	0.7 J	--	0.42 F	--	< 1	< 1	< 1	< 1	< 1	--	< 1	--	--	↔
OBMW10B	AL	Southern Site 4	no	--	3.7 J	1.4	3.7	4.1	**5.7**	**7.5**	--	**8.7**	--	**7.5**	--	**6.7**	--	**9.4**	↑
OBMW10C	AL	Southern Site 4	no	--	3.1 J	2	2.5	3.2	2.2	2.1	--	2.1	--	1.7	--	1.5	--	1.3	↔
OU1MW05	AL	Southern Site 4	no	**5.9**	**5.1**	1.6	1.1	1.5	3.1	2.9	--	2.2	--	2.3	--	1.4	--	0.74 F (F)	↓
4MW01	BD	Southern Site 4	no	**14**	**11**	**9.1**	**7.3**	**8.6**	**5.5**	**6.4**	**5.4**	**7.1**	**6.3**	**8.8**	**7**	**8.1**	**6.7** (S)	**7.1** (S)	↓
4MW26A	BD	Southern Site 4	no	--	--	0.7 J	3.4	3.8	2	4.4	--	3.7	--	4.5	--	**23**	--	--	↑
4MW27A	BD	Northern Site 4	yes	--	--	1	< 0.5	2	1.7	1.7	--	1.8	--	1.6	--	1.2	--	--	↔
4MW28A	BD	Southern Site 4	no	--	--	< 0.057	< 0.5	< 1	< 1	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
4MW31	BD	Upgradient	no	--	--	--	--	--	--	< 1	--	< 1	--	< 1	--	< 1	--	--	↔
OBMW10A	BD	Southern Site 4	no	--	2.4	3.3	2.1	2.3	1.6	2.3	--	2.7	--	< 1	--	2.8	--	2.8	↔
OU1MW04	BD	Southern Site 4	no	**20**	**18**	**24**	**21**	**23.1**	**30**	2.5	**24**	**31**	**25**	**24**	--	**24**	--	**27**	↔
4EX01	AU/BD	Southern Site 4	no	--	--	--	4	3.6	2.3	2.7	2	2.2	1.7	2.4	1.9	1.8	1.4 (S)	1.7 (S)	↔
4EX02	AU/BD	Northern Site 4	yes	--	--	--	4.2	3.7	3.2	3.4	2.4	2.7	2.3	2.9	2.3	2.2	1.9 (S)	2.2 (S)	↔

Notes:

Concentrations in **bold** were detected above water quality goals

↑	increasing trend estimated since 2000
↓	decreasing trend estimated since 2000
↔	unchanged trend estimated since 2000
--	not sampled
<	less than the displayed reporting limit
µg/L	micrograms per liter
AL	lower alluvial aquifer unit
AU	upper alluvial aquifer unit
ARB	Air Reserve Base
BD	bedrock aquifer unit
Hydro.	Hydrostratigraphic Unit
MDL	method detection limit
NA	not available, new monitoring well
PCE	tetrachloroethene
PQL	practical quantitation limit
Q	quarter
RL	reporting limit
TCE	trichloroethene

Laboratory-Assigned Qualifier:

F	Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.
J	Indicates analyte was detected. However, the analyte concentration is an estimated value which is between the MDL and the PQL.

Data Validation Qualifiers:

(F)	The compound was positively identified but the associated numerical value is below the PQL.
(M)	A matrix effect was present.
(S)	Screening data (result not validated).

TABLE 4-5. SUMMARY OF ANALYTICAL RESULTS FOR SITE 31 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 1 of 4)

		4MW14 AU	5M8MW05 AU	31AGEW01 AU	31MW02 AU	31MW04 AU		31MW06 AU	31MW07 BD	31MW08 AU	31OW01 AU
Analyte	GCG	05/30/2012	06/06/2012	05/22/2012	05/30/2012	12/21/2011	05/30/2012	05/31/2012	05/31/2012	05/30/2012	06/04/2012
Volatile Organics (μg/L)											
benzene	NE	< 0.40	< 0.40	< 0.40 (S)	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
chloroform	NE	**0.24** F (F)	**0.95**	**0.23** F (S)	< 0.50	**0.21** F (F)	**0.57**	< 0.50	< 0.50	**0.40** F (F)	< 0.50
1,2-dichloroethane	NE	< 0.50	< 0.50	< 0.50 (S)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-dichloroethene	6	< 1.0	< 1.0	< 1.0 (S)	< 1.0	**4.0**	**0.79** F (F)	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-dichloroethene	NE	< 1.0	< 1.0	< 1.0 (S)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
methyl tert-butyl ether (MTBE)	NE	< 5.0	< 5.0	< 5.0 (S)	< 5.0	**0.20** F (F)	**0.21** F (F)	< 5.0	< 5.0	< 5.0	< 5.0
tetrachloroethene (PCE)	NE	**1.8**	**0.56** F (F)	**0.84** F (S)	**0.51** F (F)	< 1.0	< 1.0	**0.73** F (F)	**0.91** F (F)	**1.1**	**0.62** F (F)
trichloroethene (TCE)	5	**0.25** F (F)	**0.48** F (F)	**0.98** F (S)	< 1.0	**22**	**5.3**	**0.29** F (F)	**2.2**	**0.29** F (F)	**0.35** F (F)

TABLE 4-5. SUMMARY OF ANALYTICAL RESULTS FOR SITE 31 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 2 of 4)

		31PW03PRC AU	31BDEW05D AU/AL		31BGEW02 AU/AL	31BGEW03 AU/BD			
Analyte	GCG	06/04/2012	06/04/2012	06/04/2012[(a)]	05/22/2012	09/08/2011	11/16/2011	01/03/2012	05/22/2012
Volatile Organics (µg/L)									
benzene	NE	<0.40	<0.40	<0.40	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)
chloroform	NE	<0.50	<0.50	<0.50	**3.4** (S)	**2.2** (S)	**1.6** (S)	**1.9** (S)	**1.6** (S)
1,2-dichloroethane	NE	<0.50	<0.50	<0.50	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
1,1-dichloroethene	6	<1.0	<1.0	<1.0	**5.1** (S)	**7.6** (S)	**6.9** (S)	**12** (S)	**3.2** (S)
cis-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	**0.40** F (S)
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)
tetrachloroethene (PCE)	NE	**0.96** F (F)	**3.3**	**3.0**	**2.1** (S)	**1.6** (S)	**0.97** F (S)	**1.4** (S)	**3.4** (S)
trichloroethene (TCE)	5	**5.4**	**0.87** F (F)	**0.79** F (F)	**28** (S)	**79** (S)	**88** (S)	**110** (S)	**46** (S)

TABLE 4-5. SUMMARY OF ANALYTICAL RESULTS FOR SITE 31 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 3 of 4)

		31BMW02 AU		OU1TW02 AU/BD			OU1MW15A BD		OU1MW15B BD	
Analyte	GCG	06/04/2012	06/04/2012[(a)]	11/16/2011	11/16/2011[(a)]	05/22/2012	12/22/2011	05/29/2012	05/29/2012	05/29/2012[(a)]
Volatile Organics (μg/L)										
benzene	NE	< 0.40	< 0.40	< 0.40 (S)	< 0.40 (S)	< 0.40 (S)	< 0.40	< 0.40	< 0.40	< 0.40
chloroform	NE	**8.5**	**8.9**	**7.5** (S)	**7.9** (S)	**10** (S)	**0.61**	**0.61**	< 0.50	< 0.50
1,2-dichloroethane	NE	< 0.50	< 0.50	< 0.50 (S)	< 0.50 (S)	< 0.50 (S)	< 0.50	< 0.50	< 0.50	< 0.50
1,1-dichloroethene	6	< 1.0	< 1.0	**0.37** F (S)	**0.40** F (S)	**0.46** F (S)	**0.81** F (F)	**0.75** F (F)	< 1.0	< 1.0
cis-1,2-dichloroethene	NE	< 1.0	< 1.0	**0.26** F (S)	**0.22** F (S)	**0.27** F (S)	**0.95** F (F)	**0.93** F (F)	**4.7**	**4.8**
methyl tert-butyl ether (MTBE)	NE	< 5.0	< 5.0	< 5.0 (S)	< 5.0 (S)	< 5.0 (S)	< 5.0	< 5.0	< 5.0	< 5.0
tetrachloroethene (PCE)	NE	**2.1**	**2.2**	**2.4** (S)	**2.5** (S)	**2.8** (S)	**1.6**	**1.5**	< 1.0	< 1.0
trichloroethene (TCE)	5	< 1.0	< 1.0	**5.2** (S)	**5.5** (S)	**5.1** (S)	**42**	**35**	**0.54** F (F)	**0.55** F (F)

TABLE 4-5. SUMMARY OF ANALYTICAL RESULTS FOR SITE 31 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 4 of 4)

		OU1MW16A BD		OU1MW16B BD	OU1MW19 AU
Analyte	GCG	11/16/2011	05/22/2012	05/30/2012	05/30/2012
Volatile Organics (µg/L)					
benzene	NE	<0.40 (S)	<0.40 (S)	**0.43**	<0.40
chloroform	NE	**0.78** (S)	**1.3** (S)	**1.2**	**0.71**
1,2-dichloroethane	NE	<0.50 (S)	<0.50 (S)	**0.27** F (F)	<0.50
1,1-dichloroethene	6	**0.98** F (S)	**1.2** (S)	**1.4**	**1.8**
cis-1,2-dichloroethene	NE	**1.1** (S)	**1.2** (S)	**2.2**	**0.44** F (F)
methyl tert-butyl ether (MTBE)	NE	<5.0 (S)	<5.0 (S)	<5.0	<5.0
tetrachloroethene (PCE)	NE	**2.0** (S)	**2.8** (S)	**3.3**	**3.0**
trichloroethene (TCE)	5	**36** (S)	**42** (S)	**75**	**36**

Notes:
[a] Field duplicate.

Highlighted concentrations exceed Site 31 Groundwater Cleanup Goal

<	less than
µg/L	micrograms per liter
AFRC	Air Force Reserve Command
AL	lower alluvial aquifer unit
ARB	Air Reserve Base
AU	upper alluvial aquifer unit
BD	bedrock aquifer unit
GCG	groundwater cleanup goal
MDL	method detection limit
NE	not established
PQL	practical quantitation limit
RL	reporting limit

Laboratory-Assigned Qualifier:
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifiers:
(F) The compound was positively identified but the associated numerical value is below the PQL.
(S) Screening data (result not validated).

TABLE 4-6. SUMMARY OF ANALYTICAL RESULTS FOR SITE 7 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC AND AFRPA GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA

		5MW03 AU	5MW04 AU		7MW03 AU	7MW04 AU	EX05A AU		EX06 AU		OU1GEW04 AU/AL/BD	
Analyte	GCG	05/29/2012	12/22/2011	05/29/2012	05/29/2012	05/29/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012
Volatile Organics (μg/L)												
benzene	1	<0.40	**0.62**	**2.1**	<0.40	<0.40	**0.39** F (S)	**0.69** (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)
carbon tetrachloride (CTCL)	0.5	<0.50	<0.50	<0.50	**0.55**	**0.45** F (F)	<0.50 (S)	**0.27** F (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
chloroform	NE	**1.8**	**1.5**	**0.95**	**2.7**	**2.7**	**2.0** (S)	**2.2** (S)	<0.50 (S)	**0.25** F (S)	**0.25** F (S)	**0.24** F (S)
1,1-dichloroethane	NE	**0.31** F (F)	<1.0	<1.0	**0.45** F (F)	**0.28** F (F)	**0.53** F (S)	**0.59** F (S)	<1.0 (S)	**0.24** F (S)	<1.0 (S)	<1.0 (S)
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	**0.42** F (S)	**0.55** F (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
cis-1,2-dichloroethene	6	<1.0	**0.27** F (F)	**0.38** F (F)	**0.29** F (F)	**0.31** F (F)	**130** (S)	**150** (S)	**0.22** F (S)	**0.25** F (S)	**4.5** (S)	**2.2** (S)
tetrachloroethene (PCE)	5	**3.6**	**1.4**	**0.81** F (F)	**4.6**	**4.1**	**3.2** (S)	**4.2** (S)	**0.61** F (S)	**0.90** F (S)	**1.6** (S)	**1.9** (S)
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	**0.23** F (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
trichloroethene (TCE)	5	**2.8**	**23**	**20**	**3.0**	**3.0**	**59** (S)	**89** (S)	**2.2** (S)	**2.6** (S)	**30** (S)	**29** (S)

Notes:
Highlighted concentrations exceed OU 1 Groundwater Cleanup Goal.

<	less than
μg/L	micrograms per liter
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
AL	lower alluvial aquifer unit
ARB	Air Reserve Base
AU	upper alluvial aquifer unit
BD	bedrock aquifer unit
GCG	groundwater cleanup goal
MDL	method detection limit
NE	not established
OU	operable unit
PQL	practical quantitation limit
RL	reporting limit

Laboratory-Assigned Qualifier:
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifiers:
(F) The compound was positively identified but the associated numerical value is below the PQL.
(S) Screening data (result not validated).

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 1 of 21)

		EGETS									
		EX01 AU		EX02 AU	EX03 AU			EX04 AU		EX05A AU	
Analyte	GCG	11/16/2011	05/22/2012	11/16/2011	11/16/2011	11/16/2011[(a)]	05/22/2012	05/22/2012	05/22/2012[(a)]	11/16/2011	05/22/2012
Volatile Organics (µg/L)											
benzene	1	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	**0.39** F (S)	**0.69** (S)
carbon tetrachloride	0.5	<0.50 (S)	<0.50 (S)	**0.21** F (S)	**0.42** F (S)	**0.44** F (S)	**0.64** (S)	**0.80** (S)	**0.78** (S)	<0.50 (S)	**0.27** F (S)
chlorobenzene	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
chloroform	NE	**0.73** (S)	**0.85** (S)	**1.4** (S)	**2.0** (S)	**2.0** (S)	**2.3** (S)	**3.1** (S)	**3.1** (S)	**2.0** (S)	**2.2** (S)
1,1-dichloroethane	NE	<1.0 (S)	**0.20** F (S)	**0.28** F (S)	**0.32** F (S)	**0.33** F (S)	**0.37** F (S)	**0.37** F (S)	**0.34** F (S)	**0.53** F (S)	**0.59** F (S)
1,2-dichloroethane	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
1,1-dichloroethene	6	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	**0.42** F (S)	**0.55** F (S)
cis-1,2-dichloroethene	6	**0.21** F (S)	<1.0 (S)	**0.20** F (S)	**0.25** F (S)	**0.26** F (S)	**0.28** F (S)	**0.46** F (S)	**0.41** F (S)	**130** (S)	**150** (S)
trans-1,2-dichloroethene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
ethylbenzene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
methyl tert-butyl ether (MTBE)	NE	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)
tetrachloroethene (PCE)	5	**2.7** (S)	**3.6** (S)	**3.0** (S)	**4.1** (S)	**4.2** (S)	**5.6** (S)	**6.5** (S)	**6.4** (S)	**3.2** (S)	**4.2** (S)
toluene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	**0.23** F (S)
trichloroethene (TCE)	5	**2.0** (S)	**2.5** (S)	**1.3** (S)	**1.7** (S)	**1.7** (S)	**2.4** (S)	**3.4** (S)	**3.4** (S)	**59** (S)	**89** (S)
vinyl chloride	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
m- & p-xylene	NE	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)
o-xylene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 2 of 21)

		EGETS (cont'd)									
		EX06 AU		OU1GEW01 AU		OU1GEW02 AU		OU1GEW03 AU/AL		OU1GEW04 AU/AL/BD	
Analyte	GCG	11/16/2011	05/22/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012
Volatile Organics (µg/L)											
benzene	1	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)
carbon tetrachloride	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	**0.51** (S)	**0.79** (S)	<0.50 (S)	<0.50 (S)
chlorobenzene	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
chloroform	NE	<0.50 (S)	**0.25** F (S)	**0.26** F (S)	**0.47** F (S)	**1.0** (S)	**1.2** (S)	**1.5** (S)	**1.8** (S)	**0.25** F (S)	**0.24** F (S)
1,1-dichloroethane	NE	<1.0 (S)	**0.24** F (S)	<1.0 (S)	<1.0 (S)	**0.26** F (S)	**0.30** F (S)	**0.31** F (S)	**0.36** F (S)	<1.0 (S)	<1.0 (S)
1,2-dichloroethane	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
1,1-dichloroethene	6	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
cis-1,2-dichloroethene	6	**0.22** F (S)	**0.25** F (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	**0.22** F (S)	**0.31** F (S)	**0.25** F (S)	**4.5** (S)	**2.2** (S)
trans-1,2-dichloroethene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
ethylbenzene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
methyl tert-butyl ether (MTBE)	NE	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)
tetrachloroethene (PCE)	5	**0.61** F (S)	**0.90** F (S)	**1.2** (S)	**2.6** (S)	**2.8** (S)	**3.5** (S)	**6.0** (S)	**7.3** (S)	**1.6** (S)	**1.9** (S)
toluene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
trichloroethene (TCE)	5	**2.2** (S)	**2.6** (S)	**2.0** (S)	**3.2** (S)	**2.6** (S)	**4.0** (S)	**2.2** (S)	**2.8** (S)	**30** (S)	**29** (S)
vinyl chloride	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
m- & p-xylene	NE	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)
o-xylene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 3 of 21)

		EGETS (cont'd)								
		OU1GEW05	OU1MW12		OU1TW02			OU1TW03		
		AU/AL	AU		AU/BD			BD		
Analyte	GCG	05/22/2012	11/16/2011	05/22/2012	11/16/2011	11/16/2011[(a)]	05/22/2012	11/16/2011	05/22/2012	05/22/2012[(a)]
Volatile Organics (µg/L)										
benzene	1	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)
carbon tetrachloride	0.5	**0.42** F (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
chlorobenzene	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
chloroform	NE	**0.72** (S)	**0.64** (S)	**0.76** (S)	**7.5** (S)	**7.9** (S)	**10** (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
1,1-dichloroethane	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
1,2-dichloroethane	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
1,1-dichloroethene	6	<1.0 (S)	<1.0 (S)	<1.0 (S)	**0.37** F (S)	**0.40** F (S)	**0.46** F (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
cis-1,2-dichloroethene	6	<1.0 (S)	<1.0 (S)	<1.0 (S)	**0.26** F (S)	**0.22** F (S)	**0.27** F (S)	**5.3** (S)	**3.9** (S)	**3.8** (S)
trans-1,2-dichloroethene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
ethylbenzene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
methyl tert-butyl ether (MTBE)	NE	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)
tetrachloroethene (PCE)	5	**3.2** (S)	**1.3** (S)	**1.9** (S)	**2.4** (S)	**2.5** (S)	**2.8** (S)	**7.3** (S)	**6.7** (S)	**6.8** (S)
toluene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)
trichloroethene (TCE)	5	**1.4** (S)	**7.3** (S)	**10** (S)	**5.2** (S)	**5.5** (S)	**5.1** (S)	**2.5** (S)	**1.9** (S)	**1.9** (S)
vinyl chloride	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)
m- & p-xylene	NE	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)
o-xylene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 4 of 21)

		Site 4									
		4EX01 AU/BD		4EX02 AU/BD		4MW01 BD		4MW07 AU		4MW08 BD	4MW13 AU
Analyte	GCG	11/16/2011	05/22/2012	11/16/2011	05/22/2012	11/16/2011	05/22/2012	05/21/2012	05/21/2012[(a)]	06/06/2012	05/24/2012
Volatile Organics (µg/L)											
benzene	1	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50
chloroform	NE	<0.50 (S)	**0.22** F (S)	**0.22** F (S)	**0.26** F (S)	**0.24** F (S)	**0.25** F (S)	**4.0**	**3.9**	**0.28** F (F)	<0.50
1,1-dichloroethane	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	**2.9** (S)	**2.7** (S)	**3.8** (S)	**3.9** (S)	**12** (S)	**13** (S)	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**8.6** (S)	**11** (S)	**6.6** (S)	**7.8** (S)	**22** (S)	**24** (S)	**2.2**	**2.3**	**0.22** F (F)	**0.52** F (F)
toluene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**1.4** (S)	**1.7** (S)	**1.9** (S)	**2.2** (S)	**6.7** (S)	**7.1** (S)	**9.1**	**10**	**4.3**	**0.27** F (F)
vinyl chloride	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 5 of 21)

		Site 4 (cont'd)				Site 5					
		4MW14 AU	4MW16 AU		4MW18 AU	5MW01 AU	5MW02 AL	5MW03 AU	5MW04 AU		5MW07 AL
Analyte	GCG	05/30/2012	12/22/2011	05/29/2012	05/24/2012	06/01/2012	05/24/2012	05/29/2012	12/22/2011	05/29/2012	05/30/2012
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	**0.62**	**2.1**	**0.37** F (F)
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	**0.79**	<0.50	<0.50	<0.50	**0.20** F (F)
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.24** F (F)	**0.27** F (F)	**0.22** F (F)	<0.50	**1.3**	**0.89**	**1.8**	**1.5**	**0.95**	**1.0**
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	**0.28** F (F)	<1.0	**0.31** F (F)	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	**1.2**	<1.0	<1.0	<1.0	**0.27** F (F)	**0.38** F (F)	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**1.8**	**1.2**	**1.0**	**4.0**	**3.2**	**1.2**	**3.6**	**1.4**	**0.81** F (F)	**1.9**
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**0.25** F (F)	<1.0	<1.0	**2.3**	**1.2**	**9.7**	**2.8**	**23**	**20**	**12**
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 6 of 21)

		Site 5 (cont'd)									
		5MW08 AU/AL	5MW09 AU	5MW14 AL	5MW16 AU	5MW18 AU	5MW23 AL	5MW28 BD	5MW29 BD	5MW30 BD	
Analyte	GCG	05/31/2012	05/30/2012	05/24/2012	05/31/2012	05/30/2012	05/31/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012[(a)]
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	**0.27** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.27** F (F)	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	**4.6**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**1.3**	<0.50	**0.32** F (F)	**0.22** F (F)	<0.50	<0.50	<0.50	**0.75**	<0.50	<0.50
1,1-dichloroethane	NE	**0.27** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	**0.47** F (F)	<1.0	**5.2**	<1.0	<1.0	<1.0	**2.0**	**0.22** F (F)	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	**0.23** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**2.5**	<1.0	**0.47** F (F)	**0.58** F (F)	<1.0	<1.0	**0.21** F (F)	**4.4**	<1.0	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**7.6**	<1.0	**4.3**	**2.1**	**0.65** F (F)	**0.42** F (F)	**6.4**	**6.8**	**1.6**	**0.69** F (F)
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 7 of 21)

		Site 5 (cont'd)					Site 7				Site 8
		5MW31	5MW32	5MW33		5MW34	7MW01		7MW03	7MW04	5M8MW05
		AU	AL	AL		AL	AU		AU	AU	AU
Analyte	GCG	05/21/2012	05/31/2012	05/30/2012	05/30/2012[(a)]	05/30/2012	12/22/2011	05/29/2012	05/29/2012	05/29/2012	06/06/2012
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	**3.9**	**3.6**	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.55**	**0.45** F (F)	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.23** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**2.7**	**2.7**	**0.95**
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	**0.54** F (F)	**0.57** F (F)	**0.45** F (F)	**0.28** F (F)	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.29** F (F)	**0.31** F (F)	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**8.9**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**4.6**	**4.1**	**0.56** F (F)
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**7.3**	<1.0	**0.30** F (F)	**0.27** F (F)	<1.0	<1.0	<1.0	**3.0**	**3.0**	**0.48** F (F)
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 8 of 21)

		Site 9		Site 15			Site 23		Site 29	
		9MW01 AU	9MW02 BD	15MW01 AU	15MW02 AU	15MW03 AU	23MW02 AL		29MW01 AU	
Analyte	GCG	06/07/2012	06/01/2012	06/05/2012	05/24/2012	06/05/2012	05/21/2012	05/21/2012[(a)]	01/10/2012	05/30/2012
Volatile Organics (µg/L)										
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	**4.4**	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	**0.38** F (F)	**0.67**	**0.55**	**0.37** F (F)	**0.32** F (F)	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.77**	<0.50	**1.2**	**2.8**	**2.9**	**0.33** F (F)	**0.31** F (F)	**1.1**	**0.56**
1,1-dichloroethane	NE	**0.54** F (F)	<1.0	**0.25** F (F)	**0.33** F (F)	**0.27** F (F)	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	**0.71** F (F)	<1.0	<1.0	**0.33** F (F)	**0.34** F (F)	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.85** F (F)	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**2.6** F (F)	<5.0	<5.0
tetrachloroethene (PCE)	5	**2.6**	<1.0	**2.5**	**5.6**	**5.3**	<1.0	<1.0	**2.1**	**1.0**
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**4.0**	<1.0	<1.0
trichloroethene (TCE)	5	**3.8**	**0.52** F (F)	**2.6**	**2.7**	**5.0**	**3.5**	**3.1**	**16**	**6.4**
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**2.2**	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.3**	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 9 of 21)

		Site 29 (cont'd)				Site 31A					
		29MW03		29MW04	29OW01	31AGEW01	31MW02	31MW04		31MW05	31MW06
		BD		AU	BD	AU	AU	AU		BD	AU
Analyte	GCG	06/01/2012	06/01/2012[a]	05/30/2012	06/01/2012	05/22/2012	05/30/2012	12/21/2011	05/30/2012	06/05/2012	05/31/2012
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40 (S)	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	**0.26** F (F)	<0.50	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	<0.50	<0.50	**0.89**	**0.47** F (F)	**0.23** F (S)	<0.50	**0.21** F (F)	**0.57**	<0.50	<0.50
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	**4.0**	**0.79** F (F)	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0 (S)	<5.0	**0.20** F (F)	**0.21** F (F)	<5.0	<5.0
tetrachloroethene (PCE)	5	<1.0	<1.0	**1.1**	<1.0	**0.84** F (S)	**0.51** F (F)	<1.0	<1.0	<1.0	**0.73** F (F)
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**0.55** F (F)	**0.47** F (F)	**4.9**	**2.3**	**0.98** F (S)	<1.0	**22**	**5.3**	**4.0**	**0.29** F (F)
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0 (S)	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 10 of 21)

		Site 31A (cont'd)				Site 31B		
		31MW07 BD	31MW08 AU	31OW01 AU	31PW03PRC AU	31BDEW05D AU/AL		31BGEW02 AU/AL
Analyte	GCG	05/31/2012	05/30/2012	06/04/2012	06/04/2012	06/04/2012	06/04/2012[a]	05/22/2012
Volatile Organics (µg/L)								
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40 (S)
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 (S)
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 (S)
chloroform	NE	<0.50	**0.40** F (F)	<0.50	<0.50	<0.50	<0.50	**3.4** (S)
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 (S)
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**5.1** (S)
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0 (S)
tetrachloroethene (PCE)	5	**0.91** F (F)	**1.1**	**0.62** F (F)	**0.96** F (F)	**3.3**	**3.0**	**2.1** (S)
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)
trichloroethene (TCE)	5	**2.2**	**0.29** F (F)	**0.35** F (F)	**5.4**	**0.87** F (F)	**0.79** F (F)	**28 (S)**
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 (S)
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0 (S)
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 11 of 21)

		Site 31B (cont'd)						Site 34		
		31BGEW03 AU/BD				31BMW02 AU		34MW02 AL	34MW04 AU	34MW06 AU
Analyte	GCG	09/08/2011	11/16/2011	01/03/2012	05/22/2012	06/04/2012	06/04/2012[(a)]	05/31/2012	05/31/2012	05/31/2012
Volatile Organics (µg/L)										
benzene	1	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40 (S)	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**2.2** (S)	**1.6** (S)	**1.9** (S)	**1.6** (S)	**8.5**	**8.9**	<0.50	**1.3**	**0.41** F (F)
1,1-dichloroethane	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	**7.6** (S)	**6.9** (S)	**12** (S)	**3.2** (S)	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0 (S)	<1.0 (S)	<1.0 (S)	**0.40** F (S)	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0 (S)	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**1.6** (S)	**0.97** F (S)	**1.4** (S)	**3.4** (S)	**2.1**	**2.2**	**0.96** F (F)	**2.1**	**1.9**
toluene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**79** (S)	**88** (S)	**110** (S)	**46** (S)	<1.0	<1.0	**1.3**	**0.58** F (F)	**0.45** F (F)
vinyl chloride	NE	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0 (S)	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 12 of 21)

		OU 1									
		EX07 AU	EX08 AU	OBMW01A BD	OBMW01B AU	OBMW02B BD	OBMW03 AU			OBMW04A AU	OBMW06A AU
Analyte	GCG	05/30/2012	05/31/2012	05/21/2012	05/31/2012	05/24/2012	12/22/2011	12/22/2011[(a)]	05/30/2012	06/06/2012	06/13/2012
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	<0.50	**0.67**	**0.46** F (F)	**0.32** F (F)	**0.36** F (F)	**0.24** F (F)	**0.24** F (F)	**0.25** F (F)	<0.50	**0.25** F (F)
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	**0.28** F (F)	**0.26** F (F)	**0.21** F (F)	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**0.55** F (F)	**1.6**	**0.83** F (F)	**0.22** F (F)	**5.3**	**1.7**	**1.8**	**3.8**	**1.2**	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**0.91** F (F)	**6.0**	<1.0	<1.0	**0.42** F (F)	**9.2**	**9.3**	**9.9**	**2.4**	<1.0
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 13 of 21)

		OU 1 (cont'd)									
		OBMW06B AL	OBMW06C AL	OBMW07A AL		OBMW07B AL	OBMW08A AL	OBMW08B AL	OBMW08C AL	OBMW08D AL	OBMW09B AL
Analyte	GCG	06/13/2012	06/13/2012	05/30/2012	05/30/2012[(a)]	05/30/2012	06/11/2012	06/12/2012	06/12/2012	06/12/2012	05/30/2012
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	**0.21** F (F)	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	**0.30** F (F)	**0.29** F (F)	**0.47** F (F)	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.26** F (F)	<0.50	<0.50	<0.50	**0.58**	**1.4**	**1.0**	<0.50	<0.50	**0.41** F (F)
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.22** F (F)	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.57** F (F)	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0 (M)	<5.0 (M)	<5.0 (M)	**0.29** F (F M)	<5.0
tetrachloroethene (PCE)	5	<1.0	<1.0	<1.0	<1.0	**0.21** F (F)	**3.6**	**2.0**	<1.0	<1.0	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.32** F (F)	<1.0
trichloroethene (TCE)	5	**1.2**	<1.0	**0.89** F (F)	**1.2**	**4.9**	**1.8**	**6.0**	**0.36** F (F)	<1.0	**13**
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 14 of 21)

		OU 1 (cont'd)									
		OBMW10D AU	OU1MW01 BD	OU1MW02 AU	OU1MW03 BD	OU1MW04 BD	OU1MW05 AL	OU1MW06 AU	OU1MW07 BD	OU1MW08 AU	OU1MW09 AU
Analyte	GCG	05/29/2012	05/21/2012	06/05/2012	06/05/2012	05/30/2012	05/30/2012	12/21/2011	06/01/2012	06/01/2012	05/24/2012
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	**0.23** F (F)	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.35** F (F)
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	<0.50	<0.50	<0.50	**0.50**	**0.87**	<0.50	<0.50	<0.50	<0.50	**1.4**
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	**0.45** F (F)	<1.0	<1.0	<1.0	<1.0	**0.30** F (F)
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	**0.69** F (F)	<1.0	<1.0	**0.33** F (F)	**49**	**3.0**	**2.6**	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	**0.41** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	<1.0	**0.25** F (F)	**1.0**	**4.0**	**95**	**3.1**	**12**	<1.0	**0.71** F (F)	**5.6**
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**1.1**	**0.88** F (F)	**0.23** F (F)	**2.3**	**27**	**0.74** F (F)	**1.7**	**0.38** F (F)	**2.1**	**4.2**
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	**0.20** F (F)	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 15 of 21)

		OU 1 (cont'd)								
		OU1MW10 BD	OU1MW11 AL	OU1MW13 AL		OU1MW14 BD	OU1MW15A BD		OU1MW15B BD	
Analyte	GCG	05/30/2012	05/31/2012	05/30/2012	05/30/2012[(a)]	05/24/2012	12/22/2011	05/29/2012	05/29/2012	05/29/2012[(a)]
Volatile Organics (µg/L)										
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	**1.6**	<0.50	**0.71**	**0.64**	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.85**	<0.50	**0.60**	**0.57**	<0.50	**0.61**	**0.61**	<0.50	<0.50
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	**0.81** F (F)	**0.75** F (F)	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	**0.95** F (F)	**0.93** F (F)	**4.7**	**4.8**
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**1.6**	<1.0	**0.92** F (F)	**0.76** F (F)	<1.0	**1.6**	**1.5**	<1.0	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**0.78** F (F)	<1.0	**6.2**	**5.6**	<1.0	**42**	**35**	**0.54** F (F)	**0.55** F (F)
vinyl chloride	NE	<0.50	**0.22** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 16 of 21)

		OU 1 (cont'd)								
		OU1MW16A BD		OU1MW16B BD	OU1MW18 AU	OU1MW19 AU	OU1MW24A AL		OU1MW24B AU	
Analyte	GCG	11/16/2011	05/22/2012	05/30/2012	05/30/2012	05/30/2012	12/22/2011	05/30/2012	12/22/2011	05/30/2012
Volatile Organics (µg/L)										
benzene	1	<0.40 (S)	<0.40 (S)	**0.43**	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50 (S)	<0.50 (S)	<0.50	**0.37** F (F)	<0.50	**0.73**	**0.90**	**0.46** F (F)	**0.47** F (F)
chlorobenzene	NE	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.78** (S)	**1.3** (S)	**1.2**	**0.47** F (F)	**0.71**	**1.3**	**1.6**	**2.0**	**1.7**
1,1-dichloroethane	NE	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0	**0.31** F (F)	**0.27** F (F)
1,2-dichloroethane	0.5	<0.50 (S)	<0.50 (S)	**0.27** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	**0.98** F (S)	**1.2** (S)	**1.4**	<1.0	**1.8**	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	**1.1** (S)	**1.2** (S)	**2.2**	<1.0	**0.44** F (F)	<1.0	<1.0	**0.23** F (F)	<1.0
trans-1,2-dichloroethene	NE	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0 (S)	<5.0 (S)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**2.0** (S)	**2.8** (S)	**3.3**	**1.2**	**3.0**	**4.2**	**5.4**	**4.7**	**4.4**
toluene	NE	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**36** (S)	**42** (S)	**75**	**5.7**	**36**	**5.3**	**6.7**	**1.6**	**1.5**
vinyl chloride	NE	<0.50 (S)	<0.50 (S)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0 (S)	<2.0 (S)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0 (S)	<1.0 (S)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 17 of 21)

		OU 1 (cont'd)									
		OU1MW25 BD		OU1MW27 BD	OU1OW01 AU	OU1OW02 BD	OU1OW03 BD	OU1OW04 BD	OU1PZ05 AU	OU1PZ07 AU	OU1PZ08 AU
Analyte	GCG	12/22/2011	05/24/2012	05/24/2012	05/30/2012	06/05/2012	06/05/2012	06/05/2012	05/30/2012	05/30/2012	05/30/2012
Volatile Organics (µg/L)											
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.30** F (F)	**0.32** F (F)	**0.32** F (F)	**1.1**	**0.28** F (F)	<0.50	<0.50	**5.1**	**3.6**	<0.50
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	**0.36** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.45** F (F)	**0.39** F (F)	<1.0
cis-1,2-dichloroethene	6	**0.76** F (F)	**0.84** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	**0.37** F (F)	**0.21** F (F)	**1.0**
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**1.7**	**1.9**	**1.3**	**1.8**	**1.7**	<1.0	<1.0	**5.5**	**5.4**	**5.7**
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**8.6**	**10**	**0.21** F (F)	**5.8**	**5.2**	<1.0	**0.62** F (F)	**5.5**	**4.3**	**0.65** F (F)
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 18 of 21)

		OU 1 (cont'd)								
		OU1PZ09 AU	OU1PZ10 AU		RBEMW01A AL	RBEMW01B AL		RBEMW01C AL	RBEMW01D AL	RBEMW01E AL
Analyte	GCG	05/30/2012	05/31/2012	05/31/2012[(a)]	06/13/2012	06/13/2012	06/13/2012[(a)]	06/13/2012	06/13/2012	06/13/2012
Volatile Organics (µg/L)										
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.22** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.20** F (F)
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.21** F (F)
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	**1.0**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	**7.1**	**0.31** F (F)	**0.30** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**1.2**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.33** F (F)
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 19 of 21)

		OU 1 (cont'd)								
		RBEMW02A AL	RBEMW02B AU	RBEMW03A AL	RBEMW03B AL	RBEMW07A AU	RBEMW07B AL	RBEMW11A AU	RBEMW11B AL	
Analyte	GCG	05/21/2012	05/31/2012	05/31/2012	05/31/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012[(a)]
Volatile Organics (µg/L)										
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	**0.22** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	**0.32** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**3.1**	**1.4**	<1.0	<1.0	<1.0	<1.0	**2.4**	**0.23** F (F)	<1.0
vinyl chloride	NE	<0.50	**0.37** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 20 of 21)

		OU 1 (cont'd)								
		RBEMW11C AL	RBEMW11D AL	RBEMW11E BD	RBEMW13A AU	RBEMW13B AL	RBEMW13C AL		RBEMW13D AL	RBEMW13E AL
Analyte	GCG	06/12/2012	06/12/2012	06/12/2012	06/13/2012	06/13/2012	06/13/2012	06/13/2012[(a)]	06/13/2012	06/13/2012
Volatile Organics (µg/L)										
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	<0.50	<0.50	<0.50	**0.25** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	**1.7**	<1.0	<1.0	**0.66** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 4-7. SUMMARY OF ANALYTICAL RESULTS FOR OU 1 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 21 of 21)

		Water Supply Wells						
		BOWERS AL		CLARK1 AL		MENDEZ AU/AL	NODARSE AL	TERAO AL
Analyte	GCG	01/10/2012	05/22/2012	05/22/2012	05/22/2012[a]	05/22/2012	05/22/2012	05/22/2012
Volatile Organics (µg/L)								
benzene	1	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride (CTCL)	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NE	<0.50	<0.50	**1.0**	**1.0**	**0.22** F (F)	<0.50	**0.92**
1,1-dichloroethane	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5	<0.50	<0.50	**0.27** F (F)	**0.30** F (F)	<0.50	<0.50	<0.50
1,1-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
vinyl chloride	NE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Notes:
(a) Field Duplicate
Highlighted concentrations exceed OU 1 Groundwater Cleanup Goal.

<	less than	BD	bedrock aquifer unit	NE	not established
µg/L	micrograms per liter	EGETS	expanded groundwater extraction and treatment system	OU	operable unit
AFRC	Air Force Reserve Command	GCG	groundwater cleanup goal	PQL	practical quantitation limit
AFRPA	Air Force Real Property Agency	MDL	method detection limit	RL	reporting limit
AL	lower alluvial aquifer unit				
ARB	Air Reserve Base				
AU	upper alluvial aquifer unit				

Laboratory-Assigned Qualifier:
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifiers:
(F) The compound was positively identified but the associated numerical value is below the PQL.
(M) A matrix effect was present.
(S) Screening data (result not validated).

TABLE 4-8. WATER SUPPLY GUARD WELL UPPER CONFIDENCE LIMIT EVALUATION
LONG-TERM GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA

		Evaluation of Guard Well TCE 95% UCL					Evaluation of Guard Well PCE 95% UCL				
Water Supply Guard Well	Associated Water Supply Well(s)	Sample Date Range	Sample Concentration Range (µg/L)	95% UCL	UCL Method	Percent of MCL	Sample Date Range	Sample Concentration Range (µg/L)	95% UCL	UCL Method	Percent of MCL
5MW23	Bowers, Johnson	11/2007 - 5/2012	<1.0 - 0.57	0.492	95% KM (Percentile Bootstrap) UCL	10%	11/2007 - 5/2012	ND	NC	NA	NA
5MW32	Bowers, Johnson	6/2009 - 5/2012	ND	NC	NA	NA	6/2009 - 5/2012	ND	NC	NA	NA
5MW33	Clark, Indian	9/2007 - 5/2012	0.30 - 0.65	0.651	95% Student's-t UCL	13%	9/2007 - 5/2012	ND	NC	NA	NA
5MW34	Clark, Indian	11/2007 - 5/2012	ND	NC	NA	NA	11/2007 - 5/2012	ND	NC	NA	NA
OBMW06A	Lee, Perry	6/2009 - 6/2012	ND	NC	NA	NA	6/2009 - 6/2012	ND	NC	NA	NA
OBMW06B	Lee, Perry	6/2009 - 6/2012	0.94 - 1.2	1.164	95% Student's-t UCL	23%	6/2009 - 6/2012	ND	NC	NA	NA
OBMW06C	Lee, Perry	6/2009 - 6/2012	ND	NC	NA	NA	6/2009 - 6/2012	ND	NC	NA	NA
RBEMW01A	Mendez, Nodarse	6/2009 - 6/2012	ND	NC	NA	NA	6/2009 - 6/2012	ND	NC	NA	NA
RBEMW01B	Mendez, Nodarse	6/2008 - 6/2012	ND	NC	NA	NA	6/2008 - 6/2012	ND	NC	NA	NA

Notes:
The results from the last five sampling dates were used to determine 95% UCL values.

<	less than the displayed reporting limit
%	percent
µg/L	micrograms per liter
ARB	Air Reserve Base
MCL	maximum contaminant level
NA	not available
NC	not calculated
ND	not detected
RL	reporting limit
UCL	upper confidence limit

TABLE 4-9. PARTIAL EGETS OPERATION ANALYTICAL RESULTS SUMMARY
LONG-TERM GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 1 of 2)

Extraction/ Injection Well	Status	Associated Monitoring Well	Historical Maximum Concentration			November 2006 Concentration			May/June 2012 Concentration		
			Carbon Tetrachloride (µg/L)	PCE (µg/L)	TCE (µg/L)	Carbon Tetrachloride (µg/L)	PCE (µg/L)	TCE (µg/L)	Carbon Tetrachloride (µg/L)	PCE (µg/L)	TCE (µg/L)
EX01	inactive		**1.8** (Jul-99)	**9.5** (Jul-02)	**180** (Nov-94)	<0.50/<0.50	**4.4/4.2**	**5.9/5.6**	<0.50 (S)	**3.6** (S)	2.5 (S)
		OBMW04A	ND	1.9 (Mar-99)	**32** (Sept-98)	<0.50/<0.50	<1.0/<1.0	4.3/4.0	<0.50	**1.2**	2.4
EX02	inactive		**1.3** J (Aug-94)	**24** (Jul-99)	**36** (Apr-98)	0.45 J (F)	**5.8**	1.5	NS	NS	NS
		OU1MW09	**0.82** (Dec-00)	**11.6** (Nov-03)	**21** (Mar-99)	0.23 J (F)	**6.1**	3.7	0.35 F (F)	**5.6**	4.2
EX03	inactive		**2.1** (Nov-94)	**14** (Jul-99)	**11** (Jul-99)	**0.65**	**6.9**	2.3	**0.64** (S)	**5.6** (S)	2.4 (S)
		5MW02	**1.8** (May-88)	**11** (Sept-98)	**10.1** (Jun-04)	**0.79**	**1.1**	**7.8**	**0.79**	**1.2**	**9.7**
EX04	inactive		**2.6** J (Apr-94)	**7.8** (May-10)	**78** (Jul-99)	**0.71**	**5.3**	4.1	**0.80** (S)/ **0.78** (S)	**6.5** (S)/ **6.4** (S)	3.4 (S)/ 3.4 (S)
		OU1MW10	**3.2** (Aug-00)	1.6 (May-12)	1.3 (Mar-97)	**1.5**	**0.52** J (F)	0.58 J (F)	**1.6**	**1.6**	0.78 F (F)
EX06	inactive		**1.1** (Jul-99)	1.9 (Jul-01)	**9.0** (Apr-97)	<0.50	**0.62** J (F)	2.4	<0.50 (S)	**0.90** F (S)	2.6 (S)
		OU1MW11	**3.3** (Aug-00)	2.0 (May-11)	1.8 (Mar-99)	**2.0/1.7**	**0.83** J (F)/ **0.69** J (F)	0.25 J (F)/ 0.22 J (F)	<0.50	<1.0	<1.0
OU1RW01	inactive		NS	NS	NS	NS	NS	NS	NS	NS	NS
		OU1OW02	ND	1.8 (Dec-08)	**99** (Jun-97)	<0.50	**0.91** J (F)	**12**	<0.50	**1.7**	**5.2**
OU1RW02	inactive		NS	NS	NS	NS	NS	NS	NS	NS	NS
		OU1OW03	ND	0.52 J (F) (May-11)	4.2 (May-11)	<0.50	<1.0	<1.0	<0.50	<1.0	<1.0
OU1RW03	inactive		NS	NS	NS	NS	NS	NS	NS	NS	NS
		5MW16	ND	0.58 F (F) (May-12)	**5.6** (May-03)	<0.50	<1.0	2.3	<0.50	**0.58** F (F)	2.1
		OU1OW04	0.46 J (F) (Jun-04)	2.0 (Dec-99)	**11** (Jul-09)	0.202 J (F)	**0.67** J (F)	**11**	<0.50	<1.0	0.62 F (F)
OU1RW04	inactive		NS	NS	NS	NS	NS	NS	NS	NS	NS
		29MW01	**0.80** (Sept-97)	3.1 (Jun-10)	**47** (Jun-08)	<0.50	**0.64** J (F)	**15**	<0.50	**1.0**	**6.4**
		29MW04	0.44 J (F) (Nov-07)	1.1 (May-12)	**8.8** (Nov-07)	<0.50	<1.0	<1.0	0.26 F (F)	**1.1**	4.9
OU1GEW01	inactive		0.34 J (F) (Nov-05)	**50** (May-97)	**56** (May-97)	0.22 J (F)	**0.75** J (F)	**9.0**	<0.50 (S)	**2.6** (S)	3.2 (S)
		OU1MW08	ND	1.6 (Nov-07)	**7.4** (Mar-97)	<0.50	**0.43** J (F)	**5.1**	<0.50	**0.71** F (F)	2.1
OU1GEW02	inactive		0.41 J (J) (Jul-01)	**74** (May-97)	**84** (May-97)	<0.50	**6.4**	2.7	<0.50 (S)	**3.5** (S)	4.0 (S)
		5MW30	**1.1** (Jun-08)	2.0 (Jun-02)	**20** (Oct-93)	<0.50	<1.0	0.35 J (F)	<0.50/<0.50	<1.0/<1.0	1.6/ 0.69 F (F)
OU1GEW03	inactive		**1.1** (Jun-05)	**86** (May-97)	**78** (May-97)	0.50	**5.9**	2.5	**0.79** (S)	**7.3** (S)	2.8 (S)
		5MW07	**1.4** (Nov-03)	4.1 (May-11)	**26.62** (J) (May-03)	**0.73**	**1.8**	**16**	0.20 F (F)	**1.9**	**12**
OU1GEW05	inactive		**3.5** (Jul-99)	**58** (May-97)	**56** (May-97)	0.32 J (F)	**1.8**	**6.3**	0.42 F (S)	**3.2** (S)	1.4 (S)
		EX07	**1.7** J (Aug-93)	1.4 (Jun-08)	**17** (Dec-94)	<0.50	**1.0**	4.0	<0.50	**0.55** F (F)	0.91 F (F)

TABLE 4-9. PARTIAL EGETS OPERATION ANALYTICAL RESULTS SUMMARY
LONG-TERM GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 2 of 2)

			Historical Maximum Concentration			November 2006 Concentration			May/June 2012 Concentration		
Extraction/ Injection Well	Status	Associated Monitoring Well	Carbon Tetrachloride (µg/L)	PCE (µg/L)	TCE (µg/L)	Carbon Tetrachloride (µg/L)	PCE (µg/L)	TCE (µg/L)	Carbon Tetrachloride (µg/L)	PCE (µg/L)	TCE (µg/L)
OU1MW12	active		**1.6** (Jul-99)	2.2 (Jun-05)	**14** (Jun-05)	0.25 J (F)	**1.6**	**10**	<0.50 (S)	**1.9** (S)	**10** (S)
		EX08	**2.2** (Feb-96)	2.0 (Jun-04)	**19.2** (Jun-04)	<0.50	**1.6**	**11**	<0.50	**1.6**	**6.0**

Notes:
Concentrations in bold were detected above water quality goals.

/	normal/field duplicate
<	less than the displayed reporting limit
µg/L	micrograms per liter
ARB	Air Reserve Base
MDL	method detection limit
ND	not detected
NS	not sampled
PCE	tetrachloroethene
PQL	practical quantitation limit
RL	reporting limit
TCE	trichloroethene

Laboratory-Assigned Qualifiers:

F	Indicates the analyte is positively identified and the result is less then the RL but greater than the MDL.
J	Indicates analyte was detected. However, analyte concentration is an estimated value which is between the MDL and the PQL.

Data Validation Qualifiers:

(F)	The compound was positively identified but the associated numerical value is below the PQL
(S)	Screening data (result not validated).

TABLE 5-1. OU 2 SUMMARY OF WATER QUALITY STANDARDS
MARCH ARB, CALIFORNIA
(Page 1 of 1)

Analyte	Water Quality Standard (μ g/L)	Federal MCL (μ g/L)	Source	Ref
benzene	1	5	State MCL (Primary)	a
n-butylbenzene	260	NP	CDPH Notification Level	b
sec-butylbenzene	260	NP	CDPH Notification Level	b
tert-butylbenzene	260	NP	CDPH Notification Level	b
carbon tetrachloride	0.5	5	State MCL (Primary)	a
chlorobenzene	70	100	State MCL (Primary)	a
chloroform	80	80	State MCL (Primary) for total trihalomethanes	a
1,2-dichlorobenzene	600	600	State and Federal MCL (Primary)	a
1,3-dichlorobenzene	600	NP	CDPH Archived Advisory Level	c
1,4-dichlorobenzene	5	75	State MCL (Primary)	a
1,1-dichloroethane	5	NP	State MCL (Primary)	a
1,2-dichloroethane	0.5	5	State MCL (Primary)	a
1,1-dichloroethene	6	7	State MCL (Primary)	a
cis-1,2-dichloroethene	6	70	State MCL (Primary)	a
trans-1,2-dichloroethene	10	100	State MCL (Primary)	a
ethylbenzene	300	700	State MCL (Primary)	a
methyl tert-butyl ether (MTBE)	13	NP	State MCL (Primary)	a
naphthalene	17	NP	CDPH Notification Level	b
n-propylbenzene	260	NP	CDPH Notification Level	b
styrene	100	100	State and Federal MCL (Primary)	a
tetrachloroethene (PCE)	5	5	State and Federal MCL (Primary)	a
toluene	150	1,000	State MCL (Primary)	a
1,2,4-trichlorobenzene	5	70	State MCL (Primary)	a
trichloroethene (TCE)	5	5	State and Federal MCL (Primary)	a
1,2,4-trimethylbenzene	330	NP	CDPH Notification Level	b
1,3,5-trimethylbenzene	330	NP	CDPH Notification Level	b
vinyl chloride	0.5	2	State MCL (Primary)	a
xylenes, total	1,750	10,000	State MCL (Primary)	a

Notes:

a CDPH Primary MCL
http://www.cdph.ca.gov/certlic/drinkingwater/Pages/MCLsandPHGs.aspx

b CDPH Drinking Water Notification Levels
http://www.cdph.ca.gov/certlic/drinkingwater/Pages/NotificationLevels.aspx

c CDPH Archived Advisory Levels for Drinking Water
http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/archivedadvisorylevels.pdf

* Total trihalomethanes are the sum of bromodichloromethane, bromoform, chloroform and dibromochloromethane.

