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April 15, 2014

Penny Reddy
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Subject: **2013 Annual Progress Report – Former Fairchild Buildings 13, 19, and 23**
Middlefield-Ellis-Whisman ("MEW") Area
Mountain View, California

Dear Ms. Reddy:

Attached please find the 2013 Annual Progress Report for Former Fairchild Buildings 13, 19, and 23, prepared by Geosyntec Consultants on behalf of Schlumberger Technology Corporation.

This annual progress report is being submitted in accordance with U.S. Environmental Protection Agency (EPA) Section XV of the Administrative Order for Remedial Design and Remedial Action (106 Order).

If you have any questions regarding this 2013 Annual Progress Report, please feel free to call me.

Very truly yours,

Virgilio Cocianni
Remediation Manager

Attachment

CC: MEW Distribution List

Prepared for

Schlumberger Technology Corporation
105 Industrial Boulevard
Sugar Land, Texas 77478

2013 ANNUAL PROGRESS REPORT FORMER FAIRCHILD BUILDINGS 13, 19, AND 23

MOUNTAIN VIEW, CALIFORNIA

Prepared by

Geosyntec consultants

engineers | scientists | innovators

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Project Number: WR1133B

15 April 2014

2013 Annual Progress Report
Former Fairchild Buildings 13, 19, and 23
Middlefield-Ellis-Whisman Study Area
Mountain View, California

Prepared by

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ACRONYMS AND ABBREVIATIONS

106 Order	Administrative Order for Remedial Design and Remedial Action
bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethene
EPA	United States Environmental Protection Agency
Fairchild	Fairchild Semiconductor Corporation
ft	feet
ft/ft	feet per foot
ft^2	feet squared
GAC	granular activated carbon
Geosyntec	Geosyntec Consultants
GETS	groundwater extraction and treatment system
gpm	gallons per minute
GSLIB	Geostatistical Software Library
HLA	Harding Lawson Associates
K	hydraulic conductivity
µg/L	micrograms per liter
MEW	Middlefield-Ellis-Whisman
MCLs	maximum contaminant levels
NPDES	National Pollutant Discharge Elimination System
PCE	tetrachloroethene
PDB	passive diffusion bag
PRPs	potentially responsible parties
O&M	operation and maintenance
QA/QC	quality assurance and quality control
RAO	remedial action objective

RGRP	Regional Groundwater Remediation Program
ROD	Record of Decision
RRWs	regional recovery wells
SCRWs	source control recovery wells
Site	369/441 Whisman Road, Mountain View, California
STC	Schlumberger Technology Corporation
SVE	soil vapor extraction
SCVWD	Santa Clara Valley Water District
Water Board	California Regional Water Quality Control Board, San Francisco Bay Region
Weiss	Weiss Associates
TCE	trichloroethene
VC	vinyl chloride
VOCs	volatile organic compounds

1. INTRODUCTION

This 2013 Annual Progress Report was prepared by Geosyntec Consultants (Geosyntec) with assistance from Weiss Associates (Weiss) on behalf of Schlumberger Technology Corporation (STC) for the former Fairchild Semiconductor Corporation (Fairchild) facilities historically located at 369/441 North Whisman Road (former Buildings 13, 19, and 23) in Mountain View, California (Site) (Figures 1 and 2).

This progress report contains a summary of Site activities and data from 1 January through 31 December 2013, and provides monitoring data from the past five years. The report is submitted in accordance with Section XV of the 1990 Administrative Order for Remedial Design and Remedial Action (106 Order) issued by the United States Environmental Protection Agency (EPA), and the EPA's correspondence prescribing Annual Report contents (EPA, 1990a, 2005, and 2011).

1.1 Site Background

The Site lies within the Middlefield-Ellis-Whisman (MEW) study area, an approximate one-quarter square mile area bounded by Middlefield Road on the south, Ellis Street on the east, Whisman Road on the west, and Highway 101 on the north, in Mountain View, California (Figure 1, Figure 2).

From 1969 to 1987 the Site functioned as a facility to produce semiconductor devices. The Site was redeveloped in the 1990s, and was occupied by AOL/Netscape and HP/Mercury Interactive until 2008. Google began occupying the Site buildings in 2013. The previous and current addresses of Former Fairchild Buildings 13, 19, and 23 are provided below:

Previous Address	Current Address
Former Fairchild Buildings 13, 19, and 23 369/441 North Whisman Road	369 North Whisman Road 379 North Whisman Road 389 North Whisman Road 399 North Whisman Road ("The Quad")

The primary constituents of concern at the Site are trichloroethene (TCE) and its reductive dechlorination breakdown products, cis-1,2-dichloroethene (cis-1,2-DCE),

and vinyl chloride (VC). Remedial actions for the MEW study area, including the Site, are specified in a 1989 Record of Decision (ROD) issued by EPA and two subsequent Explanations of Significant Difference (EPA, 1989, 1990b, 1996). Remedial actions within the MEW Area include facility-specific activities by the individual potentially responsible parties (PRPs), and a Regional Groundwater Remediation Program (RGRP) that addresses areas of commingled volatile organic compounds (VOCs) that have migrated beyond the facility-specific areas and cannot be attributed to a single source.

As specified in the ROD, groundwater cleanup included initial actions (completed) and the current long-term remedial phase (EPA, 1989).[1]

In order to prevent migration of VOCs offsite, a groundwater extraction and treatment system was installed at the Site beginning in 1984 and a soil-bentonite slurry wall was constructed at the Site from the ground surface to the A/B Aquitard in 1985. A description of the remedy is provided in Section 1.3.

1.2 Local Hydrogeology

The MEW study area is located within the northern portion of the Santa Clara Valley Groundwater Sub-basin, the northernmost of three interconnected groundwater basins within Santa Clara County (SCVWD, 2001). The groundwater flow direction is northerly, toward the San Francisco Bay, and generally sub-parallel to the ground slope. The hydrostratigraphy in this part of the sub-basin is divided into upper and lower water-bearing zones, separated by an extensive regional aquitard (SCVWD, 1989).

The upper water-bearing zone is subdivided into two depth intervals: the A Zone (roughly between 15 and 40 feet below ground surface [bgs]) and the B Zone (roughly between 45 and 160 feet bgs), which are separated by the A/B Aquitard. The B Zone is further subdivided into three zones (B1, B2, and B3 Zones).

The lower water-bearing zone occurs below a depth of about 200 feet bgs. The lower water bearing zone is subdivided into the C Zone (which extends to about 240 feet bgs)

[1] The soil cleanup goals have been met at MEW (EPA, 2004). Site soil cleanup actions were conducted from 1994 to 1997 and included in-situ soil vapor extraction (SVE) with treatment by vapor-phase granular activated carbon (GAC), and soil excavation and treatment by aeration.

and the Deep Zone. The aquitard separating the upper and lower water-bearing zones is represented as the B/C Aquitard and is the major confining layer beneath the Site.

The water-bearing zones defined at the Site are summarized below:

Water-Bearing Zones	Approximate Depth Interval Below Ground Surface (bgs)
A Zone	15 to 40 feet
B1 Zone	45 to 75 feet
B2 Zone	75 to105 feet

The following table summarizes the estimated ranges of hydraulic conductivity (K) hydraulic gradient, and transmissivity for these Zones.[2]

Water-Bearing Zone	Estimated Hydraulic Conductivity (ft/day)		Approximate Horizontal Gradient (ft/ft)	Saturated Thickness (ft)	Transmissivity (ft^2/day)	
	Low	High			Low	High
A Zone	6	480	0.004	15	44	4,400
B1 Zone	20	260	0.003	25	150	2,600
B2 Zone	0.4	5	0.002 to 0.005	35	2	230

Groundwater flow beneath the MEW study area is generally towards the north in the A and B Zones during both non-pumping and pumping conditions. Groundwater hydraulic gradients are locally modified by the operation of groundwater recovery wells (both source control and regional recovery wells) and slurry walls, resulting in steeper gradients in the vicinity of pumping wells.

The vertical component of groundwater flow is generally upward from the B1 to the A Zone, but is locally downward in some areas of the Site (Section 2.4.4). Vertical gradients below the B1 Zone are generally upward (Geosyntec, 2008).

[2] Pumping tests were conducted at the MEW study area from 1986 through 2005. References are Canonie 1986a, 1986b, 1987, and 1988, Geomatrix 2004, HLA 1986 and 1987, Locus 1998, PRC 1991, Navy 2005, and Weiss Associates 1995 and 2005.

1.3 Description of Remedy

As specified in the ROD, the current Site remedy consists of slurry wall containment and a groundwater extraction and treatment system (GETS).

The GETS is designed to protect local water supplies and to remediate or control groundwater that contains elevated concentrations of chemicals, including control of discharge of such groundwater to surface water.[3]

Groundwater cleanup goals are 5 micrograms per liter (µg/L) for TCE in shallow groundwater (A and B Zones) and 0.8 µg/L for TCE in deep groundwater (C and Deep Zones).[4] The ROD states that the chemical ratio of TCE to other chemicals found at the Site is such that achieving the cleanup goal for TCE will result in cleanup of the other Site chemicals to at least their respective federal maximum contaminant levels (MCLs).

A network of 15 extraction wells is used to remove groundwater from three depth intervals at the Site (Table 1). Extracted groundwater is then pumped through conveyance piping to a treatment facility, identified as Treatment System 19, located at the address of 389 N. Whisman Road, this location was formerly identified as having the address of 369 N. Whisman Road). Once treated, the water is monitored and sampled in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit, then discharged to a storm water sewer. A soil-bentonite slurry wall was constructed in the A-zone at the Site to prevent VOC migration from the source zones.

Effectiveness of the remedy is evaluated using a network of monitoring wells. Construction summaries for these wells are provided in Table 2. The wells are currently monitored according to the schedule provided in Table 3.

1.4 Summary of 2013 Site Activities and Deliverables

Table 3 provides the 2013 monitoring and reporting schedule for the Site Groundwater Remediation Program. Ongoing Site activities include:

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[3] The objectives of the groundwater remedy design are described in the ROD and the Feasibility Study (Canonie, 1988).

[4] Groundwater cleanup goals are presented in the ROD.

- Groundwater extraction and treatment;
- Operation and Maintenance (O&M) of treatment systems;
- Assessment of remedial progress;
- Optimization of the groundwater remedies, as directed by EPA (Section 6);
- Planning for future remedial activities; and
- Sampling the treatment system monthly in compliance with general VOC permit under California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) Order No. R2-2009-0059 for Fairchild Treatment System 19.

Specific Site activities and deliverables by month in 2013 are listed below:

February 2013

- 13 February – Submitted the 4th Quarter and Annual 2012 System 19 NPDES Self-Monitoring Report.

March 2013

- 21 March – Collected semiannual groundwater elevation measurements in Site monitoring and extraction wells and collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

April 2013

- 15 April – Submitted the 2013 Annual Progress Report to the EPA and other parties in accordance with the MEW distribution list.

May 2013

- 3 May – Submitted the 1st Quarter 2013 System 19 NPDES Self-Monitoring Report.
- 16 May – Collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

August 2013

- 2 August – Submitted the 2nd Quarter 2013 System 19 NPDES Self-Monitoring Report.

September 2013

- 26 September through 29 October – Collected annual groundwater samples from Site monitoring and extraction wells.
- 19 September – Collected semiannual groundwater elevation measurements in Site monitoring and extraction wells, and collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

November 2013

- 6 November – Submitted the 3rd Quarter 2013 System 19 NPDES Self-Monitoring Report.
- 25 November – Collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

The 2013 Annual Report Remedy Performance Checklist is provided in Appendix A.

2. GROUNDWATER EXTRACTION AND TREATMENT

2.1 Extraction, Treatment, and Containment System Description

During 2013, the Site groundwater extraction, treatment, and containment system (Figure 3) included the following components:

- A slurry wall enclosure to a depth of approximately 40 feet bgs and keyed a minimum of two feet into the A/B1 aquitard.
- Groundwater extraction from:
  - 13 active source control recovery extraction wells (SCRWs); and,
  - One active regional recovery extraction well (RRW) located offsite.
- Treatment System 19:
  - Receives extracted groundwater from the active SCRWs and an active RRW located off-Site;
  - Double-contained groundwater conveyance piping, well vaults;
  - Two sediment filters in parallel;
  - One pad sump, including sump pump;
  - Three 5,000-pound granular activated carbon (GAC) vessels in series; and,
  - Electrical distribution and control panels including:
    - A programmable logic controller,
    - A supervisory control and data acquisition computer; and
    - An auto-dialer.

The discharge of treated groundwater from the treatment system to the storm sewer is authorized by NPDES Permit CAG912003, Order No. R2-2009-0059.

2.1.1 Extraction Wells

Table 1 lists the groundwater zone, target flow rate, and 2013 average flow rates for the 13 active Site extraction wells. Two additional SCRWs extraction wells RW-1(B1) and

RW-26A have been shut down with EPA approval (EPA, 2006; Weiss, 2009) and were not operated in 2013.

The groundwater extracted by offsite regional well REG-4B(1) is conveyed to System 19 for treatment (Table 1). An additional six off-site RRWs (65B3, DW3-219, DW3-244, DW3-334, DW3-364, and DW3-505R) are connected to System 19 but have been shut down with EPA approval (EPA, 2006; Weiss, 2009; Geosyntec, 2010; EPA, 2012). Further discussion of these regional wells is provided in the MEW RGRP 2013 Annual Progress Report (Geosyntec, 2014a).

2.2 Extraction and Treatment System Operation and Maintenance

From 1 January through 31 December 2013, the Site treatment system ran 96.8% of the time.[5] A total of approximately 53 million gallons of groundwater were treated and 328.8 pounds of VOCs were removed by the Site treatment system during this reporting period.

As required by the Site discharge permit, extraction well and treatment system flow readings are recorded weekly and the Site treatment system is sampled monthly. Results are reported quarterly to the Water Board.

Extraction well flow rates were optimized in 2010 for all Fairchild wells (Geosyntec, 2010). The optimized target flow rates and actual flow rates are shown in Table 1. The combined average flow rates for the wells pumping to System 19 totaled 96.2 gallons per minute (gpm), which exceeds the optimized target flow rate of approximately 91 gpm. Monthly average flow rates and monthly extraction totals by well are provided in Tables 4 and 5, respectively.

The analytical results for monthly groundwater samples from System 19 are summarized in Tables 6a and 6b. The laboratory analytical reports are provided in Appendix B, and the quality assurance/quality control (QA/QC) evaluation for samples collected at the Site during 2013 is provided in Appendix C. Treatment system discharges were within effluent limits established by NPDES Permit CAG912003, Order No. R2-2009-0059 (Weiss, 2014).

[5] Of the System 19 downtime, approximately 13.2% was due to planned shut downs.

Table 7 presents a VOC mass removal summary based on the quarterly NPDES Self-Monitoring Reports produced by Weiss (Weiss, 2013a, 2013b, 2013c, and 2014). The cumulative groundwater and VOC mass removal for System 19 is shown in Figure 4.

A summary of non-routine maintenance or operational activities performed at the Site during 2013 is provided in Table 8. The EPA and Water Board are required to be notified of extraction well and system down-time events as follows:

1. EPA: The owner and/or operator of the Fairchild treatment system will make a best effort to orally notify EPA within 24 hours of a well or system shut down that occurs for more than 72 hours.
2. Water Board: If the treatment system is shut down for more than 120 consecutive hours after the start-up period (maintenance, repair, violations, etc.) the reason(s) for shut down, proposed corrective action(s), and estimated start-up date shall be orally reported to the Water Board within five days of shut down and a written submission shall also be provided within 15 days of shut down.

As detailed in Table 8, one well shutdown event requiring EPA notification occurred during 2013 and EPA was properly notified of the shutdown. No system shutdowns occurred in 2013 that required EPA or Water Board notification.

A total of 22.5 tons of spent carbon was generated and classified as non-hazardous for reactivation. The spent carbon was shipped to Norit America's regeneration facility in Pryor, Oklahoma. Spent sediment filters generated during 2013 were disposed of as hazardous waste at US Ecology in Beatty, Nevada.

2.3 Groundwater Level Monitoring

Groundwater levels are measured semi-annually for the purpose of monitoring the hydraulic performance of the Site groundwater remedy. Table 2 summarizes the construction details for the Site monitoring and extraction wells. During this reporting period, groundwater levels were measured in the Site monitoring wells on 21 March and 19 September 2013. In addition, water levels were measured quarterly on 21 March, 16 May, 19 September, and 25 November 2013 in 11 slurry wall well pairs (22 wells). Water levels measured in the Site monitoring wells during 2013 are included in Table 9. Water levels measured in the Site slurry wall well pairs between January 2009 and December 2013 are included in Table 10.

Hydrographs of the Site slurry wall well pairs are provided in Figures 5 and 6. Figure 5 includes a set of hydrographs of A Zone slurry wall well pairs showing the inward and outward gradients across the slurry wall. Figure 6 includes hydrographs of slurry wall well pairs in which one well is screened inside the slurry wall in the A Zone and the adjacent well pair is screened below the slurry wall in the B1 Zone.

Groundwater elevation contour maps for the Site are provided in Figures 7 through 12 and are based on facility-specific and regional data as presented in the MEW RGRP Annual Report (Geosyntec, 2014a). The groundwater elevation contour maps were created using KT3D_H2O version 3.0, a geostatistical software package (Tonkin and Larson, 2002).[6] As opposed to most interpolation programs that require a choice between linear and logarithmic kriging, this version of KT3D allows for linear-log ordinary kriging using linear kriging in areas distant from recovery wells and point logarithmic kriging in the vicinity of recovery wells. The flow rates from the extraction wells were input to the program in order to allow for a variable radial distance of transition from linear to logarithmic kriging. A spherical variogram was specified with grid spacing of 30 feet.

Groundwater elevation contour maps from March and September show that while there is minor seasonal fluctuation in groundwater elevations, there is no significant seasonal change in groundwater flow or extraction well capture across the Site.

2.4 Hydraulic Control and Capture Zone Analysis

The water level monitoring described in Section 2.3 provides the basis for evaluating the hydraulic performance of the Site-specific groundwater remedies. The hydraulic capture area achieved by one or more recovery wells cannot be directly measured, but rather requires analysis and interpretation of the measured water levels and extraction rates. The following discussion summarizes the basis for estimating the capture zones.

[6] The KT3D software package was developed as part of the Geostatistical Software Library (GSLIB) at Stanford University and was subsequently modified by S.S. Papadopulos and Associates, Inc. to include well drift (Deutsh and Journal, 1998, Tonkin and Larson, 2002).

2.4.1 Methodology

In evaluating groundwater capture for Site wells, consideration was given to the EPA guidance document *A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems* (EPA, 2008). The following steps were used to perform the hydraulic evaluation of the groundwater remedy.

- The Site conceptual model, remedy objectives, slurry wall locations, and target capture zones were available from previous studies and prior annual monitoring reports;
- Water level measurements from March and September 2013 were interpolated to generate groundwater elevation contour maps as described in Section 2.3 and the MEW RGRP Annual Report (Geosyntec, 2014a);
- Pumping rates from RRWs and SCRWs were compiled;
- Hydraulic capture from each RRW and SCRW was estimated based on graphical flow-net analysis of the contour maps, guided by backward particle tracking and analytical flow solutions (Section 2.4.2);
- A water balance calculation was used to check the total width of capture estimated from the graphical analysis;
- Water level data from well clusters were analyzed for the distribution of vertical gradients; and
- VOC time-series trends in monitoring wells were reviewed for confirming evidence of hydraulic capture (Section 2.5).

2.4.2 Estimated Extraction Well Capture

Estimated capture zones for Site recovery wells in March and September 2013 are shown in Figures 7 through 12. The capture zones were estimated by graphical flow-net analysis, using the groundwater elevation contour maps (Section 2.3). The graphical analysis was guided by backward particle tracking using TransientTracker in KT3D_H20 and calculated distances to the stagnation point and capture zone width based on the analytical solution of Javandel and Tsang (1986). All extraction wells pumping in the MEW study area were considered as part of the capture zone evaluation for the Site. The KT3D_H20 particle tracking method and analytical calculations assume homogeneous, two-dimensional groundwater flow with a single regional

estimated value of transmissivity. These methods were used as supporting lines of evidence to evaluate capture together with the groundwater elevation contour maps. The final capture zones as presented in Figures 7 through 12 are based on professional judgment in consideration of the above analyses, known Site conditions, and experience with similar sites.

2.4.3 Capture Width Based on Combined Flow Rate Analysis

The capture zone analysis described in Section 2.4.2 was developed on a well-by-well basis. However, the net result of the combined capture zones from all SCRWs is an area of hydraulic capture significantly wider than the distribution of VOCs in groundwater. An independent check of the capture zones presented in Figures 7 through 12 was developed by using the combined 2013 groundwater extraction rates for all RRWs and SCRWs located in the Site boundaries, to estimate the total capture width in each zone (A, B1, B2). The estimated capture widths were then compared to the distribution of TCE in groundwater (Section 2.5, Figures 13, 17, and 21) within the Site boundaries, measured in map view for each zone. The target capture width for A Zone wells inside the slurry wall was considered to be the total width of the slurry wall enclosure. The target capture width for wells outside the slurry wall was considered to be the total width of the Site. If the estimated width of capture is greater than the transgradient width of the TCE distribution in groundwater, then hydraulic containment of the plume is indicated.

The calculations of capture width for each zone based on the total extraction rate, regional hydraulic gradient, hydraulic conductivity, and zone thickness are shown in Table 11. The results indicate that the predicted capture width based on the total extraction rate is greater than the measured transgradient width of TCE in groundwater within the Site, thereby providing an additional line of evidence that hydraulic containment is achieved.

2.4.4 Horizontal and Vertical Gradients

Slurry wall well pairs are used to evaluate:

- The direction of horizontal gradient across the slurry wall by comparing water levels in wells located inside the slurry wall with water levels in adjacent wells outside the slurry wall; and,

- The direction of vertical gradient across the A/B aquitard by comparing water levels in wells located inside the slurry wall (in the A Zone) with water levels in wells located below the slurry wall (in the B1 Zone).

Figures 5 and 6 illustrate head differences between slurry wall well pairs at the Site. The well pairs in Figure 5 are used to evaluate the direction of horizontal gradient across the slurry wall by comparing water levels in wells located inside the slurry wall with water levels in adjacent wells outside the slurry wall. The well pairs in Figure 6 are used to evaluate the direction of vertical gradient across the A/B Aquitard by comparing water levels in wells located inside the slurry wall (in the A Zone) with water levels in wells located below the slurry wall (in B1 Zone). Groundwater elevations were recorded quarterly in March, May, September, and November 2013 in the slurry wall well pairs listed in Table 10. The well locations are shown in Figures 3, 5, and 6.

Results of the well pair analysis at the Building 19 slurry wall indicate the following:

Horizontal Gradients: During this reporting period, inward gradients were consistently observed at well pairs 140A/101A and 142A/143A, which are located on the upgradient side of the slurry wall, and well pairs 141A/139A and 17A/159A, which are located on the eastern crossgradient side of the slurry wall. Outward gradients were observed at well pairs 115A/134A and 154A/155A, which are located on the downgradient side of the slurry wall.

Vertical Gradients: Upward, neutral, and downward gradients were observed between the A and B1 aquifer. Upward gradients were observed at well pairs 101A/93B1 and 15A/98B1; neutral gradients were observed at well pair 134A/110B1; and, downward gradients were observed at well pairs 12A/117B1 and 159A/RW-1(B1).

The horizontal and vertical gradients recorded during this reporting period are generally consistent with historical observations. The outward and downward gradients observed at the Site slurry wall do not impact Site cleanup objectives because water immediately downgradient of the slurry wall is completely captured by downgradient Site A Zone extractions wells RW-24A and RW-2A and B1 Zone extraction wells RW-11 and RW-2(B1).

2.5 Groundwater Quality Monitoring

The 2013 Annual Groundwater Quality Sampling Event at the Site was conducted in September and October 2013. A total of 38 Site wells were sampled for VOCs in 2013. In addition, two MEW RGRP wells located on the Site were sampled in 2013, and the results are reported separately in the RGRP Annual Report (Geosyntec, 2014a). Chemical analytical results for the previous five years (2009 through 2013) are provided in Table 12. Appendix B contains the laboratory analytical reports and chain-of-custody documentation for samples collected in 2013, and Appendix C contains the QA/QC evaluation report, summary tables, and criteria. VOC versus time graphs for select monitoring wells are included in Appendix D.

A report summarizing the findings of a comparative analysis conducted to evaluate whether the use of passive diffusion bag (PDB) or HydraSleeve™ sampling technologies as alternatives to low-flow sampling would be acceptable for future annual sampling events was included in the 2012 MEW RGRP Annual Progress Report (Geosyntec, 2013). Based on the results of this evaluation, use of HydraSleeve™ samplers was found to be a viable alternative to low-flow sampling and on 18 July 2013, EPA approved the use of HydraSleeve™ sampling at the Fairchild sites (EPA, 2013). The HydraSleeve™ sampling method was employed in 2013 to collect the groundwater samples from monitoring wells at the Site[7] Samples from extraction wells are collected from the pump effluent line.

2.5.1 Isoconcentration Contour Maps

Tetrachloroethene (PCE), TCE, cis-1,2-DCE, and VC isoconcentration contour maps were created for the 2013 annual sampling event and are presented for the A Zone, B1 Zone, and B2 Zone in Figures 13 through 24. These maps are based on isoconcentration contouring performed for the MEW RGRP Annual Progress Report (Geosyntec, 2014) that includes all wells in the MEW study area sampled for VOCs in 2013. The 2013 contour maps were based on the previous 2012 isoconcentration contour maps (Geosyntec, 2013) with contours modified as needed to reflect decreases or increases in TCE concentrations from 2012 to 2013. In addition to data from the annual sampling event, VOC concentrations from grab groundwater samples collected

[7] Wells 22A and RW-26A were collected with micropurge sampling method.

as part of the 350 Ellis Street optimization work (Haley & Aldrich, 2014) were included in the isoconcentration contouring.

2.5.2 Remedy Performance

In conjunction with the hydraulic analysis described in Section 2.4, the VOC monitoring data provides an additional line of evidence for assessing remedy performance.

In the 2013 annual monitoring event, 98% of the Site wells sampled had TCE concentrations that were within or below historical ranges.[8]

The spatial distribution of VOC monitoring data can be used to assess remedy performance. Figures 13, 17, and 21 present maps of the A Zone, B1 Zone, and B2 Zone, respectively, with the September 2013 hydraulic capture zones (Section 2.4) overlain on the September/October 2013 TCE isoconcentration maps. These figures illustrate complete hydraulic capture within the Site boundaries.

Selected VOC versus time graphs are presented in Appendix D. In addition to the creation of time series graphs, a Mann-Kendall statistical analysis was performed in order to evaluate VOC concentration trends over the past 10 years (2004 through 2013) in the Site wells[9] (Table 13). Based on the Mann-Kendall statistical analysis, the TCE concentrations since 2004 are decreasing, stable, or have no statistically significant trend in 89% of the Site wells. Of these wells, approximately 34% display decreasing TCE concentration trends and 55% show no trend or are stable.

The wells that have statistically significant increasing or probably increasing TCE concentration trends since 2004 include 154A (increasing), 160A (increasing), RW-12A (increasing), and RW-26A (probably increasing). In 2010 the extraction well flow rates were adjusted at the Site, resulting in a change in the groundwater flow field (Geosyntec

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[8] In 2013, well 160A had a TCE concentration of 630 µg/L. This value was higher than the TCE concentrations historically observed at 160A. As described below, this increase in TCE is due to increased extraction in the area.

[9] A Mann-Kendall statistical analysis was performed using the TCE, cis-1,2-DCE and VC concentration data from 2004 to 2013 to evaluate concentration trends. Well with insufficient data (i.e., detectable concentrations of VOCs during fewer than 4 sampling events) were not included in the trend analysis evaluation.

2010). The change in the groundwater flow field appears to be correlated to the recent increases in VOC concentrations observed in wells 154A, 160A, RW-12A and RW-26A, and may also be related to recent decreasing concentration trends observed in other wells at the Site.

Overall, the VOC monitoring data and VOC time series graphs indicate that the combined MEW remedies are performing as designed to control or remediate VOCs in groundwater.

2.6 Compliance

The system operated within the effluent limits established by the NPDES permits for the entire period. VOC results from samples collected for NPDES compliance are summarized in Table 6a.

3. OTHER ACTIVITIES

3.1 Air/Vapor Intrusion

The EPA issued a ROD amendment on 16 August 2010 to address vapor intrusion. The MEW parties continued to work with EPA and local entities to implement the ROD amendment during 2013. In accordance with the Statement of Work for the Vapor Intrusion ROD Amendment, an annual report summarizing the status of the vapor intrusion remedy will be submitted under a separate cover (Geosyntec, 2014b).

3.2 Settlement Survey

A settlement survey was performed on 26 and 28 February 2014. The purpose of these measurements is to evaluate any potential adverse effects on the Site facilities, and whether long-term remedial groundwater extraction could affect soil settlement in the MEW study area. A qualified Geotechnical Engineer reviewed the historical settlement and water level elevation data and concluded that the measured values of ground elevation change do not appear to be related to groundwater extraction operations. Additional information on the settlement survey can be found in the RGRP 2013 Annual Progress Report (Geosyntec, 2014a).

4. PROBLEMS ENCOUNTERED

Table 8 provides a summary of all non-routine O&M events that occurred at the Treatment System 19 or at individual extraction wells in 2013. No other problems related to the groundwater treatment or containment system at the Site were encountered.

5. TECHNICAL ASSESSMENT

The following assessment of the groundwater remedy performance was made based on data collected through 2013.

- **The remedy is functioning as intended.** Based on 2013 data reviewed, the groundwater remedy is functioning as intended. The 2013 Annual Report Remedy Performance Checklist is included in Appendix A.
- **The capture zones are adequate.** Groundwater elevations, graphical flow net analysis, capture zone width calculations, and VOC concentration trends provide converging lines of evidence that the Site extraction wells are achieving adequate horizontal and vertical capture.
- **VOC concentrations are steady to decreasing over time.** Since 2004, over 85% of Site wells have decreasing to stable trends or no statistically significant trend in TCE concentrations over time (Appendix D).

The remedial actions meet the remediation action objectives (RAOs) for groundwater.

6. OPTIMIZATION PROGRESS

In 2013 EPA requested that the MEW PRPs proceed with optimization of existing facility-specific and regional groundwater remedies. EPA's stated objective for remedy optimization is to increase the rate of VOC mass removal from the individual MEW sites. It is expected that remedy optimization at the Fairchild Buildings 13, 19, and 23 Site will include adjustments to the groundwater extraction remedy to increase the rate of VOC mass removal. In support of the planned remedy optimization, a regional groundwater flow model is being developed in 2014 for evaluation of alternative groundwater extraction scenarios.

7. CONCLUSIONS AND RECOMMENDATIONS

Approximately 53 million gallons of groundwater were treated and 328.8 pounds of VOCs were removed by Treatment System 19 during 2013. From 1 January through 31 December 2013, System 19 had an operational uptime of 96.8%.

The Site groundwater remedy is performing as intended. The estimated capture zones from March and September 2013 meet or exceed target capture areas as indicated by converging lines of evidence, including graphical flow net analysis, capture zone width calculations, and concentration trends.

Optimization of the groundwater remedy at the Site will begin in 2014 with development of a groundwater flow model for use in evaluating optimized groundwater extraction scenarios.

Groundwater elevation contour and capture zone maps from March and September show that there is no significant seasonal change in groundwater flow or extraction well capture across the study area. Therefore, it is recommended that the frequency of groundwater level monitoring be reduced from semi-annual to annual, coincident with the September/October sampling event.

8. UPCOMING WORK IN 2014 AND PLANNED FUTURE ACTIVITIES

January	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES)
February	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Submit 4th Quarter and Annual NPDES report
March	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Groundwater level measurements
April	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Submit Annual Progress Report to EPA
May	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Semi-annual system influent sampling (NPDES) • Submit 1st Quarter NPDES report • Slurry wall well pair groundwater level measurements
June	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES)
July	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES)
August	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Submit 2nd Quarter NPDES report
September	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Annual Groundwater sampling • Groundwater level measurements
October	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Annual system effluent sampling (NPDES) • Annual Groundwater sampling
November	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES) • Semi-annual system influent sampling (NPDES) • Submit 3rd Quarter NPDES report • Slurry wall well pair groundwater level measurements
December	• Pump and Treat System O&M • Monthly system effluent sampling (NPDES)

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TABLES

Table 1
System 19 Target and 2013 Average Recovery Well Flow Rates
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Extraction Wells	2013 Target Flow Rate[1] (gpm)	Average 2013 Flow Rate[2] (gpm)
A Zone		
71A	4.0	4.4
RW-1A	4.0	5.2
RW-2A	8.5	8.7
RW-11A	3.0	3.1
RW-12A	2.0	3.3
RW-23A	10.5	11.5
RW-24A	2.5	3.5
RW-26A[3]	off	off
RW-29A	11.5	10.2
B1 Zone		
REG-4B(1) (RGRP)	6.0	6.3
RW-1(B1)[3]	off	off
RW-2(B1)	5.5	5.5
RW-10(B1)	12.5	13.7
RW-11(B1)	9.0	9.5
B2 Zone		
RW-1(B2)	0.1	0.3
RW-2(B2)	12.0	11.0
B3 Zone		
65B3 (RGRP)[4]	off	off
C/Deep Zone		
DW3-219 (RGRP)[3]	off	off
DW3-244 (RGRP)[3]	off	off
DW3-334 (RGRP)[3]	off	off
DW3-364 (RGRP)[3]	off	off
DW3-505R (RGRP)[3]	off	off

Notes:
Wells shown in **bold** are located on the Site.
1. Target flow rates were adjusted in 2010 as a result of EPA comments on the 2008 optimization evaluation (Geosyntec, 2010).
2. Average 2013 flow rates were calculated by dividing the total volume of groundwater recovered by the time in minutes between the totalizer readings. System 19 totalizer readings were recorded on 26 December 2012 and 30 December 2013.
3. Well is offline with EPA approval (EPA, 2006; Weiss, 2009; Geosyntec 2010).
4. Well was taken offline in September 2012 with EPA approval (EPA, 2012).
gpm = gallons per minute
(RGRP) = Regional Groundwater Remediation Program well connected to System 19 for treatment. Further discussion of this well is provided in the MEW RGRP 2013 Annual Progress Report (Geosyntec, 2014a).
EPA = United States Environmental Protection Agency

Table 2

Extraction and Monitoring Well Construction Summary

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Well ID	Year Installed	Reference Elevation[1] (ft msl)	Diameter (inches)	Total Well Depth (ft btoc)	Top of Screened Interval (ft btoc)	Bottom of Screened Interval (ft btoc)	Top of Sand Pack (ft btoc)	Bottom of Sand Pack (ft btoc)	Well Type
A Zone									
4A	1982	54.69	2	35	20	35	15	35	Mon
6A	1982	54.74	2	39	20	39	17	39	Mon
9A	1982	55.82	2	40	15	40	10	40	Mon
12A	1982	55.11	2	35	15	35	15	35	Mon
15A	1982	54.06	2	40	15	40	15	40	Mon
16A	1982	53.30	2	32	22	32	14	32	Mon
17A	1982	53.40	2	35	20	35	15	35	Mon
22A	1982	52.87	2	30	14	30	12	30	Mon
23A	1982	50.56	2	30	14	30	14	30	Mon
71A	1984	55.15	12	36	26	31	13	37.5	Ext
101A	1986	55.14	4	36	19	34	14	36	Mon
115A	1986	53.48	4	30	20	30	18	32	Mon
134A	1986	53.44	4	30	20	30	18	32	Mon
139A	1986	53.21	4	31	16	31	11	34	Mon
140A	1986	56.99	4	33	18	33	16	35	Mon
141A	1986	53.25	4	26	16	26	11	28	Mon
142A (RGRP)	1986	57.27	4	27	22	27	20	29	Mon
143A	1986	55.72	4	27	22	27	20	29	Mon
148A	1991	53.92	4	32.5	22.5	32.5	19.5	33	Mon
149A	1991	51.90	4	32.5	12.5	32.5	11.5	35	Mon
154A	1993	53.90	4	29	19	29	15	30	Mon
155A	1993	54.17	4	29	19	29	15	30	Mon
159A	1997	54.62	4	30	20	30	17	33	Mon
160A	1997	53.89	4	33.5	18.5	33.5	15.5	35.5	Mon
161A	1997	56.15	4	30.5	20.5	30.5	17.5	33	Mon
174A	2002	53.66	4	31.5	18	28	15	30	Mon
175A	2002	53.82	4	35	19	29	16	30	Mon
RW-1A	1985	53.71	6	35	20	35	15.5	35	Ext
RW-2A	1985	49.42	6	34	19	34	15	36	Ext
RW-11A	1985	54.87	6	35	25	35	10	37	Ext
RW-12A	1985	53.96	6	35	25	35	10	37	Ext
RW-23A	1994	52.75	6	34.5	24.5	34.5	21.5	35	Ext
RW-24A	1994	50.15	6	32	22	32	19	33	Ext
RW-26A	1997	53.51	6	32	22	32	15	34	Ext
RW-29A	2002	52.04	6	35	20	35	17	35	Ext
B1 Zone									
93B1	1986	55.27	4	67	52	67	45	69	Mon
95B1	1986	56.95	4	65	50	65	46.5	67	Mon
98B1 (RGRP)	1986	54.10	4	66	57	66	46	68	Mon
101B1	1986	54.92	4	65	50	65	46	67	Mon
110B1	1986	53.68	4	59	49	59	47	61	Mon
117B1	1986	53.80	4	63	53	63	51	65	Mon
145B1	1994	54.00	6	65	53	63	50	65	Mon
156B1	2002	50.87	4	60	49	54	37	55	Mon
RW-1(B1)	1985	53.83	6	72	52	72	42	73	Ext
RW-2(B1) (RGRP)	1986	48.18	6	56	46	56	45	59	Ext
RW-10(B1)	1994	52.40	6	65	55	65	52	66	Ext
RW-11(B1)	1995	50.43	6	61	51	61	48	63	Ext
B2 Zone									
40B2	1985	54.59	4	92	87	92	83.5	93	Mon
90B2	1986	54.18	4	104	94	104	87	106	Mon
146B2	1995	53.58	6	96	85	95	82	97	Mon
RW-1(B2)	1985	53.49	6	94	87	92	84	97	Ext
RW-2(B2)	1985	48.95	6	96	76	96	72	98	Ext

Notes:

Water levels for extraction wells are taken from a 2" piezometer located next to the well.