µg/L micrograms per liter
ARB Air Reserve Base
CDPH California Department of Public Health
MCL maximum contaminant level
NP none promulgated
OU operable unit
Ref reference

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 1 of 12)

		Site 2									
		2EW01 AL	2EW02 AL	2MW05 AL	2MW07 AL	2MW08 AU	2PW01PRC AU	2PW06PRC AL	5M2MW05A AU	5M2MW06 AL	6M2MW07 AL
Analyte	WQS	06/05/2012	06/05/2012	05/30/2012	05/24/2012	05/24/2012	06/05/2012	06/05/2012	06/05/2012	06/05/2012	06/05/2012
Petroleum Hydrocarbons (mg/L)											
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organics (µg/L)											
benzene	1[(a)]	**760**	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	**21**	<0.40	<0.40
carbon tetrachloride	0.5[(a)]	<0.50	<0.50	<0.50	**0.61**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	70[(a)]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NP	<0.50	<0.50	<0.50	**0.55**	**0.76**	**0.84**	<0.50	<0.50	**1.4**	<0.50
1,1-dichloroethane	5[(a)]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[(a)]	**3.9**	**0.42** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6[(a)]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[(a)]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.20** F (F)	<1.0
trans-1,2-dichloroethene	10[(a)]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[(a)]	**78**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**9.0**	<1.0	<1.0
methyl tert-butyl ether (MTBE)	13[(a)]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5[(b)]	<1.0	<1.0	<1.0	**0.54** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
toluene	150[(a)]	**1.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5[(b)]	**0.46** F (F)	**1.1**	**0.60** F (F)	**1.1**	<1.0	**2.3**	**1.0**	<1.0	**1.8**	**0.99** F (F)
trihalomethanes, total	80[(b)]	<0.50	<0.50	<0.50	**0.55**	**0.76**	**0.84**	<0.50	<0.50	**1.4**	<0.50
vinyl chloride	0.5[(a)]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	**2.0**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NP	**0.28** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	1,750[(a)]	**2.28** (F)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

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TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 2 of 12)

		Site 2 (cont'd)			Site 8					Site 8 Bldg 355
		6M2MW09 AL	6M2MW10 AL	6M2MW12 AL	6M36MW08 AL	6M8MW12 AL	6M8MW13 AL	RBEMW04A AL	RBEMW04B AU	5M8MW04 AU
Analyte	WQS	06/05/2012	06/05/2012	06/05/2012	05/24/2012	06/06/2012	05/21/2012	06/04/2012	06/04/2012	05/21/2012
Petroleum Hydrocarbons (mg/L)										
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organics (µg/L)										
benzene	1[a]	**5.3**	**1.4**	**2.6** (J)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5[a]	<0.50	<0.50	<0.50	**3.7**	**0.46** F (F)	**0.39** F (F)	<0.50	**0.25** F (F)	<0.50
chlorobenzene	70[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NP	**7.8**	<0.50	<0.50	**2.6**	**2.4**	**0.73**	<0.50	**1.2**	**2.9**
1,1-dichloroethane	5[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[a]	**0.83**	**1.3**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6[a]	**0.36** F (F)	**0.55** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	**27**	**1.8**	<1.0	<1.0	<1.0	<1.0	<1.0	**0.34** F (F)	**0.42** F (F)
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	<1.0	<1.0	**2.4** (J)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	13[a]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5[b]	<1.0	<1.0	<1.0	**2.5**	**2.1**	**0.47** F (F)	<1.0	**1.9**	**0.47** F (F)
toluene	150[a]	<1.0	<1.0	**0.23** F (F J)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5[b]	**150**	**23**	**0.48** F (F J)	**9.8**	**15**	**10**	<1.0	**2.5**	**26**
trihalomethanes, total	80[b]	**7.8**	<0.50	<0.50	**2.6**	**2.4**	**0.73**	<0.50	**1.2**	**2.9**
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	<2.0	<2.0	**0.84** F (F J)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NP	<1.0	<1.0	**0.21** F (F J)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	1,750[a]	<2.0	<2.0	**1.05** F (F J)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 3 of 12)

		Site 8 Bldg 355 (cont'd)									
		6M8MW15 AU			6M8MW16 AU			6M8MW17 AU			
Analyte	WQS	10/04/2011	11/03/2011	05/31/2012	11/03/2011	05/31/2012	05/31/2012[c]	10/04/2011	11/03/2011	12/22/2011	06/01/2012
Petroleum Hydrocarbons (mg/L)											
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organics (µg/L)											
benzene	1[a]	N/A	N/A	<0.40	N/A	<0.40	<0.40	N/A	N/A	<0.40	<0.40
carbon tetrachloride	0.5[a]	N/A	N/A	<0.50	N/A	<0.50	**0.21** F (F)	N/A	N/A	<0.50	<0.50
chlorobenzene	70[a]	N/A	N/A	<0.50	N/A	<0.50	<0.50	N/A	N/A	<0.50	<0.50
chloroform	NP	N/A	N/A	**0.36** F (F)	N/A	**1.5**	**1.8**	N/A	N/A	<0.50	<0.50
1,1-dichloroethane	5[a]	N/A	N/A	<1.0	N/A	<1.0	<1.0	N/A	N/A	<1.0	<1.0
1,2-dichloroethane	0.5[a]	N/A	N/A	<0.50	N/A	<0.50	<0.50	N/A	N/A	<0.50	<0.50
1,1-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	**68**	**55**	**26**	**0.23** F	**2.6** (J)	**1.5** (J)	**12**	**3.7**	**6.2**	**1.2**
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.24** F	**0.24** F	<1.0	<1.0
ethylbenzene	300[a]	N/A	N/A	<1.0	N/A	<1.0	<1.0	N/A	N/A	<1.0	<1.0
methyl tert-butyl ether (MTBE)	13[a]	N/A	N/A	<5.0	N/A	<5.0	<5.0	N/A	N/A	<5.0	<5.0
tetrachloroethene (PCE)	5[b]	**0.73** F	**0.70** F	<1.0	**0.57** F	**0.42** F (F)	**0.56** F (F)	<1.0	<1.0	<1.0	<1.0
toluene	150[a]	N/A	N/A	<1.0	N/A	<1.0	<1.0	N/A	N/A	<1.0	<1.0
trichloroethene (TCE)	5[b]	**32**	**28**	**2.8**	**0.40** F	**0.48** F (F)	**0.43** F (F)	**0.89** F	<1.0	<1.0	**0.28** F (F)
trihalomethanes, total	80[b]	N/A	N/A	**0.36** F	N/A	**1.5**	**1.8**	N/A	N/A	<0.50	<0.50
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**11**	**13**	**8.4**	**2.9**
m- & p-xylene	NP	N/A	N/A	<2.0	N/A	<2.0	<2.0	N/A	N/A	<2.0	<2.0
o-xylene	NP	N/A	N/A	<1.0	N/A	<1.0	<1.0	N/A	N/A	<1.0	<1.0
xylenes, total	1,750[a]	N/A	N/A	<2.0	N/A	<2.0	<2.0	N/A	N/A	<2.0	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 4 of 12)

		Site 8 Bldg 355 (cont'd)								
		6M8MW19 AU			6M8MW20 AU				6M8MW24 AU	6M8MW25 AU
Analyte	WQS	10/04/2011	12/22/2011	06/01/2012	10/03/2011	10/03/2011[c]	11/02/2011	06/01/2012	05/31/2012	05/31/2012
Petroleum Hydrocarbons (mg/L)										
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organics (µg/L)										
benzene	1[a]	N/A	**0.37** F (F)	**0.30** F (F)	N/A	N/A	N/A	<0.40	<0.40	<0.40
carbon tetrachloride	0.5[a]	N/A	<0.50	<0.50	N/A	N/A	N/A	**0.41** F (F)	<0.50	**0.47** F (F)
chlorobenzene	70[a]	N/A	<0.50	<0.50	N/A	N/A	N/A	<0.50	<0.50	<0.50
chloroform	NP	N/A	**0.34** F (F)	<0.50	N/A	N/A	N/A	**2.4**	**2.9**	**1.5**
1,1-dichloroethane	5[a]	N/A	**3.9**	**3.6**	N/A	N/A	N/A	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[a]	N/A	<0.50	<0.50	N/A	N/A	N/A	<0.50	<0.50	<0.50
1,1-dichloroethene	6[a]	**0.63** F	**0.77** F (F)	**0.74** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	**1,400**	**1,200**	**1,300**	<1.0	<1.0	**0.20** F	<1.0	**15**	<1.0
trans-1,2-dichloroethene	10[a]	**2.0**	**2.9**	**1.9**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	N/A	<1.0	<1.0	N/A	N/A	N/A	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	13[a]	N/A	<5.0	<5.0	N/A	N/A	N/A	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5[b]	<1.0	<1.0	<1.0	**1.2**	**1.3**	**1.0**	**0.86** F (F)	**1.7**	**4.1**
toluene	150[a]	N/A	<1.0	<1.0	N/A	N/A	N/A	<1.0	<1.0	<1.0
trichloroethene (TCE)	5[b]	**180**	**47**	**1.2**	**0.68** F	**0.68** F	**0.76** F	**0.55** F (F)	**11**	**3.5**
trihalomethanes, total	80[b]	N/A	**0.34** F	<0.50	N/A	N/A	N/A	**2.4**	**2.9**	**1.5**
vinyl chloride	0.5[a]	**1.6**	**2.1**	**22**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	N/A	<2.0	<2.0	N/A	N/A	N/A	<2.0	<2.0	<2.0
o-xylene	NP	N/A	<1.0	<1.0	N/A	N/A	N/A	<1.0	<1.0	<1.0
xylenes, total	1,750[a]	N/A	<2.0	<2.0	N/A	N/A	N/A	<2.0	<2.0	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 5 of 12)

		Site 8 Bldg 355 (cont'd)								
		6M8MW27 AU					6M8MW28 AU			
Analyte	WQS	10/03/2011	11/02/2011	11/02/2011[c]	12/22/2011	06/01/2012	10/03/2011	12/22/2011	12/22/2011[c]	06/01/2012
Petroleum Hydrocarbons (mg/L)										
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organics (µg/L)										
benzene	1[a]	N/A	N/A	N/A	**0.28** F (F)	**0.30** F (F)	N/A	<0.40	<0.40	<0.40
carbon tetrachloride	0.5[a]	N/A	N/A	N/A	<0.50	<0.50	N/A	<0.50	<0.50	<0.50
chlorobenzene	70[a]	N/A	N/A	N/A	**0.23** F (F)	<0.50	N/A	<0.50	<0.50	<0.50
chloroform	NP	N/A	N/A	N/A	**6.9**	**3.4**	N/A	**1.1**	**1.2**	**2.8**
1,1-dichloroethane	5[a]	N/A	N/A	N/A	**3.1**	**2.8**	N/A	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[a]	N/A	N/A	N/A	<0.50	<0.50	N/A	<0.50	<0.50	<0.50
1,1-dichloroethene	6[a]	**0.84** F	**0.69** F	**0.74** F	**0.72** F (F)	**0.67** F (F)	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	**680**	**790**	**770**	**720**	**940**	**0.83** F	<1.0	<1.0	**0.60** F (F)
trans-1,2-dichloroethene	10[a]	**2.1**	**2.1**	**2.1**	**2.9**	**4.0**	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	N/A	N/A	N/A	<1.0	<1.0	N/A	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	13[a]	N/A	N/A	N/A	<5.0	<5.0	N/A	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5[b]	**1.7**	**1.5**	**1.5**	**1.2**	**0.89** F (F)	**1.3**	**0.39** F (F)	**0.42** F (F)	**1.0**
toluene	150[a]	N/A	N/A	N/A	<1.0	<1.0	N/A	<1.0	<1.0	<1.0
trichloroethene (TCE)	5[b]	**370**	**420**	**410**	**350**	**430**	**2.0**	**0.90** F (F)	**0.96** F (F)	**1.2**
trihalomethanes, total	80[b]	N/A	N/A	N/A	**6.9**	**3.4**	N/A	**1.1**	**1.2**	**2.8**
vinyl chloride	0.5[a]	**0.80**	**1.1**	**1.2**	**3.5**	**13**	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	N/A	N/A	N/A	<2.0	<2.0	N/A	<2.0	<2.0	<2.0
o-xylene	NP	N/A	N/A	N/A	<1.0	<1.0	N/A	<1.0	<1.0	<1.0
xylenes, total	1,750[a]	N/A	N/A	N/A	<2.0	<2.0	N/A	<2.0	<2.0	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 6 of 12)

		Site 8 Bldg 355 (cont'd)	Site 8 Bldg 434		Site 8 Bldg 453				Site 11		Site 18
		RBEMW08 AL	434MW01 AU		453MW01 AL		453MW02 AL		5M11MW01 AU		28MW07 AU
Analyte	WQS	05/31/2012	12/21/2011	05/30/2012	12/21/2011	05/24/2012	12/21/2011	05/30/2012	06/07/2012	06/07/2012[c]	06/04/2012
Petroleum Hydrocarbons (mg/L)											
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organics (µg/L)											
benzene	1[a]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5[a]	<0.50	<0.50	<0.50	**26**	**18**	**9.7**	**8.8**	<0.50	<0.50	**0.20** F (F)
chlorobenzene	70[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NP	<0.50	**6.7**	**7.5**	**13**	**10**	**4.1**	**4.0**	<0.50	<0.50	**0.56**
1,1-dichloroethane	5[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[a]	<0.50	<0.50	<0.50	**2.8**	**2.4**	**0.30** F (F)	**0.20** F (F)	<0.50	<0.50	<0.50
1,1-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	**3.5**	**0.41** F (F)	**0.41** F (F)	**1.1**	**0.95** F (F)	**0.28** F (F)	**0.22** F (F)	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	13[a]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**0.21** F (F)	**0.20** F (F)	<5.0
tetrachloroethene (PCE)	5[b]	<1.0	**2.3**	**2.1**	**2.4**	**1.9**	**2.4**	**2.4**	<1.0	<1.0	**1.0**
toluene	150[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5[b]	**0.80** F (F)	**170**	**160**	**140**	**91**	**38**	**34**	<1.0	<1.0	**0.65** F (F)
trihalomethanes, total	80[b]	<0.5	**6.7**	**7.5**	**13**	**10**	**4.1**	**4.0**	<0.50	<0.50	**0.56**
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	1,750[a]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 7 of 12)

		Site 27				Site 33				
		5M27MW01 AU	5M27MW02 AU	6M27MW05A AL		28MW04 AL	PANCP08 AU	PANCP11 AU	PANCP13 AU	PANFP01 AU
Analyte	WQS	06/06/2012	05/21/2012	06/05/2012	06/05/2012[c]	06/06/2012	05/31/2012	05/31/2012	05/31/2012	06/04/2012
Petroleum Hydrocarbons (mg/L)										
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.027** F (F)	N/A
Volatile Organics (µg/L)										
benzene	1[a]	<0.40	**0.23** F (F)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	**22** (J)
carbon tetrachloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	70[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1.6**	**2.6**	<0.50
1,1-dichloroethane	5[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[a]	**2.1**	**1.0**	**4.2**	**4.4**	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.88** F (F)	**0.58** F (F)	**2.1** (J)
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**14** (J)
methyl tert-butyl ether (MTBE)	13[a]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**0.64** F (F J)
tetrachloroethene (PCE)	5[b]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**2.1**	**2.5**	<1.0
toluene	150[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**2.2** (J)
trichloroethene (TCE)	5[b]	<1.0	<1.0	<1.0	<1.0	**0.28** F (F)	**0.41** F (F)	**4.2**	**2.5**	**0.24** F (F J)
trihalomethanes, total	80[b]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1.6**	**2.6**	<0.50
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**4.9** (J)
o-xylene	NP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.4** (J)
xylenes, total	1,750[a]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**6.3** (J)

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 8 of 12)

		Site 33 (cont'd)								
		PANFP03 AU		PANFP04 AU	PANFP07 AU		PANMW06 AU	PANMW07 AU		PANMW09 AU
Analyte	WQS	06/04/2012	06/04/2012[c]	06/04/2012	06/07/2012	06/07/2012[c]	05/31/2012	12/22/2011	05/31/2012	05/31/2012
Petroleum Hydrocarbons (mg/L)										
jet fuel #4	NP	N/A	N/A	N/A	**0.018** F (F)	**0.020** F (F)	N/A	N/A	N/A	N/A
Volatile Organics (μg/L)										
benzene	1[a]	<0.40	<0.40	**870**	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
carbon tetrachloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	**0.27** F (F)	<0.50	<0.50	<0.50	**0.28** F (F)
chlorobenzene	70[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NP	<0.50	<0.50	<0.50	**0.63** (J)	**1.9** (J)	<0.50	**1.8**	**2.2**	**1.3**
1,1-dichloroethane	5[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	**0.34** F (F)	**0.28** F (F)	**7.3**	<1.0	<1.0	<1.0	**0.22** F (F)	**0.36** F (F)	**5.9**
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	<1.0	<1.0	**650**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
methyl tert-butyl ether (MTBE)	13[a]	<5.0	<5.0	**3.5** F (F)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tetrachloroethene (PCE)	5[b]	<1.0	<1.0	<1.0	**0.73** F (F)	**1.8**	**0.51** F (F)	**3.9**	**4.6**	**1.5**
toluene	150[a]	<1.0	<1.0	**1.3**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5[b]	**1.2**	**1.0**	<1.0	**1.0** (J)	**2.7** (J)	**0.34** F (F)	**2.5**	**3.1**	**5.4**
trihalomethanes, total	80[b]	<0.50	<0.50	<0.50	**0.63**	**1.9**	<0.50	**1.8**	**2.2**	**1.3**
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	<2.0	<2.0	**740**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	NP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	1,750[a]	<2.0	<2.0	**740**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 9 of 12)

		Site 33 (cont'd)									
		PANMW10 AU		PANMW13 AU	PANMW14 AL	PANMW16 AU	PANMW17 AL	PANMW18 AU	PANMW19 AL	PANMW21 AU	
Analyte	WQS	05/31/2012	05/31/2012[c]	06/07/2012	05/31/2012	05/31/2012	06/07/2012	05/31/2012	05/21/2012	11/02/2011	06/06/2012
Petroleum Hydrocarbons (mg/L)											
jet fuel #4	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.029** F	N/A
Volatile Organics (µg/L)											
benzene	1[a]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	N/A	<0.40
carbon tetrachloride	0.5[a]	**0.48** F (F)	**0.50**	**0.23** F (F)	<0.50	<0.50	<0.50	<0.50	<0.50	N/A	<0.50
chlorobenzene	70[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	N/A	<0.50
chloroform	NP	**1.5**	**1.5**	**3.7**	<0.50	<0.50	**0.99**	<0.50	<0.50	N/A	**0.22** F (F)
1,1-dichloroethane	5[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	**1.2**
1,2-dichloroethane	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.35** F (F)	<0.50	N/A	<0.50
1,1-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	<1.0
cis-1,2-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	**0.46** F (F)
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	<1.0
ethylbenzene	300[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	<1.0
methyl tert-butyl ether (MTBE)	13[a]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	N/A	<5.0
tetrachloroethene (PCE)	5[b]	**1.5**	**1.4**	**2.9**	**0.43** F (F)	**0.24** F (F)	**1.3**	<1.0	**0.31** F (F)	N/A	**0.35** F (F)
toluene	150[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	<1.0
trichloroethene (TCE)	5[b]	**4.4**	**4.4**	**7.3**	**0.25** F (F)	<1.0	**4.0**	<1.0	**0.22** F (F)	N/A	**0.88** F (F)
trihalomethanes, total	80[b]	**1.5**	**1.5**	**3.7**	<0.50	<0.50	**0.99**	<0.50	<0.50	N/A	**0.22** F
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	N/A	<0.50
m- & p-xylene	NP	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A	<2.0
o-xylene	NP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	<1.0
xylenes, total	1,750[a]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 10 of 12)

		Site 33 (cont'd)									
		PANMW23 AU	PANMW27 AL	PANMW28 AL	PANMW30 AU	PANMW32A AU		PANMW33 AU	PANMW35 AU	PANMW36 AU	PANMW37 AU
Analyte	WQS	05/31/2012	06/04/2012	05/31/2012	06/06/2012	06/06/2012	06/06/2012[c]	06/06/2012	05/31/2012	06/04/2012	06/04/2012
Petroleum Hydrocarbons (mg/L)											
jet fuel #4	NP	N/A	N/A	N/A	<0.20	**0.010** F (F)	**0.015** F (F)	**1.1**	**1.0**	**0.062** F (F)	N/A
Volatile Organics (µg/L)											
benzene	1[a]	<0.40	**3.2**	**12**	<0.40	<0.40	<0.40	**320**	**39**	<0.40	**4,600**
carbon tetrachloride	0.5[a]	**0.49** F (F)	**0.50**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	70[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NP	**1.8**	**0.61**	**0.71**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethane	5[a]	<1.0	<1.0	<1.0	**0.72** F (F)	<1.0	<1.0	**0.21** F (F)	<1.0	<1.0	<1.0
1,2-dichloroethane	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**39**
1,1-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	<1.0	**0.21** F (F)	**2.9**	<1.0	<1.0	<1.0	**0.65** F (F)	<1.0	<1.0	**6.7**
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	<1.0	**0.44** F (F)	**4.1**	<1.0	<1.0	<1.0	**0.74** F (F)	**6.9**	<1.0	**15**
methyl tert-butyl ether (MTBE)	13[a]	<5.0	**0.54** F (F)	<5.0	**4.1** F (F)	<5.0	<5.0	<5.0	<5.0	<5.0	**9.7**
tetrachloroethene (PCE)	5[b]	**1.6**	**0.66** F (F)	**0.61** F (F)	<1.0	**0.66** F (F)	**0.70** F (F)	<1.0	<1.0	<1.0	<1.0
toluene	150[a]	<1.0	**0.57** F (F)	**3.2**	<1.0	<1.0	<1.0	<1.0	**0.31** F (F)	<1.0	**0.32** F (F)
trichloroethene (TCE)	5[b]	**4.5**	**3.7**	**11**	<1.0	**1.4**	**1.5**	<1.0	**2.6**	**0.46** F (F)	<1.0
trihalomethanes, total	80[b]	**1.8**	**0.61**	**0.71**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	<2.0	**0.71** F (F)	**5.8**	<2.0	<2.0	<2.0	<2.0	**5.9**	<2.0	<2.0
o-xylene	NP	<1.0	**0.24** F (F)	**1.3**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
xylenes, total	1,750[a]	<2.0	**0.95** F (F)	**7.1**	<2.0	<2.0	<2.0	<2.0	**5.9**	<2.0	<2.0

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 11 of 12)

		Site 33 (cont'd)								
		PANMW40 AU	PANMW41 AU	PANMW43 AU	PANMW45 AU	PANMW47 AL	PANMW48A AL		PANOW02 AU	PANPZ02B AL
Analyte	WQS	06/06/2012	06/07/2012	06/04/2012	06/04/2012	05/31/2012	12/22/2011	06/07/2012	05/31/2012	06/04/2012
Petroleum Hydrocarbons (mg/L)										
jet fuel #4 (JP-4)	NP	N/A	**0.026** F (F)	**0.92**	**0.12** F (F)	N/A	N/A	N/A	N/A	N/A
Volatile Organics (µg/L)										
benzene	1[a]	<0.40	<0.40	**580**	<0.40	**0.36** F (F)	<0.40	<0.40	<0.40	**44**
carbon tetrachloride (CTCL)	0.5[a]	<0.50	<0.50	<0.50	<0.50	**2.8**	**0.33** F (F)	**0.49** F (F)	<0.50	<0.50
chlorobenzene	70[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	NP	<0.50	<0.50	<0.50	<0.50	**3.3**	**2.5**	**3.9**	**2.2**	<0.50
1,1-dichloroethane (1,1-DCA)	5[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.33** F (F)
1,2-dichloroethane (1,2-DCA)	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-dichloroethene (1,1-DCE)	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene (cis-1,2-DCE)	6[a]	<1.0	<1.0	**1.1**	<1.0	**0.82** F (F)	**0.47** F (F)	**1.5**	**0.29** F (F)	<1.0
trans-1,2-dichloroethene (trans-1,2-DCE)	10[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	**2.7**	<1.0	**2.0**	<1.0	<1.0	<1.0	<1.0	<1.0	**3.9**
methyl tert-butyl ether (MTBE)	13[a]	<5.0	<5.0	<5.0	**37**	<5.0	<5.0	<5.0	<5.0	**1.1** F (F)
tetrachloroethene (PCE)	5[b]	<1.0	**1.2**	<1.0	<1.0	**2.7**	**2.5**	**3.7**	**1.5**	<1.0
toluene	150[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**13**
trichloroethene (TCE)	5[b]	<1.0	**0.65** F (F)	<1.0	<1.0	**31**	**2.0**	**3.2**	**1.6**	**0.28** F (F)
trihalomethanes, total	80[b]	<0.50	<0.50	<0.50	<0.50	**3.3**	**2.5**	**3.9**	**2.2**	<0.50
vinyl chloride	0.5[a]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**16**
o-xylene	NP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**5.2**
xylenes, total	1,750[a]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**21.2**

TABLE 5-2. SUMMARY OF ANALYTICAL RESULTS FOR OU 2 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 12 of 12)

Notes:
[a] State MCL (Primary)
[b] State and Federal MCL (Primary)
[c] field duplicate

Highlighted concentrations exceed water quality standards.

<	less than
µg/L	micrograms per liter
AFRC	Air Force Reserve Command
AL	lower alluvial aquifer unit
ARB	Air Reserve Base
AU	upper alluvial aquifer unit
BD	bedrock aquifer unit
MDL	method detection limit
mg/L	milligrams per liter
N/A	not analyzed
NP	none promulgated
OU	operable unit
PQL	practical quantitation limit
RL	reporting limit
WQS	water quality standard

Laboratory-Assigned Qualifier:
F Indicates that the analyte was positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifiers:
(F) The compound was positively identified but the associated numerical value is below the PQL.
(J) Indicates analyte was detected. However, analyte concentration is an estimated value which is between the MDL and the PQL.

TABLE 5-3. SUMMARY OF ANALYTICAL RESULTS FOR SITE 8 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 1 of 2)

		Site 1	Site 8 Bldg 2300						
		5M1MW02 AU	28MW01 AU/AL	5M8MW02 BD	5M8MW07 AU	5M8MW09 AU	6M2300MW01 AU	6M8MW10 AU	6M8MW11 AU
Analyte	WQS	06/06/2012	10/06/2011	06/06/2012	06/06/2012	06/06/2012	06/06/2012	06/06/2012	06/06/2012
Volatile Organics (µg/L)									
chloroform	NP	<0.50	N/A	**0.81**	**0.42** F (F)	<0.50	<0.50	**0.76**	<0.50
1,2-dichloroethane	0.5[(a)]	<0.50	N/A	<0.50	<0.50	<0.50	<0.50	<0.50	**2.2**
cis-1,2-dichloroethene	6[(a)]	<1.0	N/A	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tetrachloroethene (PCE)	5[(b)]	**1.2**	N/A	**0.34** F (F)	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene (TCE)	5[(b)]	**0.29** F (F)	N/A	**190**	**30**	<1.0	<1.0	<1.0	<1.0
trihalomethanes, total	80[(b)]	<0.50	N/A	**0.81**	**0.42** F	<0.50	<0.50	**0.76**	<0.50

TABLE 5-3. SUMMARY OF ANALYTICAL RESULTS FOR SITE 8 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 2 of 2)

		Site 8 Bldg 2307							
		2307MW01 AU	2307MW02 AU	2307MW03 AU	2307MW05 AL	2307MW06 AU	5M8MW03 AU		5M8MW06 AL
Analyte	GCG	06/06/2012	06/06/2012	06/06/2012	06/06/2012	06/06/2012	06/06/2012	06/06/2012[c]	06/06/2012
Volatile Organics (µg/L)									
chloroform	100	**0.40** F (F)	**0.48** F (F)	**0.21** F (F)	<0.50	<0.50	<0.50	<0.50	**1.8**
1,2-dichloroethane (1,2-DCA)	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-dichloroethene (cis-1,2-DCE)	6	**22**	<1.0	**1.1**	**0.21** F (F)	<1.0	<1.0	<1.0	<1.0
tetrachloroethene (PCE)	5	**190**	<1.0	**95**	**4.5**	**7.5**	<1.0	<1.0	**0.44** F (F)
trichloroethene (TCE)	5	**19**	<1.0	**7.8**	**1.5**	**0.57** F (F)	<1.0	<1.0	**0.27** F (F)
trihalomethanes, total	80	**0.40** F	**0.48** F	**0.21** F	<0.50	<0.50	<0.50	<0.50	**1.8**

Notes:
[a] State MCL (Primary).
[b] State and Federal MCL (Primary).
[c] Field duplicate.

Highlighted concentrations exceed water quality standards.

µg/L	micrograms per liter
AFRC	Air Force Reserve Command
AL	lower alluvial aquifer unit
ARB	Air Reserve Base
AU	upper alluvial aquifer unit
BD	bedrock aquifer unit
CGC	Groundwater Cleanup Goal
MCL	maximum contaminant level
MDL	method detection limit
NP	none promulgated
PQL	practical quantitation limit
RL	reporting limit
WQS	water quality standards

Laboratory-Assigned Qualifier
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifiers
(F) The compound was positively identified but the associated numerical value is below the PQL.

TABLE 5-4. SUMMARY OF ANALYTICAL RESULTS FOR SITE 36 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 1 of 4)

		Site 2		Site 36									
		2MW09 AU		36DP01D AU		36DP03D AU	36DP04D AU	36DP05D AU			36DP06D AU		
Analyte	WQS	11/02/2011	06/01/2012	10/04/2011	05/24/2012	05/24/2012	05/24/2012	10/06/2011	11/01/2011	05/23/2012	10/05/2011	11/01/2011	05/23/2012
Volatile Organics (µg/L)													
benzene	1[(a)]	N/A	<0.40	N/A	<0.40	<0.40	<0.40	N/A	N/A	**46** (S)	N/A	N/A	[illegible]
n-butylbenzene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**27** (S)	N/A	N/A	**20** (S)
sec-butylbenzene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**42** (S)	N/A	N/A	**22** (S)
tert-butylbenzene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**2.5** (S)	N/A	N/A	**1.6** F (S)
carbon tetrachloride		N/A	<0.50	N/A	<0.50	<0.50	<0.50	N/A	N/A	<0.50 (S)	N/A	N/A	<2.5 (S)
chlorobenzene		N/A	<0.50	<0.50	<0.50	<0.50	<0.50	**1,000**	**1,100**	**940** (S)	**150**	**110**	**48** (S)
chloroethane		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.32** F (S)	N/A	N/A	<5.0 (S)
chloroform		N/A	**0.67**	N/A	**9.5**	**3.0**	**1.2**	N/A	N/A	<0.30 (S)	N/A	N/A	<1.5 (S)
2-chlorotoluene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1.0 (S)	N/A	N/A	<5.0 (S)
4-chlorotoluene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1.0 (S)	N/A	N/A	<5.0 (S)
1,2-dichlorobenzene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**9.3** (S)	N/A	N/A	**5.6** (S)
1,3-dichlorobenzene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**10** (S)	N/A	N/A	**2.6** F (S)
1,4-dichlorobenzene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**90** (S)	N/A	N/A	<2.5 (S)
1,1-dichloroethane		N/A	<1.0	N/A	<1.0	<1.0	<1.0	N/A	N/A	**2.4** (S)	N/A	N/A	<5.0 (S)
1,1-dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**6.2**	**5.2**	**5.3** (S)	<5.0	<5.0	<5.0 (S)
cis-1,2-dichloroethene		**6.7**	**8.6**	**1.0**	**0.26** F (F)	<1.0	<1.0	**6,900**	**4,800**	**7,200** (S)	**760**	**550**	**47** (S)
trans-1,2-dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**4.4**	**3.1** F	**5.8** (S)	**3.2** F	**2.8** F	**1.8** F (S)
ethylbenzene		N/A	<1.0	N/A	<1.0	<1.0	<1.0	N/A	N/A	**42** (S)	N/A	N/A	**29** (S)
isopropylbenzene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**48** (S)	N/A	N/A	**26** (S)
p-isopropyltoluene	NP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**23** (S)	N/A	N/A	**10** (S)
naphthalene	17[(b)]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**120** (S)	N/A	N/A	[illegible]
n-propylbenzene	260[(b)]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**140** (S)	N/A	N/A	**49** (S)
tetrachloroethene (PCE)	5[(c)]	**0.21** F	**0.21** F (F)	N/A	<1.0	<1.0	<1.0	N/A	N/A	<1.0 (S)	N/A	N/A	<5.0 (S)
toluene	150[(a)]	N/A	<1.0	N/A	<1.0	<1.0	<1.0	N/A	N/A	**56** (S)	N/A	N/A	**2.8** F (S)
trichloroethene (TCE)	5[(c)]	**2.0**	**3.2**	**5.3**	**2.3**	**1.6**	**0.34** F (F)	**0.42** F	<5.0	<1.0 (S)	**1.6** F	**1.4** F	<5.0 (S)
trihalomethanes, total	80[(c)]	N/A	**0.67**	N/A	**9.5**	**3.0**	**1.2**	N/A	N/A	<1.0	N/A	N/A	<5.0
1,2,4-trimethylbenzene	330[(b)]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**920** (S)	N/A	N/A	**130** (S)
1,3,5-trimethylbenzene	330[(b)]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**68** (S)	N/A	N/A	**10** (S)
vinyl chloride	0.5[(a)]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**38**	**34**	**53** (S)	**58**	**65**	**120** (S)
m- & p-xylene	NP	N/A	<2.0	N/A	<2.0	<2.0	<2.0	N/A	N/A	**39** (S)	N/A	N/A	**14** (S)
o-xylene	NP	N/A	<1.0	N/A	<1.0	<1.0	<1.0	N/A	N/A	**29** (S)	N/A	N/A	**18** (S)
xylenes, total	1,750[(a)]	N/A	<2.0	N/A	<2.0	<2.0	<2.0	N/A	N/A	**68** (S)	N/A	N/A	**32** (S)

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TABLE 5-4. SUMMARY OF ANALYTICAL RESULTS FOR SITE 36 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 2 of 4)

		Site 36 (cont'd)										
		36VEP01D AU		36VEP06 AU		5M36MW02 AU	5M36MW03 AU			5M36MW04 AU		5M36MW05 AU
Analyte	WQS	11/01/2011	05/24/2012	10/31/2011	05/24/2012	05/24/2012	11/02/2011	11/02/2011[e]	05/24/2012	11/02/2011	05/21/2012	05/24/2012
Volatile Organics (µg/L)												
benzene	1[a]	N/A	<4.0	N/A	<0.40	<0.40	N/A	N/A	<0.40	N/A	<0.40	<0.40
n-butylbenzene	260[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
sec-butylbenzene	260[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
tert-butylbenzene	260[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
carbon tetrachloride	0.5[a]	N/A	<5.0	N/A	<0.50	<0.50	N/A	N/A	<0.50	N/A	<0.50	<0.50
chlorobenzene	70[a]	**56**	**71**	**0.59**	<0.50	<0.50	**0.83**	**1.0**	<0.50	<0.50	<0.50	<0.50
chloroethane	NP	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
chloroform	NP	N/A	<5.0	N/A	**1.4**	**0.67**	N/A	N/A	**0.75**	N/A	**1.0**	**0.81**
2-chlorotoluene	140[b]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
4-chlorotoluene	140[b]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
1,2-dichlorobenzene	600[b]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
1,3-dichlorobenzene	600[d]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
1,4-dichlorobenzene	5[a]	N/A	N/A	N/A	N/A	<0.50	N/A	N/A	N/A	N/A	<0.50	<0.50
1,1-dichloroethane	5[a]	N/A	<10	N/A	<1.0	<1.0	N/A	N/A	<1.0	N/A	<1.0	<1.0
1,1-dichloroethene	6[a]	<25	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	6[a]	**5.1** F	**2.6** F (F)	**0.56** F	<1.0	<1.0	<1.0	**0.23** F	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	10[a]	<25	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ethylbenzene	300[a]	N/A	**2.4** F (F)	N/A	<1.0	<1.0	N/A	N/A	<1.0	N/A	<1.0	<1.0
isopropylbenzene	770[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
p-isopropyltoluene	NP	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
naphthalene	17[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
n-propylbenzene	260[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
tetrachloroethene (PCE)	5[b]	N/A	<10	N/A	<1.0	<1.0	N/A	N/A	<1.0	N/A	<1.0	<1.0
toluene	150[a]	N/A	**3.9** F (F)	N/A	<1.0	<1.0	N/A	N/A	<1.0	N/A	<1.0	<1.0
trichloroethene (TCE)	5[b]	<25	<10	**3.1**	**0.50** F (F)	**0.25** F (F)	<1.0	<1.0	<1.0	**1.6**	**2.0**	**1.3**
trihalomethanes, total	80[b]	N/A	<5.0	N/A	**1.4**	**0.67** F	N/A	N/A	**0.75**	N/A	**1.0**	**0.81** F
1,2,4-trimethylbenzene	330[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
1,3,5-trimethylbenzene	330[c]	N/A	N/A	N/A	N/A	<1.0	N/A	N/A	N/A	N/A	<1.0	<1.0
vinyl chloride	0.5[a]	<12	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m- & p-xylene	NP	N/A	<20	N/A	<2.0	<2.0	N/A	N/A	<2.0	N/A	<2.0	<2.0
o-xylene	NP	N/A	<10	N/A	<1.0	<1.0	N/A	N/A	<1.0	N/A	<1.0	<1.0
xylenes, total	1,750[a]	N/A	<20	N/A	<2.0	<2.0	N/A	N/A	<2.0	N/A	<2.0	<2.0

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TABLE 5-4. SUMMARY OF ANALYTICAL RESULTS FOR SITE 36 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 3 of 4)

		Site 36 (cont'd)											
		6M36MW06		6M36MW07				6M36MW09	6M36MW11				
		AL		AU				AU	AU				
Analyte	WQS	05/24/2012	05/24/2012[e]	10/05/2011	10/05/2011[e]	10/31/2011	05/23/2012	05/24/2012	10/06/2011	10/31/2011	12/21/2011	05/24/2012	05/24/2012[e]
Volatile Organics (µg/L)													
benzene	1[a]	<0.40	<0.40	N/A	N/A	N/A	**31** (S)	<0.40	N/A	N/A	**140**	**98**	**94**
n-butylbenzene	260[c]	N/A	N/A	N/A	N/A	N/A	**1.3** (S)	<1.0	N/A	N/A	N/A	**12**	**12**
sec-butylbenzene	260[c]	N/A	N/A	N/A	N/A	N/A	**3.2** (S)	<1.0	N/A	N/A	N/A	**15**	**15**
tert-butylbenzene	260[c]	N/A	N/A	N/A	N/A	N/A	**0.36** F (S)	<1.0	N/A	N/A	N/A	**1.5** F (F)	**1.4** F (F)
carbon tetrachloride	0.5[a]	**0.35** F (F)	**0.38** F (F)	N/A	N/A	N/A	<0.50 (S)	<0.50	N/A	N/A	<2.5	<2.5	<2.5
chlorobenzene	70[a]	<0.50	<0.50	**1,500**	**1,500**	**1,500**	**1,500** (S)	<0.50	**5,000**	**4,600**	**4,800**	**3,300**	**3,600**
chloroethane	NP	N/A	N/A	N/A	N/A	N/A	<1.0 (S)	<1.0	N/A	N/A	N/A	<5.0	<5.0
chloroform	NP	**0.83**	**0.84**	N/A	N/A	N/A	<0.30 (S)	**0.67**	N/A	N/A	<2.5	<1.5	<1.5
2-chlorotoluene	140[b]	N/A	N/A	N/A	N/A	N/A	**0.45** F (S)	<1.0	N/A	N/A	N/A	<5.0	<5.0
4-chlorotoluene	140[b]	N/A	N/A	N/A	N/A	N/A	**0.34** F (S)	<1.0	N/A	N/A	N/A	<5.0	<5.0
1,2-dichlorobenzene	600[b]	N/A	N/A	N/A	N/A	N/A	**3.1** (S)	<1.0	N/A	N/A	N/A	**20**	**20**
1,3-dichlorobenzene	600[d]	N/A	N/A	N/A	N/A	N/A	**3.6** (S)	<1.0	N/A	N/A	N/A	**15**	**15**
1,4-dichlorobenzene	5[a]	N/A	N/A	N/A	N/A	N/A	**110** (S)	<0.50	N/A	N/A	N/A	**370**	**360**
1,1-dichloroethane	5[a]	<1.0	<1.0	N/A	N/A	N/A	<1.0 (S)	<1.0	N/A	N/A	**1.1** F (F)	**1.2** F (F)	**1.1** F (F)
1,1-dichloroethene	6[a]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (S)	<1.0	**7.9**	**8.2**	**9.4**	**2.8** F (F)	**2.7** F (F)
cis-1,2-dichloroethene	6[a]	<1.0	<1.0	**1.2**	**1.3**	**1.0**	**0.93** F (S)	**0.43** F (F)	**6,400**	**4,200**	**6,700**	**2,800**	**3,000**
trans-1,2-dichloroethene	10[a]	<1.0	<1.0	**2.1**	**2.1**	**2.4**	**2.0** (S)	<1.0	**33**	**52**	**39**	**21**	**20**
ethylbenzene	300[a]	<1.0	<1.0	N/A	N/A	N/A	**3.4** (S)	<1.0	N/A	N/A	**1.6** F (F)	**37**	**36**
isopropylbenzene	770[c]	N/A	N/A	N/A	N/A	N/A	**4.6** (S)	<1.0	N/A	N/A	N/A	**34**	**33**
p-isopropyltoluene	NP	N/A	N/A	N/A	N/A	N/A	**1.9** (S)	<1.0	N/A	N/A	N/A	**16**	**15**
naphthalene	17[c]	N/A	N/A	N/A	N/A	N/A	**7.0** (S)	<1.0	N/A	N/A	N/A	**49**	**50**
n-propylbenzene	260[c]	N/A	N/A	N/A	N/A	N/A	**8.3** (S)	<1.0	N/A	N/A	N/A	**65**	**63**
tetrachloroethene (PCE)	5[b]	**1.8**	**1.9**	N/A	N/A	N/A	<1.0 (S)	**0.24** F (F)	N/A	N/A	<5.0	<5.0	<5.0
toluene	150[a]	<1.0	<1.0	N/A	N/A	N/A	**2.0** (S)	<1.0	N/A	N/A		**130**	**130**
trichloroethene (TCE)	5[b]	**5.6**	**5.9**	<1.0	<1.0	<1.0	<1.0 (S)	**1.8**	**0.50** F	**0.29** F	<5.0	<5.0	<5.0
trihalomethanes, total	80[b]	**0.83**	**0.84**	N/A	N/A	N/A	<1.0	**0.67** F	N/A	N/A	<2.5	<5.0	<5.0
1,2,4-trimethylbenzene	330[c]	N/A	N/A	N/A	N/A	N/A	**45** (S)	<1.0	N/A	N/A	N/A	**450**	**430**
1,3,5-trimethylbenzene	330[c]	N/A	N/A	N/A	N/A	N/A	**1.1** (S)	<1.0	N/A	N/A	N/A	**130**	**120**
vinyl chloride	0.5[a]	<0.50	<0.50	**5.2**	**5.8**	**11**	**3.0** (S)	<0.50	**46**	**62**	**100**	**270**	**250**
m- & p-xylene	NP	<2.0	<2.0	N/A	N/A	N/A	**6.9** (S)	<2.0	N/A	N/A	**260**	**120**	**120**
o-xylene	NP	<1.0	<1.0	N/A	N/A	N/A	**3.0** (S)	<1.0	N/A	N/A	**260**	**120**	**120**
xylenes, total	1,750[a]	<2.0	<2.0	N/A	N/A	N/A	**9.9** (S)	<2.0	N/A	N/A	**520**	**240**	**240**

TABLE 5-4. SUMMARY OF ANALYTICAL RESULTS FOR SITE 36 PLUME, 2011-2012 ANNUAL MONITORING PERIOD
AFRC GROUNDWATER MONITORING PROGRAM
MARCH ARB, CALIFORNIA
(Page 4 of 4)

Notes:
[(a)] State MCL (Primary).
[(b)] State and Federal MCL (Primary).
[(c)] CDPH Notification Level.
[(d)] CDPH Archived Advisory Level.
[(e)] Field duplicate.

Highlighted concentrations exceed water quality standards.

µg/L	micrograms per liter
AFRC	Air Force Reserve Command
AL	lower alluvial aquifer unit
AU	upper alluvial aquifer unit
CDPH	California Department of Public Health
MDL	method detection limit
N/A	not analyzed
NP	none promulgated
PQL	practical quantitation limit
RL	reporting limit
WQS	water quality standard

Laboratory-Assigned Qualifier:
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL

Data Validation Qualifiers:
(F) The compound was positively identified but the associated numerical value is below the PQL.
(S) Screening data (result not validated).

TABLE 5-5. SITE 36 MAXIMUM CONCENTRATIONS DETECTED IN GROUNDWATER
MARCH ARB, CALIFORNIA
(Page 1 of 1)

Analyte	Water Quality Standard* (µg/L)	Maximum Historical Concentration (µg/L)	Date of Maximum Historical Concentration	2011-2012 Maximum Concentration (µg/L)	Location of 2011-2012 Maximum Concentration
Volatile Organics (µg/L)					
benzene	1	700	Dec-95	140	6M36MW11
n-butylbenzene	260	120	Jun-05	27 (S)	36DP05D
sec-butylbenzene	260	88	Mar-01	42 (S)	36DP05D
tert-butylbenzene	260	88	Jun-06	2.5 (S)	36DP05D
carbon tetrachloride	0.5	9.0	Nov-03	0.38 F (F)	6M36MW06
chlorobenzene	70	5,100	Dec-10	5,000	6M36MW11
2-chlorotoluene	140	1.3	May-10	0.45 F (S)	6M36MW07
4-chlorotoluene	140	0.69	Jun-07	0.34 F (S)	6M36MW07
1,2-dichlorobenzene	600	1,600	Feb-05	20	6M36MW11
1,3-dichlorobenzene	600	380	Feb-05	15	6M36MW11
1,4-dichlorobenzene	5	600	Jun-06/Dec-07	370	6M36MW11
dichlorodifluoromethane	1,000	0.28	Apr-03	ND	--
1,1-dichloroethane	5	20	Mar-94	2.4 (S)	36DP05D
1,2-dichloroethane	0.5	22	May-01	ND	--
1,1-dichloroethene	6	32.8	Dec-05	9.4	6M36MW11
cis-1,2-dichloroethene	6	25,600	Dec-05	7,200 (S)	36DP05D
trans-1,2-dichloroethene	10	120	Aug-93	52	6M36MW11
ethylbenzene	300	100	Jun-07	42 (S)	36DP05D
isopropylbenzene	770	130	Jun-05	48 (S)	36DP05D
methyl tert-butyl ether (MTBE)	13	0.67	Sep-99	ND	--
methylene chloride	5	5.8	Mar-97	ND	--
naphthalene	17	490	Jun-05/Jun-08	120 (S)	36DP05D
n-propylbenzene	260	280	Jun-05	140 (S)	36DP05D
styrene	100	14	Sep-96	ND	--
1,1,2,2-tetrachloroethane	1	15	Mar-01	ND	--
tetrachloroethene (PCE)	5	22	Apr-00	1.9	6M36MW06
toluene	150	840	Dec-95	310	6M36MW11
1,2,4-trichlorobenzene	5	9.3	Feb-05	ND	--
trichloroethene (TCE)	5	3,400	Mar-96	5.9	6M36MW06
trichlorofluoromethane	150	0.77	Oct-01	ND	--
1,2,3-trichloropropane	0.005	0.70	Nov-03	ND	--
trihalomethanes, total	80	36	Mar-93/Apr-93	9.5	36DP01D
1,2,4-trimethylbenzene	330	2,900	Jun-05	920 (S)	36DP05D
1,3,5-trimethylbenzene	330	630	Jul-00	130	6M36MW11
vinyl chloride	0.5	93.5	Dec-05	270	6M36MW11
xylenes, total	1,750	1,150	Mar-97	520	6M36MW11

Notes:
* See Table 5-1 for detailed information.

-- not applicable
µg/L micrograms per liter
ARB Air Reserve Base
ND not detected

Laboratory-Assigned Qualifier
F Indicates that the analyte is positively identified and the result is less than the RL but greater than MDL.

Data Validation Qualifiers
(F) The compound was positively identified but the associated numerical value is below the PQL.
(S) Screening data (result not validated).

TABLE 6-1. 2012 - 2013 PROPOSED GROUNDWATER SAMPLE COLLECTION SCHEDULE
MARCH ARB, CALIFORNIA
(Page 1 of 4)

			Proposed Groundwater Sample Collection Schedule					
Well ID	2011-2012 Sampling Frequency	2012-2013 Sampling Frequency	Semiannual Q4 2011	Quarterly Q1 2012	Annual Q2 2012	Semiannual Q4 2012	Annual Q2 2013	Sampling Rationale
AFRC LTM Program								
5M1MW02	A	A			✓		✓	Basewide Plume Monitoring
2EW01	A	A			✓		✓	Petroleum Plume Monitoring
2EW02	A	A			✓		✓	Petroleum Plume Monitoring
2MW05	A	A			✓		✓	Basewide Plume Monitoring
2MW07	A	A			✓		✓	Basewide Plume Monitoring
2MW08	A	A			✓		✓	Basewide Plume Monitoring
2MW09	A	A	✓	✓	✓		✓	Basewide Plume Monitoring
5M2MW05A	A	A			✓		✓	Basewide Plume Monitoring
5M2MW06	A	A			✓		✓	Basewide Plume Monitoring
2PW01PRC	A	A			✓		✓	Basewide Plume Monitoring
2PW06PRC	A	A			✓		✓	Basewide Plume Monitoring
6M2MW07	A	A			✓		✓	Basewide Plume Monitoring
6M2MW09	A	A			✓		✓	Basewide Plume Monitoring
6M2MW10	A	A			✓		✓	Basewide Plume Monitoring
6M2MW12	A	A			✓		✓	Basewide Plume Monitoring
4MW07	A	A			✓		✓	Basewide Plume Monitoring
4MW08	A	A			✓		✓	Water Supply Guard Well
4MW14	A	A			✓		✓	Basewide Plume Monitoring
4MW16	S	A	✓		✓		✓	OU 1 Perimeter Guard Well
4MW18	A	A			✓		✓	OU 1 Perimeter Guard Well
5MW01	A	A			✓		✓	Basewide Plume Monitoring
5MW02	A	A			✓		✓	Basewide Plume Monitoring
5MW03	A	A			✓		✓	Basewide Plume Monitoring
5MW04	S	A	✓		✓		✓	Basewide Plume Monitoring
5MW07	A	A			✓		✓	Basewide Plume Monitoring
5MW08	A	A			✓		✓	Basewide Plume Monitoring
5MW09	A	A			✓		✓	Basewide Plume Monitoring
5MW14	A	A			✓		✓	Basewide Plume Monitoring
5MW16	A	A			✓		✓	Basewide Plume Monitoring
5MW18	A	A			✓		✓	Basewide Plume Monitoring
5MW23	A	A			✓		✓	Water Supply Guard Well
5MW28	A	A			✓		✓	Basewide Plume Monitoring
5MW29	A	A			✓		✓	Basewide Plume Monitoring
5MW30	A	A			✓		✓	Basewide Plume Monitoring
5MW31	A	A			✓		✓	Basewide Plume Monitoring
5MW32	A	A			✓		✓	Water Supply Guard Well
5MW33	B	B			✓			Water Supply Guard Well
5MW34	A	A			✓		✓	Water Supply Guard Well
5MW36	A	A			✓		✓	Basewide Plume Monitoring
7MW01	S	A	✓		✓		✓	Basewide Plume Monitoring
7MW03	A	A			✓		✓	Basewide Plume Monitoring
7MW04	A	A			✓		✓	Basewide Plume Monitoring
5M8MW02	A	A			✓		✓	Basewide Plume Monitoring
5M8MW03	A	A			✓		✓	Basewide Plume Monitoring
5M8MW04	A	A			✓		✓	Basewide Plume Monitoring
5M8MW05	A	A			✓		✓	Basewide Plume Monitoring
5M8MW06	A	A			✓		✓	Basewide Plume Monitoring
5M8MW07	A	A			✓		✓	Basewide Plume Monitoring
5M8MW09	A	A			✓		✓	Basewide Plume Monitoring
6M8MW10	A	A			✓		✓	Basewide Plume Monitoring
6M8MW11	A	A			✓		✓	Basewide Plume Monitoring
6M8MW12	A	A			✓		✓	Basewide Plume Monitoring
6M8MW13	A	A			✓		✓	Basewide Plume Monitoring
6M8MW15	A	A	✓		✓		✓	Basewide Plume Monitoring
6M8MW16	A	A	✓		✓		✓	Basewide Plume Monitoring
6M8MW17	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
6M8MW19	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
6M8MW20	A	A	✓		✓		✓	Basewide Plume Monitoring
6M8MW24	A	A			✓		✓	Basewide Plume Monitoring
6M8MW25	A	A			✓		✓	Basewide Plume Monitoring
6M8MW27	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
6M8MW28	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
434MW01	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
453MW01	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
453MW02	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
9MW01	A	A			✓		✓	Basewide Plume Monitoring
9MW02	A	A			✓		✓	Basewide Plume Monitoring
5M11MW01	A	A			✓		✓	Basewide Plume Monitoring
15MW01	A	A			✓		✓	Basewide Plume Monitoring
15MW02	A	A			✓		✓	Basewide Plume Monitoring
15MW03	A	A			✓		✓	Basewide Plume Monitoring
18MW01	--	--						Petroleum Plume Monitoring
18MW02	A	A			✓		✓	Petroleum Plume Monitoring
18MW04	--	--						Petroleum Plume Monitoring
18MW05	--	--						Petroleum Plume Monitoring
18MW07	--	--						Petroleum Plume Monitoring
18MW08	--	--						Petroleum Plume Monitoring
18MW09	A	A			✓		✓	Petroleum Plume Monitoring
18MW13	--	--						Petroleum Plume Monitoring
18MW14	--	--						Petroleum Plume Monitoring
18MW15	--	--						Petroleum Plume Monitoring
18MW17	--	--						Petroleum Plume Monitoring
18MW18	--	--						Petroleum Plume Monitoring
18MW19	--	--						Petroleum Plume Monitoring
18VW10D	--	--						Petroleum Plume Monitoring
18VW10S	--	--						Petroleum Plume Monitoring
18VW12D	--	--						Petroleum Plume Monitoring
18VW12S	--	--						Petroleum Plume Monitoring

TABLE 6-1. 2012 - 2013 PROPOSED GROUNDWATER SAMPLE COLLECTION SCHEDULE
MARCH ARB, CALIFORNIA
(Page 2 of 4)

			Proposed Groundwater Sample Collection Schedule					
Well ID	2011-2012 Sampling Frequency	2012-2013 Sampling Frequency	Semiannual Q4 2011	Quarterly Q1 2012	Annual Q2 2012	Semiannual Q4 2012	Annual Q2 2013	Sampling Rationale
23MW02	A	A			✓		✓	OU 1 Perimeter Guard Well
5M27MW01	A	A			✓		✓	Basewide Plume Monitoring
5M27MW02	A	A			✓		✓	Basewide Plume Monitoring
6M27MW05A	A	A			✓		✓	Basewide Plume Monitoring
28MW04	B	B			✓			Basewide Plume Monitoring
28MW07	A	A			✓		✓	Basewide Plume Monitoring
29MW01	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
29MW03	A	A			✓		✓	Basewide Plume Monitoring
29MW04	A	A			✓		✓	Basewide Plume Monitoring
29OW01	A	A			✓		✓	Basewide Plume Monitoring
31MW02	B	B			✓			Basewide Plume Monitoring
31MW04	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
31MW05	A	A			✓		✓	Basewide Plume Monitoring
31MW06	A	A			✓		✓	Basewide Plume Monitoring
31MW07	A	A			✓		✓	Basewide Plume Monitoring
31MW08	A	A			✓		✓	Basewide Plume Monitoring
31OW01	A	A			✓		✓	Basewide Plume Monitoring
31PW03PRC	A	A			✓		✓	Basewide Plume Monitoring
31BMW02	A	A			✓		✓	Basewide Plume Monitoring
31BDEW05D	A	A			✓		✓	Basewide Plume Monitoring
34MW02	A	A			✓		✓	Basewide Plume Monitoring
34MW04	A	A			✓		✓	Basewide Plume Monitoring
34MW06	A	A			✓		✓	Basewide Plume Monitoring
5M36MW02	A	A			✓		✓	Basewide Plume Monitoring
5M36MW03	A	A	✓		✓		✓	Basewide Plume Monitoring
5M36MW04	A	A	✓		✓		✓	Basewide Plume Monitoring
5M36MW05	A	A			✓		✓	Basewide Plume Monitoring
6M36MW06	A	A			✓		✓	Basewide Plume Monitoring
6M36MW07	A	A	✓		✓		✓	Basewide Plume Monitoring
6M36MW08	A	A			✓		✓	Basewide Plume Monitoring
6M36MW09	A	A			✓		✓	Basewide Plume Monitoring
6M36MW11	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
36DP01D	A	A	✓		✓		✓	Basewide Plume Monitoring
36DP03D	A	A			✓		✓	Basewide Plume Monitoring
36DP04D	A	A			✓		✓	Basewide Plume Monitoring
36DP05D	A	A	✓		✓		✓	Basewide Plume Monitoring
36DP06D	A	A	✓		✓		✓	Basewide Plume Monitoring
36VEP01D	A	A	✓		✓		✓	Basewide Plume Monitoring
36VEP06	A	A	✓		✓		✓	Basewide Plume Monitoring
6M2300MW01	A	A			✓		✓	Basewide Plume Monitoring
2307MW01	A	A			✓		✓	Basewide Plume Monitoring
2307MW02	A	A			✓		✓	Basewide Plume Monitoring
2307MW03	A	A			✓		✓	Basewide Plume Monitoring
2307MW05	A	A			✓		✓	Basewide Plume Monitoring
2307MW06	A	A			✓		✓	Basewide Plume Monitoring
EX07	A	A			✓		✓	Basewide Plume Monitoring
EX08	A	A			✓		✓	Basewide Plume Monitoring
OBMW01A	A	A			✓		✓	OU 1 Perimeter Guard Well
OBMW01B	A	A			✓		✓	OU 1 Perimeter Guard Well
OBMW02B	A	A			✓		✓	Basewide Plume Monitoring
OBMW03	A	A	✓		✓		✓	Basewide Plume Monitoring
OBMW04A	A	A			✓		✓	Basewide Plume Monitoring
OBMW05A	A	A			✓		✓	Basewide Plume Monitoring
OBMW05B	A	A			✓		✓	Basewide Plume Monitoring
OBMW07A	A	A			✓		✓	Basewide Plume Monitoring
OBMW07B	A	A			✓		✓	Basewide Plume Monitoring
OBMW09A	A	A			✓		✓	Basewide Plume Monitoring
OBMW09B	A	A			✓		✓	Basewide Plume Monitoring
OBMW10A	A	A			✓		✓	Basewide Plume Monitoring
OBMW10B	A	A			✓		✓	Basewide Plume Monitoring
OBMW10C	A	A			✓		✓	Basewide Plume Monitoring
OBMW10D	A	A			✓		✓	OU 1 Perimeter Guard Well
OU1MW01	A	A			✓		✓	Basewide Plume Monitoring
OU1MW02	A	A			✓		✓	Basewide Plume Monitoring
OU1MW03	A	A			✓		✓	Basewide Plume Monitoring
OU1MW04	A	A			✓		✓	Basewide Plume Monitoring
OU1MW05	A	A			✓		✓	Basewide Plume Monitoring
OU1MW07	A	A			✓		✓	Basewide Plume Monitoring
OU1MW08	A	A			✓		✓	Basewide Plume Monitoring
OU1MW09	A	A			✓		✓	Basewide Plume Monitoring
OU1MW10	A	A			✓		✓	Basewide Plume Monitoring
OU1MW11	A	A			✓		✓	Basewide Plume Monitoring
OU1MW13	A	A			✓		✓	Basewide Plume Monitoring
OU1MW14	A	A			✓		✓	Basewide Plume Monitoring
OU1MW15A	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
OU1MW15B	A	A			✓		✓	Basewide Plume Monitoring
OU1MW16B	A	A			✓		✓	Basewide Plume Monitoring
OU1MW18	A	A			✓		✓	Basewide Plume Monitoring
OU1MW19	A	A			✓		✓	Basewide Plume Monitoring
OU1MW24A	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
OU1MW24B	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
OU1MW25	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
OU1MW27	A	A			✓		✓	Basewide Plume Monitoring
OU1OW01	A	A			✓		✓	Basewide Plume Monitoring
OU1OW02	A	A			✓		✓	Basewide Plume Monitoring
OU1OW03	A	A			✓		✓	Basewide Plume Monitoring
OU1OW04	A	A			✓		✓	Basewide Plume Monitoring
OU1PZ05	A	A			✓		✓	Basewide Plume Monitoring

TABLE 6-1. 2012 - 2013 PROPOSED GROUNDWATER SAMPLE COLLECTION SCHEDULE
MARCH ARB, CALIFORNIA
(Page 3 of 4)