1. Reference Elevations are in National Geodetic Vertical Datum from 1929 (NGVD 29).

ft msl = feet mean sea level

ft btoc = feet below top of casing

Ext = extraction well

Mon = monitoring well

(RGRP) = Regional Groundwater Remediation Program well. Further discussion of this well is provided in the MEW RGRP 2013 Annual Progress Repor (Geosyntec, 2014a)

Table 3
Monitoring and Reporting Schedule
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Monitoring and Sampling - Wells		
Well	**Sampling Frequency**	**Water Level Gauging Frequency**
A Zone		
4A	Annually (September or October)	Semiannually (March, September)
6A	Every 5 Years (Last Sampled 2012)	Semiannually (March, September)
9A	Every 5 Years (Last Sampled 2012)	Semiannually (March, September)
12A	Every 5 Years (Last Sampled 2012)	Quarterly
15A	Every 5 Years (Last Sampled 2012)	Quarterly
16A	Annually (September or October)	Semiannually (March, September)
17A	Annually (September or October)	Quarterly
22A	Annually (September or October)	Semiannually (March, September)
23A (RGRP)	Annually (September or October)	Semiannually (March, September)
71A	Annually (September or October)	Semiannually (March, September)
101A	Every 5 Years (Last Sampled 2012)	Quarterly
115A	Annually (September or October)	Quarterly
134A	Annually (September or October)	Quarterly
139A	Every 5 Years (Last Sampled 2012)	Quarterly
140A		Quarterly
141A		Quarterly
142A[1] (RGRP)		Quarterly
143A	Every 5 Years (Last Sampled 2012)	Quarterly
148A	Every 5 Years (Last Sampled 2012)	Semiannually (March, September)
149A	Annually (September or October)	Semiannually (March, September)
154A	Annually (September or October)	Quarterly
155A	Annually (September or October)	Quarterly
159A	Annually (September or October)	Quarterly
160A	Annually (September or October)	Semiannually (March, September)
161A	Every 5 Years (Last Sampled 2012)	Semiannually (March, September)
174A	Annually (September or October)	Semiannually (March, September)
175A	Annually (September or October)	Semiannually (March, September)
RW-1A	Annually (September or October)	Semiannually (March, September)
RW-2A	Annually (September or October)	Semiannually (March, September)
RW-11A	Annually (September or October)	Semiannually (March, September)
RW-12A	Annually (September or October)	Semiannually (March, September)
RW-23A	Annually (September or October)	Semiannually (March, September)
RW-24A	Annually (September or October)	Semiannually (March, September)
RW-26A	Annually (September or October)	Semiannually (March, September)
RW-29A	Annually (September or October)	Semiannually (March, September)
B1 Zone		
93B1[1]		Quarterly
95B1	Annually (September or October)	Semiannually (March, September)
98B1[1] (RGRP)		Quarterly
101B1	Annually (September or October)	Semiannually (March, September)
110B1	Annually (September or October)	Quarterly
117B1	Annually (September or October)	Quarterly
145B1	Annually (September or October)	Semiannually (March, September)
156B1	Annually (September or October)	Semiannually (March, September)
RW-1(B1)	Annually (September or October)	Quarterly
RW-2(B1)[2]	Annually (September or October)	Semiannually (March, September)
RW-10(B1)	Annually (September or October)	Semiannually (March, September)
RW-11(B1)	Annually (September or October)	Semiannually (March, September)
B2 Zone		
40B2 (RGRP)	Annually (September or October)	Semiannually (March, September)
90B2	Annually (September or October)	Semiannually (March, September)
146B2	Annually (September or October)	Semiannually (March, September)
RW-1(B2)	Annually (September or October)	Semiannually (March, September)
RW-2(B2)	Annually (September or October)	Semiannually (March, September)

Table 3
Monitoring and Reporting Schedule
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Monitoring and Sampling - System 19	
System Component	**Sample Frequency**
Systerm 19 Influent	Quarterly
System19 Midpoint 1	Monthly
System 19 Midpoint 2	Monthly
System 19 Effluent	Monthly
Stevens Creek[3,4]	

Reporting	
Report	**Due Date**
Quarterly NPDES	February 15, May 15, August 15, and November 15
EPA Annual Progress Report	April 15

Notes:

Wells shown in **bold** are associated with the Fairchild Operation and Maintenance Program (RMT, 2003).

1. Regional Groundwater Remediation Program well gauged as part of a slurry wall well pair.
2. RW-2(B1) is a Fairchild extraction well that is monitored as part of the Regional Groundwater Remediation Program.
3. In cases of effluent exceedance, receiving water must be sampled upstream/downstream of treatment system within 24 hours for the exceeded compound(s) and dissolved oxygen level.
4. In cases of Cadmium, Chromium (total), Copper, Lead, Silver, or Zinc trigger exceedances, receiving water must be sampled upstream/downstream of treatment system for hardness and salinity on the same day as one of the three required resamples is taken (Per NPDES Permit CAG912003, Order No. R2-2009-0059, effective October 1, 2009).

EPA = United States Environmental Protection Agency

NPDES = National Pollutant Discharge Elimination System

(RGRP) = Regional Groundwater Remediation Program well. Further discussion of this well is provided in the MEW RGRP 2013 Annual Progress Report (Geosyntec, 2014a).

Slurry wall well pair water levels are measured on a quarterly basis.

Table 4
System 19 Monthly Average Recovery Well Flow Rates
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Extraction Well	2013 Average Monthly Flowrate[1] (gpm)											
	January	February	March	April	May	June	July	August	September	October	November	December
A Zone												
71A	5.56	5.25	5.09	4.93	3.94	3.81	2.97	4.41	4.75	3.82	3.65	4.18
RW-1A	5.46	5.69	5.91	6.13	5.26	5.86	5.33	5.58	4.65	4.67	4.30	3.90
RW-2A	8.69	8.69	8.52	8.96	7.99	9.36	8.48	9.35	8.22	8.80	8.74	8.78
RW-11A	2.73	2.89	2.81	2.94	2.82	3.20	3.11	3.76	3.20	3.25	3.07	3.14
RW-12A	5.17	4.80	4.57	4.47	3.65	3.73	3.16	2.81	1.89	2.01	1.84	1.75
RW-23A	12.02	11.61	11.44	12.01	10.41	11.42	11.25	12.51	10.63	11.80	11.75	11.07
RW-24A	3.67	3.68	3.65	3.84	3.22	3.71	3.55	3.61	3.00	3.16	3.14	3.28
RW-26A[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-29A	9.99	10.76	10.66	11.08	9.65	10.46	10.20	11.17	9.26	8.86	9.91	10.83
B1 Zone												
REG-4B(1) (RGRP)	6.74	6.57	6.49	6.79	5.80	6.47	6.09	6.74	5.74	6.17	5.92	5.96
RW-1(B1)[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-2(B1)	5.77	4.41	5.51	5.86	4.97	5.57	5.39	5.90	4.96	5.50	6.06	5.45
RW-10(B1)	13.81	13.43	13.39	14.27	12.51	13.82	13.41	14.92	12.88	14.12	13.53	14.25
RW-11(B1)	9.85	9.77	9.69	10.12	8.62	9.48	9.49	10.41	8.80	9.74	8.79	9.10
B2 Zone												
RW-1(B2)	0.27	0.28	0.29	0.30	0.27	0.30	0.28	0.31	0.26	0.28	0.28	0.28
RW-2(B2)	11.79	11.20	11.13	11.27	10.97	6.67	8.30	14.51	11.69	11.74	9.98	12.91
B3 Zone												
65B3 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
C/Deep Zone												
DW3-219 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-244 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-334 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-364 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-505R (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
Total	101.52	99.03	99.16	102.97	90.11	93.85	91.01	105.99	89.95	93.92	90.97	94.86

Notes:

1. Monthly average recovery well flow rates were calculated by dividing the volume of groundwater extracted by the time (minutes) between the effluent totalizer readings (generally taken last Wednesday of each month).

2. Well is offline with EPA approval (EPA, 2006; Weiss, 2009; Geosyntec, 2010; EPA, 2012).

gpm = gallons per minute

-- = well was off this month

EPA = United States Environmental Protection Agency

(RGRP) = Regional Groundwater Remediation Program well connected to System 19 for treatment. Further discussion of this well is provided in the MEW RGRP 2013 Annual Progress Report (Geosyntec, 2014a)

Table 5
System 19 Monthly Extraction Totals
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Extraction Well	2013 Monthly Volume Extracted[1] (gallons)											
	January	February	March	April	May	June	July	August	September	October	November	December
A Zone												
71A	288,476	196,464	205,202	248,543	164,570	164,398	136,910	184,254	191,430	192,734	142,011	204,551
RW-1A	283,023	213,080	238,490	308,940	219,834	253,218	245,593	232,997	187,376	235,398	166,991	191,068
RW-2A	450,592	325,272	343,332	451,455	333,781	404,442	390,848	390,352	331,592	443,298	339,811	429,647
RW-11A	141,701	108,382	113,419	148,257	117,931	138,254	143,410	157,132	129,116	163,594	119,273	153,690
RW-12A	267,756	179,787	184,437	225,272	152,624	161,258	145,553	117,410	76,373	101,310	71,583	85,671
RW-23A	623,026	434,531	461,279	605,436	434,853	493,128	518,316	522,537	428,584	594,731	456,786	541,789
RW-24A	190,354	137,694	147,097	193,504	134,589	160,403	163,583	150,787	121,085	159,290	122,234	160,493
RW-26A[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-29A	518,127	403,013	429,969	558,447	402,872	451,708	470,053	466,269	373,395	446,525	385,355	530,046
B1 Zone												
REG-4B(1) (RGRP)	349,181	245,982	261,538	342,457	242,323	279,450	280,834	281,449	231,541	311,183	230,280	291,922
RW-1(B1)[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-2(B1)	299,186	165,275	222,325	295,255	207,479	240,538	248,170	246,426	199,835	277,039	235,799	266,789
RW-10(B1)	715,824	502,715	539,795	719,328	522,490	597,203	617,785	623,233	519,409	711,765	526,216	697,805
RW-11(B1)	510,745	365,724	390,668	510,026	360,088	409,383	437,171	434,864	354,893	491,147	341,659	445,295
B2 Zone												
RW-1(B2)	13,917	10,345	11,584	15,109	11,381	12,802	13,026	12,776	10,467	14,093	10,940	13,689
RW-2(B2)	611,139	419,360	448,948	567,757	458,304	288,305	382,293	605,848	471,520	591,672	388,143	632,108
B3 Zone												
65B3 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
C/Deep Zone												
DW3-219 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-244 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-334 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-364 (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
DW3-505R (RGRP)[2]	--	--	--	--	--	--	--	--	--	--	--	--
Total[3]	5,133,600	3,816,300	4,140,950	5,347,500	3,902,890	4,200,285	4,387,175	4,294,950	4,052,300	5,007,200	3,736,700	4,962,050

Notes:

1. The monthly volume of groundwater extracted is based on effluent totalizer readings at each well (generally taken last Wednesday of each month).

2. Well is offline with EPA approval (EPA, 2006; Weiss, 2009; Geosyntec, 2010; EPA, 2012).

3. The total volume extracted is calculated from the system effluent meter, therefore the sum of the wells is not equal to the total volume reported. This discrepancy is attributed to inherent errors associated with comparing these two independently measured values.

-- = well was off this month

EPA = United States Environmental Protection Agency

(RGRP) = Regional Groundwater Remediation Program well connected to System 19 for treatment. Further discussion of this well is provided in the MEW RGRP 2013 Annual Progress Report (Geosyntec, 2014a)

Table 6a

System 19 VOC Sampling Results Summary

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Sample Location	Sample Date	Constituent (concentration in µg/L and method is 8260B)											
		Chloroform	**1,1-DCA**	**1,2-DCA**	**1,1-DCE**	**cis-1,2-DCE**	**trans-1,2-DCE**	**Freon 113**	**1,1,1-TCA**	**TCE**	**PCE**	**Vinyl Chloride**	**1,4-Dioxane**[1]
Influent	2/13/2013	<5.0	**4.2**	<2.5	**4.6**	**230**	**3.8**	14	**5.1**	**560**	<2.5	**3.8**	NA
Influent	3/7/2013	<5.0	**3.2**	<2.5	**3.8**	**210**	**2.8**	11	**3.8**	**530**	<2.5	**2.4**	NA
Influent (D)	3/7/2013	**0.30**	**3.9**	<0.50	**3.9**	**210**	**3.1**	13	**4.6**	**530**	**0.72**	**3.0**	NA
Influent	4/11/2013	<5.0	**3.7**	<2.5	**3.8**	**180**	**3.0**	12	**4.4**	**460**	<2.5	**2.6**	NA
Influent (D)	4/11/2013	<5.0	**3.2**	<2.5	**3.3**	**170**	**2.5**	10	**3.6**	**410**	<2.5	**2.1**	NA
Influent	5/9/2013	<5.0	**3.5**	<2.5	**4.7**	**190**	**3.0**	15	**4.8**	**550**	<2.5	**1.7**	NA
Influent	8/8/2013	**0.43**	**5.4**	<0.50	**6.0**	**180**	**4.4**	22	**7.0**	**570**	**0.72**	**4.6**	NA
Influent	11/12/2013	<20	<10	<10	**4.1**	**150**	**2.8**	14	**5.1**	**440**	<10	<10	NA
Influent (D)	11/12/2013	**0.34**	**5.1**	<0.50	**5.2**	**180**	**3.0**	20	**7.1**	**480**	**0.68**	**3.7**	NA
Midpoint 1	1/17/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.78**	NA
Midpoint 1	2/13/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 1	3/7/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 1	4/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1.2**	NA
Midpoint 1	5/9/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1.1**	NA
Midpoint 1	6/6/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.34**	NA
Midpoint 1(D)	6/6/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.31**	NA
Midpoint 1	7/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**2.2**	NA
Midpoint 1	8/8/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 1	9/26/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.93**	NA
Midpoint 1(D)	9/26/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.28**	**0.83**	NA
Midpoint 1	10/11/2013	<1.0	**0.19**	<0.50	<0.50	**0.11**	<0.50	<0.50	<0.50	<0.50	<0.50	**0.94**	NA
Midpoint 1	11/12/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.29**	NA
Midpoint 1	12/20/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.25**	NA
Midpoint 2	2/13/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 2	3/7/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 2	4/11/2013	<1.0	<0.50	<0.50	<0.50	**0.14**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 2	5/9/2013	<1.0	<0.50	<0.50	<0.50	**0.15**	<0.50	<0.50	<0.50	<0.50	<0.50	**0.61**	NA
Midpoint 2	6/6/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 2	7/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.23**	NA
NPDES Trigger Levels		*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*3*
Effluent Limitations:		*5*	*5*	*0.5*	*0.11*	*5*	*5*	*5*	*5*	*5*	*1.6*	*0.5*	*NE*

Table 6a

System 19 VOC Sampling Results Summary

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Sample Location	Sample Date	Constituent (concentration in µg/L and method is 8260B)											
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	1,1,1-TCA	TCE	PCE	Vinyl Chloride	1,4-Dioxane[1]
Midpoint 2	8/8/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 2	9/26/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.20**	NA
Midpoint 2	10/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.47**	NA
Midpoint 2	11/12/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Midpoint 2	12/20/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.41**	NA
Effluent	1/17/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	2/13/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	3/7/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	4/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	5/9/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	6/6/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	7/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	8/8/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	9/26/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	10/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	11/12/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	12/20/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	1/17/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	2/13/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	3/7/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	4/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	5/9/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	5/30/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	6/6/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	7/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	8/8/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	9/26/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	10/11/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Travel Blank	11/12/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
NPDES Trigger Levels		*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*3*
Effluent Limitations:		*5*	*5*	*0.5*	*0.11*	*5*	*5*	*5*	*5*	*5*	*1.6*	*0.5*	*NE*

Table 6a

System 19 VOC Sampling Results Summary

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Sample Location	Sample Date	Constituent (concentration in µg/L and method is 8260B)											
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	1,1,1-TCA	TCE	PCE	Vinyl Chloride	1,4-Dioxane[1]
Travel Blank	12/20/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
NPDES Trigger Levels		*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*3*
Effluent Limitations:		*5*	*5*	*0.5*	*0.11*	*5*	*5*	*5*	*5*	*5*	*1.6*	*0.5*	*NE*

Notes:

All Parameters are within effluent limits specified in NPDES permit order no. R2-2009-0059, NPDES permit no. CAG912003

(1) The NPDES permit requries semiannual sampling of 1,4-Dioxane if the chemical is known to be in the influent. In May 2011, the influent was sampled for 1,4-Dioxane. Because it was not detected, sampling the effluent for the chemical is not required. (Weiss, 2012)

In accordance with the NPDES permit, if reporting limit for 1,1-DCE is greater than the effluent limit, the permit specifies that non-detect using a 0.5 µg/L reporting limit will not be deemed to be out of compliance.

Effluent limitations are maximum daily effluent limitations on discharge to drinking water areas as specified in Order No. R2-2009-0059, VOC General NPDES Permit No. CAG912003.

1,1-DCA = 1,1-Dichloroethane
1,2-DCA = 1,2-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
Freon 113 = trichlorotrifluoroethane
trans-1,2-DCE = trans-1,2-Dichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
TCE = Trichloroethene

< indicates analyte not detected above the reported detection limit
NA indicates the sample was not analyzed for the given analyte
Midpoint 1 = sample collected between the primary and secondary carbon vessels
Midpoint 2 = sample collected between the secondary and tertiary carbon vessels
NE = Not Established
NPDES = National Pollutant Discharge Elimination System
µg/L = micrograms per liter
VOC = Volatile Organic Compound

Table 6b
System 19 Inorganic Sampling Results Summary
MEW Fairchild Building 13, 19, and 23 Groundwater Remediation Prgram
Mountain View, California

Sample Location	Sample Date	pH	Temp (°C)	Conductivity (µS/cm)	Turbidity (NTU)	Rainbow Trout Acute Toxicity[1] (% survival)	
						Three sample moving median	single sample
Influent	02/02/13	7.12	19.0	875	---	---	---
Influent	03/07/13	6.97	18.7	903			
Influent	04/11/13	7.00	18.4	728	---	---	---
Influent	05/09/13	7.17	19.2	966	---	---	---
Influent	08/08/13	7.00	19.2	805	---	---	---
Influent	11/12/13	6.93	19.3	712	---		---
Midpoint 1	01/17/13	7.02	18.8	686	---	---	---
Midpoint 1	02/13/13	7.06	18.8	869	---	---	---
Midpoint 1	03/07/13	6.91	18.5	915	---	---	---
Midpoint 1	04/11/13	6.97	18.4	727	---	---	---
Midpoint 1	05/09/13	7.19	19.4	965	---	---	---
Midpoint 1	06/06/13	6.97	19.2	924	---	---	---
Midpoint 1	07/11/13	6.93	19.2	799	---	---	---
Midpoint 1	08/08/13	6.92	19.2	807	---	---	---
Midpoint 1	09/26/13	6.97	19.0	656	---	---	---
Midpoint 1	10/11/13	7.11	18.1	743	---	---	---
Midpoint 1	11/12/13	6.89	19.1	710	---	---	---
Midpoint 1	12/20/13	6.97	19.0	898	---	---	---
Midpoint 2	02/13/13	6.94	19.3	865	---	---	---
Midpoint 2	03/07/13	6.92	18.2	914	---	---	---
Midpoint 2	04/11/13	6.88	18.4	723			
Midpoint 2	05/09/13	7.10	19.7	972			
Midpoint 2	06/06/13	6.99	19.0	914			
Midpoint 2	07/11/13	6.96	19.1	803			
Midpoint 2	08/08/13	7.01	19.3	804			
Midpoint 2	09/26/13	7.03	19.1	659			
Midpoint 2	10/11/13	7.15	18.0	740			
Midpoint 2	11/12/13	6.85	19.1	714	---	---	---
Midpoint 2	12/20/13	6.96	18.9	891	---	---	---
Effluent	01/17/13	7.08	18.4	684	---	---	---
Effluent	02/13/13	7.13	19.5	870	---	---	---
Effluent	03/07/13	6.75	17.6	919	---	---	---
Effluent	04/11/13	6.78	18.3	717	---	---	---
Effluent	05/09/13	7.36	20.7	1030	---		
Effluent	06/06/13	7.14	19.0	921	---		
Effluent	07/11/13	6.94	19.1	814	---	---	---
Effluent	08/08/13	7.17	19.1	805	---	---	---
Effluent	09/26/13	6.99	18.9	650	---	---	---
Effluent	10/11/13	7.11	17.8	781	---	---	---
Effluent	11/12/13	6.80	19.1	728	<0.1	---	---
Effluent	11/18/13 - 11/20/13	7.28/7.16	19.0/19.2	807/840	---	100	100
Effluent	12/20/13	7.13	18.3	885	---	---	---
NPDES Trigger Levels:		---	---	---	5	---	NE
Effluent Limitations:[2]		6.5 to 8.5	NE	NE	NE	NE	70.0

General Notes:
All parameters are within effluent limits specified in NPDES permit order no. R2-2009-0059, NPDES permit no. CAG912003
Per Order No. R2-2009-0059, VOC General NPDES Permit No. CAG912003, pH, temperature, electrical conductivity, and turbidity are now required to be reported on an annual basis but pH, temperature, and conductivity readings are reported more frequently. System effluent was analyzed for turbidity in November 2013.
Sampling for hardness and salinity is required in a single annual sample in the receiving water only if trigger levels for Cadmium, Chromium (total), Copper, Lead, Nickel, Silver, or Zinc are exceeded. System samples are analyzed for these metals, mercury, and cyanide every three years and sampling was performed in November 2012. The next triennial sampling will be conducted in November

Notes:
1. Rainbow trout acute toxicity, 96-hr static, percent survival. This analysis is required to be performed annually
2. Effluent limitation in system discharge as specified in Order No. R2-2009-0059, VOC General NPDES Permit CAG912003
--- = not applicable, not required
Temp = temperature
ºC = degrees Celsius
< indicates analyte not detected above the reported detection limi
µS/cm = micro Siemens per centimeter
NTU = nephelometric turbidity unit
µg/L = micrograms per Liter
NE = not established
NPDES = National Pollutant Discharge Elimination System
VOC = volatile organic compound

Table 7

System 19 VOC Mass Removal Summary

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

	Total Groundwater Extracted[1] (gallons)	Influent VOC Concentration[1,2] (mg/L)	Total VOC Mass Removed[1] (pounds)
January	5,133,600	0.83	35.3
February	3,816,300		26.2
March	4,140,950	0.77	26.5
April	5,347,500	0.64	28.4
May	3,902,890	0.77	25.1
June	4,200,285		27.0
July	4,387,175	0.80	29.2
August	4,294,950		28.6
September	4,052,300		27.0
October	5,007,200	0.66	27.5
November	3,736,700		20.6
December	4,962,050		27.3
2013 Cumulative[1]	52,981,900		328.8

Notes:

1. Total groundwater extracted, influent VOC concentrations, total VOC mass removed, and cumulative values were obtained from the NPDES quarterly reports (Weiss, 2013a,b,c and 2014).

2. Influent samples are analyzed at least one time per quarter for System 19.

mg/L = milligrams per liter

NPDES = National Pollutant Discharge Elimination System

VOC = Volatile Organic Compound

Table 8

Summary of 2013 Non-Routine Maintenance and Operational Activities for System 19

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Date	Component	Off-line Time	Event/Alert	Diagnosis and Response	Regulatory Notification[1]
January 4 - 7, 2013	RW-11A, RW-29A	72 hours, non-consecutive	Wells cycled off with no alert.	Wires in the underground conduit were damaged. The damaged wires were replaced, and the wells were restarted. At no time were the wells offline for 72 consecutive hours.	Not Required
January 7, 2013	Treatment System	3 hours	Planned manual shutdown.	System was shut down to pull new wires for RW-11A and RW-29A. System was restarted.	Not Required
January 23 - 30, 2013	RW-1(B2)	92 hours, non-consecutive	Well cycled off multiple times with no alerts.	Pump saver was replaced and well was restarted. At no time was the well offline for 72 consecutive hours.	Not Required
January 31 - February 1, 2013	RW-1(B2)	13 hours	Well cycled off with no alert.	Sections of wire in the underground conduit were replaced and well was restarted.	Not Required
February 1, 2013	Treatment System	2 hours	Planned manual shutdown.	System was shut down to replace a section of wires in the underground conduit. System was restarted.	Not Required
February 5 - 7, 2013	RW-1(B2)	50 hours	Well cycled off with no alert.	The circuit control was replaced and the well was restarted.	Not Required
February 7, 2013	Treatment System	2 hours	Planned manual shutdown.	System was shut down to troubleshoot RW-1(B2). System was restarted.	Not Required
February 14 - 15, 2013	RW-1(B2)	31 hours	Well cycled off with no alert.	Well was restarted.	Not Required
February 19 - 20, 2013	Treatment System, RW-29A	13 hours	Multiple vault high level alerts.	Alert was triggered by rain. The water drained from the vault, and the system was restarted.	Not Required
February 21, 2013	Treatment System	1 hour	Planned manual shutdown.	System was shut down to troubleshoot RW-1(B2). The power cables in the well need to be replaced. System was restarted. Access to replace the power cables was coordinated with site security for March 5, 2013.	Not Required
February 21 - 26, 2013	RW-2(B1)	119 hours	Well cycled off with no alert.	A wiring connection in an electrical vault failed. The failed connection was replaced and the well was restarted.	EPA notification was made on February 25, 2013
February 25 - 28, 2013	RW-1(B2)	58 hours	Well cycled off multiple times with no alert.	Well was restarted multiple times. The power cable replacement was conducted on March 5, 2013.	Not Required
March 1 - 4, 2013	Treatment System, LDV-04	15 hours	Multiple leak detect vault high level alerts.	Wires in the underground conduit were corroded. The damaged wires were replaced and the system was restarted.	Not Required
March 5, 2013	RW-1(B2)	3 hours	Planned manual shutdown.	Well was shut off to replace pump, motor, and power cables. Well was restarted.	Not Required
March 5 - 6, 2013	Treatment System, LDV-01	12 hours	Leak detect vault high level alert.	Float switch failed. Switch was replaced and system was restarted.	Not Required
March 7 - 8, 2013	Treatment System, RW-29A	9 hours	Vault high level alert.	Alert was triggered by rain. The water drained from the vault and the system was restarted.	Not Required
April 18 - 23, 2013	Treatment System, LDV-01	14 hours, non-consecutive	Multiple leak detect vault high level alerts.	Wire splices in an electrical vault were replaced and the system was restarted. Wires were replaced on May 1, 2013.	Not Required
May 1, 2013	Treatment System, LDV-01	4 hours	Planned manual shutdown.	System was shut down to replace wires in the underground conduit and system was restarted. More wires were replaced on May 7, 2013.	Not Required
May 2 - 3, 2013	Treatment System, LDV-01	15 hours	Leak detect vault high level alert.	System was restarted. Wires were replaced on May 7, 2013.	Not Required
May 7, 2013	Treatment System, LDV-01	6 hours	Planned manual shutdown.	System was shut down to replace wires in the underground conduit. System was restarted.	Not Required

Table 8
Summary of 2013 Non-Routine Maintenance and Operational Activities for System 19
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Date	Component	Off-line Time	Event/Alert	Diagnosis and Response	Regulatory Notification[1]
May 8, 2013	Treatment System, RW-11A	4 hours	Planned manual shutdown.	System was shut down for a pump replacement at RW-11A. System was restarted.	Not Required
May 11 - 13, 2013	Treatment System, RW-23A	35 hours	Vault high level alert.	Alert set off by irrigation water. Water was pumped out and system was restarted.	Not Required
May 29, 2013	Treatment System, LDV-04	12 hours	Leak detect vault high level alert.	System was restarted. Wires were replaced on June 4, 2013.	Not Required
June 4, 2013	Treatment System, LDV-04	8 hours	Planned manual shutdown.	System was shut down to replace wires in the underground conduit. System was restarted.	Not Required
June 9 - 21, 2013	RW-2(B2)	117 hours, non-consecutive	Multiple alerts.	Flow transmitter was replaced on June 21, 2013 and well was restarted.	Not Required
June 10, 2013	RW-11A	12 hours	Well cycled off without an alert.	Well was restarted on June 11, 2013.	Not Required
June 10 - 11, 2013	Treatment System, LDV-01	8 hours	Leak detect vault high level alert.	Alert was reset and system was restarted. Troubleshooting is scheduled for June 14, 2013.	Not Required
June 12 - 14, 2013	Treatment System, LDV-01 LDV-04	21 hours	Multiple leak detect vault high level alerts.	Wiring in both vaults were reconfigured and system was restarted.	Not Required
June 23 - 24, 2013	RW-11(B1)	26 hours	Well cycled off with no alert.	The circuit breaker tripped. Breaker was reset and well was restarted.	Not Required
June 25 - 26, 2013	Treatment System, LDV-10	2 hours	Planned manual shutdown.	System was shut down to service LDV-10. System was restarted.	Not Required
June 29 - July 2, 2013	Treatment System, REG-4B(1) LDV-04	54 hours, non-consecutive	Multiple vault high level alerts.	Alerts were set off by irrigation water. Water was pumped out and system was restarted. The landscaping company was notified, and the irrigation system was reprogrammed.	Not Required
July 3, 2013	Treatment System, REG-4B(1)	8 hours	Vault high level alert.	Alerts were set off by irrigation water. Water was pumped out and system was restarted.	Not Required
July 15 - 17, 2013	RW-2(B2)	43 hours	Well cycled off without an alert.	Pump saver settings were adjusted and well was restarted.	Not Required
August 1, 2013	71A	2 hours	Planned manual shutdown.	Well was shut down to replace the pump. Well was restarted.	Not Required
August 2, 2013	RW-2(B1)	7 hours	Vault high level alert.	Alert was triggered by irrigation water. The water was pumped out, the vault was sealed, and the system was restarted.	Not Required
August 27, 2013	71A	2 hours	Low flow alert.	The flow meter paddle wheel was cleaned and the well was restarted.	Not Required
September 15 - 16, 2013	Treatment System, REG-4B(1)	22 hours	Vault high level alert.	Alert was set off by irrigation water. Water was pumped out, vault was sealed, and well was restarted.	Not Required
October 10, 2013	Treatment System, REG-4B(1)	5 hours	Vault high level alert.	Alert was set off by irrigation water. Water was pumped out, and system was restarted.	Not Required
October 12 - 14, 2013	RW-29A	52 hours	Pump fault alert.	Well was restarted	Not Required
October 17 - 21, 2013	RW-29A	35 hours, non-consecutive	Well cycled off without alert multiple times.	Pump saver was reprogrammed and well was restarted.	Not Required
October 28 - 30, 2013	RW-29A	56 hours	Well cycled off without alert.	Pump saver was reprogrammed and well was restarted.	Not Required
October 31, 2013	Treatment System	1 hour	Planned manual shutdown.	System was shut down as a safety precaution to troubleshoot electrical equipment.	Not Required
October 31 – November 1, 2013	RW-10(B1)	29 hours	Well cycled off without alert.	Electrical components in the vault were damaged. New wiring and a new switch were installed and well was restarted.	Not Required
October 31 – November 1, 2013	RW-11(B1)	20 hours	Pump fault alert.	Well was restarted.	Not Required

Table 8

Summary of 2013 Non-Routine Maintenance and Operational Activities for System 19

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Date	Component	Off-line Time	Event/Alert	Diagnosis and Response	Regulatory Notification[1]
November 6 - 8, 2013	RW-29A	41 hours	Pump fault alert.	Pump saver was reprogrammed and well was restarted.	Not Required
November 8, 2013	Treatment System, RW-29A	<1 hour	Planned manual shutdown.	System was shut down to troubleshoot RW-29A. System was restarted.	Not Required
November 8, 2013	RW-2(B1)	<1 hour	Low flow alert.	Electrical connections for the flow meter were faulty. The connections were repaired and the well was restarted.	Not Required
November 20, 2013	RW-12A	3 hours	Low flow alert	Well was restarted.	Not Required
November 21, 2013	Treatment System	5 hours	Planned manual shutdown.	System was shut down for contractor's work on the electrical infrastructure. System was restarted.	Not Required
November 27, 2013	RW-2(B2)	1 hour	Low flow alert.	Flow meter paddle wheel was broken. The paddle wheel was replaced and the well was restarted.	Not Required
December 9 – 10, 2013	RW-1(B2)	9 hours	Multiple low flow alerts.	Flow meter paddle wheel fouled. The paddle wheel was cleaned and the well was restarted.	Not Required
December 12, 2013	RW-1(B2)	1 hour	Low flow alert.	Well was restarted.	Not Required
December 23, 2013	RW-12A	19 hours	Multiple low flow alerts.	Flow meter paddle wheel fouled. The paddle wheel was cleaned, and the well was restarted.	Not Required

Notes:

1. The EPA is required to be notified if the treatment system or an extraction well is shut down for 72 consecutive hours. The Water Board is required to be notified if the treatment system is shut down for more than 120 consecutive hours.