Well ID	2011-2012 Sampling Frequency	2012-2013 Sampling Frequency	Proposed Groundwater Sample Collection Schedule: Semiannual Q4 2011	Quarterly Q1 2012	Annual Q2 2012	Semiannual Q4 2012	Annual Q2 2013	Sampling Rationale
OU1PZ07	A	A			✓		✓	Basewide Plume Monitoring
OU1PZ08	A	A			✓		✓	Basewide Plume Monitoring
OU1PZ09	A	A			✓		✓	Basewide Plume Monitoring
OU1PZ10	A	A			✓		✓	Basewide Plume Monitoring
PANCP08	A	A			✓			Petroleum Plume Monitoring
PANCP11	A	A			✓		✓	Basewide Plume Monitoring
PANCP13	A	A			✓		✓	Basewide Plume Monitoring
PANEX01	--	--						Petroleum Plume Monitoring
PANEX02	--	--						Petroleum Plume Monitoring
PANEX03	--	--						Petroleum Plume Monitoring
PANFP01	A	A			✓			Petroleum Plume Monitoring
PANFP03	A	A			✓		✓	Basewide Plume Monitoring
PANFP04	A	A			✓			Petroleum Plume Monitoring
PANFP05	--	--						Petroleum Plume Monitoring
PANFP06	--	--						Petroleum Plume Monitoring
PANFP07	A	A			✓		✓	Basewide Plume Monitoring
PANHP04	--	--						Petroleum Plume Monitoring
PANHP06	--	--						Petroleum Plume Monitoring
PANMW01	--	--						Petroleum Plume Monitoring
PANMW06	A	A			✓		✓	Basewide Plume Monitoring
PANMW07	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
PANMW09	A	A			✓		✓	Basewide Plume Monitoring
PANMW10	A	A			✓		✓	Basewide Plume Monitoring
PANMW11	--	--						Petroleum Plume Monitoring
PANMW12	--	--						Petroleum Plume Monitoring
PANMW13	S	S			✓		✓	Basewide Plume Monitoring
PANMW14	B	B			✓			Basewide Plume Monitoring
PANMW15	--	--						Petroleum Plume Monitoring
PANMW16	A	A			✓		✓	Basewide Plume Monitoring
PANMW17	A	A			✓		✓	Basewide Plume Monitoring
PANMW18	A	A			✓		✓	Basewide Plume Monitoring
PANMW19	A	A			✓		✓	Basewide Plume Monitoring
PANMW21	A	A	✓		✓		✓	Petroleum Plume Monitoring
PANMW23	A	A			✓		✓	Basewide Plume Monitoring
PANMW25	--	--						Petroleum Plume Monitoring
PANMW26	--	--						Petroleum Plume Monitoring
PANMW27	A	A			✓		✓	Basewide Plume Monitoring
PANMW28	A	A			✓		✓	Basewide Plume Monitoring
PANMW30	A	A			✓			Petroleum Plume Monitoring
PANMW32A	A	A			✓			Petroleum Plume Monitoring
PANMW33	A	A			✓			Petroleum Plume Monitoring
PANMW35	A	A			✓		✓	Petroleum Plume Monitoring
PANMW36	A	A			✓		✓	Petroleum Plume Monitoring
PANMW37	A	A			✓		✓	Petroleum Plume Monitoring
PANMW39	--	--						Petroleum Plume Monitoring
PANMW40	A	A			✓			Petroleum Plume Monitoring
PANMW41	A	A			✓			Petroleum Plume Monitoring
PANMW42	--	--						Petroleum Plume Monitoring
PANMW43	A	A			✓			Petroleum Plume Monitoring
PANMW44	--	--						Petroleum Plume Monitoring
PANMW45	A	A			✓			Petroleum Plume Monitoring
PANMW47	A	A			✓		✓	Basewide Plume Monitoring
PANMW48A	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
PANOW02	A	A			✓		✓	Basewide Plume Monitoring
PANPZ02B	A	A			✓		✓	Basewide Plume Monitoring
PANTF05	--	--						Petroleum Plume Monitoring
PANTF09	--	--						Petroleum Plume Monitoring
RBEMW02A	A	A			✓		✓	Basewide Plume Monitoring
RBEMW02B	A	A			✓		✓	Basewide Plume Monitoring
RBEMW03A	A	A			✓		✓	Basewide Plume Monitoring
RBEMW03B	A	A						Petroleum Plume Monitoring
RBEMW04A	A	A			✓		✓	Basewide Plume Monitoring
RBEMW04B	A	A			✓		✓	Basewide Plume Monitoring
RBEMW08	A	A			✓		✓	Basewide Plume Monitoring
OBMW06A	A	A			✓		✓	Water Supply Guard Well
OBMW06B	A	A			✓		✓	Water Supply Guard Well
OBMW06C	A	A			✓		✓	Water Supply Guard Well
OBMW08A	A	A			✓		✓	Basewide Plume Monitoring
OBMW08B	A	A			✓		✓	Basewide Plume Monitoring
OBMW08C	A	A			✓		✓	Basewide Plume Monitoring
OBMW08D	A	A			✓		✓	Basewide Plume Monitoring
RBEMW01A	A	A			✓		✓	Basewide Plume Monitoring
RBEMW01B	A	A			✓		✓	Water Supply Guard Well
RBEMW01C	B	B			✓			Basewide Plume Monitoring
RBEMW01D	B	B			✓			Basewide Plume Monitoring
RBEMW01E	B	B			✓			Basewide Plume Monitoring
RBEMW07A	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW07B	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW11A	A	A			✓		✓	Basewide Plume Monitoring
RBEMW11B	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW11C	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW11D	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW11E	B	B			✓			Basewide Plume Monitoring
RBEMW13A	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW13B	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW13C	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW13D	A	A			✓		✓	OU 1 Perimeter Guard Well
RBEMW13E	A	A			✓		✓	OU 1 Perimeter Guard Well
BOWERS	S	S	✓		✓	✓	✓	Water Supply Well

TABLE 6-1. 2012 - 2013 PROPOSED GROUNDWATER SAMPLE COLLECTION SCHEDULE
MARCH ARB, CALIFORNIA
(Page 4 of 4)

Well ID	2011-2012 Sampling Frequency	2012-2013 Sampling Frequency	Proposed Groundwater Sample Collection Schedule: Semiannual Q4 2011	Quarterly Q1 2012	Annual Q2 2012	Semiannual Q4 2012	Annual Q2 2013	Sampling Rationale
MENDEZ	A	A			✓		✓	Water Supply Well
CLARK1	A	A			✓		✓	Water Supply Well
NODARSE	A	A			✓		✓	Water Supply Well
TERAO	A	A			✓		✓	Water Supply Well
AFRC Total:								
270			**35**	**1**	**236**	**18**	**218**	
AFRPA LTM Program								
4MW04*	A	A					✓	Basewide Plume Monitoring
4MW05*	A	A					✓	Basewide Plume Monitoring
4MW06*	A	A					✓	OU 1 Perimeter Guard Well
4MW11*	A	A					✓	Basewide Plume Monitoring
4MW12*	A	A					✓	Basewide Plume Monitoring
4MW13	A	A			✓		✓	OU 1 Perimeter Guard Well
4MW19*	A	A					✓	OU 1 Perimeter Guard Well
4MW20*	A	A					✓	Basewide Plume Monitoring
4MW21*	A	A					✓	Basewide Plume Monitoring
4MW22	A	A			✓		✓	Basewide Plume Monitoring
4MW23*	A	A					✓	Basewide Plume Monitoring
4MW25A*	A	A					✓	Basewide Plume Monitoring
4MW26A*	A	A					✓	Basewide Plume Monitoring
4MW27A*	A	A					✓	Basewide Plume Monitoring
4MW28A*	A	A					✓	Basewide Plume Monitoring
4MW29*	A	A					✓	OU 1 Perimeter Guard Well
4MW30*	A	A					✓	Basewide Plume Monitoring
4MW31*	A	A					✓	Basewide Plume Monitoring
4PZ03*	A	A					✓	Basewide Plume Monitoring
4PZ05*	A	A					✓	Basewide Plume Monitoring
4PZ06*	A	A					✓	Basewide Plume Monitoring
4PZ07*	A	A					✓	Basewide Plume Monitoring
4PZ08*	A	A					✓	Basewide Plume Monitoring
4PZ09*	B	B					✓	Basewide Plume Monitoring
4PZ10*	A	A					✓	Basewide Plume Monitoring
4PZ11*	A	A					✓	Basewide Plume Monitoring
4PZ12*	A	A					✓	Basewide Plume Monitoring
4PZ13*	A	A					✓	Basewide Plume Monitoring
5M6MW02A	--	--						
5M6MW05	--	--						
6M6MW01	--	--						
6M6MW03	--	--						
6M6MW05	--	--						
6M6MW06	--	--						
6M6MW07	--	--						
OU1MW06	S	S	✓		✓	✓	✓	Basewide Plume Monitoring
OU1MW20*	A	A					✓	Basewide Plume Monitoring
OU1MW21*	A	A					✓	Basewide Plume Monitoring
OU1MW22*	A	A					✓	Basewide Plume Monitoring
OU1MW23*	A	A					✓	Basewide Plume Monitoring
AFRPA Total:								
40			**1**	**0**	**3**	**1**	**33**	

Notes:

* This well was not sampled during the 2011-2012 annual monitoring period (August 2011 through July 2012). The well was sampled in September 2012 and was reported in the *2012-2013 CG049 Semiannual Groundwater Monitoring Informal Technical Information Report* (AECOM 2013b).

1) RWQCB reviewed the Draft 2011 – 2012 Annual Monitoring Report for Petroleum Sites (Sites 18 and 33) and recommended modification to the groundwater monitoring program for Sites 18 and 33. The modification requested to reduce the number of wells to be sampled to two wells at each location (RWQCB 2013a).

2) Based on RWQCB recommendation the detection monitoring program for groundwater at LF006 is discontinued (RWQCB 2013b).

Well	Discontinue Groundwater Elevation Monitoring
Well	Reduce Sampling and Analysis Frequency to Biennial
Well	Halt Monitoring of Transducers

The following wells are currently inaccessible for monitoring:

- Wells 5MW35, 5MW36, OBMW05A, and OBMW05B due to construction activities and are buried.
- Well OBMW09A contained a blockage in the well.
- Well 5M2MW6 is inaccessible due to a trailer parked over it.
- Well RBEMW05 was inaccessible due to Museum fence modification and restricted access.
- Well RBEMW12 was inaccessible due to new roadway with heavy traffic conditions.
- Well 9MW01 requires multiple levels of approval for access.

A	annual
AECOM	AECOM Technical Services, Inc.
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
B	biennial
NA	not applicable
RWQCB	Regional Water Quality Control Board

TABLE 6-2. WELL LIST AND RATIONALE TO DISCONTINUE GROUNDWATER ELEVATION MONITORING
AFRC AND AFRPA LONG-TERM GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 1 of 2)

Site	Well ID	HSU	Well Location in Relation to the Associated Plume	Top of Screen Depth (feet bgs)	Bottom of Screen Depth (feet bgs)	Screen Length (feet)	Depth of Well (feet bgs)	Rationale for Discontinued GW Elevation Monitoring	Potential Impact due to Proposed Change
Site 2	2PW01PRC	AU	700' N of TCE Plume	48.7	68.7	20	68.7	Data not necessary to construct groundwater potentiometric maps. Data available from well 5M2MW02, in the same HSU within 100 feet.	None anticipated, redundant wells.
Site 2	5M2MW05A	AU	800' N of TCE Plume	57	77	20	77	Data not necessary to construct groundwater potentiometric maps. Data available from well 5M2MW02, in the same HSU within 100 feet.	None anticipated, redundant wells.
Site 4	4MW14	AU	150' SW of small TCE Plume	35	75	40	75	Data not necessary to construct groundwater potentiometric maps. Data available from well 31OW01, in the same HSU, within 100 feet.	None anticipated, redundant wells.
Site 7	7MW04	AU	In PCE Plume	44.7	64.7	20	64.7	Data not necessary to construct groundwater potentiometric maps. Data available from well 7MW03, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 8 Building 355	5M8MW04	AU	N end of TCE Plume	38.7	58.7	20	58.7	Data not necessary to construct groundwater potentiometric maps. Data available from well 6M8MW18, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 8 Building 355	6M8MW15	AU	N end of TCE Plume	39	44	5	44	Data not necessary to construct groundwater potentiometric maps. Data available from well 6M8MW18, in the same HSU, within 30 feet.	None anticipated, redundant wells.
Site 8 Building 355	6M8MW17	AU	N end of TCE Plume	29	39	10	44	Data not necessary to construct groundwater potentiometric maps. Data available from well 6M8MW14, in the same HSU, within 30 feet.	None anticipated, redundant wells.
Site 8 Building 355	6M8MW24	AU	In TCE Plume	30	40	10	40	Data not necessary to construct groundwater potentiometric maps. Data available from two monitoring wells (6M8MW20 and PANMW06) in the same HSU within 300 feet.	None anticipated, redundant wells.
Site 8 Building 2300	6M2300MW01	AU	1200' N of PCE Plume	50	60	10	60	Data not necessary to construct groundwater potentiometric maps. Data available from well 5M8MW09, in the same HSU, within 150 feet.	None anticipated, redundant wells.
Site 8 Building 2307	2307MW01	AU	In PCE Plume	45.5	60.5	15	66	Data not necessary to construct groundwater potentiometric maps. Data available from well 2307MW03, in the same HSU, within 150 feet.	None anticipated, redundant wells.
Site 8 Building 2307	2307MW02	AU	100' NE PCE Plume	60	70	10	75	Data not necessary to construct groundwater potentiometric maps. Data available from well 2307MW06, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 15	15MW03	AU	In PCE, TCE, and CTCL Plumes	32.87	57.2	24.33	57.2	Data not necessary to construct groundwater potentiometric maps. Data available from well 15MW01, in the same HSU, within 300 feet.	None anticipated, redundant wells.
Site 27	5M27MW01	AU	900' W of TCE Plume	52	72	20	72	Data not necessary to construct groundwater potentiometric maps. Data available from well 5M27MW04, in the same HSU, within 100 feet.	None anticipated, redundant wells.
Site 31A	31MW02	AU	600' NW of small TCE Plume	40	60	20	60	Data not necessary to construct groundwater potentiometric maps. Data available from well 31MW08, in the same HSU, within 300 feet.	None anticipated, redundant wells.
Site 31A	31PW03PRC	AU	In small TCE Plume	90	105	15	105	Data not necessary to construct groundwater potentiometric maps. Data available from well 31PW01PRC, in the same HSU, within 50 feet.	None anticipated, redundant wells.

TABLE 6-2. WELL LIST AND RATIONALE TO DISCONTINUE GROUNDWATER ELEVATION MONITORING
AFRC AND AFRPA LONG-TERM GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 2 of 2)

Site	Well ID	HSU	Well Location in Relation to the Associated Plume	Top of Screen Depth (feet bgs)	Bottom of Screen Depth (feet bgs)	Screen Length (feet)	Depth of Well (feet bgs)	Rationale for Discontinued GW Elevation Monitoring	Potential Impact due to Proposed Change
Site 34	34MW06	AU	900' NW of small TCE Plume	29	49	20	49	Data not necessary to construct groundwater potentiometric maps. Data available from well 34MW01, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 36	36DP01D	AU	300' SE of TCE Plume	36	46	10	46	Data not necessary to construct groundwater potentiometric maps. Data available from well 36DP03D, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 36	36DP04D	AU	300' SE of TCE Plume	34	44	10	44	Data not necessary to construct groundwater potentiometric maps. Data available from well 36DP03D, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 36	36DP05D	AU	300' SE of TCE Plume	50	60	10	60	Data not necessary to construct groundwater potentiometric maps. Data available from well 36DP03D, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 36	36VEP06	AU	300' SE of TCE Plume	28	58	30	63	Data not necessary to construct groundwater potentiometric maps. Data available from well 36DP03D, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 36	5M36MW02	AU	300' SE of TCE Plume	32	52	20	52	Data not necessary to construct groundwater potentiometric maps. Data available from well 6M36MW10, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 36	5M36MW04	AU	300' SE of TCE Plume	43	63	20	63	Data not necessary to construct groundwater potentiometric maps. Data available from well 6M36MW09, in the same HSU, within 50 feet.	None anticipated, redundant wells.
Site 36	5M36MW05	AU	300' SE of TCE Plume	40	60	20	60	Data not necessary to construct groundwater potentiometric maps. Data available from well 36VEP04, in the same HSU, within 50 feet.	None anticipated, redundant wells.

Notes:

' feet
AFRC Air Force Reserve Command
AFRPA Air Force Real Property Agency
ARB Air Reserve Base
AU upper alluvial
CTCL carbon tetrachloride
feet bgs feet below ground surface
GW groundwater
HSU hydrostratigraphic unit
ID idenification
NE northeast
NW northwest
PCE tetrachloroethene
SE southeast
SW southwest
TCE trichloroethene
W west

TABLE 6-3. WELL LIST AND RATIONALE FOR REDUCED SAMPLING AND ANALYSIS FREQUENCY
AFRC AND AFRPA LONG-TERM GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA
(Page 1 of 2)

Site	Well ID	HSU	Well Location in Relation to the Associated Plume	Top of Screen Depth (feet bgs)	Bottom of Screen Depth (feet bgs)	Screen Length (feet)	Depth of Well (feet bgs)	Current Sampling Frequency*	Rationale for Reduced Sampling and Analysis Frequency	Potential Impact due to Proposed Change
Site 2	2MW08	AU	1200' E of Bldg 434 TCE Plume	43	83	40	83	A	GW flow direction is to the SE, well is to the W of the plume.	None anticipated. Well is not in plume path.
Site 4	4MW04	AL	1200' NE of Bldg 453 TCE Plume	121.02	152.52	31.5	152.52	A	Well is not in a plume path.	None anticipated. Well is not in plume path.
Site 4	4MW22	AU	100' SSW of Site 4 PCE Plume	35	55	20	55	A	Other wells (31BDEW05D and 31BMW02) are S of the PCE plume and useful to monitor plume movement/change.	None anticipated. Adequate data points are available.
Site 5	5MW01	AU	100' N of Site 7 PCE Plume	47.05	87.05	40	87.05	A	GW flow direction is to the SE. Well OU1GEW02 is 50' N of 5MW01 and therefore better positioned to monitor plume.	None anticipated. Well is not in plume path.
Site 5	5MW16	AU	2,000' S of Site 31 Plumes and 1,000' E of a small TCE Plume	54	94	40	94	A	Well 29MW04 is likely in the path of the small TCE plume. Well 5MW18 is between two plumes, 900' E of the small plume and 900' SW of a PCE/TCE plume.	None anticipated. Well is not in plume path.
Site 5	5MW32	AL	1800' SE of TCE Plume	135	155	20	155	A	Well 5MW23 (screen depth 202' - 242' bgs) is adjacent to Well 5MW32.	None anticipated. The shallower screened BD well (135; - 155') will identify the plume before the deeper screened BD well (202' - 242'). If COC concentration in 5MW23 rise to 5 ug/L, then monitoring frequency in 5MW32 would revert to annual.
Site 8	5M8MW05	AU	900' E of Bldg 355 Plume	36.7	56.7	20	56.7	A	Well is not in a plume path.	None anticipated. Well is not in plume path.
Site 8	RBEMW04A	AL	2,400' SE of small TCE Plume	140.33	150.33	10	155.33	A	Well PANMW48A will likely intercept plume before Well RBEMW04A. Well sampling frequency can be increased in future if/when warranted.	None anticipated.
Site 8	RBEMW04B	AU	400' SW of CTCL Plume	91.66	101.66	10	101.66	A	Well is not in plume path, Well 28MW07 is also 400' W of the plume and 1,000' downgradient.	None anticipated. Well is not in plume path.
Site 8 Building 2300	5M8MW09	AU	700' NE of Bldg 2307 PCE Plume	61	81	20	81	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 8 Building 2300	6M2300MW01	AU	800' NE of Bldg 2307 PCE Plume	50	60	10	60	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 8 Building 2300	6M8MW10	AU	1,200' N of Bldg 2307 PCE Plume	75	85	10	85	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 8 Building 2307	2307MW02	AU	75' NE of Bldg 2307 PCE Plume	60	70	10	75	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 8 Building 2307	5M8MW06	AL	1,500' NW of Bldg 453 Plumes	57	77	20	77	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 9	9MW02	BD	50' N of TCE Plume	146	156	10	156	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 11	5M11MW01	AU	1,800' N of Bldg 2307 PCE Plume	69	89	20	89	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 15	15MW01	AU	150' SW of CTCL Plume	35	75	40	75	A	Well is 100' SW of plumes. Well is not in plume path.	None Anticipated.
Site 31A	31MW06A	AU	750' S of small TCE Plume	39.5	59.5	20	59.5	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 31A	31MW08	AU	400' W of small TCE Plume	57	77	20	77	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 31A	31OW01	AU	Just S of small TCE Plume	60	80	20	80	A	TCE concentrations have decreased below 5 ug/L since 2000 and below 1 ug/L since 2012.	None Anticipated.
Site 33	PANCP11	AU	750' SW of TCE Plume and 2,000' SE of a small TCE Plume	37	67	30	67	A	Well is not in a plume path. Other wells will intercept plume. Well sampling frequency can be increased if/when warranted.	None Anticipated.

**TABLE 6-3. WELL LIST AND RATIONALE FOR REDUCED SAMPLING AND ANALYSIS FREQUENCY
AFRC AND AFRPA LONG-TERM GROUNDWATER MONITORING PROGRAMS
MARCH ARB, CALIFORNIA**
(Page 2 of 2)

Site	Well ID	HSU	Well Location in Relation to the Associated Plume	Top of Screen Depth (feet bgs)	Bottom of Screen Depth (feet bgs)	Screen Length (feet)	Depth of Well (feet bgs)	Current Sampling Frequency*	Rationale for Reduced Sampling and Analysis Frequency	Potential Impact due to Proposed Change
Site 33	PANCP13	AU	750' SW of TCE Plume and over 2,000' SE of a small TCE Plume	36	66	30	66	A	Well is not in a plume path. Other wells will intercept plume. Well sampling frequency can be increased if/when warranted.	None Anticipated.
Site 33	PANFP03	AU	750' W of TCE Plume and 1,000' SE of a small TCE Plume	34	64	30	64	A	Well is not in a plume path. Other wells will intercept plume. Well sampling frequency can be increased if/when warranted.	None Anticipated.
Site 33	PANFP07	AU	750' SW of small TCE Plume	39	69	30	69	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 33	PANMW18	AU	300' W of TCE Plume	36	66	30	66	A	Well is not in plume path.	None anticipated. Well is not in plume path.
Site 33	PANMW19	AL	1,500' SE of Bldg 453 Plumes	75	80	5	80	A	Well PANMW14 is a nearby well in the same HSU.	None Anticipated. Redundant wells.
Site 34	34MW04	AU	300' N of small TCE Plume, 2,400' SE of TCE Plume	25	60	35	60	A	Well located a far distance downgradient of plume. Other wells will intercept plume. Well sampling frequency can be increased if/when warranted.	None Anticipated.
Site 34	34MW06	AU	200' N of small TCE Plume, 2,500' SE of TCE Plume	29	49	20	49	A	Well located a far distance downgradient of plume. Other wells will intercept plume first. Well sampling frequency can be increased if/when warranted.	None Anticipated.
Site 36	36DP04D	AU	150' SE of Bldg 453 TCE Plume	34	44	10	44	A	In a cluster of 14 wells, some wells similarly screened.	None Anticipated.
Site 36	5M36MW02	AU	150' SE of Bldg 453 TCE Plume	32	52	20	52	A	In a cluster of 14 wells, some wells similarly screened.	None Anticipated.
Site 36	5M36MW03	AU	150' SE of Bldg 453 TCE Plume	33	53	20	53	A	In a cluster of 14 wells, some wells similarly screened.	None Anticipated.
OU1	OBMW01A	BD	750' ENE of PCE Plume.	140	160	20	166	A	Well is not in plume path.	None anticipated. Well is not in plume path.
OU1	OBMW06A	AU	8,500' SE of TCE Plume	135	145	10	145	A	Other wells will intercept first.	None Anticipated.
OU1	OBMW06B	AL	9,500' SE of TCE Plume	260	270	10	270	A	Other wells will intercept first.	None Anticipated.

Notes:

* Proposed sampling frequency will be biennial.

'	feet
µg/L	micrograms per liter
A	annually
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
AL	lower alluvial
ARB	Air Reserve Base
AU	upper alluvial
BD	bedrock
Bldg	building
COC	contaminant of concern
CTCL	carbon tetrachloride
ENE	east-northeast
feet bgs	feet below ground surface
GW	groundwater
HSU	hydrostratigraphic unit
ID	identifier
MCL	maximum contaminant level
N	north
NE	northeast
NW	northwest
PCE	tetrachloroethene
S	south
SA	semi-annually
SE	southeast
SSW	south-southwest
SW	southwest
TCE	trichloroethene

TABLE 6-4. TRANSDUCER MONITORING PROGRAM
(Page 1 of 2)

Site	Well ID	HSU	Top of Screen Depth (feet bgs)	Bottom of Screen Depth (feet bgs)	Screen Length (feet)	Depth of Well (feet bgs)	Rationale to Halt Transducer Monitoring
Site 4	4MW12	AU	28	68	40	68	Data collected from 2009 to 2012 were inconlcusive in explaining the groundwater contamination north and west of the Site 4 landfill.
Site 4	4MW23	AU	26.9	46.9	20	46.9	Same as above
Site 4	4MW27A	BD	260	270	10	275	Same as above
Site 5	4PZ02	AL	93	103	10	103.4	Same as above
Site 4	4PZ06	AU	40	60	20	60	Same as above
Site 4	4PZ09	AU	55	65	10	65	Same as above
Site 29	29MW02	BD	146	156	10	154.5	Same as above
Site 29	29MW03	BD	80	100	20	100	Same as above
Site 29	29MW04	AU	35	55	20	55	Same as above
Site 33	PANMW23	AU	35	55	20	55	Same as above
OU1	OBMW03	AU	57.69	67.69	10	67.69	Same as above
OU1	OBMW04A	AU	80	85	5	87	Same as above
OU1	OBMW04B	AU	54	64	10	66	Same as above
OU1	OBMW10A	BD	205	225	20	225	Same as above
OU1	OBMW10B	AL	161	171	10	171	Same as above
OU1	OBMW10D	AU	35	45	10	45	Same as above
OU1	OU1MW03	BD	98	118	20	118	Same as above
OU1	OU1MW08	AU	50	85	35	85	Same as above
OU1	OU1MW15A	BD	72	82	10	82	Same as above
OU1	OU1MW15S	BD	130	135	5	139	Same as above
OU1	OU1MW16B	BD	215	225	10	225	Same as above
OU1	OU1MW16S	BD	139	149	10	152.5	Same as above
OU1	OU1MW18	AU	85	95	10	95	Same as above

TABLE 6-4. TRANSDUCER MONITORING PROGRAM
(Page 2 of 2)

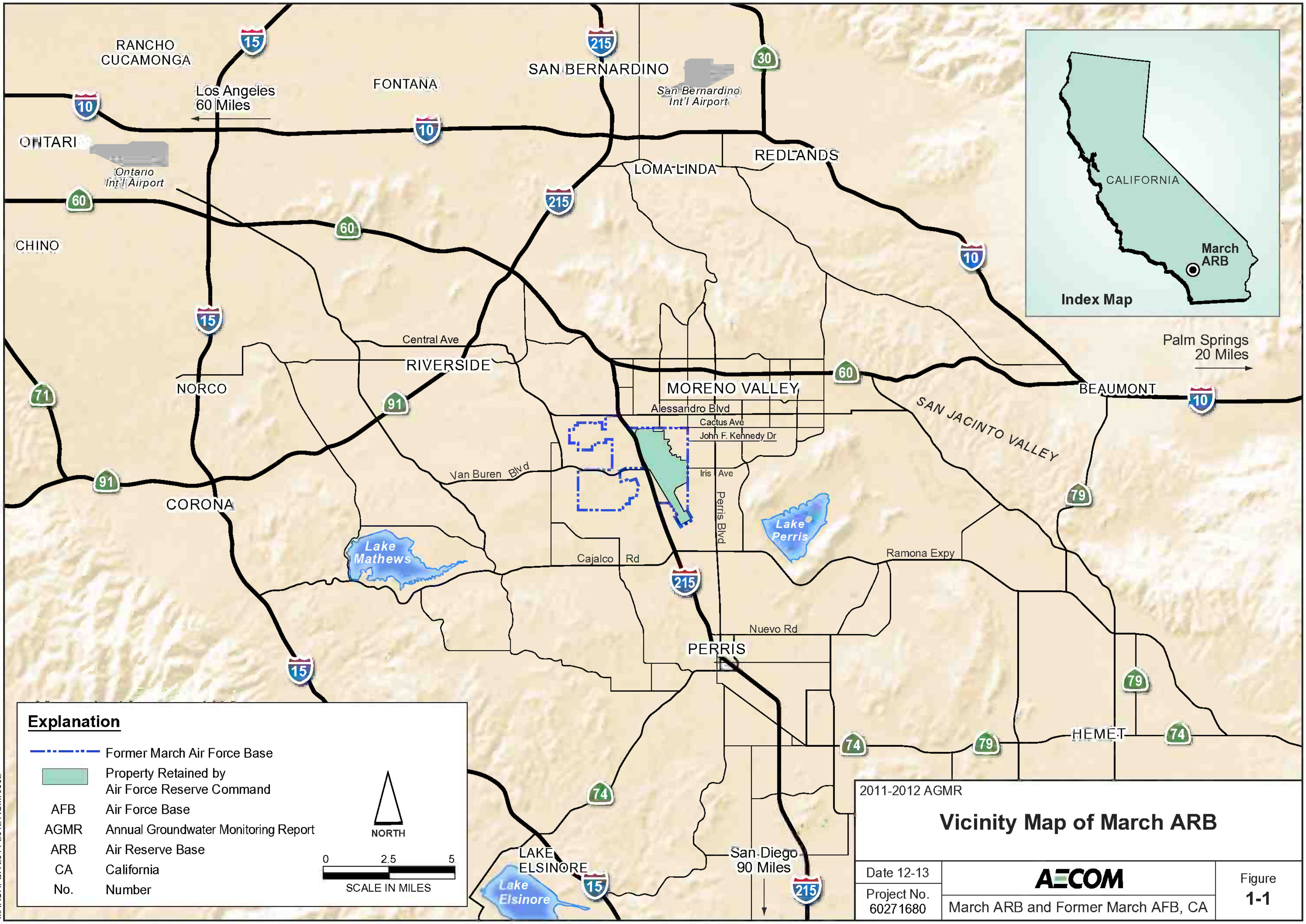
Site	Well ID	HSU	Top of Screen Depth (feet bgs)	Bottom of Screen Depth (feet bgs)	Screen Length (feet)	Depth of Well (feet bgs)	Rationale to Halt Transducer Monitoring
Site 7	OU1MW22	AU	59	69	10	69	Same as above
OU1	OU1MW24B	AU	77	87	10	87	Same as above
OU1	OU1MW25	BD	114.5	124.5	10	124.5	Same as above
OU1	RBEMW02A	AL	144.55	149.55	5	151.95	Same as above
OU1	RBEMW02B	AU	100.15	105.15	5	107.55	Same as above

Notes:

AL lower alluvial
AU upper alluvial
BD bedrock
feet bgs feet below ground surface
HSU hydrostratigraphic unit
ID identifier

LIST OF FIGURES

LIST OF FIGURES *(Continued)*



2011-2012 AGMR

Vicinity Map of March ARB

Date 12-13

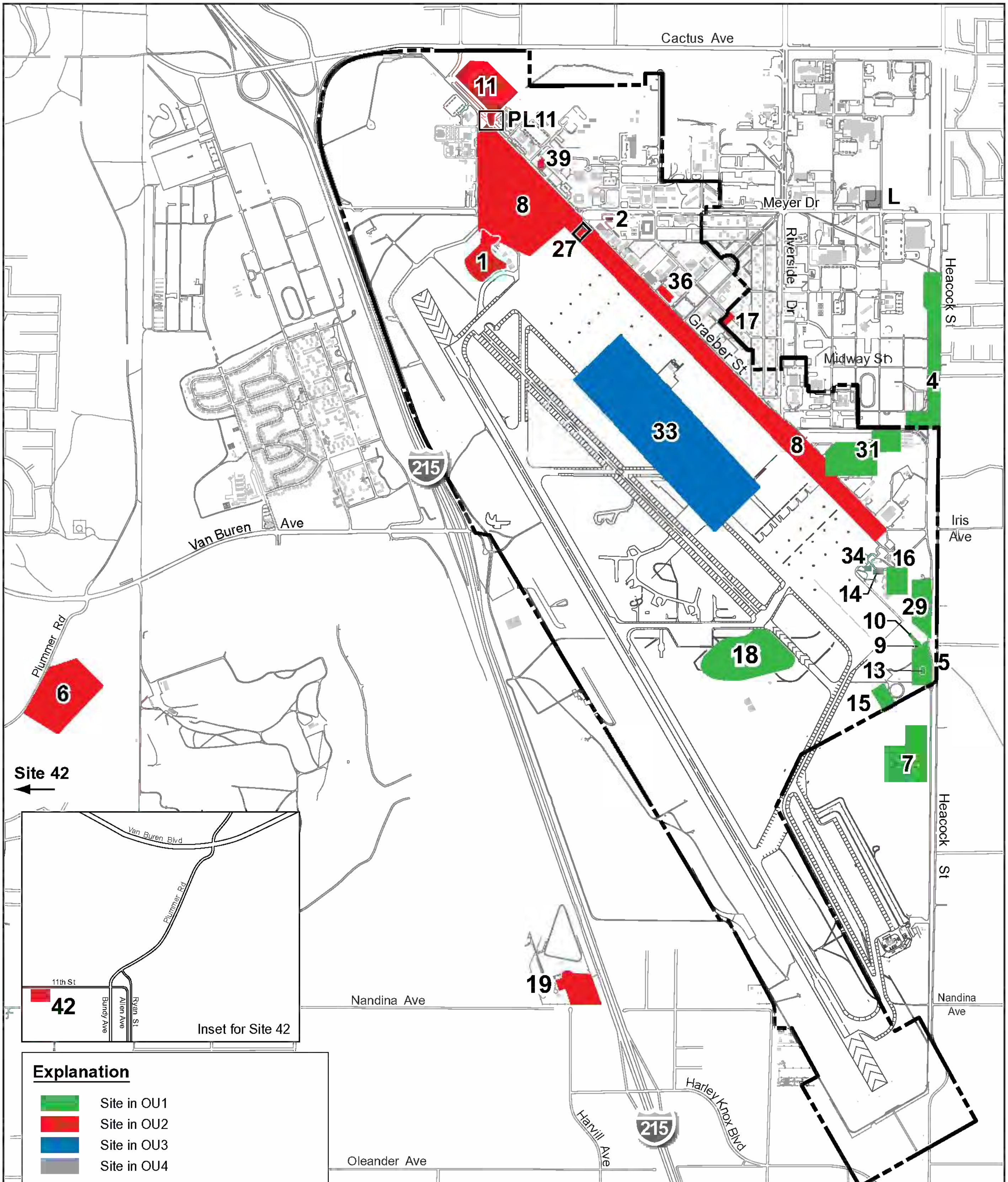
Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 1-1

MARCHPBR 2011-2012 AGMR/002



Explanation

(green)	Site in OU1
(red)	Site in OU2
(blue)	Site in OU3
(gray)	Site in OU4
— · — ·	Property Retained by Air Force Reserve Command
AFB	Air Force Base
AGMR	Annual Groundwater Monitoring Report
ARB	Air Reserve Base
CA	California
No.	Number

2011-2012 AGMR

Base Map

Date 12-13

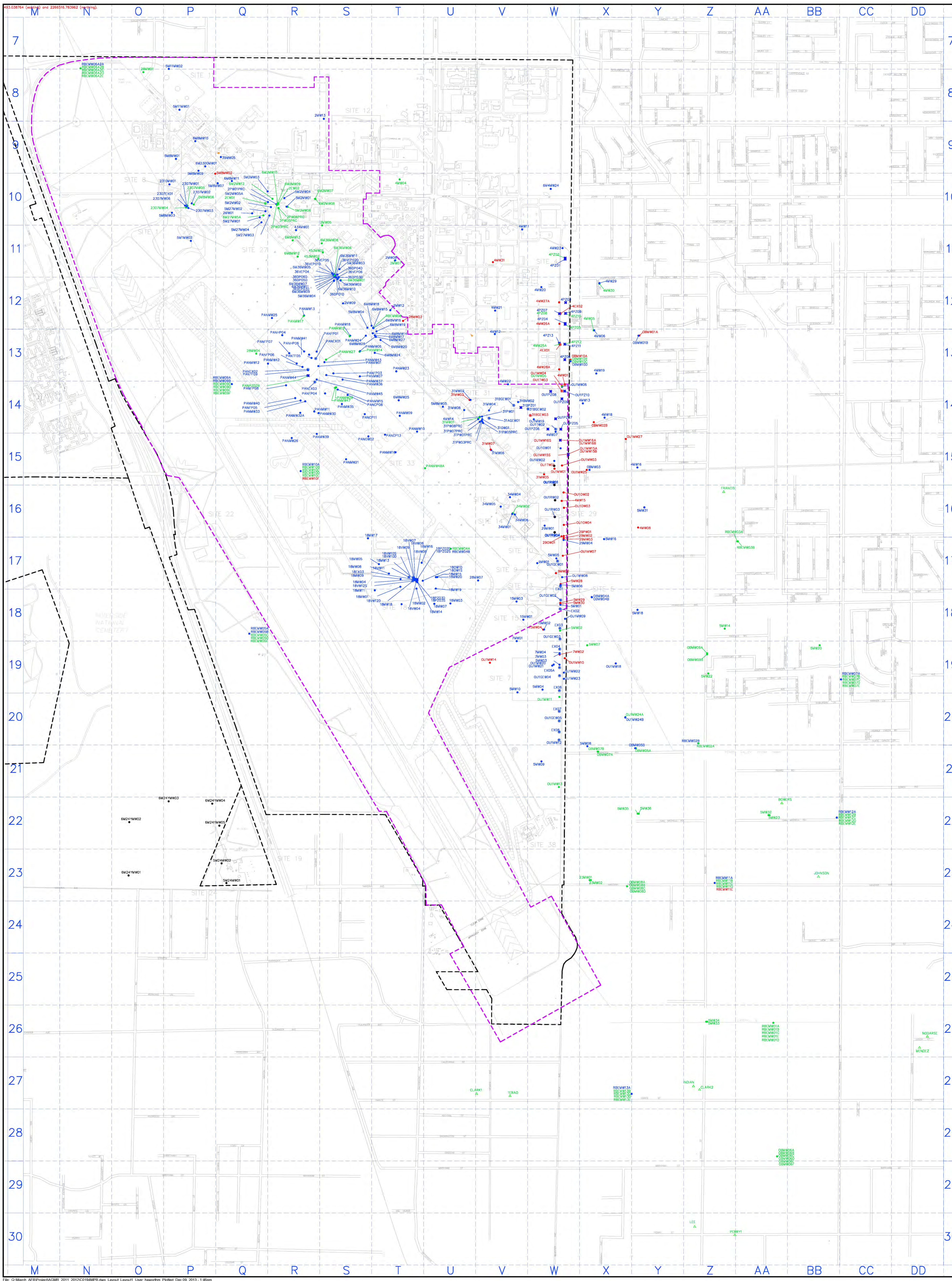
Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 1-2

MARCHPBR 2011-2012 AGMR/003



N

0 700' 1400' Feet

LEGEND

- MONITORING WELL
- PIEZOMETER
- EXTRACTION WELL
- INJECTION WELL
- WATER SUPPLY WELL
- WELL SCREENED PRIMARILY IN THE BEDROCK HYDROSTRATIGRAPHIC UNIT (BD)
- WELL SCREENED PRIMARILY IN THE LOWER ALLUVIAL HYDROSTRATIGRAPHIC UNIT (AL)
- WELL SCREENED PRIMARILY IN THE UPPER ALLUVIAL HYDROSTRATIGRAPHIC UNIT (AU)
- WEST MARCH WELL NOT INCLUDED IN THE AIR FORCE LONG-TERM GROUNDWATER MONITORING PROGRAM
- FORMER MARCH AFB BOUNDARY
- MARCH ARB BOUNDARY

SITE 6 WELLS ARE NOT SHOWN ON THIS FIGURE AND ARE NOT INCLUDED IN THIS REPORT.

ABBREVIATIONS

AFB AIR FORCE BASE
AGMR ANNUAL GROUNDWATER MONITORING REPORT
ARB AIR RESERVE BASE
CA CALIFORNIA

GROUNDWATER WELL INDEX

WELL	LOCATION
5M1MW02	P-11
2EW01	Q-10
2EW02	R-10
2MW01	Q-10
2MW05	S-11
2MW07	T-11
2MW08	T-11
2MW09	S-12
2MW12	T-12
2MW13	S-12
5M2MW01	R-10
5M2MW02	R-10
5M2MW03	R-10
5M2MW04	R-10
5M2MW05A	R-10
5M2MW06	R-10
6M2MW07	R-10
6M2MW08	R-10
6M2MW09	R-10
6M2MW10	R-10
6M2MW12	R-10
2PW01PRC	R-10
2PW03PRC	R-10
2PW05PRC	R-10
2PW06PRC	R-10
4EX01	W-13
4EX02	W-12
4MW01	W-14
4MW04	T-10
4MW05	X-13
4MW06	X-13
4MW07	W-14
4MW08	Y-16
4MW11	V-11
4MW12	V-13
4MW13	X-14
4MW14	V-14
4MW15	W-16
4MW16	Y-15
4MW18	X-14
4MW19	X-13
4MW20	W-12
4MW21	V-12
4MW22	V-14
4MW23	W-11
4MW25A	W-13
4MW26A	W-12
4MW27A	W-12
4MW28A	W-13
4MW29	X-12
4MW30	X-12
4MW31	V-11
4PZ01	W-11
4PZ02	W-11
4PZ03	W-12
4PZ04	W-12
4PZ05	W-12
4PZ06	W-12
4PZ07	W-13
4PZ08	W-12
4PZ09	W-12
4PZ10	W-12
4PZ11	W-13
4PZ12	W-13
4PZ13	W-13
6M4MW24	W-10
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5MW02	W-18
5MW03	W-19
5MW04	W-19
5MW05	W-17
5MW06	W-17
5MW07	X-19
5MW08	X-21
5MW09	W-21
5MW10	V-19
5MW14	Z-18
5MW16	X-17
5MW18	Y-18
5MW20	BB-19
5MW22	Z-19
5MW23	AA-22
5MW28	W-17
5MW29	W-18
5MW30	W-18
5MW31	Y-16
5MW32	AA-22
5MW33	Z-26
5MW34	Z-26
5MW35	Y-22
5MW36	Y-22
7MW01	V-18
7MW02	W-19
7MW03	W-19
7MW04	W-19
5M8MW01	P-9
5M8MW02	P-10
5M8MW03	P-10
5M8MW04	S-12
5M8MW05	U-14
5M8MW06	P-10
5M8MW07	Q-10
5M8MW09	P-10
6M8MW10	P-9
6M8MW11	Q-10
6M8MW12	R-11
6M8MW13	R-11
6M8MW14	T-13

WELL	LOCATION
6M8MW15	T-12
6M8MW16	T-12
6M8MW17	T-13
6M8MW18	S-12
6M8MW19	T-13
6M8MW20	T-13
6M8MW24	T-13
6M8MW25	T-14
9MW01	W-17
9MW02	W-17
5M11MW01	P-8
5M11MW02	P-7
15MW01	V-18
15MW02	W-18
15MW03	V-18
15MW04	W-18
18EX03	T-17
18MW01	T-17
18MW02	T-17
18MW03	U-18
18MW04	T-17
18MW05	T-17
18MW07	U-18
18MW08	T-17
18MW09	T-17
18MW11	T-18
18MW13	T-17
18MW14	T-17
18MW15	U-17
18MW16	T-17
18MW17	S-17
18MW18	T-18
18MW19	U-17
18MW20	U-17
18OW01	T-17
18VW10	T-17
18VW11	T-17
18VW12	T-17
23MW01	X-23
23MW02	X-23
6M24YMW01	O-23
6M24YMW02	O-22
6M24YMW03	P-22
6M24YMW04	P-22
6M24YMW05	Q-22
5M27MW01	Q-10
5M27MW02	Q-10
5M27MW03	R-10
5M27MW04	Q-10
6M27MW05A	Q-10
28MW01	O-8
28MW03	T-12
28MW04	Q-13
28MW07	V-17
29MW01	W-16
29MW02	W-17
29MW03	W-17
29MW04	W-17
29OW01	W-16
29PW01	W-16
31AGEW01	V-14
31MW01	V-14
31MW02	U-14
31MW03	U-14
31MW04	V-14
31MW05	W-15
31MW06	V-14
31MW07	V-14
31MW08	U-14
31OW01	V-14
31PW01	V-14
31PW01PRC	V-14
31PW03PRC	V-14
31PW05PRC	V-14
31PW07PRC	V-14
31PW08PRC	V-14
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31BGEW02	V-14
31BGEW03	W-14
31BMW02	V-14
31BPZ1	V-14
PANCP08	S-14
PANCP11	S-14
PANCP13	T-15
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PANEX02	R-13
PANEX03	R-14
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PANMW01	R-13
PANMW06	S-13
PANMW07	S-13
PANMW09	T-14
PANMW10	T-14
PANMW11	R-14
PANMW12	R-13
PANMW13	R-12
PANMW14	S-13
PANMW15	S-14
PANMW16	T-15

WELL	LOCATION
PANMW17	R-12
PANMW18	S-13
PANMW19	S-13
PANMW21	S-15
PANMW23	T-13
PANMW24	S-13
PANMW25	R-12
PANMW26	R-15
PANMW27	S-13
PANMW28	S-14
PANMW30	R-14
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PANMW35	S-14
PANMW36	S-13
PANMW37	S-13
PANMW39	R-15
PANMW40	R-14
PANMW41	R-13
PANMW42	R-13
PANMW43	R-13
PANMW44	R-13
PANMW45	R-13
PANMW47	S-14
PANMW48A	U-15
PANOW2	T-14
PANPZ2B	R-13
PANTF05	R-13
PANTF09	R-13
34MW01	V-16
34MW02	V-16
34MW04	V-16
34MW05	V-16
34MW06	V-16
36DP01D	S-12
36DP03D	S-11
36DP04D	S-11
36DP05D	S-11
36DP06D	S-11
36VEP1D	S-11
36VEP2D	S-11
36VEP3D	S-11
36VEP04	S-11
36VEP05	S-11
36VEP06	S-11
5M36MW02	S-12
5M36MW03	S-11
5M36MW04	S-12
5M36MW05	S-11
6M36MW01	S-12
6M36MW06	S-11
6M36MW07	S-11
6M36MW08	S-11
6M36MW09	S-12
6M36MW10	S-12
6M36MW11	S-12
39MW05	Q-9
6M2300MW01	P-9
2307MW01	P-10
2307MW02	P-10
2307MW03	P-10
2307MW04	P-10
2307MW05	P-10
2307MW06	P-10
2310MW01	P-10
434MW01	R-11
453MW01	S-11
453MW02	R-11
550EX01	U-9
550MW01	U-9
550MW02	U-9
550MW03	U-9
550MW04	U-9
550MW05	U-9
550MW06	U-9
550MW07	T-9
550MW08	U-9
550MW09	U-9
550MW10	U-9
550MW11	U-9
550MW12	T-9
550MW13	T-9
550MW14	U-9
EX01	W-17
EX02	W-18
EX03	W-18
EX04	W-19
EX05A	W-19
EX06	W-19
EX07	W-20
EX08	W-20
OBMW01A	Y-13
OBMW01B	Y-13
OBMW02B	X-14
OBMW03	X-15
OBMW04A	X-18
OBMW04B	X-18
OBMW05A	Y-21
OBMW05B	Y-21
OBMW06	AA-28
OBMW07A	X-21
OBMW07B	X-21
OBMW08	X-23
OBMW09A	Z-19
OBMW09B	Z-19
OBMW10A	W-13
OBMW10B	W-13
OBMW10C	W-13

WELL	LOCATION
OBMW10D	W-13
OU1GEW01	W-17
OU1GEW02	W-18
OU1GEW03	W-18
OU1GEW04	W-19
OU1GEW05	W-20
OU1MW01	W-15
OU1MW02	W-15
OU1MW03	W-15
OU1MW04	W-14
OU1MW05	W-14
OU1MW06	W-14
OU1MW07	W-17
OU1MW08	W-17
OU1MW09	W-18
OU1MW10	W-19
OU1MW11	W-20
OU1MW12	W-20
OU1MW13	W-21
OU1MW14	W-19
OU1MW15	W-15
OU1MW16	W-15
OU1MW18	X-19
OU1MW19	W-14
OU1MW20	W-19
OU1MW21	W-19
OU1MW22	W-19
OU1MW23	W-19
OU1MW24A	X-20
OU1MW24B	X-20
OU1MW25	X-15
OU1MW27	X-15
OU1OW01	W-15
OU1OW02	W-16
OU1OW03	W-16
OU1OW04	W-16
OU1PZ05	W-14
OU1PZ06	W-14
OU1PZ07	W-14
OU1PZ08	W-14
OU1PZ09	W-14
OU1PZ10	W-14
OU1RW01	W-16
OU1RW02	W-16
OU1RW03	W-16
OU1RW04	W-16
OU1TW01	W-15
OU1TW02	W-14
OU1TW03	W-14
RBEMW01	AA-26
RBEMW02A	Z-20
RBEMW02B	Z-20
RBEMW03A	AA-17
RBEMW03B	AA-17
RBEMW04A	U-17
RBEMW04B	U-17
RBEMW05	Q-18
RBEMW06A2	N-7
RBEMW07	CC-19
RBEMW08	T-12
RBEMW09	Q-14
RBEMW10	R-15
RBEMW11	Z-23
RBEMW12	BB-22
RBEMW13	Z-27
BOWERS	AA-22
CLARK1	V-27
CLARK2	Z-27
FRANCIS	AA-16
INDIAN	Z-27
JOHNSON	BB-23
LEE	Z-30
MENDEZ	DD-26
NODARSE	DD-26
PERRY1	Z-30
TERAO	V-27
6M36MW11	S-11
6M8MW27	T-13
6M8MW28	T-13

DESTROYED WELLS

18EX01	28MW09	34MW03	5M12MW02	OW1	PANPW01A
18EX02	28MW10	4MW02	5M12MW03	OW2	PANPZ01A
18EX04	2MW02	4MW03	5M12MW04	OW3	PANPZ01B
18EX05	2MW03	4MW09	5M12MW05	OW4	PANPZ02A
18MW10	2MW04	550EX01	5M1MW01	OW5	PANPZ03A
18PZ01D	2MW06	550EX02	5M24MW01	OW6	PANPZ03B
18PZ01S	2MW10	550EX03	5M24MW02	OW7	PANTF01
18PZ02D	2MW11	550MW01	5M2MW05	PAMW03	PANTF02
18PZ02S	2PW2PRC	550MW02	5MW11	PANEX16	PANTF03
18PZ03D	2PW4PRC	550MW03	5MW12	PANEX17	PANTF06
18PZ03S	31ADEW01	550MW04	5MW13	PANFP02	PANTF07
18VW01	31ADEW02	550MW05	5MW15	PANFP09	PANTF08
18VW02	31ADEW03	550MW06	5MW21	PANHP11	PANTF11
18VW03	31ADEW04	550MW07	5MW25	PANMW02	PANTF12
18VW04	31ADEW05	550MW08	5MW26	PANMW04	PW05
18VW06	31ADEW06	550MW09	5MW27	PANMW05	
18VW07	31BDEW01	550MW10	6M2MW11	PANMW08	
18VW08	31BDEW02	550MW11	9MW03	PANMW22	
18VW09	31BDEW03	550MW12	BPW1	PANMW29	
2307EX01	31BDEW04	550MW13	BPW2	PANMW31	
28MW02	31BDEW05S	550MW14	BPW3	PANMW34	
28MW05	31PW2PRC	550MW16	BPW4	PANMW38A	
28MW06	31PW4PRC	5M11MW03	BPW5	PANMW46	
28MW08	31PW6PRC	5M12MW01	BPW6	PANOW01	

2011-2012 AGMR

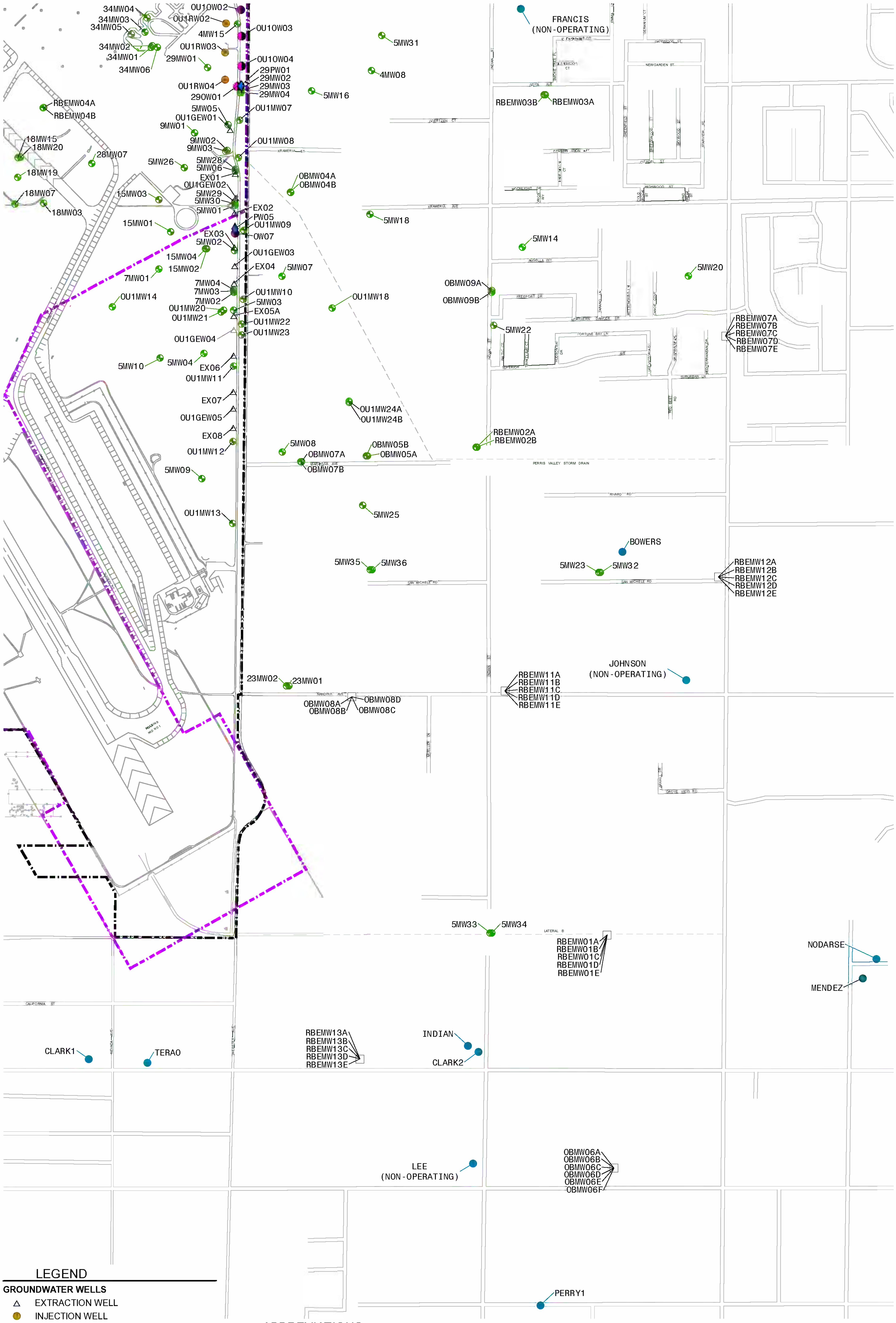
Well Location Map

Date 12-13
Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 1-3



LEGEND

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER
- WATER SUPPLY WELL (NON-OPERATING WHERE NOTED)
- WESTBAY WELL
- PUMPING WELL
- OBSERVATION WELL
- FORMER MARCH AFB BASE BOUNDARY
- MARCH ARB BOUNDARY

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA

N

0 500 1,000

SCALE IN FEET

2011-2012 AGMR

Off-Base Water Supply Well Location Map

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 1-4

File: Q:\March_AFB\Project\AGMR_2011_2012\B9770fga.mxd
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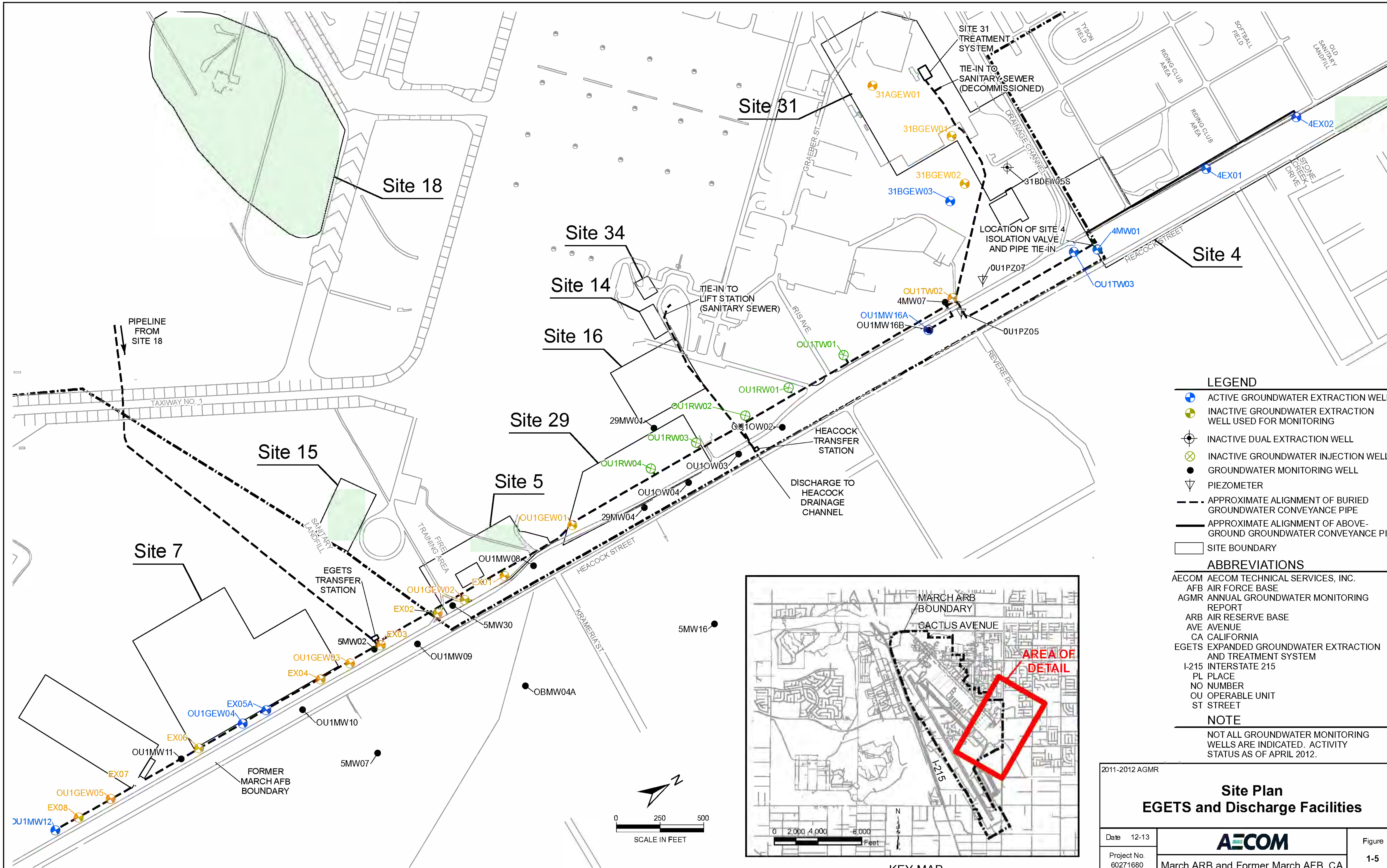

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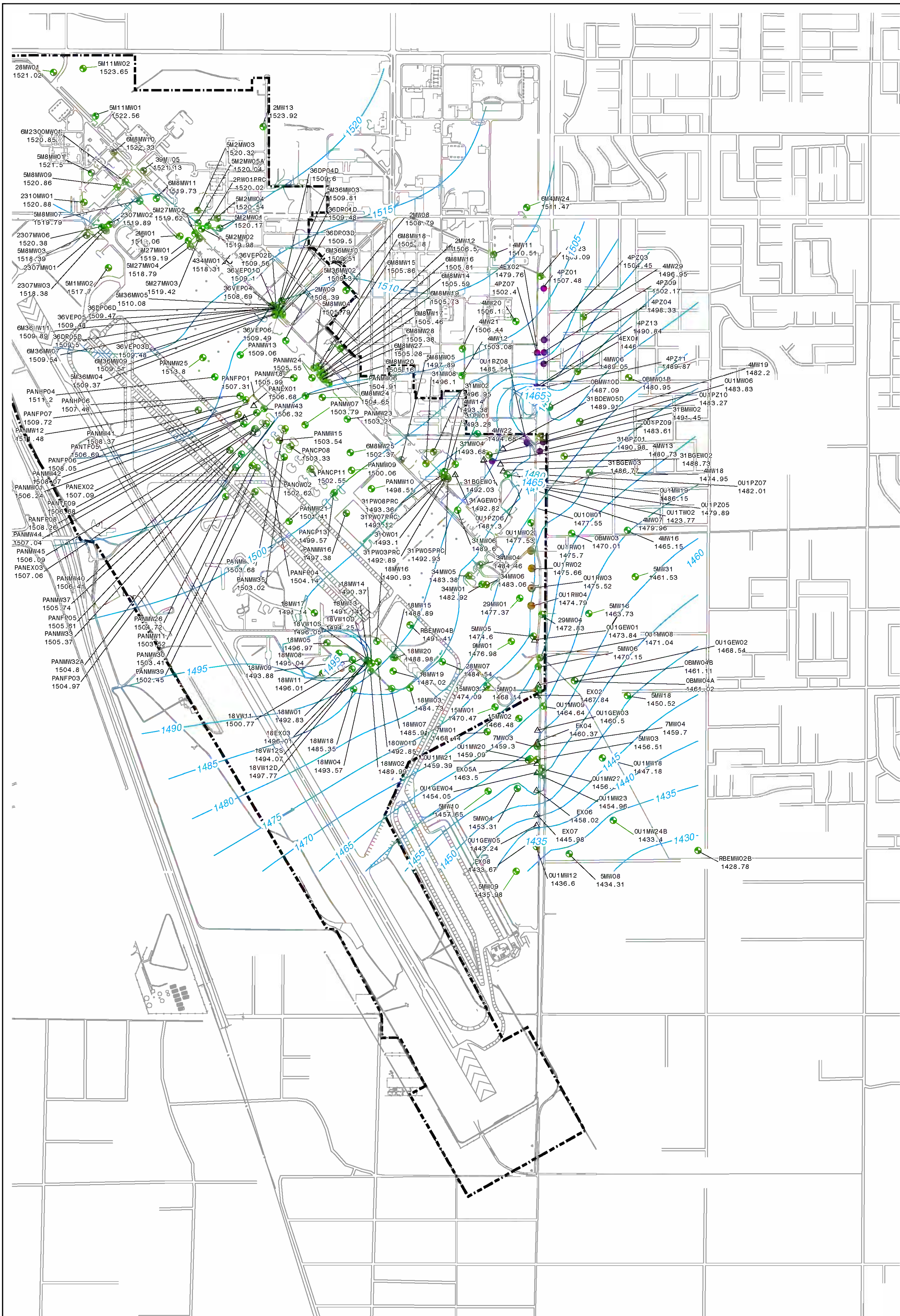

LEGEND

- FOURTH QUARTER 2011 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL

N

0 750 1,500

SCALE IN FEET

2011-2012 AGMR

Upper Alluvial Basewide Potentiometric Surface Map Fourth Quarter 2011

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 2-1

File: Q:\March_AFB\Project\AGMR_2011_2012\B9779fga.mxd
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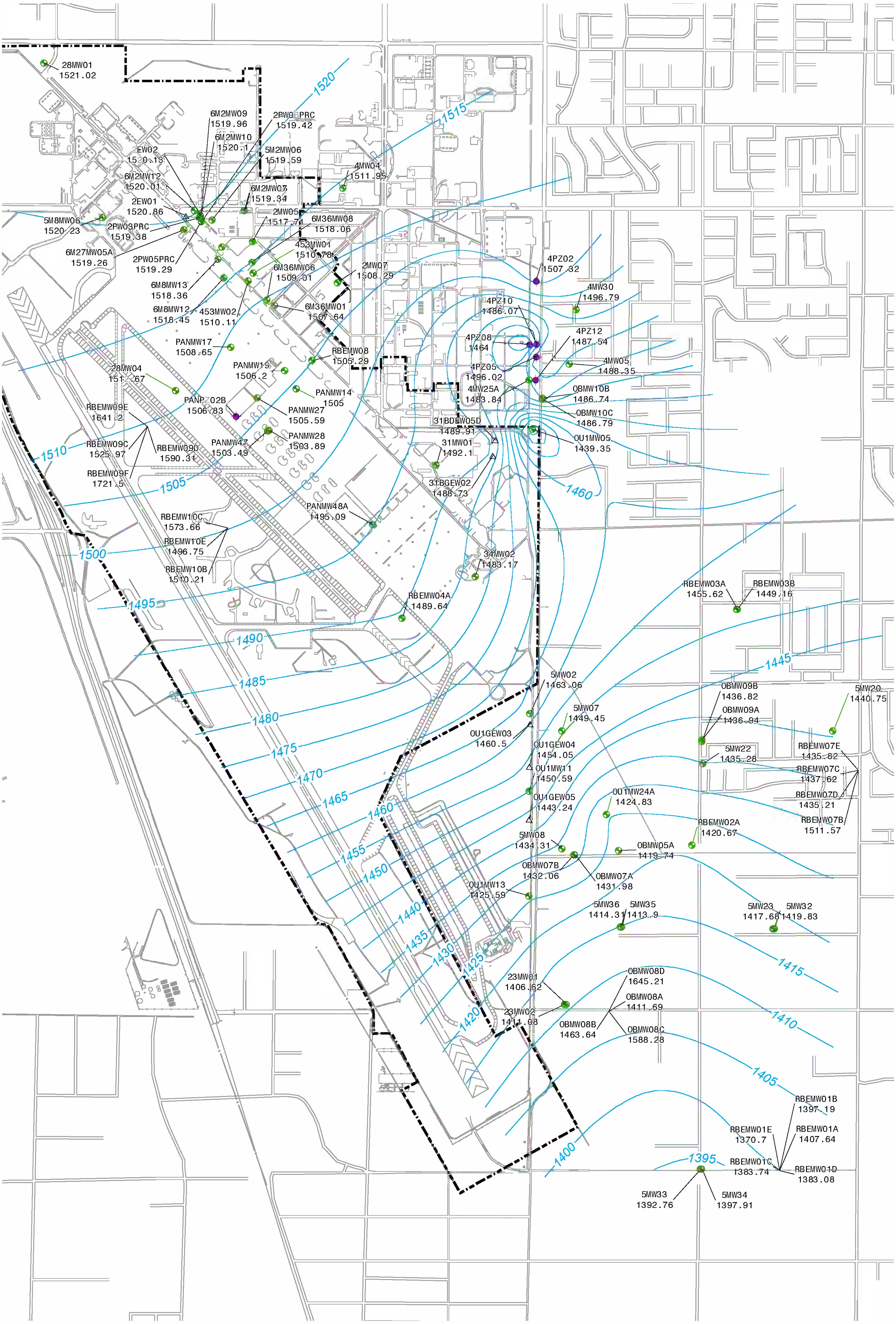

LEGEND

FOURTH QUARTER 2011 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

EXTRACTION WELL

MONITORING WELL

PIEZOMETER

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL

2011-2012 AGMR

Lower Alluvial Basewide Potentiometric Surface Map Fourth Quarter 2011

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 2-2

File: Q:\March_AFB\Project\AGMR_2011_2012\B9780fga.mxd
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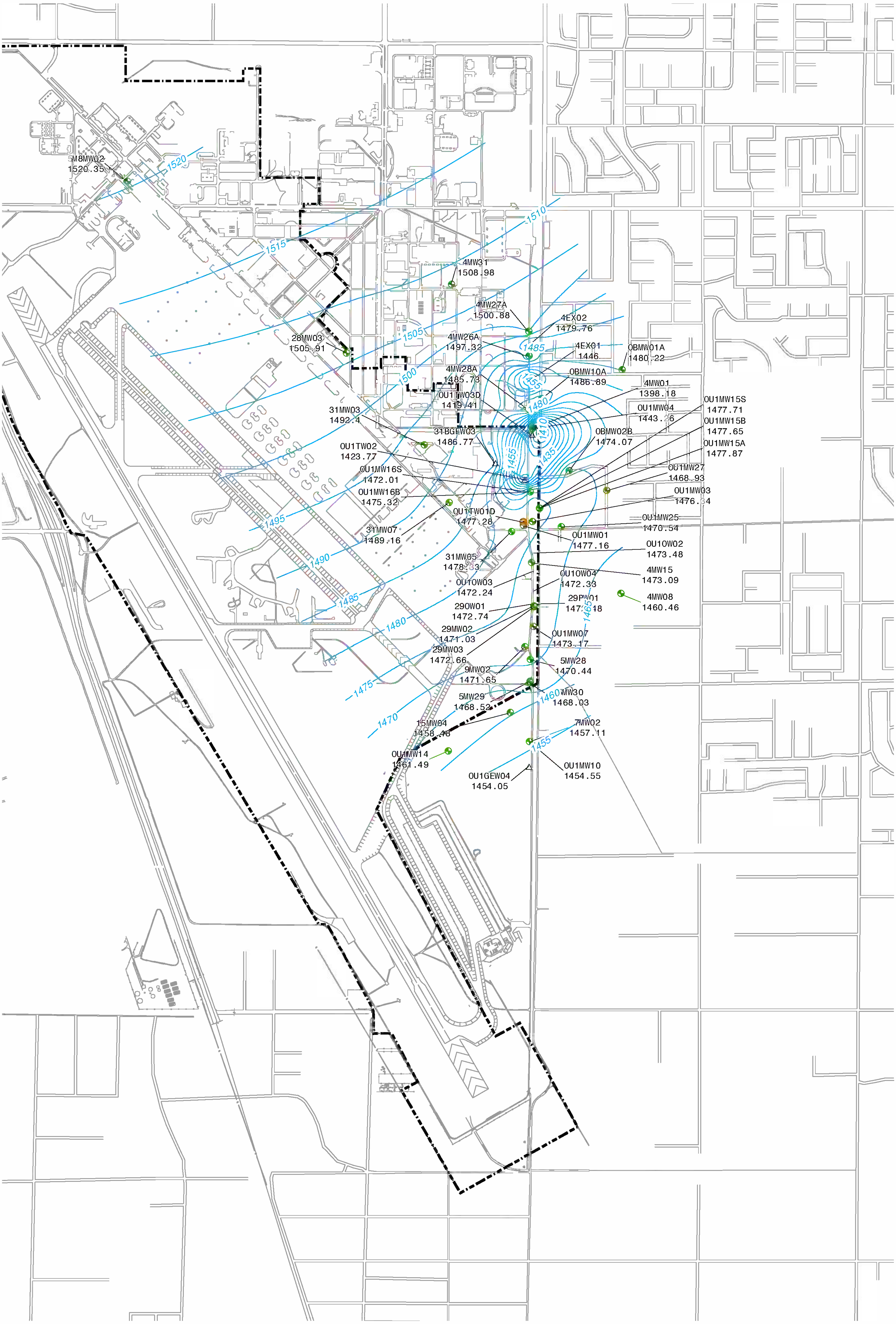

LEGEND

FOURTH QUARTER 2011 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

EXTRACTION WELL

INJECTION WELL

MONITORING WELL

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL

N

0 750 1,500

SCALE IN FEET

2011-2012 AGMR

Bedrock Basewide Potentiometric Surface Map Fourth Quarter 2011

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 2-3

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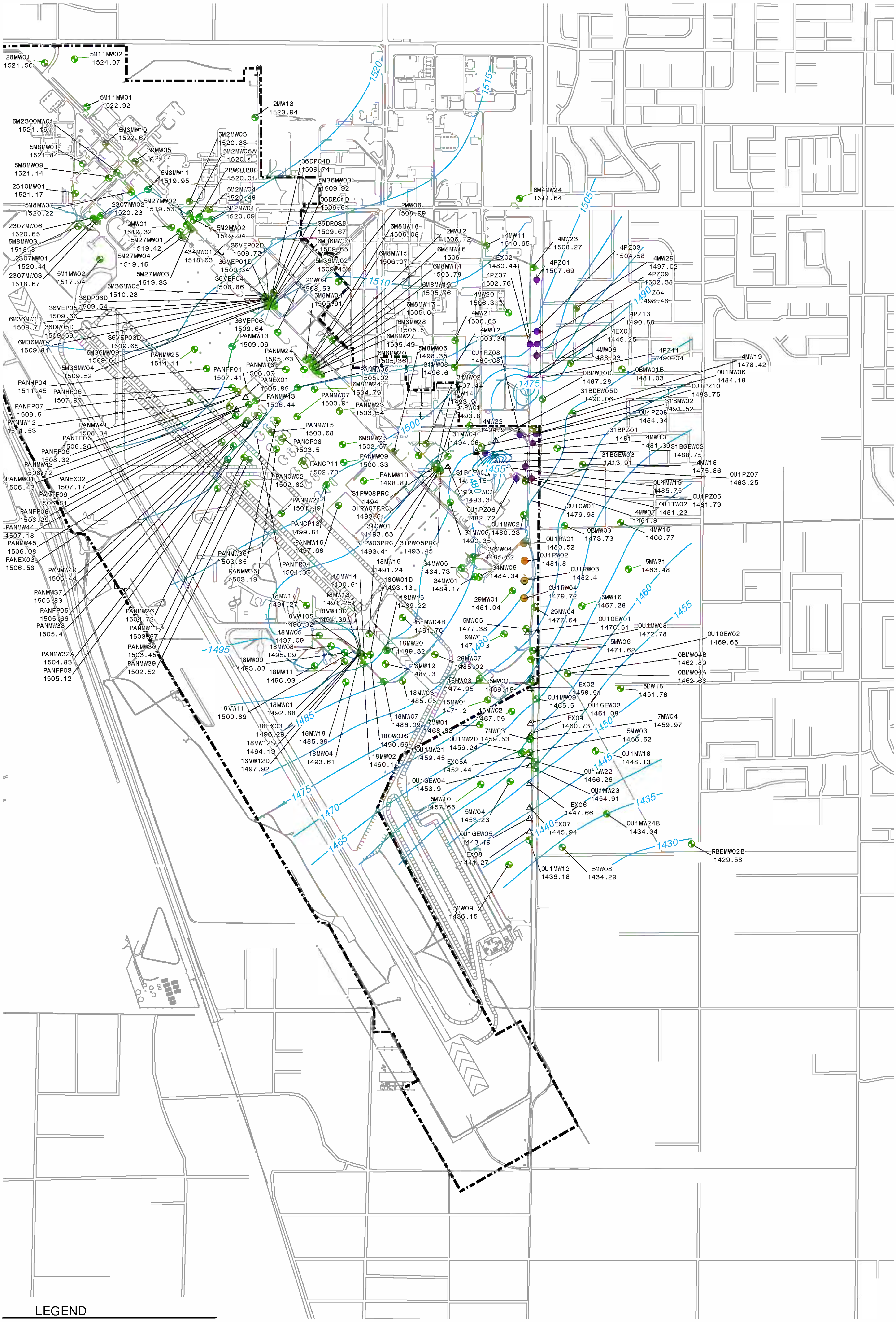

LEGEND

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL

N

0 750 1,500
SCALE IN FEET

2011-2012 AGMR

Upper Alluvial Basewide Potentiometric Surface Map Second Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 2-4

File: Q:\March_AFB\Project\AGMR_2011_2012\B9782fga.mxd
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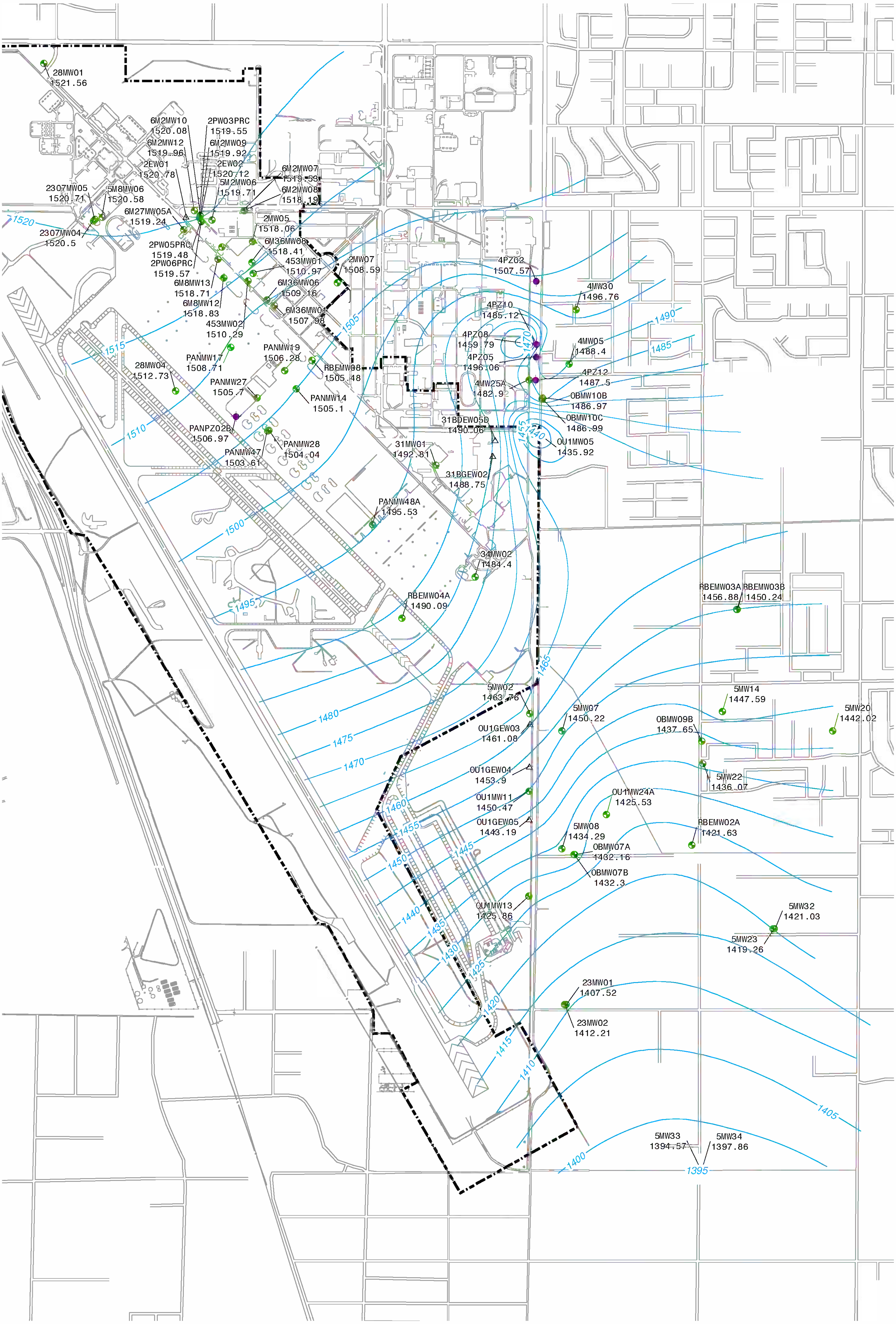

LEGEND

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- MONITORING WELL
- PIEZOMETER

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL

2011-2012 AGMR

Lower Alluvial Basewide Potentiometric Surface Map Second Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 2-5

File: Q:\March_AFB\Project\AGMR_2011_2012\B9783fga.mxd
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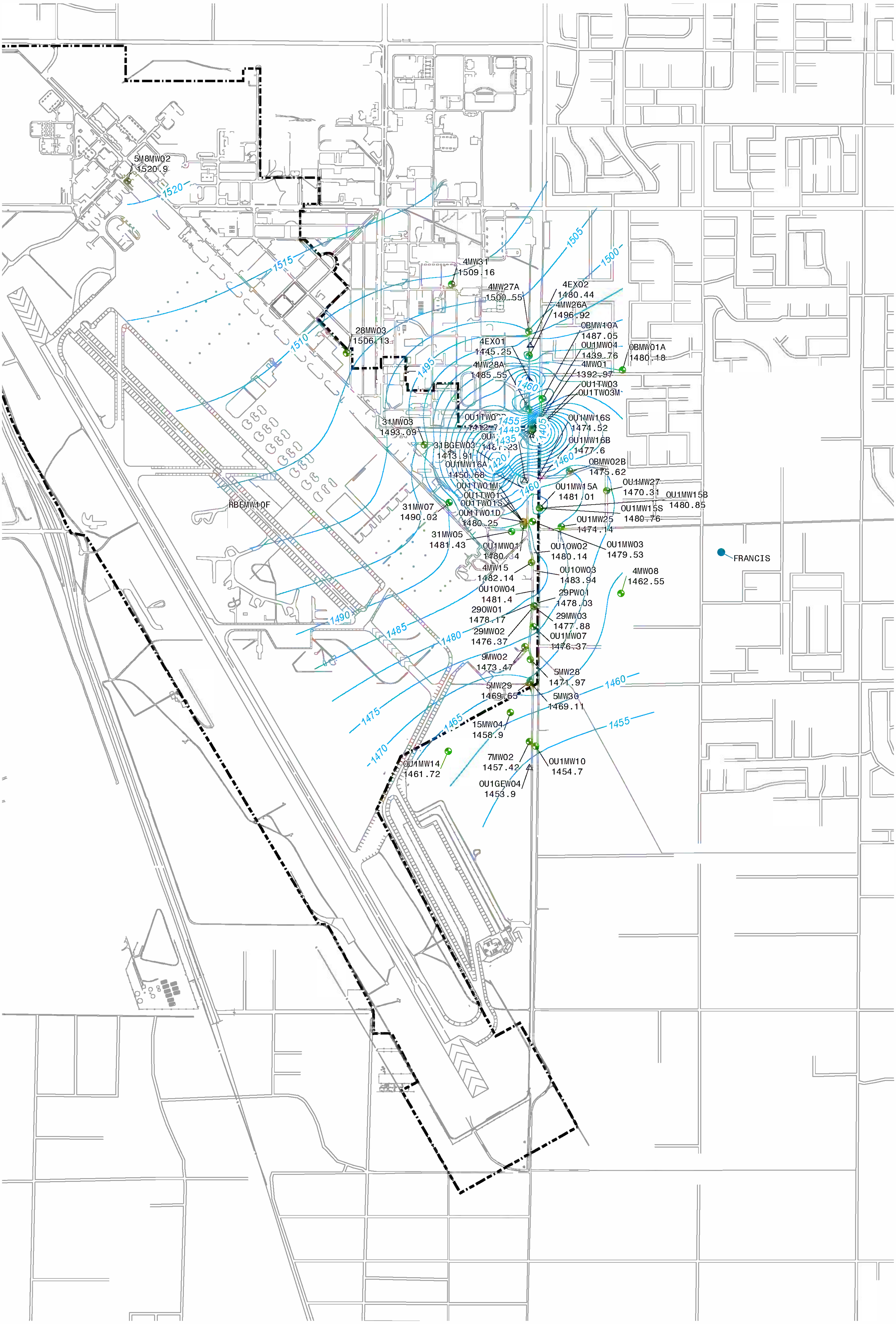

LEGEND

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PRIVATE WELL

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL

N

0 750 1,500

SCALE IN FEET

2011-2012 AGMR

Bedrock Basewide Potentiometric Surface Map Second Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 2-6

File: Q:\March_AFB\Project\AGMR_2011_2012\B9784fga.mxd
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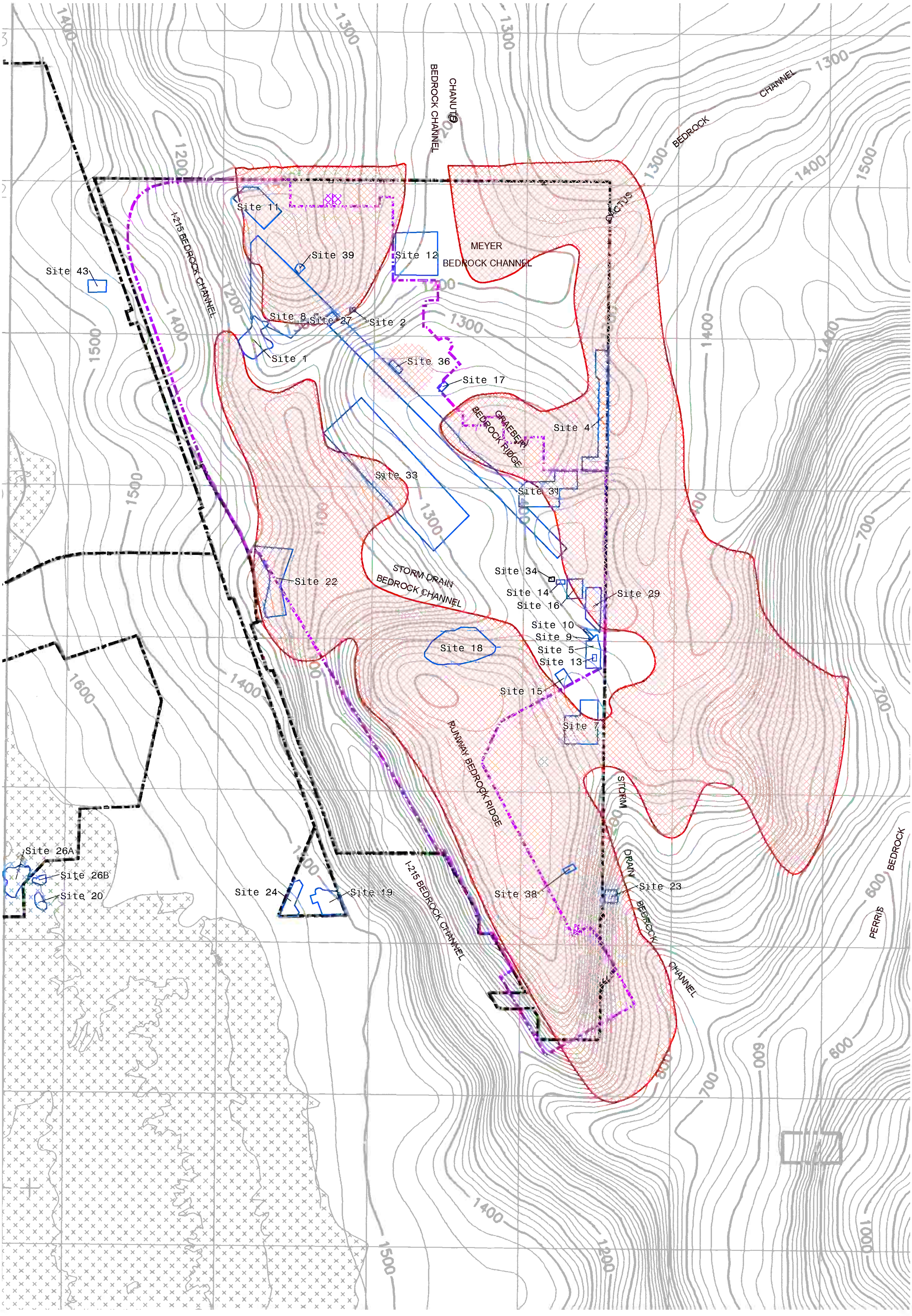

LEGEND

- FORMER MARCH AFB BASE BOUNDARY
- MARCH ARB BOUNDARY
- Site 24 IRP SITE
- LOW HYDRAULIC CONDUCTIVITY

ABBREVIATIONS

AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
I-215	INTERSTATE 215
IRP	INSTALLATION RESTORATION PROGRAM

N

0 1,000 2,000
SCALE IN FEET

2011-2012 AGMR

Bedrock Elevation Map

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 3-1

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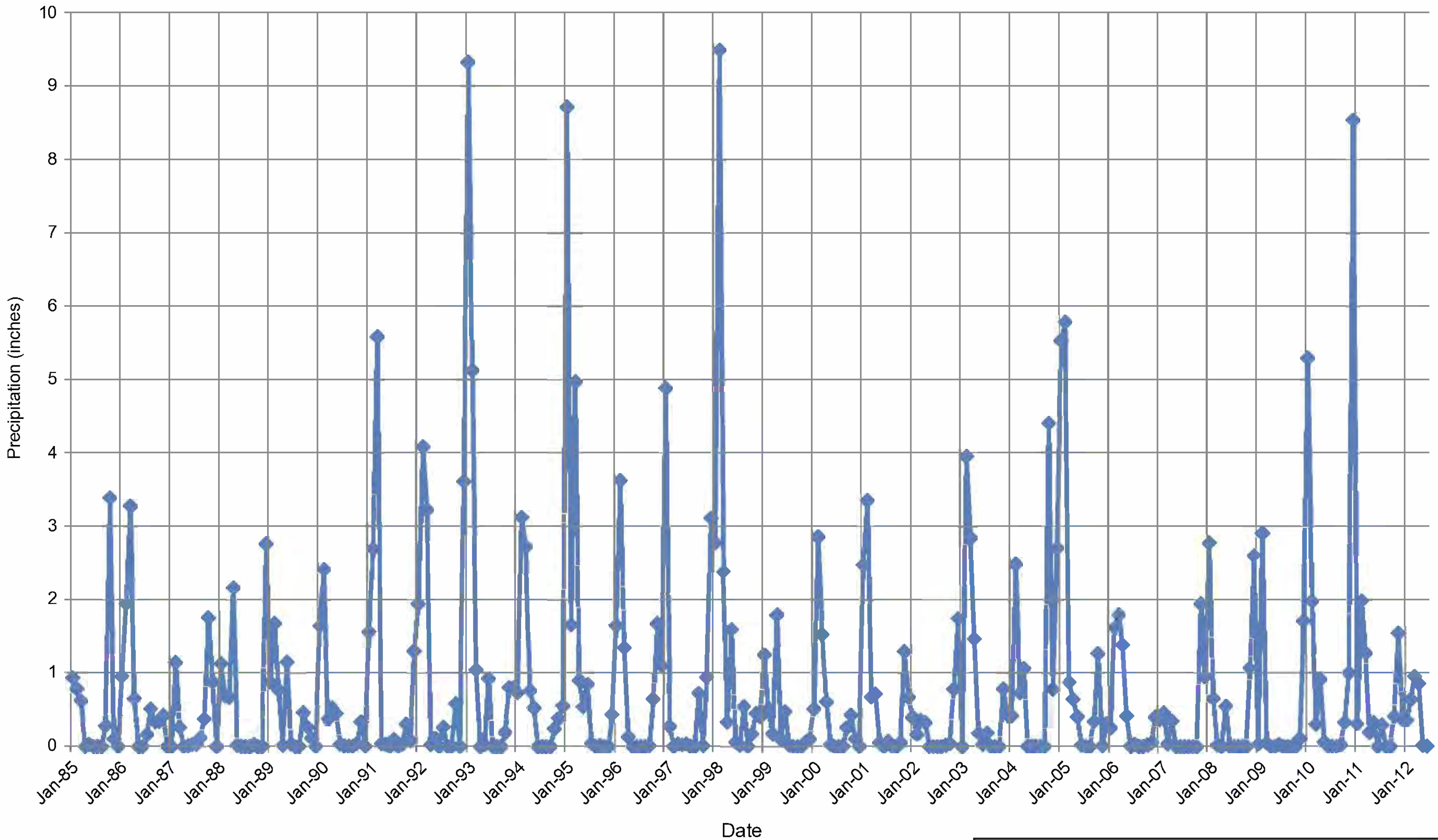

Explanation

AFB	Air Force Base
AGMR	Annual Groundwater Monitoring Report
ARB	Air Reserve Base
CA	California
No.	Number

MARCHPBR 2011-2012 AGMR/001

2011-2012 AGMR

Monthly Precipitation Over Time Riverside, California

Date 03-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 3-2

LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- TCE PLUME OUTLINE >100 µg/L
- TCE PLUME OUTLINE >1000 µg/L
- PCE PLUME OUTLINE >5 µg/L
- PCE PLUME OUTLINE >10 µg/L
- PCE PLUME OUTLINE >100 µg/L
- CTCL PLUME OUTLINE >0.5 µg/L
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER
- WELL SAMPLED IN 2Q 2012

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
2Q	SECOND QUARTER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE
FT MSL	FEET MEAN SEA LEVEL
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE

N

0 580 1,160
SCALE IN FEET

2011-2012 AGMR

Basewide Upper Alluvial Chlorinated Solvent Plumes 2nd Quarter 2012

Date 12-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 3-3

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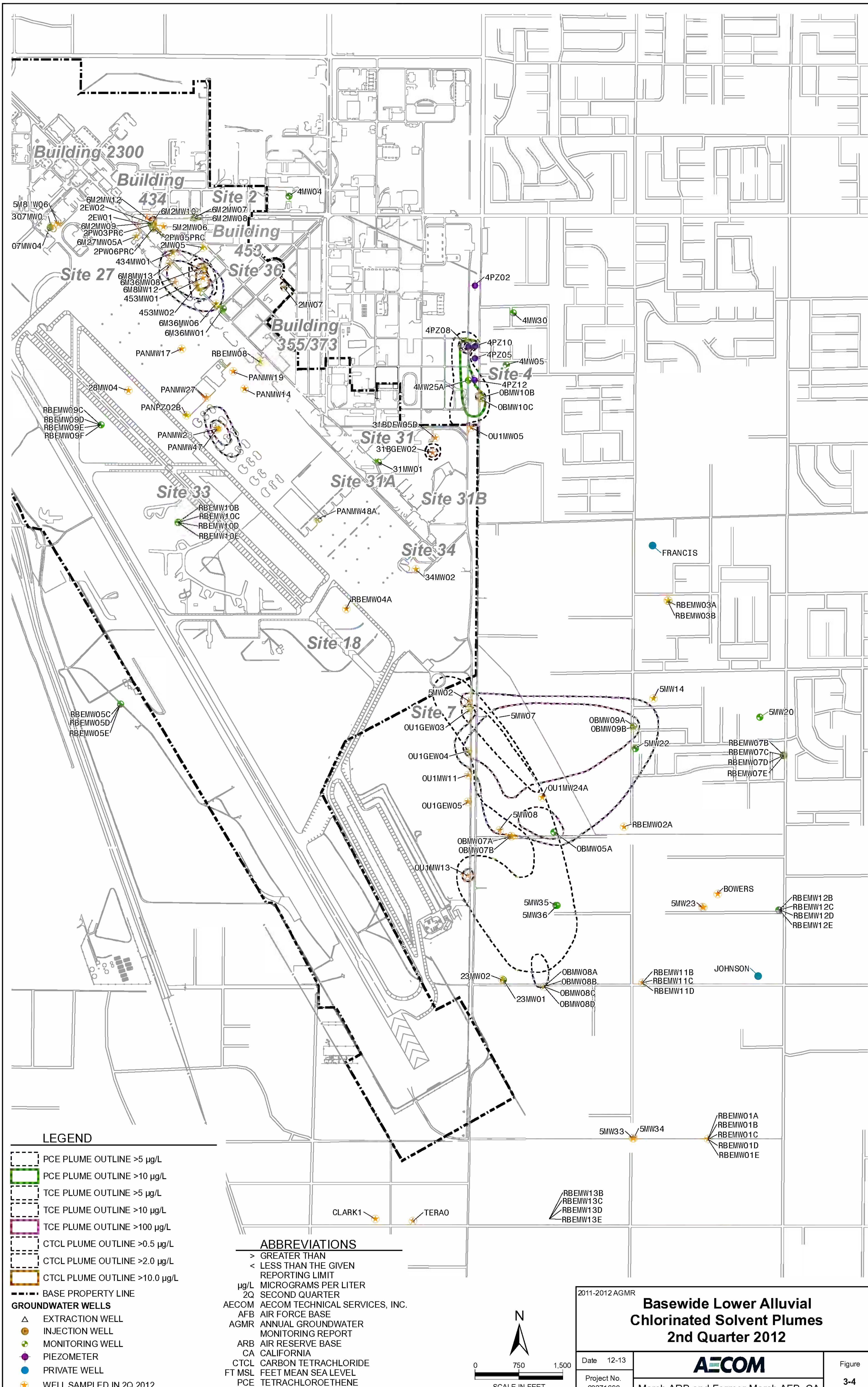

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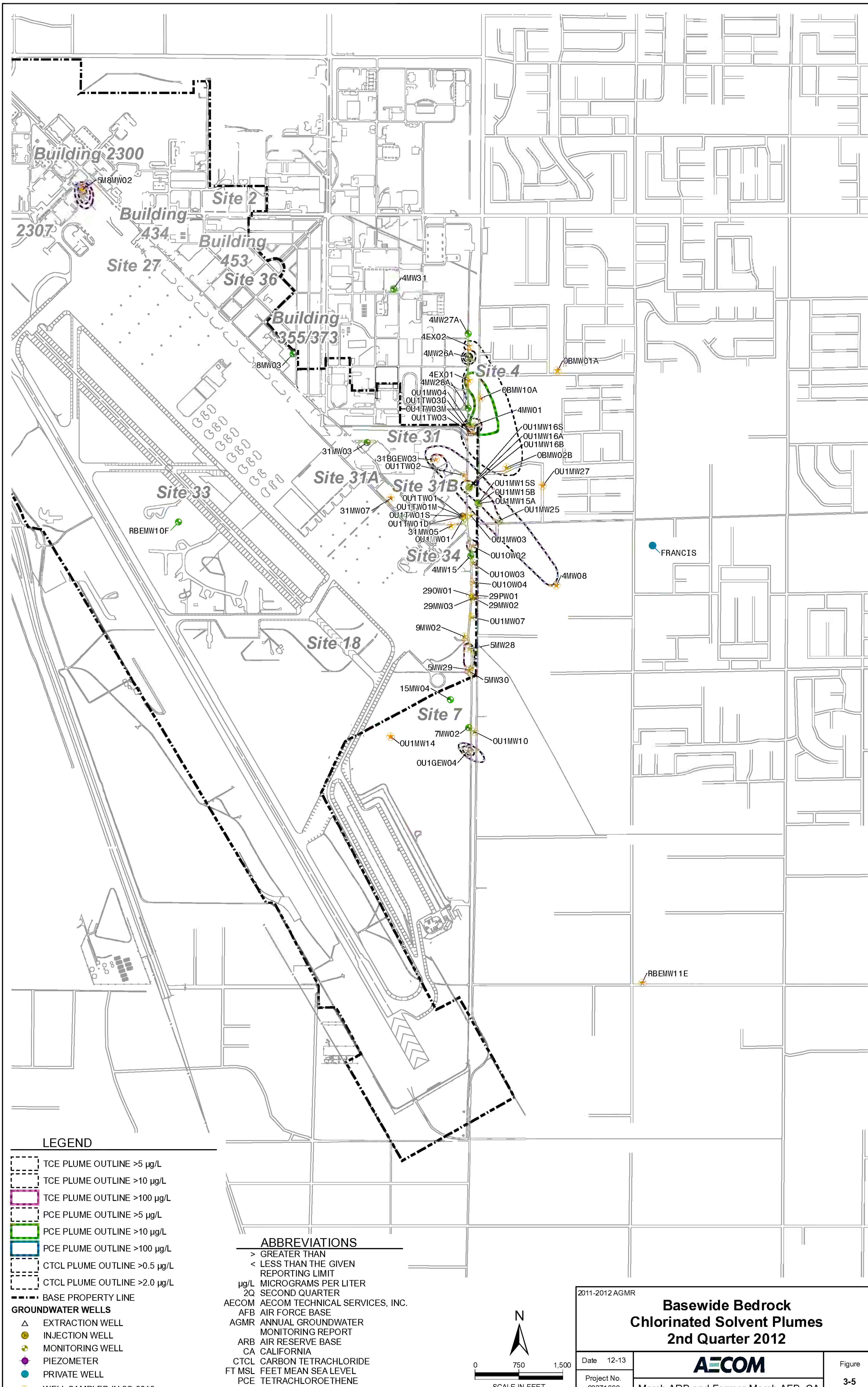

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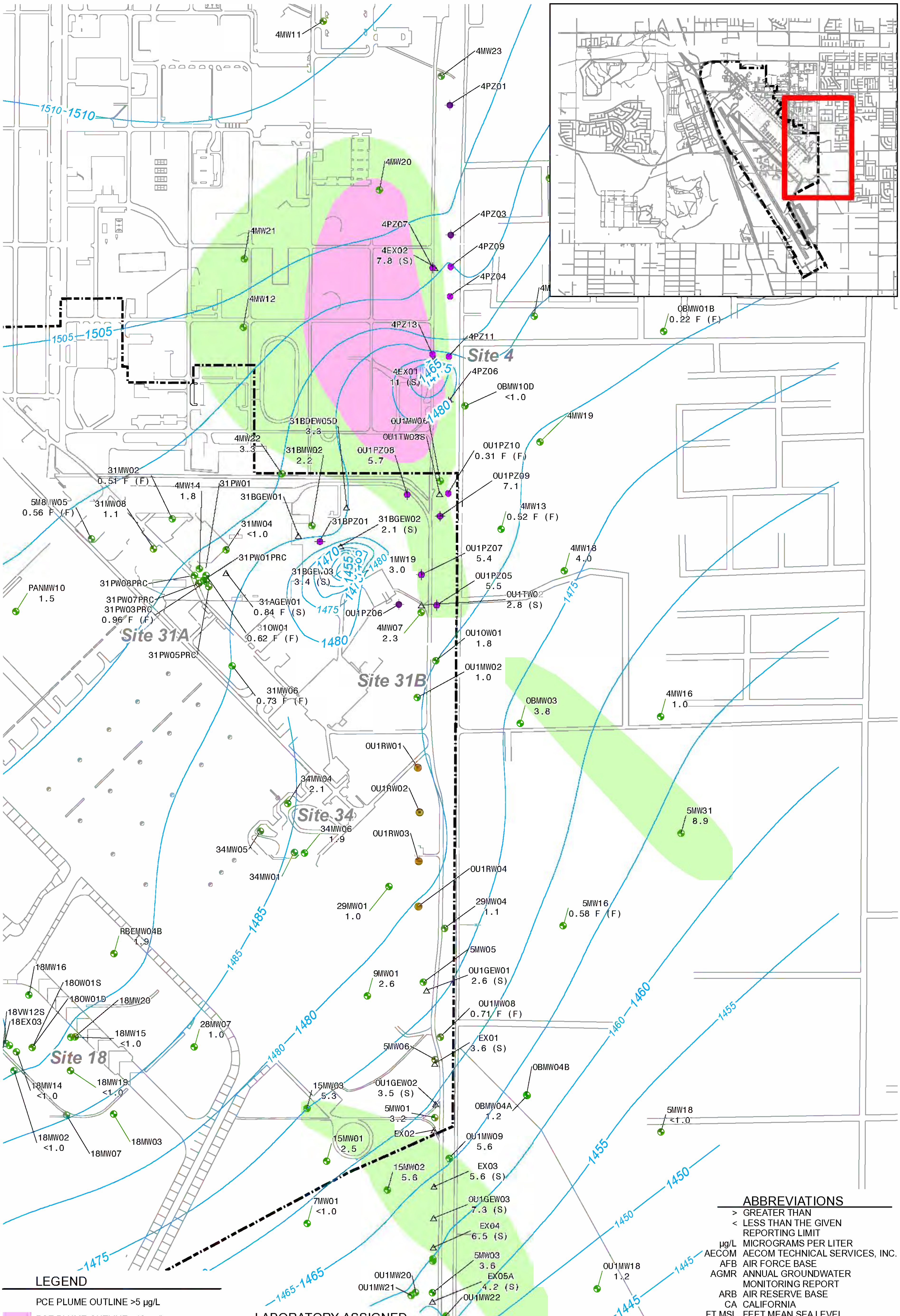

LEGEND

PCE PLUME OUTLINE >5 µg/L

PCE PLUME OUTLINE >10 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F	INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT
(F)	THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
PCE	TETRACHLOROETHENE

2011-2012 AGMR

Upper Alluvial PCE Plume Sites 4 and 31 2nd Quarter 2012

Date 12-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-1

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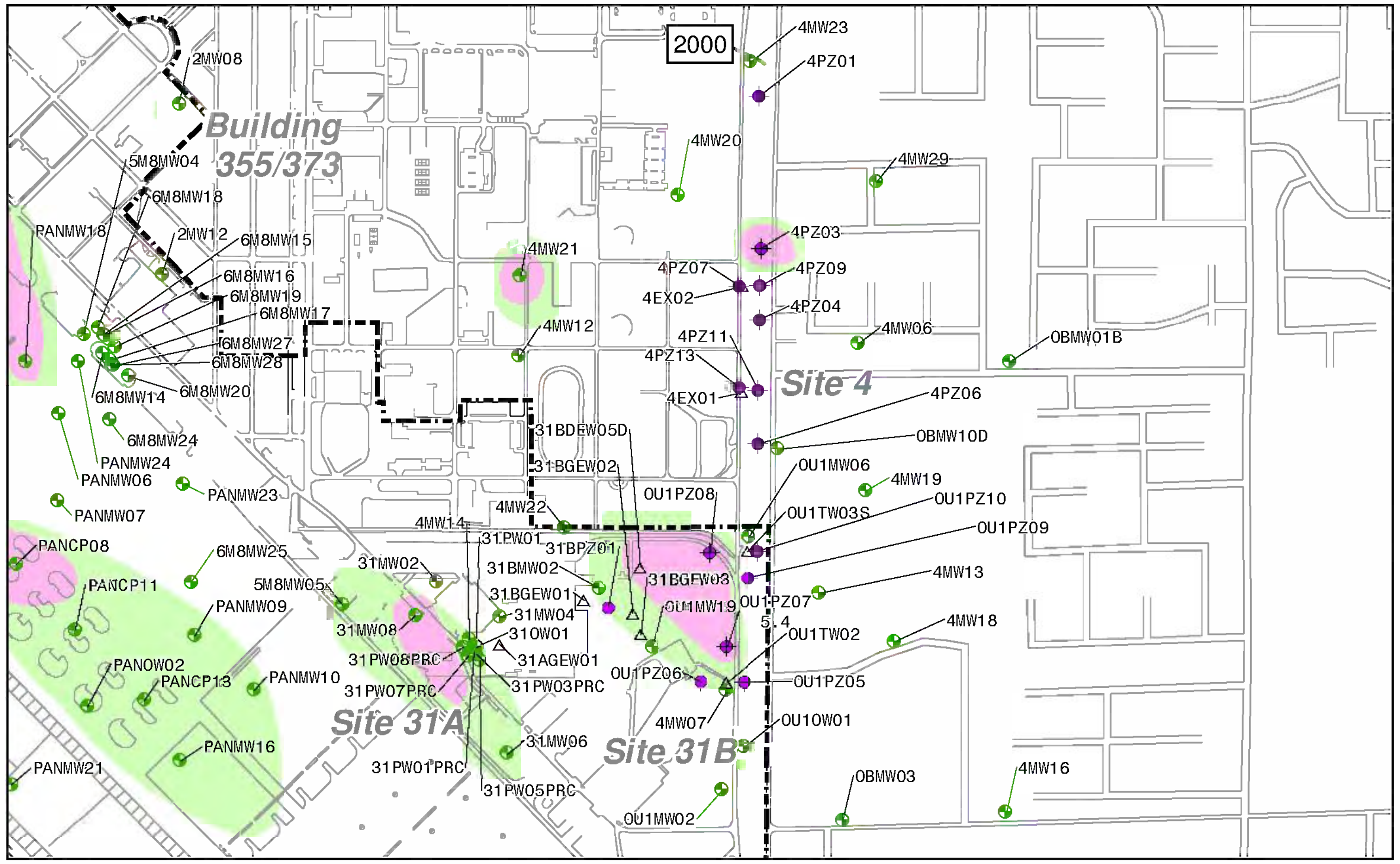

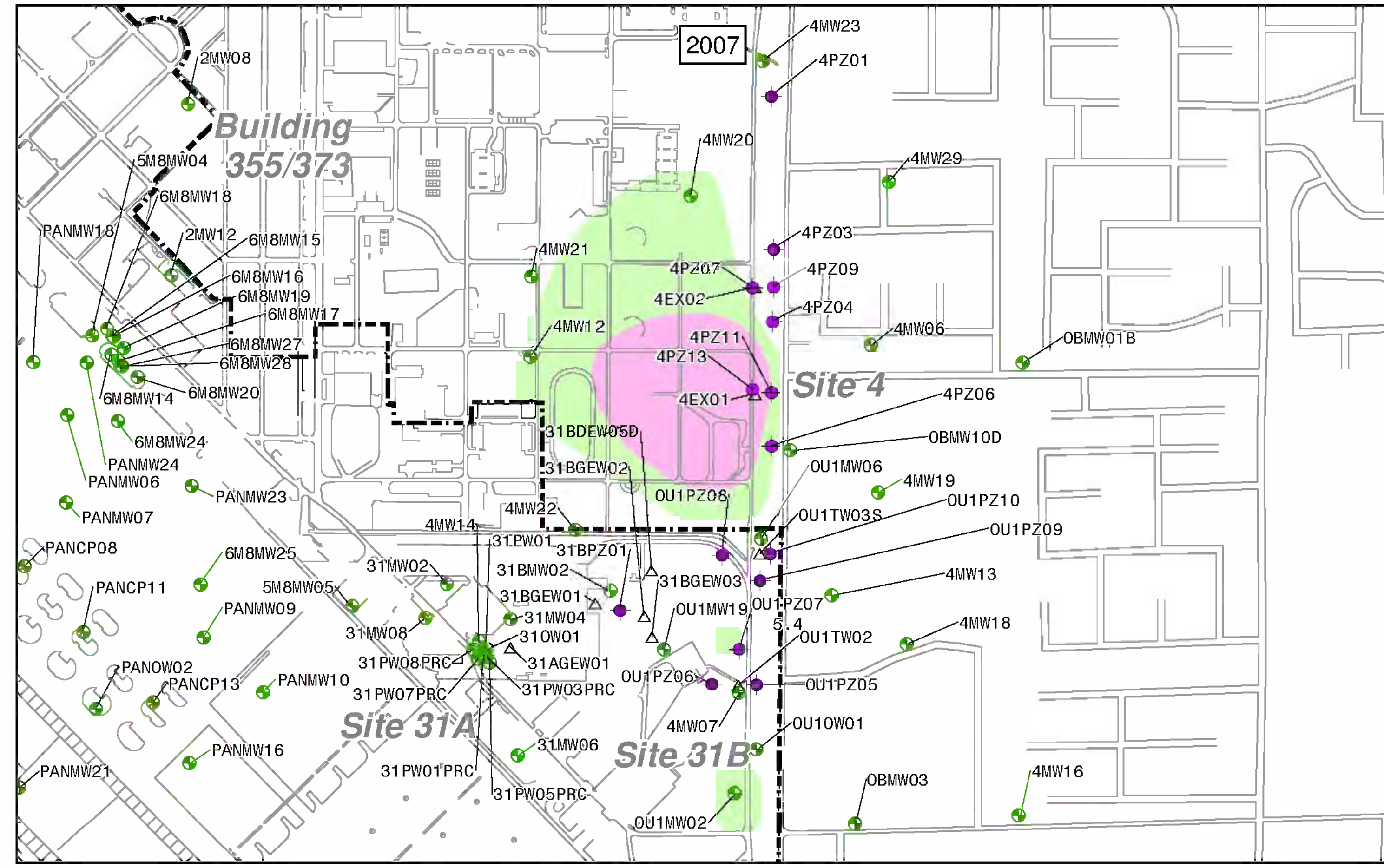

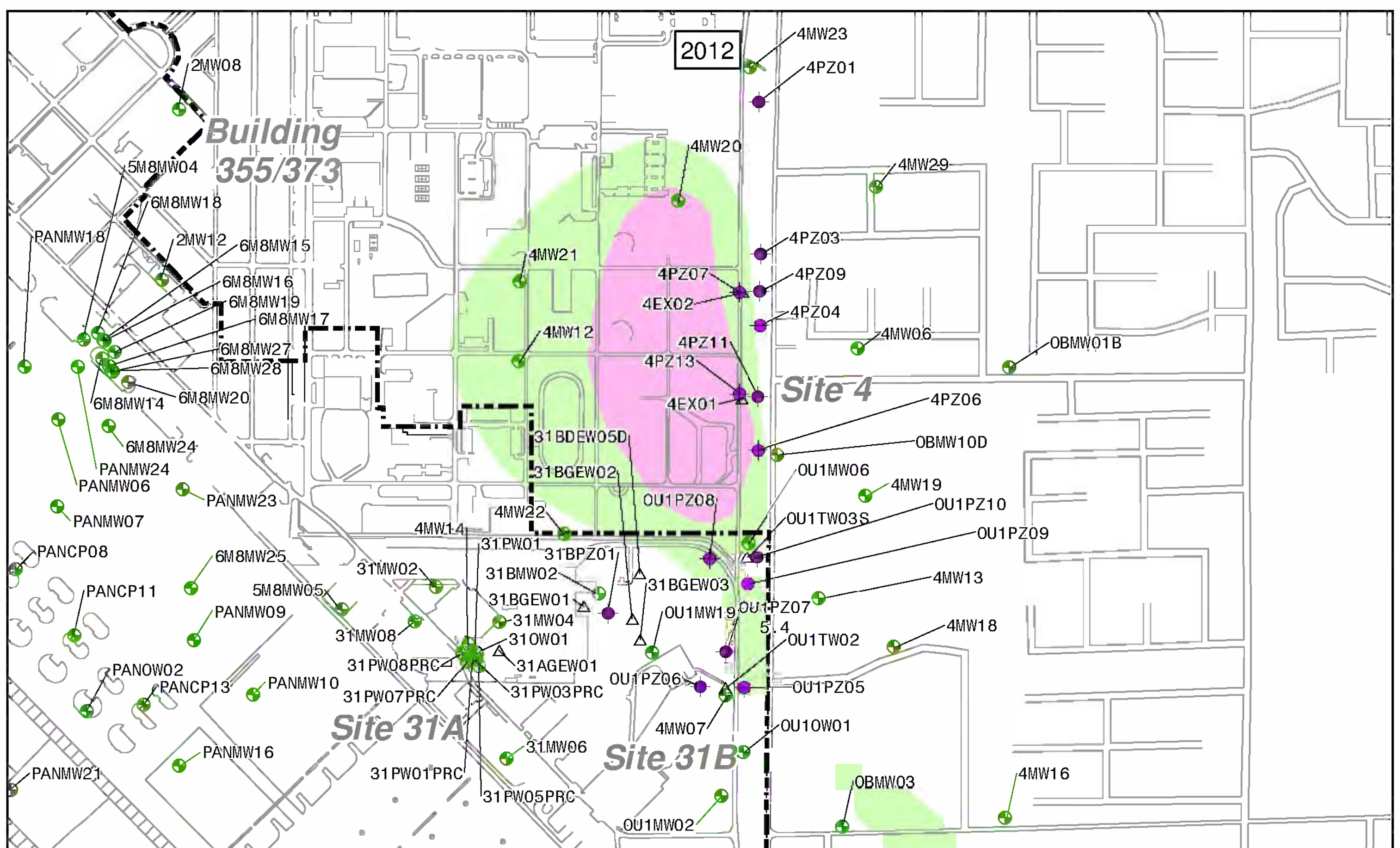

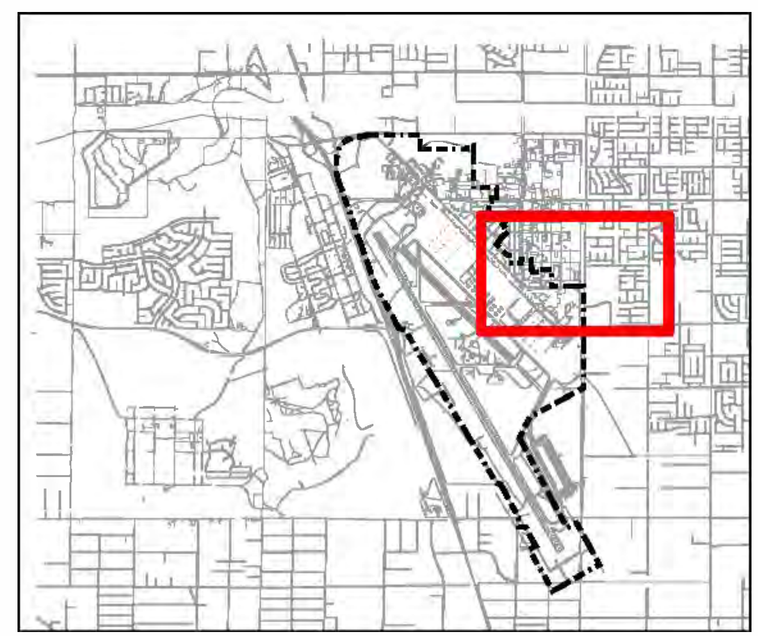

LEGEND

PCE PLUME OUTLINE >5 µg/L

PCE PLUME OUTLINE >10 µg/L

BASE PROPERTY LINE

GROUNDWATER WELLS

EXTRACTION WELL

MONITORING WELL

PIEZOMETER

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
PCE	TETRACHLOROETHENE

N

0 500 1,000

SCALE IN FEET

2011-2012 AGMR

Upper Alluvial PCE Plume Sites 4 and 31 Comparison of 2000, 2007, and 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-2