EPA = U.S. Environmental Protection Agency

Table 9

Groundwater Elevations, January through December 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Well ID	TOC Elevation (ft msl)	21 March 2013		19 September 2013	
		Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)	Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)
A Zone					
4A	54.69	14.47	40.22	15.30	39.39
6A	54.74	14.36	40.38	15.19	39.55
9A	55.82	16.27	39.55	17.00	38.82
12A	55.11	16.17	38.94	16.97	38.14
15A	54.06	15.34	38.72	16.00	38.06
16A	53.30	13.75	39.55	14.50	38.80
17A	53.40	14.43	38.97	15.24	38.16
22A	52.87	18.57	34.30	19.28	33.59
23A	50.56	16.20	34.36	16.85	33.71
71A	55.15	18.99	36.16	20.01	35.14
101A	55.14	14.04	41.10	14.88	40.26
115A	53.48	16.25	37.23	17.04	36.44
134A	53.44	15.15	38.29	15.83	37.61
139A	53.21	14.81	38.40	15.39	37.82
140A	56.99	13.19	43.80	13.65	43.34
141A	53.25	9.58	43.67	10.02	43.23
143A	55.72	15.76	39.96	16.61	39.11
148A	53.92	15.11	38.81	15.91	38.01
149A	51.90	17.64	34.26	18.22	33.68
154A	53.90	19.32	34.58	19.97	33.93
155A	54.17	15.78	38.39	16.45	37.72
159A	54.62	16.07	38.55	16.86	37.76
160A	53.89	19.48	34.41	20.15	33.74
161A	56.15	16.36	39.79	17.28	38.87
174A	53.70	15.35	38.35	16.01	37.69
175A	53.86	19.10	34.76	19.78	34.08
RW-1A	53.71	25.65	28.06	27.40	26.31
RW-2A	49.42	19.10	30.32	17.02	32.40
RW-11A	54.87	16.36	38.51	17.23	37.64
RW-12A	53.96	15.11	38.85	16.28	37.68
RW-23A	52.75	20.45	32.30	21.21	31.54
RW-24A	50.15	17.16	32.99		NA
RW-26A	53.51	13.36	40.15	13.13	40.38
RW-29A	48.18	28.21	19.97	27.70	20.48
B1 Zone					
93B1	55.27	12.52	42.75	13.62	41.65
95B1	56.95		NA	15.56	41.39
101B1	54.92	12.41	42.51	13.40	41.52
110B1	53.68	14.71	38.97	15.62	38.06
117B1	53.80	16.30	37.50	17.23	36.57
145B1	54.00	15.30	38.70	16.05	37.95
156B1	50.91	12.58	38.33	13.37	37.54
RW-1(B1)	52.40	14.27	38.13	15.20	37.20
RW-2(B1) (RGRP)	48.18	12.23	35.95	12.75	35.43
RW-10(B1)	52.40	21.26	31.14	22.75	29.65
RW-11(B1)	50.43	18.36	32.07	18.98	31.45

Table 9

Groundwater Elevations, January through December 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Well ID	TOC Elevation (ft msl)	21 March 2013		19 September 2013	
		Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)	Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)
B2 Zone					
40B2 (RGRP)	54.59	24.52	30.07	29.92	24.67
90B2	54.18	11.56	42.62	12.97	41.21
146B2	53.58		NA	18.30	35.28
RW-1(B2)	53.49	72.38	-18.89	74.33	-20.84
RW-2(B2)	48.95	19.12	29.83	20.81	28.14

Notes:
93B1 and 146B2 was not gauged on 21 March 2013 becuase a car was parked over the well.
RW-24A was not gauged on 19 September 2013 because the vault could not be opened.
TOC = Top of Casing
BTOC = Below Top of Casing
ft msl = Feet Mean Sea Level
NA = Not Available
(RGRP) = Regional Groundwater Remediation Program Well associated with the Fairchild Operation and Maintenance Program (RMT, 2003)

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2009 through December 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Date	Well ID (Outside)	Groundwater Elevation (ft msl)	Well ID (Inside)	Groundwater Elevation (ft msl)	Difference	Flow Direction
Southern Wall - Upgradient Well Pairs						
3/26/2009	140A	44.03	101A	40.52	3.51	Inward
5/21/2009	140A	44.25	101A	42.26	1.99	Inward
8/27/2009	140A	43.54	101A	41.14	2.40	Inward
11/19/2009	140A	43.14	101A	40.73	2.41	Inward
3/25/2010	140A	44.32	101A	42.25	2.07	Inward
5/27/2010	140A	44.13	101A	41.69	2.44	Inward
8/26/2010	140A	43.88	101A	41.26	2.62	Inward
11/18/2010	140A	43.76	101A	40.93	2.83	Inward
3/24/2011	140A	45.23	101A	42.23	3.00	Inward
5/26/2011	140A	41.94	101A	30.84	11.10	Inward
9/15/2011	140A	44.40	101A	41.40	3.00	Inward
11/10/2011	140A	44.14	101A	41.01	3.13	Inward
3/15/2012	140A	43.89	101A	40.93	2.96	Inward
5/24/2012	140A	44.04	101A	40.99	3.05	Inward
9/20/2012	140A	43.38	101A	40.27	3.11	Inward
11/21/2012	140A	43.00	101A	39.90	3.10	Inward
3/21/2013	140A	43.80	101A	41.10	2.70	Inward
5/16/2013	140A	44.24	101A	41.34	2.90	Inward
9/19/2013	140A	43.34	101A	40.26	3.08	Inward
11/25/2013	140A	42.94	101A	39.58	3.36	Inward
3/26/2009	142A	44.59	143A	41.27	3.32	Inward
5/21/2009	142A	44.85	143A	36.85	8.00	Inward
8/27/2009	142A	44.20	143A	40.67	3.53	Inward
11/19/2009	142A	42.75	143A	40.21	2.54	Inward
3/25/2010	142A	43.77	143A	41.93	1.84	Inward
5/27/2010	142A	43.49	143A	41.78	1.71	Inward
8/26/2010	142A	44.80	143A	40.81	3.99	Inward
11/18/2010	142A	44.39	143A	40.18	4.21	Inward
3/24/2011	142A	45.82	143A	43.64	2.18	Inward
5/26/2011	142A	29.99	143A	36.76	-6.77	Outward
9/15/2011	142A	45.08	143A	40.66	4.42	Inward
11/10/2011	142A	44.79	143A	40.21	4.58	Inward
3/15/2012	142A	44.56	143A	39.97	4.59	Inward
5/24/2012	142A	44.67	143A	40.37	4.30	Inward
9/20/2012	142A	43.96	143A	39.25	4.71	Inward
11/21/2012	142A	43.61	143A	38.56	5.05	Inward
3/21/2013	142A	44.58	143A	39.96	4.62	Inward
5/16/2013	142A	44.83	143A	40.60	4.23	Inward
9/19/2013	142A	43.99	143A	39.11	4.88	Inward
11/25/2013	142A	43.39	143A	38.32	5.07	Inward
Western Wall - Crossgradient Well Pairs						
3/26/2009	17A	39.56	159A	41.23	-1.67	Outward
5/21/2009	17A	39.79	159A	40.90	-1.11	Outward
8/27/2009	17A	38.80	159A	39.77	-0.97	Outward
11/19/2009	17A	38.37	159A	39.30	-0.93	Outward
3/25/2010	17A	39.80	159A	40.89	-1.09	Outward

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2009 through December 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Date	Well ID (Outside)	Groundwater Elevation (ft msl)	Well ID (Inside)	Groundwater Elevation (ft msl)	Difference	Flow Direction
5/27/2010	17A	39.69	159A	40.76	-1.07	Outward
8/26/2010	17A	39.38	159A	39.86	-0.48	Outward
11/18/2010	17A	38.69	159A	38.95	-0.26	Outward
3/24/2011	17A	40.62	159A	41.08	-0.46	Outward
5/26/2011	17A	26.60	159A	39.60	-13.00	Outward
9/15/2011	17A	39.25	159A	39.50	-0.25	Outward
11/10/2011	17A	38.97	159A	39.04	-0.07	Outward
3/15/2012	17A	38.83	159A	38.70	0.13	Inward
5/24/2012	17A	38.85	159A	38.74	0.11	Inward
9/20/2012	17A	38.18	159A	37.91	0.27	Inward
11/21/2012	17A	37.89	159A	37.63	0.26	Inward
3/21/2013	17A	38.97	159A	38.55	0.42	Inward
5/16/2013	17A	39.15	159A	38.95	0.20	Inward
9/19/2013	17A	38.16	159A	37.76	0.40	Inward
11/25/2013	17A	37.58	159A	36.98	0.60	Inward
Eastern Wall - Crossgradient Well Pairs						
3/26/2009	141A	43.63	139A	39.76	3.87	Inward
5/21/2009	141A	43.81	139A	41.15	2.66	Inward
8/27/2009	141A	43.35	139A	39.91	3.44	Inward
11/19/2009	141A	43.10	139A	39.41	3.69	Inward
3/25/2010	141A	43.80	139A	41.09	2.71	Inward
5/27/2010	141A	43.25	139A	40.81	2.44	Inward
8/26/2010	141A	43.38	139A	39.99	3.39	Inward
11/18/2010	141A	43.57	139A	39.10	4.47	Inward
3/24/2011	141A	44.56	139A	41.72	2.84	Inward
5/26/2011	141A	30.64	139A	40.72	-10.08	Outward
9/15/2011	141A	47.09	139A	39.46	7.63	Inward
11/10/2011	141A	43.92	139A	38.93	4.99	Inward
3/15/2012	141A	43.68	139A	38.67	5.01	Inward
5/24/2012	141A	43.80	139A	38.81	4.99	Inward
9/20/2012	141A	43.32	139A	37.98	5.34	Inward
11/21/2012	141A	43.01	139A	37.19	5.82	Inward
3/21/2013	141A	43.67	139A	38.40	5.27	Inward
5/16/2013	141A	43.83	139A	39.06	4.77	Inward
9/19/2013	141A	43.23	139A	37.82	5.41	Inward
11/25/2013	141A	42.78	139A	37.00	5.78	Inward
Northern Wall - Downgradient Well Pairs						
3/26/2009	115A	38.22	134A	40.30	-2.08	Outward
5/21/2009	115A	38.23	134A	40.61	-2.38	Outward
8/27/2009	115A	37.43	134A	39.42	-1.99	Outward
11/19/2009	115A	37.07	134A	39.01	-1.94	Outward
3/25/2010	115A	38.43	134A	40.59	-2.16	Outward
5/27/2010	115A	38.22	134A	40.53	-2.31	Outward
8/26/2010	115A	37.91	134A	39.44	-1.53	Outward
11/18/2010	115A	37.11	134A	38.64	-1.53	Outward
3/24/2011	115A	39.04	134A	41.07	-2.03	Outward

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2009 through December 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Date	Well ID (Outside)	Groundwater Elevation (ft msl)	Well ID (Inside)	Groundwater Elevation (ft msl)	Difference	Flow Direction
5/26/2011	115A	28.41	134A	25.31	3.10	Inward
9/15/2011	115A	37.55	134A	39.14	-1.59	Outward
11/10/2011	115A	37.27	134A	38.72	-1.45	Outward
3/15/2012	115A	37.10	134A	38.41	-1.31	Outward
5/24/2012	115A	37.12	134A	38.52	-1.40	Outward
9/20/2012	115A	36.46	134A	37.69	-1.23	Outward
11/21/2012	115A	36.17	134A	37.21	-1.04	Outward
3/21/2013	115A	37.23	134A	38.29	-1.06	Outward
5/16/2013	115A	37.43	134A	38.72	-1.29	Outward
9/19/2013	115A	36.44	134A	37.61	-1.17	Outward
11/25/2013	115A	35.98	134A	36.60	-0.62	Outward
3/26/2009	154A	35.68	155A	40.71	-5.03	Outward
5/21/2009	154A	35.57	155A	41.08	-5.51	Outward
8/27/2009	154A	34.85	155A	39.87	-5.02	Outward
11/19/2009	154A	34.56	155A	39.34	-4.78	Outward
3/25/2010	154A	35.84	155A	41.04	-5.20	Outward
5/27/2010	154A	35.72	155A	40.93	-5.21	Outward
8/26/2010	154A	35.21	155A	40.07	-4.86	Outward
11/18/2010	154A	34.61	155A	39.04	-4.43	Outward
3/24/2011	154A	36.40	155A	41.36	-4.96	Outward
5/26/2011	154A	33.77	155A	39.21	-5.44	Outward
9/15/2011	154A	34.99	155A	39.36	-4.37	Outward
11/10/2011	154A	34.65	155A	38.83	-4.18	Outward
3/15/2012	154A	34.47	155A	38.58	-4.11	Outward
5/24/2012	154A	34.60	155A	38.72	-4.12	Outward
9/20/2012	154A	33.91	155A	37.91	-4.00	Outward
11/21/2012	154A	33.65	155A	37.13	-3.48	Outward
3/21/2013	154A	34.58	155A	38.39	-3.81	Outward
5/16/2013	154A	34.72	155A	38.95	-4.23	Outward
9/19/2013	154A	33.93	155A	37.72	-3.79	Outward
11/25/2013	154A	33.50	155A	36.92	-3.42	Outward
Vertical Gradient Well Pairs						
3/26/2009	110B1	39.96	134A	40.30	-0.34	Downward
5/21/2009	110B1	40.04	134A	40.61	-0.57	Downward
8/27/2009	110B1	39.08	134A	39.42	-0.34	Downward
11/19/2009	110B1	38.66	134A	39.01	-0.35	Downward
3/25/2010	110B1	40.15	134A	40.59	-0.44	Downward
5/27/2010	110B1	39.68	134A	40.53	-0.85	Downward
8/26/2010	110B1	39.10	134A	39.44	-0.34	Downward
11/18/2010	110B1	38.79	134A	38.64	0.15	Upward
3/24/2011	110B1	40.78	134A	41.07	-0.29	Downward
5/26/2011	110B1	30.02	134A	25.31	4.71	Upward
9/15/2011	110B1	39.32	134A	39.14	0.18	Upward
11/10/2011	110B1	38.98	134A	38.72	0.26	Upward
3/15/2012	110B1	38.80	134A	38.41	0.39	Upward
5/24/2012	110B1	38.97	134A	38.52	0.45	Upward
9/20/2012	110B1	38.03	134A	37.69	0.34	Upward

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2009 through December 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Date	Well ID (Outside)	Groundwater Elevation (ft msl)	Well ID (Inside)	Groundwater Elevation (ft msl)	Difference	Flow Direction
11/21/2012	110B1	37.65	134A	37.21	0.44	Upward
3/21/2013	110B1	38.97	134A	38.29	0.68	Upward
5/16/2013	110B1	39.08	134A	38.72	0.36	Upward
9/19/2013	110B1	38.06	134A	37.61	0.45	Upward
11/25/2013	110B1	37.44	134A	36.60	0.84	Upward
3/26/2009	117B1	40.59	12A	40.95	-0.36	Downward
5/21/2009	117B1	40.78	12A	42.40	-1.62	Downward
8/27/2009	117B1	39.75	12A	41.79	-2.04	Downward
11/19/2009	117B1	39.35	12A	39.61	-0.26	Downward
3/25/2010	117B1	40.77	12A	41.25	-0.48	Downward
5/27/2010	117B1	40.24	12A	41.12	-0.88	Downward
8/26/2010	117B1	39.80	12A	42.10	-2.30	Downward
11/18/2010	117B1	38.61	12A	39.25	-0.64	Downward
3/24/2011	117B1	40.72	12A	41.79	-1.07	Downward
5/26/2011	117B1	27.70	12A	28.84	-1.14	Downward
9/15/2011	117B1	39.04	12A	39.77	-0.73	Downward
11/10/2011	117B1	38.70	12A	39.33	-0.63	Downward
3/15/2012	117B1	38.45	12A	39.13	-0.68	Downward
5/24/2012	117B1	38.60	12A	39.22	-0.62	Downward
9/20/2012	117B1	36.58	12A	38.30	-1.72	Downward
11/21/2012	117B1	36.15	12A	38.68	-2.53	Downward
3/21/2013	117B1	37.50	12A	38.94	-1.44	Downward
5/16/2013	117B1	37.65	12A	39.41	-1.76	Downward
9/19/2013	117B1	36.57	12A	38.14	-1.57	Downward
11/25/2013	117B1	35.91	12A	38.30	-2.39	Downward
3/26/2009	93B1	43.31	101A	40.52	2.79	Upward
5/21/2009	93B1	43.47	101A	42.26	1.21	Upward
8/27/2009	93B1	42.42	101A	41.14	1.28	Upward
11/19/2009	93B1	41.99	101A	40.73	1.26	Upward
3/25/2010	93B1	43.53	101A	42.25	1.28	Upward
5/27/2010	93B1	43.52	101A	41.69	1.83	Upward
8/26/2010	93B1	42.61	101A	41.26	1.35	Upward
11/18/2010	93B1	42.35	101A	40.93	1.42	Upward
3/24/2011	93B1	44.37	101A	42.23	2.14	Upward
5/26/2011	93B1	32.18	101A	30.84	1.34	Upward
9/15/2011	93B1	42.28	101A	41.40	0.88	Upward
11/10/2011	93B1	42.77	101A	41.01	1.76	Upward
3/15/2012	93B1	42.55	101A	40.93	1.62	Upward
5/24/2012	93B1	42.67	101A	40.99	1.68	Upward
9/20/2012	93B1	41.66	101A	40.27	1.39	Upward
11/21/2012	93B1	41.25	101A	39.90	1.35	Upward
3/21/2013	93B1	42.75	101A	41.10	1.65	Upward
5/16/2013	93B1	42.87	101A	41.34	1.53	Upward
9/19/2013	93B1	41.65	101A	40.26	1.39	Upward
11/25/2013	93B1	40.96	101A	39.58	1.38	Upward
3/26/2009	98B1	41.35	15A	40.87	0.48	Upward
5/21/2009	98B1	41.51	15A	41.15	0.36	Upward

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2009 through December 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Date	Well ID (Outside)	Groundwater Elevation (ft msl)	Well ID (Inside)	Groundwater Elevation (ft msl)	Difference	Flow Direction
8/27/2009	98B1	40.60	15A	39.99	0.61	Upward
11/19/2009	98B1	40.20	15A	39.51	0.69	Upward
3/25/2010	98B1	41.57	15A	41.11	0.46	Upward
5/27/2010	98B1	41.00	15A	41.02	-0.02	Downward
8/26/2010	98B1	40.86	15A	40.29	0.57	Upward
11/18/2010	98B1	40.32	15A	39.31	1.01	Upward
3/24/2011	98B1	42.32	15A	41.41	0.91	Upward
5/26/2011	98B1	31.02	15A	26.83	4.19	Upward
9/15/2011	98B1	40.97	15A	39.64	1.33	Upward
11/10/2011	98B1	40.61	15A	39.14	1.47	Upward
3/15/2012	98B1	40.38	15A	38.91	1.47	Upward
5/24/2012	98B1	40.55	15A	39.01	1.54	Upward
9/20/2012	98B1	39.43	15A	38.20	1.23	Upward
11/21/2012	98B1	39.21	15A	37.46	1.75	Upward
3/21/2013	98B1	40.52	15A	38.72	1.80	Upward
5/16/2013	98B1	40.70	15A	39.30	1.40	Upward
9/19/2013	98B1	39.57	15A	38.06	1.51	Upward
11/25/2013	98B1	39.00	15A	37.30	1.70	Upward
3/26/2009	RW-1(B1)	40.39	159A	41.23	-0.84	Downward
5/21/2009	RW-1(B1)	40.47	159A	40.90	-0.43	Downward
8/27/2009	RW-1(B1)	39.53	159A	39.77	-0.24	Downward
11/19/2009	RW-1(B1)	39.58	159A	39.30	0.28	Upward
3/25/2010	RW-1(B1)	40.58	159A	40.89	-0.31	Downward
5/27/2010	RW-1(B1)	40.44	159A	40.76	-0.32	Downward
8/26/2010	RW-1(B1)	39.62	159A	39.86	-0.24	Downward
11/18/2010	RW-1(B1)	39.30	159A	38.95	0.35	Upward
3/24/2011	RW-1(B1)	41.39	159A	41.08	0.31	Upward
5/26/2011	RW-1(B1)	29.84	159A	39.60	-9.76	Downward
9/15/2011	RW-1(B1)	39.93	159A	39.50	0.43	Upward
11/10/2011	RW-1(B1)	37.99	159A	39.04	-1.05	Downward
3/15/2012	RW-1(B1)	37.89	159A	38.70	-0.81	Downward
5/24/2012	RW-1(B1)	38.05	159A	38.74	-0.69	Downward
9/20/2012	RW-1(B1)	37.15	159A	37.91	-0.76	Downward
11/21/2012	RW-1(B1)	36.74	159A	37.63	-0.89	Downward
3/21/2013	RW-1(B1)	38.13	159A	38.55	-0.42	Downward
5/16/2013	RW-1(B1)	38.16	159A	38.95	-0.79	Downward
9/19/2013	RW-1(B1)	37.20	159A	37.76	-0.56	Downward
11/25/2013	RW-1(B1)	36.55	159A	36.98	-0.43	Downward

Notes:
ft msl = Feet Mean Sea Level

Table 11

Calculation of Predicted Capture Widths Based on Combined Flow Rate

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program

Mountain View, California

Parameter	A Zone[1]	A Zone Slurry Wall[2]	B1 Zone[1]	B2 Zone[1]
Q = Combined pumping rate (gpm)	12.2	37.7	28.7	11.3
b = saturated aquifer thickness (ft)	15	15	25	35
i = regional hydraulic gradient (ft/ft)	0.004	0.004	0.003	0.004
K = hydraulic conductivity (ft/day)[3]	40	40	40	5
Calculated Capture Width (ft) = Q/(K x b x i)	1000	3000	1800	3100
Measured plume width at widest point (ft)[4]	662	630	662	662

Notes:

1. The combined pumping rate equals the summed average 2013 flow rates of all extraction wells located within the Fairchild Building 13, 19, and 23 Site that are outside the slurry wall
2. The combined pumping rate equals the summed average 2013 flow rates of all extraction wells located within the Fairchild Building 13, 19, and 23 Site slurry wall
3. Hydraulic conductivity values used for each aquifer zone are from the numerical model included as Appendix B to the 2008 Optimization Report
4. Measured plume width at widest point is not continued past Site boundaries, Site width is approximately 662 feet

1 cubic foot = 7.48 gallons

1 day = 1440 minutes

gpm = gallons per minute; ft = feet

Assumptions:

1. Homogeneous, isotropic, confined aquifer of infinite extent
2. Uniform regional horizontal hydraulic gradient
3. No net recharge (or net recharge is accounted for in the regional hydraulic gradient)
4. Uniform aquifer thickness
5. Fully penetrating extraction well
6. Steady-state flow
7. Negligible vertical gradient

Table 12
VOC Analytical Results
Five Year Summary, January 2009 through December 2013
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Sample Location	Sample Date	Constituent (concentration in µg/L and method is 8260B)											
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
A Zone													
4A	11/6/2009	<83	**350**	<42	**470**	**6800**	<42	<170	<1700	<42	<42	**11000**	**240**
4A	11/10/2010	<10	**13**	<5.0	**37**	**80**	<5.0	**24**	<20	<5.0	**5.9**	**950**	**5.1**
4A	9/28/2011	<71	**52**	<36	**100**	**660**	<36	<140	<140	<36	<36	**4000**	**46**
4A	10/23/2012	<1.0	**60**	<0.50	**91**	**1200**	**5.5**	**49**	<5.0	<0.50	**14**	**4400**	**36**
4A	9/27/2013	<1.0	**61**	<0.50	**120**	**4800**	**12**	**47**	<5.0	<0.50	**11**	**4600**	**35**
6A	9/24/2012	<1.0	**2.5**	<0.50	**10**	**64**	**0.70**	<0.50	<5.0	<0.50	<0.50	**290**	<0.50
9A	9/21/2012	<1.0	**6.2**	<0.50	**5.0**	**310**	**1.2**	<0.50	<5.0	<0.50	<0.50	**10**	**13**
12A	10/4/2012	<1.0	**5.9**	<0.50	**5.6**	**1700**	**23**	**11**	<5.0	**1.1**	**0.81**	**2000**	**37**
15A	9/24/2012	<1.0	**2.5**	<0.50	**1.6**	**21**	**0.56**	**0.55**	<5.0	<0.50	<0.50	**71**	<0.50
16A	11/2/2009	<1.0	<0.5	<0.5	<0.5	**2.9**	<0.5	<2.0	<20	<0.5	<0.5	**64**	<0.5
16A	11/3/2010	<1.0	<0.5	<0.5	<0.5	**2.6**	<0.5	<2.0	<2.0	<0.5	<0.5	**56**	<0.5
16A	9/27/2011	<1.0	<0.5	<0.5	<0.5	**1.6**	<0.5	<2.0	<2.0	<0.5	<0.5	**50**	<0.5
16A	9/24/2012	<1.0	<0.50	<0.50	<0.50	**1.5**	<0.50	<0.50	<5.0	<0.50	<0.50	**43**	<0.50
16A	9/26/2013	<1.0	<0.50	<0.50	<0.50	**1.2**	<0.50	<0.50	<5.0	<0.50	<0.50	**40**	<0.50
17A	11/2/2009	<1.4	<0.7	<0.7	<0.7	**3.8**	<0.7	<2.9	<29	<0.7	<0.7	**87**	<0.7
17A	11/3/2010	<1.0	<0.5	<0.5	<0.5	**5.7**	<0.5	<2.0	<2.0	<0.5	<0.5	**68**	<0.5
17A	9/27/2011	<1.0	<0.5	<0.5	<0.5	**4.0**	<0.5	<2.0	<2.0	<0.5	<0.5	**50**	<0.5
17A	9/24/2012	<1.0	<0.50	<0.50	<0.50	**4.9**	<0.50	<0.50	<5.0	<0.50	<0.50	**76**	<0.50
17A	9/26/2013	<1.0	<0.50	<0.50	<0.50	**5.8**	<0.50	<0.50	<5.0	<0.50	<0.50	**84**	<0.50
22A	11/23/2009	<1.4	**1.6**	<0.7	**1.7**	**20**	**1**	**110**	<29	<0.7	**2.4**	**100**	<0.7
22A	11/22/2010	<1.0	**1.8**	<0.5	**2.4**	**34**	**0.6**	**150**	<2.0	<0.5	**2.3**	**110**	<0.5
22A	9/22/2011	<2.0	<1.0	<1.0	<1.0	**19**	<1.0	**47**	<4.0	<1.0	**1.0**	**97**	<1.0
22A	10/19/2012	<1.0	**1.2**	<0.50	**1.6**	**25**	**0.56**	**97**	<5.0	<0.50	**1.3**	**120**	<0.50
22A D	10/19/2012	<1.0	**1.1**	<0.50	**1.5**	**23**	**0.52**	**90**	<5.0	<0.50	**1.3**	**120**	<0.50
22A	10/23/2013	<1.0	**1.6**	<0.50	**1.9**	**34**	**0.50**	**120**	<5.0	<0.50	**1.6**	**110**	**0.56**
23A	11/16/2009	<1.0	**1.2**	<0.5	**1.7**	**13**	<0.5	**3.3**	<20	<0.5	<0.5	**30**	<0.5
23A	11/11/2010	<1.0	<0.5	<0.5	<0.5	**0.7**	<0.5	**2.7**	<2.0	<0.5	<0.5	**3.0**	<0.5
23A	9/2/2011	<1.0	<0.5	<0.5	<0.5	**0.5**	<0.5	**2.6**	<2.0	<0.5	<0.5	**1.7**	<0.5
23A	10/19/2012	<1.0	**2.0**	<0.50	**2.4**	**50**	**0.55**	**3.0**	<5.0	<0.50	<0.50	**29**	<0.50

Table 12
VOC Analytical Results
Five Year Summary, January 2009 through December 2013
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Sample Location	Sample Date	Constituent (concentration in µg/L and method is 8260B)											
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
A Zone													
23A	9/27/2013	<1.0	**4.2**	<0.50	**7.4**	**140**	**0.88**	**8.6**	<5.0	<0.50	**0.63**	**94**	<0.50
71A	11/23/2009	<25	<13	<13	**15**	**2300**	**68**	<50	<500	<13	<13	**20**	**610**
71A	11/10/2010	<7.1	<3.6	<3.6	**11**	**160**	**3.8**	<14	**19**	<3.6	<3.6	**530**	**25**
71A	9/16/2011	<20	<10	<10	<10	**310**	<10	<40	<40	<10	<10	**1600**	**33**
71A	9/25/2012	**2.3**	**3.8**	<0.50	**11**	**340**	**12**	**32**	<5.0	<0.50	**6.0**	**1900**	**27**
71A	10/25/2013	**1.1**	**3.9**	<0.50	**12**	**280**	**7.4**	**36**	<5.0	<0.50	**7.9**	**1600**	**16**
101A	9/25/2012	<1.0	<0.50	<0.50	<0.50	**16**	<0.50	**0.50**	<5.0	<0.50	<0.50	**52**	<0.50
115A	11/2/2009	<1.0	**5.9**	<0.5	**2.5**	**43**	<0.5	**4.7**	<20	<0.5	<0.5	**4.3**	**0.7**
115A	11/2/2010	<1.0	**6.6**	<0.5	**4.7**	**110**	<0.5	**4.3**	<2.0	<0.5	<0.5	**4.1**	**1**
115A	9/27/2011	<4.0	**4.9**	<2.0	**3.6**	**180**	**3.7**	<8.0	<8.0	<2.0	<2.0	**5.3**	<2.0
115A	10/24/2012	<1.0	**6.7**	<0.50	**4.2**	**360**	**1.8**	**1.7**	<5.0	<0.50	<0.50	**5.1**	**1.3**
115A	10/24/2013	<1.0	**7.5**	<0.50	**7.5**	**460**	**0.86**	**2.6**	<5.0	<0.50	<0.50	**6.7**	**2.3**
134A	11/3/2009	<1.0	**3.1**	<0.5	**4.7**	**9.0**	<0.5	**25**	<20	<0.5	**11**	**57**	<0.5
134A	11/10/2010	<1.0	**2.7**	<0.5	**3.6**	**9.8**	<0.5	**17**	<2.0	<0.5	**9.0**	**49**	<0.5
134A	9/27/2011	<1.0	**1.9**	<0.5	**2.7**	**7.8**	<0.5	**11**	<2.0	<0.5	**4.7**	**47**	<0.5
134A	10/4/2012	<1.0	**2.2**	<0.50	**2.6**	**9.8**	<0.50	**10**	<5.0	<0.50	**3.7**	**46**	<0.50
134A	10/24/2013	<1.0	**1.9**	<0.50	**2.2**	**7.8**	<0.50	**11**	<5.0	<0.50	**3.8**	**56**	<0.50
139A	11/17/2010	<1.0	**2.8**	<0.5	**2.6**	**11**	**0.7**	<2.0	<2.0	<0.5	**0.5**	**54**	<0.5
139A D	11/17/2010	<1.0	**2.9**	<0.5	**2.5**	**11**	**0.6**	<2.0	<2.0	<0.5	**0.5**	**54**	<0.5
139A	9/21/2012	<1.0	**1.8**	<0.50	**1.3**	**11**	<0.50	**0.53**	<5.0	<0.50	<0.50	**49**	<0.50
140A	6/22/2012	**5.4**	**0.3**	<0.5	<0.5	**8.5**	<0.5	**0.4**	<2.0	**0.2**	<0.5	**78**	<0.5
140A D	6/22/2012	**5.5**	**0.4**	<0.5	<0.5	**9.1**	<0.5	**0.4**	<2.0	**0.3**	<0.5	**80**	<0.5
141A	11/17/2010	<1.0	<0.5	<0.5	**0.7**	<0.5	<0.5	<2.0	<2.0	<0.5	**1.4**	**41**	<0.5
141A	9/21/2012	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	**0.78**	**38**	<0.50
143A	9/21/2012	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	**6.3**	<5.0	<0.50	<0.50	**4.1**	<0.50
148A	10/4/2012	<1.0	**6.4**	<0.50	**16**	**1200**	**7.9**	**34**	<5.0	**0.58**	**9.2**	**2400**	**29**
149A	11/16/2009	<13	**10**	<6.3	**13**	**1200**	**10**	<25	<250	<6.3	<6.3	**42**	**8.8**
149A	11/15/2010	<1.0	<0.5	<0.5	**1.6**	**5.1**	<0.5	**4.6**	<2.0	<0.5	**1.5**	**94**	<0.5

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		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
A Zone													
149A	9/2/2011	<2.0	<1.0	<1.0	<1.0	**6.2**	<1.0	<4.0	<4.0	<1.0	**1.0**	**99**	<1.0
149A	9/24/2012	<1.0	<0.50	<0.50	**0.71**	**4.8**	<0.50	**1.8**	<5.0	<0.50	**0.77**	**89**	<0.50
149A	9/27/2013	<1.0	<0.50	<0.50	**0.88**	**6.1**	<0.50	**2.4**	<5.0	<0.50	**0.89**	**110**	<0.50
154A	11/6/2009	<2.5	**4.0**	<1.3	**4.1**	**92**	**1.9**	**13**	<50	<1.3	**6.8**	**250**	**2.2**
154A	11/10/2010	<2.5	**3.5**	<1.3	**7.1**	**110**	<1.3	**18**	<5.0	<1.3	**6.6**	**290**	**2.5**
154A	9/27/2011	<5.0	**3.0**	<2.5	**4.6**	**100**	<2.5	**13**	<10	<2.5	**4.8**	**300**	<2.5
154A	10/4/2012	<1.0	**4.2**	<0.50	**5.8**	**180**	**1.7**	**15**	<5.0	<0.50	**4.8**	**340**	**3.1**
154A	10/24/2013	<1.0	**4.9**	<0.50	**6.6**	**240**	**1.8**	**24**	<5.0	**0.60**	**7.0**	**410**	**2.4**
155A	11/6/2009	<3.3	**5.9**	<1.7	**6.3**	**18**	<1.7	<6.7	<67	<1.7	**7.0**	**260**	<1.7
155A	11/10/2010	<3.3	**11**	<1.7	**13**	**17**	<1.7	**8.8**	<6.7	<1.7	**14**	**340**	<1.7
155A	9/27/2011	<5.0	**12**	<2.5	**9.0**	**20**	<2.5	<10	<10	<2.5	**13**	**340**	<2.5
155A	10/4/2012	<1.0	**28**	<0.50	**14**	**49**	<0.50	**21**	<5.0	**1.2**	**29**	**330**	<0.50
155A	10/24/2013	<1.0	**25**	<0.50	**17**	**55**	<0.50	**23**	<5.0	**1.9**	**20**	**460**	<0.50
159A	11/17/2010	<5.0	<2.5	<2.5	<2.5	**7.9**	<2.5	<10	<10	<2.5	<2.5	**370**	<2.5
159A	9/28/2011	<8.3	<4.2	<4.2	<4.2	**9.3**	<4.2	<17	<17	<4.2	<4.2	**480**	<4.2
159A	10/4/2012	<1.0	<0.50	<0.50	**0.87**	**10**	**2.3**	**1.1**	<5.0	<0.50	<0.50	**370**	<0.50
159A	10/24/2013	<1.0	<0.50	<0.50	**1.0**	**15**	**3.8**	**1.6**	<5.0	<0.50	<0.50	**440**	<0.50
160A	11/17/2009	<6.3	**15**	<3.1	**17**	**380**	**5.8**	**450**	<130	<3.1	**9.4**	**500**	<3.1
160A	11/15/2010	<6.3	**11**	<3.1	**15**	**390**	**7.7**	**290**	<13	<3.1	**8.1**	**550**	**3.8**
160A	10/3/2011	<13	**11**	<6.3	**11**	**330**	**9.2**	**250**	<25	<6.3	**6.6**	**520**	<6.3
160A	10/23/2012	<1.0	**11**	<0.50	**10**	**420**	**3.3**	**270**	<5.0	<0.50	**6.2**	**560**	**0.84**
160A	9/27/2013	<1.0	**11**	<0.50	**12**	**340**	**4.4**	**300**	<5.0	**0.77**	**6.3**	**630**	**0.74**
161A	9/25/2012	<1.0	**0.83**	<0.50	**16**	**8800**	**1200**	**86**	<5.0	<0.50	**1.1**	**4600**	**15**
174A	11/3/2009	<2.0	**1.8**	<1.0	**2.1**	**4.0**	<1.0	<4.0	<40	**2.8**	**2.8**	**130**	<1.0
174A	11/5/2010	<3.3	**10**	<1.7	**7.5**	**13**	<1.7	<6.7	<6.7	**2.1**	**9.6**	**170**	<1.7
174A	9/9/2011	<4.0	**17**	<2.0	**7.2**	**26**	<2.0	**11**	<8.0	**2.1**	**13**	**220**	<2.0
174A	10/24/2012	<1.0	**39**	<0.50	**15**	**58**	**0.78**	**26**	<5.0	**1.9**	**16**	**340**	<0.50
174A	9/27/2013	<1.0	**3.5**	<0.50	**2.7**	**17**	<0.50	**1.9**	<5.0	**1.4**	**0.99**	**140**	<0.50
175A	11/16/2009	<2.0	**13**	<1.0	**6.6**	**26**	<1.0	**9.1**	<40	**1.1**	**9.2**	**150**	<1.0