File: Q:\March_AFB\Project\AGMR_2011_2012\B9790fga.mxd
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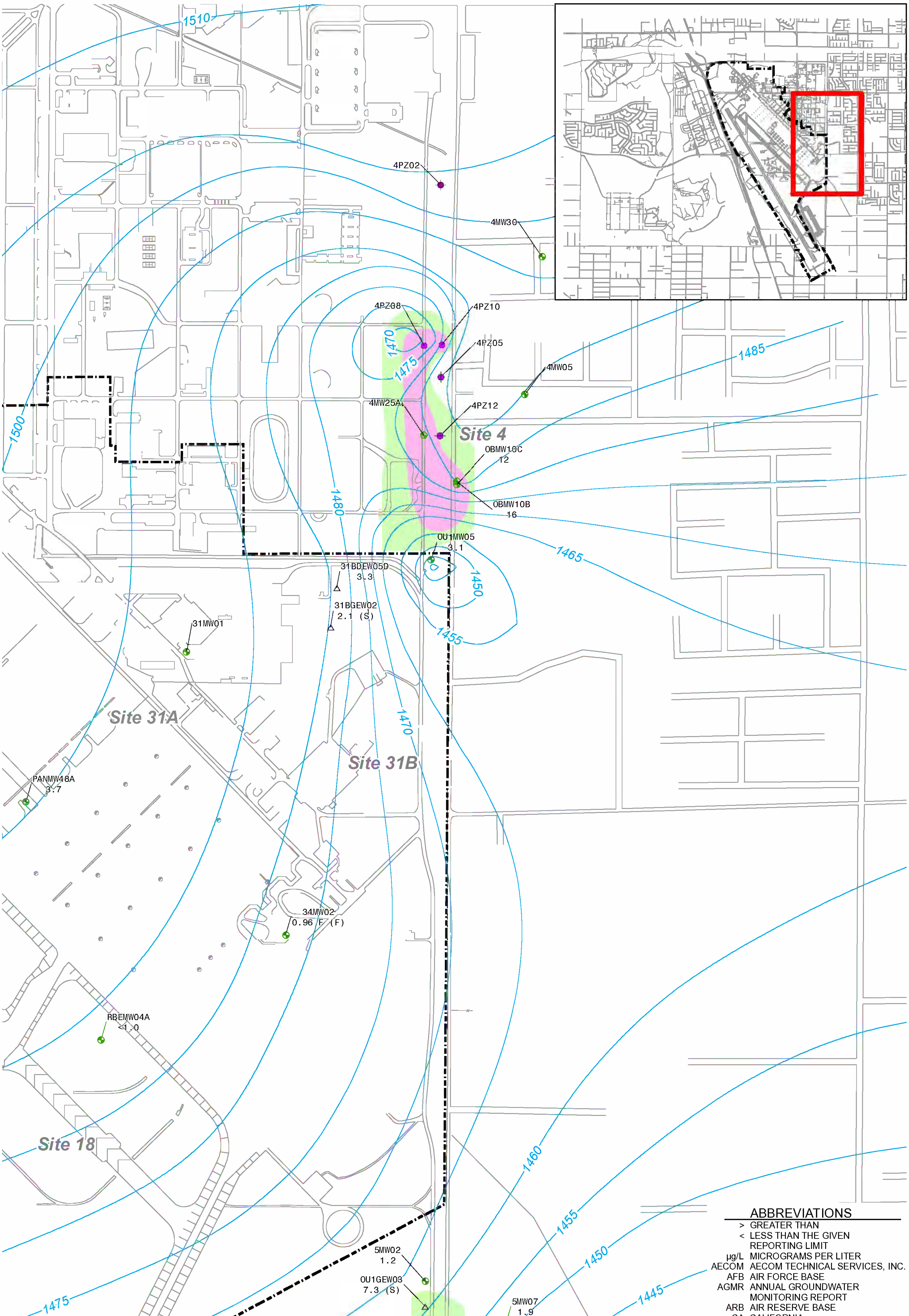

LEGEND

PCE PLUME OUTLINE >5 µg/L

PCE PLUME OUTLINE >10 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
PCE	TETRACHLOROETHENE

2011-2012 AGMR

Lower Alluvial PCE Plume
Site 4
2nd Quarter 2012

Date 04-13

AECOM

Project No. 60271680

March ARB and Former March AFB, CA

Figure 4-3

File: Q:\March_AFB\Project\AGMR_2011_2012\B9791fga.mxd
Date: Thursday, April 18, 2013 4:10:35 PM

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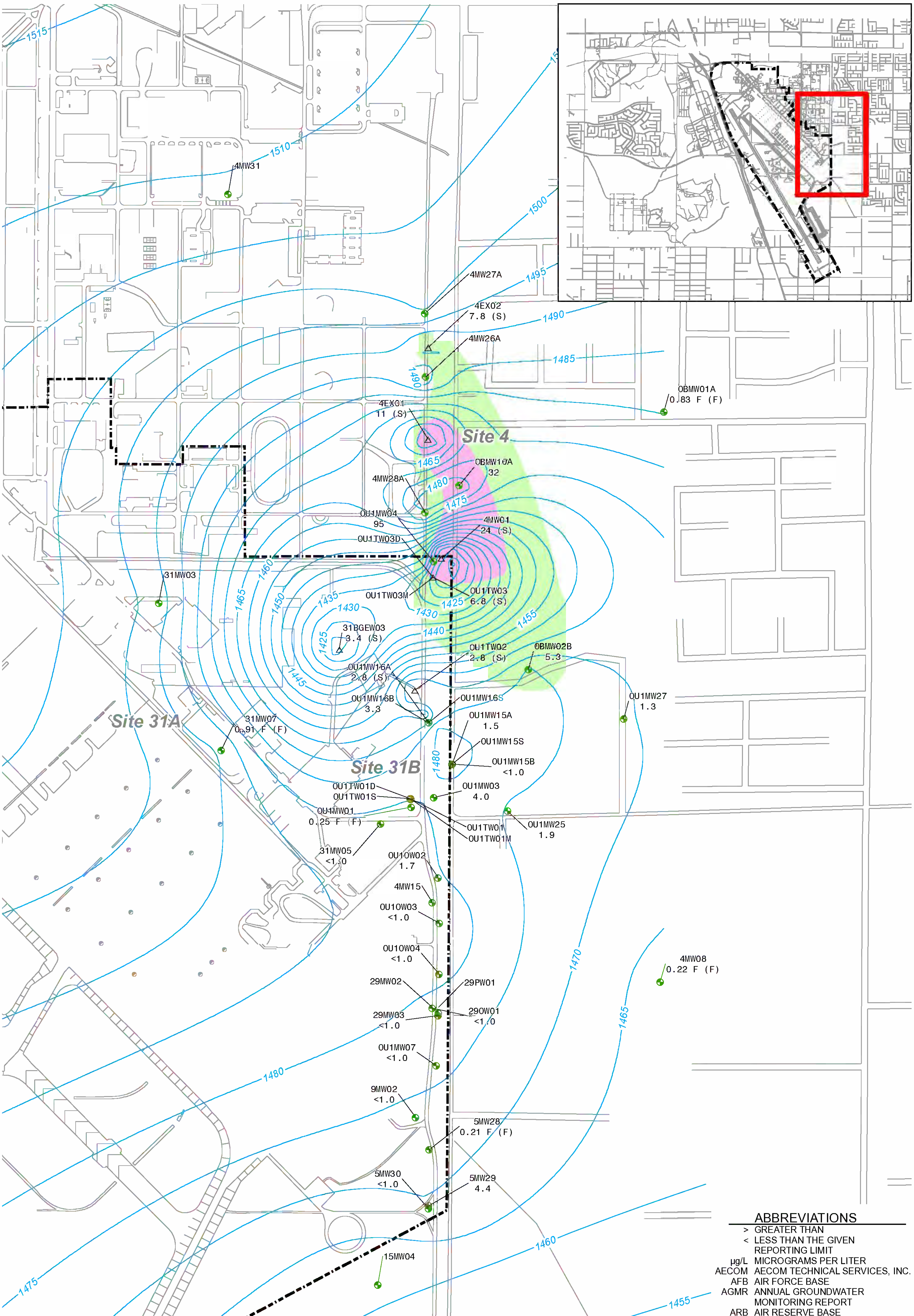

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
PCE	TETRACHLOROETHENE

LEGEND

- PCE PLUME OUTLINE >5 µg/L
- PCE PLUME OUTLINE >10 µg/L
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

2011-2012 AGMR

Bedrock PCE Plume Site 4 2nd Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-5

File: Q:\March_AFB\Project\AGMR_2011_2012\B9793fga.mxd
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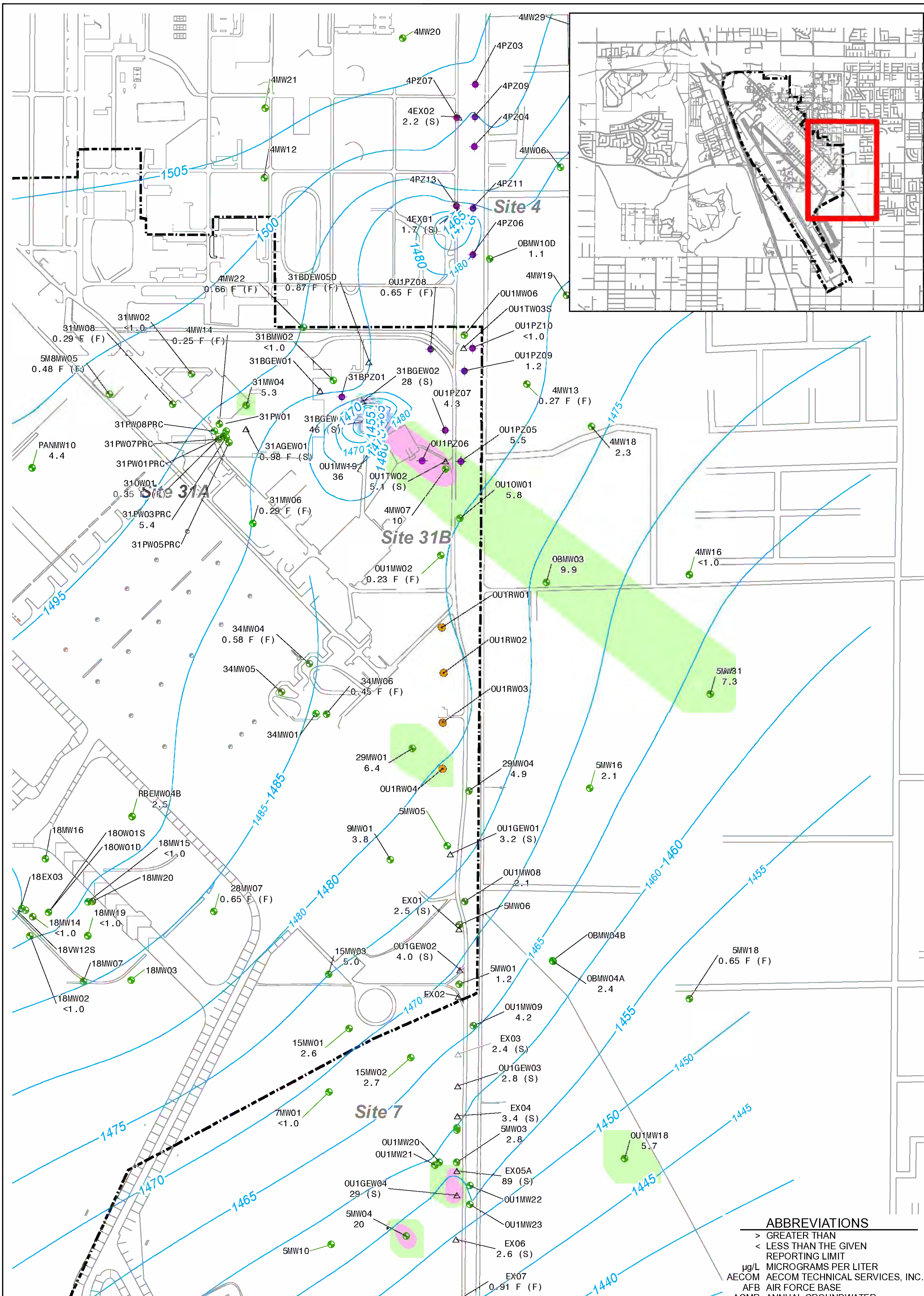

LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT
TCE	TRICHLOROETHENE

N

0 300 600

SCALE IN FEET

2011-2012 AGMR

Upper Alluvial TCE Plume OU 1 Plume North 2nd Quarter 2012

Date 12-13

AECOM

Figure 4-7

Project No. 60271680

March ARB and Former March AFB, CA

File: Q:\March_AFB\Project\AGMR_2011_2012\B9795fga.mxd
Date: Monday, December 09, 2013 5:29:12 PM

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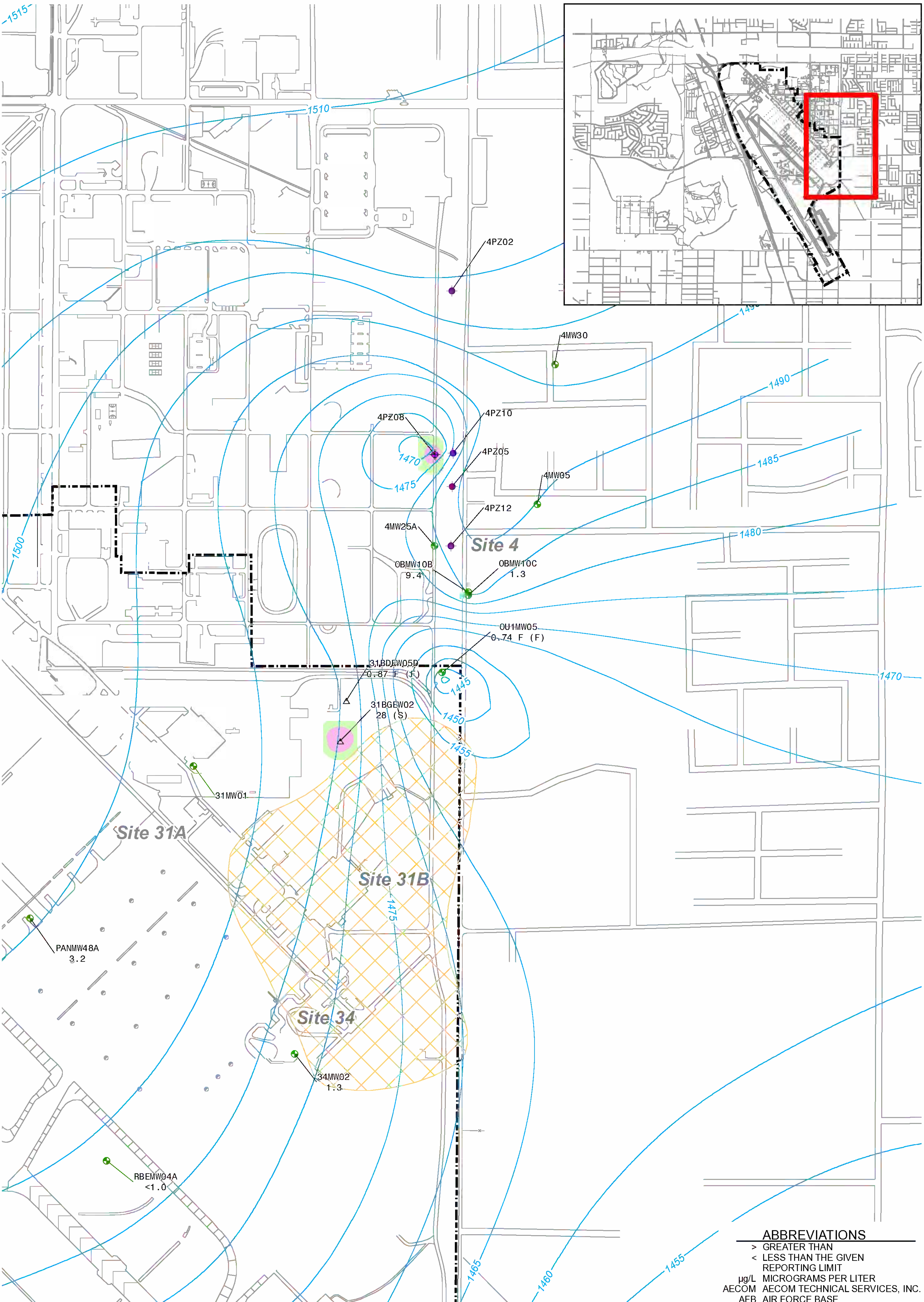

LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- NO LOWER ALLUVIAL UNIT PRESENT
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600
SCALE IN FEET

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
TCE	TRICHLOROETHENE

2011-2012 AGMR

Lower Alluvial TCE Plume Sites 4 and 31 2nd Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-9

File: Q:\March_AFB\Project\AGMR_2011_2012\B9801fga.mxd
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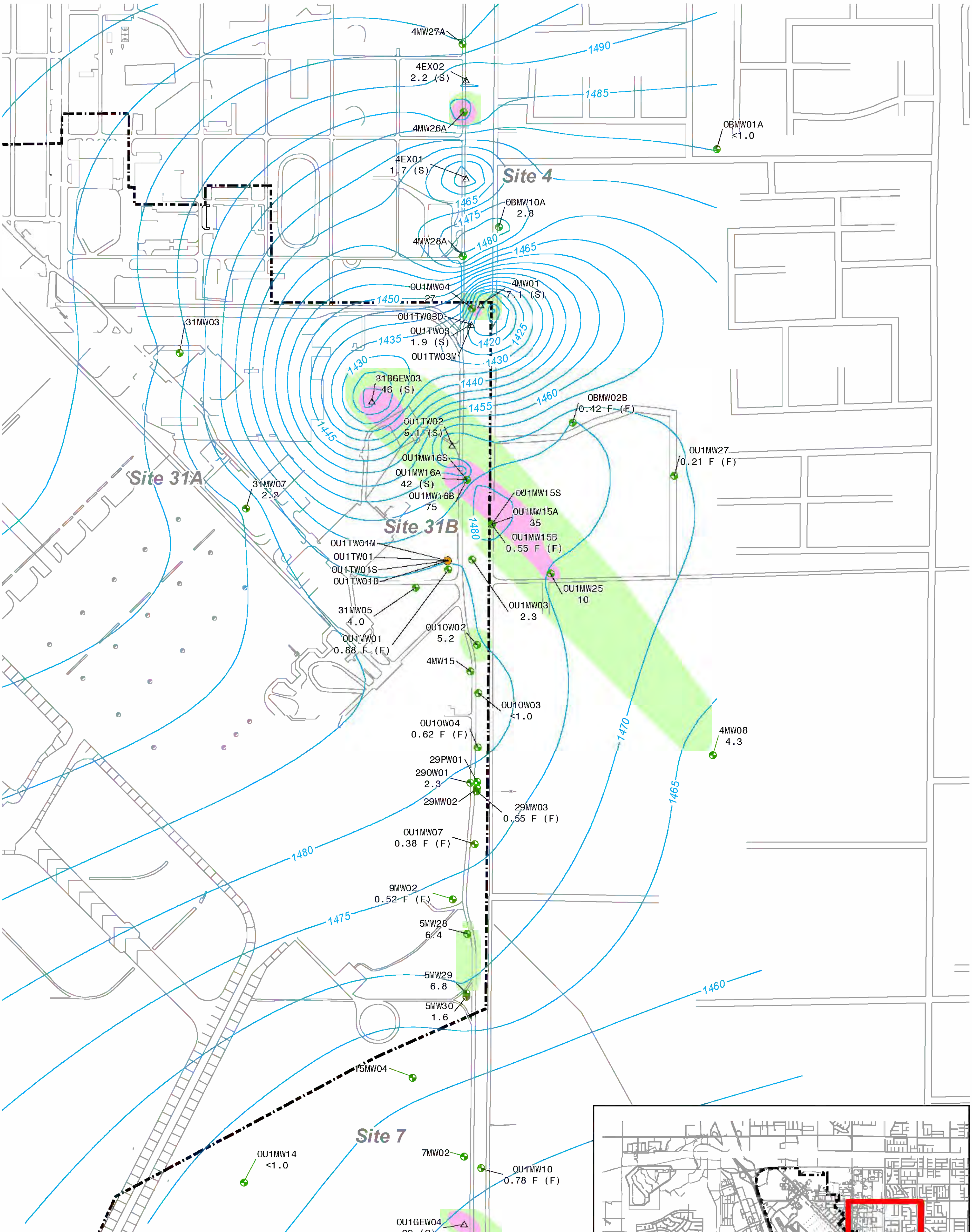

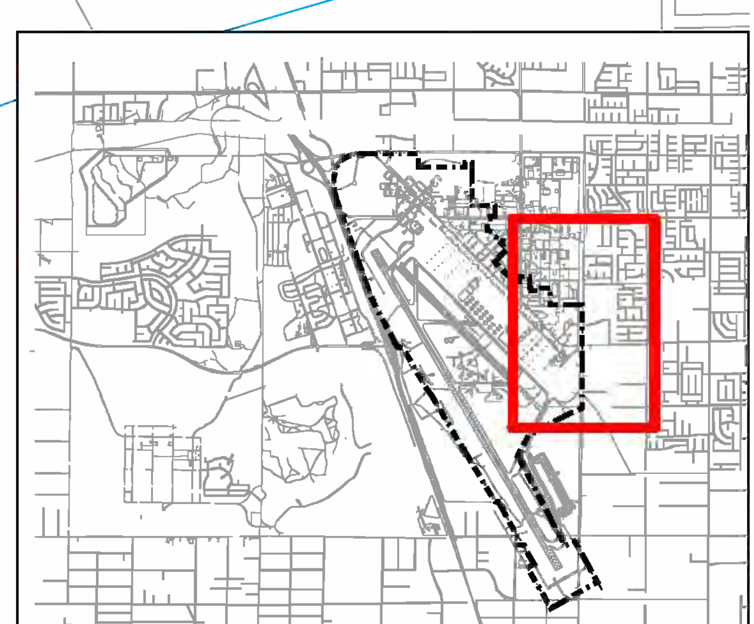

LEGEND

TCE PLUME OUTLINE >5 µg/L

TCE PLUME OUTLINE >10 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

△ EXTRACTION WELL

INJECTION WELL

MONITORING WELL

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT
TCE	TRICHLOROETHENE

LABORATORY ASSIGNED QUALIFIERS

F	INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT
(F)	THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S)	SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

2011-2012 AGMR

Bedrock TCE Plume
Sites 4 and 31 and OU 1 Plume
2nd Quarter 2012

Date 12-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-11

File: Q:\March_AFB\Project\AGMR_2011_2012\B9803fga.mxd
Date: Monday, December 09, 2013 5:47:31 PM

File: Q:\March_AFB\Project\AGMR_2011_2012\B9804fga.mxd
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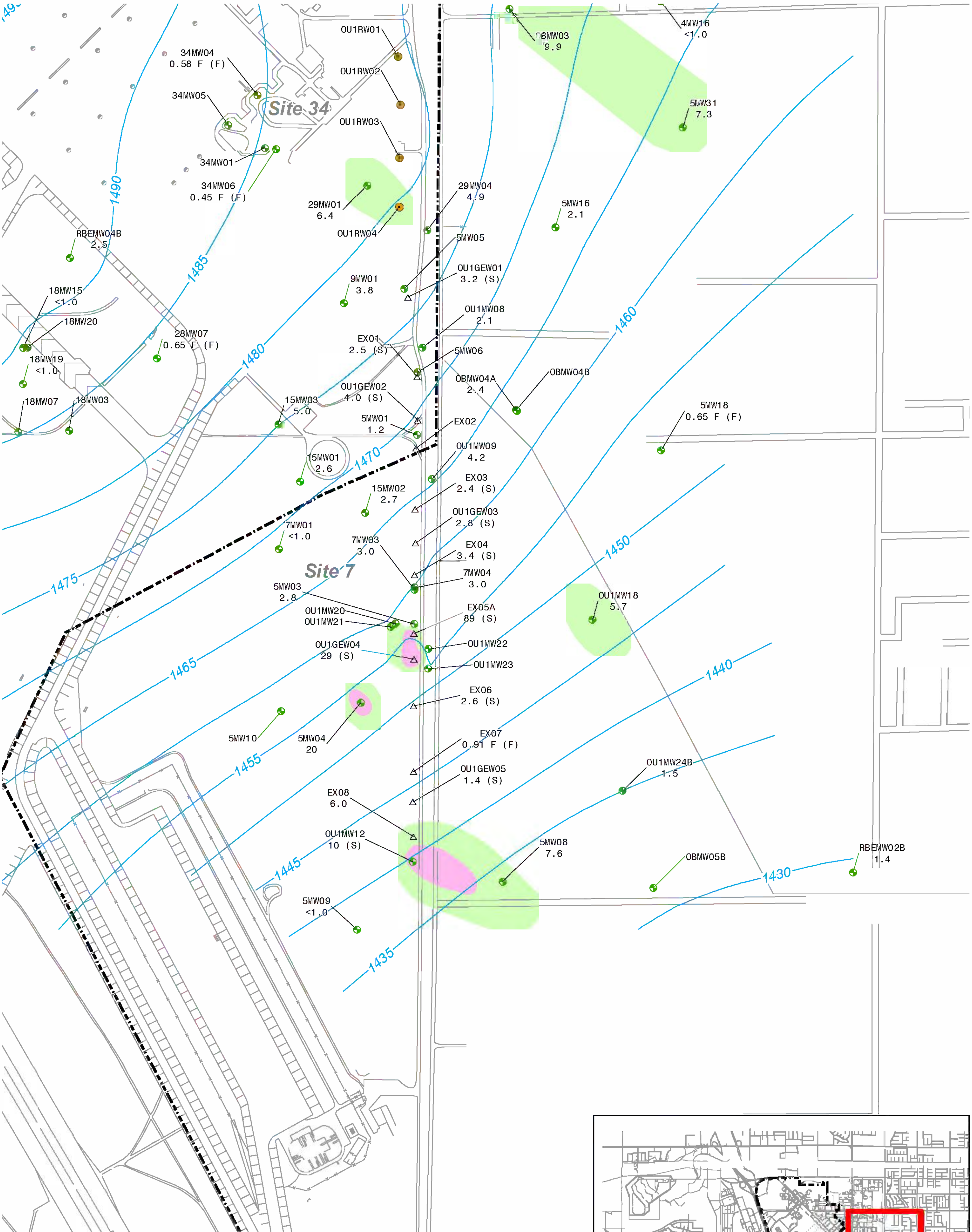


LEGEND

TCE PLUME OUTLINE >5 µg/L

TCE PLUME OUTLINE >10 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT
TCE	TRICHLOROETHENE

LABORATORY ASSIGNED QUALIFIERS

F	INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT
(F)	THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

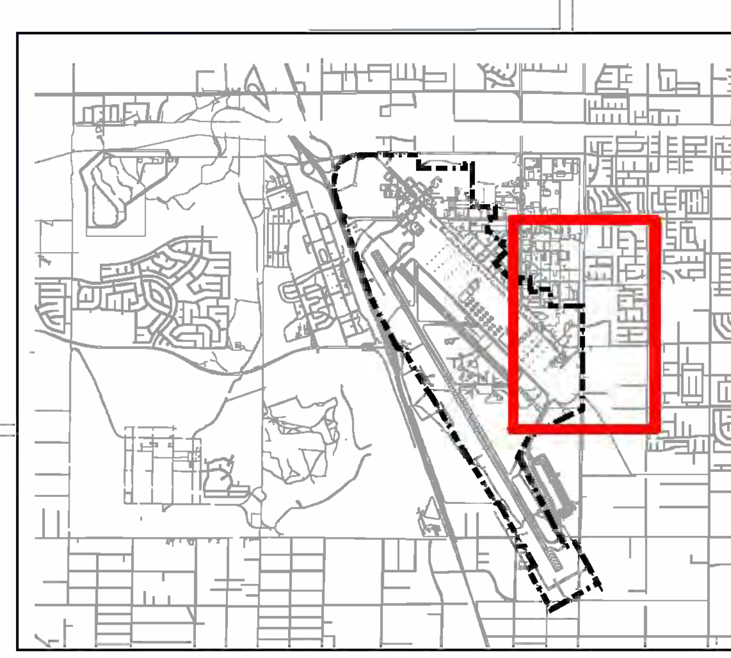
DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET



2011-2012 AGMR

Upper Alluvial TCE Plume
OU 1 Plume South
2nd Quarter 2012

Date 12-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-13

File: Q:\March_AFB\Project\AGMR_2011_2012\B9805fga.mxd
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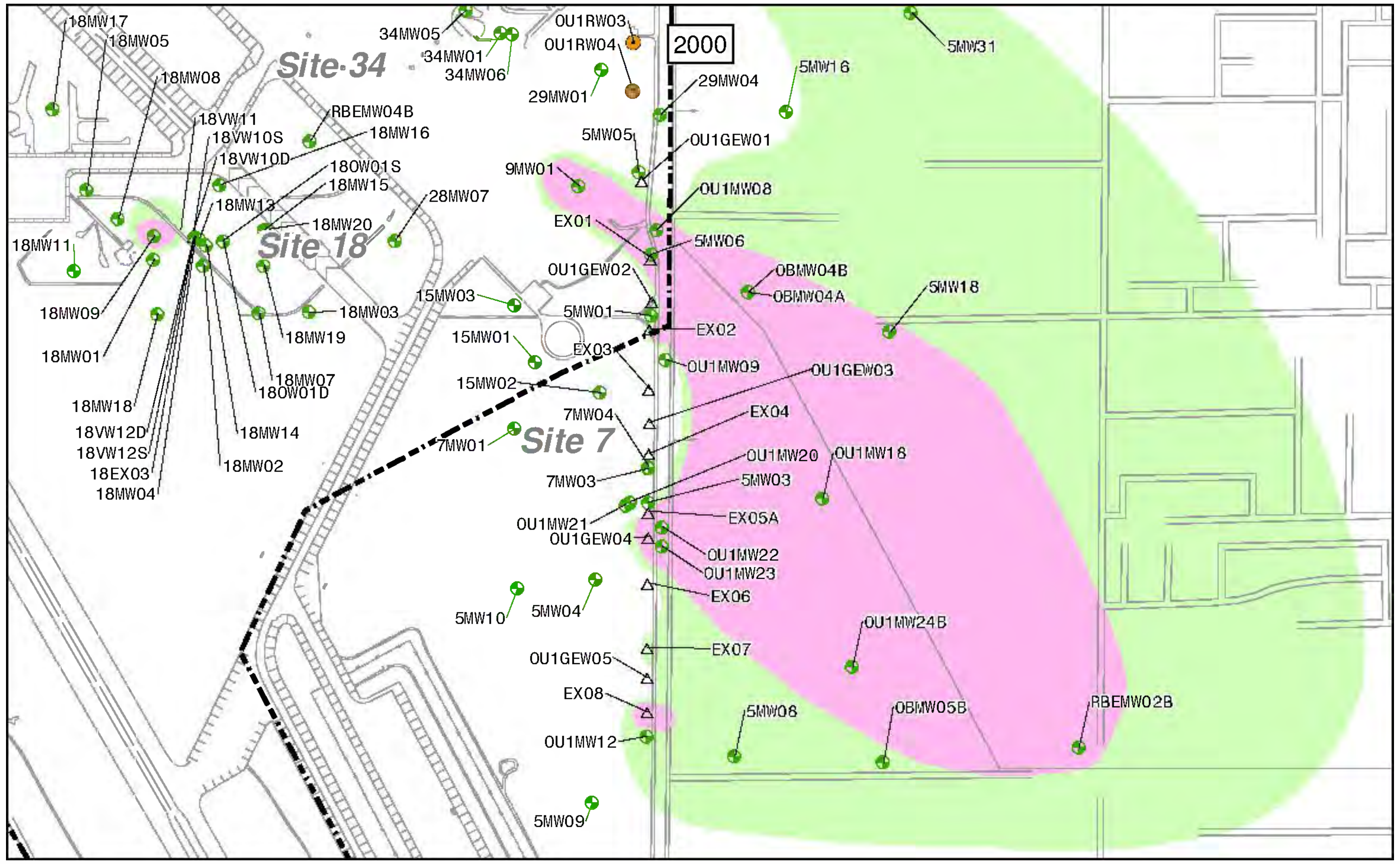

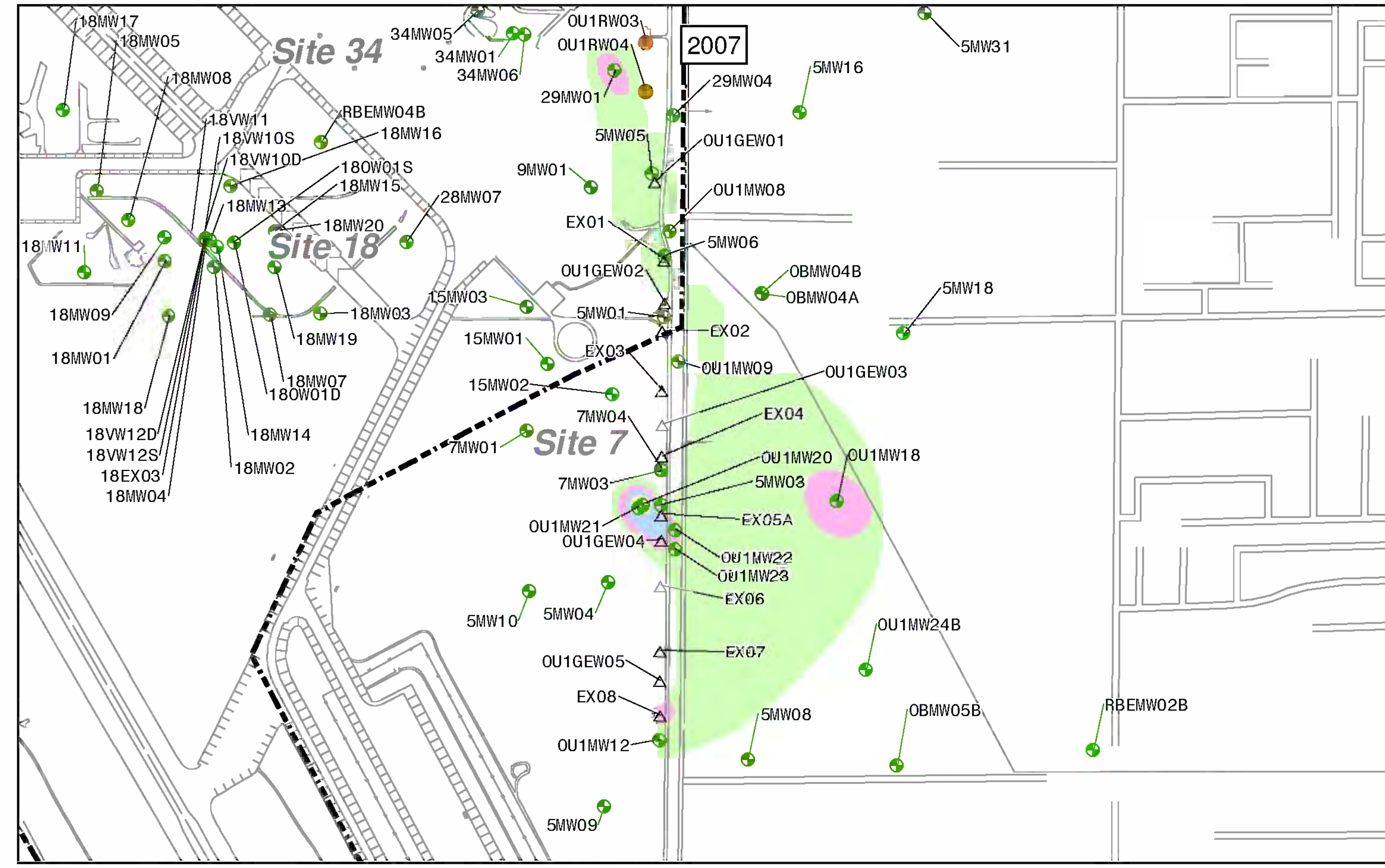

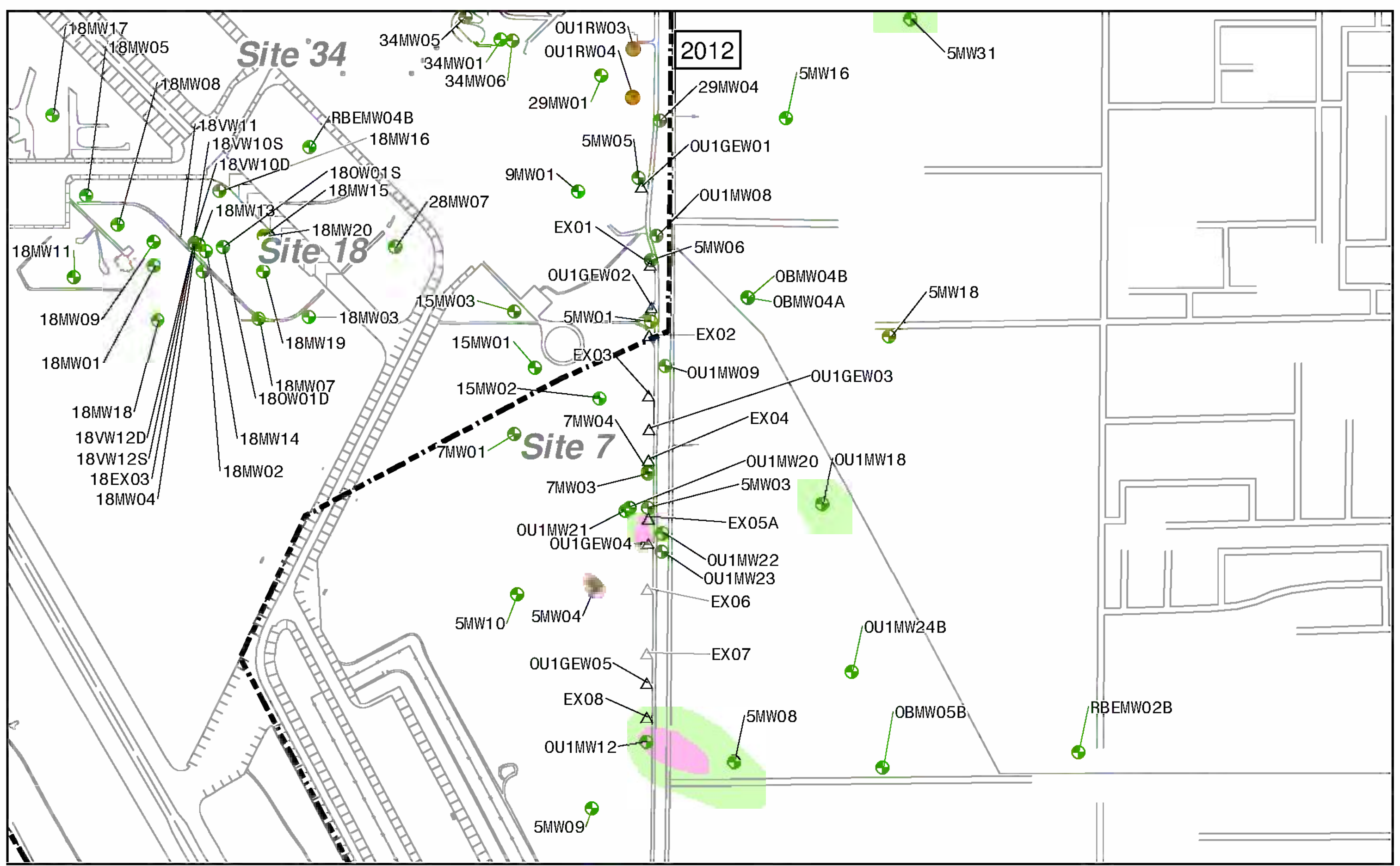

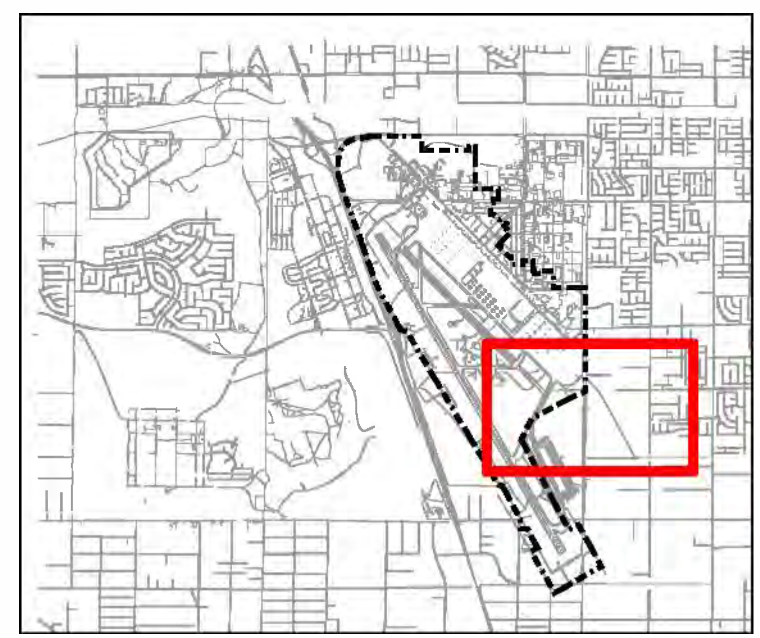

N
0 550 1,100
SCALE IN FEET

LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- TCE PLUME OUTLINE >100 µg/L
- BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL

ABBREVIATIONS

> GREATER THAN
µg/L MICROGRAMS PER LITER
AECOM AECOM TECHNICAL SERVICES, INC.
AFB AIR FORCE BASE
AGMR ANNUAL GROUNDWATER MONITORING REPORT
ARB AIR RESERVE BASE
CA CALIFORNIA
TCE TRICHLOROETHENE

2011-2012 AGMR

Upper Alluvial TCE Plume
OU 1 Plume South
Comparison of 2000, 2007, and 2012

Date 12-13
Project No. 60271680
AECOM
March ARB and Former March AFB, CA
Figure 4-14

File: Q:\March_AFB\Project\AGMR_2011_2012\B9806fga.mxd
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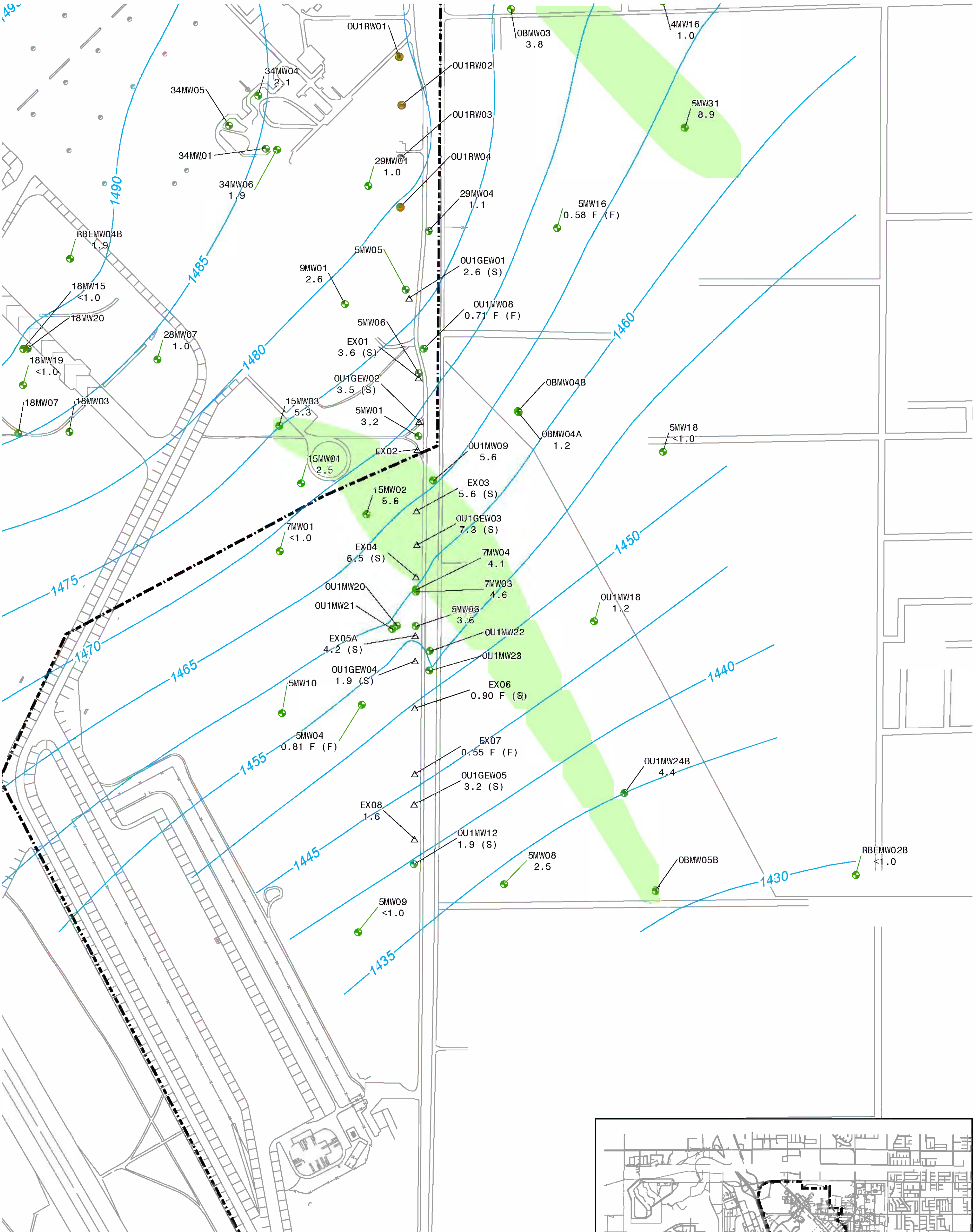

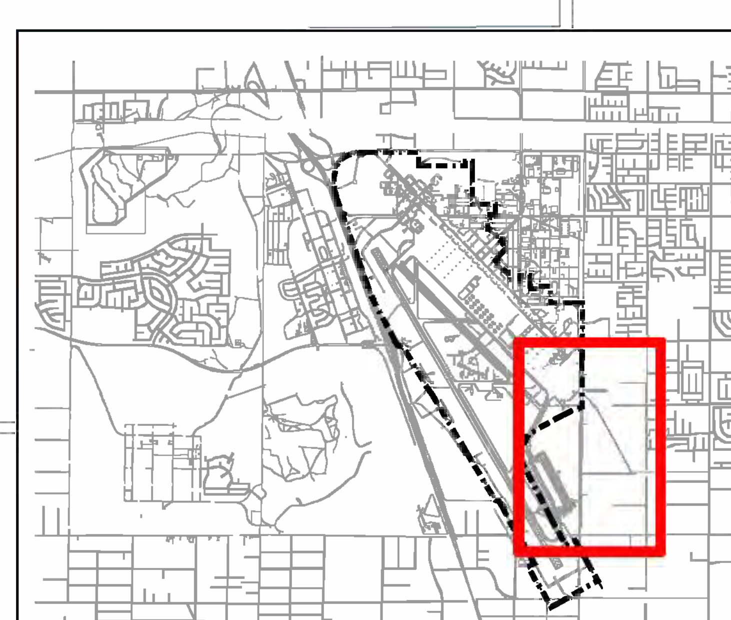

LEGEND

- PCE PLUME OUTLINE >5 µg/L
- PCE PLUME OUTLINE >10 µg/L
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT
PCE	TETRACHLOROETHENE

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

2011-2012 AGMR

Upper Alluvial PCE Plume
OU 1 Plume South
2nd Quarter 2012

Date 12-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-15

File: Q:\March_AFB\Project\AGMR_2011_2012\B9807fga.mxd
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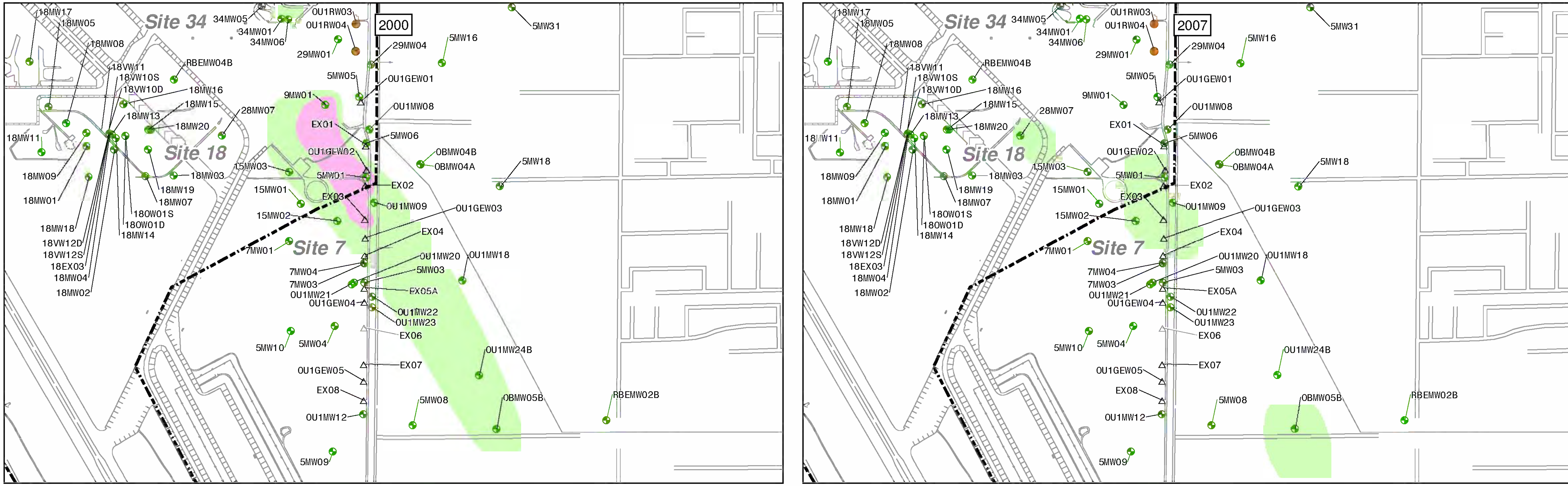
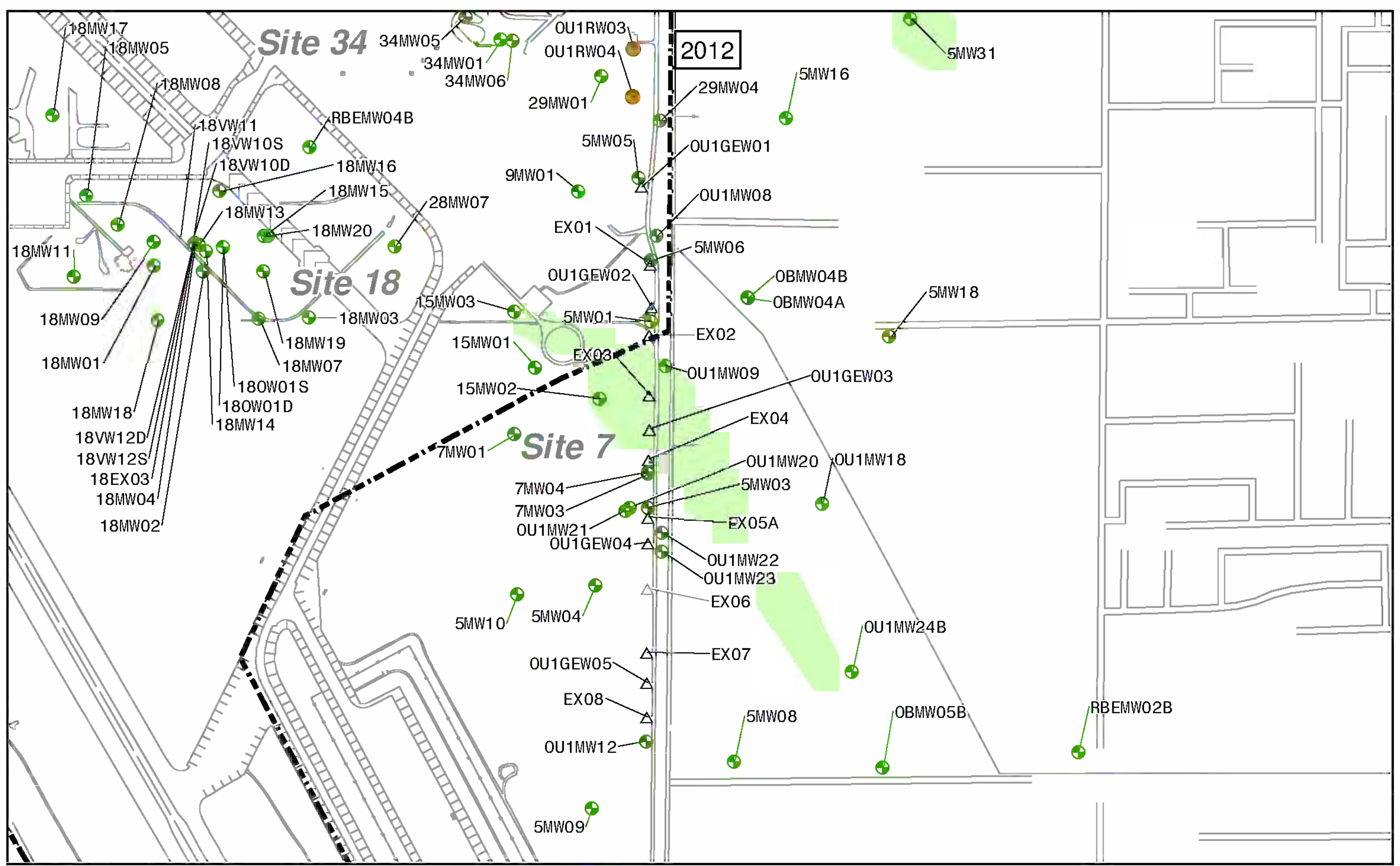
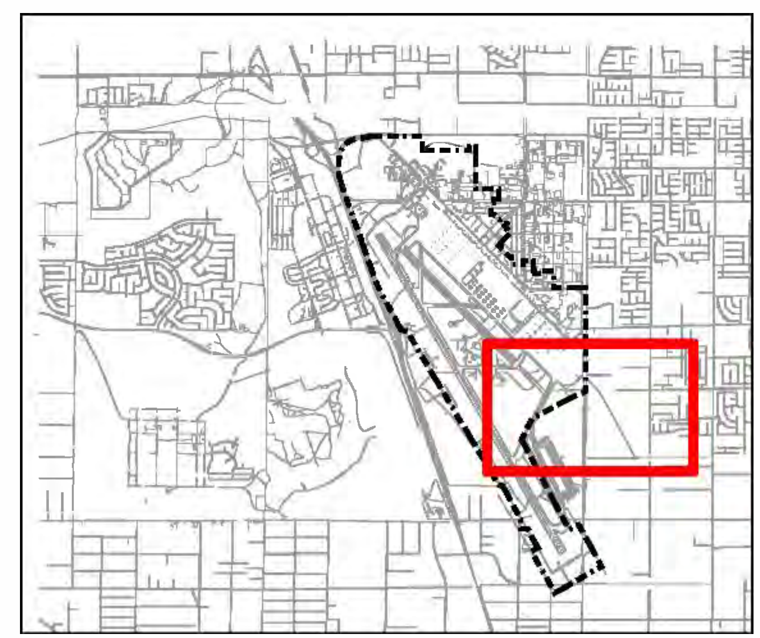