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		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
A Zone													
175A	11/11/2010	<2.0	**11**	<1.0	**3.3**	**21**	<1.0	**7.5**	<4.0	<1.0	**7.1**	**120**	<1.0
175A	9/1/2011	<2.0	**7.4**	<1.0	**3.1**	**20**	<1.0	**4.9**	<4.0	<1.0	**4.0**	**100**	<1.0
175A	10/15/2012	<1.0	**3.3**	<0.50	**1.9**	**19**	<0.50	**1.5**	<5.0	<0.50	**0.83**	**87**	<0.50
175A	9/27/2013	<1.0	**2.0**	<0.50	**1.5**	**19**	<0.50	**0.84**	<5.0	<0.50	<0.50	**84**	<0.50
RW-1A	11/3/2009	<1.0	**0.7**	<0.5	**1.7**	**3.9**	**0.7**	**2.9**	<20	<0.5	**1.6**	**140**	<0.5
RW-1A	11/5/2010	<1.4	<0.7	<0.7	<0.7	**3.5**	**0.9**	<2.9	<2.9	<0.7	<0.7	**96**	<0.7
RW-1A	9/16/2011	**1.1**	<0.5	<0.5	<0.5	**5.8**	**1.0**	<2.0	<2.0	<0.5	<0.5	**87**	<0.5
RW-1A	10/4/2012	**1.0**	<0.50	<0.50	<0.50	**7.0**	**2.7**	**0.67**	<5.0	<0.50	<0.50	**110**	<0.50
RW-1A	10/24/2013	<1.0	<0.50	<0.50	<0.50	**8.4**	**3.6**	**0.70**	<5.0	<0.50	<0.50	**97**	<0.50
RW-2A	11/12/2009	<1.0	**2.3**	<0.5	**3.3**	**89**	**1**	**11**	<20	<0.5	**4.4**	**180**	<0.5
RW-2A	11/15/2010	<2.5	**1.3**	<1.3	**3.5**	**81**	**1.5**	**12**	<5.0	<1.3	**3.0**	**200**	<1.3
RW-2A	9/2/2011	<5.0	<2.5	<2.5	**2.6**	**93**	<2.5	<10	<10	<2.5	<2.5	**240**	<2.5
RW-2A D	9/2/2011	<4.0	<2.0	<2.0	**2.3**	**89**	<2.0	**8.8**	<8.0	<2.0	**2.3**	**230**	<2.0
RW-2A	9/26/2012	<1.0	**1.3**	<0.50	**2.8**	**90**	**0.82**	**8.8**	<5.0	<0.50	**2.4**	**290**	<0.50
RW-2A	10/17/2013	**1.3**	**1.6**	<0.50	**3.4**	**86**	**0.79**	**13**	<5.0	<0.50	**3.3**	**250**	<0.50
RW-2A D	10/17/2013	**1.3**	**1.6**	<0.50	**3.3**	**82**	**0.82**	**12**	<5.0	<0.50	**3.3**	**260**	<0.50
RW-11A	11/2/2009	<3.3	**20**	<1.7	**35**	**770**	**8.5**	**180**	<67	<1.7	**28**	**3300**	**50**
RW-11A D	11/2/2009	<3.3	**20**	<1.7	**27**	**760**	**30**	**190**	<67	<1.7	**30**	**3200**	**48**
RW-11A D	12/7/2010	<17	**20**	<8.3	**35**	**320**	<8.3	**110**	<33	<8.3	**21**	**1600**	**19**
RW-11A	12/7/2010	<14	**19**	<7.1	**34**	**310**	<7.1	**100**	<29	<7.1	**20**	**1600**	**17**
RW-11A	9/16/2011	<33	<17	<17	**29**	**260**	<17	**100**	<67	<17	**28**	**1600**	<17
RW-11A D	9/16/2011	<25	**18**	<13	**33**	**260**	<13	**100**	<50	<13	**25**	**1600**	**14**
RW-11A	10/5/2012	<1.0	**18**	<0.50	**34**	**320**	**1.2**	**120**	<5.0	<0.50	**32**	**1600**	**12**
RW-11A	10/24/2013	<1.0	**16**	<0.50	**27**	**240**	**1.4**	**130**	<5.0	<0.50	**17**	**1300**	**10**
RW-12A	11/23/2009	<20	<10	<10	<10	**2100**	**37**	<40	<400	<10	<10	**1900**	**110**
RW-12A	12/7/2010	<40	<20	<20	<20	**3500**	**38**	<80	<80	<20	<20	**3400**	**130**
RW-12A	9/16/2011	<63	<31	<31	<31	**3400**	**50**	<130	<130	<31	<31	**2800**	**150**
RW-12A	10/5/2012	<1.0	**3.9**	<0.50	**10**	**5400**	**52**	**14**	<5.0	**1.6**	**1.7**	**2800**	**390**
RW-12A	10/24/2013	<1.0	**4.1**	<0.50	**15**	**8100**	**82**	**27**	<5.0	**2.4**	**1.4**	**6000**	**400**

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A Zone													
RW-23A	11/6/2009	<2.5	**12**	<1.3	**5.2**	**66**	**1.4**	**9.3**	<50	**2.0**	**4.9**	**520**	<1.3
RW-23A	12/9/2010	<5.0	**13**	<2.5	**10**	**67**	<2.5	**17**	<10	<2.5	**8.5**	**550**	<2.5
RW-23A	9/16/2011	<10	**11**	<5.0	**6.8**	**90**	<5.0	<20	<20	<5.0	**6.6**	**520**	<5.0
RW-23A	10/5/2012	<1.0	**13**	<0.50	**8.1**	**100**	**1.4**	**14**	<5.0	**1.8**	**12**	**630**	<0.50
RW-23A	10/24/2013	<1.0	**14**	<0.50	**8.6**	**150**	**2.0**	**18**	<5.0	**2.2**	**11**	**650**	<0.50
RW-24A	11/12/2009	<5.0	**7.7**	<2.5	**11**	**550**	**26**	**31**	<100	<2.5	**7.7**	**410**	**9.8**
RW-24A	11/15/2010	<5.0	**4.2**	<2.5	**8.4**	**430**	**6.9**	**23**	<10	<2.5	**4.3**	**310**	**5.2**
RW-24A	9/2/2011	<7.1	**4.4**	<3.6	**7.5**	**460**	**6.6**	**19**	<14	<3.6	<3.6	**350**	**5.2**
RW-24A	9/25/2012	<1.0	**4.3**	<0.50	**5.9**	**410**	**4.3**	**16**	<5.0	<0.50	**3.3**	**360**	**3.4**
RW-24A	10/17/2013	<1.0	**3.4**	<0.50	**5.0**	**320**	**3.1**	**14**	<5.0	<0.50	**3.2**	**310**	**3.4**
RW-26A	11/23/2009	<2.0	**3.4**	<1.0	**9.4**	**83**	**1.1**	**5.4**	<40	<1.0	**2.4**	**180**	<1.0
RW-26A	12/3/2010	<1.0	**4.0**	<0.5	**8.8**	**91**	**2.8**	**5.2**	<2.0	<0.5	**2.7**	**160**	<0.5
RW-26A	10/14/2011	<2.5	**3.5**	<1.3	**8.8**	**89**	**1.8**	**5.3**	<5.0	<1.3	**2.6**	**170**	<1.3
RW-26A	10/25/2012	<1.0	**5.5**	<0.50	**14**	**130**	**0.92**	**7.2**	<5.0	<0.50	**3.4**	**260**	<0.50
RW-26A	10/29/2013	<1.0	**19**	<0.50	**30**	**840**	**3.9**	**8.5**	<5.0	<0.50	**2.9**	**270**	**0.74**
RW-29A	11/2/2009	<2.0	**1.5**	<1.0	**1.8**	**5.3**	**1.3**	<4.0	<40	**2.0**	**3.9**	**210**	<1.0
RW-29A	11/5/2010	<2.0	**3.9**	<1.0	**2.9**	**7.4**	<1.0	<4.0	<4.0	**1.2**	**3.1**	**160**	<1.0
RW-29A	9/16/2011	<3.3	**4.3**	<1.7	**2.3**	**9.4**	<1.7	<6.7	<6.7	<1.7	**2.8**	**180**	<1.7
RW-29A	9/24/2012	<1.0	**7.5**	<0.50	**3.3**	**14**	**1.3**	**3.9**	<5.0	**1.8**	**3.5**	**240**	<0.50
RW-29A	10/17/2013	<1.0	**5.4**	<0.50	**2.9**	**12**	**1.4**	**3.1**	<5.0	**1.6**	**2.6**	**290**	<0.50
B1 Zone													
95B1	11/3/2009	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<20	<0.5	<0.5	**7.4**	<0.5
95B1	11/4/2010	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5	<0.5	**4.9**	<0.5
95B1	9/9/2011	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5	<0.5	**5.7**	<0.5
95B1	10/25/2012	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	**9.0**	<0.50
95B1	10/29/2013	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	**6.2**	<0.50
101B1	11/3/2009	<1.0	**1.2**	<0.5	**1.2**	**41**	<0.5	<2.0	<20	<0.5	<0.5	**51**	<0.5
101B1	11/4/2010	<1.0	**1.2**	<0.5	**1**	**34**	**0.8**	<2.0	<2.0	<0.5	**0.5**	**51**	<0.5
101B1	9/9/2011	<1.0	**1.1**	<0.5	**0.9**	**32**	<0.5	<2.0	<2.0	<0.5	<0.5	**37**	<0.5

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B1 Zone													
101B1	10/15/2012	<1.0	**1.1**	<0.50	**0.75**	**37**	<0.50	<0.50	<5.0	<0.50	<0.50	**42**	<0.50
101B1	9/27/2013	<1.0	**1.0**	<0.50	**0.92**	**34**	<0.50	<0.50	<5.0	<0.50	<0.50	**51**	<0.50
110B1	11/3/2009	<5.0	<2.5	<2.5	<2.5	**28**	<2.5	**24**	<100	<2.5	**7.7**	**440**	<2.5
110B1	11/15/2010	<1.7	<1.7	<1.7	**2.4**	**13**	<1.7	**60**	<67	<1.7	**38**	**350**	<1.7
110B1 D	11/15/2010	<1.7	<1.7	<1.7	**3.1**	**15**	<1.7	**60**	<67	<1.7	**39**	**360**	<1.7
110B1	9/28/2011	<5.0	<2.5	<2.5	**3.8**	**7.2**	<2.5	**67**	<10	<2.5	**29**	**260**	<2.5
110B1	10/4/2012	<1.0	**1.5**	<0.50	**5.9**	**9.2**	<0.50	**58**	<5.0	<0.50	**22**	**300**	<0.50
110B1	10/24/2013	<1.0	**1.5**	<0.50	**4.6**	**9.1**	<0.50	**51**	<5.0	<0.50	**14**	**380**	<0.50
117B1	11/6/2009	<1.3	<0.6	<0.6	<0.6	**110**	**1.3**	<2.5	<25	<0.6	<0.6	**110**	**0.9**
117B1	11/10/2010	<2.5	<1.3	<1.3	**1.4**	**460**	**7.2**	<5.0	<5.0	<1.3	<1.3	**150**	<1.3
117B1	9/28/2011	<7.1	<3.6	<3.6	<3.6	**430**	**11**	<14	<14	<3.6	<3.6	**200**	<3.6
117B1	10/4/2012	<1.0	**0.68**	<0.50	<0.50	**330**	**3.1**	<0.50	<5.0	<0.50	<0.50	**100**	<0.50
117B1	10/24/2013	<1.0	<0.50	<0.50	<0.50	**40**	<0.50	<0.50	<5.0	<0.50	<0.50	**120**	**4.1**
145B1	11/2/2009	<1.0	**0.8**	<0.5	**1.1**	**32**	**1.5**	<2.0	<20	<0.5	<0.5	**120**	**0.8**
145B1	11/4/2010	<1.0	**0.7**	<0.5	**0.9**	**26**	**1.5**	<2.0	<2.0	<0.5	<0.5	**97**	**1.5**
145B1	9/28/2011	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5	<0.5	<0.5	**2.2**
145B1	9/21/2012	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	**0.71**
145B1	10/29/2013	<1.0	**0.53**	<0.50	<0.50	**35**	**1.4**	<0.50	<5.0	<0.50	<0.50	**69**	**0.89**
156B1	11/12/2009	<1.0	**1.6**	<0.5	<0.5	**21**	<0.5	<2.0	<20	<0.5	<0.5	**48**	<0.5
156B1	11/11/2010	<1.0	**1.7**	<0.5	**0.6**	**22**	<0.5	<2.0	<2.0	<0.5	<0.5	**40**	<0.5
156B1	9/1/2011	<1.0	**1.7**	<0.5	**0.8**	**25**	<0.5	<2.0	<2.0	<0.5	<0.5	**46**	<0.5
156B1	10/23/2012	<1.0	**1.9**	<0.50	**0.98**	**39**	<0.50	<0.50	<5.0	<0.50	<0.50	**48**	<0.50
156B1	9/27/2013	<1.0	**1.4**	<0.50	**1.2**	**22**	**0.61**	<0.50	<5.0	<0.50	<0.50	**48**	<0.50
RW-1(B1)	11/24/2009	<1.0	**2.6**	<0.5	**8.0**	**5.4**	<0.5	**120**	<20	<0.5	**98**	**110**	<0.5
RW-1(B1)	12/3/2010	<1.0	**1.9**	<0.5	**3.9**	**8.9**	<0.5	**41**	<2.0	<0.5	**19**	**96**	<0.5
RW-1(B1)	10/14/2011	<0.50	**1.2**	<0.50	**2.2**	**6.9**	<0.50	**22**	<5.0	<0.50	**9.8**	**73**	<0.50
RW-1(B1)	10/24/2012	<5.0	<2.5	<2.5	<2.5	**15**	<2.5	<2.5	<25	<2.5	<2.5	**11**	**13**
RW-1(B1)	10/24/2013	<1.0	**0.55**	<0.50	**1.3**	**5.1**	<0.50	**11**	<5.0	<0.50	**5.1**	**52**	<0.50
RW-1(B1) D	10/24/2013	<1.0	**0.57**	<0.50	**1.3**	**5.3**	<0.50	**11**	<5.0	<0.50	**5.0**	**53**	<0.50

Table 12
VOC Analytical Results
Five Year Summary, January 2009 through December 2013
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Sample Location	Sample Date	Constituent (concentration in µg/L and method is 8260B)											
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
B1 Zone													
RW-2(B1) (RGRP)	11/23/2009	<3.3	<1.7	<1.7	**3.0**	**29**	<1.7	**56**	<67	<1.7	**27**	**220**	<1.7
RW-2(B1) (RGRP)	12/2/2010	<2.0	**1.4**	<1.0	**2.4**	**27**	<1.0	**46**	<4.0	<1.0	**25**	**270**	<1.0
RW-2(B1) (RGRP)	10/6/2011	<3.3	<1.7	<1.7	**1.9**	**21**	<1.7	**30**	<6.7	<1.7	**15**	**190**	<1.7
RW-2(B1) (RGRP)	9/18/2012	<1.0	**1.2**	<0.50	**3.2**	**26**	<0.50	**37**	<5.0	<0.50	**18**	**270**	<0.50
RW-2(B1) (RGRP)	10/25/2013	<1.0	<0.50	<0.50	**2.3**	**23**	<0.50	**25**	<5.0	<0.50	**12**	**330**	<0.50
RW-10(B1)	11/2/2009	<5.0	<2.5	<2.5	<2.5	**300**	**17**	<10	<100	<2.5	<2.5	**870**	<2.5
RW-10(B1)	12/7/2010	<6.3	<3.1	<3.1	<3.1	**410**	**10**	<13	<13	<3.1	**4.7**	**650**	<3.1
RW-10(B1)	9/16/2011	<10	<5.0	<5.0	<5.0	**360**	**7.9**	<20	<20	<5.0	**5.6**	**670**	<5.0
RW-10(B1)	10/5/2012	<1.0	**1.5**	<0.50	**2.3**	**430**	**5.7**	**19**	<5.0	<0.50	**11**	**710**	<0.50
RW-10(B1)	10/24/2013	<1.0	**1.0**	<0.50	**1.9**	**200**	**3.0**	**19**	<5.0	<0.50	**7.8**	**590**	<0.50
RW-11(B1)	11/12/2009	<1.0	**1.3**	<0.5	**0.9**	**57**	**1.6**	<2.0	<20	<0.5	**0.6**	**91**	<0.5
RW-11(B1)	11/15/2010	<1.0	**1**	<0.5	**1.0**	**48**	**2.1**	<2.0	<2.0	<0.5	**0.6**	**99**	<0.5
RW-11(B1) D	9/2/2011	<2.0	<1.0	<1.0	<1.0	**45**	**2.0**	<4.0	<4.0	<1.0	<1.0	**96**	<1.0
RW-11(B1)	9/2/2011	<2.0	<1.0	<1.0	<1.0	**44**	**1.9**	<4.0	<4.0	<1.0	<1.0	**95**	<1.0
RW-11(B1)	9/24/2012	<1.0	**0.67**	<0.50	<0.50	**41**	**1.4**	<0.50	<5.0	<0.50	<0.50	**90**	<0.50
RW-11(B1)	10/17/2013	<1.0	**0.57**	<0.50	**0.54**	**38**	**1.4**	**0.50**	<5.0	<0.50	<0.50	**94**	<0.50
B2 Zone													
40B2 (RGRP)	11/3/2009	<1.0	<0.5	<0.5	<0.5	**11**	**0.5**	<2.0	<20	<0.5	<0.5	**2.0**	<0.5
40B2 (RGRP)	11/3/2010	<1.0	<0.5	<0.5	<0.5	**21**	**0.6**	<2.0	<2.0	<0.5	<0.5	**1.0**	<0.5
40B2 (RGRP)	9/28/2011	<1.0	<0.5	<0.5	<0.5	**9.5**	**0.7**	<2.0	<2.0	<0.5	<0.5	**2.0**	<0.5
40B2 (RGRP)	10/4/2012	<1.0	<0.50	<0.50	<0.50	**61**	<0.50	**1.7**	<5.0	<0.50	<0.50	**8.5**	<0.50
40B2 (RGRP)	10/24/2013	<1.0	<0.50	<0.50	<0.50	**47**	**0.56**	**2.0**	<5.0	<0.50	<0.50	**4.1**	<0.50
90B2	11/3/2009	<2.5	<1.3	<1.3	<1.3	**22**	<1.3	<5.0	<50	<1.3	<1.3	**150**	<1.3
90B2	11/10/2010	<1.0	<1.0	<1.0	**1.0**	**35**	<1.0	<4.0	<40	<1.0	<1.0	**180**	<1.0
90B2 D	11/10/2010	<1.0	<1.0	<1.0	**1.1**	**36**	<1.0	<4.0	<40	<1.0	<1.0	**180**	<1.0
90B2	9/28/2011	<2.5	<1.3	<1.3	<1.3	**33**	<1.3	<5.0	<5.0	<1.3	<1.3	**140**	<1.3
90B2	10/23/2012	<1.0	<0.50	<0.50	**0.76**	**56**	**0.59**	<0.50	<5.0	<0.50	<0.50	**120**	<0.50
90B2	9/27/2013	<1.0	<0.50	<0.50	**0.92**	**69**	**0.94**	<0.50	<5.0	<0.50	<0.50	**150**	<0.50
146B2	11/2/2009	<1.0	<0.5	<0.5	<0.5	**93**	<0.5	<2.0	<20	<0.5	<0.5	**4.4**	<0.5

Table 12
VOC Analytical Results
Five Year Summary, January 2009 through December 2013
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Sample Location	Sample Date	Constituent (concentration in µg/L and method is 8260B)											
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
B2 Zone													
146B2	11/3/2010	<1.0	<0.5	<0.5	<0.5	**91**	<0.5	<2.0	<2.0	<0.5	<0.5	**3.5**	<0.5
146B2	9/28/2011	<5.0	<2.5	<2.5	<2.5	**230**	<2.5	<10	<10	<2.5	<2.5	**5.8**	<2.5
146B2 D	10/24/2012	<1.0	<0.50	<0.50	**0.57**	**300**	<0.50	<0.50	<5.0	<0.50	<0.50	**4.8**	<0.50
146B2	10/24/2012	<1.0	<0.50	<0.50	**0.62**	**300**	<0.50	<0.50	<5.0	<0.50	<0.50	**5.0**	<0.50
146B2 D	10/24/2013	<1.0	<0.50	<0.50	<0.50	**43**	<0.50	<0.50	<5.0	<0.50	<0.50	**85**	<0.50
146B2	10/24/2013	<1.0	<0.50	<0.50	<0.50	**36**	<0.50	<0.50	<5.0	<0.50	<0.50	**96**	<0.50
RW-1(B2)	11/3/2009	<1.4	<0.7	<0.7	<0.7	**35**	<0.7	<2.9	<29	<0.7	<0.7	**83**	<0.7
RW-1(B2)	11/5/2010	<1.0	<0.5	<0.5	<0.5	**7.2**	<0.5	<2.0	<2.0	<0.5	<0.5	**2.3**	<0.5
RW-1(B2)	9/16/2011	<1.0	<0.5	<0.5	<0.5	**33**	<0.5	<2.0	<2.0	<0.5	<0.5	**71**	<0.5
RW-1(B2)	10/4/2012	<1.0	<0.50	<0.50	<0.50	**40**	<0.50	**1.2**	<5.0	<0.50	<0.50	**51**	<0.50
RW-1(B2)	10/24/2013	<1.0	<0.50	<0.50	<0.50	**41**	<0.50	**1.4**	<5.0	<0.50	<0.50	**54**	<0.50
RW-2(B2)	11/12/2009	<1.0	<0.5	<0.5	**5.7**	**13**	**2.8**	**4.7**	<20	<0.5	**0.7**	**830**	<0.5
RW-2(B2)	11/15/2010	<10	<5.0	<5.0	**5.5**	**10**	<5.0	<20	<20	<5.0	<5.0	**730**	<5.0
RW-2(B2)	9/2/2011	<14	<7.1	<7.1	<7.1	**13**	<7.1	<29	<29	<7.1	<7.1	**750**	<7.1
RW-2(B2)	9/26/2012	<1.0	<0.50	<0.50	**3.0**	**11**	**1.9**	**2.4**	<5.0	<0.50	<0.50	**850**	<0.50
RW-2(B2)	10/17/2013	<1.0	<0.50	<0.50	**3.5**	**17**	**2.0**	**2.6**	<5.0	<0.50	<0.50	**870**	<0.50

Notes:
1,1-DCA = 1,1-Dichloroethane
1,2-DCA = 1,2-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
trans-1,2-DCE = trans-1,2-Dichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
TCE = Trichloroethene
< indicates analyte not detected above the reported detection limit
D indicates duplicate sample
(RGRP) = Regional Groundwater Remediation Program Well associated with the fairchild Operation and Maintenance Program (RMT, 2003)

Table 13

Mann-Kendall Statistics Concentration Trends Summary

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Well Name	TCE	cis-1,2-DCE	Vinyl Chloride
A Zone			
4A	S	NT	NT
6A	N/A	N/A	N/A
9A	N/A	N/A	N/A
12A	N/A	N/A	N/A
15A	N/A	N/A	N/A
16A	PD	D	NT
17A	S	NT	NT
22A	PD	I	NT
23A	D	S	NT
71A	NT	NT	NT
101A	N/A	N/A	N/A
115A	NT	I	I
134A	S	NT	NT
139A	N/A	N/A	N/A
140A	N/A	N/A	N/A
141A	N/A	N/A	N/A
143A	N/A	N/A	N/A
148A	N/A	N/A	N/A
149A	S	PD	NT
154A	I	I	NT
155A	S	NT	NT
159A	NT	I	S
160A	I	I	NT
161A	N/A	N/A	N/A
174A	NT	NT	NT
175A	D	PD	NT
RW-1A	S	NT	NT

Well Name	TCE	cis-1,2-DCE	Vinyl Chloride
A Zone			
RW-2A	NT	PI	NT
RW-11A	D	D	D
RW-12A	I	I	I
RW-23A	NT	I	NT
RW-24A	D	S	PI
RW-26A	PI	PI	NT
RW-29A	NT	I	NT
B1 Zone			
93B1	N/A	N/A	N/A
95B1	PD	NT	NT
101B1	D	D	NT
110B1	NT	NT	NT
117B1	PD	PI	NT
145B1	NT	D	S
156B1	S	S	NT
RW-1(B1)	S	D	NT
RW-2(B1)	PD	PD	NT
RW-10(B1)	D	NT	NT
RW-11(B1)	D	D	NT
B2 Zone			
40B2	S	PD	NT
90B2	S	S	NT
146B2	NT	S	NT
RW-1(B2)	D	S	NT
RW-2(B2)	NT	NT	NT

Notes:

TCE = Trichloroethene

cis-1,2-DCE = cis-1,2-Dichloroethene

PI =Probably Increasing

I =Increasing

N/A = Not applicable due to insufficient data (< 4 sampling events)

S = Stable

PD = Probably Decreasing

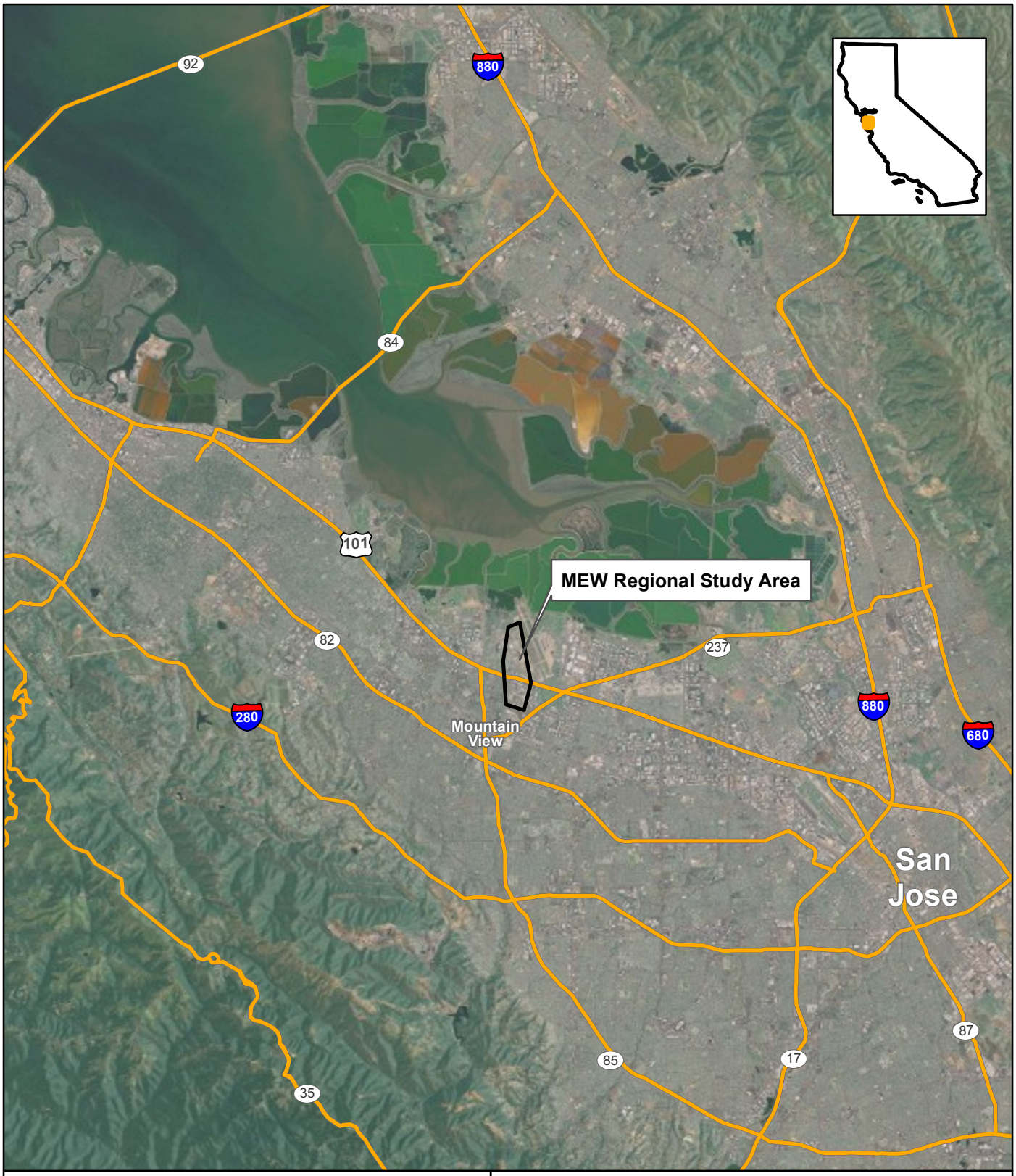
D = Decreasing

NT = No Trend

Mann-Kendall statistical analysis was performed on Site wells using data from 2004 to 2013,

In circumstances where sample concentratons have not been detected above the reporting limit in >5 of the 10 sampling years the NT symbol was used.

FIGURES



N

0 10 Miles

Basemap Sources: USGS, ESRI, TANA, AND, DeLorme, NPS

Site Location Map

MEW Area, Mountain View, California

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Figure 1

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Legend

Former Fairchild Facility

- Buildings 1 - 4
- Building 18
- Building 9
- Building 20 and 20A
- Buildings 13, 19, and 23
- Slurry Wall
- Building
- Road

FAIRCHILD BUILDINGS 1 - 4
A. 313 Fairchild Drive
B. 323 Fairchild Drive
C. 545 North Whisman Road
D. 515 North Whisman Road

FAIRCHILD BUILDING 18
E. 331 Fairchild Drive*

FAIRCHILD BUILDING 9
F. 401 National Avenue

FAIRCHILD BUILDING 20 AND 20A
G. 468 Ellis Street
H. 466 Ellis Street
I. 464 Ellis Street

FAIRCHILD BUILDINGS 13, 19, AND 23
J. 399 North Whisman Road
K. 389 North Whisman Road
L. 369 North Whisman Road
M. 379 North Whisman Road

N

* Former Fairchild Building 18 is now part of 331 Fairchild Drive Parcel

300 150 0 300 Feet

Current Building Configurations
Former Fairchild Facilities

MEW Former Fairchild Buildings 13, 19, & 23 Groundwater Remediation Programs
Mountain View, California

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Figure **2**

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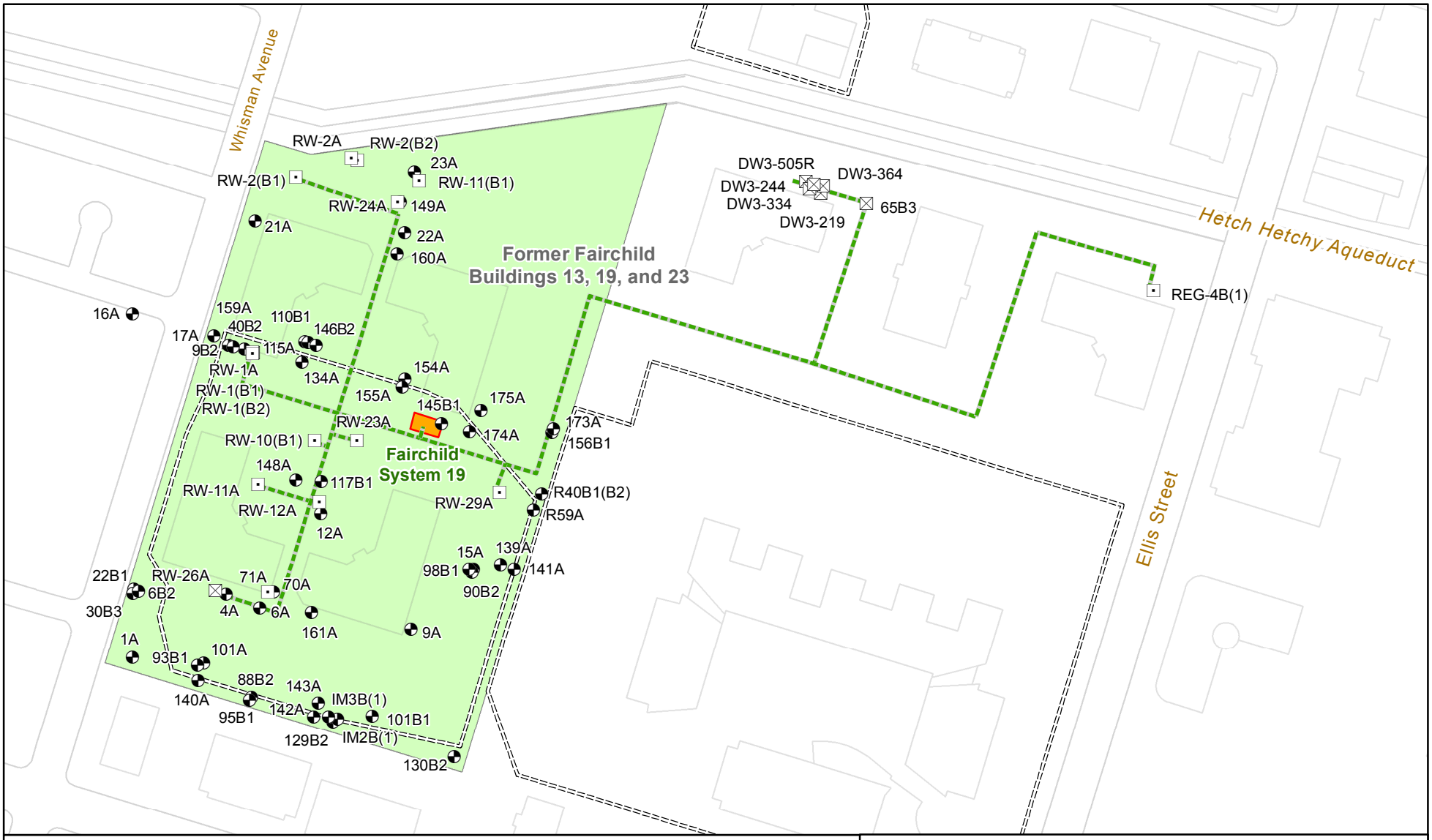

Legend

Extraction and Monitoring Wells

- Monitoring Well
- Recovery Well, On
- Recovery Well, Off
- Treatment System Pipeline
- Treatment-System Discharge Pipeline
- Slurry Wall
- Building
- Road
- Former Fairchild Building 13, 19 and 23 Site - 369/379/389/399/441 Whisman Road
- Fairchild Groundwater Treatment System 19

Site Map and Well Network

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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Figure 3

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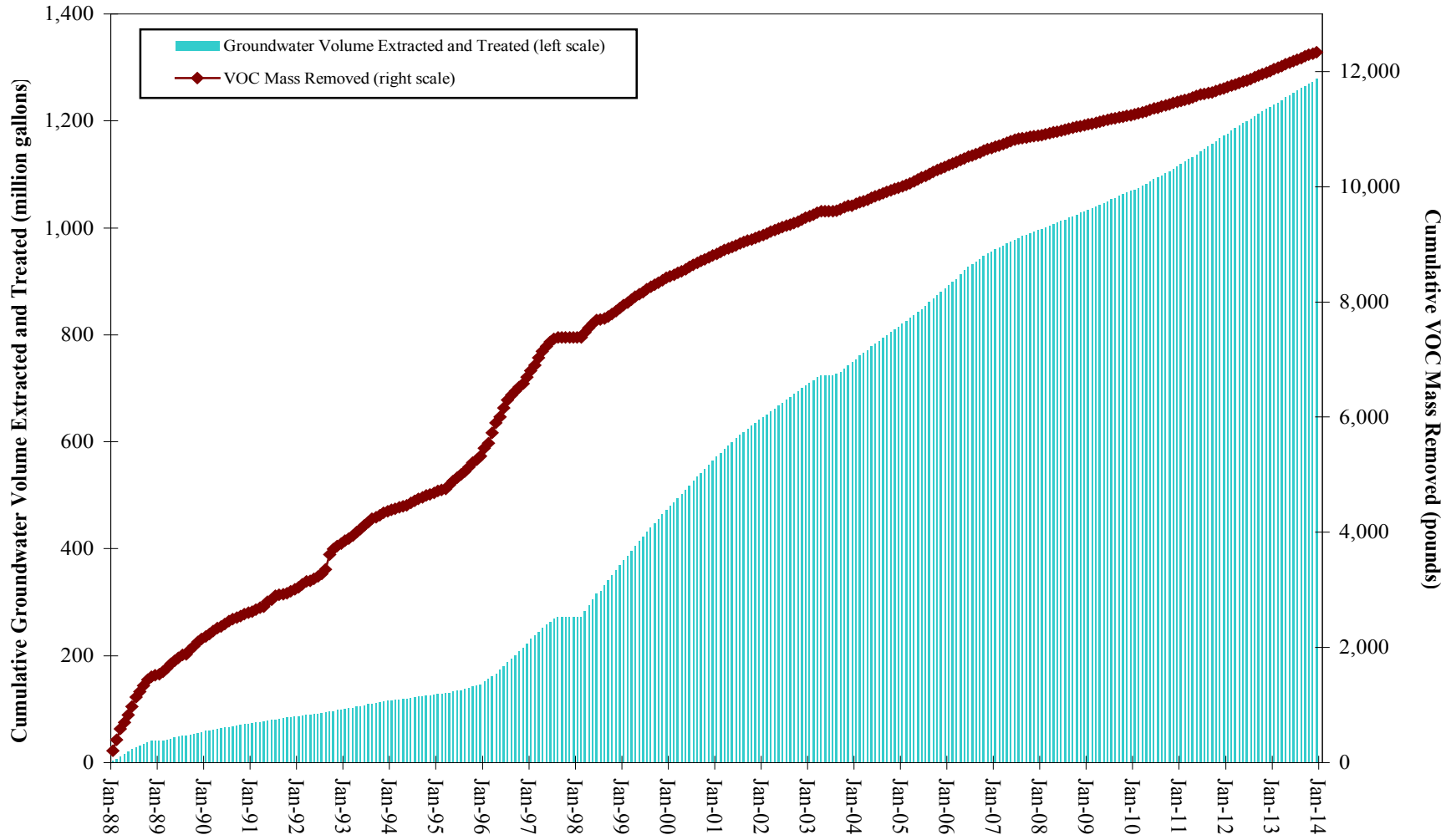

Abbreviation:
VOC = volatile organic compound

Cumulative Groundwater Extracted and VOC Mass Removed, System 19

Former Fairchild Buildings 13, 19 and 23 Groundwater Remediation Program
Mountain View, California

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Figure 4

Source: Fourth Quarter and Annual 2013 Self-Monitoring Report, Treatment System 19 (Weiss, 2014a)