LEGEND

PCE PLUME OUTLINE >5 µg/L

PCE PLUME OUTLINE >10 µg/L

BASE PROPERTY LINE

GROUNDWATER WELLS

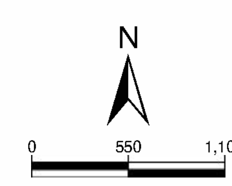
EXTRACTION WELL

INJECTION WELL

MONITORING WELL

ABBREVIATIONS

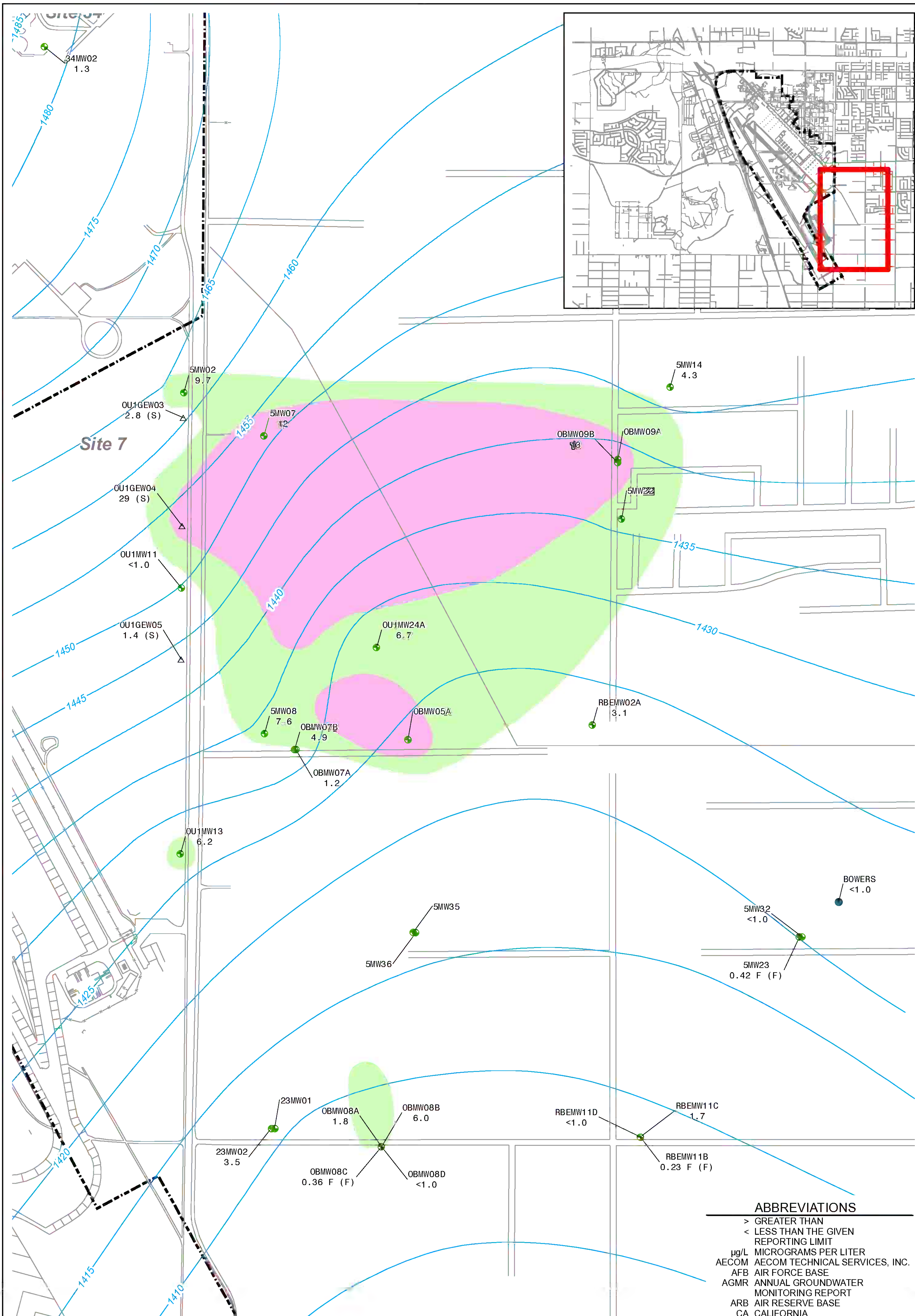
>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
PCE	TETRACHLOROETHENE



2011-2012 AGMR

**Upper Alluvial PCE Plume
OU 1 Plume South
Comparison of 2000, 2007, and 2012**

Date 12-13	AECOM	Figure 4-16
Project No. 60271680	March ARB and Former March AFB, CA	



ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT
TCE	TRICHLOROETHENE

LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- MONITORING WELL
- PRIVATE WELL

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

2011-2012 AGMR

Lower Alluvial TCE Plume
OU 1 Plume
2nd Quarter 2012

Date 04-13

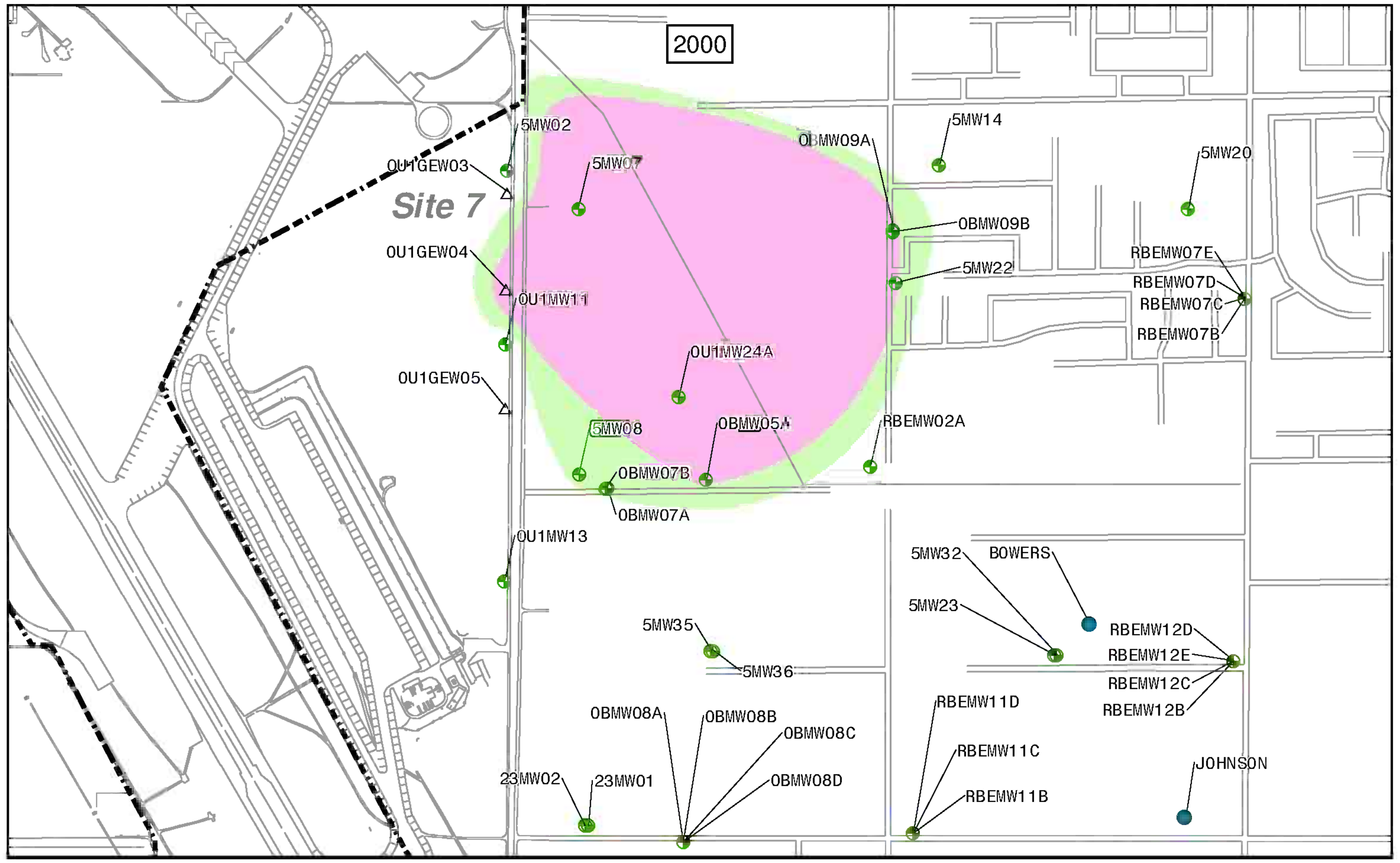
Project No. 60271680

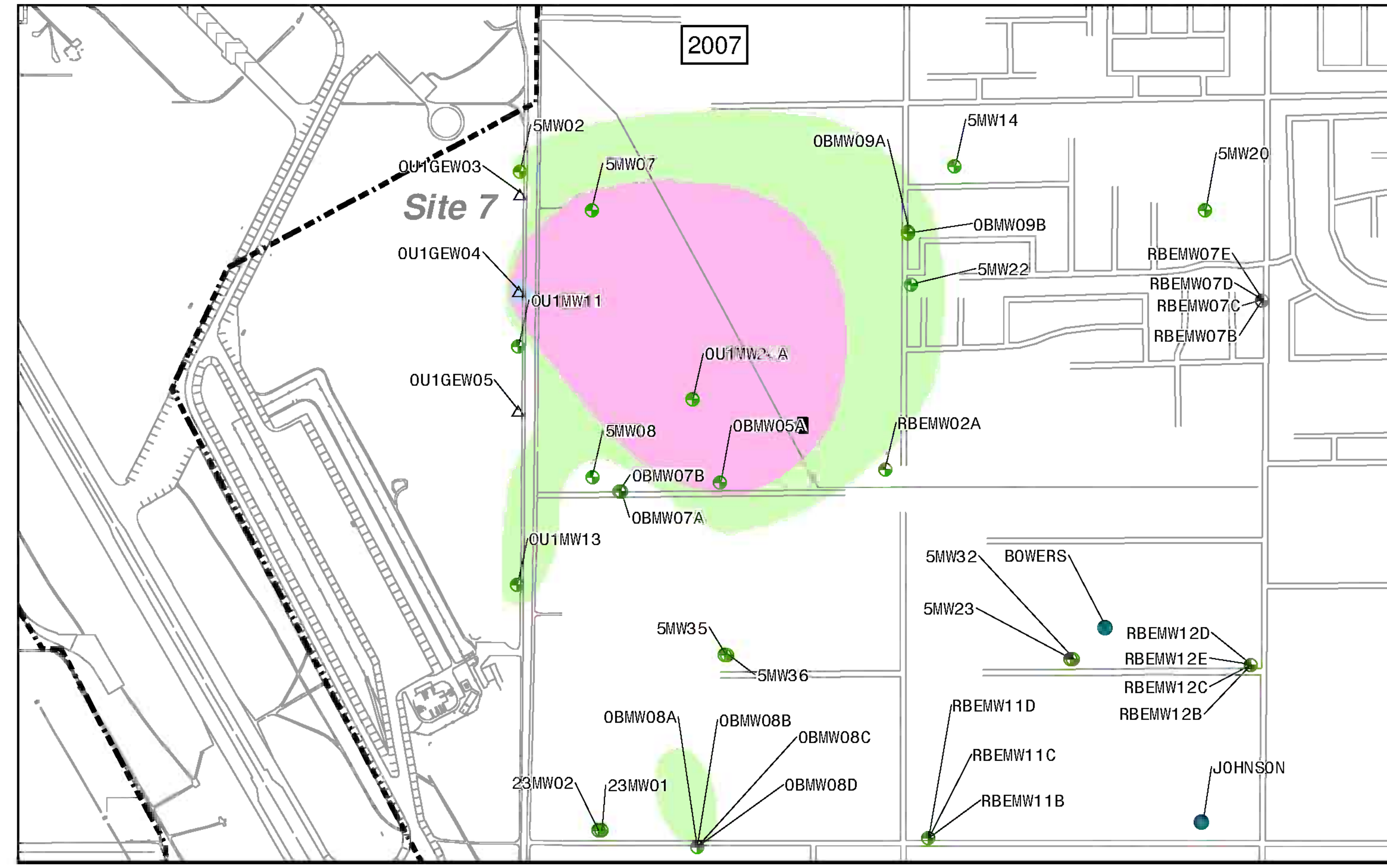
AECOM

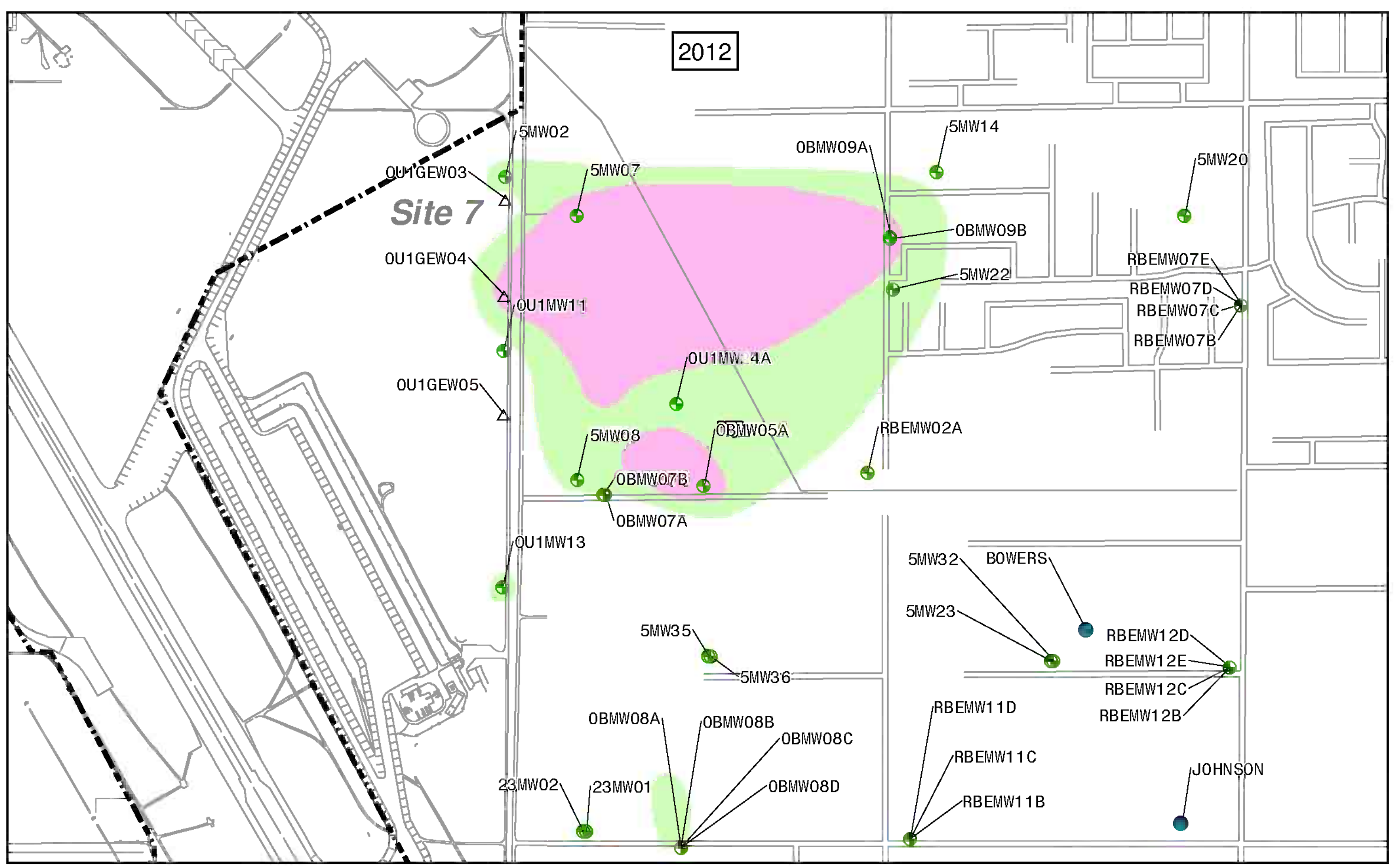
March ARB and Former March AFB, CA

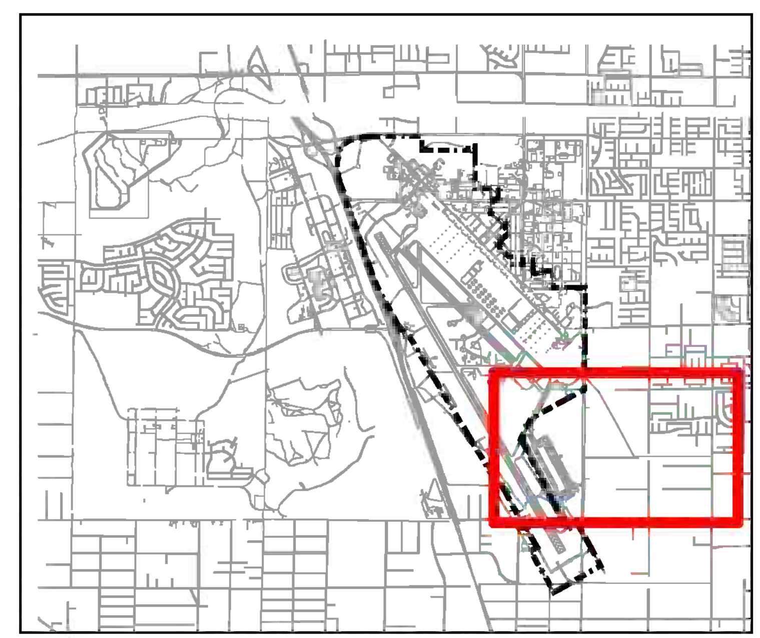
Figure 4-17

File: Q:\March_AFB\Project\AGMR_2011_2012\B9809fga.mxd
Date: Thursday, April 18, 2013 4:59:17 PM









N

0 650 1,300

SCALE IN FEET

LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- TCE PLUME OUTLINE >100 µg/L
- BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- MONITORING WELL
- PRIVATE WELL

ABBREVIATIONS

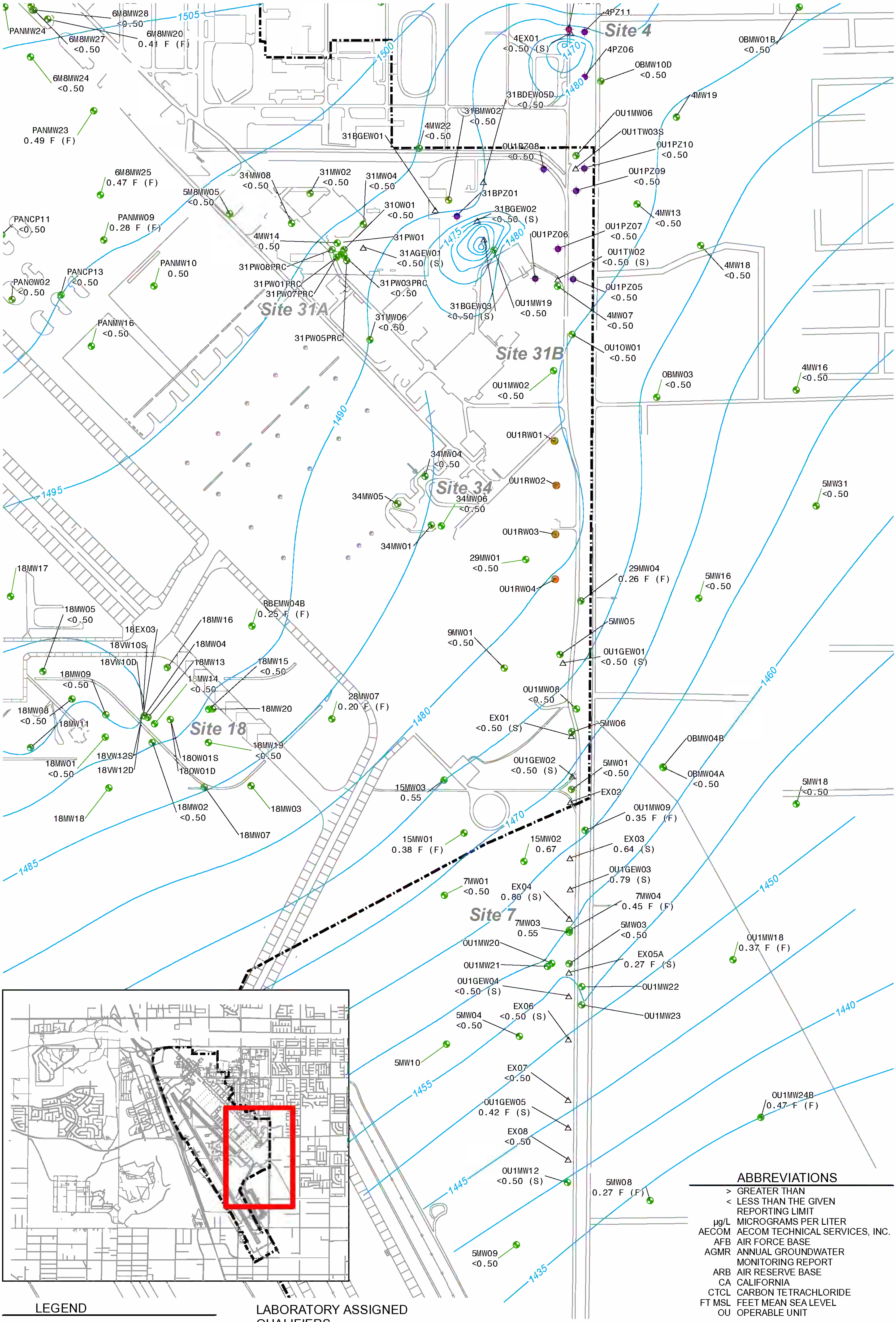
>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
TCE	TRICHLOROETHENE

2011-2012 AGMR

Lower Alluvial TCE Plume
OU 1 Plume
Comparison of 2000, 2007, and 2012

Date 04-13	AECOM	Figure
Project No. 60271680	March ARB and Former March AFB, CA	4-18

File: Q:\March_AFB\Project\AGMR_2011_2012\B9810fga.mxd
Date: Thursday, April 18, 2013 4:59:44 PM



LEGEND

CTCL PLUME OUTLINE >0.5 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT

2011-2012 AGMR

Upper Alluvial CarbonTetrachloride Plume OU1 and OU2 Areas 2nd Quarter 2012

Date 12-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-19

File: Q:\March_AFB\Project\AGMR_2011_2012\B9811fga.mxd
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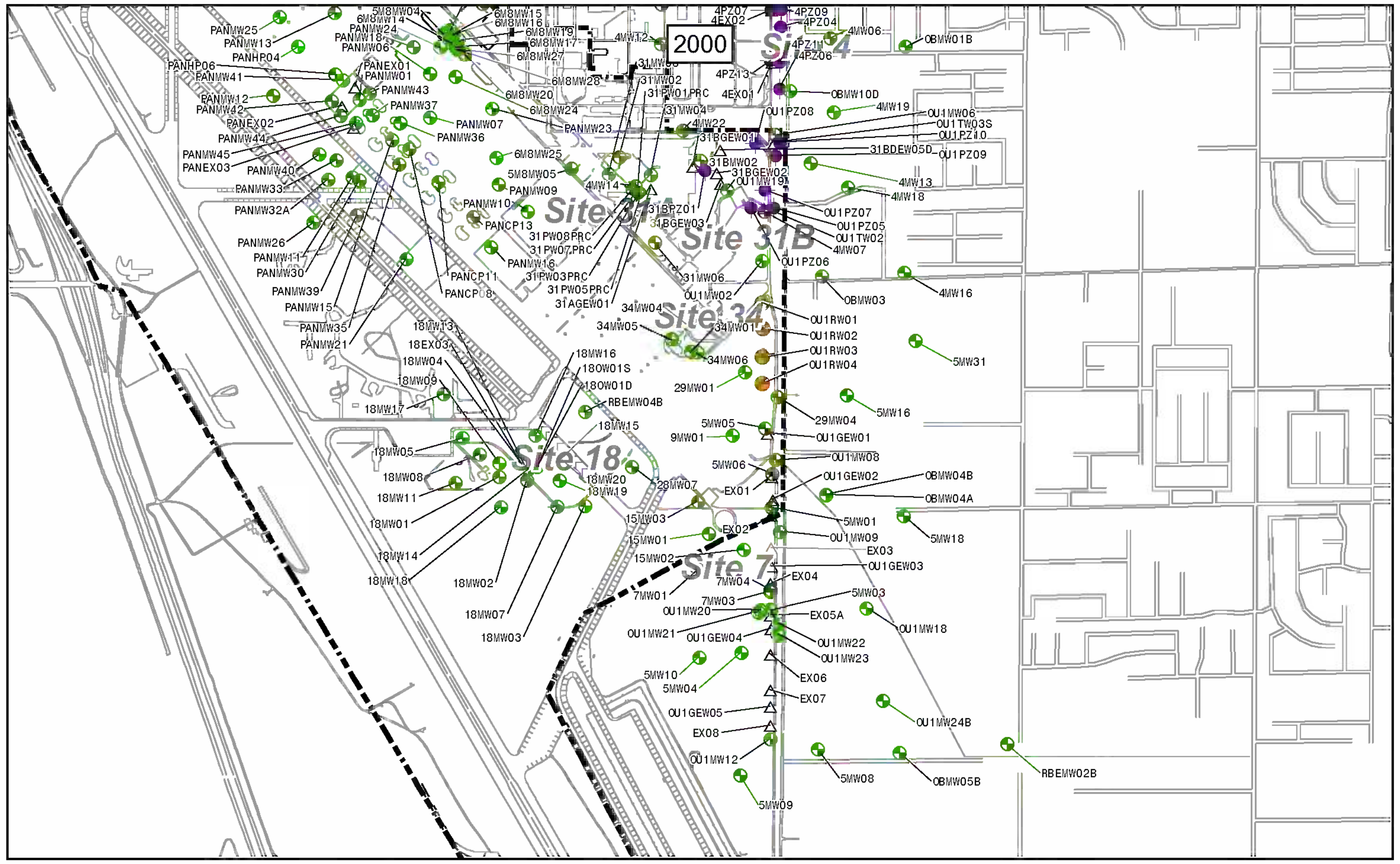
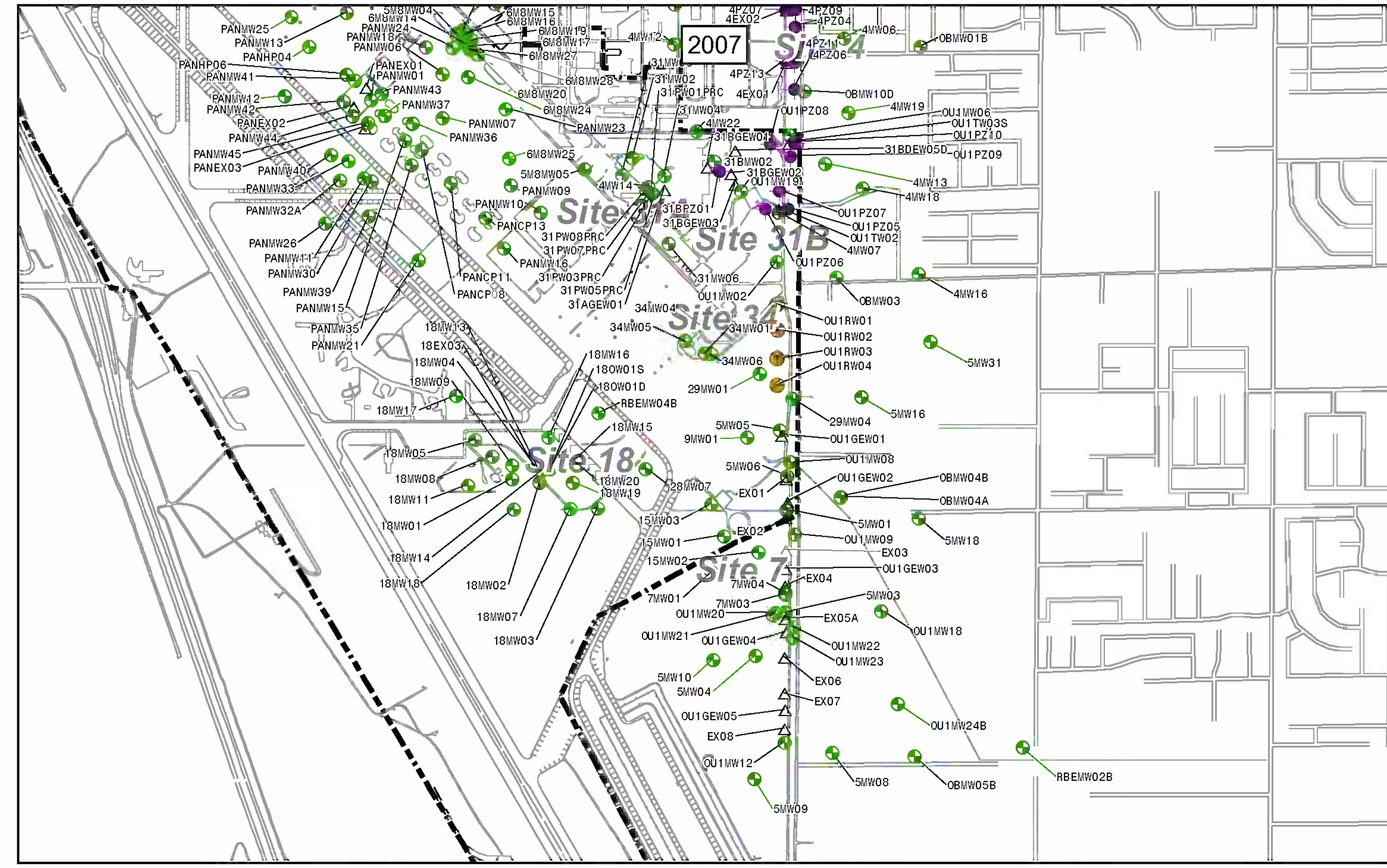
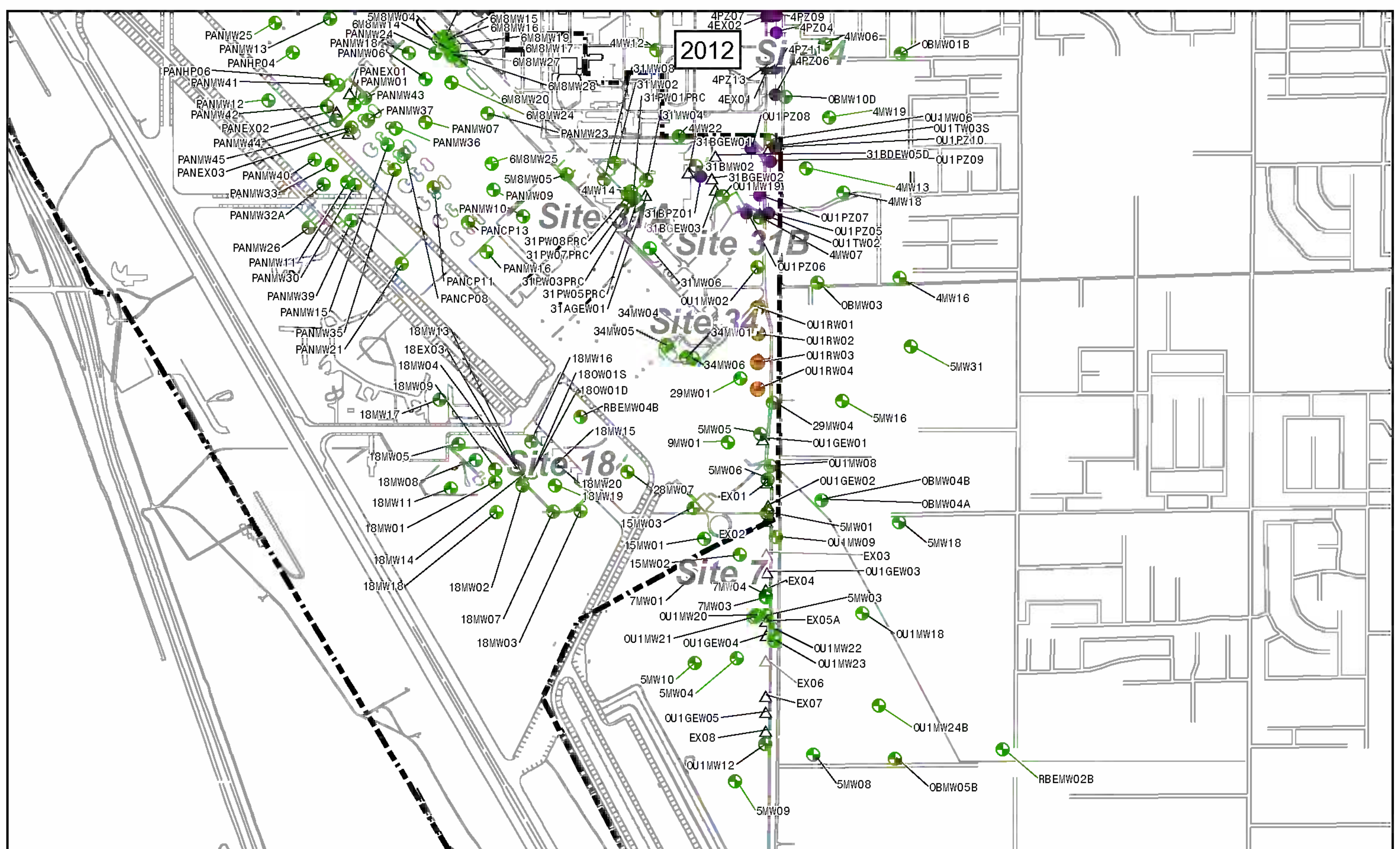
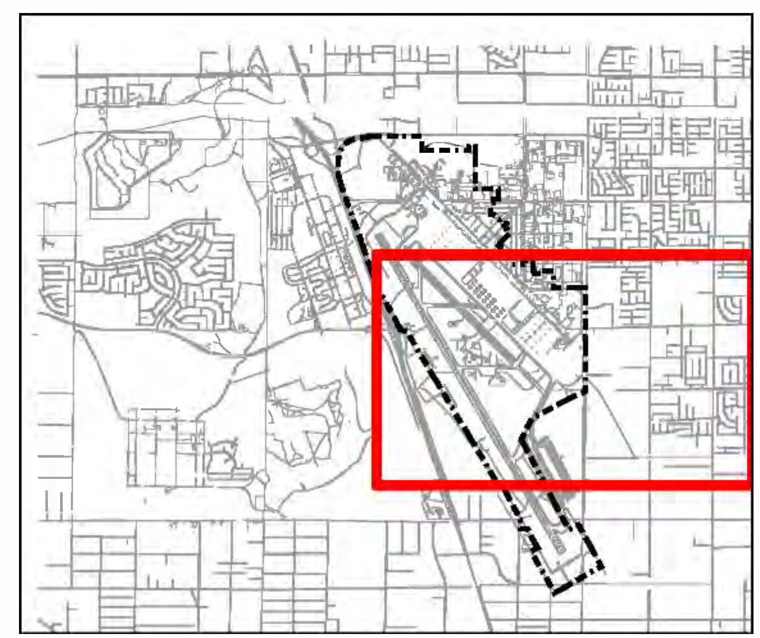








LEGEND

CTCL PLUME OUTLINE >0.5 µg/L

BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE

N

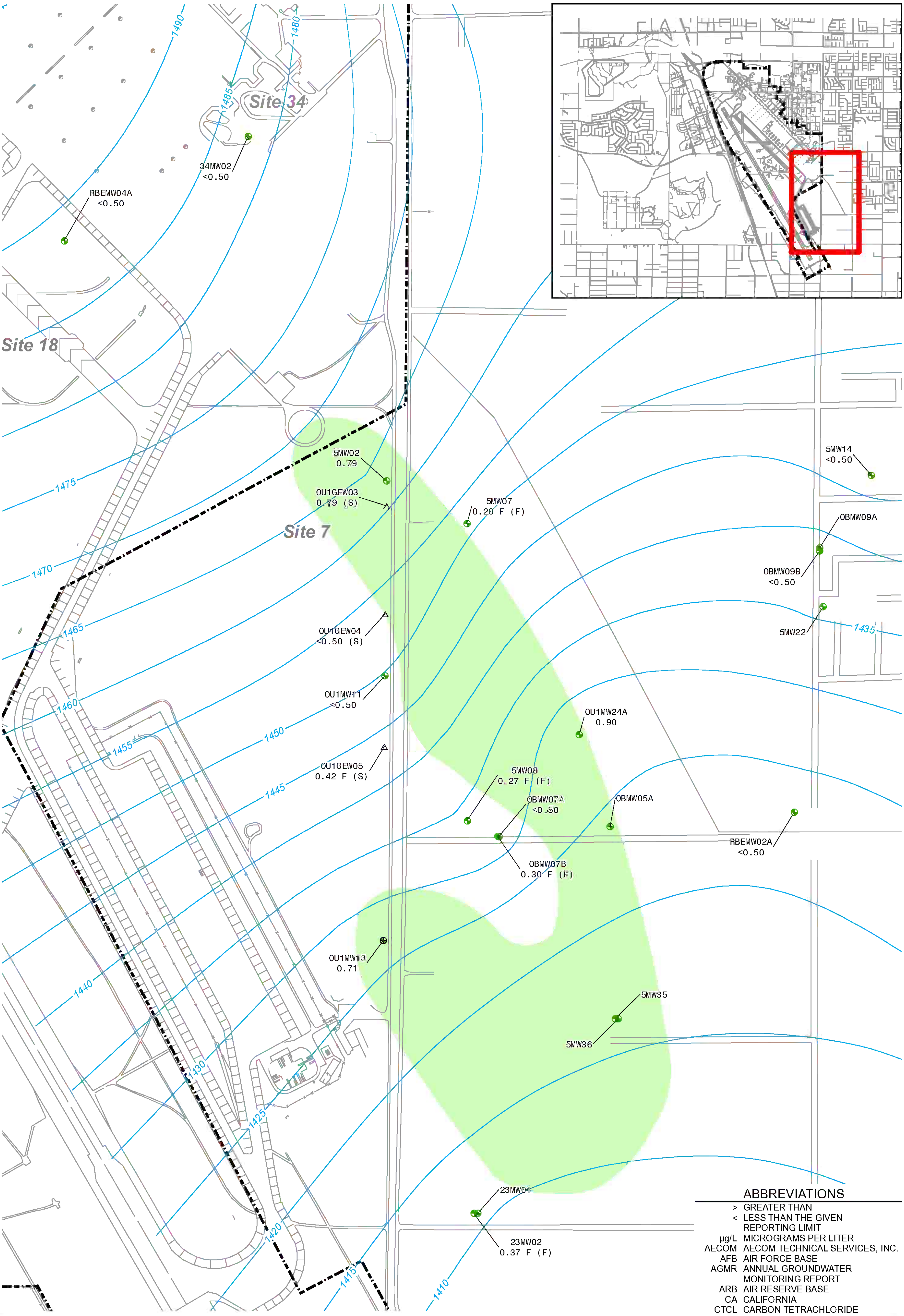
0 1,000 2,000

SCALE IN FEET

2011-2012 AGMR

Upper Alluvial CarbonTetrachloride Plume OU1 and OU2 Areas Comparison of 2000, 2007, and 2012

Date 12-13	AECOM	Figure
Project No. 60271680	March ARB and Former March AFB, CA	4-20



ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT

LEGEND

CTCL PLUME OUTLINE >0.5 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

EXTRACTION WELL

INJECTION WELL

MONITORING WELL

PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

2011-2012 AGMR

Lower Alluvial Carbon Tetrachloride Plume OU 1 Plume 2nd Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 4-21

File: Q:\March_AFB\Project\AGMR_2011_2012\B9813fga.mxd
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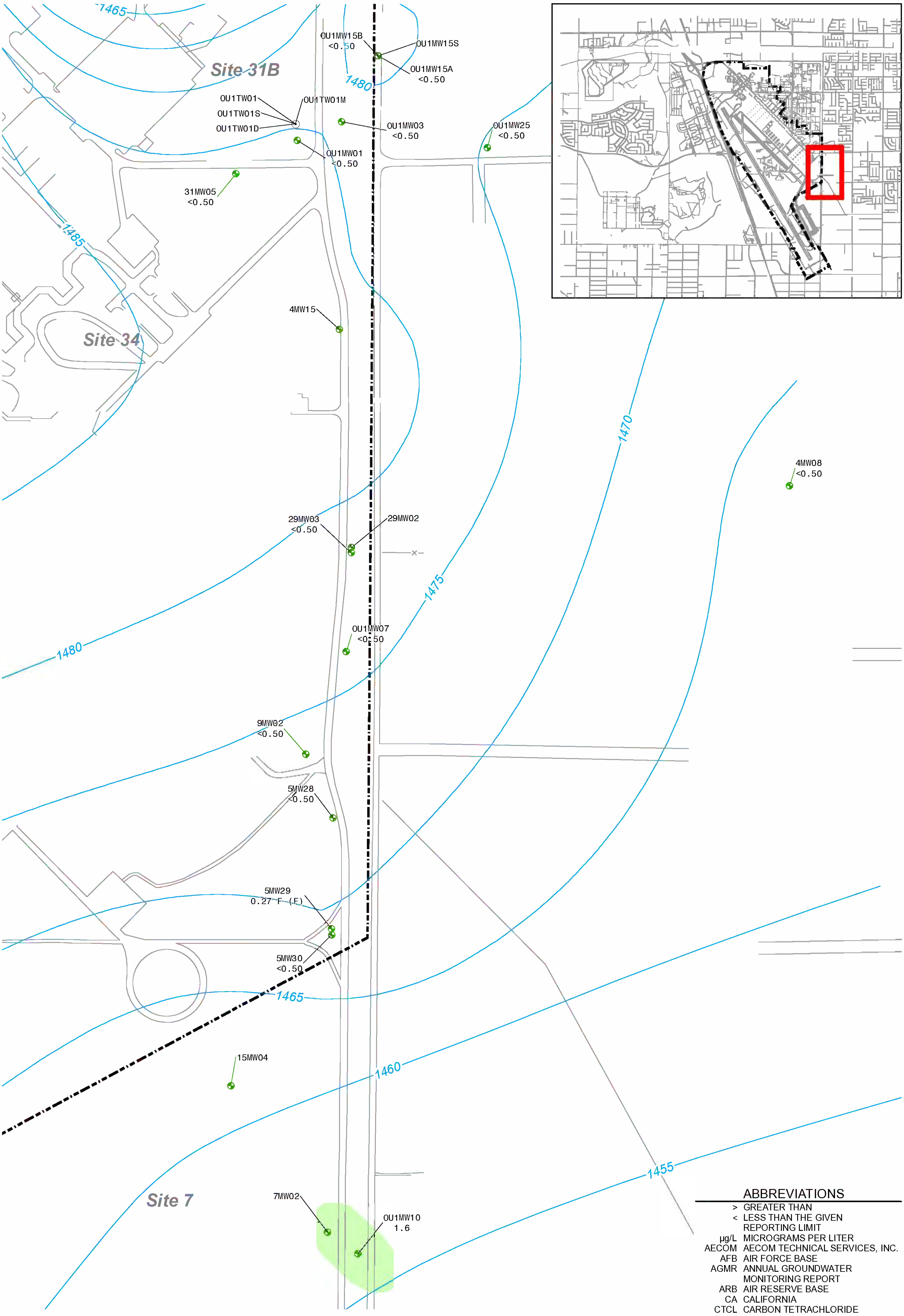

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT

LEGEND

CTCL PLUME OUTLINE >0.5 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 150 300

SCALE IN FEET

2011-2012 AGMR

Bedrock Carbon Tetrachloride Plume
OU1 Area
2nd Quarter 2012

Date 04-13

AECOM

Project No. 60271680

March ARB and Former March AFB, CA

Figure 4-23

File: Q:\March_AFB\Project\AGMR_2011_2012\B9815fga.mxd
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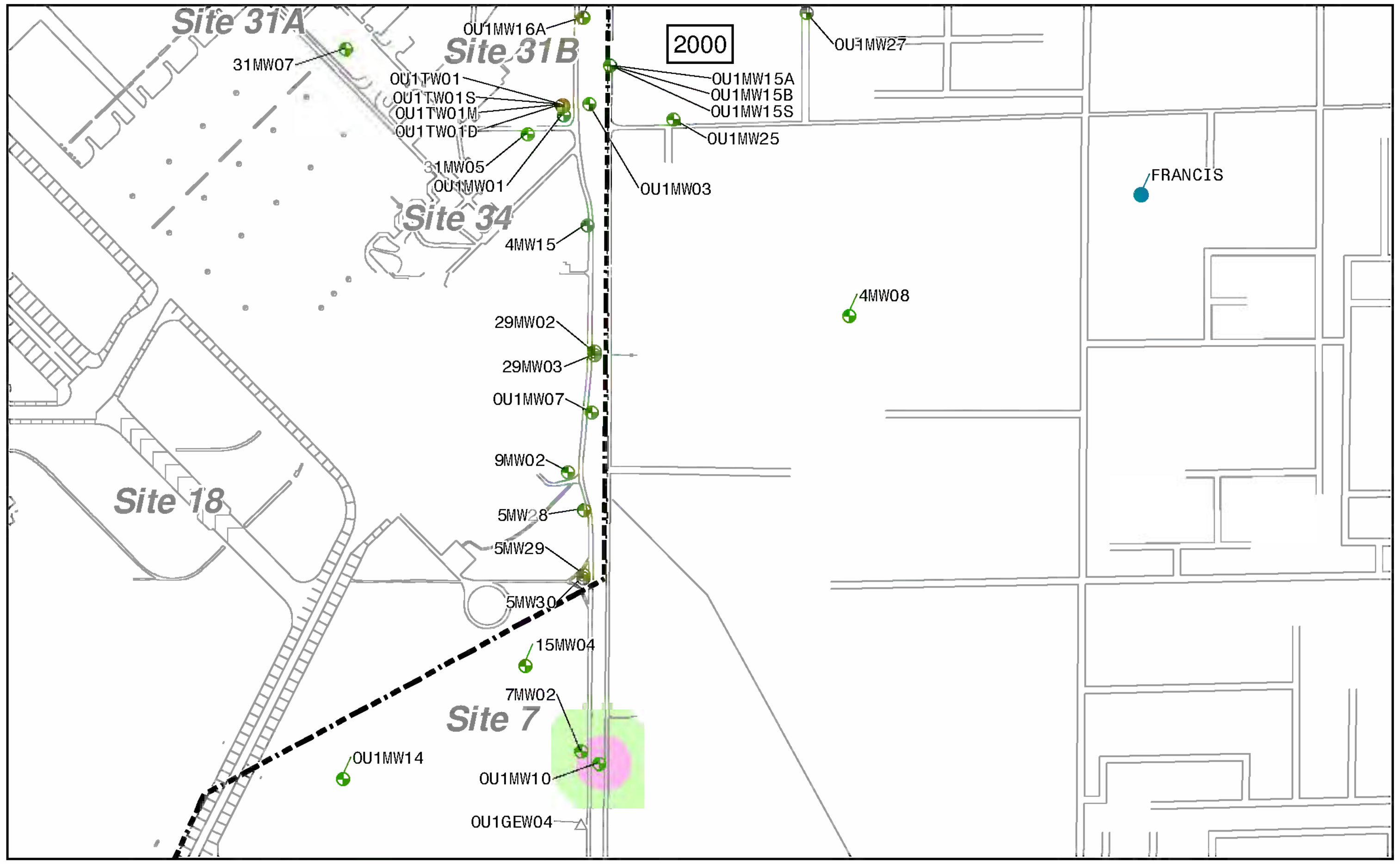

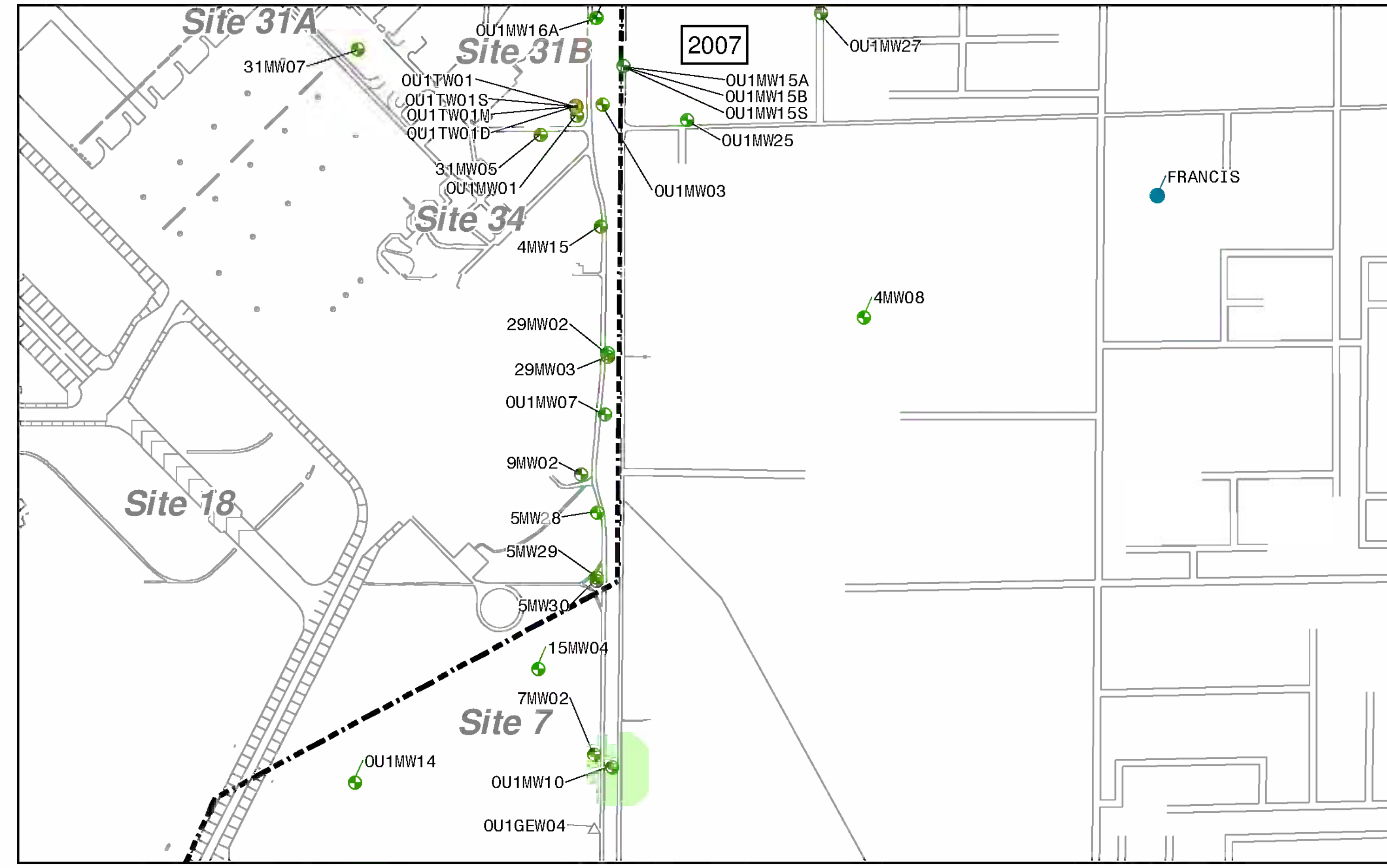

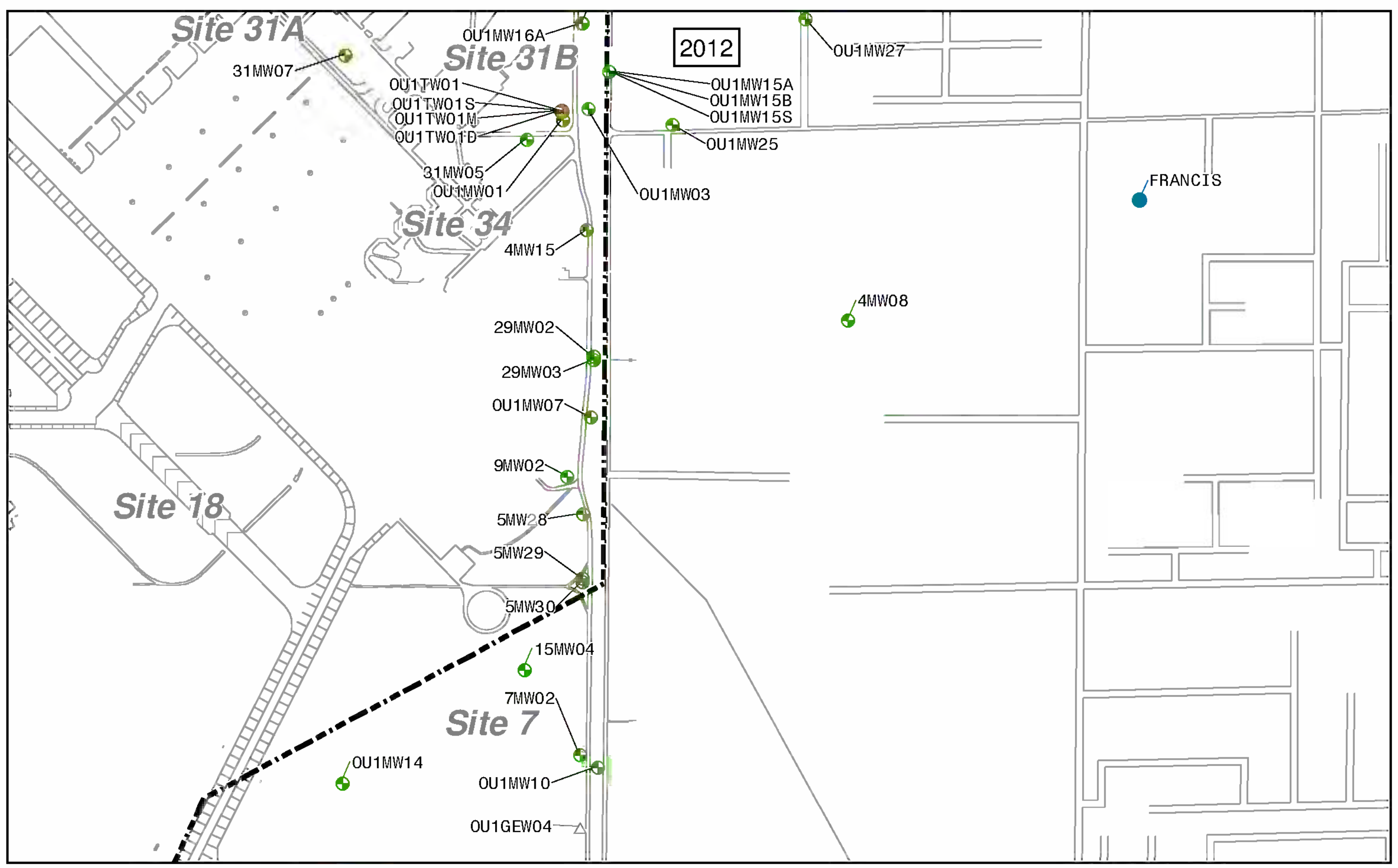

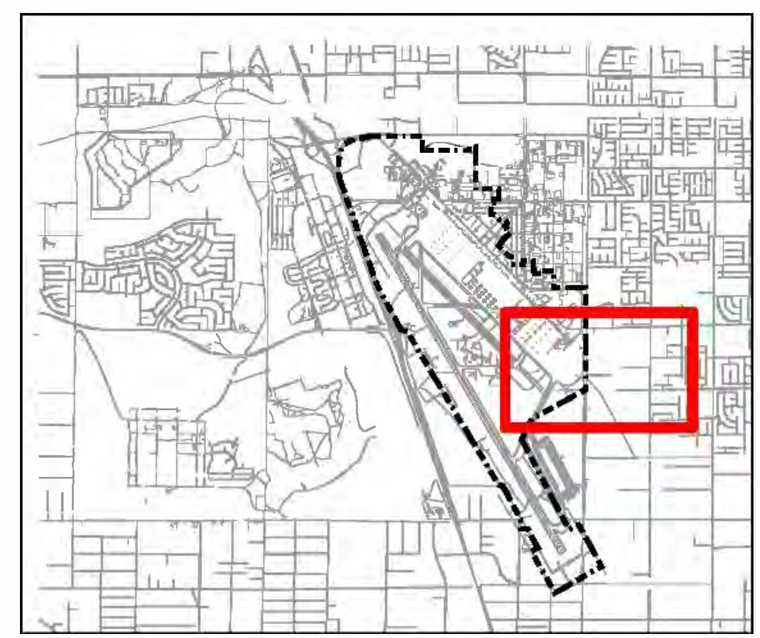

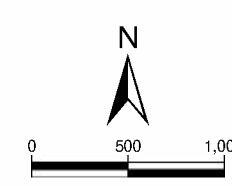

LEGEND

CTCL PLUME OUTLINE >0.5 µg/L
CTCL PLUME OUTLINE >2.0 µg/L
BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PRIVATE WELL

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE

2011-2012 AGMR

Bedrock Carbon Tetrachloride Plume
OU1 Area
Comparison of 2000, 2007, and 2012

Date 04-13	AECOM	Figure
Project No. 60271680	March ARB and Former March AFB, CA	4-24

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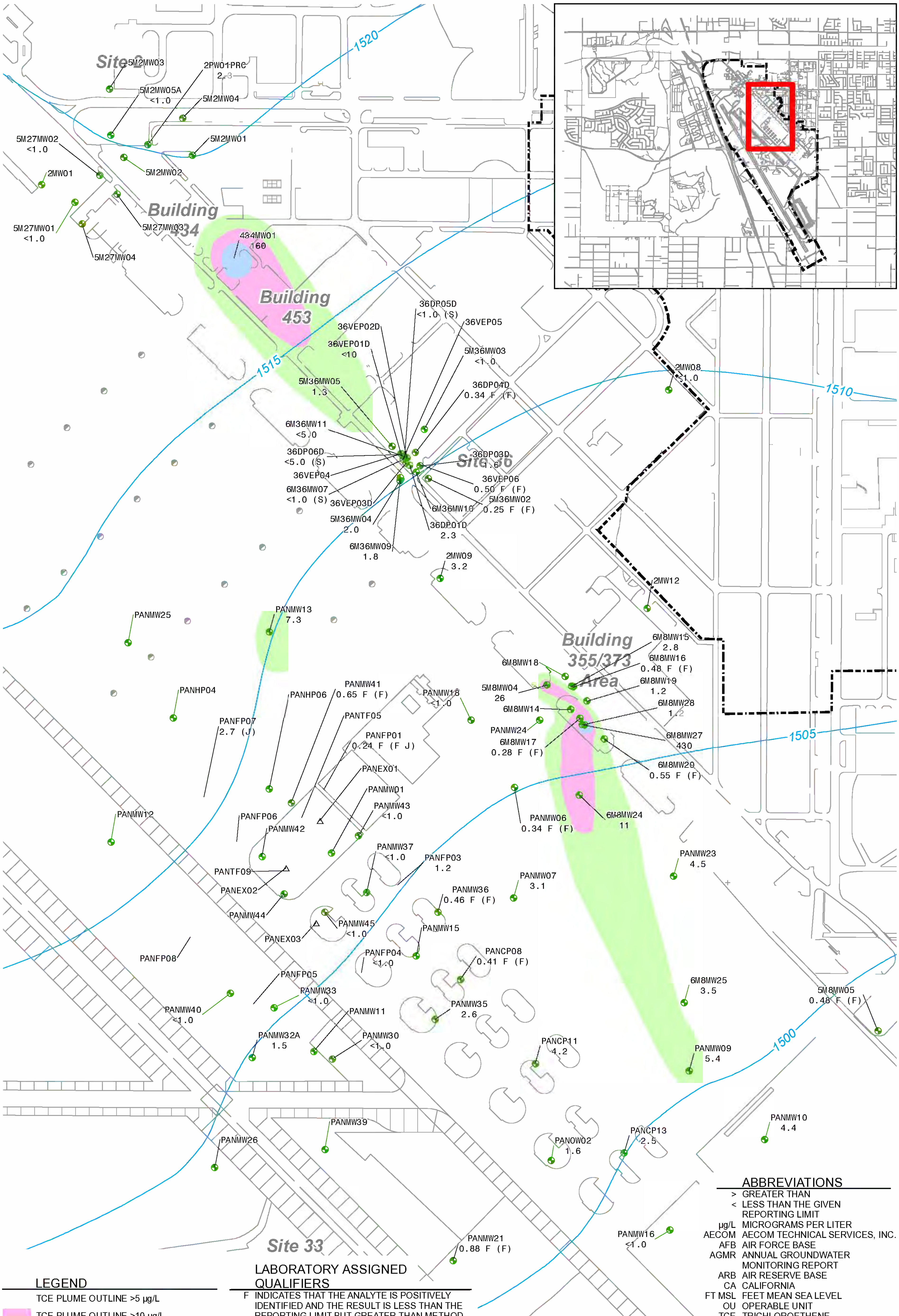

LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- TCE PLUME OUTLINE >100 µg/L
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- MONITORING WELL

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

(J) INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANATATION LIMIT (PQL).