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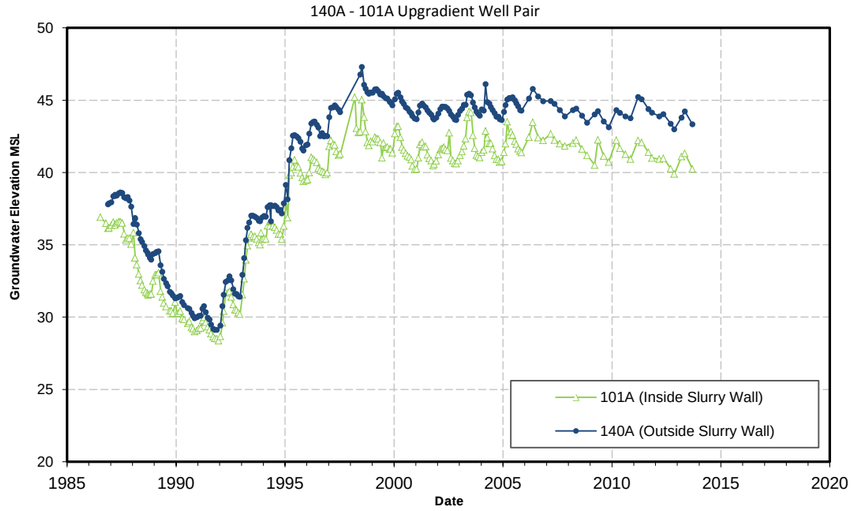

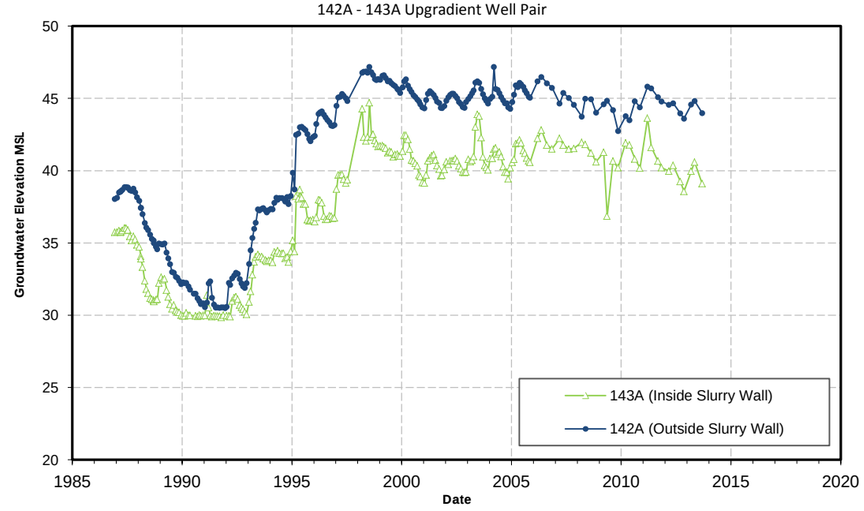

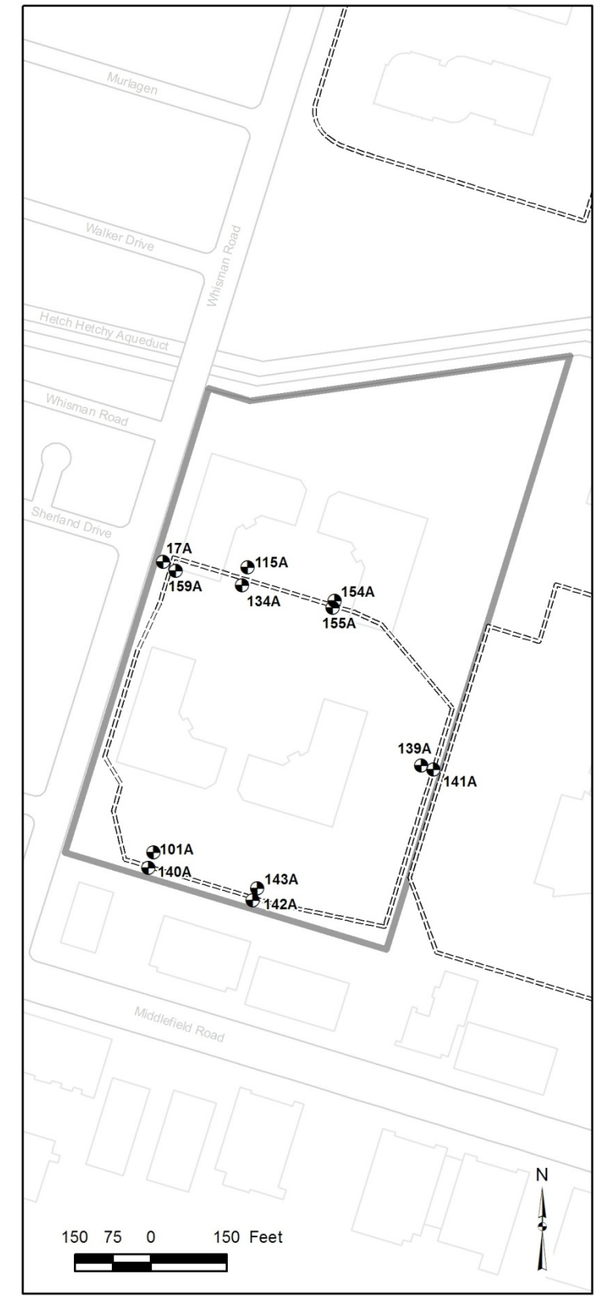

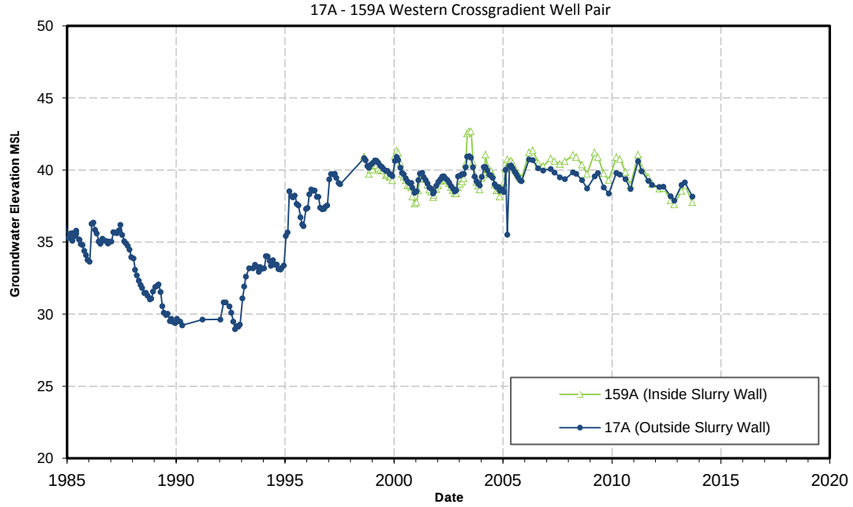

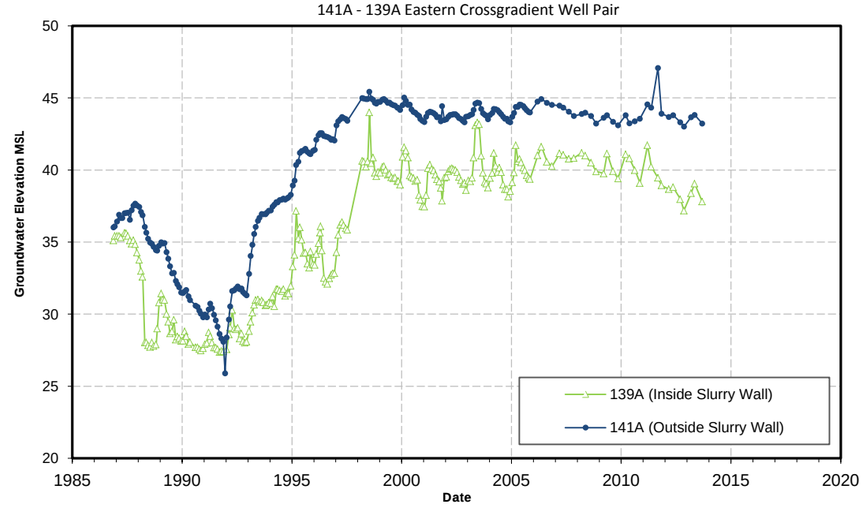

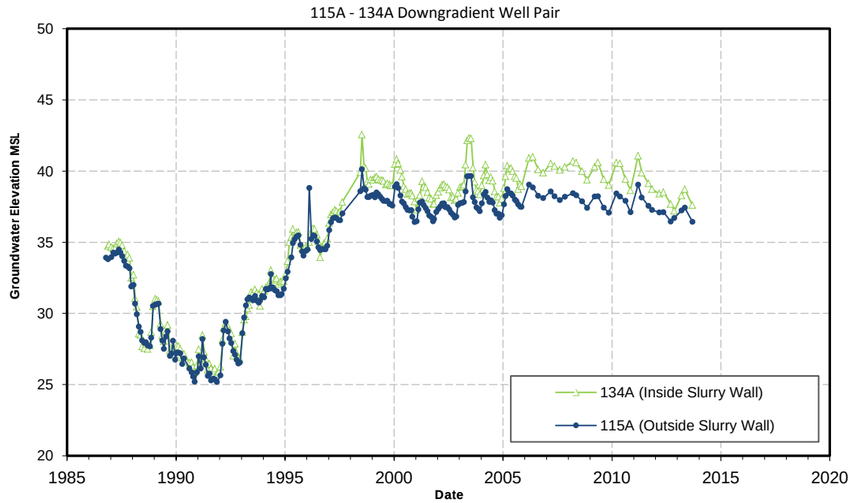

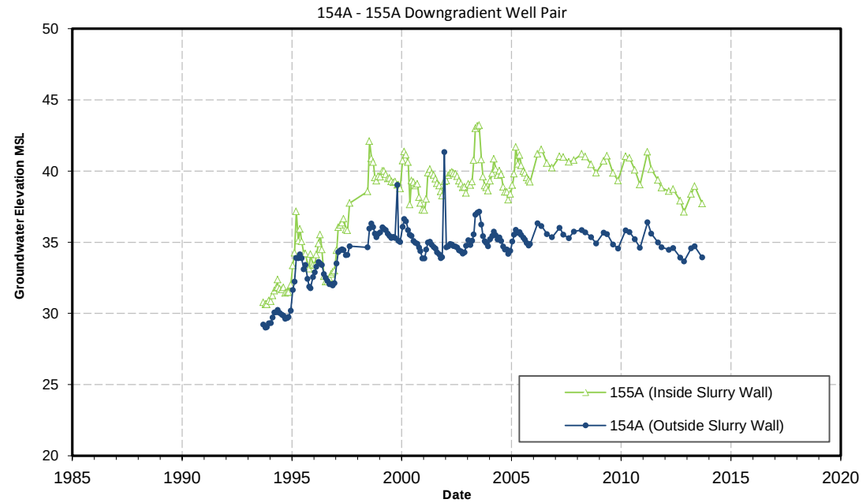

Hydrographs - Slurry Wall Well Pairs

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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Figure 5

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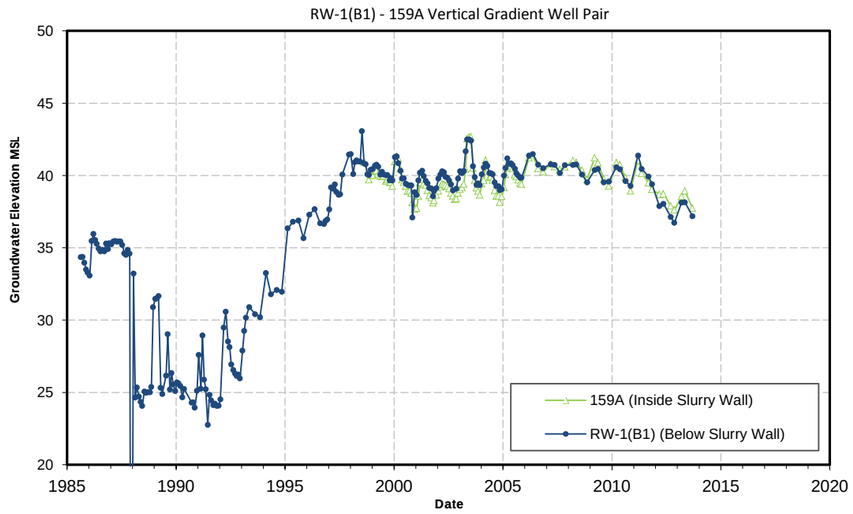

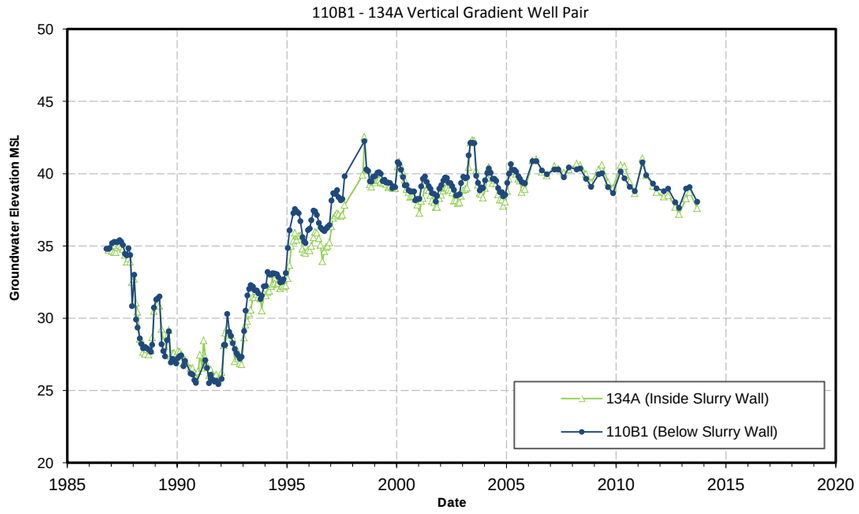

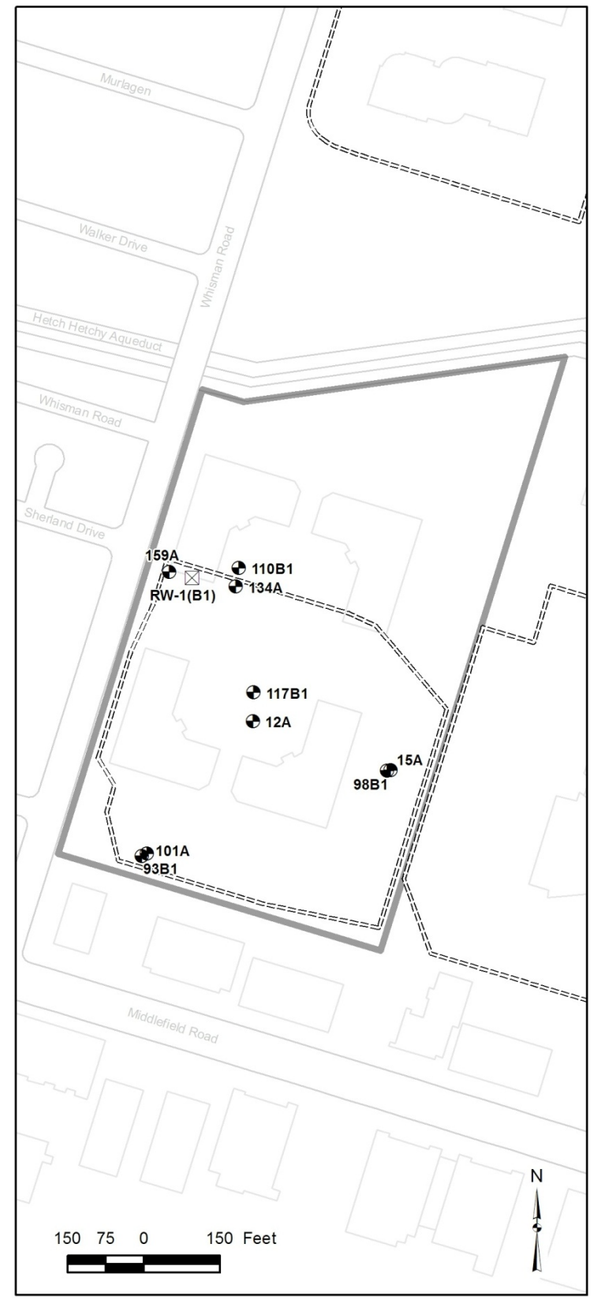

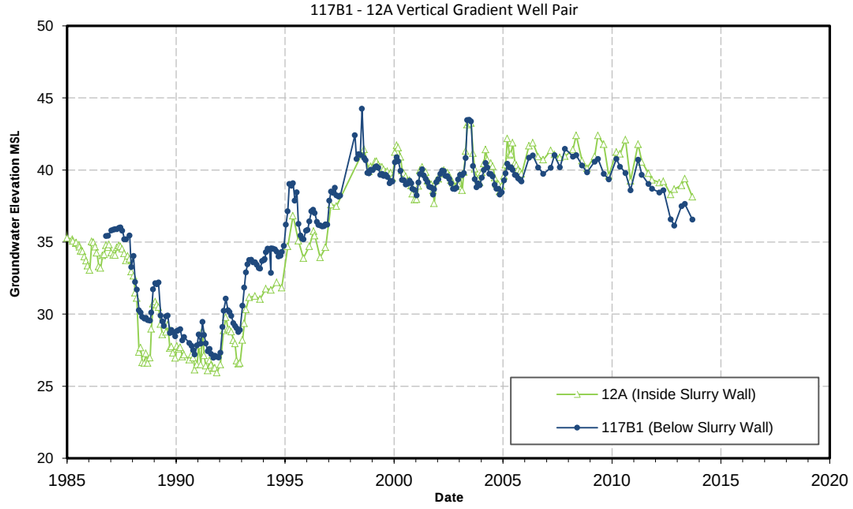

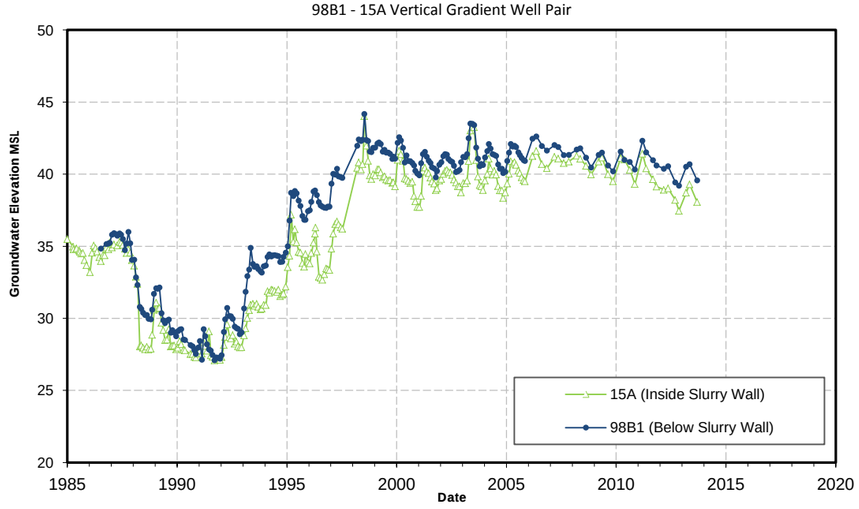

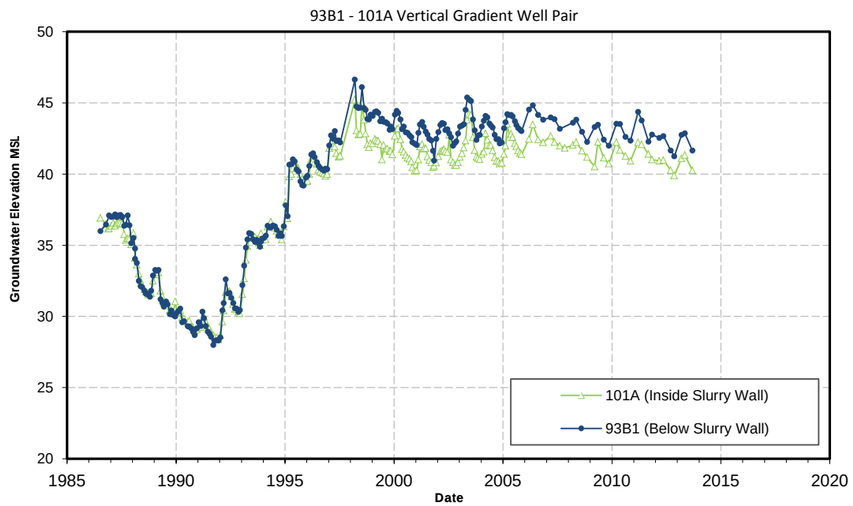

Hydrographs - Slurry Wall Well Pairs Across Water-Bearing Zones

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

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Figure 6

P:\GIS\MEW\Excel\Fairchild\Building19\Fig5and6_Hydrographs.xlsx

Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road

RW-2A (9.1) 30.32
23A 34.36
RW-24A (3.9) 32.99
149A 34.26
21A 36.31
22A 34.30
160A 34.41
16A 39.55
17A 38.97
RW-1A (6.3) 28.06*
159A 38.55
115A 37.23
134A 38.29
154A 34.58
155A 38.39
175A 34.76
173A 36.61
174A 38.35
RW-23A (12.2) 32.30*
RW-11A (3.1) 38.51
148A 38.81
RW-12A (4.8) 38.85
12A 38.94
RW-29A (11.6) 19.97*
R59A 44.46
15A 38.72
139A 38.40
141A 43.67
RW-26A 40.15
71A (5.3) 36.16
70A 39.57
4A 40.22
6A 40.38
161A 39.79
9A 39.55
1A 43.52
101A 41.10
140A 43.80
143A 39.96
142A 44.58

Estimated capture zones are only shown for recovery wells associated with the former Fairchild sites. Capture zones for other MEW recovery wells are provided in the Annual RGRP Report (Geosyntec, 2014a).

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off
- Groundwater Elevation: 1 ft Contours
- Groundwater Elevation: 5 ft Contours
- Closely Spaced Groundwater Contour
- Estimated Capture Zone
- Building
- Road
- Slurry Wall
- Site Boundary

71A (5.3) Well ID (Pumping Rate)
36.16 Groundwater Elevation (feet above mean sea level)
* Groundwater Measurement Not Used in Contouring. (Water levels measured inside the casing of an extraction well are not used in contouring.)

Note:
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.

N

150 75 0 150 Feet

A Zone Groundwater Elevation Contours and Estimated Capture Zones 21 March 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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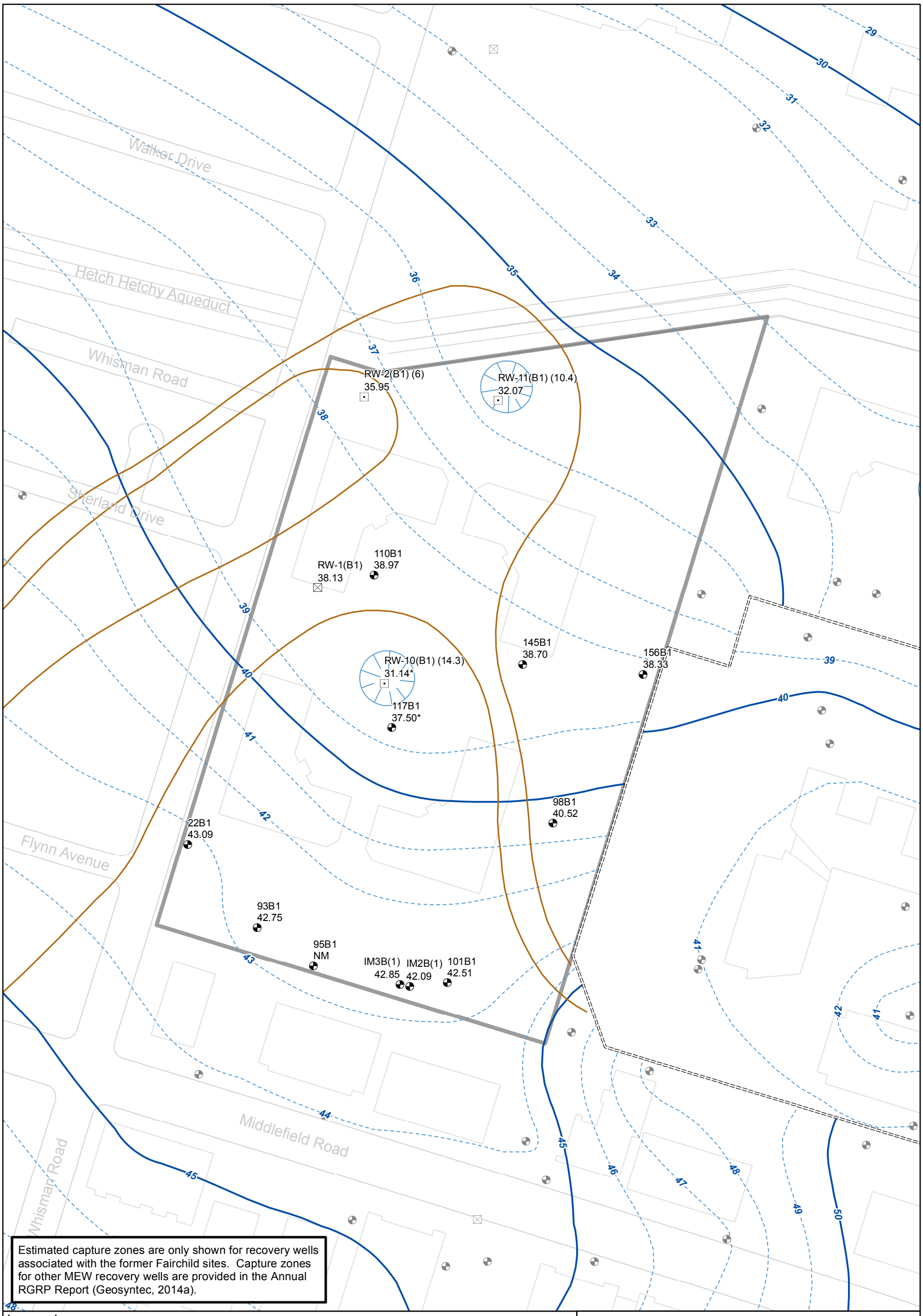
Figure 7

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig07_GW_A_Mar.mxd | 3/26/2014 3:13:31 PM


Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road
RW-2A (9)
32.40
RW-24A (3.6)
23A
33.71
NM*
149A
33.68
21A
35.54
22A
33.59
160A
33.74
16A
38.80
17A
38.16
RW-1A (5.3)
26.31
159A
37.76
115A
36.44
134A
37.61
154A
33.93
155A
37.72
175A
34.08
173A
35.49
174A
37.69
RW-23A (11.8)
31.54
RW-11A (3.6)
37.64
148A
38.01
RW-12A (2.1)
37.68
12A
38.14
RW-29A (11)
20.48
R59A
44.01
15A
38.06
139A
37.82
141A
43.23
RW-26A (4.9)
40.38
71A
35.14
70A
38.85
4A
39.39
6A
39.55
161A
38.87
9A
38.82
1A
42.82
101A
40.26
140A
43.34
143A
39.11
142A
43.99
25
25
Estimated capture zones are only shown for recovery wells associated with the former Fairchild sites. Capture zones for other MEW recovery wells are provided in the Annual RGRP Report (Geosyntec, 2014a).
Legend
Monitoring Well
Recovery Well On
Recovery Well Off
Groundwater Elevation: 1 ft Contours
Groundwater Elevation: 5 ft Contours
Closely Spaced Groundwater Contour
Estimated Capture Zone
Building
Road
Slurry Wall
Site Boundary
71A (4.9) Well ID (Pumping Rate)
35.14 Groundwater Elevation (feet above mean sea level)
* Groundwater Measurement Not Used in Contouring. (Water levels measured inside the casing of an extraction well are not used in contouring.)
Note:
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.
N
150 75 0 150 Feet
A Zone Groundwater Elevation Contours and Estimated Capture Zones 19 September 2013
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California
Geosyntec consultants
Oakland
April 2014
Figure 8
P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig08_GW_A_Sept.mxd | 3/26/2014 3:14:26 PM



B1 Zone Groundwater Elevation Contours and Estimated Capture Zones 21 March 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

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Figure 9

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig09_GW_B1_Mar.mxd | 3/26/2014 3:15:26 PM

Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road

RW-2(B1) (5.5)
35.43
RW-11(B1) (9.7)
31.45
RW-1(B1)
37.20*
110B1
38.06
RW-10(B1) (14.2)
29.65
117B1
36.57
145B1
37.95
156B1
37.54
98B1
39.57
22B1
41.87
93B1
41.65
95B1
41.39
IM3B(1)
41.81
IM2B(1)
40.98
101B1
41.52

28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

Estimated capture zones are only shown for recovery wells associated with the former Fairchild sites. Capture zones for other MEW recovery wells are provided in the Annual RGRP Report (Geosyntec, 2014a).

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off
- Groundwater Elevation: 1 ft Contours
- Groundwater Elevation: 5 ft Contours
- Closely Spaced Groundwater Contour
- Estimated Capture Zone
- Slurry Wall
- Building
- Road
- Site Boundary

RW-2(B1) (5.5) Well ID (Pumping Rate)
35.43 Groundwater Elevation (feet above mean sea level)
* Groundwater Measurement Not Used in Contouring. (Water levels measured inside the casing of an extraction well are not used in contouring.)

Note:
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.

N

150 75 0 150 Feet

B1 Zone Groundwater Elevation Contours and Estimated Capture Zones 19 September 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

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Figure 10

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig10_GW_B1_Sept.mxd | 3/26/2014 3:16:16 PM

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off
- Groundwater Elevation: 1 ft Contours
- Groundwater Elevation: 5 ft Contours
- Closely Spaced Groundwater Contour
- Estimated Capture Zone
- Building
- Road
- Slurry Wall
- Site Boundary

RW-1(B2) (5.3) Well ID (Pumping Rate)
-18.89 Groundwater Elevation (feet above mean sea level)
***** Groundwater Measurement Not Used in Contouring. (Water levels measured inside the casing of an extraction well are not used in contouring.)

Note:
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.

N

150 75 0 150 Feet

B2 Zone Groundwater Elevation Contours and Estimated Capture Zones 21 March 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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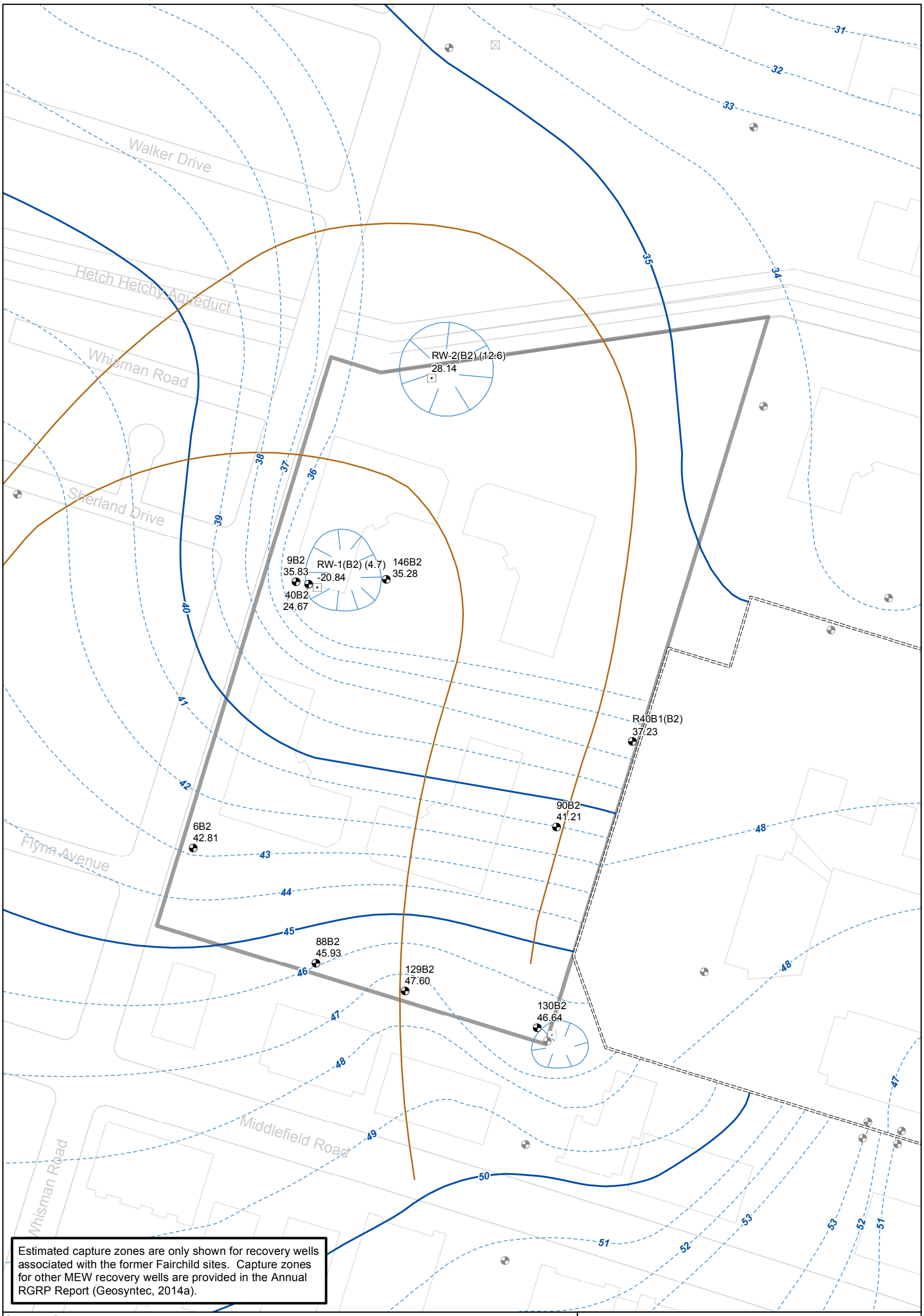
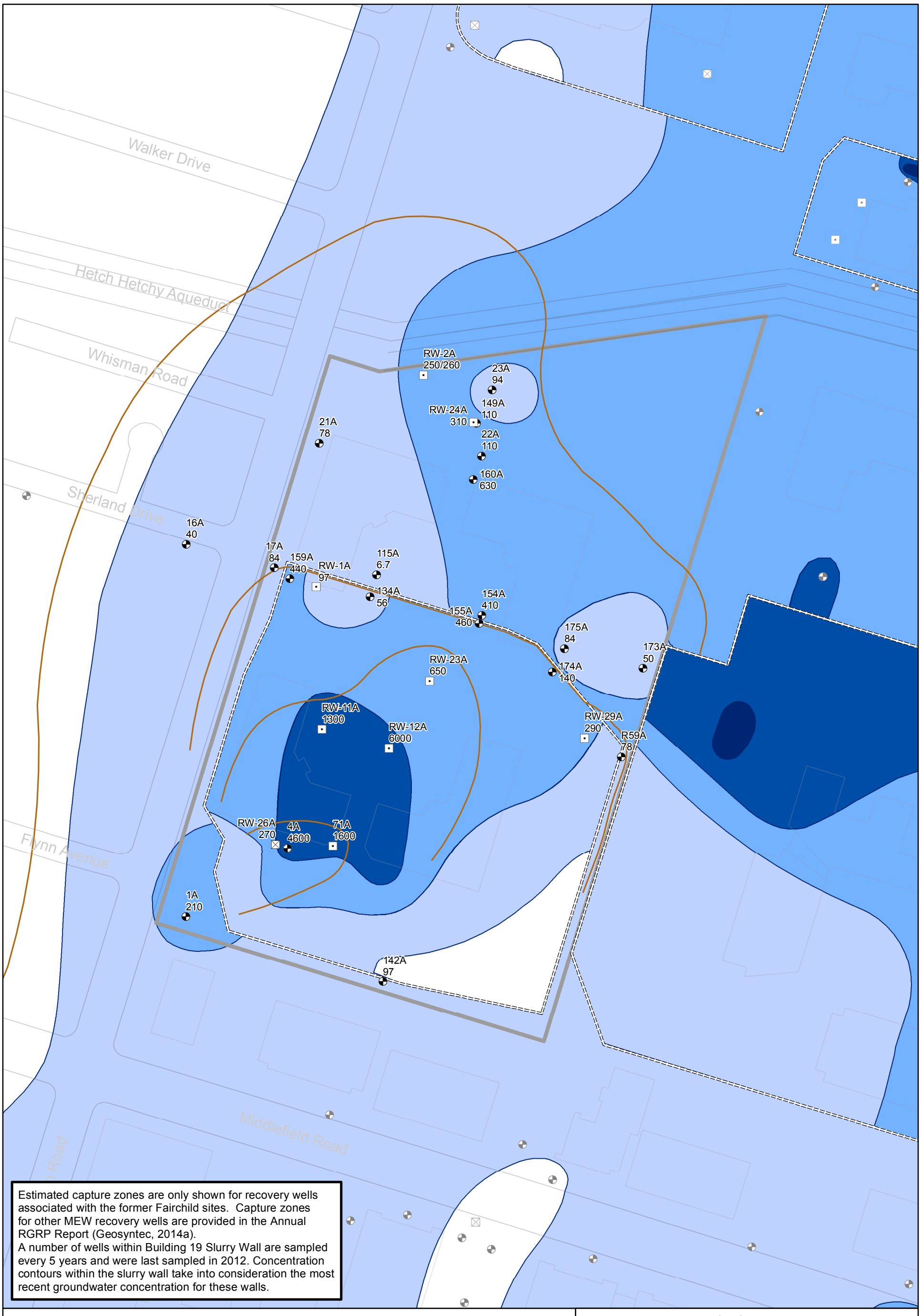
Figure 11

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig11_GW_B2_Mar.mxd | 3/26/2014 3:17:05 PM


Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road
RW-2(B2) (12.6)
28.14
RW-1(B2) (4.7)
-20.84
9B2
35.83
40B2
24.67
146B2
35.28
R40B1(B2)
37.23
90B2
41.21
6B2
42.81
88B2
45.93
129B2
47.60
130B2
46.64
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
Estimated capture zones are only shown for recovery wells associated with the former Fairchild sites. Capture zones for other MEW recovery wells are provided in the Annual RGRP Report (Geosyntec, 2014a).
Legend
Monitoring Well
Recovery Well On
Recovery Well Off
Groundwater Elevation: 1 ft Contours
Groundwater Elevation: 5 ft Contours
Closely Spaced Groundwater Contour
Estimated Capture Zone
Building
Road
Slurry Wall
Site Boundary
RW-1(B2) (4.7) Well ID (Pumping Rate)
-20.84 Groundwater Elevation (feet above mean sea level)
* Groundwater Measurement Not Used in Contouring. (Water levels measured inside the casing of an extraction well are not used in contouring.)
Note:
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.
N
150 75 0 150 Feet
B2 Zone Groundwater Elevation Contours and Estimated Capture Zones
19 September 2013
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California
Geosyntec consultants
Oakland
April 2014
Figure
12
P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig12_GW_B2_Sept.mxd | 3/26/2014 3:18:09 PM



A Zone TCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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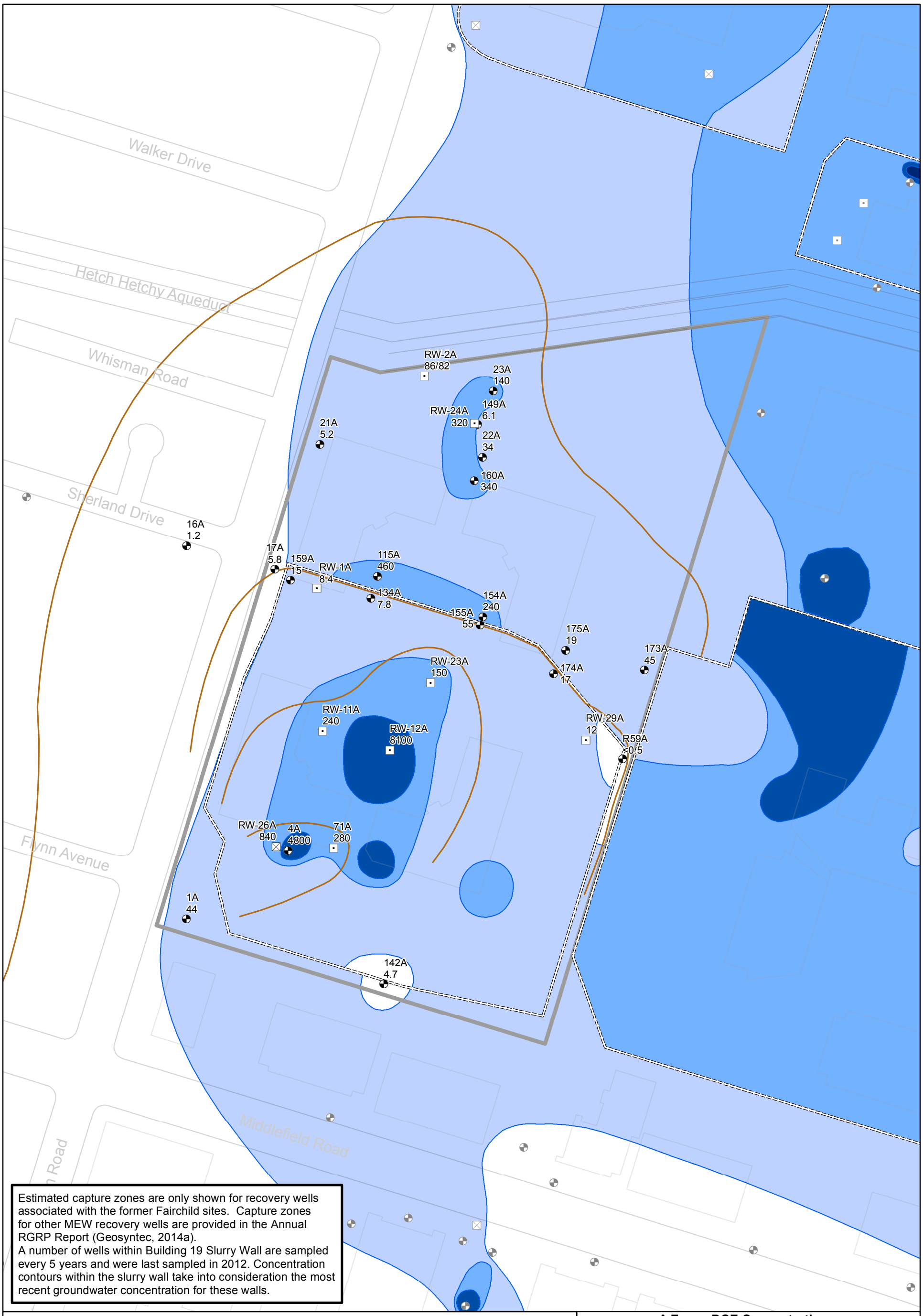
Figure 13

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig13_TCE_A_Sept_CZ.mxd | 3/26/2014 3:18:57 PM



A Zone cDCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

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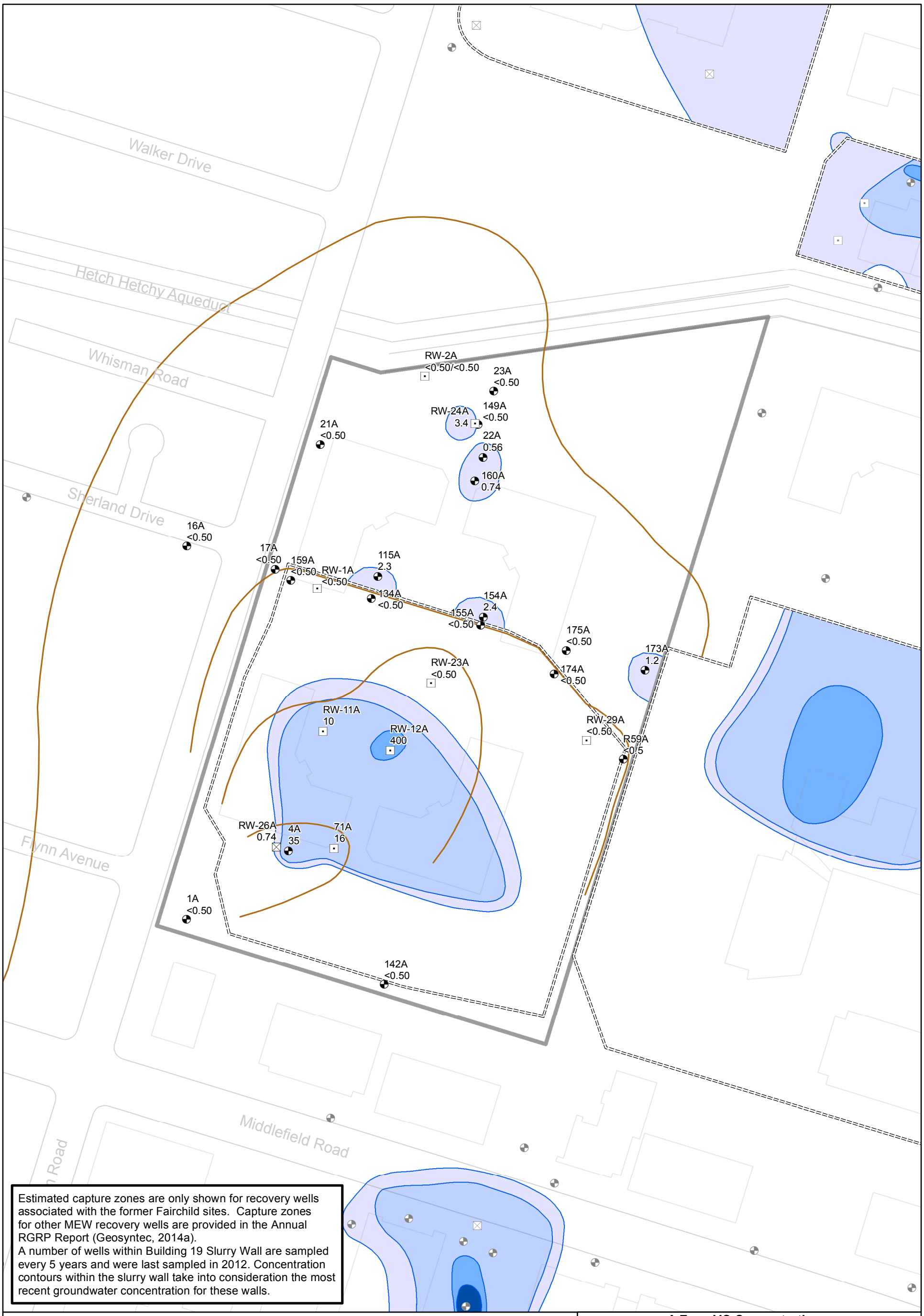
Figure 14

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig14_DCE_A_Sept_CZ.mxd | 3/26/2014 3:19:34 PM



A Zone VC Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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Figure 15

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig15_VC_A_Sept_CZ.mxd | 3/26/2014 3:20:27 PM

Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road

RW-2A
<0.50/<0.50
23A
<0.50
RW-24A
<0.50
149A
<0.50
21A
<0.50
22A
<0.50
160A
0.77
16A
<0.50
17A
<0.50
159A
<0.50
RW-1A
<0.50
115A
<0.50
134A
<0.50
154A
0.60
155A
1.9
175A
<0.50
173A
<0.50
174A
1.4
RW-23A
2.2
RW-11A
<0.50
RW-12A
2.4
RW-29A
1.6
R59A
<0.5
RW-26A
<0.50
4A
<0.50
71A
<0.50
1A
<0.50
142A
12

Estimated capture zones are only shown for recovery wells associated with the former Fairchild sites. Capture zones for other MEW recovery wells are provided in the Annual RGRP Report (Geosyntec, 2014a).
A number of wells within Building 19 Slurry Wall are sampled every 5 years and were last sampled in 2012. Concentration contours within the slurry wall take into consideration the most recent groundwater concentration for these walls.

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

PCE Concentration

- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L

- Estimated Capture zone
- Slurry Wall
- Building
- Road
- Site Boundary

N

150 75 0 150 Feet

Notes:
PCE = Tetrachloroethene
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for PCE in 2013.
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.

A Zone PCE Concentrations and Estimated Capture Zones September/October 2013

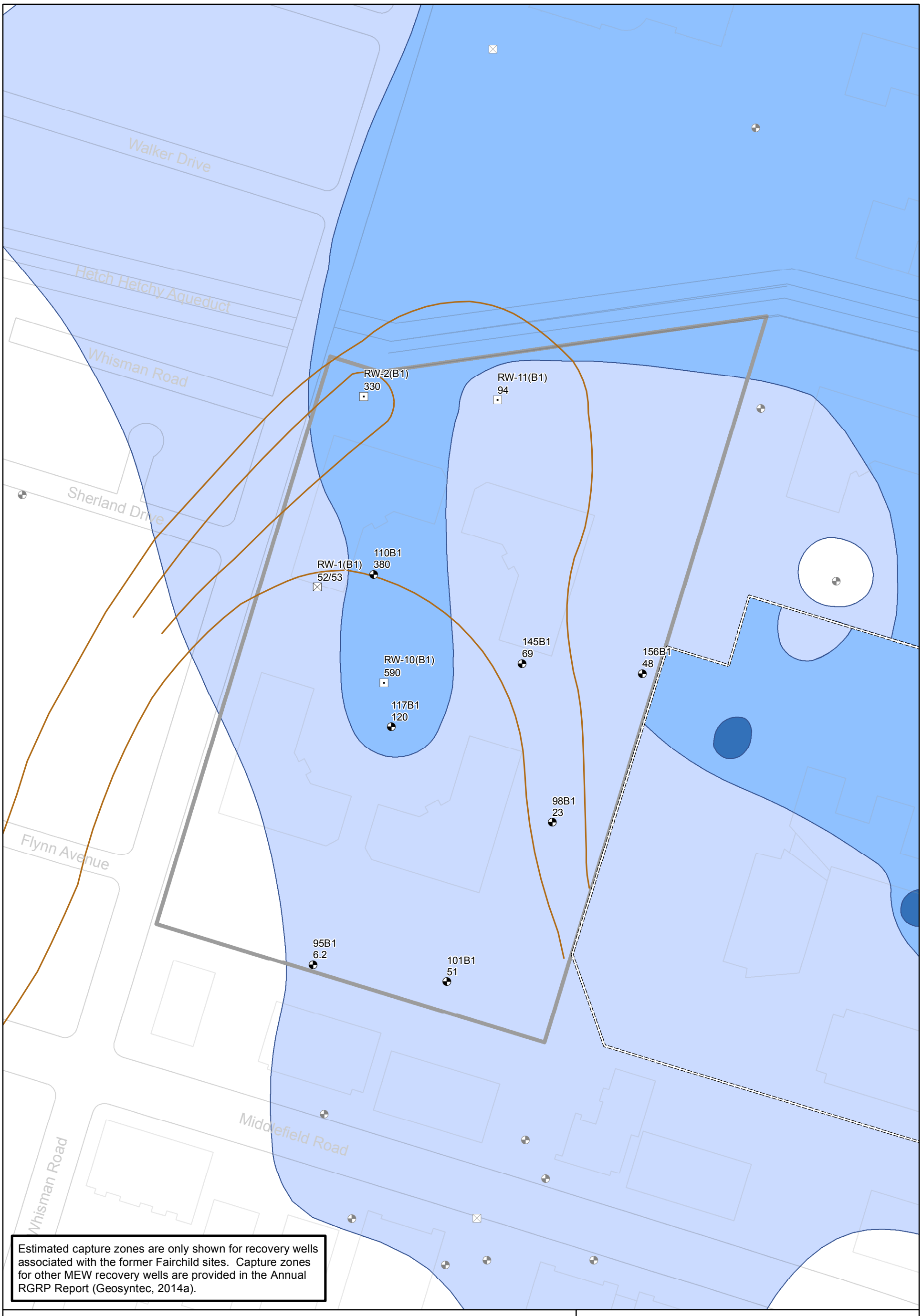
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Oakland | April 2014

Figure 16

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig16_PCE_A_Sept_CZ.mxd | 3/26/2014 3:21:08 PM



B1 Zone TCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Oakland | April 2014

Figure 17

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig17_TCE_B1_Sept_CZ.mxd | 3/26/2014 3:21:58 PM

B1 Zone cDCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

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Figure 18

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig18_DCE_B1_Sept_CZ.mxd | 3/26/2014 3:22:52 PM

B1 Zone VC Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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Figure 19

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig19_VC_B1_Sept_CZ.mxd | 3/26/2014 3:23:46 PM

Estimated capture zones are only shown for recovery wells associated with the former Fairchild sites. Capture zones for other MEW recovery wells are provided in the Annual RGRP Report (Geosyntec, 2014a).

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

PCE Concentration

- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L

- Estimated Capture zone
- Slurry Wall
- Building
- Road
- Site Boundary

N

150 75 0 150 Feet

Notes:
PCE = Tetrachloroethene
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for PCE in 2013.
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.

B1 Zone PCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

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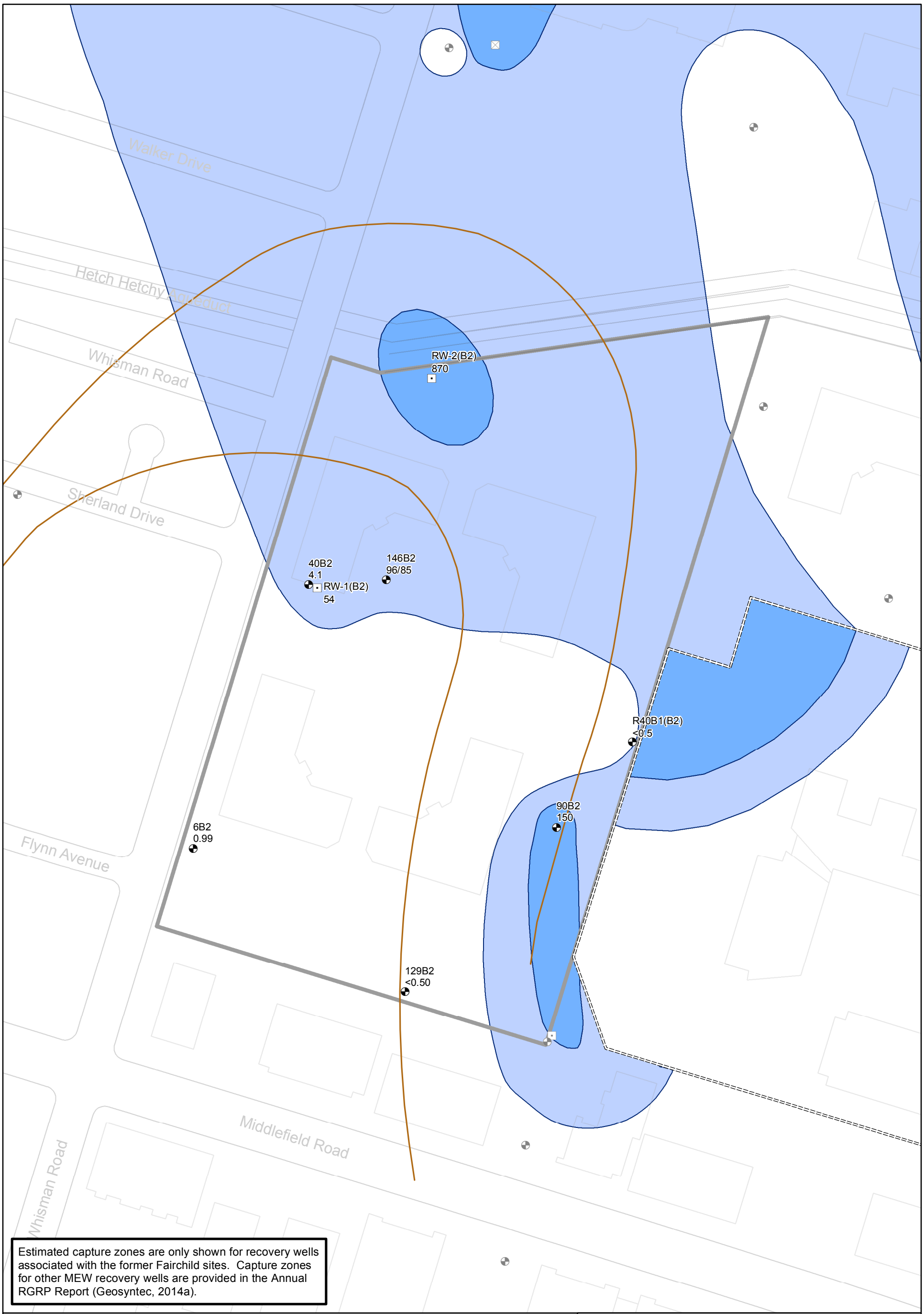
Figure 20

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig20_PCE_B1_Sept_CZ.mxd | 3/26/2014 3:24:33 PM



B2 Zone TCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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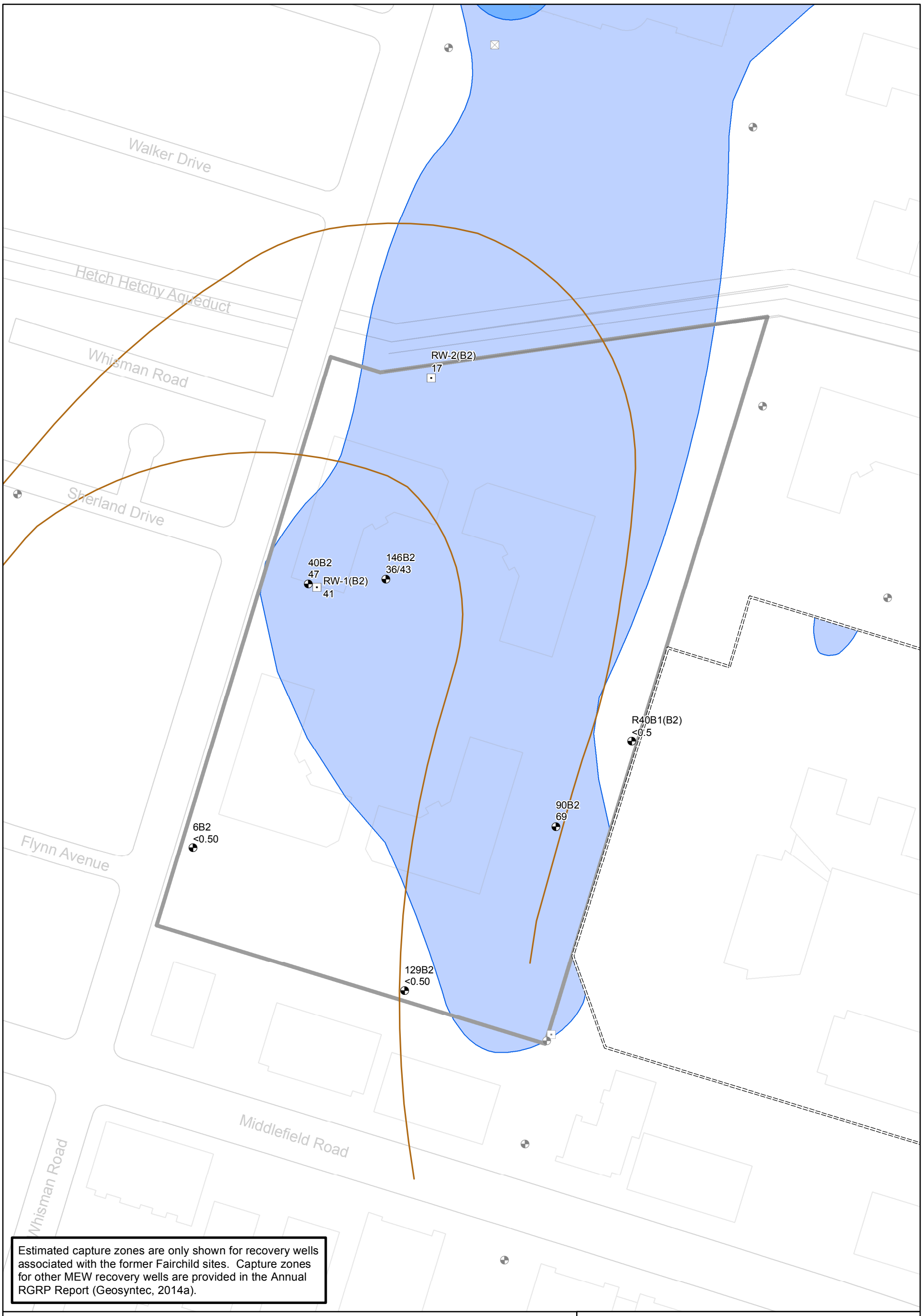
Figure 21

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig21_TCE_B2_Sept_CZ.mxd | 3/26/2014 3:25:27 PM



B2 Zone cDCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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Figure 22

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig22_cDCE_B2_Sept_CZ.mxd | 3/26/2014 3:26:17 PM

Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road

RW-2(B2)
<0.50

40B2
<0.50

RW-1(B2)
<0.50

146B2
<0.50/<0.50

R40B1(B2)
<0.5

90B2
<0.50

6B2
<0.50

129B2
<0.50

Estimated capture zones are only shown for recovery wells associated with the former Fairchild sites. Capture zones for other MEW recovery wells are provided in the Annual RGRP Report (Geosyntec, 2014a).

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

VC Concentration

- 0.5 - 5 ug/L
- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L

- Estimated Capture zone
- Slurry Wall
- Building
- Road
- Site Boundary

N

150 75 0 150 Feet

Notes:
VC = Vinyl Chloride
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for VC in 2013.
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.

B2 Zone VC Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Oakland | April 2014

Figure 23

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig23_VC_B2_Sept_CZ.mxd | 3/26/2014 3:27:03 PM

B2 Zone PCE Concentrations and Estimated Capture Zones September/October 2013

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

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Figure 24

P:\GIS\MEW\Project\Fairchild\2013_AR\Building19\Fig24_PCE_B2_Sept_CZ.mxd | 3/26/2014 3:27:59 PM

APPENDIX A

2013 Annual Report Remedy Performance Checklist

2013 Annual Report Remedy Performance Checklist

I. GENERAL SITE INFORMATION	
Facility Name: Former Fairchild Facilities, Middlefield-Ellis-Whisman Study Area (MEW Site)	
Facility Address, City, State: 515/545 North Whisman Road and 313 Fairchild Drive (former Bldgs. 1-4; this includes the building located at 323 Fairchild Drive) 369 and 441 North Whisman Road (former Bldgs. 13 and 19 and 23; this includes buildings located 379, 389 and 399 North Whisman Road) 401 National Avenue (former Bldg. 9) 331 Fairchild Drive (former Bldg. 18, formerly 644 National Avenue) 464 Ellis Street (former Bldg. 20 and 20A; this includes buildings located at 466 and 468 Ellis Street)	
Checklist completion date: March 2014	EPA Site ID: System-1: CAR000164285 System-3: CAD095989778 System-19: CAR000164228
Site Lead: ☐ Fund ☑ PRP ☐ State ☐ State Enforcement ☐ Federal Facility ☐ Other: EPA Region IX	

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

1. Three slurry wall enclosures around former Buildings 1-4, Building 9, and Building 19. The slurry walls extend to a depth of about 40 feet below ground surface and are keyed a minimum of two feet into the A/B1 aquitard.
2. Extraction Systems as described below:

Buildings 1-4 – 20 Source Recovery Wells (SCRWs), 3 of the SCRWs are also operational under the Regional Groundwater Remediation Program (RGRP)

Buildings 13, 19, 23 – 13 SCRWs and 1 Regional Groundwater Remediation Program well.

Building 9 – 4 SCRWs

Building 18 – 1 SCRW and 3 Regional Groundwater Remediation Program wells.

3. Treatment Systems as described below:

System 1 (treats water from Buildings 1-4, Building 9, Building 18, and one RGRP well)

- Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.

System 3 (treats water from Buildings 1-4)

- Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.

System 19 (treats water from Buildings 13, 19, and 23, and two RGRP wells)

- Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.

2013 Annual Report Remedy Performance Checklist

II. CONTACTS

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

	Name/Title	Phone	E-mail
RP/Facility Representative	Virgilio Cocianni Schlumberger Technology Corporation	281-285-4747	cocianni-v@slb.com
RP Consultant	John Gallinatti Geosyntec Consultants	510-285-2750	jgallinatti@geosyntec.com
RP Consultant	Trish Eliasson Weiss Associates	510 450-6138	tae@weiss.com

III. O&M COSTS (OPTIONAL)

What is your annual O&M cost total for the reporting year?_____

Breakout your annual O&M cost total into the following categories (use either dollars or %):

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

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

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

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

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

Documents and records are available at treatment systems and/or on-site office located at 453 Ravendale Drive, Suite C, Mountain View, CA.

2013 Annual Report Remedy Performance Checklist

V. INSTITUTIONAL CONTROLS (as applicable)

List institutional controls called for (and from what enforcement document): Signs and other security measures are in place at extraction and treatment points.

Status of their implementation: Posted signage (Health & Safety and emergency contact information).

- Signs and other security measures are in place at extraction and treatment points.
- Groundwater production wells within plume area are prohibited. Administered by Santa Clara Valley Water District.
- Properties formerly owned by Fairchild have deed restrictions that require notification prior to subsurface construction and provide for access for remedial actions.
- Public notifications regarding remediation activities.

Where are the ICs documented and/or reported?

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

Additional remarks regarding ICs:

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

☐ Community Issues
☐ Vandalism
☐ Maintenance Issues
☐Other:

Please elaborate on Significant Site Events:

VII. REDEVELOPMENT

Is redevelopment on property planned? ☑ Yes ☐ No

If yes, what is planned? Please describe below.

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

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

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

Elaborate on redevelopment proposal and how it affects remedy performance:

644 National Avenue property (former Building 18) has been bought by Carr America National Avenue LLC. Redevelopment of the property began in 2012 and was completed in 2013. Redevelopment included demolishing former Fairchild Building 18 and construction of a parking lot on the former Fairchild Building 18 site. The former Fairchild building 18 property has been consolidated with properties to the north and the new address is 331 Fairchild Drive. There is continued coordination with the developer to maintain the extraction wells, conveyance piping, and monitoring wells at the Site, as well as the Regional Groundwater Remediation Program (RGRP) South of 101 treatment system located on the Site.

369 and 441 North Whisman Road (former Bldgs. 13 and 19 and 23), owned by Keenan Lovewell Ventures, is developing plans for additional buildings on the site.

The existing treatment systems and their components (conveyance piping, extraction wells, and monitoring wells) will be maintained or modified as appropriate to accommodate redevelopment.

2013 Annual Report Remedy Performance Checklist

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

Groundwater Quality Data

List the types of data that are available:	What is the source report?
Potentiometric surface maps, hydrographs Capture zone maps, isoconcentration maps VOC time series plots and trend analysis Laboratory Analytical Results and Reports	2013 Annual Fairchild Building Reports (Geosyntec, 2014) and the 2013 Annual Regional Report (Geosyntec, 2014a)

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

Groundwater Pump & Treat Extraction Well and Treatment System Data

List the types of data that are available:	What is the source report?
O&M logs System Influent & Effluent water samples VOC mass and groundwater removal graphs	NPDES Self-Monitoring Reports 2013 Annual Fairchild Building Reports

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

Discharge Data

List the types of data that are available:	What is the source report?
System performance data such as average flow rates, totalized flow, influent/effluent chemical data, GAC removal efficiencies	NPDES Self-Monitoring Reports

☑ The system is in compliance with discharge permits.

Slurry Wall Data

List the types of data that are available:	What is the source report?
Water level elevations in select well pairs Analysis of inward and upward hydraulic gradients	2013 Annual Fairchild Reports (Geosyntec, 2014)

Is slurry wall operating as designed? ☑ Yes ☐ No

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

The slurry walls are operating as designed and are effective at impeding flow and preventing VOCs inside the wall from migrating downgradient. However, the ROD specifies that the slurry walls, "maintain inward and upward gradients." Historically, this has not been observed in all well pairs, even under maximum historical pumping scenarios.

The chemical concentration data and potentiometric surface contours from 2013 continue to demonstrate that the slurry walls are an effective means of impeding VOC migration outside of the slurry walls.

Elaborate on technical data and/or other comments

2013 Annual Report Remedy Performance Checklist

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

Walk-throughs/Surveys: The EPA issued a ROD amendment on 16 August 2010 to address vapor intrusion. The MEW parties continued to work with EPA and local entities to implement the ROD amendment during 201. In accordance with the Statement of Work for the Vapor Intrusion ROD Amendment, an annual report summarizing the status of the vapor intrusion remedy will be submitted under separate cover (Geosyntec, 2014b).

Summary of Results: Access was received and indoor air sampling was conducted at four buildings in accordance with their EPA-approved building-specific vapor intrusion work plans. Results for 464 Ellis Street showed VOC levels below the EPA commercial indoor air clean-up levels established for this Site. At 466 Ellis Street, an initial round of indoor air sampling revealed TCE levels above the EPA commercial indoor air clean-up leveld established for the site. A recently installed sound insulating product was identified to be the source of TCE off-gassing. The product was subsequently removed and a second round of sampling revealed no exceedances. At 369 and 379 North Whisman Road, indoor air sampling revealed TCE levels above the clean-up levels established for the site. SSD systems are being constructed at these two buildings. More information is provided in the Vapor Intrusion Annual Report (Geosyntec, 2014c).

Problems Encountered: None

Recommendations/Next Steps: Continue to evaluate the potential for vapor intrusion in the buildings that have yet to be sampled, prior to occupancy, and tier the buildings in accordance with the tiers established in the ROD Amendment .

Schedule: Vapor intrusion and tiering activities will be conducted in accordance with a schedule set forth and approved by EPA in the building-specific vapor intrusion work plans and as requested by EPA. Further details are provided in the Vapor Intrusion Annual Report (Geosyntec, 2014c).

X. REMEDY PERFORMANCE ASSESSMENT

A. Groundwater Remedies

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

The groundwater remedy is hydraulic remediation by extraction and treatment. The Treatment System is reliable and consistent in its operation and mass removal ability, with greater than 95% up-time. The capture zones from the extraction wells provide sufficient overlap to achieve hydraulic control over the plume based on flow net evaluation and converging lines of evidence, including stable lateral extent of TCE exceeding 5 µg/L. Remediation is also demonstrated because concentrations within the TCE plume have continued to decrease in all zones. Groundwater with TCE concentrations exceeding 5 µg/L does not discharge to surface water.

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

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

Concentrations within TCE plume have been evaluated using Mann-Kendall analysis and reviewing VOC concentrations over time. The analyses show that TCE concentrations continued to decrease, remain stable, or show no trend in all zones, while the lateral extent of TCE exceeding 5 µg/L has been stable. See Annual Reports for trends in monitoring wells (Geosyntec 2014).

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

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

Plume containment goal is met, slurry walls provide physical containment of sources on 369 N. Whisman Road, 401 National Avenue, 515/545 N. Whisman Road and 313 Fairchild Drive.

Groundwater elevation and chemical monitoring results from 2013 demonstrate that the Fairchild extraction wells continue to achieve adequate horizontal and vertical capture based on converging lines of evidence, including graphical flow net analysis and chemical concentration trends.

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

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

The objective is to remediate and control the plume. VOC concentrations in groundwater continue to remain well below historical maximums, and generally show long-term decreasing trends. The groundwater extraction, treatment, and containment systems are functioning as intended and meet the Remedial Action Objectives for the Site.

B. Vertical Migration

Have you done an assessment of vertical gradients? ☑ Yes ☐ No; If Yes, what does it show? (Is it inconclusive due to inadequate data?

Are the concentrations increasing or decreasing? Explain and provide source document reference

In general, vertical gradients across the B and deeper water-bearing zones are upward. Upward vertical gradients are typical from the B- to A-zone, but downward vertical gradients are observed at a few locations where caused by extraction in deeper zones.

Source document reference: 2013 Annual Fairchild Building Reports (Geosyntec, 2014)
2013 Annual Regional Report (Geosyntec, 2014a)
2008 Optimization Evaluation (Geosyntec, 2008)

C. Source Control Remedies

What are the remedial goals for source control?

Capture of former source areas is the goal for source control. Cleanup standards are Maximum Contaminant Level (MCLs) in upper groundwater zones; the TCE MCL is 5 µg/L.

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

Capture zone analysis in the 2013 Fairchild Building and RGRP Annual Progress Reports indicate containment of target capture areas.

XI. PROJECTIONS

Administrative Issues
Dates of next monitoring and sampling events for next annual reporting period: September/October 2014

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

2013 Annual Report Remedy Performance Checklist

Remedy Projections for the upcoming year (2014/2015)
☑ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☑ Other modification(s) anticipated: Groundwater Remedy Optimization Elaborate below. Target date: 2014

Elaborate on Remedy Projections: EPA has requested that the MEW parties work to optimize performance of the groundwater remedy with respect to mass removal.

Remedy Projections for **the long-term** (Check all that apply)
☑ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. ☐ Expansion or ☐ minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☑ Other modification(s) anticipated: Groundwater Remedy Optimization Elaborate below. Target date: 2014

Elaborate on Remedy Projections: EPA has requested that the MEW parties work to optimize performance of the groundwater remedy with respect to mass removal.

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

Remedy Projections for **the upcoming year**
☐ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☑ Other modification(s) anticipated: Groundwater Remedy Optimization Elaborate below. Target date: 2014

Elaborate on Remedy Projections:

Remedy Projections for **the long-term**
☐ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☑ Other modification(s) anticipated: Groundwater Remedy Optimization Elaborate below. Target date: 2014

Elaborate on Remedy Projections: EPA has requested that the MEW parties work to optimize performance of the groundwater remedy with respect to mass removal.

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

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

Extraction rates were modified in 2010 based on an Optimization Evaluation conducted in 2008 (Geosyntec, 2008).

XII. ADMINISTRATIVE ISSUES
Check all that apply:

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

Site-Wide Focused Groundwater Feasibility Study for Groundwater being conducted by EPA.

Date of Next EPA Five-Year Review: September 30, 2014

XIII. RECOMMENDATIONS

APPENDIX B

Laboratory Analytic Reports and Chain-of-Custody Documents, January through December 2013

(This appendix is being submitted on CD to the EPA only and is available upon request.)

APPENDIX C

QA/QC Report, Summary Tables, and Criteria

Weiss Associates

M E M O R A N D U M

TO: Eric Suchomel, Ph.D., P.E.
Geosyntec Consultants

FROM: Trish Eliasson, P.E.
Weiss Associates

DATE: January 31, 2014
Revised March 5, 2014

RE: **2013 DATA QUALITY ASSURANCE/QUALITY CONTROL SUMMARY**
Middlefield-Ellis-Whisman Area
Mountain View, California

This memorandum summarizes Weiss Associates' (Weiss) review of data quality for water samples collected in 2013 at the Middlefield-Ellis-Whisman (MEW) Area. Our review was conducted in general accordance with the Quality Assurance Project Plan (QAPP)[1] and the United States Environmental Protection Agency (USEPA) data review guidelines.[2,3] The data reviewed herein include field and laboratory data quality assurance and quality control (QA/QC) results for the following events:

- The annual sampling conducted by Weiss of MEW monitoring and extraction wells that occurred in September and October 2013 for the Regional Groundwater Remediation Program (RGRP) and Former Fairchild Buildings (Fairchild).
- Monthly water sampling conducted by Weiss at the RGRP North-101 (N101) and South-101 (S101) treatment systems and Fairchild Systems 1, 3, and 19.

FIELD QA/QC SAMPLE REQUIREMENTS

Per the QAPP, the following field QA/QC samples were collected:

Field duplicate – Field duplicate samples are blind duplicates that provide data to assess precision of the contract laboratory. Field duplicates are specified to be collected at a frequency of 1 for every 20 field samples collected.

[1] The QAPP includes the following: *Quality Assurance Project Plan, Middlefield-Ellis-Whisman Site, Mountain View, California*, prepared by Canonie Environmental Services Corporation, submitted on May 3, 1991 and approved in part by USEPA on July 22, 1991; modifications as presented in *Revision 1.0, Quality Assurance Project Plan, Middlefield-Ellis-Whisman Site, Mountain View, California*, prepared by Canonie, submitted on August 16, 1991; and the *Transmittal of Addendum to the Unified Quality Assurance Project Plan*, submitted on December 2, 1992 and approved by the USEPA on February 3, 1993.

[2] *National Functional Guidelines for Superfund Organic Methods Data Review*, prepared by the USEPA Contract Laboratory Program, OSWER 9240.1-48 USEPA-540-R-08-01, June 2008.

[3] *National Functional Guidelines for Inorganic Superfund Methods Data Review*, prepared by the USEPA Contract Laboratory Program, OSWER 9240.1-51 USEPA-540-R-10-011, January 2010.

Matrix spike/Matrix spike duplicate – Matrix spike/matrix spike duplicate (MS/MSD) samples measure the accuracy and precision of the analytical methods. MS/MSD samples are specified at a frequency of 1 for every 20 field samples collected.

Rinseate blank – Rinseate blanks are collected to evaluate whether sampling equipment (e.g. bladder pumps used at monitoring wells for low-flow sampling) may be causing cross-contamination between sample locations or if sampler materials (e.g., Hydrasleeves™) may be contributing contamination to the samples. The blanks consist of distilled/organic-free water collected from a final rinse of sampling equipment after the decontamination procedure has been performed or before sampling material is deployed. Rinseate blank sampling is not necessary for locations that have dedicated sample collection, such as at groundwater extraction and treatment system (GWETS) sample ports. Following equipment decontamination, distilled/organic-free water used for the final rinse is collected in appropriate bottles. Hydrasleeve rinseate blanks are prepared by rinsing unused Hydrasleeves with distilled/organic-free water and collecting the subsequent rinseate in appropriate bottles. Rinseate samples are specified at a frequency of 1 for every 20 field samples. Twelve rinseate blanks were collected.

Field blank – Field blanks are collected to assess if the source water used onsite for decontamination may affect the samples. The decontamination source water is de-ionized and organic-free. Field blanks are collected at a frequency of 5% of the samples collected.

Trip blank – Trip blanks assist in evaluating whether the exposure of a sample to site conditions, storage, and shipment may introduce contamination. These samples consist of volatile organic analysis vials (VOAs) filled with distilled/organic-free water and preserved with hydrochloric acid. These pre-filled VOAs are supplied by the laboratory and accompany the other samples in the field and to the laboratory. One trip blank accompanies each volatile organic compound (VOC) sample shipment to the laboratory.

LABORATORY DATA QUALITY REVIEW PARAMETERS

Per the QAPP, Weiss verified that the sample results met the QAPP Level 2 and Level 4 requirements for completeness. A Level 2 data review includes reviewing the following parameters:

- Holding time;
- Detection and reporting limits;
- Surrogate recovery (VOC methods only);
- Laboratory control sample recovery;
- MS/MSD recovery;
- Method blank results;
- Trip blank results (VOC methods only);
- Field, rinseate and equipment blank results; and
- Field duplicate results.

Weiss performed a Level 4 data validation review for ten percent of the samples as required by the QAPP. The samples intended for the Level 4 data validation were documented on separate chain-of-custody forms than the other samples. Level 4 validation procedures vary by method. In addition to the Level 2 verification parameters listed above, the Level 4 validation parameters for VOC analyses include:

- Ion abundance;
- Minimum number of initial calibration standards analyzed;

- Relative response factors in initial and continuing calibrations;
- Percent of relative standard deviations in initial calibrations;
- Percent of differences in continuing calibrations;
- Internal standard retention times;
- Internal standard area counts;
- Analytical sequence carryover;
- Dilutions performed appropriately;
- Calibration blank contamination; and
- Data package completeness for all raw data, including chromatograms and bench sheets, for calibration standards, quality control data, and samples.

The Level 4 review of metal data includes:

- Minimum number of initial calibration standards analyzed;
- All initial calibration verification recoveries within established limits;
- Initial calibration correlation coefficients within established limits;
- Continuing calibration verification recoveries within established limits;
- Analytical sequence carryover;
- Dilutions performed appropriately;
- Laboratory duplicate results within established limits;
- Initial and continuing calibration blank contamination; and
- Data package completeness for all raw data, including bench sheets for calibration standards, quality control data, and the sample analyses.

REVIEW FINDINGS

Well Sampling

Field Sampling Data

A total of 280 groundwater monitoring and extraction wells were sampled during the 2013 annual sampling event resulting in 286 laboratory analyses of primary samples. The total numbers of primary analyses, and QA/QC samples for each laboratory test method are summarized on Table 1.

The groundwater sample data were imported into the database and no data were rejected or "J" qualified during the validation process. A J-qualifier, as defined by the USEPA, applies when an analyte is positively identified and the associated numerical value is qualified as an approximate concentration of the analyte in the sample.

Weiss checked all chain-of-custody forms for completeness and accuracy before the samples were transported to the laboratories. The laboratories reported no sample quality concerns that resulted in qualified data. Temperatures in the sample coolers were acceptable for sample preservation, no significant headspace volumes were observed in the VOAs, and sample containers were properly preserved.

Field Duplicates. Field duplicates were collected for VOCs and metals. The required frequency of 1 for every 20 field samples collected was satisfied as specified in the QAPP. Table 2 reports the relative percent difference (RPD) in concentrations for each of the duplicate sample pairs, the average RPD, the upper confidence level (UCL), as specified in the QAPP, and the precision acceptance limits for tetrachloroethene (PCE),

trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC). Table 2 shows that the RPDs for these analytes were less than their respective precision acceptance limits.

Except for arsenic, RPDs were not calculated for metals because metals were not detected above reporting limits in the duplicate pairs. UCLs were not calculated because there was only one field duplicate RPD for arsenic (Table 3).

Matrix Spike/Matrix Spike Duplicates. A total of 44 MS/MSD samples were analyzed for VOCs, and metals. The required frequency of 1 for every 20 field samples collected was met. The RPDs for these MS/MSD samples were below the 35% limit as specified in the QAPP.

Rinseate Blanks. A total of 12 rinseate blank samples were collected (Table 1). The required frequency of 1 rinseate blank for every 20 field samples collected was met. No VOCs or metals were detected above reporting limits in the rinseate blanks.

Field Blanks. A total of 19 field blanks were collected during the well sampling event (Table 1). As required by the QAPP, at least 1 blank was collected for every 20 samples. No VOCs or metals were detected above reporting limits in the field blanks.

Trip Blanks. A total of 31 trip blanks were analyzed for VOCs (Table 1). One blank was collected per shipping container containing samples for VOC analysis. No analytes were detected above reporting limits in any of the trip blanks.

Field Audit. Weiss performed an internal audit of sampling activities on September 24, 2013 and periodically throughout the sampling event as required by the QAPP. The audit consisted of observing sampling activities, reviewing shipping and chain-of-custody procedures for consistency with the QAPP and project operation and maintenance manuals (O&M), conducting split samples and submitting them blind for chemical analyses, and reviewing field forms for completeness and accuracy. The audit findings were that the sampling activities were in general accordance with the QAPP and Weiss standard operating procedures as appropriate.

Laboratory Data

The samples were analyzed by TestAmerica Laboratories, Inc., Pleasanton, California, which is certified by the California Department of Public Health Environmental Laboratory Accreditation Program for the analyses they conducted.

Weiss reviewed the Level 2 and Level 4 QA/QC analysis results produced by the laboratory for the well sample analyses. Our review confirmed that all samples were analyzed per the requested laboratory analyses and that all method holding times were met. No significant deviations from the required reporting limits were identified and no data were rejected. Weiss verified that the samples met the QAPP Level 2 and Level 4 requirements for completeness.

As part of the laboratory protocol specified in the QAPP, method blanks, laboratory control spikes (LCS) are required to be performed to verify accuracy, precision, and completeness.

Method Blanks. The required frequency for method blanks is 1 method blank for every 20 field samples collected and the acceptance criterion is no detections above reporting limits. The required frequency and acceptance criterion were met.

Laboratory Control Spikes. As specified in the QAPP, the required frequency for LCS is 1 LCS for every 20 field samples and the acceptance range is 80% to 120% recovery. The required LCS frequency was met. However, the acceptance range was not met for all compounds. The acceptance criteria in the QAPP was set in 1991 and is considered out-of-date as laboratories are continually calibrating their equipment and updating their capabilities for % recovery for each compound based on the equipment used. In accordance with the EPA Test Method[4], it is necessary for the laboratory to develop single-laboratory performance data for accuracy and precision in the matrices of interest. The laboratory has developed their own in-house LCS recovery limits, which were used as the acceptance criteria for the 2013 data. The laboratory LCS ranges were met for all compounds.

Groundwater Extraction and Treatment System Sampling

Field Sampling Data

A total of 232 primary samples and 45 field duplicates were collected from RGRP Systems N101 and S101 and from Fairchild Systems 1, 3 and 19 throughout the year. The total numbers of primary analyses, duplicate analyses and QA/QC samples for each laboratory test method are summarized on Table 4.

The samples were collected, stored, transported, and managed according to USEPA protocols based on Weiss' review of field and laboratory documentation. The laboratories reported that sample temperature and holding times were within acceptable ranges. No data were rejected during the validation process, and a "detected, but not quantified (DNQ)" qualification was applied to 154 sample results. DNQ qualifier applies when an analyte is detected between the method detection limit and the reporting limit.

Field Duplicates. The required frequency of 1 for every 20 field samples collected was satisfied as specified in the QAPP. Table 5 reports the RPD in concentrations for each of the duplicate sample pairs, average RPDs, resultant UCLs and precision acceptance limits for 1,4-dioxane, PCE, TCE, cis-1,2-DCE and VC. All RPDs were within the precision acceptance limits. Table 6 reports the RPD in concentrations for each of the duplicate sample pairs for selenium. All RPDs for concentrations of selenium were below the precision acceptance limit.

Trip Blanks. Sixty trip blanks, 1 for each GWETS sample shipment to the laboratory, were analyzed for VOCs. No VOCs were detected in the trip blanks except for chloroform in one blank (Table 7). Chloroform was not detected in primary samples that accompanied the blanks, so no data qualifiers were necessary.

[4] EPA, 2003. Method 8000C, Determinative Chromatographic Separations. Revision 3. March, 2003.

Laboratory Data

The samples were analyzed by TestAmerica Laboratories, Inc., Pleasanton, California, a laboratory certified by the California Department of Public Health Environmental Laboratory Accreditation Program for the analyses they conducted.

Per the QAPP, Weiss verified that the samples from the treatment systems met the QAPP Level 2 requirements for completeness. Our review confirmed that all samples were analyzed per the requested laboratory analyses and that all method holding times were met. No significant deviations from the required reporting limits were identified, and no data were rejected. DNQ qualifiers were applied to 154 sample results with 147 qualified due to a result between the method detection limit and the reporting limit.

As part of the laboratory protocol specified in the QAPP, method blanks and LCS are required to be performed to verify accuracy, precision, and completeness.

Method blanks. The required frequency for method blanks is 1 method blank for every 20 field samples collected and the acceptance criterion is no detections above method detection limit. The required frequency and this criterion were met.

Laboratory Control Spikes. As specified in the QAPP, the required frequency for LCS is 1 LCS for every 20 field samples and the acceptance range is 80% to 120% recovery. The required LCS frequency was met. However, the acceptance range, was not met for all compounds. The acceptance criteria in the QAPP was set in 1991 and is considered out-of-date as laboratories are continually calibrating their equipment and updating their capabilities for percent recovery for each compound based on the equipment used. Therefore, there are several compounds where the QAPP acceptance criteria of 80% to 120% cannot be met using modern laboratory practices. The laboratory LCS ranges were met for all compounds.

COMPLETENESS STATEMENT

No laboratory data were invalidated. Therefore, valid data constitutes 100% of the total data collected, exceeding the QAPP requirement of 90%.

TABLES

Table 1. Quantities of Primary Well and Associated Quality Assurance Samples Analyzed in 2013, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Analytes	Laboratory Method	Primary Samples	Field Duplicates	Field Blanks	Rinseate Blanks	Trip Blanks	Matrix Spike/Matrix Spike Duplicates	Total
VOCs	USEPA Method 8260	280	16	15	11[a]	31	44	397
Metals	USEPA Method 6010	6	3	3	1	0	0	13
Total		**286**	**19**	**18**	**12**	**31**	**44**	**410**

Notes:

[a] - Rinseate blanks were collected for primary samples collected using Hydrasleeve or micropurge sampling methods only (198 total primary samples).

Abbreviations:

RGRP - Regional Groundwater Remediation Program

USEPA - United States Environmental Protection Agency

VOCs - volatile organic compounds

Table 2. Summary of VOC Results for Groundwater Duplicate Samples from Well Sampling, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Site, Mountain View, California

Well ID	Sample Date	cis-1,2-DCE (µg/L)	cis-1,2-DCE RPD	PCE (µg/L)	PCE RPD	TCE (µg/L)	TCE RPD	Vinyl Chloride (µg/L)	Vinyl Chloride RPD
10B2	10/29/2013	<0.50		<0.50		<0.50		<0.50	
10B2 (DUP)	10/29/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
123B2	10/3/2013	<0.50		<0.50		<0.50		<0.50	
123B2 (DUP)	10/3/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
132B2	10/17/2013	<0.50		<0.50		<0.50		<0.50	
132B2 (DUP)	10/17/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
146B2	10/24/2013	36		<0.50		96		<0.50	
146B2 (DUP)	10/24/2013	43	18	<0.50	NC	85	12	<0.50	NC
156A	10/21/2013	1,400		<0.50		56		0.61	
156A (DUP)	10/21/2013	1,200	15	<0.50	NC	56	0	0.65	6
42A	10/23/2013	87		1.9		480		1.1	
42A (DUP)	10/23/2013	85	2	1.7	11	470	2	1.0	10
44B3	10/23/2013	<0.50		<0.50		<0.50		<0.50	
44B3 (DUP)	10/23/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
65A	9/30/2013	170		0.82		580		0.77	
65A (DUP)	9/30/2013	150	13	0.73	12	510	13	0.83	7
93A	10/29/2013	9.2		<0.50		2.4		<0.50	
93A (DUP)	10/29/2013	<0.50	189	<0.50	NC	<0.50	162	<0.50	NC
DW3-551	10/17/2013	<0.50		<0.50		<0.50		<0.50	
DW3-551 (DUP)	10/17/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
REG-9A	10/10/2013	34		<0.50		68		0.53	
REG-9A (DUP)	10/10/2013	38	11	<0.50	NC	68	0	0.51	4
RW-1(B1)	10/24/2013	5.1		<0.50		52		<0.50	
RW-1(B1) (DUP)	10/24/2013	5.3	4	<0.50	NC	53	2	<0.50	NC
RW-2A	10/17/2013	86		<0.50		250		<0.50	
RW-2A (DUP)	10/17/2013	82	5	<0.50	NC	260	4	<0.50	NC
RW-3A	10/24/2013	4.9		<0.50		44		<0.50	
RW-3A (DUP)	10/24/2013	5.3	8	<0.50	NC	44	0	<0.50	NC
RW-5(B2)	10/17/2013	<0.50		<0.50		<0.50		<0.50	
RW-5(B2) (DUP)	10/17/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
RW-9A	10/29/2013	380		0.79		450		1.3	
RW-9A (DUP)	10/29/2013	380	0	0.79	0	470	4	1.3	0
Average RPD			26		8		20		5
UCL			164		16		143		10
Precision Acceptance Limit			**190**		**24**		**163**		**15**

Table 2. Summary of VOC Results for Groundwater Duplicate Samples from Well Sampling, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Site, Mountain View, California

Notes:
For duplicate pairs where one analyte was detected in one sample but not the other, half the reporting limit was used as the concentration for the sample with no analyte detected.
VOCs analyzed by USEPA Method 8260B
Per the 1991 Quality Assurance Project Plan:
RPD = (X1-X2) /((X1+X2) / 2)*100 where X1 is the concentration in sample 1 and X2 is the concentration in sample 2.
UCL = 3*s, where s is the standard deviation of the RPDs for that analyte.
Precision Acceptance Limit = average RPD + UCL

Abbreviations:
< # - analyte not detected above the reporting limit of "#"
cis-1,2-DCE - cis-1,2-dichloroethene
DUP - duplicate sample
NC - not calculated
PCE - tetrachloroethene
RPD - relative percent difference
TCE - trichloroethene
UCL - upper confidence level
VOCs - volatile organic compounds
µg/L - micrograms per liter
BOLD = RPD exceeds the precision acceptance limit

Table 3. Metal Results for Groundwater Duplicate Samples Collected from Wells in 2013, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Site, Mountain View, California

		Antimony		Arsenic		Cadmium		Lead	
Well ID	**Sample Date**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**
10B2	10/29/2013	---		11		---		---	
10B2 (DUP)	10/29/2013	---	---	12	9	---	---	---	---
42A	10/30/2013	<10		---		<2.5		---	
42A (DUP)	10/30/2013	<10	NC	---	---	<2.5	NC	---	---
RW-1(B1)	10/29/2013	---		---		---		<5	
RW-1(B1) (DUP)	10/29/2013	---	---	---	---	---	---	<5	NC

Notes:

Metals analyzed by United States Environmental Protection Agency Method 6010B

Abbreviations:

< # - analyte not detected above the reporting limit of "#"

--- - not analyzed

µg/L - micrograms per liter

DUP - duplicate sample

NC - not calculated

RPD - relative percent difference per the quality assurance project plan.

RPD = (X1-X2) /((X1+X2) / 2)*100 where X1 is the concentration in sample 1 and X2 is the concentration in sample 2.

Table 4. Quantities of System and Associated Quality Assurance Samples Analyzed in 2013, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Analytes	Lab Method	Primary Samples Analyzed	Field Duplicates	Trip Blanks	Matrix Spike/ Matrix Spike Duplicates	Total
VOCs	USEPA Method 8260	184	24	60	30	298
1,4-Dioxane	USEPA Method 8270	31	15	0	1	47
Metals	USEPA Method 6010	7	6	0	1	14
Turbidity	USEPA Method 180.1	5	0	0	2	7
96-hour Fish Bioassay	E2000 (821-R-02-012)	5	0	0	0	5
Total		**232**	**45**	**60**	**34**	**371**

Abbreviations:

RGRP - Regional Groundwater Remediation Program

USEPA - United States Environmental Protection Agency

VOCs - volatile organic compounds

Table 5. Summary of Results for VOCs and 1,4-Dioxane Duplicate Samples Collected during Treatment System Sampling Events, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Site, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	cis-1,2-DCE (µg/L)	cis-1,2-DCE RPD	PCE (µg/L)	PCE RPD	TCE (µg/L)	TCE RPD	Vinyl Chloride (µg/L)	Vinyl Chloride RPD	1,4-Dioxane (µg/L)	1,4-Dioxane RPD
RGRP	N101	Influent	2/6/2013	190		<10		690		<10		2.1	
RGRP	N101	Influent (DUP)	2/6/2013	220	15	1.6	103	800	15	0.9	139	2.4	13
RGRP	N101	Influent	3/8/2013	210		<10		730		<10		---	
RGRP	N101	Influent (DUP)	3/8/2013	220	5	<5.0	NC	750	3	<5.0	NC	---	---
RGRP	N101	Influent	4/17/2013	220		<10		820		<10		---	
RGRP	N101	Influent (DUP)	4/17/2013	210	5	<5.0	NC	800	2	<5.0	NC	---	---
RGRP	N101	Influent	6/7/2013	210		<10		720		<10		---	
RGRP	N101	Influent (DUP)	6/7/2013	220	5	<5.0	NC	750	4	<5.0	NC	---	---
RGRP	N101	Influent	7/10/2013	210		<10		770		<10		---	
RGRP	N101	Influent (DUP)	7/10/2013	210	0	<5.0	NC	780	1	<5.0	NC	---	---
RGRP	N101	Influent	9/6/2013	260		<10		980		<10		---	
RGRP	N101	Influent (DUP)	9/6/2013	210	21	<5.0	NC	800	20	<5.0	NC	---	---
RGRP	N101	Influent	10/9/2013	220		<10		680		<10		---	
RGRP	N101	Influent (DUP)	10/9/2013	230	4	<5.0	NC	670	1	<5.0	NC	---	---
RGRP	N101	Influent	12/4/2013	380		<10		1,300		<10		---	
RGRP	N101	Influent (DUP)	12/4/2013	280	30	2.2	78	980	28	<5.0	NC	---	---
RGRP	N101	Effluent	1/18/2013	<0.50		<0.50		<0.50		<0.50		---	
RGRP	N101	Effluent (DUP)	1/18/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	---	---
RGRP	N101	Effluent	5/17/2013	---		---		---		---		2.1	
RGRP	N101	Effluent (DUP)	5/17/2013	---	---	---	---	---	---	---	---	2.3	9
RGRP	N101	Effluent	11/11/2013	---		---		---		---		1.9	
RGRP	N101	Effluent (DUP)	11/11/2013	---	---	---	---	---	---	---	---	2.6	31
RGRP	S101	Midpoint 1	5/17/2013	86		<10		2,000		<10		---	
RGRP	S101	Midpoint 1 (DUP)	5/17/2013	79	8	1.5	108	2,000	0	<0.50	NC	---	---
RGRP	S101	Midpoint 1	8/8/2013	61		<5.0		1,300		<5.0		---	
RGRP	S101	Midpoint 1 (DUP)	8/8/2013	63	3	1.3	63	1,200	8	<0.50	NC	---	---
RGRP	S101	Midpoint 1	11/11/2013	90		1.4		2,000		<0.50		---	
RGRP	S101	Midpoint 1 (DUP)	11/11/2013	79	13	<25	160	1,800	11	<25	NC	---	---
Fairchild	System 1	Influent	5/9/2013	610		2.4		1,100		4.3		---	
Fairchild	System 1	Influent (DUP)	5/9/2013	600	2	2.4	0	1,000	10	4.9	13	---	---
Fairchild	System 1	Midpoint 2	7/11/2013	<0.50		<0.50		<0.50		0.53		---	

Table 5. Summary of Results for VOCs and 1,4-Dioxane Duplicate Samples Collected during Treatment System Sampling Events, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Site, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	cis-1,2-DCE (µg/L)	cis-1,2-DCE RPD	PCE (µg/L)	PCE RPD	TCE (µg/L)	TCE RPD	Vinyl Chloride (µg/L)	Vinyl Chloride RPD	1,4-Dioxane (µg/L)	1,4-Dioxane RPD
Fairchild	System 1	Midpoint 2 (DUP)	7/11/2013	<0.50	NC	<0.50	NC	<0.50	NC	0.38	33	---	---
Fairchild	System 1	Midpoint 2	10/11/2013	<0.50		<0.50		<0.50		<0.50		---	
Fairchild	System 1	Midpoint 2 (DUP)	10/11/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	---	---
Fairchild	System 3	Influent	2/13/2013	820		8.3		1,300		<10		2.0	
Fairchild	System 3	Influent (DUP)	2/13/2013	670	20	7.4	11	1,100	17	2.5	67	2.4	18
Fairchild	System 3	Influent	5/9/2013	---		---		---		---		2.0	
Fairchild	System 3	Influent (DUP)	5/9/2013	---	---	---	---	---	---	---	---	2.6	26
Fairchild	System 3	Influent	8/8/2013	690		7.8		1,200		<10		1.4	
Fairchild	System 3	Influent (DUP)	8/8/2013	710	3	7.5	4	1,300	8	<10	NC	2.5	56
Fairchild	System 3	Influent	11/12/2013	---		---		---		---		2.7	
Fairchild	System 3	Influent (DUP)	11/12/2013	---	---	---	---	---	---	---	---	2.1	25
Fairchild	System 3	Midpoint 2	12/20/2013	5.8		<0.50		<0.50		2.4		---	
Fairchild	System 3	Midpoint 2 (DUP)	12/20/2013	5.2	11	<0.50	NC	<0.50	NC	2.2	9	---	---
Fairchild	System 3	Effluent	1/17/2013	<0.50		<0.50		<0.50		<0.50		1.4	
Fairchild	System 3	Effluent (DUP)	1/17/2013	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	1.5	7
Fairchild	System 3	Effluent	3/7/2013	---		---		---		---		3.2	
Fairchild	System 3	Effluent (DUP)	3/7/2013	---	---	---	---	---	---	---	---	3.3	3
Fairchild	System 3	Effluent	4/11/2013	---		---		---		---		1.1	
Fairchild	System 3	Effluent (DUP)	4/11/2013	---	---	---	---	---	---	---	---	0.78	34
Fairchild	System 3	Effluent	6/6/2013	---		---		---		---		3.0	
Fairchild	System 3	Effluent (DUP)	6/6/2013	---	---	---	---	---	---	---	---	2.8	7
Fairchild	System 3	Effluent	7/11/2013	---		---		---		---		1.5	
Fairchild	System 3	Effluent (DUP)	7/11/2013	---	---	---	---	---	---	---	---	2.0	29
Fairchild	System 3	Effluent	9/26/2013	---		---		---		---		<1.0	
Fairchild	System 3	Effluent (DUP)	9/26/2013	---	---	---	---	---	---	---	---	<1.0	NC
Fairchild	System 3	Effluent	10/11/2013	---		---		---		---		<1.0	
Fairchild	System 3	Effluent (DUP)	10/11/2013	---	---	---	---	---	---	---	---	<1.0	NC
Fairchild	System 3	Effluent	12/20/2013	---		---		---		---		2.1	
Fairchild	System 3	Effluent (DUP)	12/20/2013	---	---	---	---	---	---	---	---	2.0	5
Fairchild	System 19	Influent	3/7/2013	210		<2.5		530		2.4		---	

Table 5. Summary of Results for VOCs and 1,4-Dioxane Duplicate Samples Collected during Treatment System Sampling Events, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Site, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	cis-1,2-DCE (µg/L)	cis-1,2-DCE RPD	PCE (µg/L)	PCE RPD	TCE (µg/L)	TCE RPD	Vinyl Chloride (µg/L)	Vinyl Chloride RPD	1,4-Dioxane (µg/L)	1,4-Dioxane RPD
Fairchild	System 19	Influent (DUP)	3/7/2013	210	0	0.72	54	530	0	3.0	22	---	---
Fairchild	System 19	Influent	4/11/2013	180		<2.5		460		2.6		---	
Fairchild	System 19	Influent (DUP)	4/11/2013	170	6	<2.5	NC	410	11	2.1	21	---	---
Fairchild	System 19	Influent	11/12/2013	150		<10		440		<10		---	
Fairchild	System 19	Influent (DUP)	11/12/2013	180	18	0.68	152	480	9	3.7	30	---	---
Fairchild	System 19	Midpoint 2	6/6/2013	<0.50		<0.50		<0.50		0.34		---	
Fairchild	System 19	Midpoint 2 (DUP)	6/6/2013	<0.50	NC	<0.50	NC	<0.50	NC	0.31	9	---	---
Fairchild	System 19	Midpoint 2	9/26/2013	<0.50		<0.50		<0.50		0.93		---	
Fairchild	System 19	Midpoint 2 (DUP)	9/26/2013	<0.50	NC	0.28	11	<0.50	NC	0.83	11	---	---
Average RPD					9		68		9		35		20
UCL					25		166		23		115		44
Precision Acceptance Limit					**34**		**234**		**32**		**150**		**64**

Notes:

For duplicate pairs where one analyte was detected in one sample but not the other, half the reporting limit was used as the concentration for the sample with no analyte detected.

VOCs analyzed by USEPA Method 8260B

1,4-Dioxane analyzed by USEPA Method 8270C

Per the 1991 quality assurance project plan:

RPD = (X1-X2) /((X1+X2) / 2)*100 where X1 is the concentration in sample 1 and X2 is the concentration in sample 2.

UCL = 3*s, where s is the standard deviation of the RPDs for that analyte.

Precision Acceptance Limit = average RPD + UCL

Abbreviations:

--- - not analyzed
< # - analyte not detected above the reporting limit of "#"
cis-1,2-DCE - cis-1,2-dichloroethene
DUP - duplicate sample
FD - field duplicate
NC - not calculated
PCE - tetrachloroethene
BOLD - RPD exceeds the precision acceptance limit
RPD - relative percent difference
RGRP - Regional Groundwater Remediaton Program
TCE - trichloroethene
UCL - upper confidence level
USEPA - United States Environmental Protection Agency
VOCs - volatile organic compounds
µg/L - micrograms per liter

Table 6. Selenium Results for Duplicate Samples from Treatment System Sampling in 2013, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	Selenium (µg/L)	Selenium RPD
RGRP	N101	Effluent	2/6/2013	5.5	
RGRP	N101	Effluent (DUP)	2/6/2013	5.9	7
RGRP	N101	Effluent	5/17/2013	5.3	
RGRP	N101	Effluent (DUP)	5/17/2013	5.9	11
RGRP	N101	Effluent	8/8/2013	5.3	
RGRP	N101	Effluent (DUP)	8/8/2013	5.6	6
Fairchild	System 1	Effluent	5/9/2013	5.0	
Fairchild	System 1	Effluent (DUP)	5/9/2013	5.7	13
Fairchild	System 1	Effluent	8/8/2013	5.7	
Fairchild	System 1	Effluent (DUP)	8/8/2013	5.1	11
Fairchild	System 1	Effluent	11/12/2013	5.2	
Fairchild	System 1	Effluent (DUP)	11/12/2013	5.0	4
Average RPD					**9**
UCL (three standard deviations)					**10**
Precision Acceptance Limit					**19**

Notes:
Selenium analyzed by United States Environmental Protection Agency (USEPA) Method 200.8

Per the 1991 MEW Quality Assurance Project Plan:

RPD = (X1-X2) /((X1+X2) / 2))*100 where X1 is the concentration in sample 1 and X2 is the concentration in sample 2.

UCL = 3*s where s is the standard deviation of the RPDs for that analyte.

Precision Acceptance Limit = average RPD + UCL

Abbreviations:
DUP - duplicate sample collected at indicated location
RPD - Relative Percent Difference
UCL - upper confidence level
µg/L - micrograms per liter

Table 7. Detections in Travel Blanks from Treatment System Sampling in 2013, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Sample Name	Treatment System	Sample Date	Method	Detections
TB-N-131218	N101	12/4/2013	8260	0.31 µg/L DNQ chloroform

Notes:

No volatile organic compounds detected above method detection limits in 59 other travel blank samples analyzed by USEPA Method 8260.

Abbreviations:

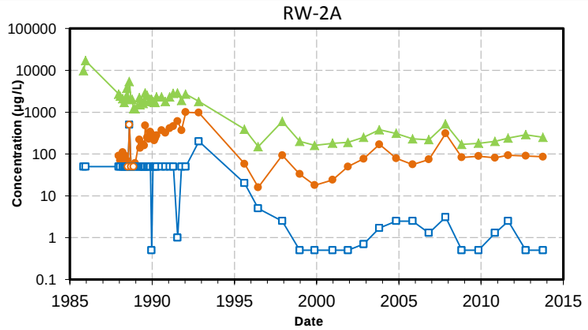
DNQ - detected, but not quantified

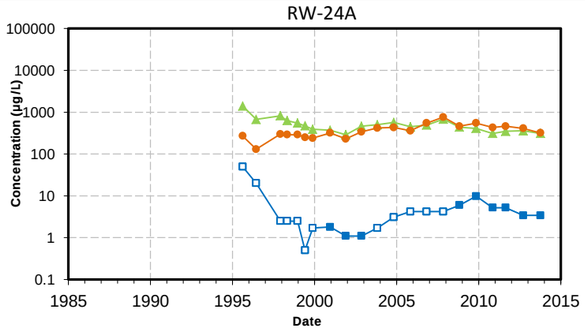
USEPA - United States Environmental Protection Agency

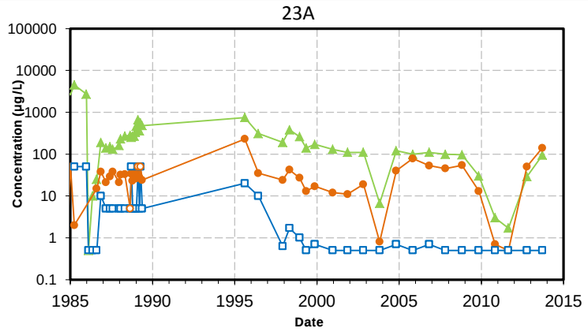
µg/L - micrograms per liter

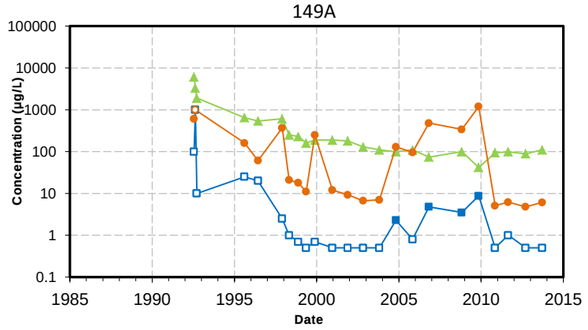
APPENDIX D

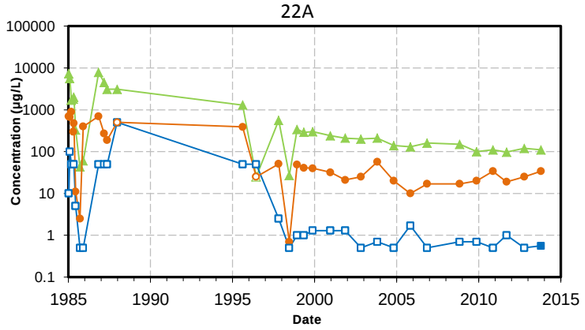
VOCs versus Time Graphs

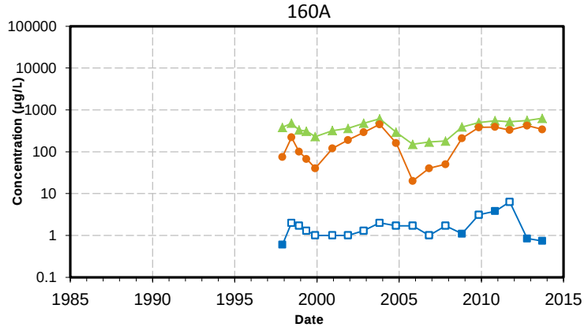


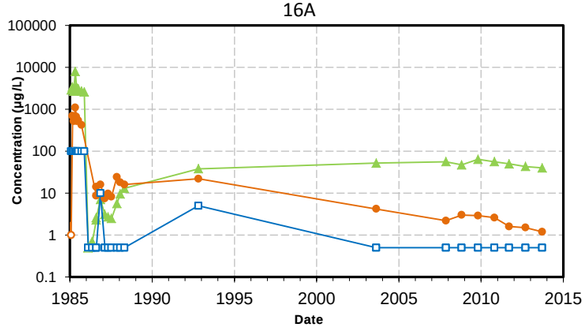


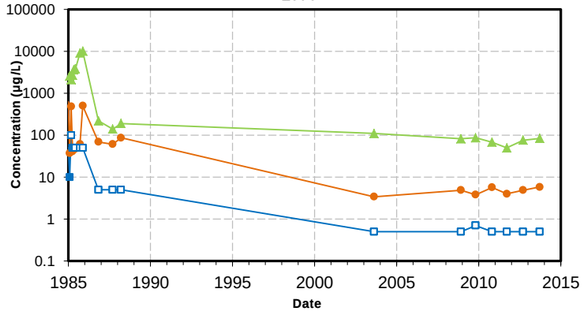


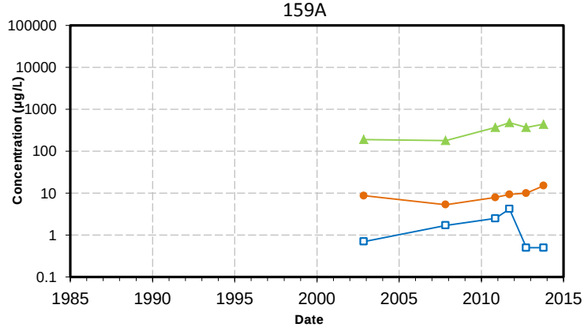


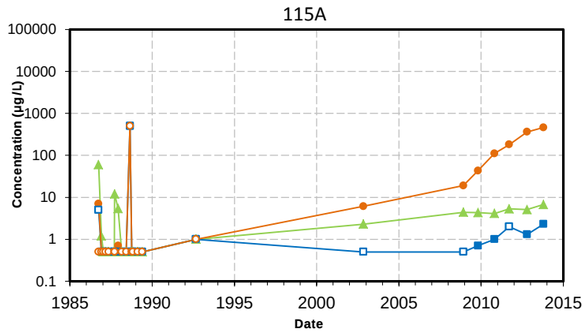


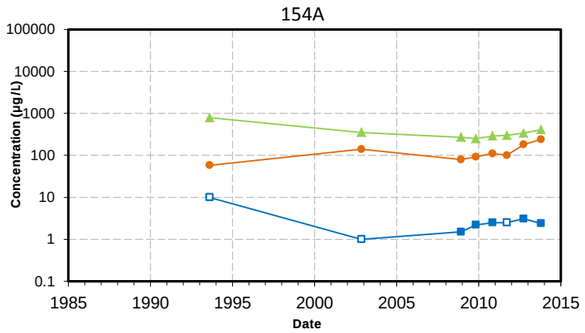


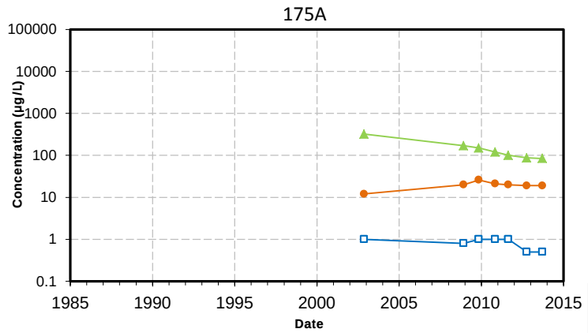






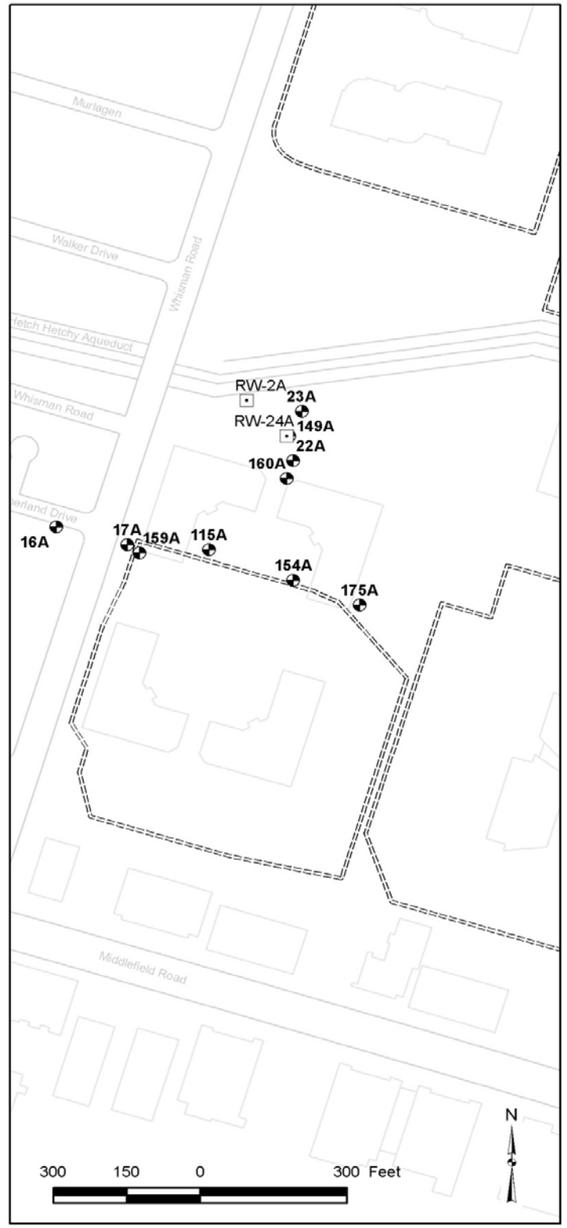






Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

Note:
Open symbols are non-detects, presented at limit of quantification



16A Monitoring Well

RW-2A Extraction Well (On)

Chlorinated Ethenes in Groundwater
A Aquifer Wells

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Oakland | April 2014

Figure **D-1**

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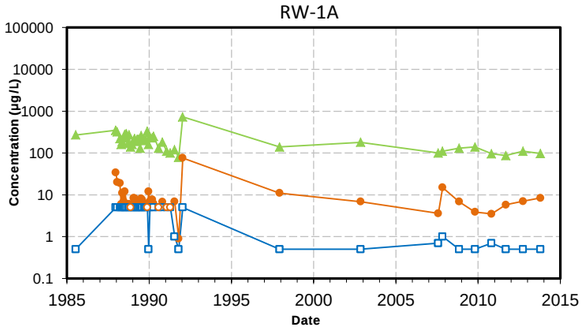
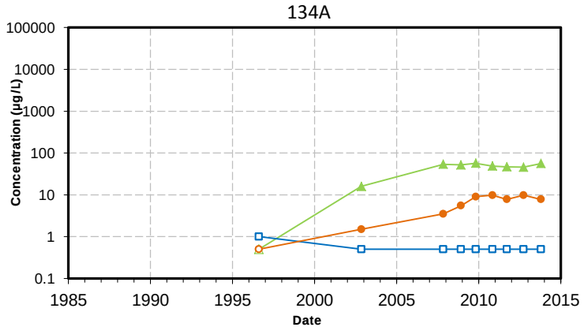
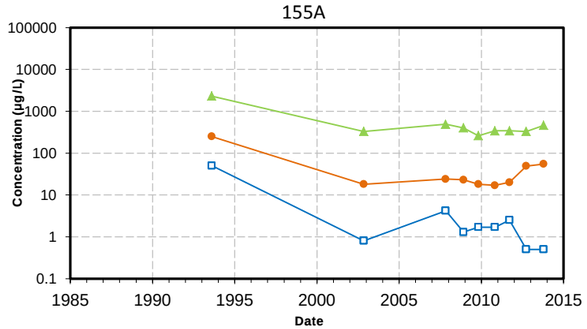
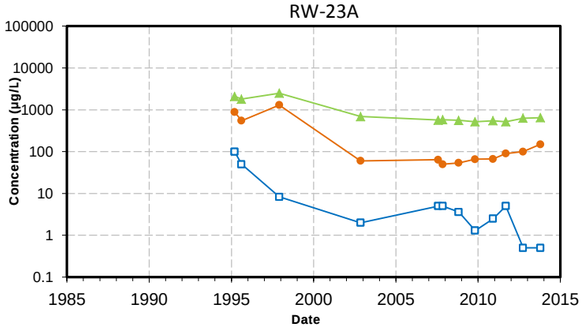
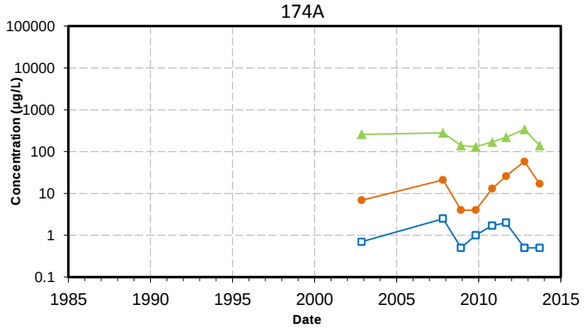
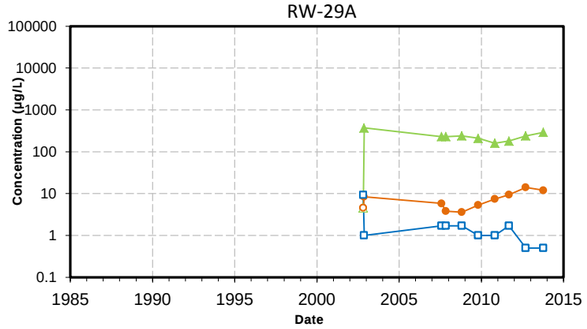


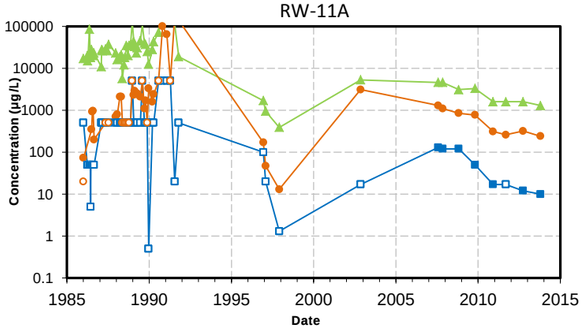


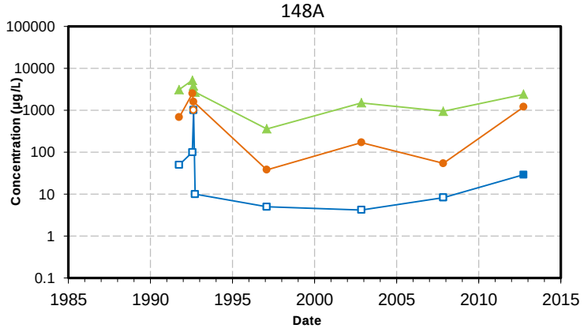


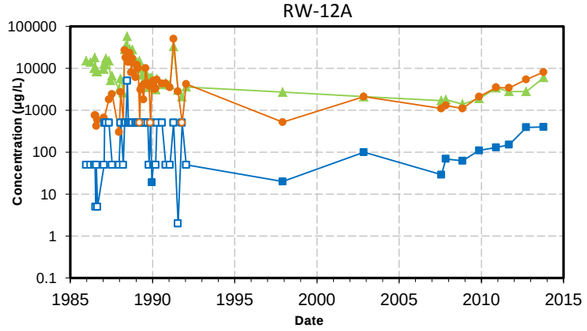


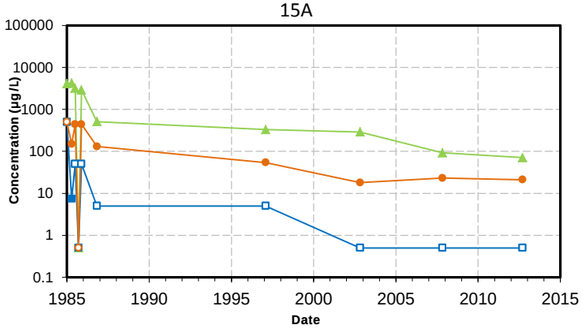


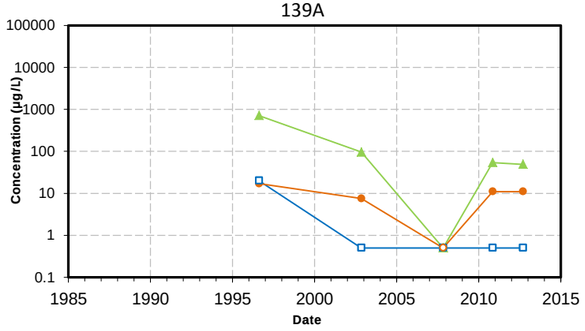


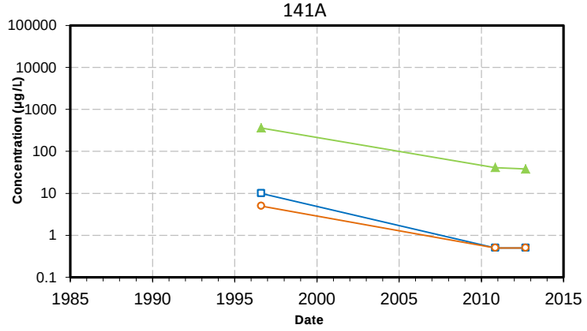






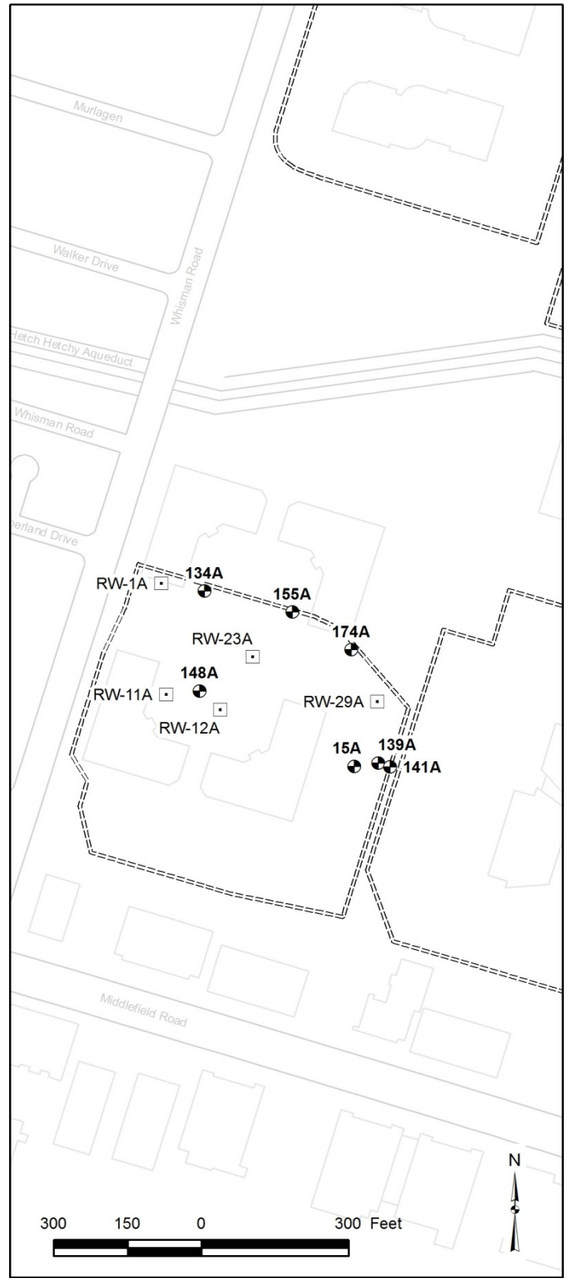






Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

Note:
Open symbols are non-detects, presented at limit of quantification



148A Monitoring Well

RW-1A Extraction Well (On)

Chlorinated Ethenes in Groundwater
A Aquifer Wells

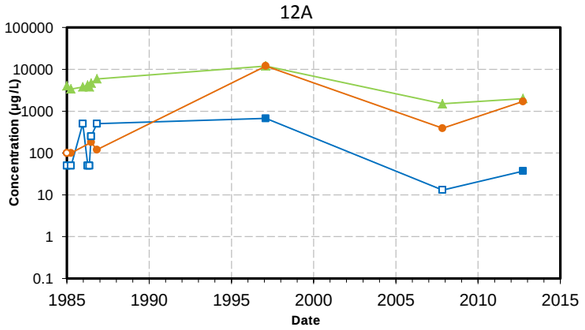
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

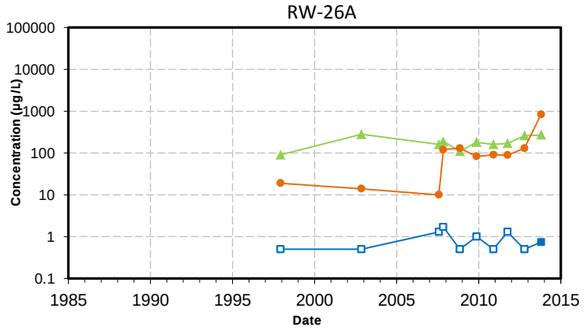
Geosyntec consultants

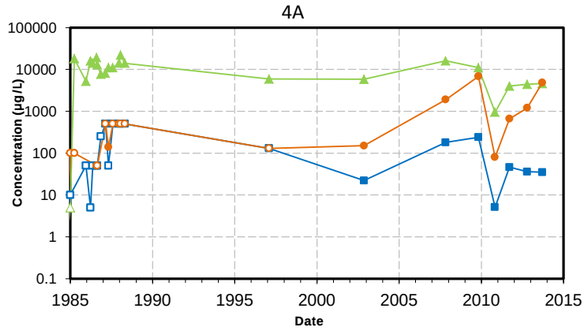
Oakland | April 2014

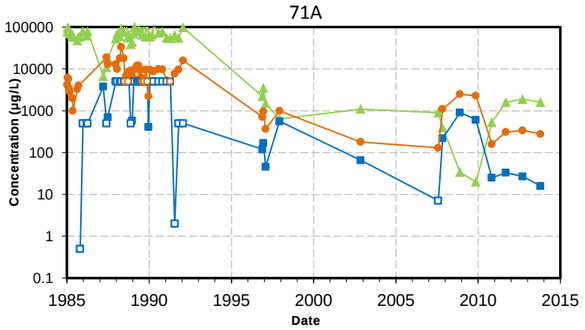
Figure **D-2**

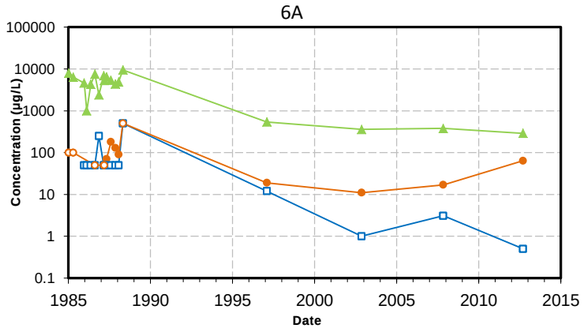
P:\GIS\MEW\Excel\Fairchild\2013_AR\Building19\[FigD-2_TimeSeries.xlsx]

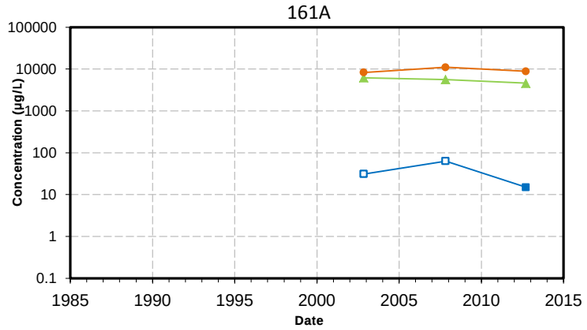


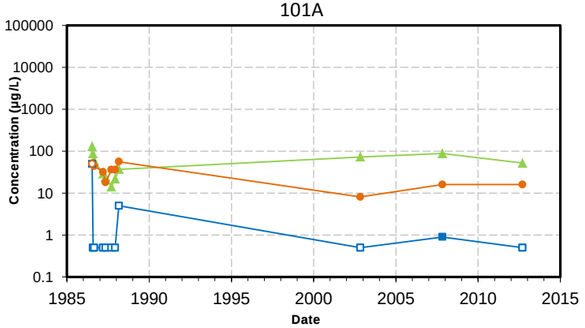


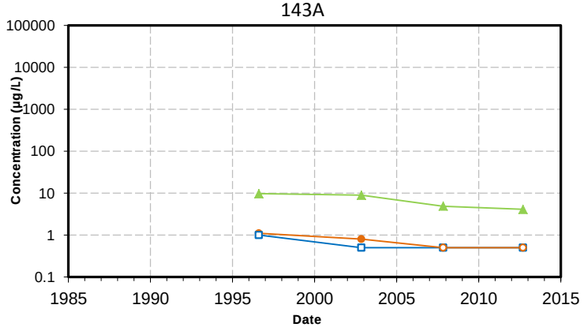


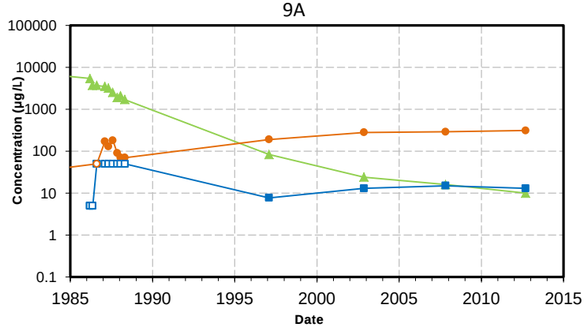


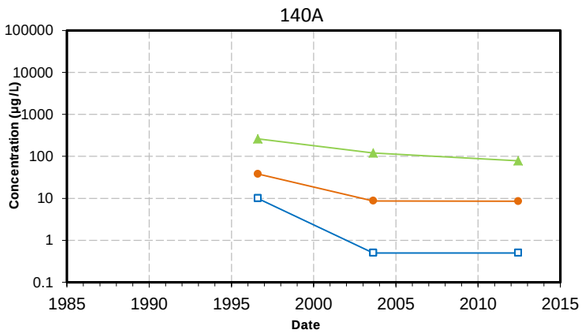












Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

Note:
Open symbols are non-detects, presented at limit of quantification

140A Monitoring Well
RW-26A Extraction Well (On)

Chlorinated Ethenes in Groundwater
A Aquifer Wells
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Oakland | April 2014

Figure **D-3**

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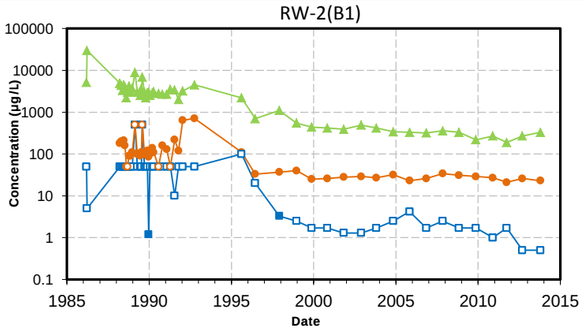
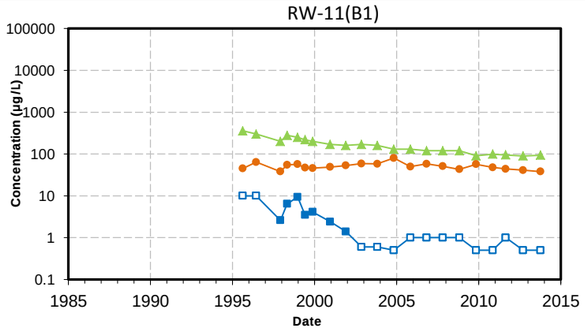
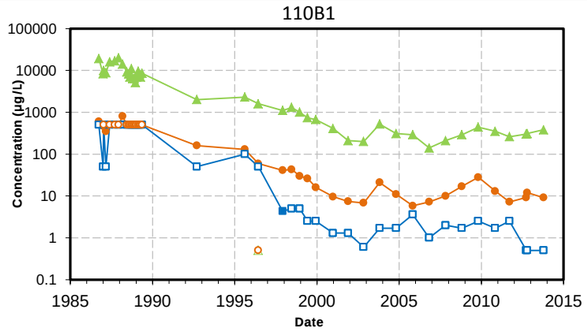
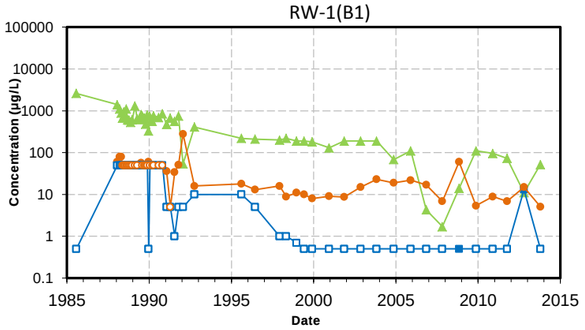
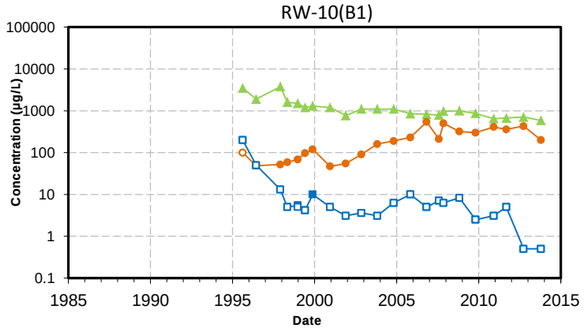
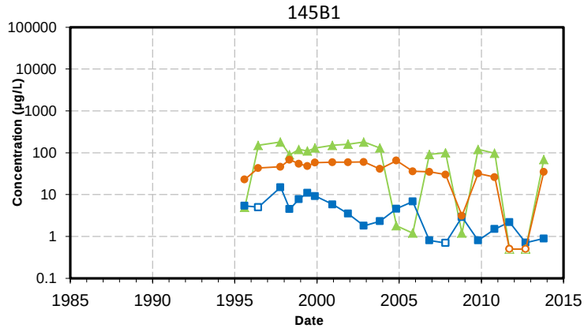


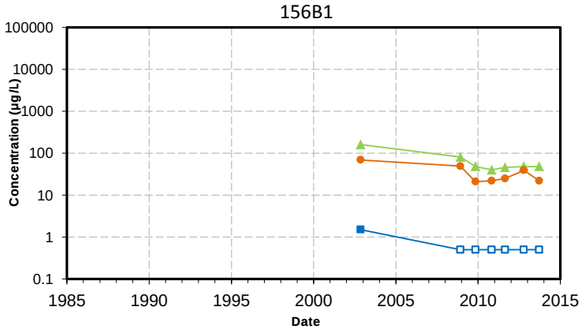


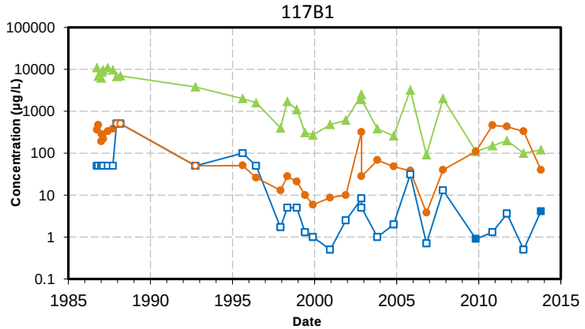


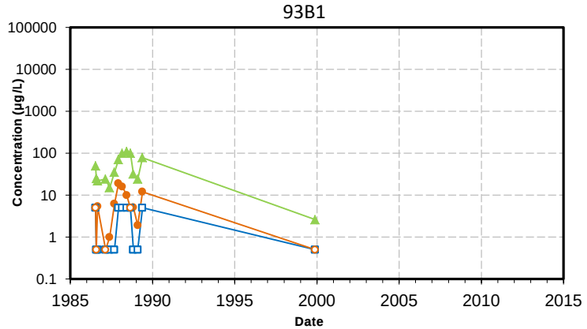


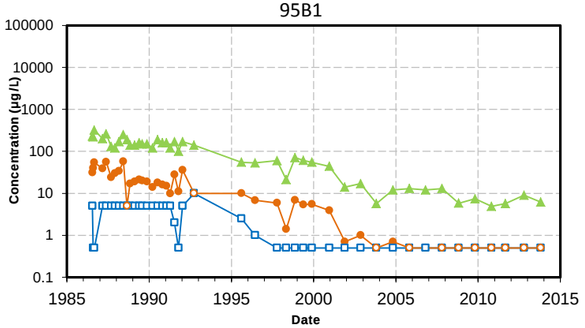


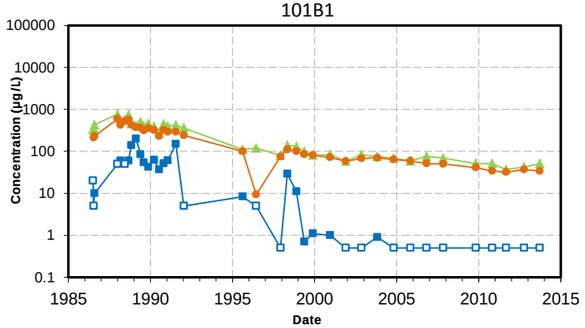






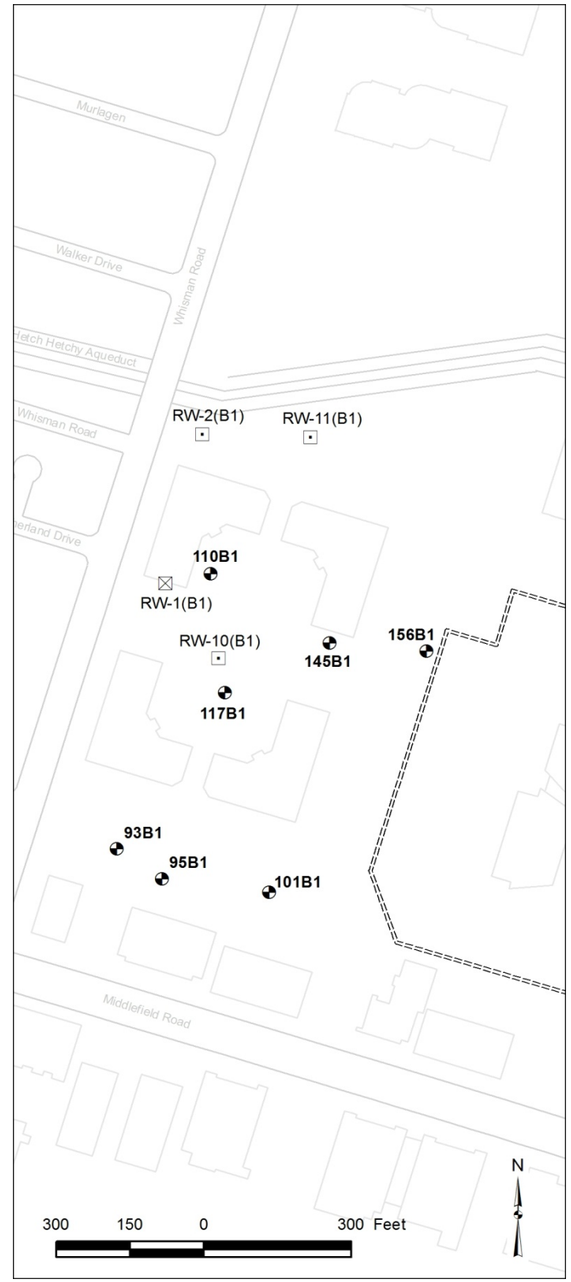






Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

Note:
Open symbols are non-detects, presented at limit of quantification



93B1 Monitoring Well
RW-10(B1) Extraction Well (On)
RW-1(B1) Extraction Well (Off)

Chlorinated Ethenes in Groundwater
B1 Aquifer Wells
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Oakland | April 2014

Figure **D-4**

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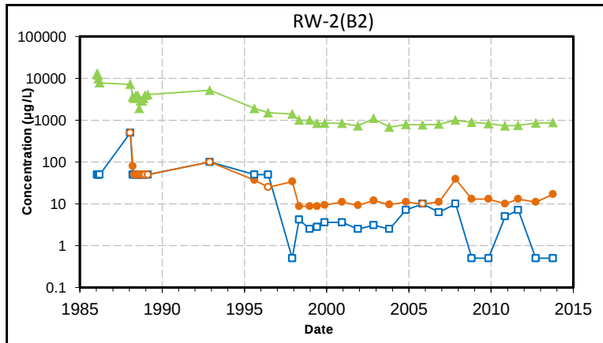

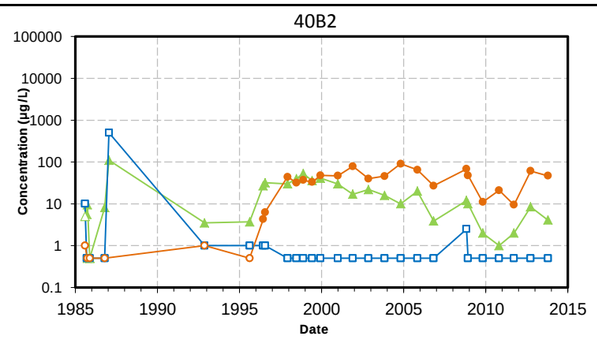

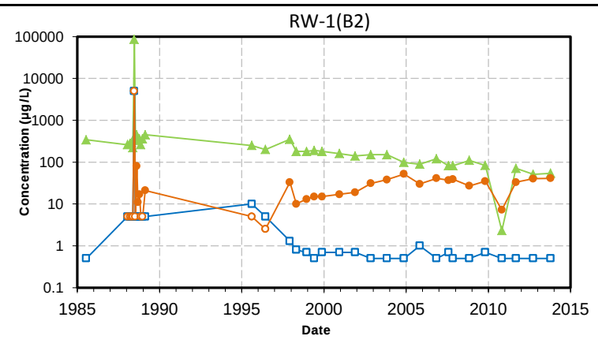

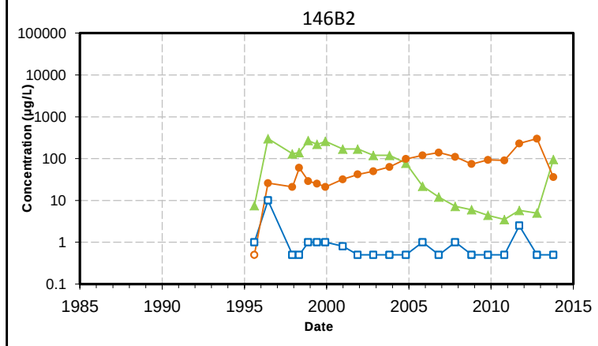

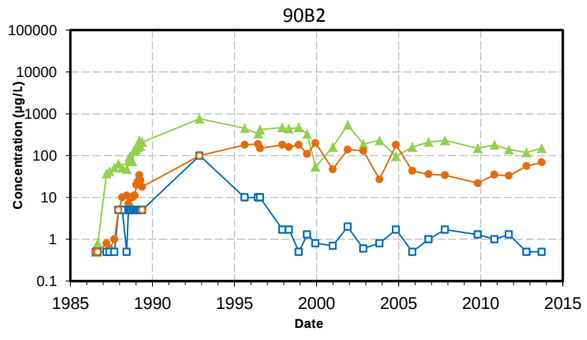

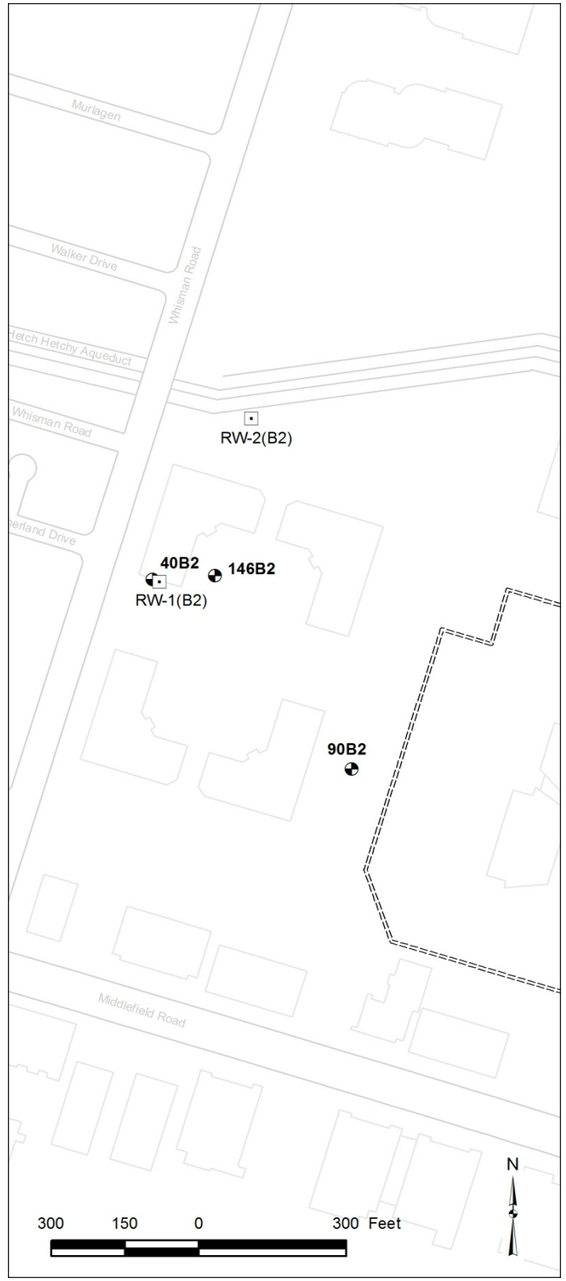

Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

Note:
Open symbols are non-detects,
presented at limit of quantification

40B2 Monitoring Well

RW-1(B2) Extraction Well (On)

Chlorinated Ethenes in Groundwater
B2 Aquifer Wells

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Figure **D-5**

Oakland | April 2014

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