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 200 400

SCALE IN FEET

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT
TCE	TRICHLOROETHENE

2011-2012 AGMR

Upper Alluvial TCE Plume
OU 2 Plume
2nd Quarter 2012

Date 04-13

AECOM

Figure 5-1

Project No. 60271680

March ARB and Former March AFB, CA

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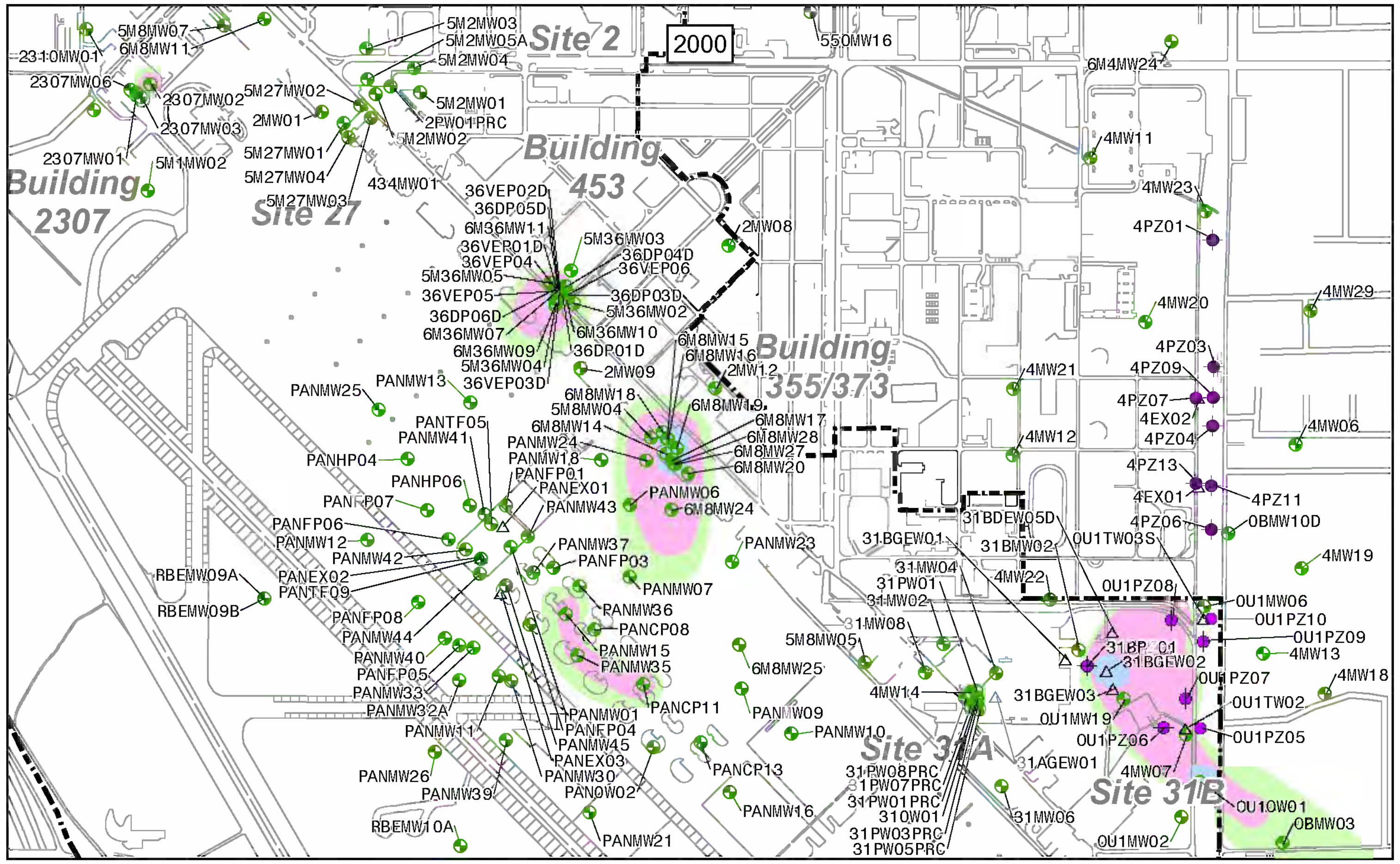

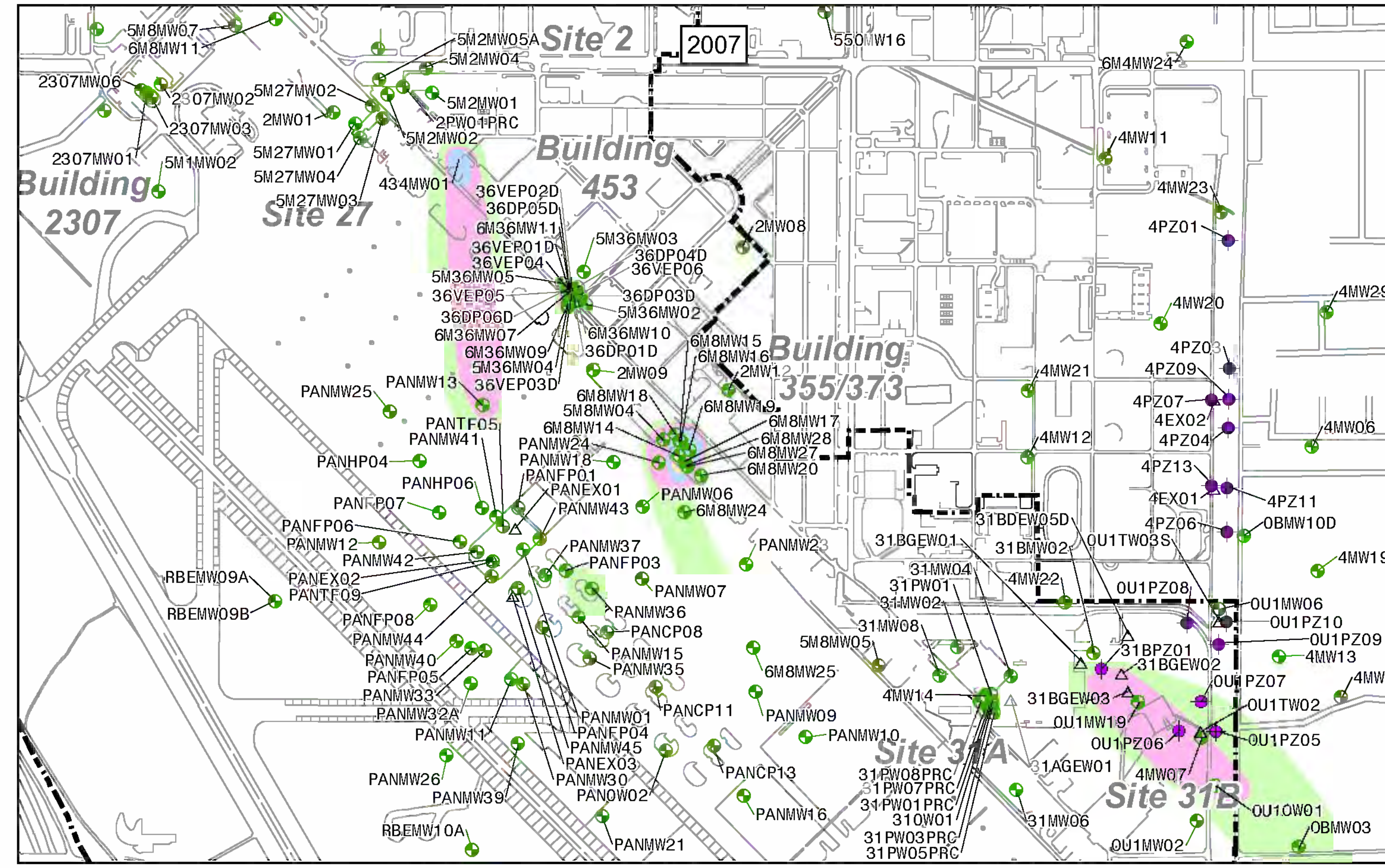

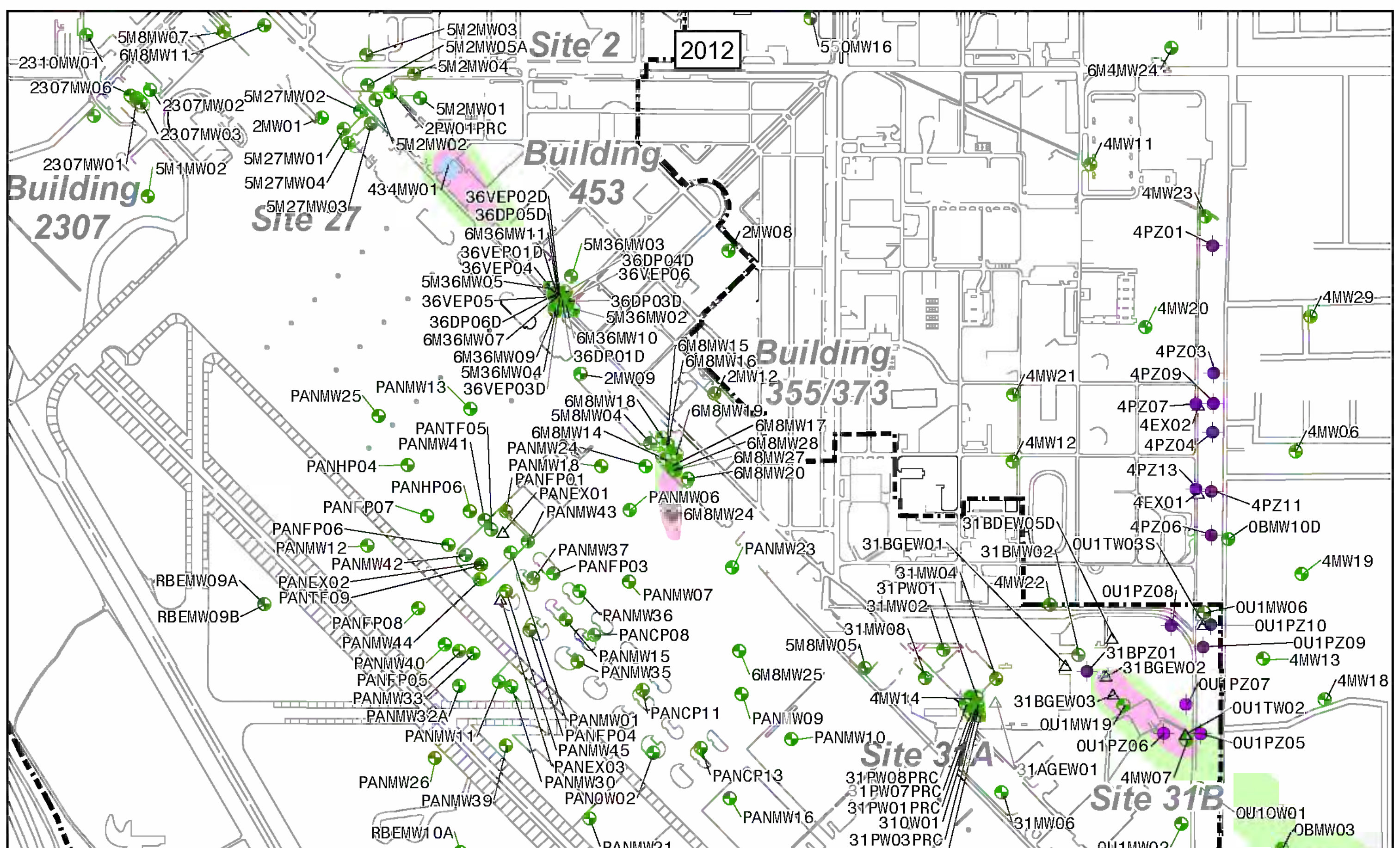

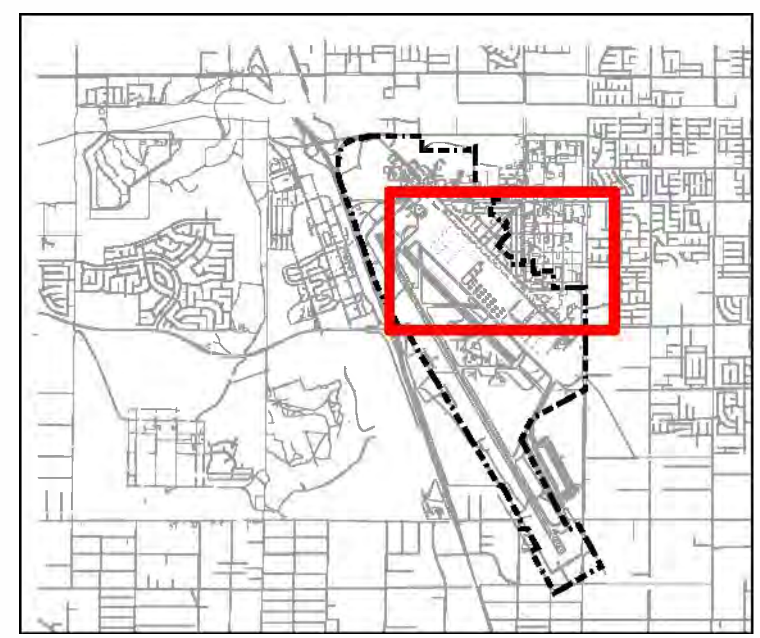

LEGEND

TCE PLUME OUTLINE >5 µg/L

TCE PLUME OUTLINE >10 µg/L

TCE PLUME OUTLINE >100 µg/L

BASE PROPERTY LINE

GROUNDWATER WELLS

EXTRACTION WELL

MONITORING WELL

PIEZOMETER

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
TCE	TRICHLOROETHENE

N

0 600 1,200

SCALE IN FEET

2011-2012 AGMR

Upper Alluvial TCE Plume
OU 2 Plume
Comparison of 2000, 2007, and 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 5-2

File: Q:\March_AFB\Project\AGMR_2011_2012\B9818fga.mxd
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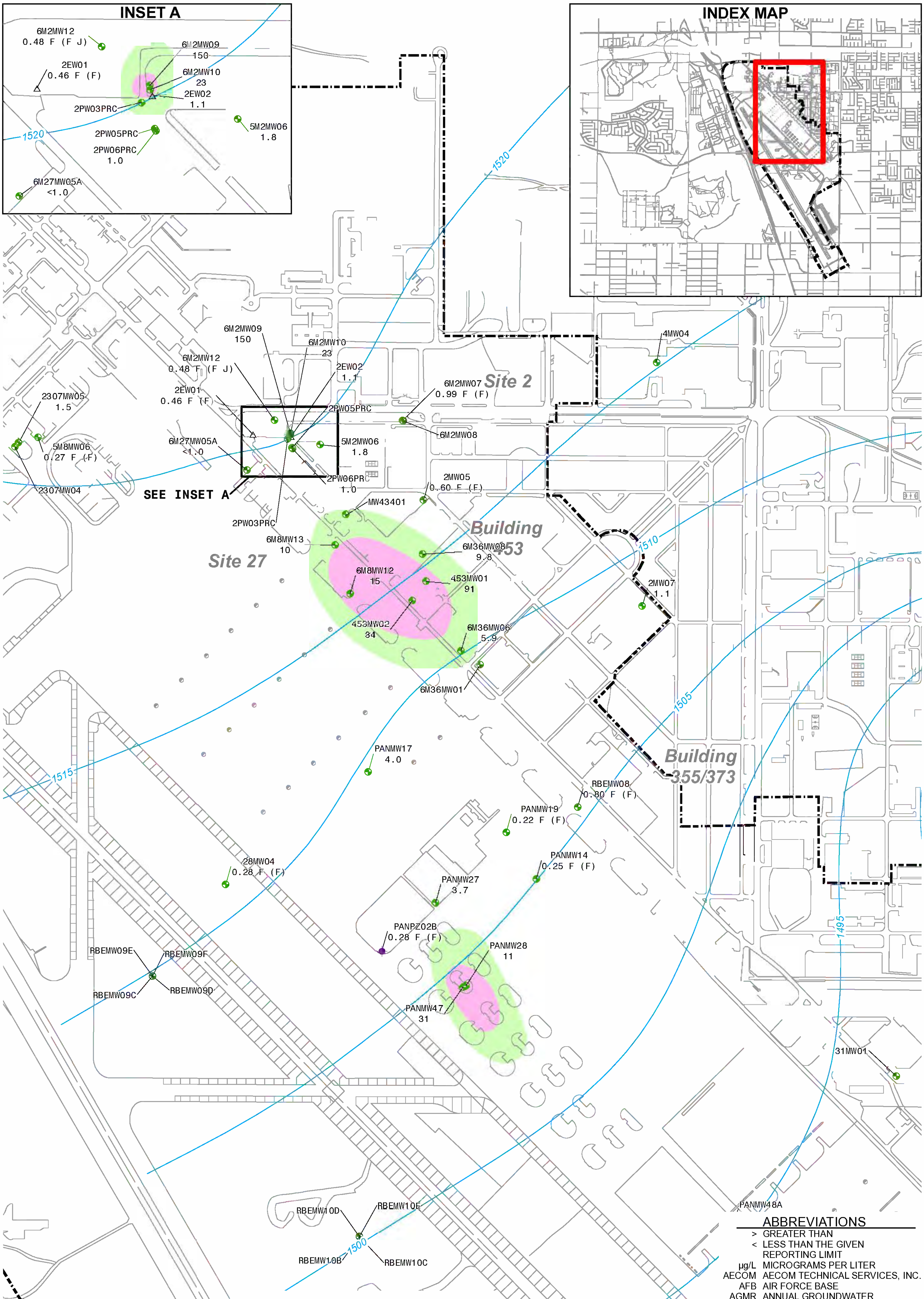

LEGEND

TCE PLUME OUTLINE >5 µg/L
TCE PLUME OUTLINE >10 µg/L
SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITATION LIMIT

(J) INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANATATION LIMIT (PQL).

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT
TCE	TRICHLOROETHENE

2011-2012 AGMR

Lower Alluvial TCE Plume
OU 2 Plume
2nd Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 5-3

File: Q:\March_AFB\Project\AGMR_2011_2012\B9819fga.mxd
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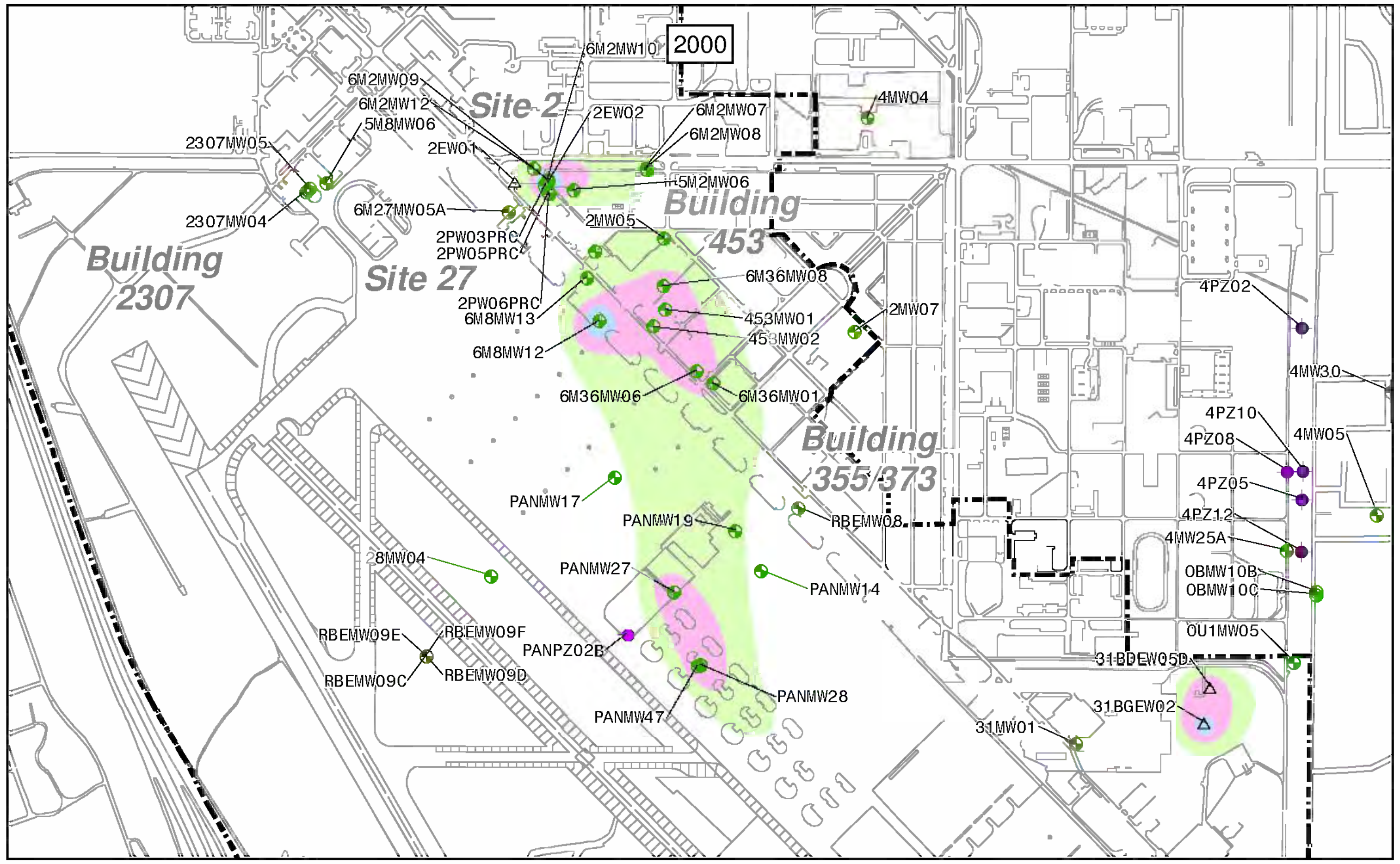

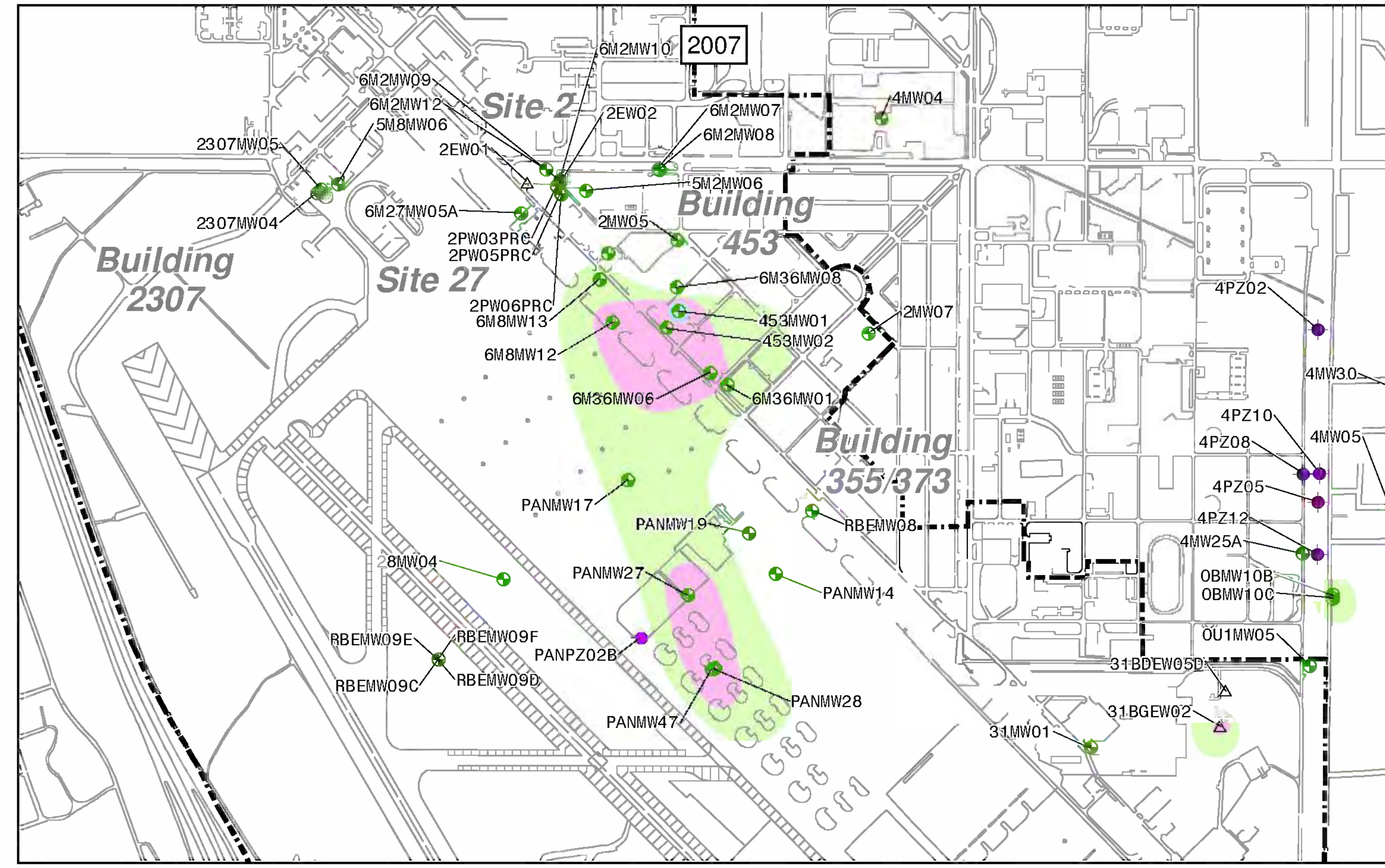

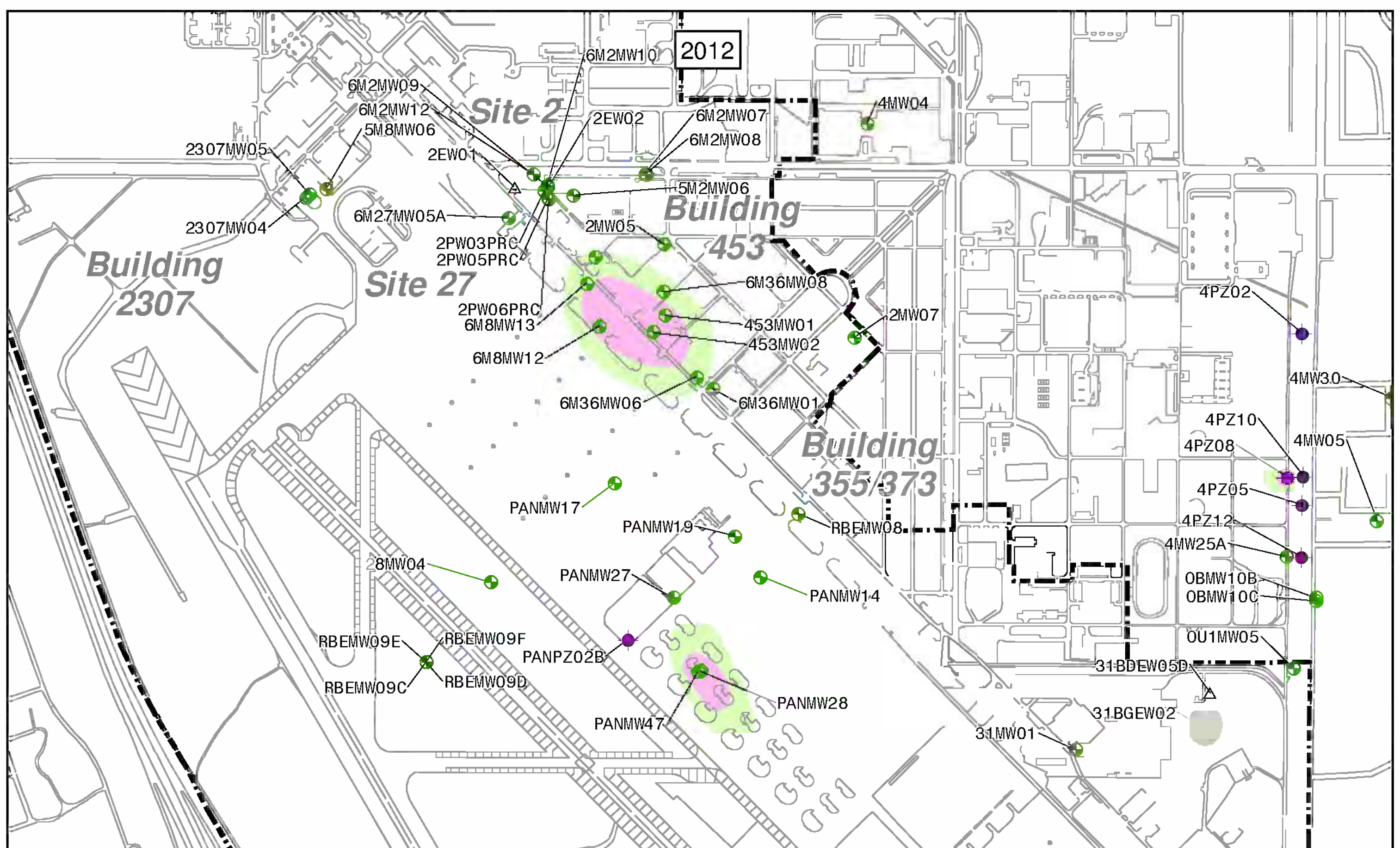

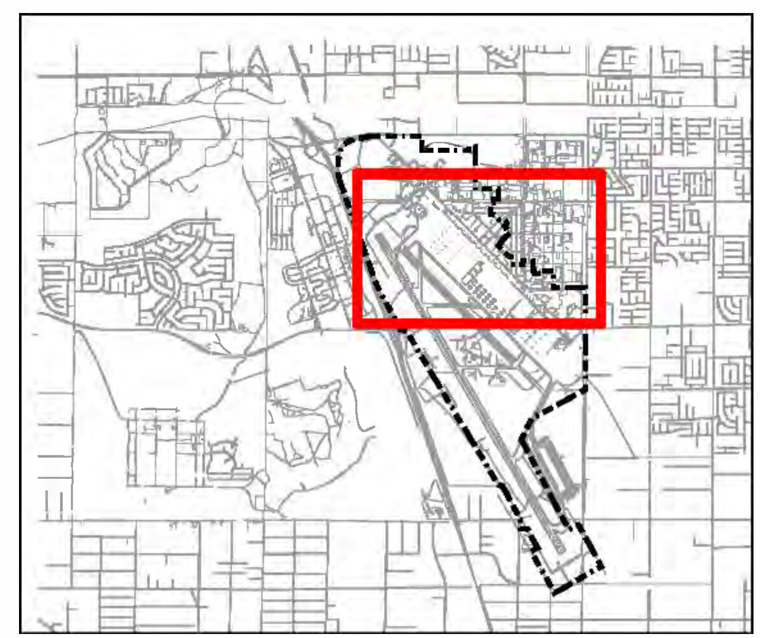

LEGEND

TCE PLUME OUTLINE >5 µg/L
TCE PLUME OUTLINE >10 µg/L
TCE PLUME OUTLINE >100 µg/L
BASE PROPERTY LINE

GROUNDWATER WELLS

EXTRACTION WELL
MONITORING WELL
PIEZOMETER

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
TCE	TRICHLOROETHENE

N

0 650 1,300
SCALE IN FEET

2011-2012 AGMR

Lower Alluvial TCE Plume
OU 2 Plume
Comparison of 2000, 2007, and 2012

Date 04-13
AECOM
Figure 5-4
Project No. 60271680
March ARB and Former March AFB, CA

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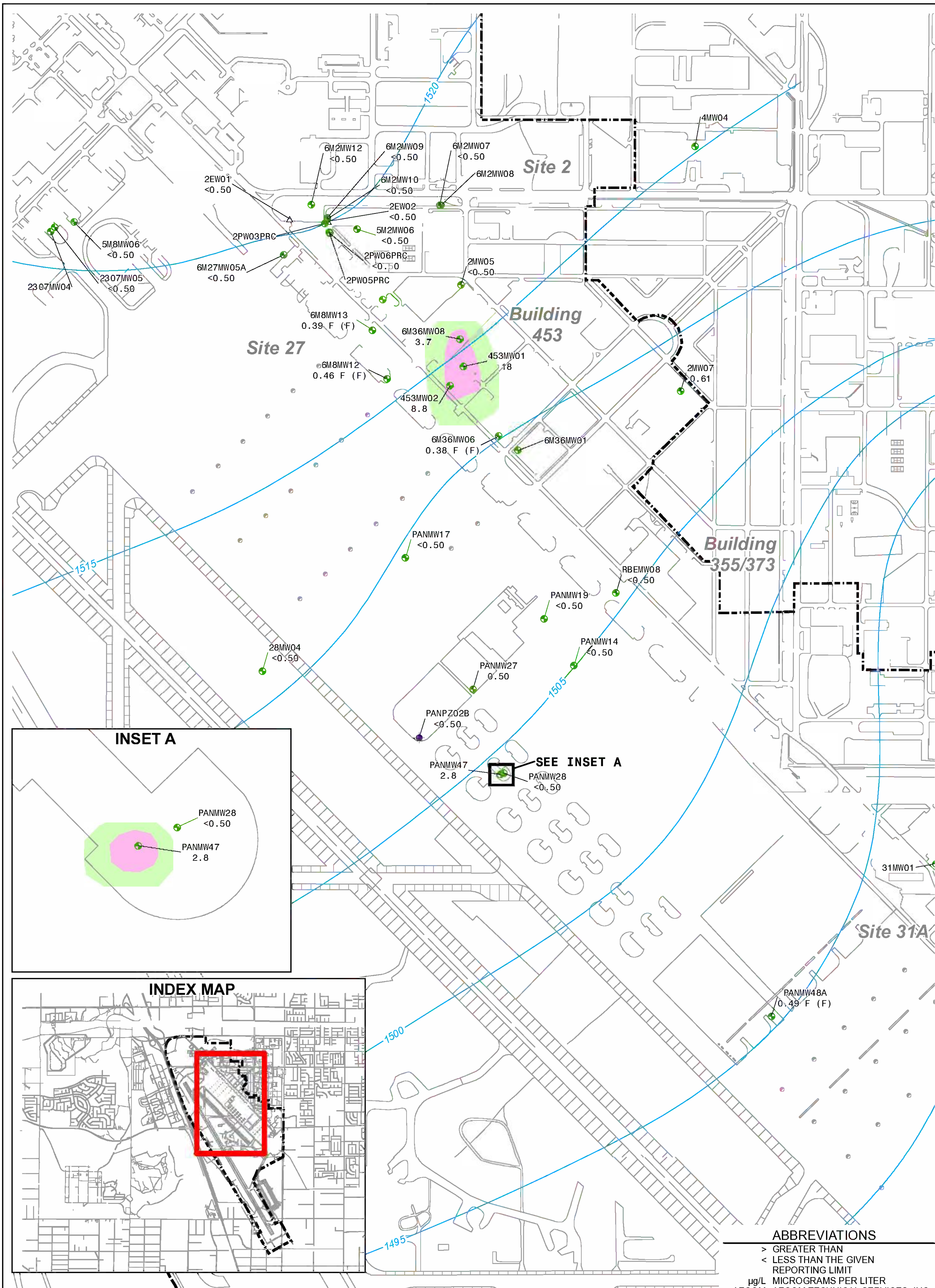

LEGEND

- CTCL PLUME OUTLINE >0.5 µg/L
- CTCL PLUME OUTLINE >2.0 µg/L
- CTCL PLUME OUTLINE >10.0 µg/L
- SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

LABORATORY ASSIGNED QUALIFIERS

F INDICATES THAT THE ANALYTE IS POSITIVELY IDENTIFIED AND THE RESULT IS LESS THAN THE REPORTING LIMIT BUT GREATER THAN METHOD DETECTION LIMIT

(F) THE COMPOUND WAS POSITIVELY IDENTIFIED BUT THE ASSOCIATED NUMERICAL VALUE IS BELOW THE PRACTICAL QUANTITIATION LIMIT

DATA VALIDATION QUALIFIERS

(S) SCREENING DATA (RESULT NOT VALIDATED)

N

0 300 600

SCALE IN FEET

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE
FT MSL	FEET MEAN SEA LEVEL
OU	OPERABLE UNIT

2011-2012 AGMR

Lower Alluvial Carbon Tetrachloride Plume OU 2 Plume 2nd Quarter 2012

Date 04-13

AECOM

Figure 5-5

Project No. 60271680

March ARB and Former March AFB, CA

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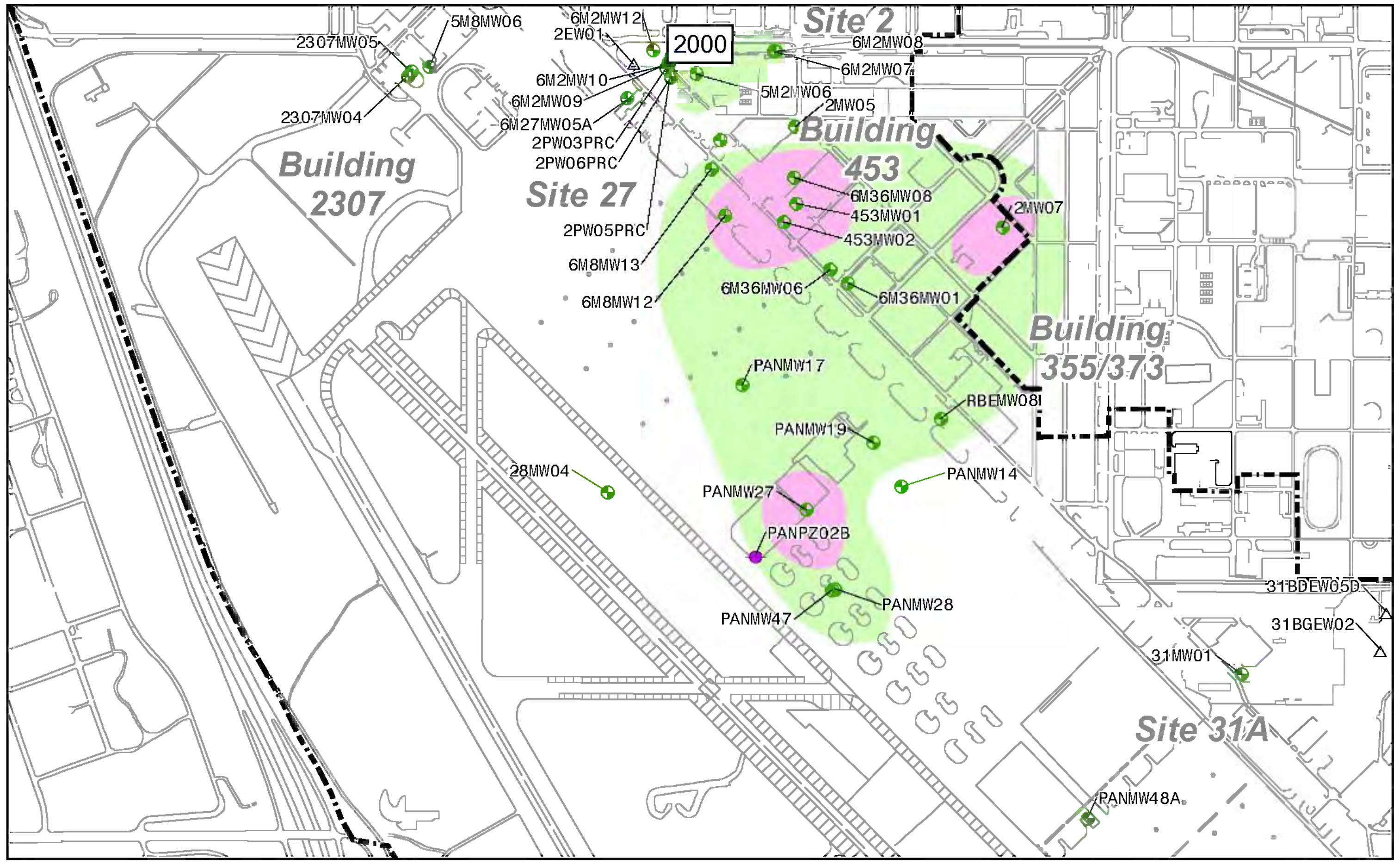

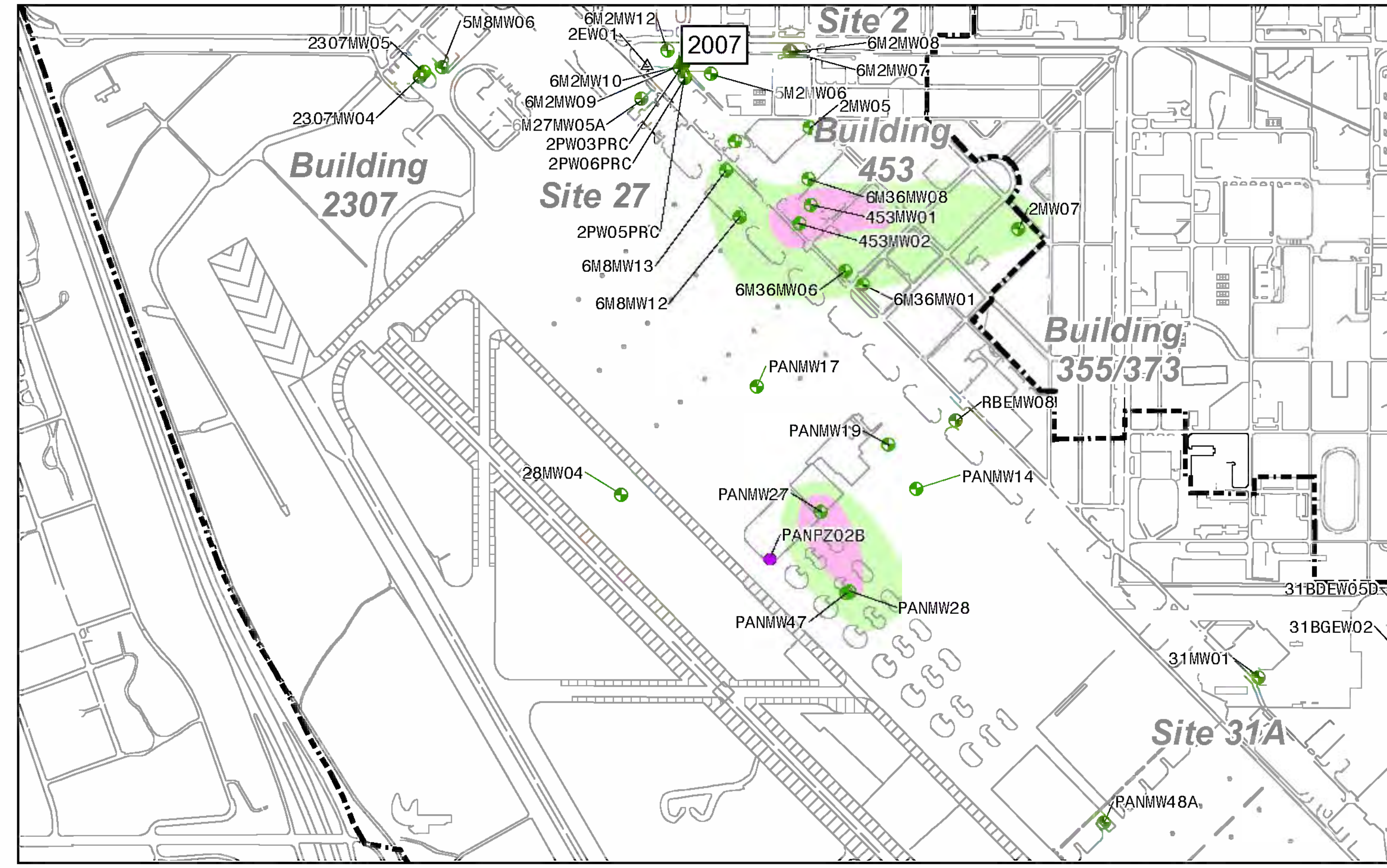

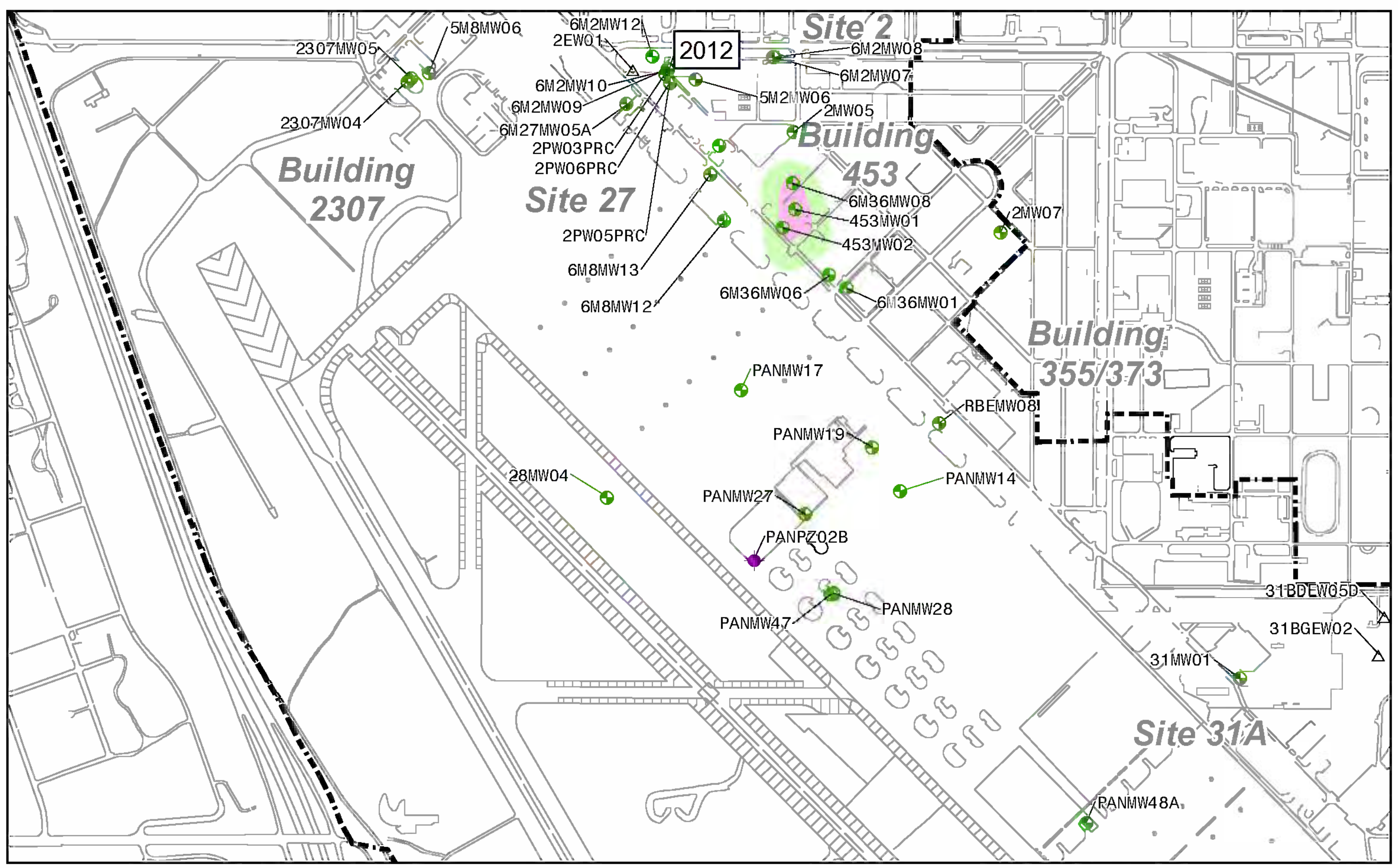

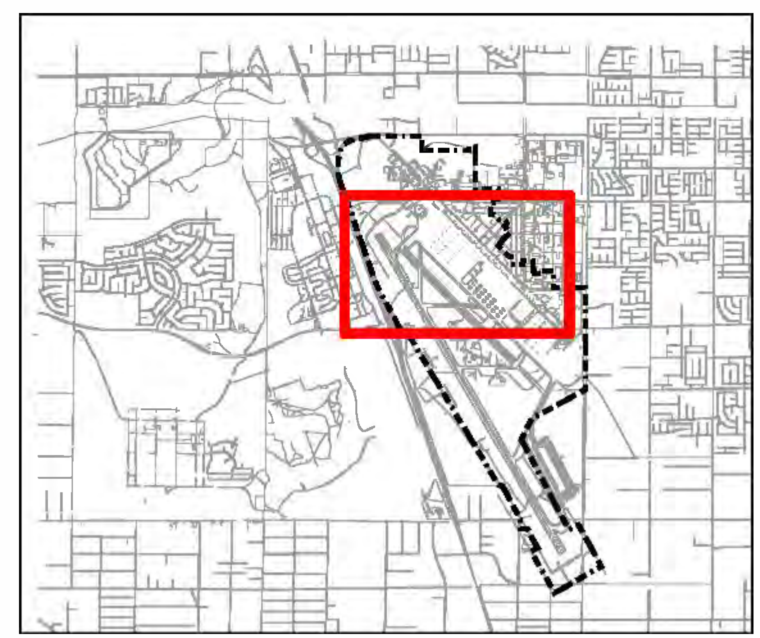

N

0 600 1,200
SCALE IN FEET

LEGEND

- CTCL PLUME OUTLINE >0.5 µg/L
- CTCL PLUME OUTLINE >2.0 µg/L
- BASE PROPERTY LINE

GROUNDWATER WELLS

- △ EXTRACTION WELL
- MONITORING WELL
- PIEZOMETER

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE

2011-2012 AGMR

Lower Alluvial Carbon Tetrachloride Plume OU 2 Plume Comparison of 2000, 2007, and 2012

Date 04-13	AECOM	Figure
Project No. 60271680	March ARB and Former March AFB, CA	5-6

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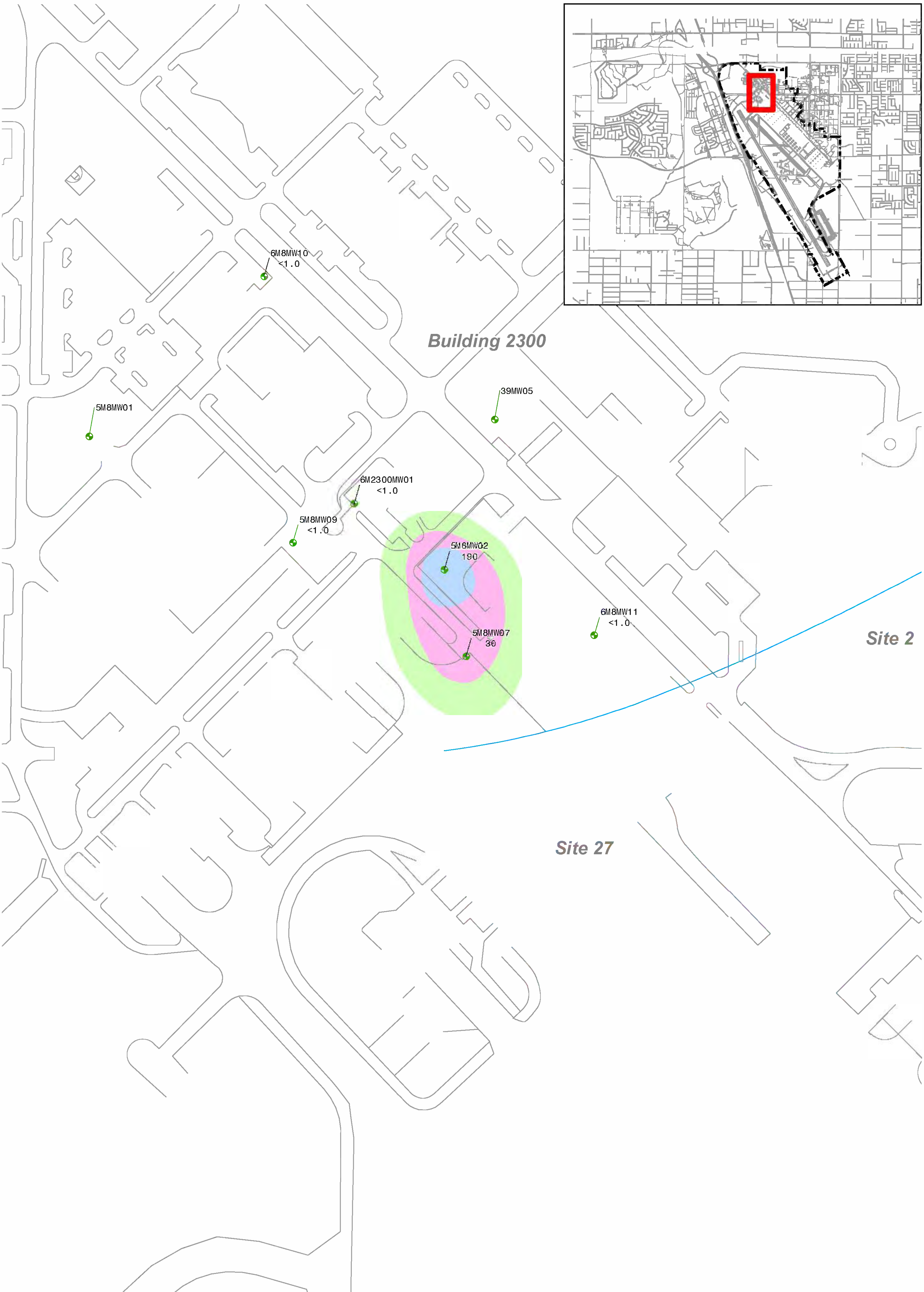

LEGEND

TCE PLUME OUTLINE >5 µg/L

TCE PLUME OUTLINE >10 µg/L

TCE PLUME OUTLINE >100 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL
- PIEZOMETER

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
TCE	TRICHLOROETHENE

2011-2012 AGMR

Bedrock TCE Plume
Building 2300
2nd Quarter 2012

Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 5-7

File: Q:\March_AFB\Project\AGMR_2011_2012\B9823fga.mxd
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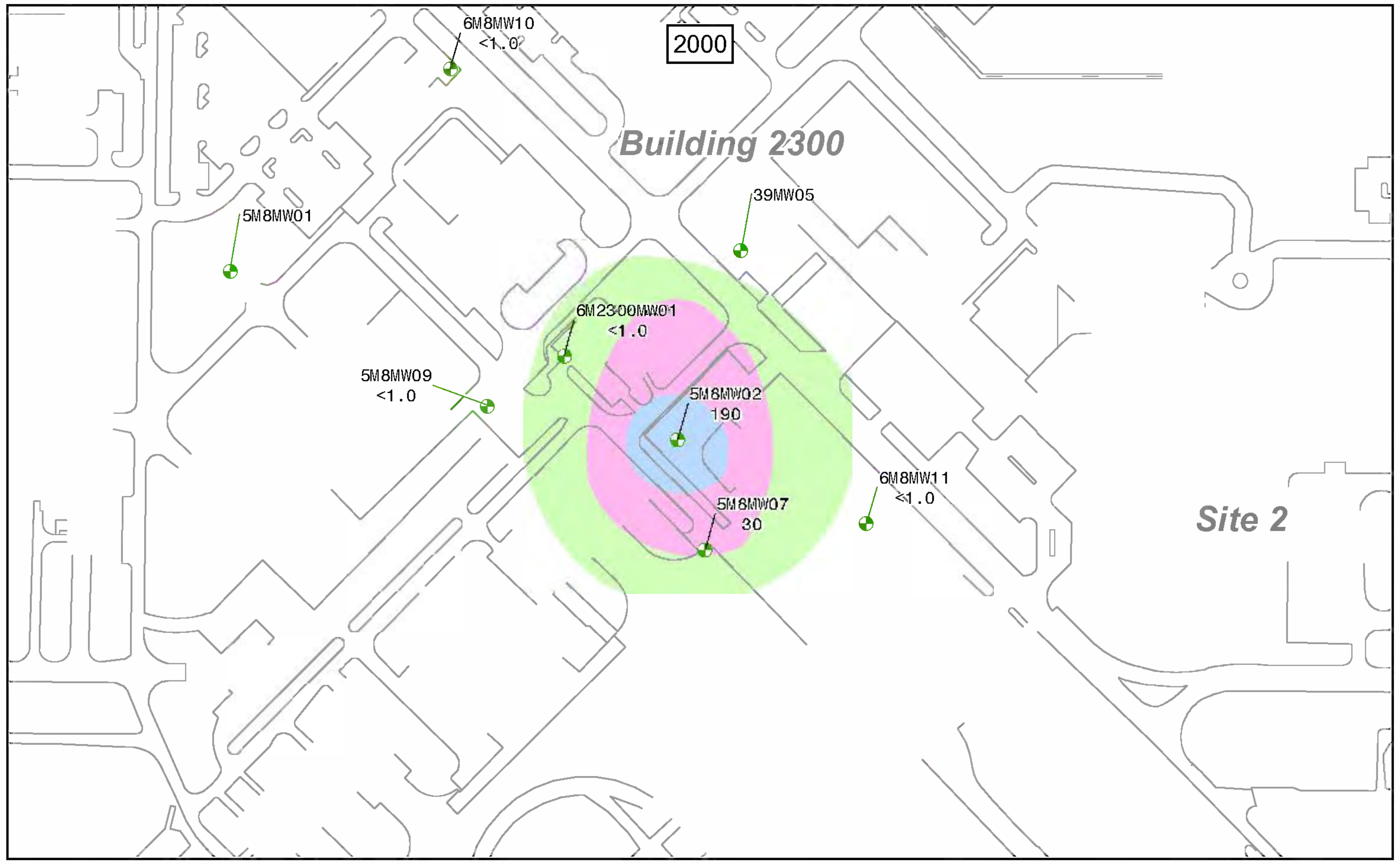
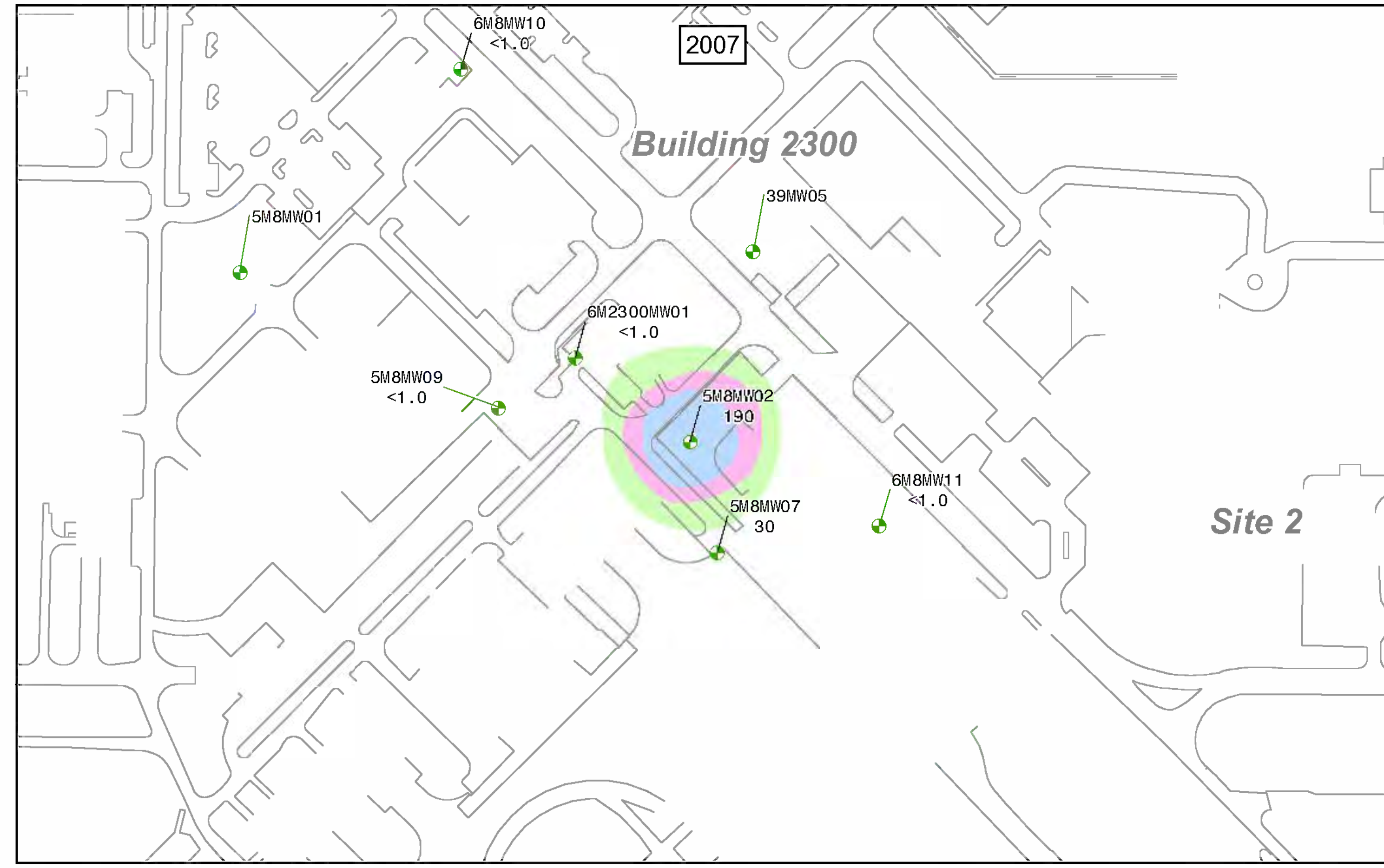
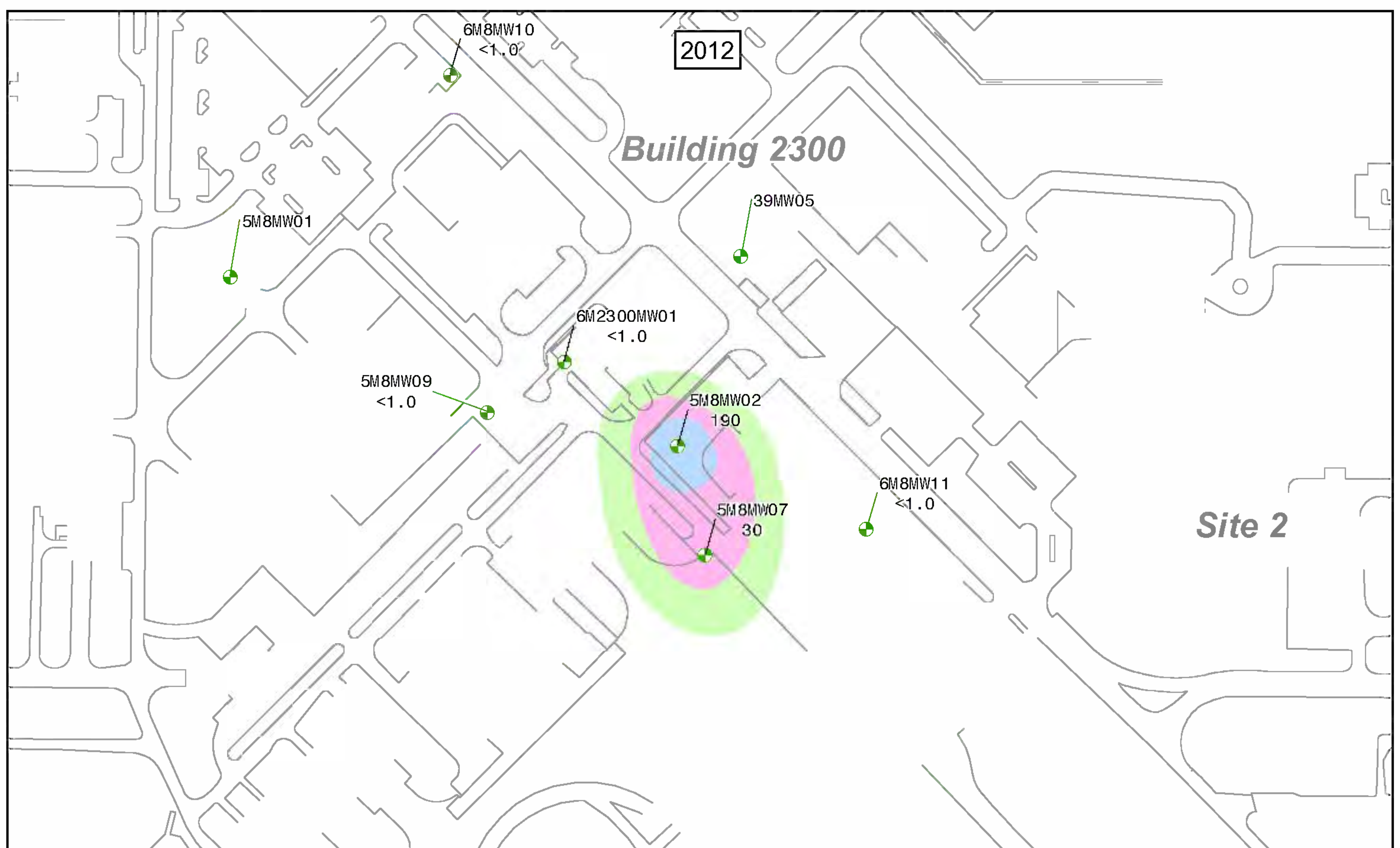
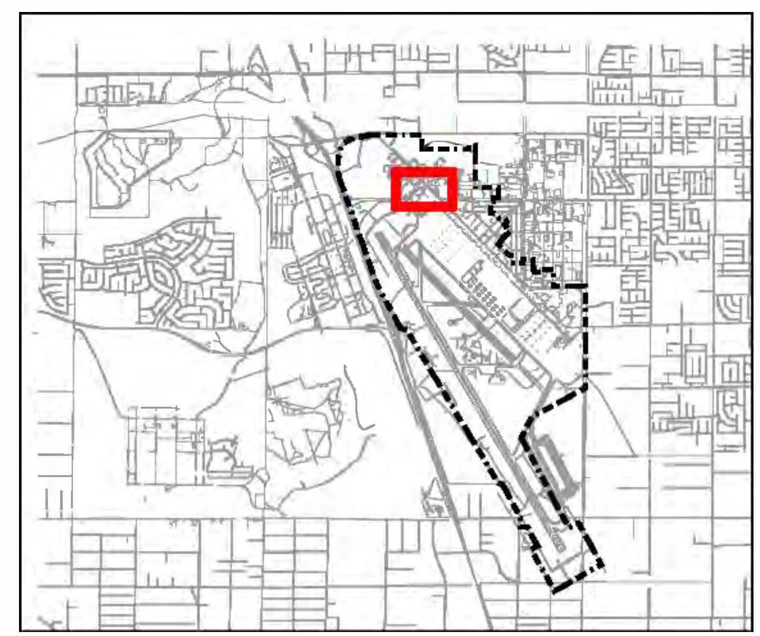








LEGEND

TCE PLUME OUTLINE >5 μg/L

TCE PLUME OUTLINE >10 μg/L

TCE PLUME OUTLINE >100 μg/L

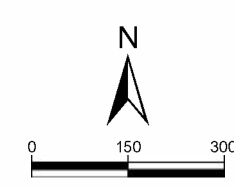
BASE PROPERTY LINE

GROUNDWATER WELLS

MONITORING WELL

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
μg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
TCE	TRICHLOROETHENE



2011-2012 AGMR

Bedrock TCE Plume Building 2300 Comparison of 2000, 2007, and 2012

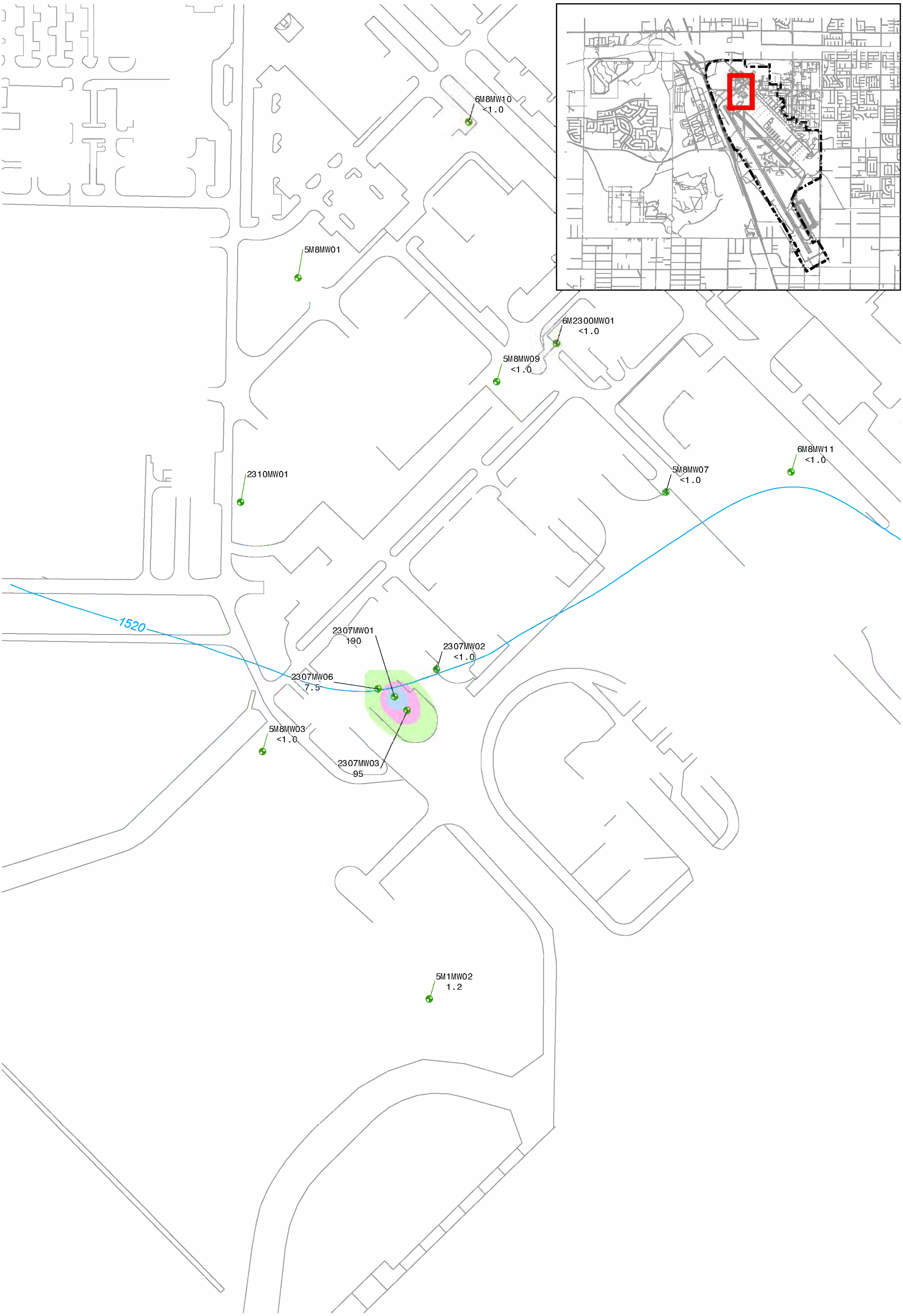
Date 04-13

Project No. 60271680

AECOM

March ARB and Former March AFB, CA

Figure 5-8



LEGEND

PCE PLUME OUTLINE >5 µg/L

PCE PLUME OUTLINE >10 µg/L

PCE PLUME OUTLINE >100 µg/L

SECOND QUARTER 2012 GROUNDWATER ELEVATION CONTOURS (FT MSL)

BASE PROPERTY LINE

GROUNDWATER WELLS

MONITORING WELL

ABBREVIATIONS

>	GREATER THAN
<	LESS THAN THE GIVEN REPORTING LIMIT
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
FT MSL	FEET MEAN SEA LEVEL
PCE	TETRACHLOROETHENE

2011-2012 AGMR

Upper Alluvial PCE Plume
Building 2307
2nd Quarter 2012

Date 04-13

AECOM

Project No. 60271680

March ARB and Former March AFB, CA

Figure 5-9

File: Q:\March_AFB\Project\AGMR_2011_2012\B9825fga.mxd
Date: Friday, April 19, 2013 11:26:06 AM


2000
2007
2012
2310MW01
5M8MW07
6M8MW11
2307MW01
2307MW02
2307MW06
2307MW03
5M8MW03
5M1MW02
Building 2307
LEGEND
PCE PLUME OUTLINE >5 µg/L
PCE PLUME OUTLINE >10 µg/L
PCE PLUME OUTLINE >100 µg/L
BASE PROPERTY LINE
GROUNDWATER WELLS
MONITORING WELL
ABBREVIATIONS
> GREATER THAN
µg/L MICROGRAMS PER LITER
AECOM AECOM TECHNICAL SERVICES, INC.
AFB AIR FORCE BASE
AGMR ANNUAL GROUNDWATER MONITORING REPORT
ARB AIR RESERVE BASE
CA CALIFORNIA
PCE TETRACHLOROETHENE
N
0 150 300
SCALE IN FEET
2011-2012 AGMR
Upper Alluvial PCE Plume
Building 2307
Comparison of 2000, 2007, and 2012
Date 04-13
Project No. 60271680
AECOM
March ARB and Former March AFB, CA
Figure 5-10

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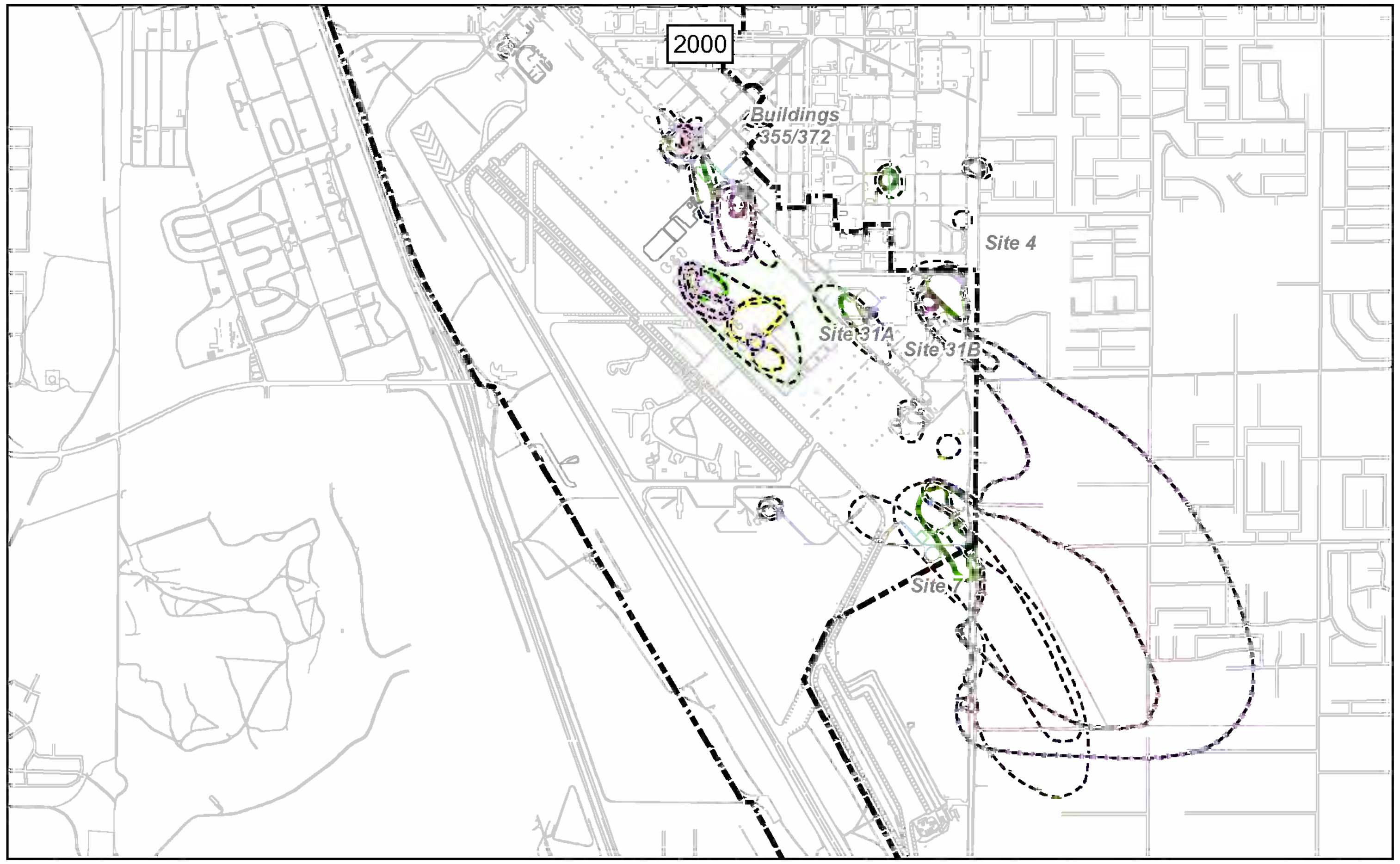
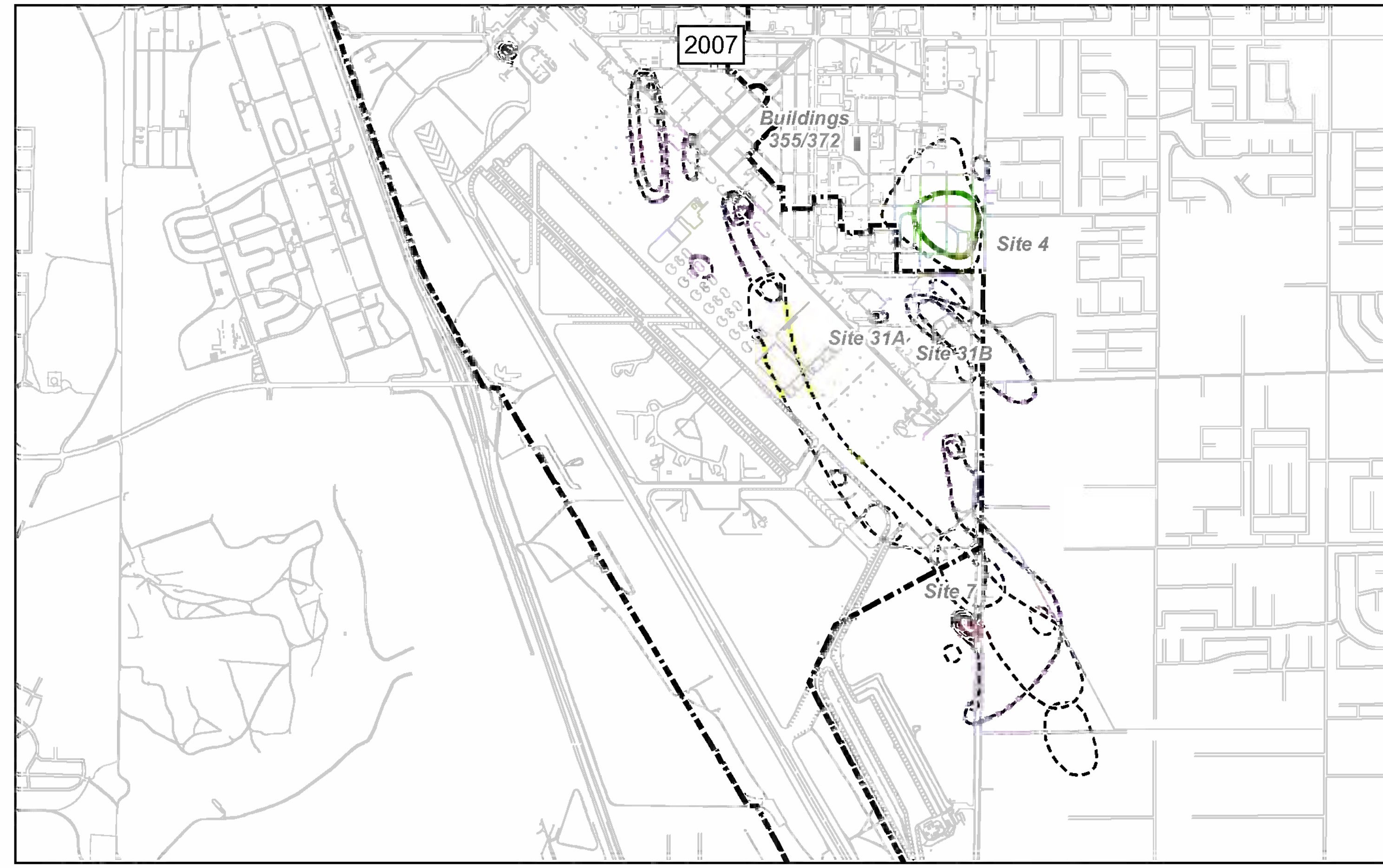
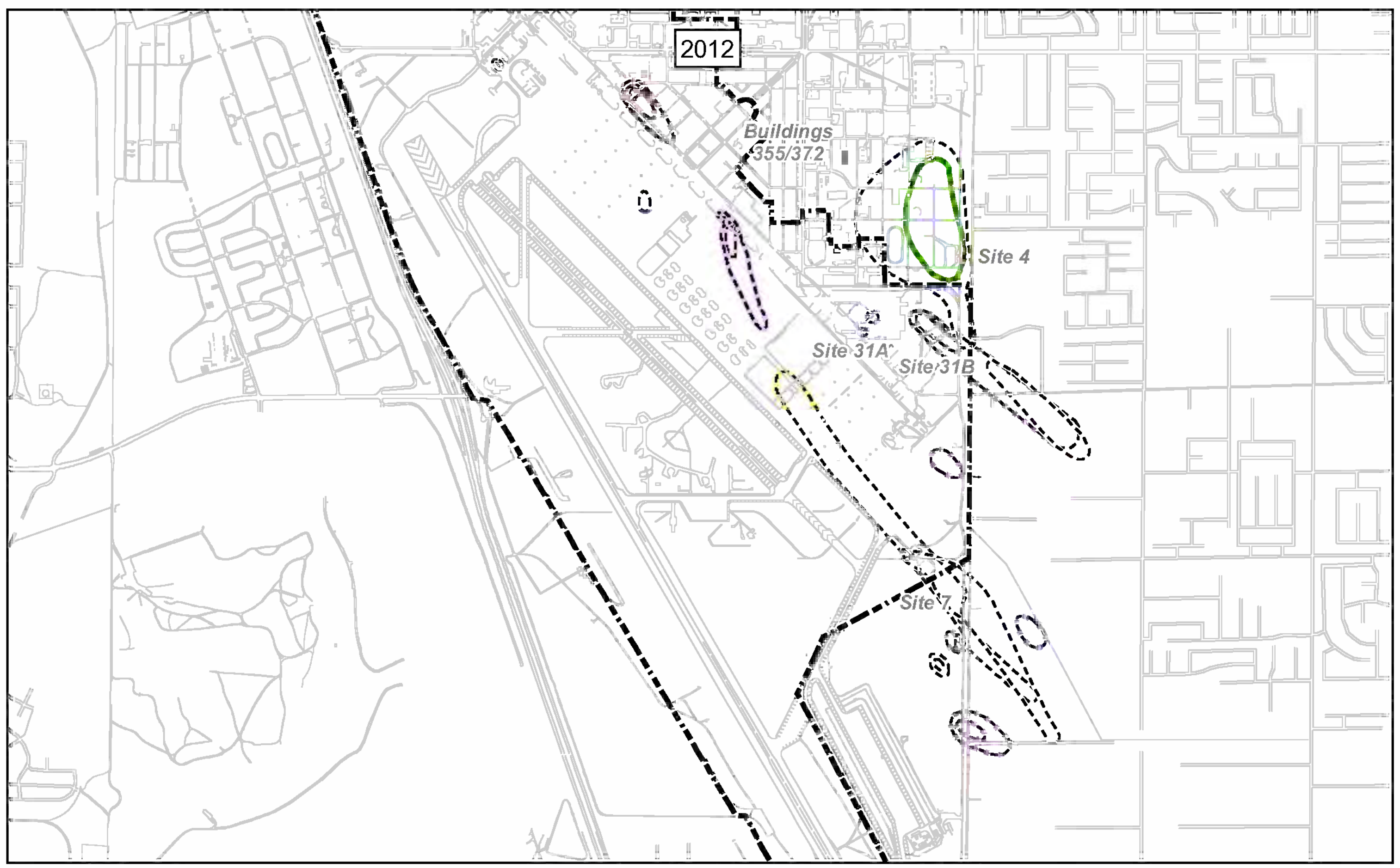
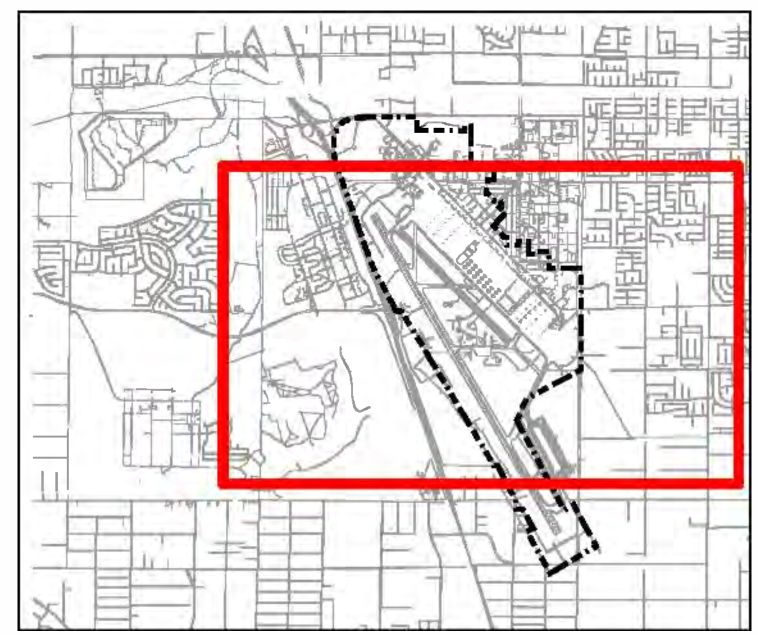








LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- TCE PLUME OUTLINE >100 µg/L
- PCE PLUME OUTLINE >5 µg/L
- PCE PLUME OUTLINE >10 µg/L
- PCE PLUME OUTLINE >100 µg/L
- CTCL PLUME OUTLINE >0.5 µg/L
- BASE PROPERTY LINE

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
AGMR	ANNUAL GROUNDWATER MONITORING REPORT
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE
FT MSL	FEET MEAN SEA LEVEL
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE

N

0 0.5 1
Miles

2011-2012 AGMR

Upper Alluvial Chlorinated Solvent Plumes Comparison of 2000, 2007, and 2012

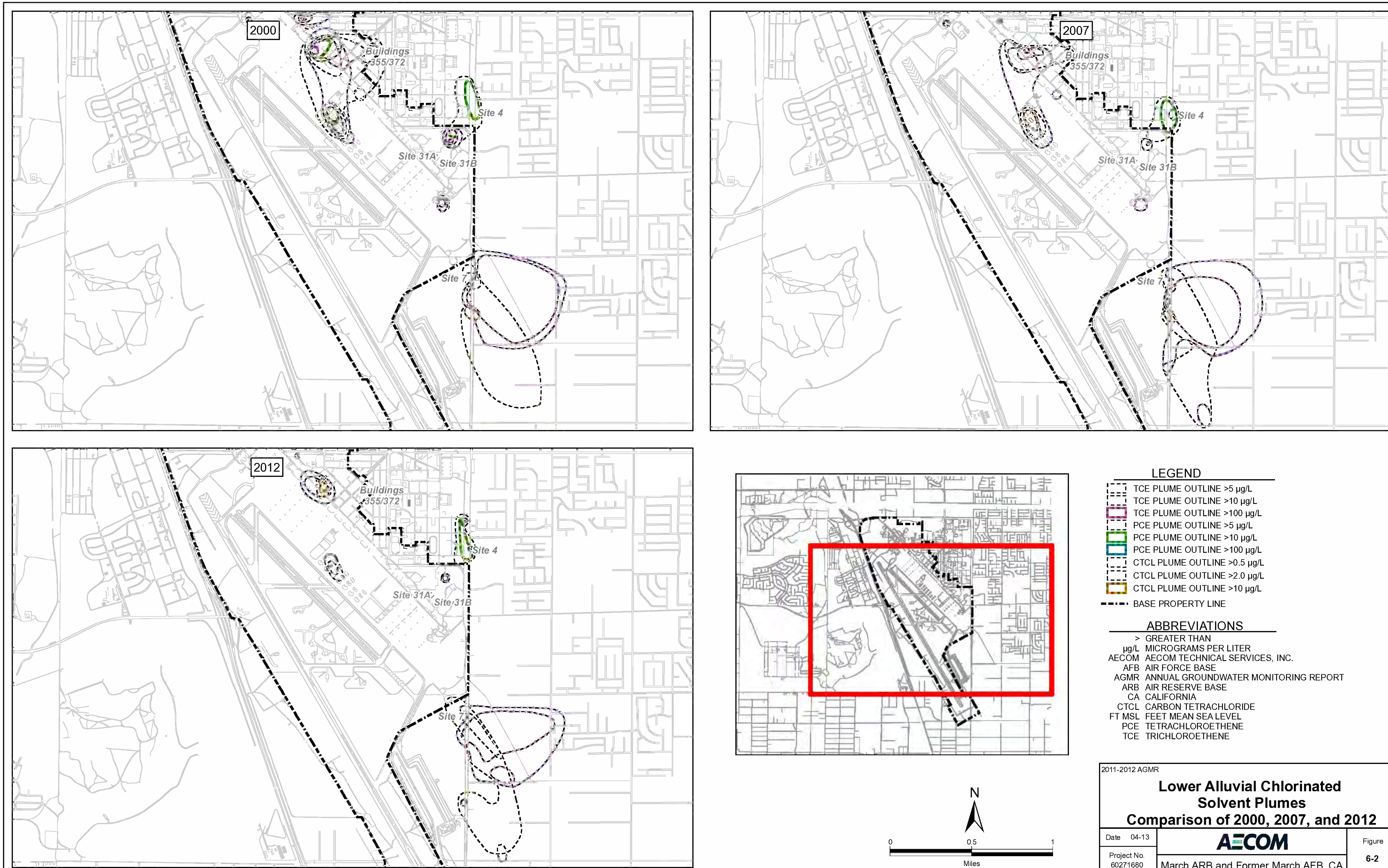
Date 04-13

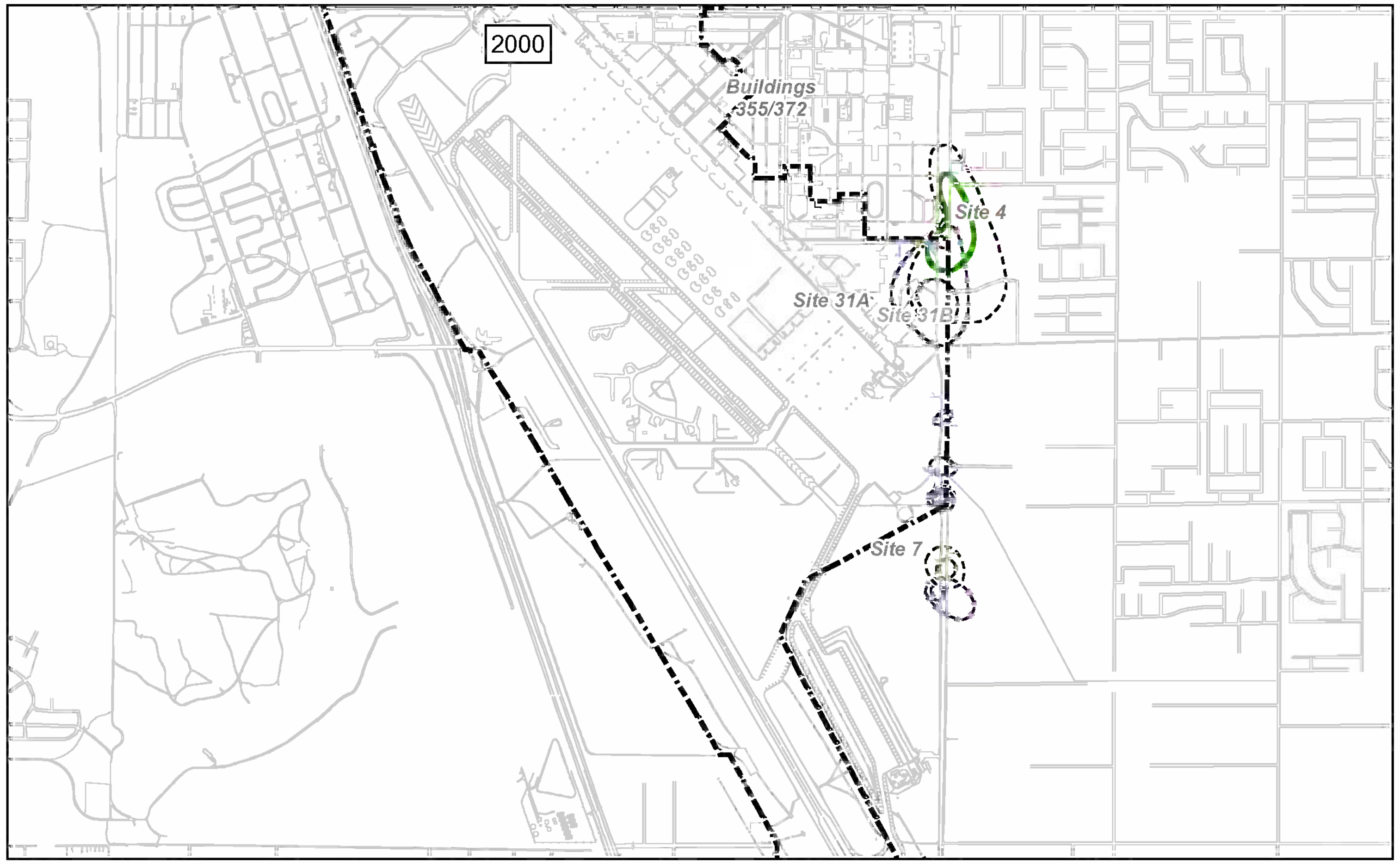
Project No. 60271680

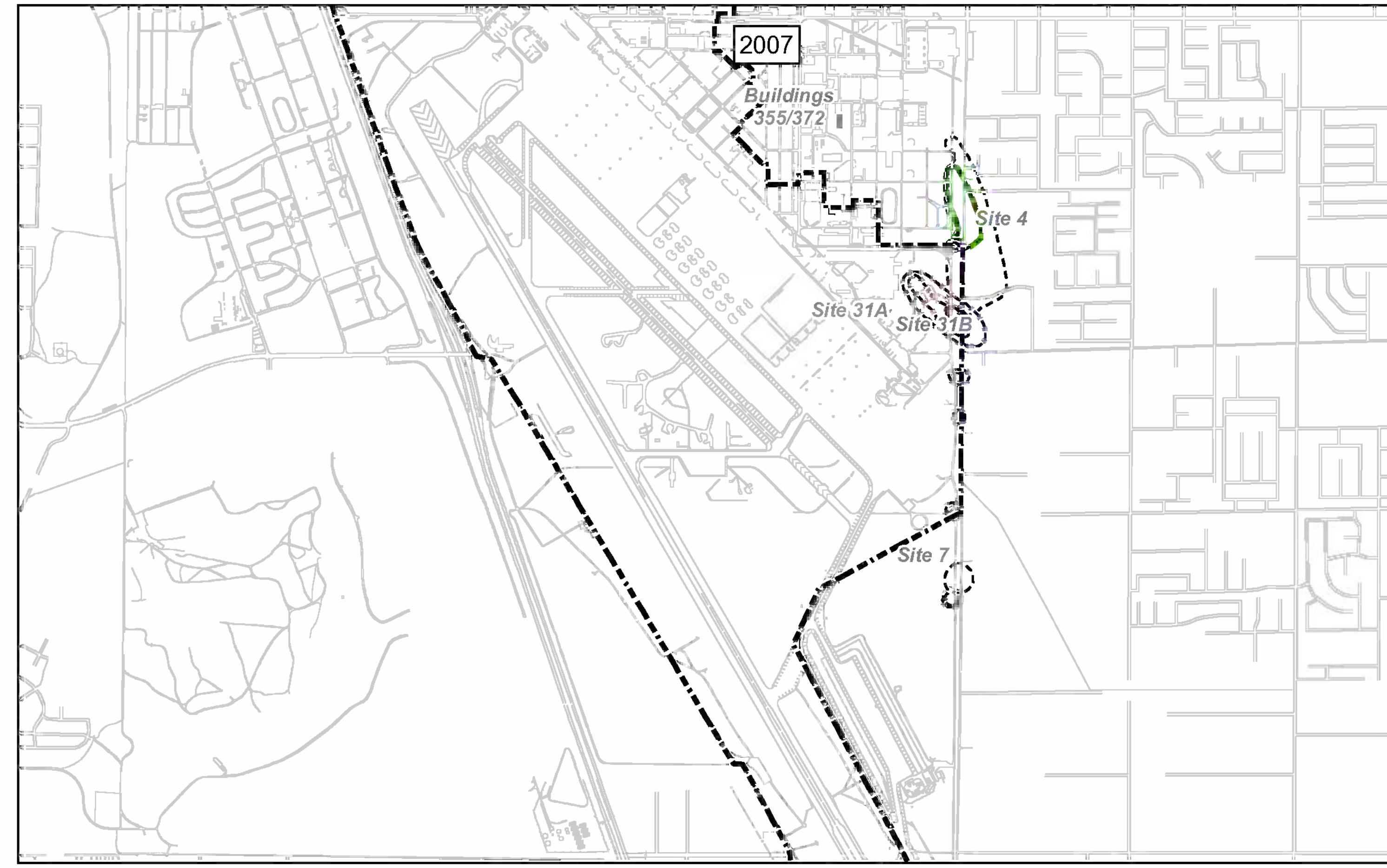
AECOM

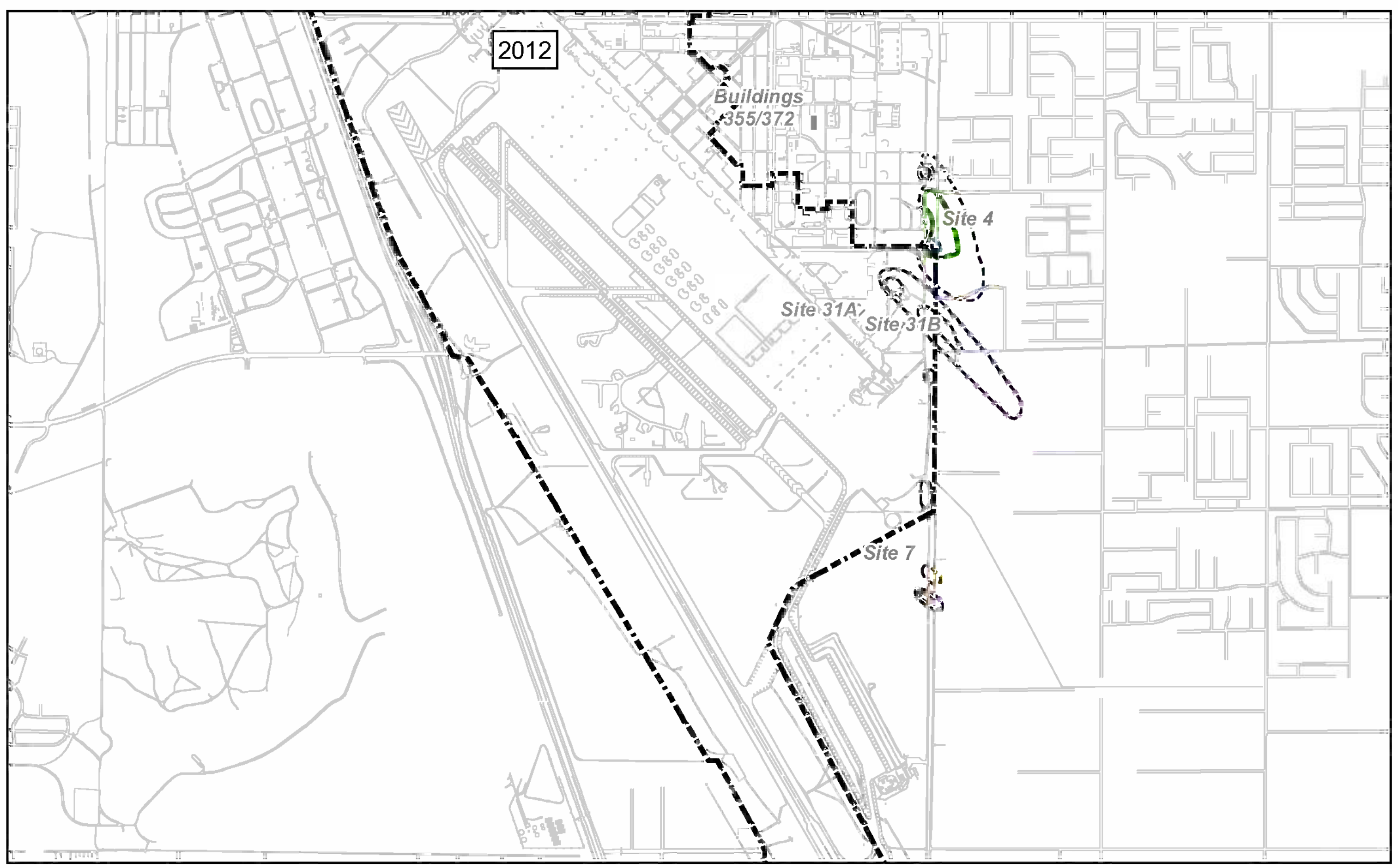
March ARB and Former March AFB, CA

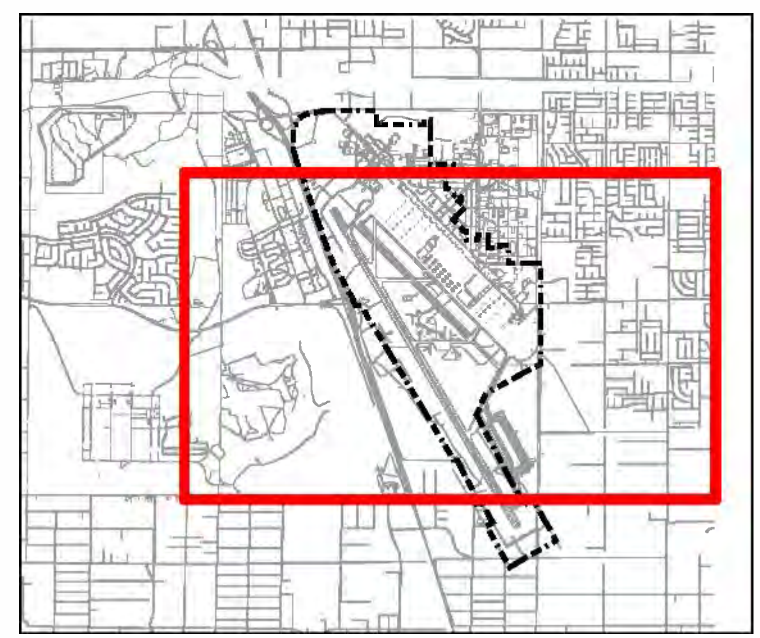
Figure 6-1


2000
Buildings
355/372
Site 4
Site 31A
Site 31B
Site 7
2007
Buildings
355/372
Site 4
Site 31A
Site 31B
Site 7
2012
Buildings
355/372
Site 4
Site 31A
Site 31B
Site 7
LEGEND
TCE PLUME OUTLINE >5 µg/L
TCE PLUME OUTLINE >10 µg/L
TCE PLUME OUTLINE >100 µg/L
PCE PLUME OUTLINE >5 µg/L
PCE PLUME OUTLINE >10 µg/L
PCE PLUME OUTLINE >100 µg/L
CTCL PLUME OUTLINE >0.5 µg/L
CTCL PLUME OUTLINE >2.0 µg/L
CTCL PLUME OUTLINE >10 µg/L
BASE PROPERTY LINE
ABBREVIATIONS
> GREATER THAN
µg/L MICROGRAMS PER LITER
AECOM AECOM TECHNICAL SERVICES, INC.
AFB AIR FORCE BASE
AGMR ANNUAL GROUNDWATER MONITORING REPORT
ARB AIR RESERVE BASE
CA CALIFORNIA
CTCL CARBON TETRACHLORIDE
FT MSL FEET MEAN SEA LEVEL
PCE TETRACHLOROETHENE
TCE TRICHLOROETHENE
N
0
0.5
1
Miles
2011-2012 AGMR
Lower Alluvial Chlorinated Solvent Plumes
Comparison of 2000, 2007, and 2012
Date 04-13
Project No. 60271680
AECOM
March ARB and Former March AFB, CA
Figure
6-2









LEGEND

- TCE PLUME OUTLINE >5 µg/L
- TCE PLUME OUTLINE >10 µg/L
- TCE PLUME OUTLINE >100 µg/L
- PCE PLUME OUTLINE >5 µg/L
- PCE PLUME OUTLINE >10 µg/L
- PCE PLUME OUTLINE >100 µg/L
- CTCL PLUME OUTLINE >0.5 µg/L
- CTCL PLUME OUTLINE >2.0 µg/L
- BASE PROPERTY LINE

ABBREVIATIONS

>	GREATER THAN
µg/L	MICROGRAMS PER LITER
AECOM	AECOM TECHNICAL SERVICES, INC.
AFB	AIR FORCE BASE
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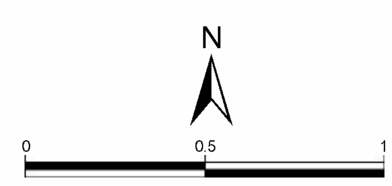
ARB	AIR RESERVE BASE
CA	CALIFORNIA
CTCL	CARBON TETRACHLORIDE
FT MSL	FEET MEAN SEA LEVEL
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE



2011-2012 AGMR

Bedrock Chlorinated Solvent Plumes Comparison of 2000, 2007, and 2012

Date 04-13

AECOM

Figure 6-3

Project No. 60271680

March ARB and Former March AFB, CA

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FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE