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April 15, 2015

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Subject: **2014 Annual Progress Report – Former Fairchild Buildings 13, 19, and 23**
Middlefield-Ellis-Whisman ("MEW") Area
Mountain View, California

Dear Ms. Lee:

Attached please find the 2014 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 2014 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
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Sugar Land, Texas 77478

2014 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: WR1133C

15 April 2015

2014 Annual Progress Report
Former Fairchild Buildings 13, 19, and 23
Middlefield-Ellis-Whisman Study Area
Mountain View, California

Prepared by

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15 April 2015

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µg/L	micrograms per liter
106 Order	Section XV of the 1990 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/day	feet per day
ft^2/day	feet squared per day
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
MCLs	maximum contaminant levels
MEW	Middlefield-Ellis-Whisman
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
PCE	tetrachloroethene
PLC	programmable logic controller
PRPs	potentially responsible parties
QA/QC	quality assurance/quality control

RAO	remediation action objective
RGRP	Regional Groundwater Remediation Program
ROD	Record of Decision
RRW	regional recovery extraction well
SCADA	supervisory control and data acquisition
Schlumberger	Schlumberger Technology Corporation
SCRWs	source control recovery extraction wells
Site	369/441 North Whisman Road, Mountain View, California (Buildings 13, 19 and 23)
SVE	soil vapor extraction
TCE	trichloroethene
VC	vinyl chloride
VOCs	volatile organic compounds
Water Board	California Regional Water Quality Control Board – San Francisco Bay Region
WDRs	Waste Discharge Requirements
Weiss	Weiss Associates

1. INTRODUCTION

This 2014 Annual Progress Report was prepared by Geosyntec Consultants (Geosyntec) with assistance from Weiss Associates (Weiss) on behalf of Schlumberger Technology Corporation (Schlumberger) 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 2014, 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 California Highway 101 on the north, in Mountain View, California (Figure 1, Figure 2).

From 1969 to 1987 the Site operated 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 13, 19 and 23 369/441 North Whisman Road	369 North Whisman 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 study 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 off-Site, 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 in 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) 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.

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

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 under 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, Canonie, 1986b, Canonie, 1987, and Canonie, 1988; Geomatrix 2004; HLA, 1986 and HLA, 1987; Locus, 1998; PRC, 1991; Navy, 2005; and Weiss, 1995 and Weiss, 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 pumped through conveyance piping to a treatment facility, identified as Treatment System 19, located at the address of 389 North Whisman Road (formerly identified as having the address of 369 North Whisman Road). The treated water is monitored and sampled in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit, then discharged to the 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 2014 Site Activities and Deliverables

Table 3 provides the 2014 monitoring and reporting schedule for the Site Groundwater Remediation Program. Ongoing Site activities include:

- Groundwater monitoring and reporting;

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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;
- Annual sampling and semiannual water-level gauging;
- Assessment of remedial progress;
- Optimization of the groundwater remedy, as directed by EPA (Section 6);
- Planning for future remedial activities; and
- Sampling the treatment system monthly in compliance with the General Waste Discharge Requirements (WDRs) issued by the California Regional Water Quality Control Board – San Francisco Bay Region (Water Board) for discharge or reuse of extracted and treated groundwater resulting from cleanup of groundwater polluted by VOCs (NPDES Permit No. CAG912002 and Order Nos. R2-2009-0059 and R2-2012-0012 for Fairchild Treatment System 19[5]).

Specific activities and deliverables by month in 2014 are listed below:

February 2014

- 4 February – Submitted the 4th Quarter and Annual 2013 System 19 NPDES Self-Monitoring Report.

March 2014

- 20 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 2014

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

[5] System 19 operated under permit No. CAG912002 and Water Board Order No. R2-2009-0059 through 25 August 2014. On 26 August 2014, permit No. CAG912002 and Order No. R2-2012-0012 were issued for Fairchild Treatment System 19. The Order is effective through 15 March 2017 (Table 3).

- 29 April – Submitted the 1st Quarter 2014 System 19 NPDES Self-Monitoring Report.

May 2014

- 15 May – Collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

June 2014

- 17 through 25 June – Planned shutdown of Treatment System 19 for PLC upgrades

August 2014

- 5 August – Submitted the 2nd Quarter 2014 System 19 NPDES Self-Monitoring Report.

September 2014

- 26 September through 9 October – Collected annual groundwater samples from Site monitoring and extraction wells.
- 18 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 2014

- 4 November – Submitted the 3rd Quarter 2014 System 19 NPDES Self-Monitoring Report.
- 13 November – Collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

The 2014 Annual Report Remedy Performance Checklist is provided in Appendix A.

2. GROUNDWATER EXTRACTION AND TREATMENT

2.1 Extraction, Treatment, and Containment System Description

During 2014, 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 off-Site.
- Treatment System 19:
  - Receives extracted groundwater from the active SCRWs and an active RRW located off-Site;
  - Double-contained groundwater conveyance piping and 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 (PLC),
    - A supervisory control and data acquisition (SCADA) computer; and
    - An auto-dialer.

Wells associated with System 19 are listed in Table 1. The discharge of treated groundwater from the treatment system to the storm sewer is authorized by NPDES Permit CAG912002, Order No. R2-2012-0012. The system operated under NPDES Permit CAG912003, Order No. R2-2009-0059 until 25 August 2014, at which point the new permit came into effect.

2.1.1 Extraction Wells

Table 1 lists the groundwater zone, target flow rate, and 2014 average flow rates for the 13 active Site extraction wells. Two other 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 2014.

Groundwater extracted by off-Site RRW 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 2014 Annual Progress Report (Geosyntec, 2015b).

2.2 Extraction and Treatment System Operation and Maintenance

From 1 January through 31 December 2014, the Site treatment system ran 98% of the time.[6] A total of approximately 48 million gallons of groundwater were treated, and 323 pounds of VOCs were removed by the Site treatment system during this reporting period.

As required by NPDES Permits CAG912003 and CAG912002, Orders R2-2009-0059 and R2-2012-0012, 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. Monthly average flow rates and monthly extraction totals by well are provided in Tables 4 and 5, respectively.

The combined average flow rates for the Fairchild wells pumping to System 19 totaled 79.2 gallons per minute (gpm), which is 5.9 gpm below the combined optimized target flow rate for the Site (85.1 gpm). Additionally, flow rates in 5 of the 13 active Building 19 SCRWs were below their target rates in 2014. 2014 is the first year in

[6] Of the System 19 downtime, approximately 56% was due to planned shut downs.

which combined average flow rate for the Fairchild wells pumping to System 19 was below the target optimized rate established in 2010. The decline in flow rates can be attributed to declining water levels in the A Zone that have been observed both at the Site and over the larger MEW study area. Figures 5 and 6 illustrate the decline in water levels that has been ongoing for the last three years, with water levels measured in 2014 approximately 2 to 5 feet lower than water levels measured in 2010 when the target flow rates were established. Although flow rates were lower in 2014, the active extraction wells are still achieving target capture of the Site as shown in Figures 7 through 12. Therefore, new target flow rates that consider current and reasonably anticipated future Site conditions may need to be established. The maximum achievable flow rates and optimized target flow rates will be evaluated further in 2015 as part of Building 19 optimization (discussed further in Section 6).

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 2014 is provided in Appendix C. Treatment system discharges were within effluent limits established by NPDES Permits CAG912003 and CAG912002, Orders R2-2009-0059 and R2-2012-0012 (Weiss, 2015).

Table 7 presents a VOC mass removal summary based on the quarterly NPDES Self-Monitoring Reports produced by Weiss (Weiss, 2014a, 2014b, 2014c, and 2015). 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 2014 is provided in Table 8. The EPA and Water Board are required to be notified of extraction well and system downtime events as follows:

1. **EPA:** The owner and/or operator of the treatment system will make a best effort to notify the EPA orally within 24 hours of a well or system shutdown 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 in March 2014; EPA was notified of the shutdown as required. In addition, a planned treatment system shutdown for PLC upgrades occurred in June 2014; EPA and the Water Board were notified of the shutdown as required.

A total of 27.2 tons of spent carbon was generated during 2014 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 2014 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 and extraction wells on 20 March and 18 September 2014. In addition, water levels were measured quarterly on 20 March, 15 May, 18 September, and 13 November 2014 in 11 slurry wall well pairs (22 wells). Water levels measured in the Site monitoring wells during 2014 are included in Table 9. Water levels measured in the Site slurry wall well pairs between January 2010 and December 2014 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 A Zone, B1 Zone, and B2 Zone underlying 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, 2015b). The groundwater elevation contour maps were created using KT3D_H2O version 3.0, a geostatistical software package (Tonkin and Larson, 2002).[7] As opposed to most

[7] 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 (Deutsch and Journal, 1998, Tonkin and Larson, 2002).

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 the 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.

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 2014 were interpolated to generate groundwater elevation contour maps as described in Section 2.3 and the MEW RGRP Annual Report (Geosyntec, 2015b);
- 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 A Zone, B1 Zone, and B2 Zone recovery wells in March and September 2014 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 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 2014 groundwater extraction rates for all RRWs and SCRWs located within 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 boundary 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 boundary (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. Groundwater elevations were recorded quarterly in March, May, September, and November 2014 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 and western cross gradient sides of the slurry wall, respectively. 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 and downward gradients were observed between the A and B1 aquifer. Upward gradients were observed at well pairs 101A/93B1, 134A/110B1, and 15A/98B1. 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 2014 Annual Groundwater Quality Sampling Event was conducted in September and October 2014. A total of 38 Site wells were sampled for VOCs in 2014. In addition, two MEW RGRP wells located on the Site were sampled in 2014, and the results are reported separately in the RGRP Annual Report (Geosyntec, 2015b). Chemical analytical results for the previous five years (2010 through 2014) are provided in Table 12. Appendix B contains the laboratory analytical reports and chain-of-custody documentation for samples collected in 2014, and Appendix C contains the QA/QC evaluation report, summary tables, and criteria. VOC (TCE, *cis*-1,2-DCE, and vinyl chloride) versus time graphs for select monitoring wells are included in Appendix D.

2.5.1 Isoconcentration Contour Maps

TCE, *cis*-1,2-DCE, vinyl chloride, and tetrachloroethene (PCE) isoconcentration contour maps were created for the 2014 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, 2015b) that includes all wells in the MEW study area sampled for VOCs in 2014. The 2014 contour maps were based on the previous 2013 isoconcentration contour maps (Geosyntec, 2014) with contours modified as needed to reflect decreases or increases in TCE concentrations between 2013 and 2014.

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 2014 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 TCE isoconcentration contour maps of the A Zone, B1 Zone, and B2 Zone, respectively, with the September 2014 hydraulic capture zones (Section 2.4) overlain on the 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 conducted to evaluate VOC concentration trends over the past 10 years (2005 through 2014)[9] (Table 13). Since 2005, TCE concentrations are decreasing, stable, or have no statistically significant trend in 90% of the Building 19 Site wells evaluated. Approximately 24% of the wells display decreasing TCE concentration trends and 66% show no trend or are stable.

The wells with statistically significant increasing or probably increasing TCE concentration trends since 2005 (11%) include 71A (increasing), 160A (increasing), RW-26A (increasing), and 154A (probably increasing). In 2010, the extraction well flow rates were adjusted at the Site, resulting in a change in the groundwater flow field (Geosyntec 2010). The change in the groundwater flow field appears to be correlated with the recent increases in VOC concentrations observed in wells 71A, 154A, 160A, and RW-26A, and may also be related to recent decreasing concentration trends observed in other wells at the Site.

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[8] In 2014, well 160A had a TCE concentration of 1,000 µg/L. This value is higher than TCE concentrations historically observed at 160A. As described below, this increase in TCE appears to be related to increased extraction in the vicinity of the well.

[9] A Mann-Kendall statistical analysis was performed using the TCE, *cis*-1,2-DCE and VC concentration data from 2005 to 2014 to evaluate concentration trends. Wells with insufficient data (i.e., data from fewer than 4 sampling events) were not included in the trend analysis evaluation.

VOC versus time graphs presented in Appendix D were reviewed in addition to Mann-Kendall analysis, to evaluate VOC concentration tends over the last 5 years. Based on review of these graphs, TCE concentrations in two additional wells (23A and RW-11A) may also be increasing. As with the wells discussed above, the potentially increasing concentrations in 23A appear to correlate with increased pumping rates in RW-24A following the 2010 optimization activities. The increase in RW-11A appears to be anomalous and does not correlate with changing in pumping rates or concentration trends in nearby wells. The sample results for this well will be evaluated further in 2015 once the 2015 annual sampling event has been conducted.

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 throughout 2014 (Weiss, 2015). 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 2014. 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, 2015c).

4. PROBLEMS ENCOUNTERED

Table 8 provides a summary of all non-routine O&M events that occurred at System 19 or at individual extraction wells in 2014. No other problems related to the groundwater treatment or containment system at the Site were encountered (Weiss, 2015).

5. TECHNICAL ASSESSMENT

The following assessment of the groundwater remedy performance was made based on data collected through 2014.

- **The remedy is functioning as intended.** Based on 2014 data reviewed, the groundwater remedy is functioning as intended. The 2014 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 2005, over 90% of Site wells have decreasing, stable, or no statistically significant trend in TCE concentrations over time (Table 13, Appendix D).

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

6. OPTIMIZATION PROGRESS

In 2014, 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 an analysis of groundwater extraction to achieve EPA's stated desire for increased VOC mass removal.

In support of the planned remedy optimization, a regional groundwater flow model was developed and submitted to EPA on 2 May 2014 (Geosyntec, 2014b). A local VOC fate and transport model was developed for the Building 19 Site based on the regional groundwater flow model, and various optimization strategies were evaluated. Based on this optimization evaluation, a work plan for Building 19 optimization is being prepared and will be submitted to EPA in the first half of 2015.

7. CONCLUSIONS AND RECOMMENDATIONS

Approximately 48 million gallons of groundwater were treated, and 323 pounds of VOCs were removed by Treatment System 19 during 2014. From 1 January through 31 December 2014, System 19 had an operational uptime of 98%.

The Site groundwater remedy is performing as intended. The estimated capture zones from March and September 2014 meet or exceed target capture areas as indicated by converging lines of evidence, including graphical flow net analysis, capture zone width calculations, and VOC concentration trends.

Optimization of the groundwater remedy at the Site will continue in 2015. A work plan for Building 19 optimization is being prepared and will be submitted to EPA in the first half of 2015.

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 MEW study area. As stated in a 13 February 2015 letter to EPA, it is recommended that the frequency of groundwater level monitoring be reduced from semi-annual to annual, coincident with the September/October annual sampling event (Geosyntec, 2015a).

8. UPCOMING WORK IN 2015 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 • Submit the Building 19 Optimization Work Plan 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 2014 Average Recovery Well Flow Rates
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California

Extraction Wells	2014 Target Flow Rate[1] (gpm)	Average 2014 Flow Rate[2] (gpm)
A Zone		
71A	4.0	3.9
RW-1A	4.0	2.6
RW-2A	8.5	8.7
RW-11A	3.0	3.1
RW-12A	2.0	2.5
RW-23A	10.5	7.5
RW-24A	2.5	3.3
RW-26A[3]	off	off
RW-29A	11.5	9.1
B1 Zone		
REG-4B(1) (RGRP)	6.0	5.0
RW-1(B1)[3]	off	off
RW-2(B1)	5.5	5.7
RW-10(B1)	12.5	13.3
RW-11(B1)	9.0	9.2
B2 Zone		
RW-1(B2)	0.1	0.3
RW-2(B2)	12.0	10.0
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 2014 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 30 December 2013 and 30 December 2014. Due to planned shutdown for Treatment System 19 upgrades over parts of June and July, totalizer readings from those months were provided for time the system was operational.

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 2014 Annual Progress Report (Geosyntec, 2015b).

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 2014 Annual Progress Report (Geosyntec 2015b)

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 2014 Annual Progress Report (Geosyntec, 2015b).
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	2014 Average Monthly Flowrate[1] (gpm)											
	January	February	March	April	May	June[3]	July[3]	August	September	October	November	December
A Zone												
71A	5.02	5.28	4.11	3.68	3.67	4.07	3.90	3.29	3.38	3.50	3.54	3.79
RW-1A	3.54	3.49	3.58	3.42	2.92	2.56	2.25	2.08	2.04	1.86	1.68	1.79
RW-2A	8.67	8.88	8.58	8.26	9.69	8.95	8.85	9.01	8.80	8.51	8.57	7.60
RW-11A	3.02	3.24	2.01	3.53	3.37	2.94	3.09	3.28	3.38	3.34	3.21	2.64
RW-12A	3.92	2.63	2.41	2.52	2.33	1.85	1.25	2.15	2.49	2.01	1.69	3.92
RW-23A	9.68	9.66	8.10	8.69	8.63	7.75	7.53	7.63	4.69	6.95	6.15	4.96
RW-24A	3.11	2.99	2.59	3.55	3.87	3.59	3.67	3.63	3.55	3.38	3.24	2.20
RW-26A[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-29A	10.55	10.43	10.00	10.25	9.71	8.72	8.27	8.49	8.56	8.47	8.34	7.33
B1 Zone												
REG-4B(1) (RGRP)	5.78	5.78	5.44	5.69	5.58	5.04	4.88	5.03	4.95	4.55	4.36	3.06
RW-1(B1)[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-2(B1)	5.18	5.80	5.80	6.08	6.06	5.53	5.57	5.75	5.83	5.82	5.73	4.98
RW-10(B1)	13.95	13.82	13.09	13.45	14.29	13.11	13.17	13.61	13.81	13.39	12.98	11.38
RW-11(B1)	8.70	9.18	8.73	9.43	10.24	9.27	9.18	9.30	9.45	9.34	9.33	8.35
B2 Zone												
RW-1(B2)	0.28	0.28	0.27	0.28	0.27	0.26	0.61	0.26	0.26	0.26	0.26	0.25
RW-2(B2)	7.22	8.39	7.18	12.92	14.45	12.93	10.93	11.04	11.00	9.88	8.70	6.63
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	88.61	89.82	81.89	91.75	95.09	86.56	83.15	84.57	82.20	81.24	77.78	68.87

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).
3. System 19 was shut down over parts of June and July for PLC upgrades. Flow rates are presented for those days when the system was operational.
-- = well was off this month
gpm = gallons per minute
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 2014 Annual Progress Report (Geosyntec, 2015b)
NA = Not Available

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

Extraction Well	2014 Monthly Volume Extracted[1] (gallons)											
	January	February	March	April	May	June	July	August	September	October	November	December
A Zone												
71A	216,719	220,301	165,552	180,331	158,403	105,445	123,516	151,509	126,365	186,314	132,466	185,722
RW-1A	153,031	145,640	144,263	167,340	126,027	66,326	71,330	95,967	76,374	99,088	62,854	87,407
RW-2A	374,704	370,764	345,879	404,490	418,685	232,010	280,519	415,193	329,312	453,598	320,707	372,173
RW-11A	130,379	135,292	80,986	172,820	145,647	76,160	97,772	151,194	126,675	178,093	120,261	129,382
RW-12A	169,539	109,628	97,073	123,187	100,546	47,917	39,698	98,944	93,198	106,852	63,445	191,976
RW-23A	418,212	403,317	326,617	425,277	372,940	200,768	238,612	351,621	175,560	370,162	230,339	242,622
RW-24A	134,170	124,786	104,551	173,576	167,161	92,997	116,268	167,294	132,824	179,896	121,383	107,686
RW-26A[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-29A	455,637	435,610	403,227	502,007	419,332	225,900	261,887	391,170	320,467	451,146	312,359	358,972
B1 Zone												
REG-4B(1) (RGRP)	249,596	241,207	219,161	278,779	241,217	130,589	154,742	231,974	185,508	242,376	163,269	149,868
RW-1(B1)[2]	--	--	--	--	--	--	--	--	--	--	--	--
RW-2(B1)	223,620	242,094	233,841	297,597	261,602	143,270	176,327	265,050	218,448	310,085	214,557	243,808
RW-10(B1)	602,559	577,113	527,935	658,530	617,465	339,892	417,107	627,192	516,999	713,190	486,007	557,100
RW-11(B1)	375,922	383,213	352,093	461,920	442,455	240,341	290,778	428,693	353,935	497,560	349,448	408,674
B2 Zone												
RW-1(B2)	12,093	11,835	10,931	13,522	11,864	6,757	19,321	12,194	9,802	13,703	9,553	12,118
RW-2(B2)	311,871	350,185	289,524	632,495	624,351	335,185	346,286	508,849	411,956	526,480	325,551	324,419
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]	4,338,250	3,977,300	3,640,450	4,848,550	4,421,200	2,711,530	4,422,820	4,367,200	3,425,450	4,823,540	3,265,460	3,594,400

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 totalizer, therefore the sum of the wells may not be equal to the total volume reported. This discrepancy is attributed to inherent errors associated wit comparing these two independently measured values.

-- = well was off this month
EPA = United States Environmental Protection Agenc
(RGRP) = Regional Groundwater Remediation Program well connected to System 19 for treatment. Further discussion of this well is provided in the MEW RGRP 2014 Annual Progress Report (Geosyntec, 2015b)
NA = Not Available

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	2/13/2014	<10	**4.8**	<5.0	**5.5**	**250**	**3.1**	18	**7.0**	**610**	<5.0	**5.9**	NA
Influent (D)	2/13/2014	<10	**4.2**	<5.0	**4.4**	**220**	**2.4**	14	**6.2**	**540**	<5.0	**5.5**	NA
Influent	4/17/2014	<10	**4.9**	<5.0	**4.9**	**260**	**4.1**	14	**3.7**	**530**	<5.0	**7.3**	NA
Influent	5/22/2014	<10	**4.5**	<5.0	**5.5**	**190**	**4.3**	16	**5.7**	**440**	<5.0	**4.5**	NA
Influent (D)	5/22/2014	<10	**4.2**	<5.0	**4.9**	**180**	**3.8**	15	**5.3**	**420**	<5.0	**4.0**	NA
Influent	6/10/2014	<10	**4.4**	<5.0	**4.7**	**200**	**4.4**	16	**4.7**	**500**	<5.0	**5.4**	NA
Influent	7/17/2014	<10	**4.2**	<5.0	**5.6**	**170**	**3.6**	18	**6.0**	**580**	<5.0	**4.9**	NA
Influent	8/14/2014	<10	**4.6**	<5.0	**4.9**	**200**	**3.7**	13	**5.2**	**580**	**2.0**	**5.7**	NA
Influent	9/11/2014	<10	**3.3**	<5.0	**4.2**	**210**	**4.6**	13	**4.5**	**570**	<5.0	**5.8**	NA
Influent	10/23/2014	<20	**3.7**	<10	**5.6**	**220**	**3.7**	15	**5.1**	**650**	<10	<10	NA
Influent	11/18/2014	<20	<10	<10	**5.3**	**230**	**4.2**	16	**5.7**	**590**	<10	**5.4**	NA
Influent (D)	11/18/2014	<10	**4.1**	<5.0	**3.7**	**250**	**3.0**	10	**3.7**	**580**	<5.0	**4.7**	NA
Influent	12/18/2014	<20	**4.2**	<10	**4.3**	**190**	**4.1**	13	**4.1**	**510**	<10	**6.3**	NA
Midpoint 1	1/30/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.45**	NA
Midpoint 1	2/13/2014	<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	3/19/2014	<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	4/17/2014	<1.0	**4.3**	<0.50	**3.0**	**180**	**1.7**	5.8	**1.8**	**16**	<0.50	**1.0**	NA
Midpoint 1	5/22/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**3.2**	NA
Midpoint 1	6/10/2014	<1.0	**0.96**	<0.50	<0.50	**9.3**	<0.50	0.11	<0.50	<0.50	<0.50	**1.8**	NA
Midpoint 1	7/17/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.26**	NA
Midpoint 1	8/14/2014	<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	9/11/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.30**	NA
Midpoint 1 (D)	9/11/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.25**	NA
Midpoint 1	10/23/2014	<1.0	**1.1**	<0.50	<0.50	**4.6**	<0.50	0.26	<0.50	<0.50	<0.50	**1.4**	NA
Midpoint 1	11/18/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.58**	<0.50	**0.43**	NA
Midpoint 1	12/18/2014	<1.0	**0.18**	<0.50	<0.50	**0.41**	<0.50	<0.50	<0.50	<0.50	<0.50	**1.9**	NA
Midpoint 2	1/30/2014	<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	2/13/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.49**	NA
Midpoint 2	3/19/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA

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	4/17/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1.6**	NA
Midpoint 2	5/22/2014	<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	6/10/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.99**	NA
Midpoint 2	7/17/2014	<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	8/14/2014	<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	9/11/2014	<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	10/23/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.57**	NA
Midpoint 2	11/18/2014	<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	12/18/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	1/30/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	2/13/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	3/19/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	4/17/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.42**	NA
Effluent	5/22/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	6/10/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	7/17/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	8/14/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	9/11/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	10/23/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	11/18/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Effluent	12/18/2014	<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	1/30/2014	<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	2/13/2014	<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	3/19/2014	<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	4/17/2014	<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	5/22/2014	<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	6/10/2014	<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	7/17/2014	<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	8/14/2014	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA

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	9/11/2014	<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	10/23/2014	<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	11/18/2014	<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	12/18/2014	<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 and R2-2012-0012, NPDES permit no. CAG912003 and CAG912002

(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 and R2-2012-0012, VOC General NPDES Permit No. CAG912003 and CAG912002.

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
Freon 113 = trichlorotrifluoroethane
1,1,1-TCA = 1,1,1-Trichloroethane
PCE = Tetrachloroethene
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
(D) = Duplicate

Table 6b
System 19 Inorganic Sampling Results Summary
MEW Fairchild Building 13, 19, and 23 Groundwater Remediation Prgran
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	02/13/14	7.22	18.5	732	---	---	---
Influent	04/17/14	6.99	19.5	752	---	---	---
Influent	05/22/14	6.87	18.7	771	---	---	---
Influent	06/10/14	6.94	19.4	713	---	---	---
Influent	07/17/14	7.15	21.3	622	---	---	---
Influent	08/14/14	7.33	18.7	717	---	---	---
Influent	09/11/14	7.95	19.6	792	---	---	---
Influent	10/23/14	7.16	19.9	807	---	---	---
Influent	11/18/14	7.32	17.9	709	---	---	---
Influent	12/18/14	7.31	17.6	682	---	---	---
Midpoint 1	01/30/14	7.16	19.2	738	---	---	---
Midpoint 1	02/13/14	7.27	18.8	742	---	---	---
Midpoint 1	03/19/14	7.13	17.7	829	---	---	---
Midpoint 1	04/17/14	6.98	19.4	757	---	---	---
Midpoint 1	05/22/14	6.82	18.7	778	---	---	---
Midpoint 1	06/10/14	6.90	19.6	713	---	---	---
Midpoint 1	07/17/14	7.15	21.1	624	---	---	---
Midpoint 1	08/14/14	7.42	18.7	710	---	---	---
Midpoint 1	09/11/14	7.01	19.5	800	---	---	---
Midpoint 1	10/23/14	7.16	19.9	818	---	---	---
Midpoint 1	11/18/14	7.31	18.7	713	---	---	---
Midpoint 1	12/18/14	7.36	17.1	683	---	---	---
Midpoint 2	01/30/14	7.15	19.2	742	---	---	---
Midpoint 2	02/13/14	7.24	18.1	750	---	---	---
Midpoint 2	03/19/14	7.08	17.7	848	---	---	---
Midpoint 2	04/17/14	7.05	19.4	761	---	---	---
Midpoint 2	05/22/14	6.79	18.7	777	---	---	---
Midpoint 2	06/10/14	6.88	19.7	708	---	---	---
Midpoint 2	07/17/14	7.20	21.2	625	---	---	---
Midpoint 2	08/14/14	7.36	18.5	711	---	---	---
Midpoint 2	09/11/14	7.00	19.8	801	---	---	---
Midpoint 2	10/23/14	7.15	19.9	808	---	---	---
Midpoint 2	11/18/14	7.27	18.8	716	---	---	---
Midpoint 2	12/18/14	7.26	17.8	686	---	---	---
Effluent	01/30/14	7.17	18.5	779	---	---	---
Effluent	02/13/14	7.37	18.3	735	---	---	---
Effluent	03/19/14	7.01	17.3	879	---	---	---
Effluent	04/17/14	7.10	19.7	762	---	---	---
Effluent	05/22/14	6.79	18.4	801	---	---	---
Effluent	06/10/14	6.84	20.5	709	---	---	---
Effluent	07/17/14	7.34	21.9	652	---	---	---
Effluent	08/14/14	7.38	18.6	756	---	---	---
Effluent	09/11/14	6.80	19.5	814	---	---	---
Effluent	10/23/14	7.14	19.7	821	---	---	---
Effluent	11/18/14 - 11/20/14	7.31/7.36	17.9/18.8	732/742	<0.1	100	100
Effluent	12/18/14	7.42	17.4	719	---	---	---
NPDES Trigger Levels:		---	---	---	5	---	NE
Effluent Limitations:[2]		6.5 to 8.5	NE	NE	NE	90	70

Notes:
All parameters are within effluent limits specified in NPDES permit order no. R2-2009-0059 and R2-2012-0012, NPDES permit no. CAG912002 and CAG912003.
pH, temperature, electrical conductivity, and turbidity are 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 2014.
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. The next triennial sampling will be conducted in November 2015.
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 and R2-2012-0012, VOC General NPDES Permit CAG912002 and CAG912003.
--- = not applicable, not required
Temp = temperature
°C = degrees Celsius
< indicates analyte not detected above the reported detection limit
µS/cm = micro Siemens per centimeter
NTU = nephelometric turbidity unit
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	4,338,250	0.85	31
February	3,977,300		28
March	3,640,450		26
April	4,848,550	0.83	33
May	4,421,200	0.65	24
June	2,711,530	0.74	17
July	4,422,820	0.79	29
August	4,367,200	0.82	30
September	3,425,450	0.82	23
October	4,823,540	0.90	36
November	3,265,460	0.86	23
December	3,594,400	0.74	22
2014 Cumulative[1]	47,836,150		323

Notes:
1. Total groundwater extracted, influent VOC concentrations, total VOC mass removed, and cumulative values were obtained from the NPDES quarterly reports (Weiss, 2014a,b,c and 2015).
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 2014 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 9	71A	1 hour	Planned manual shutdown	Well was shut off to replace pump and motor. Well was restarted.	Not Required
January 13 - 14	Treatment System, RW-12A	19 hours	Planned manual shutdown	System was shut down for manifold maintenance on well RW-12A. System was restarted.	Not Required
January 27	Treatment System	<1 hour	Leak detect vault high level alert	Alert was caused by a power glitch. System was restarted.	Not Required
February 4	RW-2(B1)	16 hours	Low flow alert	Paddlewheel on flow meter failed. Paddlewheel was replaced. Well was restarted.	Not Required
February 5	RW-23A	12 hours	Low flow alert	Paddlewheel on flow meter failed. Paddlewheel was replaced. Well was restarted.	Not Required
February 7	Treatment System, LDV-04	2 hours	Leak detect vault high level alert	Alert was caused by water in containment pipe. Water was pumped out and system was restarted.	Not Required
February 28	RW-12A	4 hours	Vault high level alert	Alert was triggered by rain. The water drained from the vault and the system was restarted.	Not Required
February 28	Treatment System, LDV-01	1 hour	Leak detect vault high level alert	Wiring connection in leak detection vault was faulty. Connection was repaired and system was restarted.	Not Required
March 13 - 17	RW-11A	103 hours	Well cycled off without alert	Well was restarted on March 17, 2014.	USEPA notification was made on March 17, 2014
March 19 - 21	RW-11A	48 hours, non-consecutive	Well cycled off without alert	The pump saver was adjusted and the well was restarted.	Not Required
March 19 - 21	71A	52 hours, non-consecutive	Well cycled off without alert	The pump saver was adjusted and the well was restarted.	Not Required
March 22 - 24	RW-2A	54 hours	Low flow alert	Pump failed. Pump was replaced, and well was restarted.	Not Required
March 25	RW-2(B2)	9 hours, non-consecutive	Well cycled off without alert	The pump saver was adjusted and the well was restarted.	Not Required
April 17	Treatment System	1 hour	Planned manual shutdown	System was shut down for SCVWD discharge meter cleaning.	Not Required
May 22	71A	7 hours	Low flow alert	The flow meter paddle wheel was cleaned and the well was restarted.	Not Required
May 28	71A	6 hours	Low flow alert	The flow meter paddle wheel was cleaned and the well was restarted.	Not Required
June 3	Treatment System	6 hours	Planned manual shutdown	System was shut down to replace valves on GAC manifold. System was restarted.	Not Required
June 7 - 9	Treatment System, RW-2(B1)	34 hours	Vault high level alert	Alert was triggered by irrigation water in the vault. Water was pumped out, the vault resealed, and the system was restarted.	Not Required
June 17 - 25	Treatment System	186 hours	Planned manual shutdown	System shutdown for PLC upgrades. The system operated intermittenly during system control upgrade activities in order to test the new controls. The system was restarted for continuous operation on June 25, 2014.	USEPA and Water Board were notified in a letter dated April 21, 2014, that the system would be shut down in order to complete necessary upgrades to the system controls.
July 1	Treatment System	<1 hour	Planned manual shutdown	System computer failed to complete restart during remote troubleshooting of the SCADA system. The system was restarted.	Not Required
July 29	Treatment System	2 hours	Planned manual shutdown	System was shut down to change the pump in 71A. System was restarted.	Not Required
August 1- 4	71A	65 hours	Low flow alert	The flow meter paddle wheel was cleaned and the well was restarted.	Not Required
August 4	Treatment System	1 hour	Planned manual shutdown	System was shut down to clean the flow meter in 71A. System was restarted.	Not Required
August 15	71A	41 hours	Pump fault	Pump saver was reset and the well was restarted.	Not Required

Table 8
Summary of 2014 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]
August 17 - 18	Treatment System	14 hours, non-consecutive	Multiple alerts	Alerts were triggered by a faulty electrical connection. The connection was repaired and the system was restarted.	Not Required
August 25 - 27	71A	33 hours	Pump fault	The alert was reset and the well was restarted.	Not Required
September 3	71A	14 hours	Pump fault	Pump saver displayed a fault. The pump saver was replaced and the well was restarted.	Not Required
September 3	RW-23A	7 hours	Well failed to restart with system	Well was restarted.	Not Required
September 3 - 4	Treatment System	1 hour, non-consecutive	Planned manual shutdown	System was shut down to replace electrical component. System was restarted.	Not Required
September 8 - 10	RW-23A	44 hours	Low flow alert	Paddle wheel on flow meter failed. Flow meter was replaced on September 10, 2014 and the well was restarted.	Not Required
October 17	RW-2(B2)	<1 hour	Vault high level alert	Alert was triggered by irrigation water in vault. Water was pumped out and the well was restarted.	Not Required
November 30	Treatment System, RW-12A	21 hours	Vault high level alert	Alert was triggered by rain water. Water was pumped out and the system was restarted.	Not Required
December 1	RW-24A	1 hour	Pump low flow	Alert caused by a fouled flow meter. Flow meter was cleaned and the well was restarted.	Not Required
December 2 - 3	Treatment System, RW-11A, RW-12A	21 hours	Vault high level alert	Alert was triggered by rain water. The water was pumped out and the system was restarted.	Not Required
December 3	RW-12A	2 hours	Pump low flow alert	Alert was triggered by faulty flow meter. The flow meter was replaced and the well was restarted.	Not Required
December 9	RW-12A	2 hours	Planned manual shutdown	Well was shut down to perform pump change. The well was restarted.	Not Required
December 11 – December 12	Treatment System	23 hours	Multiple alerts	Alert was triggered by rain water. The water was pumped out and the system was restarted.	Not Required
December 12	Treatment System, RW-11A	2 hours	Vault high level alert	Alert was triggered by rain water. The water was pumped out and the system was restarted.	Not Required
December 15	Treatment System, RW-11A	24 hours	Vault high level alert	Alert was triggered by rain water. The water was pumped out and the system was restarted.	Not Required
December 16 - 17	Treatment System, RW-11A	17 hours	Vault high level alert	Alert was triggered by rain water. The water was pumped out and the system was restarted.	Not Required
December 17	Treatment System, RW-11A	<1 hour	Multiple alerts	Alerts were triggered during troubleshooting of vault high level switch wiring. Connections were repaired and the system was restarted.	Not Required
December 23	Treatment system	5 hours	Planned manual shutdown	System was shut down to perform preventative wiring replacement. The system was restarted.	Not Required
December 24	Treatment System	2 hours	Planned manual shutdown	System was shut down to perform preventative wiring replacement. The system was restarted.	Not Required
December 26	Treatment System	2 hours	Planned manual shutdown	System was shut down to perform electrical work. The system 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
PLC = programmable logic controller
GAC = granular activated carbon
SCVWD = Santa Clara Valley Water District
SCADA = supervisory control and data acquisition

Table 9

Groundwater Elevations, January through December 2014

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

Mountain View, California

Well ID	TOC Elevation (ft msl)	20 March 2014		18 September 2014	
		Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)	Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)
A Zone					
4A	54.69	16.21	38.48	18.16	36.53
6A	54.74	16.12	38.62	18.37	36.37
9A	55.82	18.08	37.74	19.87	35.95
12A	55.11	18.22	36.89	20.02	35.09
15A	54.06	17.44	36.62	18.99	35.07
16A	53.30	14.87	38.43	16.65	36.65
17A	53.40	16.24	37.16	18.15	35.25
22A	52.87	19.01	33.86	21.57	31.30
23A	50.56	17.53	33.03	19.26	31.30
71A	55.15	17.15	38.00	21.80	33.35
101A	55.14	15.85	39.29	18.08	37.06
115A	53.48	17.90	35.58	19.71	33.77
134A	53.44	17.16	36.28	18.90	34.54
139A	53.21	16.84	36.37	18.43	34.78
140A	56.99	14.79	42.20	16.22	40.77
141A	53.25	10.95	42.30	11.98	41.27
143A	55.72	17.92	37.80	19.68	36.04
148A	53.92	17.25	36.67	19.02	34.90
149A	51.90	19.01	32.89	20.67	31.23
154A	53.90	20.65	33.25	22.22	31.68
155A	54.17	17.88	36.29	19.42	34.75
159A	54.62	18.10	36.52	19.80	34.82
160A	53.89	20.84	33.05	22.42	31.47
161A	56.15	18.32	37.83	20.35	35.80
174A	53.66	17.46	36.2	19.03	34.63
175A	53.82	20.53	33.29	22.03	31.79
RW-1A	53.71	28.10	25.61	29.03	24.68
RW-2A	49.42	18.41	31.01	22.28	27.14
RW-11A	54.87	17.90	36.97	20.57	34.30
RW-12A	53.96	17.22	36.74	18.98	34.98
RW-23A	52.75	21.85	30.90	19.34	33.41
RW-24A	50.15	18.08	32.07	20.98	29.17
RW-26A	53.51	15.24	38.27	17.06	36.45
RW-29A	52.04	28.84	23.20	28.45	23.59
B1 Zone					
93B1	55.27	14.78	40.49	16.61	38.66
95B1	56.95	16.70	40.25	18.51	38.44
101B1	54.92	14.55	40.37	16.42	38.50
110B1	53.68	16.60	37.08	18.42	35.26
117B1	53.80	18.27	35.53	20.18	33.62
145B1	54.00	16.95	37.05	18.75	35.25
156B1	50.87	14.39	36.48	15.99	34.88
RW-1(B1)	52.40	18.56	33.84	18.07	34.33
RW-2(B1) (RGRP)	48.18	13.74	34.44	15.51	32.67
RW-10(B1)	52.40	22.93	29.47	25.14	27.26
RW-11(B1)	50.43	19.68	30.75	21.73	28.70

Table 9

Groundwater Elevations, January through December 2014

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

Mountain View, California

Well ID	TOC Elevation (ft msl)	20 March 2014		18 September 2014	
		Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)	Depth To Water (feet BTOC)	Groundwater Elevation (ft msl)
B2 Zone					
40B2 (RGRP)	54.59	29.42	25.17	30.57	24.02
90B2	54.18	14.12	40.06	14.76	39.42
146B2	53.58	NA	NA	20.12	33.46
RW-1(B2)	53.49	71.30	-17.81	71.23	-17.74
RW-2(B2)	48.95	18.67	30.28	21.86	27.09

Notes:
146B2 was not gauged on 20 March 2014 because the well was temporarily inaccessible.
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 2010 through December 2014

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	Gradient Direction
Southern Wall - Upgradient Well Pairs						
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
3/20/2014	140A	42.20	101A	39.29	2.91	Inward
5/15/2014	140A	41.93	101A	38.57	3.36	Inward
9/18/2014	140A	40.77	101A	37.06	3.71	Inward
11/13/2014	140A	40.24	101A	36.81	3.43	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
3/20/2014	142A	42.73	143A	37.80	4.93	Inward
5/15/2014	142A	42.36	143A	37.16	5.20	Inward
9/18/2014	142A	41.19	143A	36.04	5.15	Inward
11/13/2014	142A	40.64	143A	35.68	4.96	Inward
Western Wall - Crossgradient Well Pairs						
3/25/2010	17A	39.80	159A	40.89	-1.09	Outward
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

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2010 through December 2014

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	Gradient Direction
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
3/20/2014	17A	37.16	159A	36.52	0.64	Inward
5/15/2014	17A	36.56	159A	35.73	0.83	Inward
9/18/2014	17A	35.25	159A	34.82	0.43	Inward
11/13/2014	17A	34.85	159A	34.29	0.56	Inward
Eastern Wall - Crossgradient Well Pairs						
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
3/20/2014	141A	42.30	139A	36.37	5.93	Inward
5/15/2014	141A	42.06	139A	35.73	6.33	Inward
9/18/2014	141A	41.27	139A	34.78	6.49	Inward
11/13/2014	141A	40.88	139A	34.32	6.56	Inward
Northern Wall - Downgradient Well Pairs						
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
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

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2010 through December 2014

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	Gradient Direction
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
3/20/2014	115A	35.58	134A	36.28	-0.70	Outward
5/15/2014	115A	34.87	134A	35.50	-0.63	Outward
9/18/2014	115A	33.77	134A	34.54	-0.77	Outward
11/13/2014	115A	33.38	134A	34.06	-0.68	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
3/20/2014	154A	33.25	155A	36.29	-3.04	Outward
5/15/2014	154A	32.76	155A	35.63	-2.87	Outward
9/18/2014	154A	31.68	155A	34.75	-3.07	Outward
11/13/2014	154A	31.33	155A	34.29	-2.96	Outward
Vertical Gradient Well Pairs						
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
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

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2010 through December 2014

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	Gradient Direction
11/25/2013	110B1	37.44	134A	36.60	0.84	Upward
3/20/2014	110B1	37.08	134A	36.28	0.80	Upward
5/15/2014	110B1	36.45	134A	35.50	0.95	Upward
9/18/2014	110B1	35.26	134A	34.54	0.72	Upward
11/13/2014	110B1	34.88	134A	34.06	0.82	Upward
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
3/20/2014	117B1	35.53	12A	36.89	-1.36	Downward
5/15/2014	117B1	34.73	12A	36.01	-1.28	Downward
9/18/2014	117B1	33.62	12A	35.09	-1.47	Downward
11/13/2014	117B1	33.28	12A	34.59	-1.31	Downward
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
3/20/2014	93B1	40.49	101A	39.29	1.20	Upward
5/15/2014	93B1	39.92	101A	38.57	1.35	Upward
9/18/2014	93B1	38.66	101A	37.06	1.60	Upward
11/13/2014	93B1	38.16	101A	36.81	1.35	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

Table 10

Groundwater Elevations, Slurry Wall Well Pairs, January 2010 through December 2014

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	Gradient Direction
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
3/20/2014	98B1	38.52	15A	36.62	1.90	Upward
5/15/2014	98B1	37.94	15A	36.02	1.92	Upward
9/18/2014	98B1	36.60	15A	35.07	1.53	Upward
11/13/2014	98B1	36.35	15A	34.63	1.72	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
3/20/2014	RW-1(B1)	33.84	159A	36.52	-2.68	Downward
5/15/2014	RW-1(B1)	35.52	159A	35.73	-0.21	Downward
9/18/2014	RW-1(B1)	34.33	159A	34.82	-0.49	Downward
11/13/2014	RW-1(B1)	33.92	159A	34.29	-0.37	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)	11.9	28.8	28.2	10.3
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	2300	1800	2800
Measured plume width at widest point (ft)[4]	662	630	662	662

Notes:

1. The combined pumping rate equals the summed average 2014 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 2014 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 2010 through December 2014
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	11/10/2010	<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**
4A	9/29/2014	<25	**48**	<25	**95**	**2800**	<25	<100	<100	<25	<25	**3800**	**69**
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	11/3/2010	<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
16A	9/29/2014	<0.50	<0.50	<0.50	<0.50	**2.7**	<0.50	<2.0	<2.0	<0.50	<0.50	**59**	<0.50
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
17A	9/29/2014	<0.50	<0.50	<0.50	<0.50	**6.7**	<0.50	<2.0	<2.0	<0.50	<0.50	**120**	<0.50
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**
22A	9/26/2014	<0.50	**1.6**	<0.50	**1.4**	**43**	**0.77**	**80**	<2.0	<0.50	**1.9**	**130**	<0.50
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
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

Table 12
VOC Analytical Results
Five Year Summary, January 2010 through December 2014
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	9/29/2014	<1.3	**6.6**	<1.3	**11**	**250**	**1.3**	**9.5**	<5.0	<1.3	<1.3	**170**	<1.3
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**
71A	9/30/2014	<25	<25	<25	**27**	**580**	<25	<100	<100	<25	<25	**3200**	<25
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	11/2/2010	<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**
115A	10/1/2014	<0.50	**5.9**	<0.50	**6.7**	**290**	**0.87**	<2.0	<2.0	<0.50	<0.50	<5.0	**2.0**
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
134A	10/1/2014	<0.50	**1.5**	<0.50	**1.5**	**6.8**	<0.50	**7.2**	<2.0	<0.50	**2.9**	**41**	<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	11/15/2010	<1.0	<0.5	<0.5	**1.6**	**5.1**	<0.5	**4.6**	<2.0	<0.5	**1.5**	**94**	<0.5
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

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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													
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
149A	9/29/2014	<1.0	<1.0	<1.0	<1.0	**5.6**	<1.0	<4.0	<4.0	<1.0	**1.2**	**120**	<1.0
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**
154A	10/1/2014	<0.50	**4.5**	<0.50	**7.3**	**110**	**1.3**	**20**	<2.0	**0.85**	**7.2**	**290**	**1.1**
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
155A	10/1/2014	<0.50	**11**	<0.50	**11**	**36**	<0.50	**11**	<2.0	**2.4**	**9.9**	**300**	<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
159A	10/1/2014	<0.50	<0.50	<0.50	**0.72**	**21**	**12**	<2.0	<2.0	<0.50	<0.50	**270**	<0.50
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**
160A	9/29/2014	<5.0	**13**	<5.0	**15**	**770**	**7.5**	**110**	<20	<5.0	**14**	**1000**	<5.0
161A	9/25/2012	<1.0	**0.83**	<0.50	**16**	**8800**	**1200**	**86**	<5.0	<0.50	**1.1**	**4600**	**15**
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
174A	9/29/2014	<0.50	**2.6**	<0.50	**1.9**	**13**	<0.50	<2.0	<2.0	**0.89**	**0.57**	**80**	<0.50

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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
175A	10/1/2014	<0.50	**1.9**	<0.50	**1.3**	**18**	<0.50	<2.0	<2.0	<0.50	<0.50	**83**	<0.50
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-1A	10/1/2014	<0.50	<0.50	<0.50	<0.50	**10**	**5.8**	<2.0	<2.0	<0.50	<0.50	**140**	<0.50
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-2A	9/30/2014	<1.0	**1.8**	<1.0	**3.3**	**110**	**1.0**	**9.3**	<4.0	<1.0	**2.8**	**310**	<1.0
RW-11A	12/7/2010	<14	**19**	<7.1	**34**	**310**	<7.1	**100**	<29	<7.1	**20**	**1600**	**17**
RW-11A D	12/7/2010	<17	**20**	<8.3	**35**	**320**	<8.3	**110**	<33	<8.3	**21**	**1600**	**19**
RW-11A D	9/16/2011	<25	**18**	<13	**33**	**260**	<13	**100**	<50	<13	**25**	**1600**	**14**
RW-11A	9/16/2011	<33	<17	<17	**29**	**260**	<17	**100**	<67	<17	**28**	**1600**	<17
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-11A	10/1/2014	<1.3	**29**	<1.3	**48**	**4300**	**18**	**180**	<5.0	<1.3	**34**	**10000**	**320**
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**
RW-12A	10/1/2014	<1.3	**7.4**	<1.3	**6.0**	**2400**	**31**	**14**	<5.0	**2.0**	<1.3	**710**	**90**

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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													
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-23A	10/1/2014	<1.3	**17**	<1.3	**8.3**	**120**	**1.5**	**18**	<5.0	**2.0**	**9.6**	**450**	<1.3
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-24A	9/30/2014	<2.5	**3.6**	<2.5	**5.6**	**390**	**3.1**	**17**	<10	<2.5	**3.6**	**300**	**4.0**
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-26A	10/6/2014	<5.0	**19**	<5.0	**27**	**650**	<5.0	<20	<20	<5.0	<5.0	**220**	<5.0
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
RW-29A	9/30/2014	<1.3	**10**	<1.3	**3.9**	**21**	**1.6**	<5.0	<5.0	**2.2**	**3.2**	**240**	<1.3
B1 Zone													
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
95B1	10/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<0.50	<0.50	**9.2**	<0.50
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
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

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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
B1 Zone													
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
101B1	9/29/2014	<0.50	**1.4**	<0.50	**0.80**	**44**	<0.50	<2.0	<2.0	<0.50	<0.50	**55**	<0.50
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	11/15/2010	<1.7	<1.7	<1.7	**2.4**	**13**	<1.7	**60**	<67	<1.7	**38**	**350**	<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
110B1	10/1/2014	<0.50	**1.3**	<0.50	**3.8**	**8.8**	<0.50	**31**	<2.0	<0.50	**2.8**	**290**	<0.50
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**
117B1	10/1/2014	<0.50	<0.50	<0.50	<0.50	**34**	<0.50	<2.0	<2.0	<0.50	<0.50	**110**	**2.6**
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**
145B1	9/29/2014	<0.50	**0.59**	<0.50	<0.50	**44**	**1.9**	<2.0	<2.0	<0.50	<0.50	**100**	<0.50
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
156B1	9/26/2014	<0.50	**1.9**	<0.50	**1.2**	**40**	**0.52**	<2.0	<2.0	<0.50	<0.50	**75**	<0.50
156B1 D	9/26/2014	<0.50	**1.0**	<0.50	**0.71**	**23**	<0.50	<2.0	<2.0	<0.50	<0.50	**48**	<0.50
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 2010 through December 2014
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-1(B1)	10/1/2014	<0.50	**0.51**	<0.50	**0.85**	**6.3**	<0.50	**6.5**	<2.0	<0.50	**3.5**	**48**	<0.50
RW-1(B1) D	10/1/2014	<0.50	**0.53**	<0.50	**0.75**	**6.1**	<0.50	**6.0**	<2.0	<0.50	**3.3**	**45**	<0.50
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-2(B1) (RGRP) D	9/26/2014	<2.5	<2.5	<2.5	<2.5	**20**	<2.5	**21**	<10	<2.5	**9.1**	**230**	<2.5
RW-2(B1) (RGRP)	9/26/2014	<2.5	<2.5	<2.5	<2.5	**22**	<2.5	**20**	<10	<2.5	**9.3**	**240**	<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-10(B1)	10/1/2014	<0.50	**0.96**	<0.50	**1.7**	**100**	**1.6**	**22**	<2.0	<0.50	**10**	**500**	<0.50
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
RW-11(B1)	9/30/2014	<0.50	**0.85**	<0.50	<0.50	**51**	**2.1**	<2.0	<2.0	<0.50	<0.50	**110**	<0.50
B2 Zone													
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
40B2 (RGRP)	10/1/2014	<0.50	<0.50	<0.50	<0.50	**4.9**	**0.52**	<2.0	<2.0	<0.50	<0.50	**1.6**	<0.50
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

Table 12
VOC Analytical Results
Five Year Summary, January 2010 through December 2014
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													
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
90B2	9/26/2014	<1.0	<1.0	<1.0	<1.0	**59**	<1.0	<4.0	<4.0	<1.0	<1.0	**170**	<1.0
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	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	10/24/2012	<1.0	<0.50	<0.50	**0.57**	**300**	<0.50	<0.50	<5.0	<0.50	<0.50	**4.8**	<0.50
146B2 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
146B2	10/1/2014	<0.50	<0.50	<0.50	<0.50	**39**	<0.50	<2.0	<2.0	<0.50	<0.50	**120**	<0.50
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-1(B2)	10/1/2014	<0.50	<0.50	<0.50	<0.50	**35**	<0.50	<2.0	<2.0	<0.50	<0.50	**67**	<0.50
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
RW-2(B2)	9/30/2014	<2.5	<2.5	<2.5	**3.5**	**14**	<2.5	<10	<10	<2.5	<2.5	**880**	<2.5

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	PD	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	S	PD	ND
17A	NT	PI	ND
22A	S	I	S
23A	S	NT	ND
71A	I	NT	NT
101A	N/A	N/A	N/A
115A	NT	I	I
134A	PD	NT	ND
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	NT	PD	NT
154A	PI	I	S
155A	S	NT	ND
159A	NT	I	ND
160A	I	I	NT
161A	N/A	N/A	N/A
174A	S	NT	ND
175A	D	D	ND
RW-1A	NT	NT	ND
A Zone			
RW-2A	NT	PI	ND
RW-11A	PD	PD	D
RW-12A	NT	I	I
RW-23A	S	I	ND
RW-24A	D	PD	NT
RW-26A	I	I	NT
RW-29A	NT	I	ND
B1 Zone			
93B1	N/A	N/A	N/A
95B1	S	S	ND
101B1	D	D	ND
110B1	NT	NT	ND
117B1	NT	NT	NT
145B1	S	S	NT
156B1	S	NT	ND
RW-1(B1)	S	D	NT
RW-2(B1)	S	PD	ND
RW-10(B1)	D	S	ND
RW-11(B1)	D	PD	ND
B2 Zone			
40B2	NT	PD	ND
90B2	S	NT	ND
146B2	NT	S	ND
RW-1(B2)	D	NT	ND
RW-2(B2)	NT	NT	ND

Notes:

TCE = Trichloroethene

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

PI =Probably Increasing

I =Increasing

S = Stable

PD = Probably Decreasing

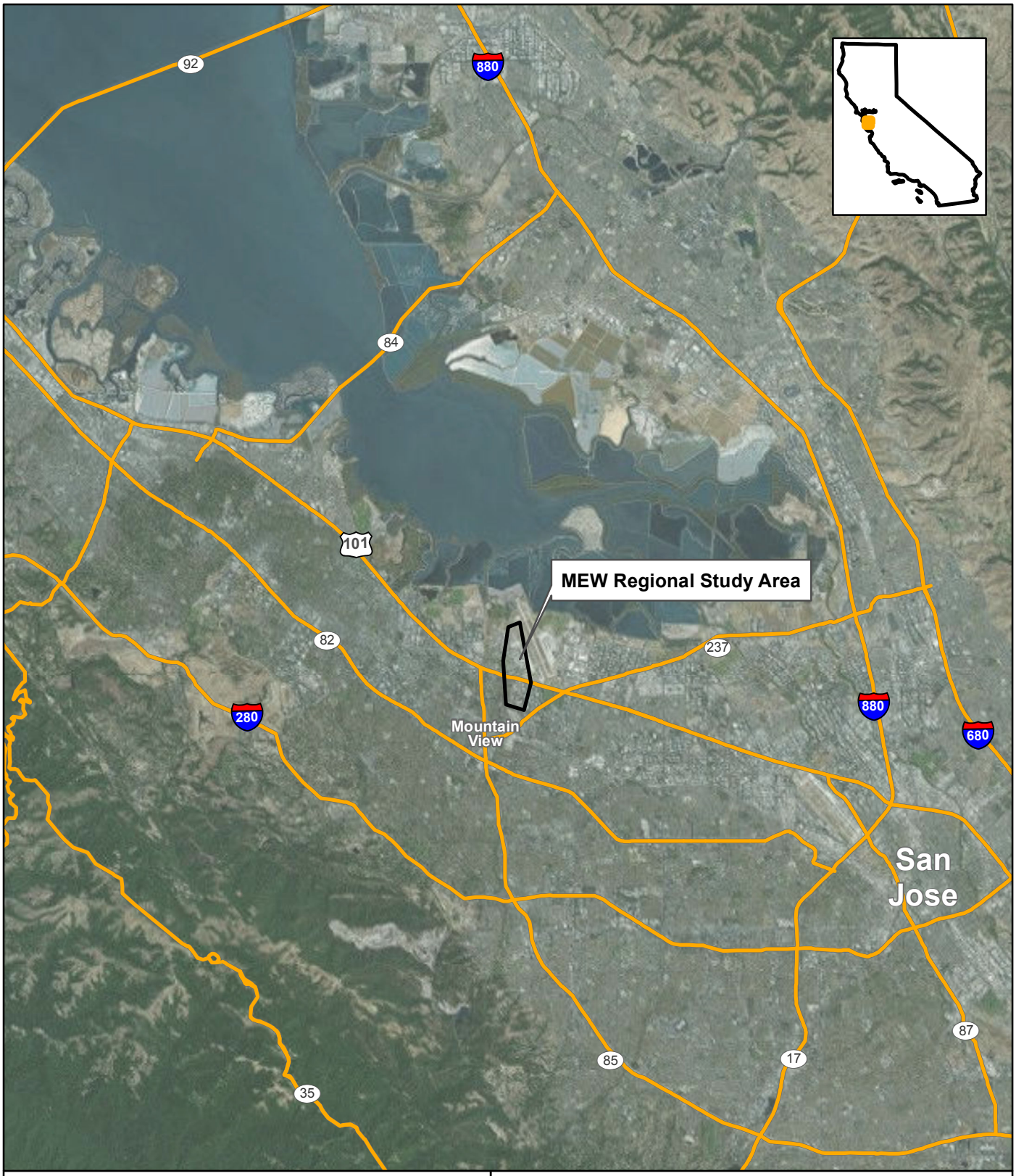
D = Decreasing

NT = No Trend

ND = Non-Detect, In circumstances where sample concentratons have not been detected in any sample from the last 10 sampling years the ND designation was used

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

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, and 23 Groundwater Remediation Program
Mountain View, California

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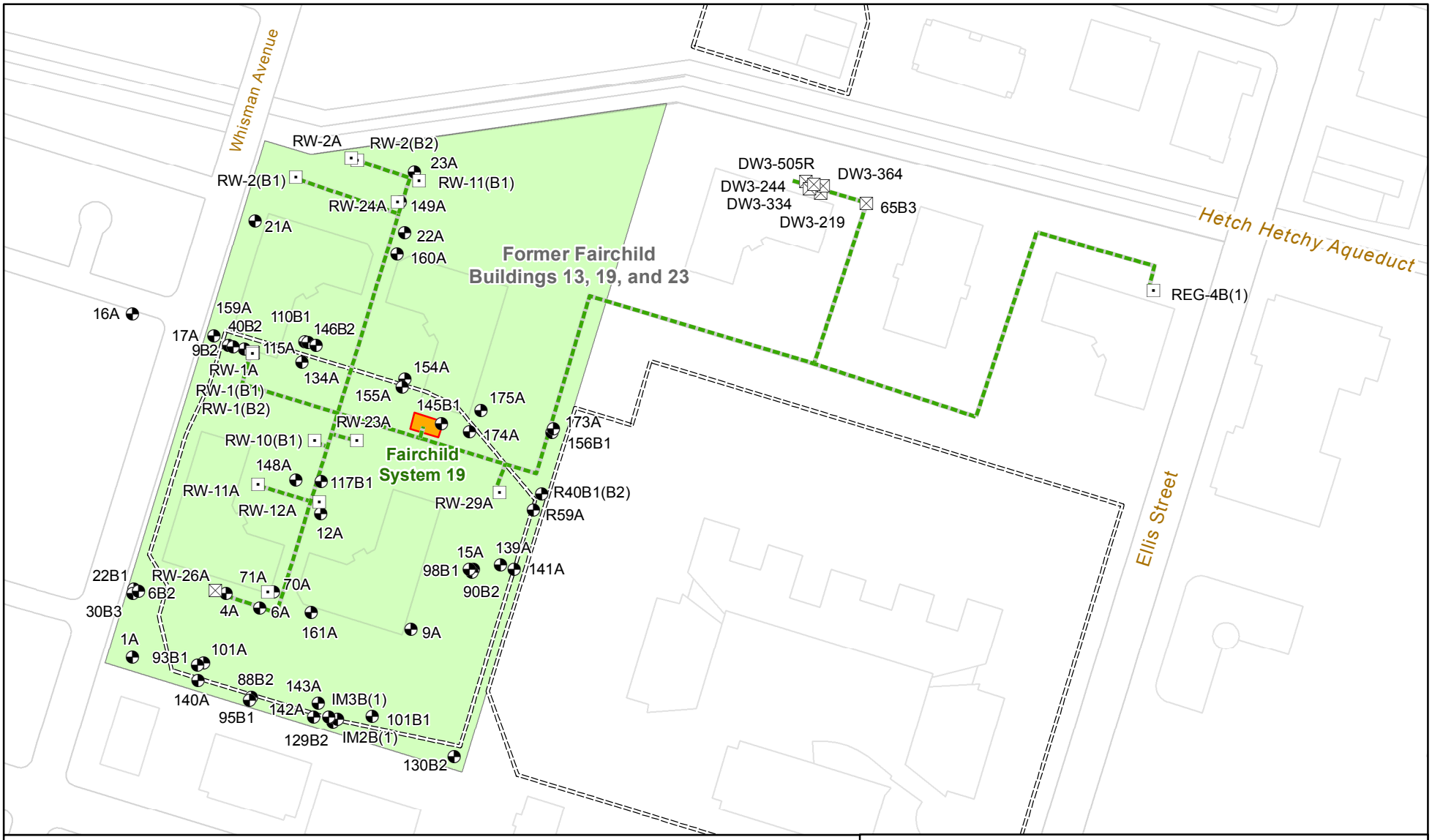
Figure **2**

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig02_FormerFacilities.mxd



Legend

Extraction and Monitoring Wells

- Monitoring Well
- Recovery Well, On
- Recovery Well, Off
- Treatment System 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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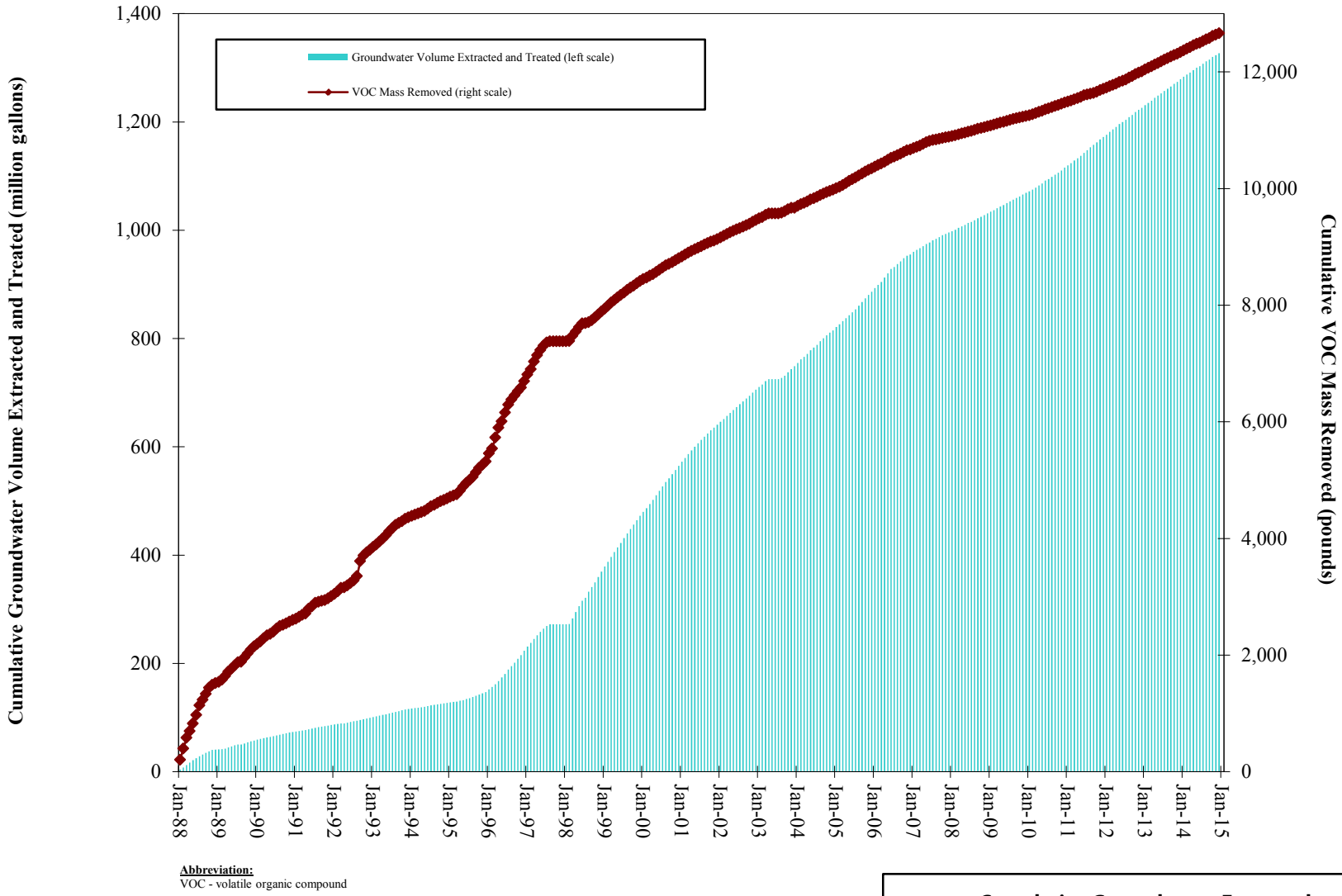

Abbreviation:
VOC - volatile organic compound

Source: Fourth Quarter and Annual 2014 Self-Monitoring Report, Treatment System 19 (Weiss, 2015)

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

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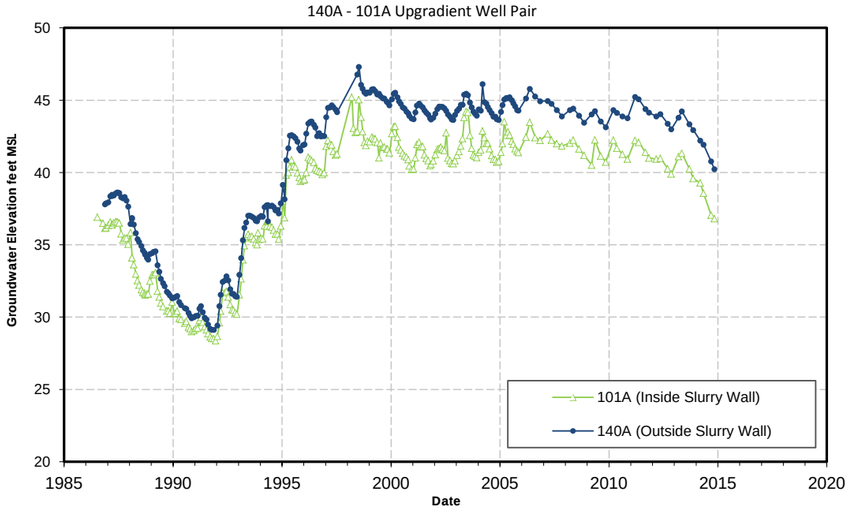

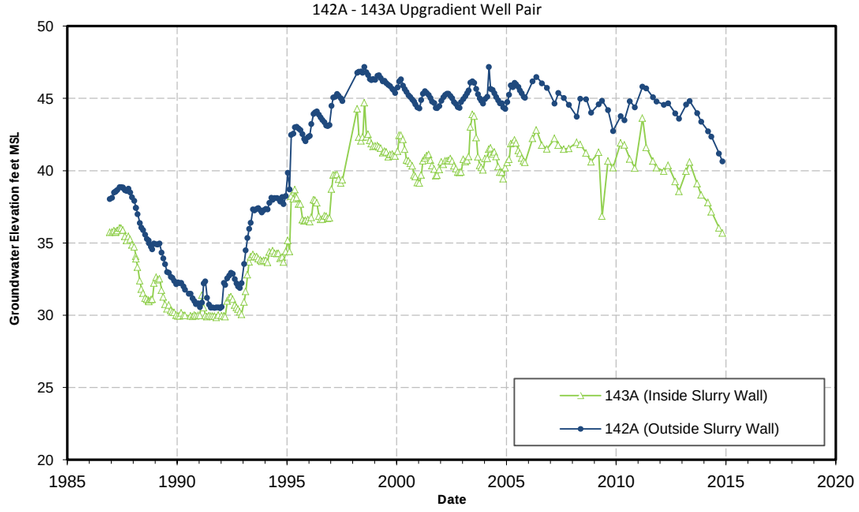

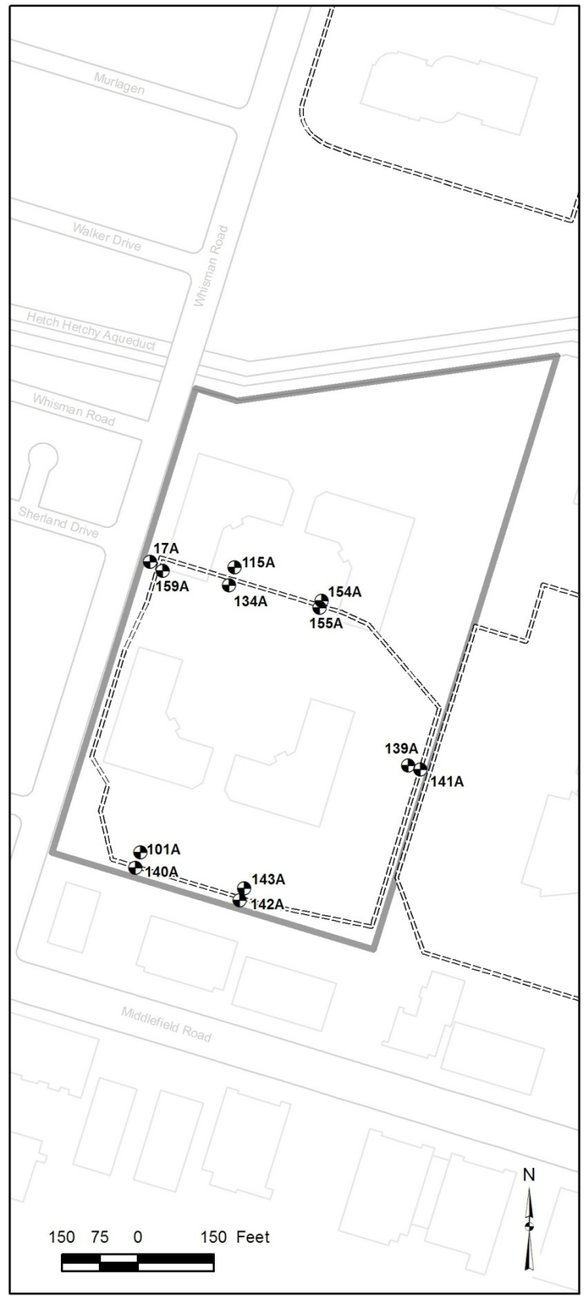

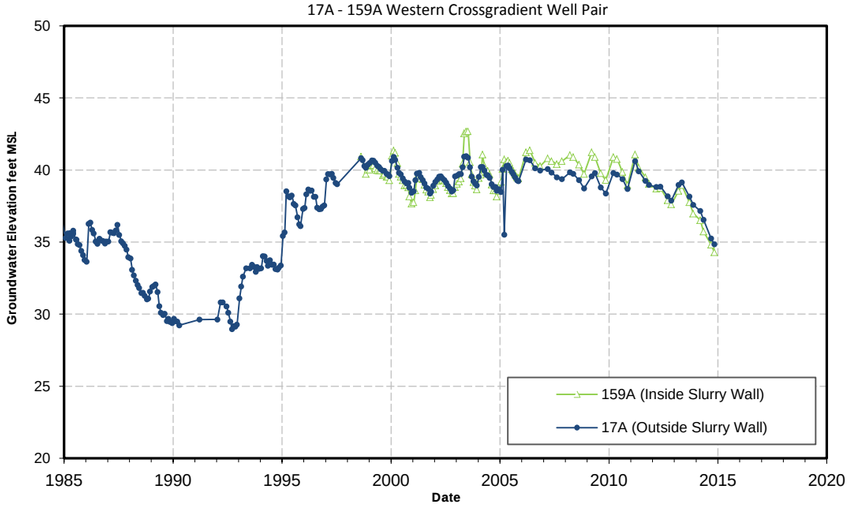

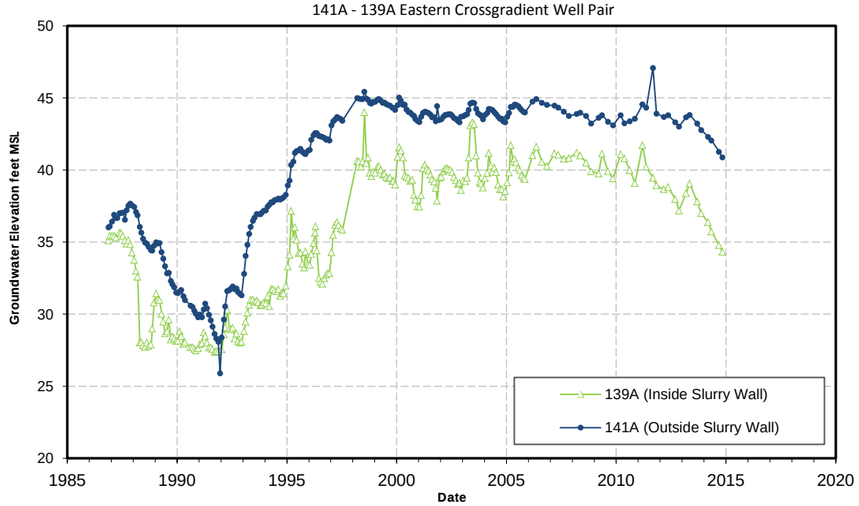

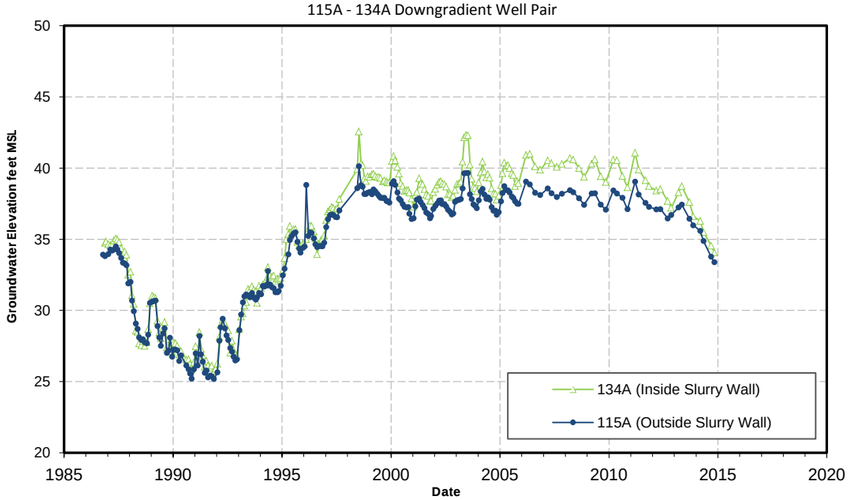

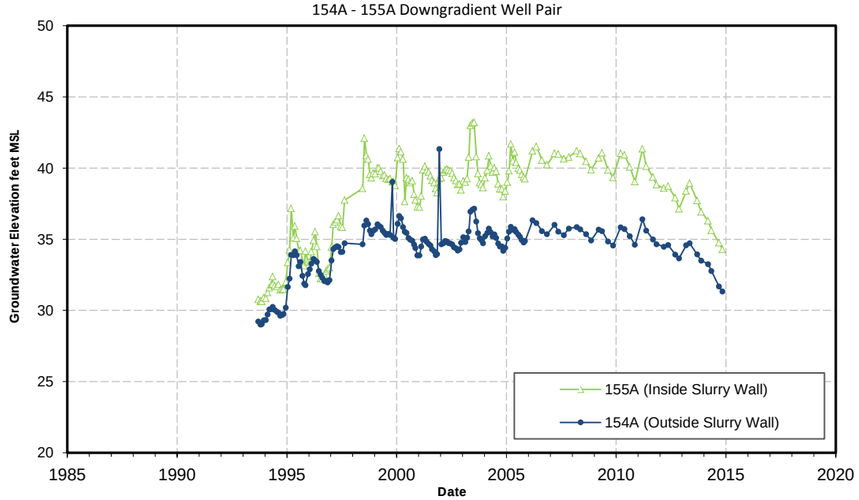

Hydrographs - Slurry Wall Well Pairs

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

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Figure 5

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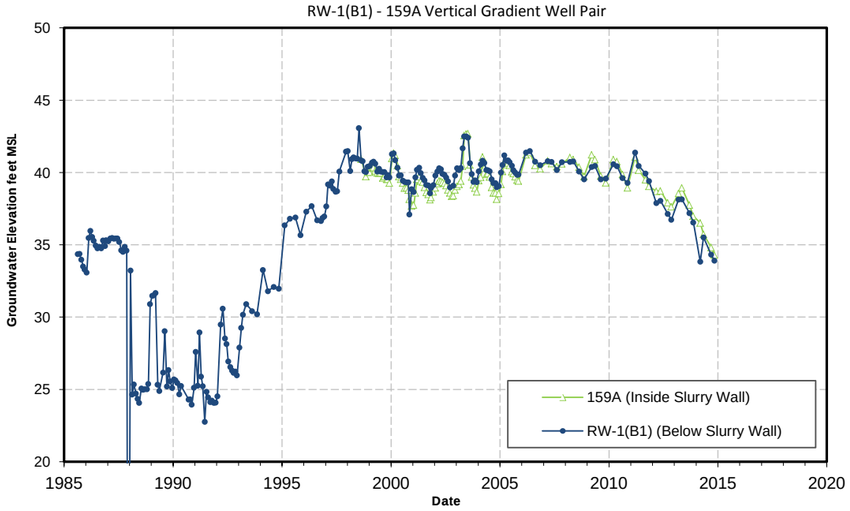
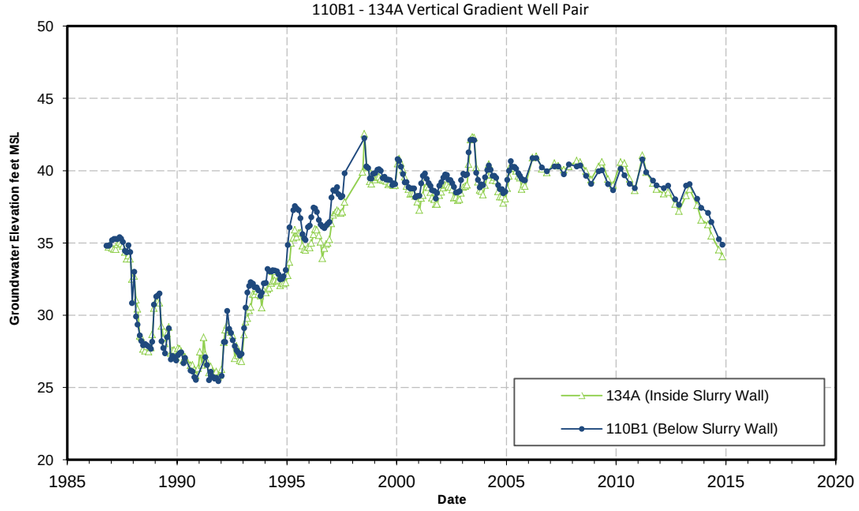
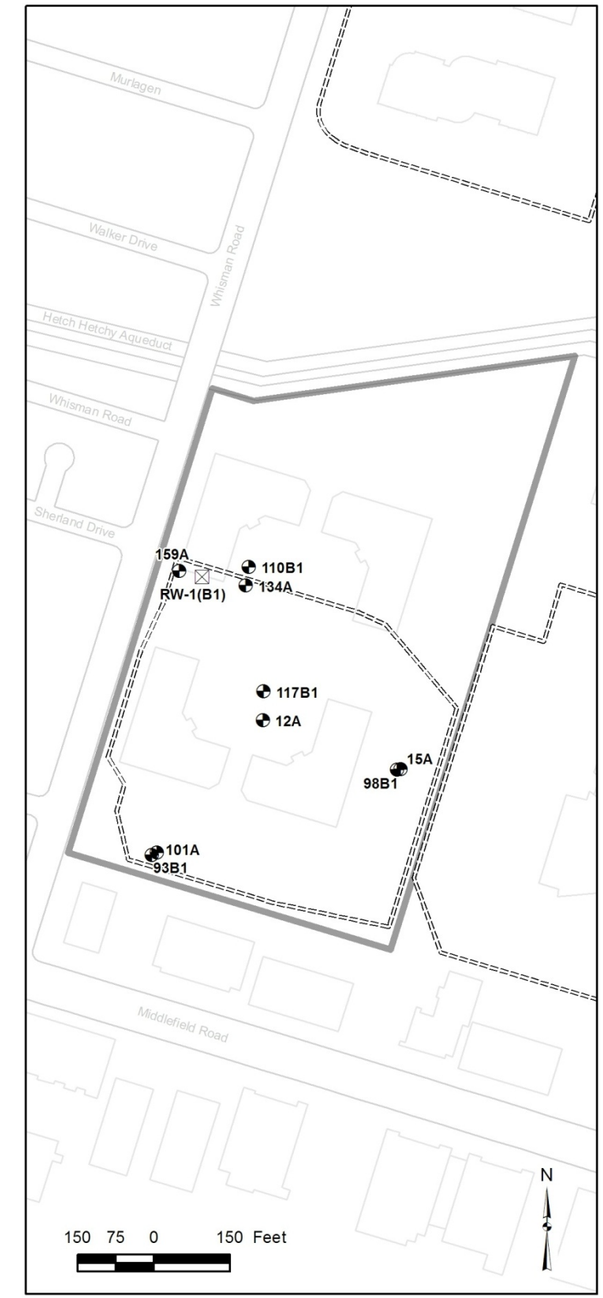
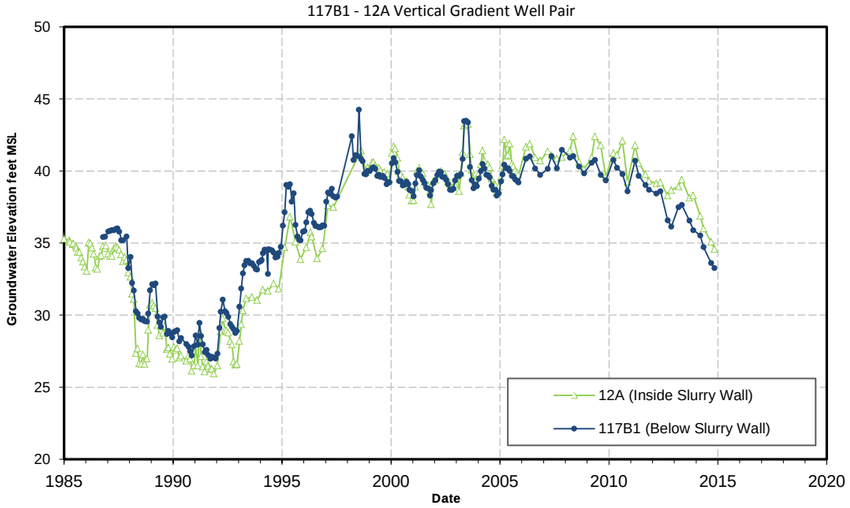
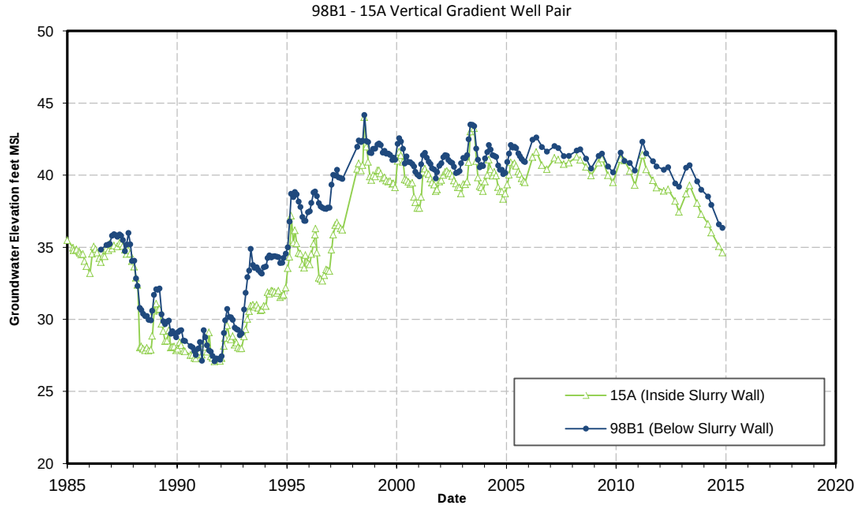
P:\GIS\MEW\Excel\Fairchild\Building19\Fig5and6_Hydrographs.xlsx

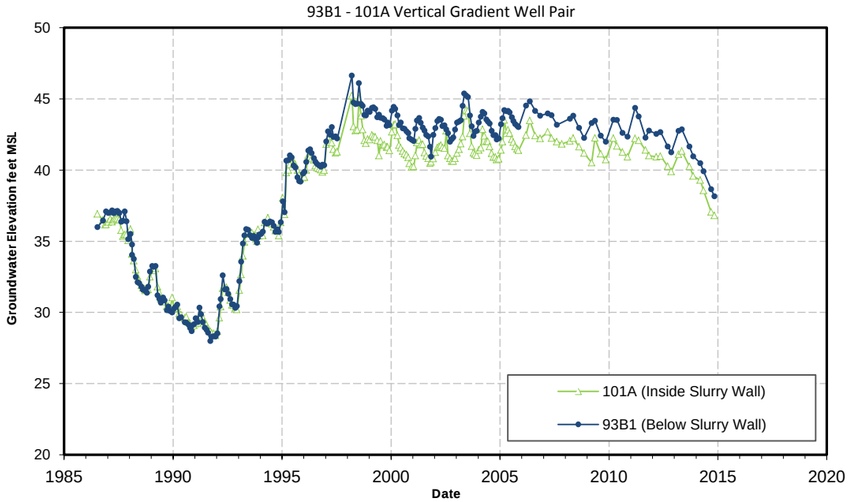












Hydrographs - Slurry Wall Well Pairs Across Water-Bearing Zones

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 (10.3)
31.01
23A
33.03
RW-24A (2.5)
32.07
149A
32.89
21A
34.62
22A
33.86
160A
33.05
16A
38.43
17A
37.16
RW-1A (3.9)
25.61*
159A
36.52
115A
35.58
134A
36.28
154A
33.25
155A
36.29
175A
33.29
173A
34.55
174A
36.2
RW-23A (8.2)
30.90*
RW-11A (2.6)
36.97
148A
36.67
RW-12A (2.5)
36.74
12A
36.89
RW-29A (10.8)
23.20*
R59A
42.76
15A
36.62
139A
36.37
141A
42.30
RW-26A
38.27
71A (4.5)
38.00*
70A
37.65
4A
38.48
6A
38.62
161A
37.83
9A
37.74
1A
41.41
101A
39.29
140A
42.20
143A
37.80
142A
42.73

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, 2015b).

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 (4.5) Well ID (Pumping Rate)
38.00 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 20 March 2014

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
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Figure 7

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig07_GW_A_Mar.mxd | 4/8/2015 4:07:19 PM

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

RW-2A (8.7) 27.14
23A 31.30
RW-24A (3.5) 29.17
149A 31.23
21A 32.79
22A 31.30
160A 31.47
16A 36.65
17A 35.25
RW-1A (2.1) 24.68
159A 34.82
115A 33.77
134A 34.54
154A 31.68
155A 34.75
175A 31.79
173A 33.04
174A 34.63
RW-23A (3.1) 33.41
RW-11A (3.5) 34.30
148A 34.90
RW-12A (2.6) 34.98
12A 35.09
RW-29A (8.9) 23.59
R59A 41.22
15A 35.07
139A 34.78
141A 41.27
RW-26A 36.45
71A (3.7) 33.35
70A 35.32
4A 36.53
6A 36.37
161A 35.80
9A 35.95
1A 39.96
101A 37.06
140A 40.77
143A 36.04
142A 41.19

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, 2015b).

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 (3.7) Well ID (Pumping Rate)
33.35 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 18 September 2014

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

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Figure 8

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig08_GW_A_Sept.mxd | 4/8/2015 4:08:16 PM

B1 Zone Groundwater Elevation Contours and Estimated Capture Zones 20 March 2014

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

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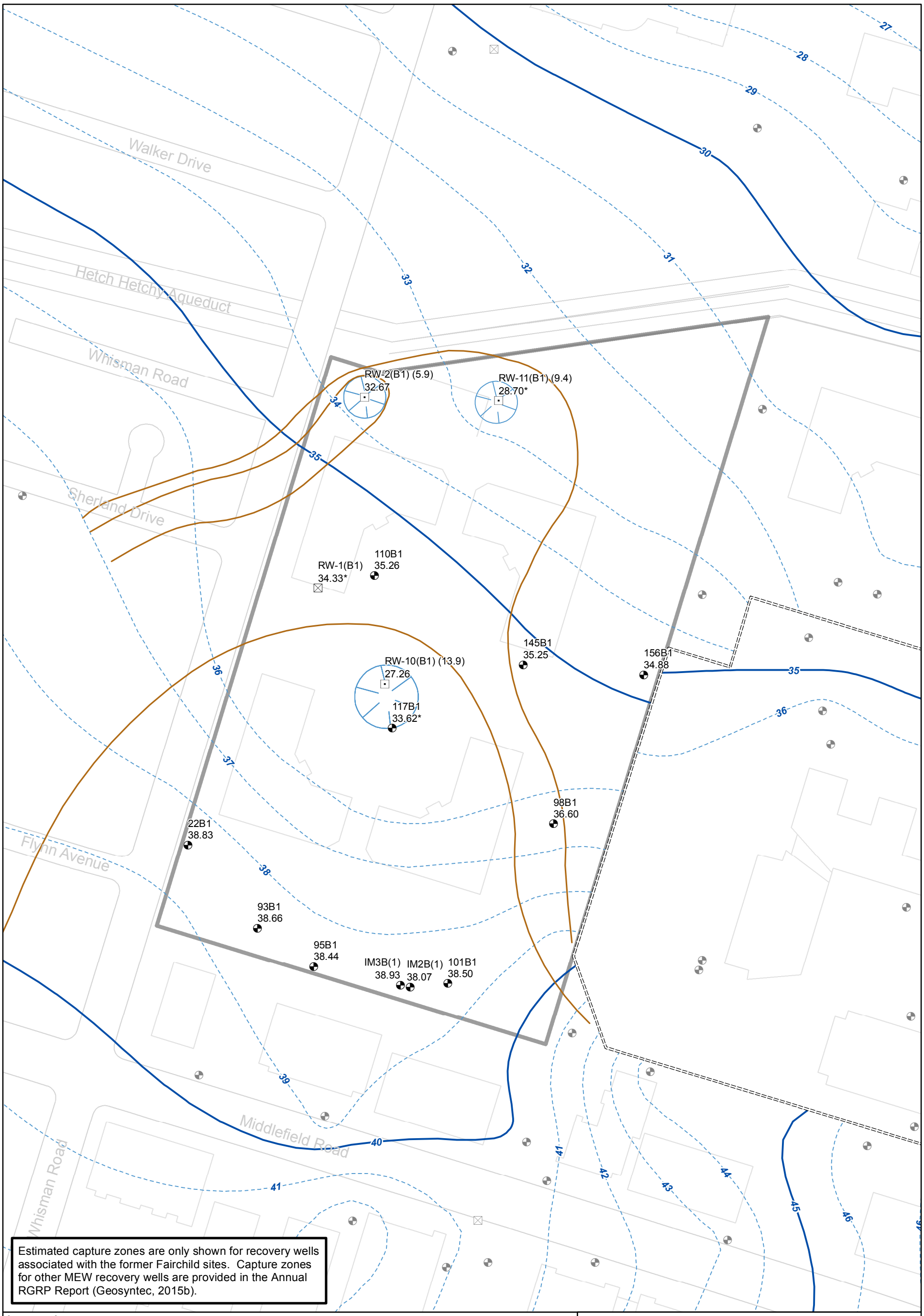
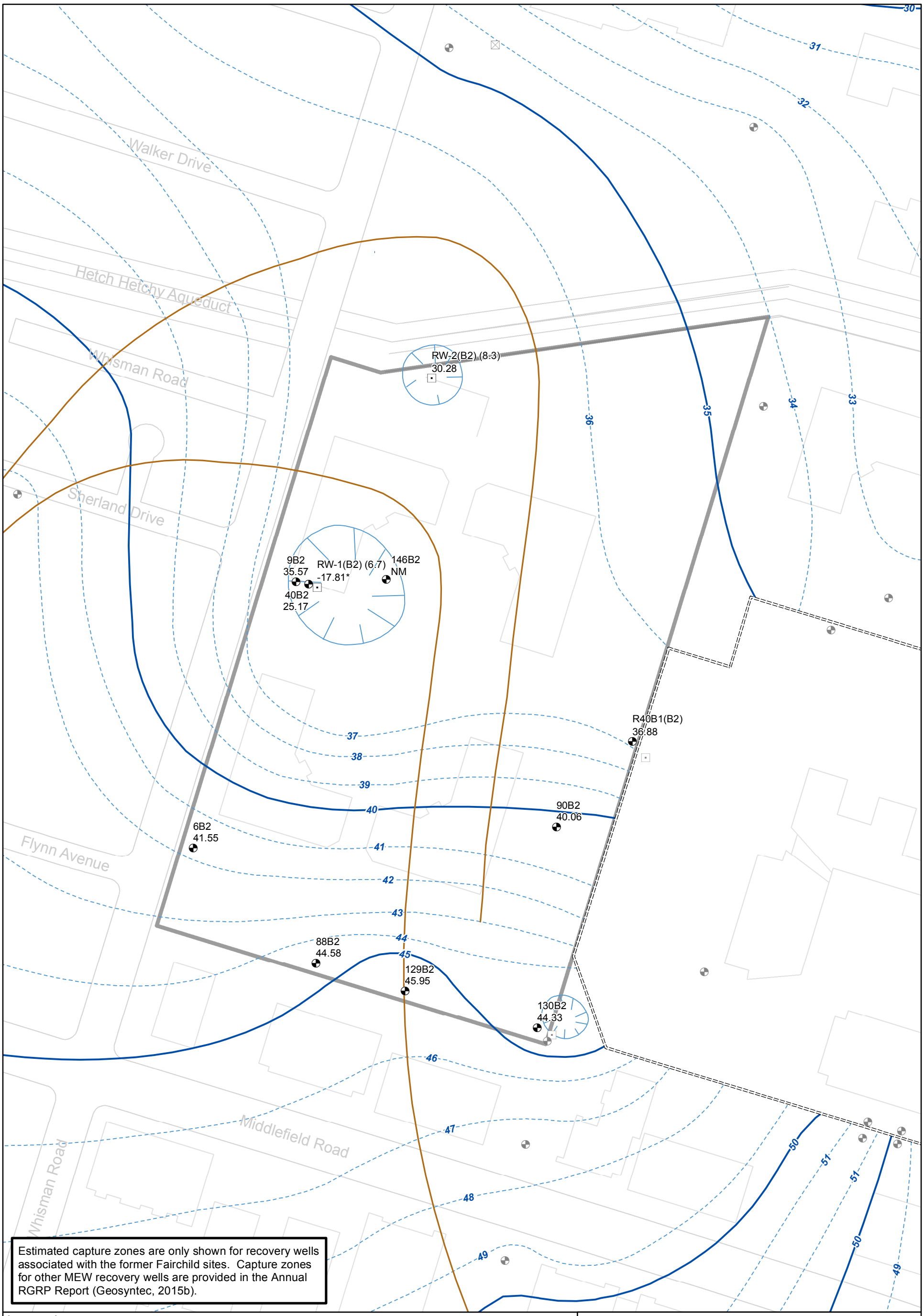
Figure 9

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig09_GW_B1_Mar.mxd | 4/8/2015 4:09:11 PM


Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road
RW-2(B1) (5.9)
32.67
RW-11(B1) (9.4)
28.70*
RW-1(B1)
34.33*
110B1
35.26
RW-10(B1) (13.9)
27.26
117B1
33.62*
145B1
35.25
156B1
34.88
98B1
36.60
22B1
38.83
93B1
38.66
95B1
38.44
IM3B(1)
38.93
IM2B(1)
38.07
101B1
38.50
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
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, 2015b).
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) (5.9) Well ID (Pumping Rate)
32.67 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
18 September 2014
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California
Geosyntec consultants
Oakland
April 2015
Figure
10
P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig10_GW_B1_Sept.mxd | 4/8/2015 4:10:07 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, 2015b).

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) (6.7) Well ID (Pumping Rate)
-17.81 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 20 March 2014

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\2014_AR\Building19\Fig11_GW_B2_Mar.mxd | 4/8/2015 4:11:04 PM

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

RW-2(B2) (11)
27.09

9B2
33.70

RW-1(B2) (6.3)
-17.74

146B2
33.46

40B2
24.02

R40B1(B2)
35.04

90B2
39.42

6B2
39.60

88B2
42.77

129B2
44.46

130B2
44.82

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, 2015b).

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) (6.3) Well ID (Pumping Rate)
-17.74 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 18 September 2014

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
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Figure **12**

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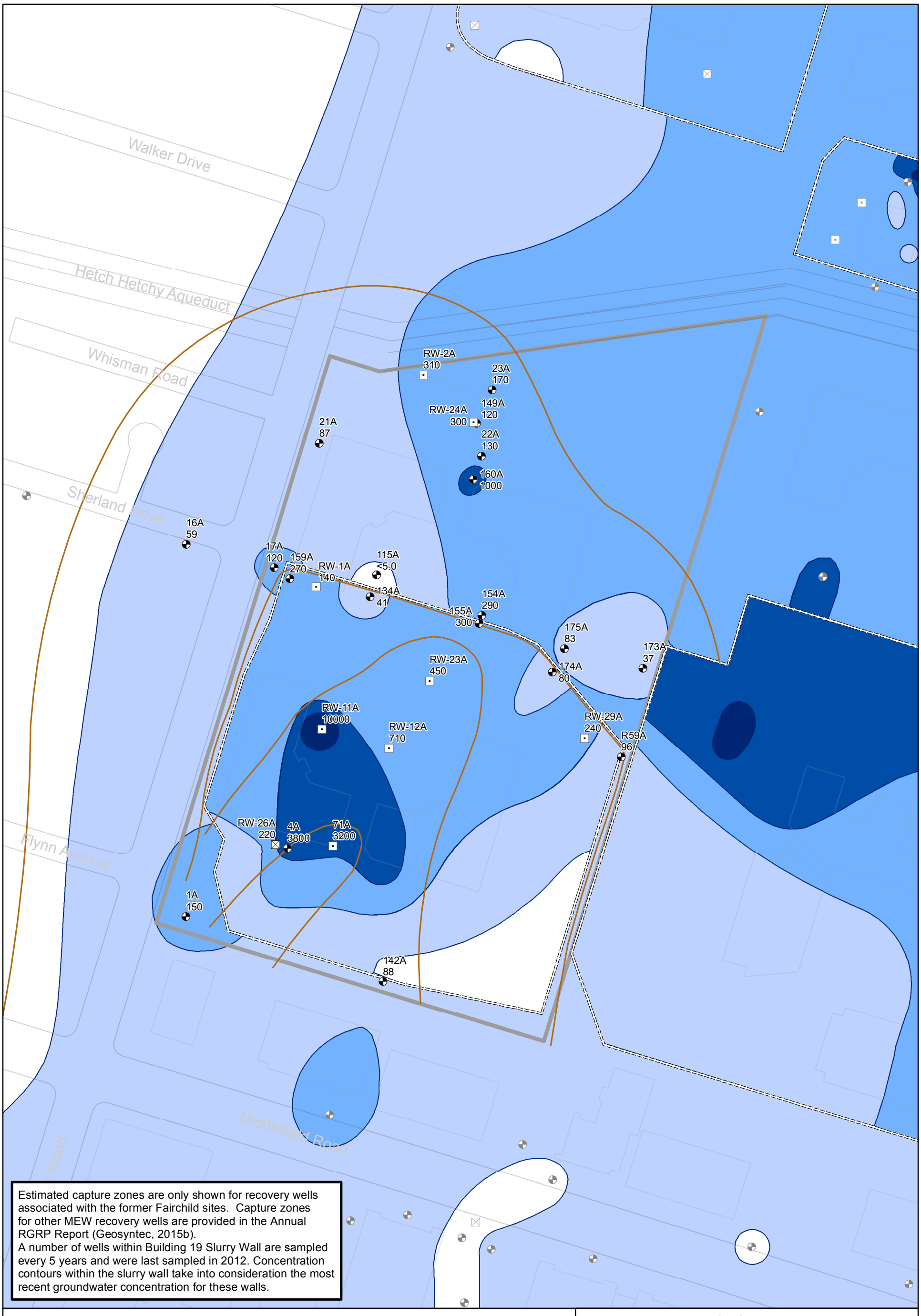

A Zone TCE Concentrations and Estimated Capture Zones September/October 2014

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

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Figure 13

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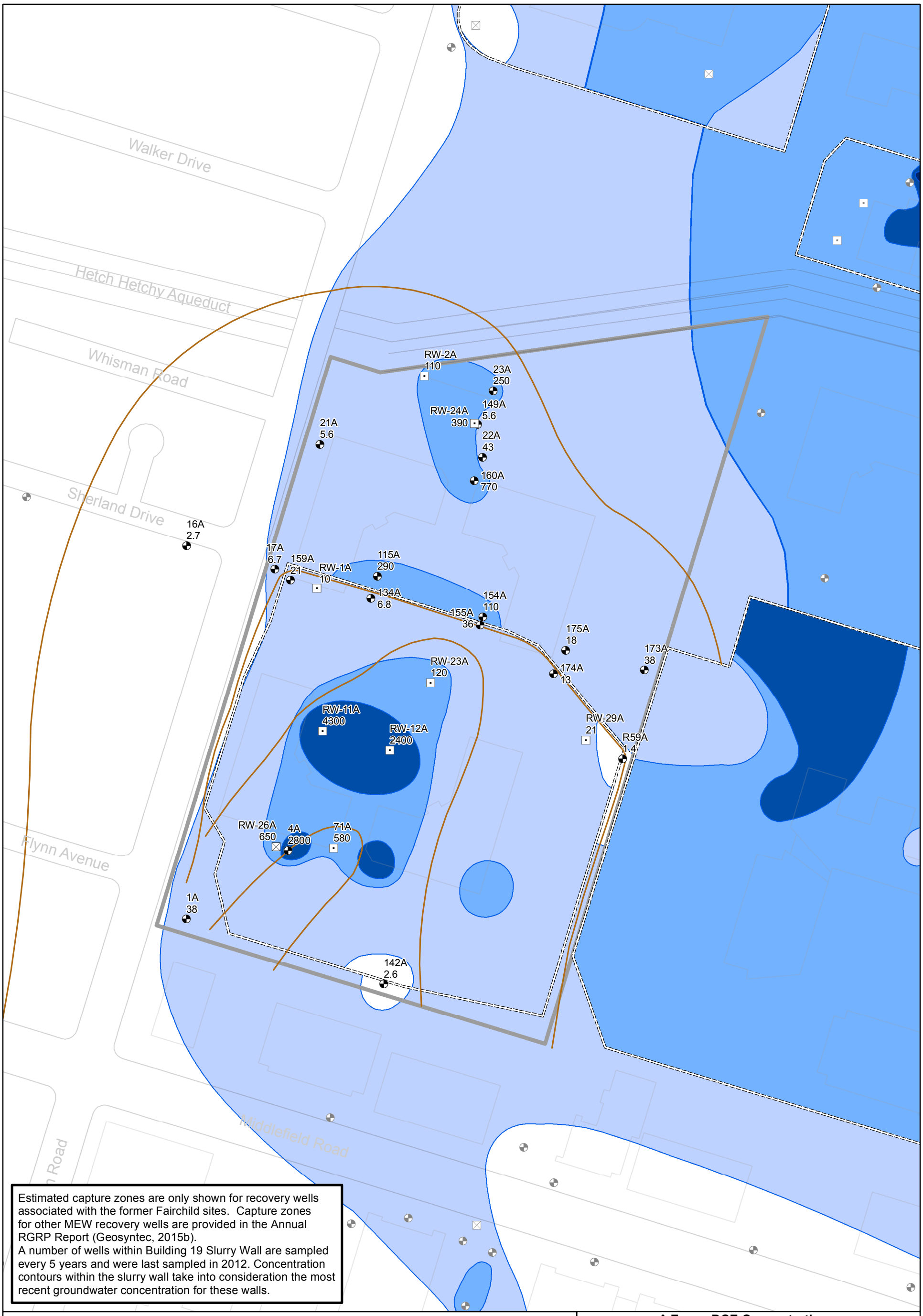

A Zone cDCE Concentrations and Estimated Capture Zones September/October 2014

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

Geosyntec consultants

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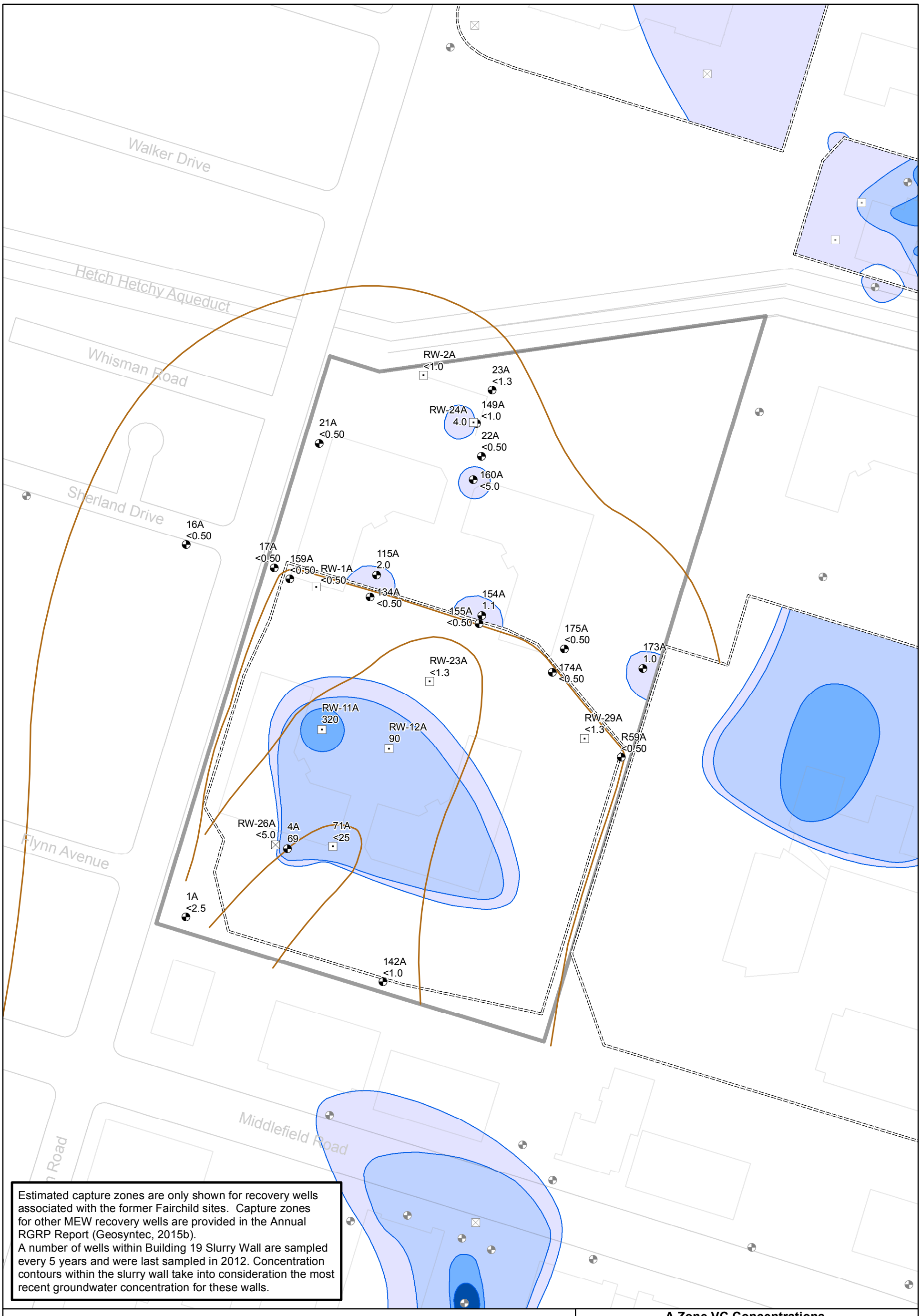
Figure 14

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig14_DCE_A_Sept_CZ.mxd | 4/8/2015 4:13:45 PM



A Zone VC Concentrations and Estimated Capture Zones September/October 2014

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

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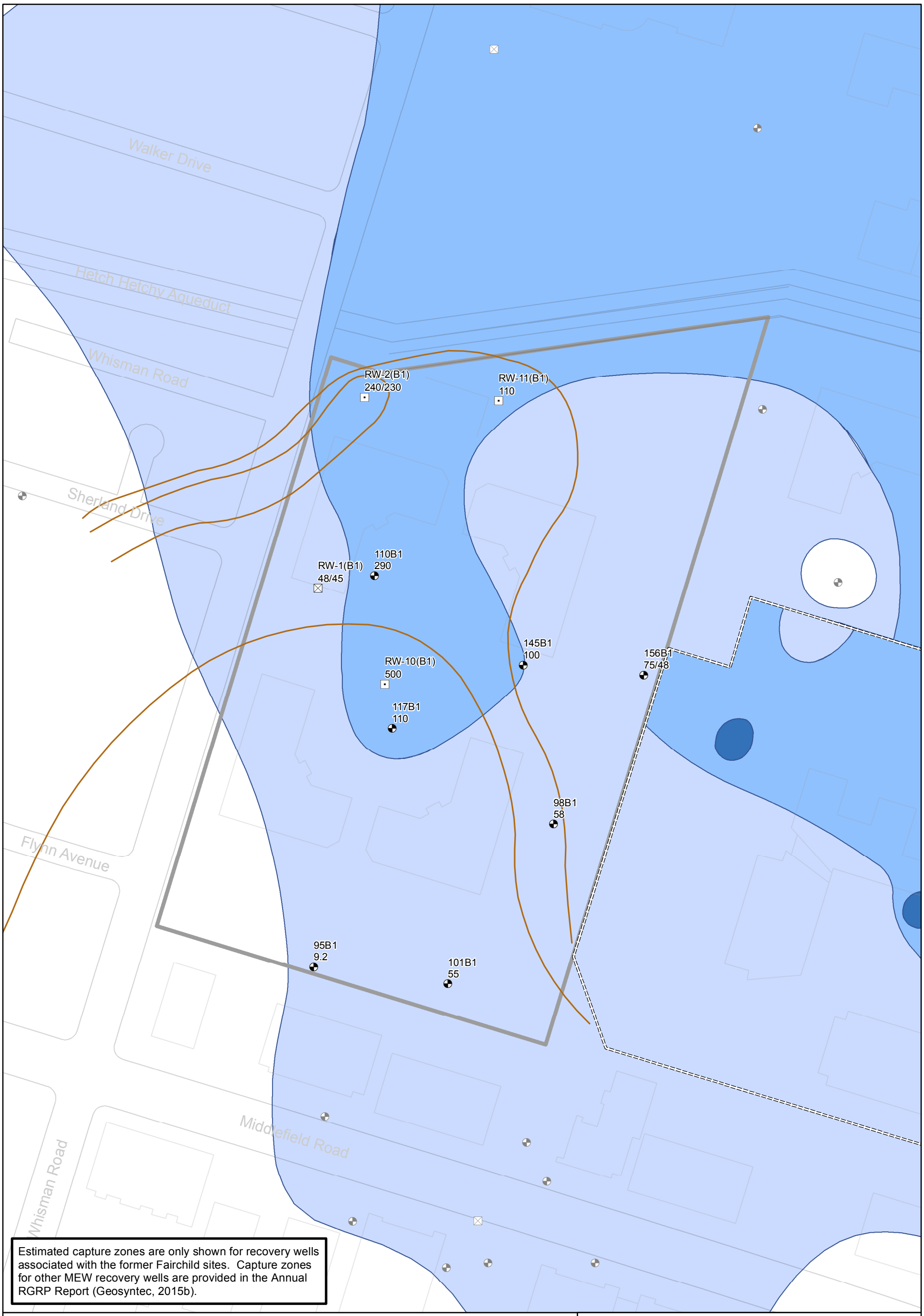
Figure 15

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig15_VC_A_Sept_CZ.mxd | 4/8/2015 4:14:34 PM


Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
RW-2A
<1.0
23A
<1.3
RW-24A
<2.5
149A
<1.0
21A
<0.50
22A
<0.50
160A
<5.0
16A
<0.50
17A
<0.50
159A
<0.50
RW-1A
<0.50
115A
<0.50
134A
<0.50
155A
2.4
154A
0.85
175A
<0.50
174A
0.89
173A
<0.50
RW-23A
2.0
RW-11A
<1.3
RW-12A
2.0
RW-29A
2.2
R59A
<0.50
RW-26A
<5.0
4A
<25
71A
<25
1A
<2.5
142A
15
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, 2015b).
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 2014.
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 2014
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California
Geosyntec consultants
Oakland
April 2015
Figure 16
P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig16_PCE_A_Sept_CZ.mxd | 4/8/2015 4:15:25 PM


Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road
RW-2(B1)
240/230
RW-11(B1)
110
110B1
290
RW-1(B1)
48/45
145B1
100
RW-10(B1)
500
156B1
75/48
117B1
110
98B1
58
95B1
9.2
101B1
55
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, 2015b).
Legend
Monitoring Well
Recovery Well On
Recovery Well Off
TCE 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
Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for TCE in 2014.
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 TCE Concentrations and Estimated Capture Zones September/October 2014
MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
Mountain View, California
Geosyntec consultants
Oakland
April 2015
Figure 17
P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig17_TCE_B1_Sept_CZ.mxd | 4/8/2015 4:16:18 PM

B1 Zone cDCE Concentrations and Estimated Capture Zones September/October 2014

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

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Figure 18

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig18_DCE_B1_Sept_CZ.mxd | 4/8/2015 4:17:09 PM

B1 Zone VC Concentrations and Estimated Capture Zones September/October 2014

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\2014_AR\Building19\Fig19_VC_B1_Sept_CZ.mxd | 4/8/2015 4:17:59 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, 2015b).

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 2014.
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 2014

MEW Former Fairchild Buildings 13, 19, and 23 Groundwater Remediation Program
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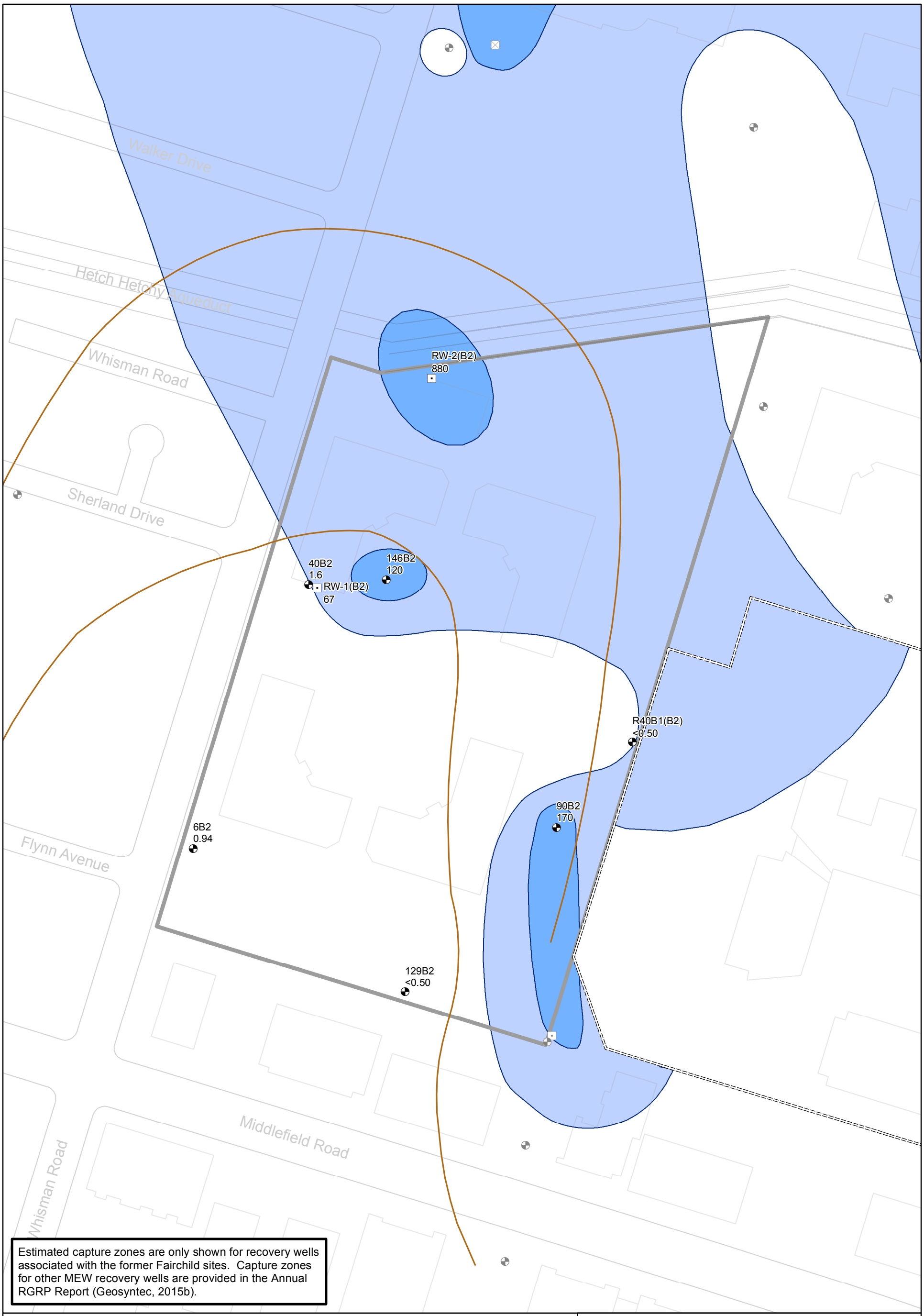
Figure 20

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig20_PCE_B1_Sept_CZ.mxd | 4/8/2015 4:18:51 PM



B2 Zone TCE Concentrations and Estimated Capture Zones September/October 2014

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\2014_AR\Building19\Fig21_TCE_B2_Sept_CZ.mxd | 4/8/2015 4:19:44 PM

Walker Drive
Hetch Hetchy Aqueduct
Whisman Road
Sherland Drive
Flynn Avenue
Middlefield Road
Whisman Road
RW-2(B2)
14
40B2
4.9
RW-1(B2)
35
146B2
39
6B2
<0.50
90B2
59
R40B1(B2)
<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, 2015b).

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

cDCE 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:
cDCE = cis-1,2-Dichloroethene
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for cDCE in 2014.
Wells not associated with the Former Fairchild Buildings 13, 19, and 23 Site are shown in gray.

B2 Zone cDCE Concentrations and Estimated Capture Zones September/October 2014

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Mountain View, California

Geosyntec consultants

Oakland | April 2015

Figure 22

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig22_cDCE_B2_Sept_CZ.mxd | 4/8/2015 4:20:34 PM

B2 Zone VC Concentrations and Estimated Capture Zones September/October 2014

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

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Figure 23

P:\GIS\MEW\Project\Fairchild\2014_AR\Building19\Fig23_VC_B2_Sept_CZ.mxd | 4/8/2015 4:21:24 PM

B2 Zone PCE Concentrations and Estimated Capture Zones September/October 2014

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\2014_AR\Building19\Fig24_PCE_B2_Sept_CZ.mxd | 4/8/2015 4:22:13 PM

APPENDICES

APPENDIX A

2014 Annual Report Remedy Performance Checklist

2014 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 2015	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 recovery wells: 3 Regional Groundwater Remediation Program (RGRP) wells and 17 Source Control Recovery Wells (SCRWs)

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.

2014 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.

2014 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:

In 2013 the 401 National Avenue property was purchased by National Avenue Partners, LLC and in May 2014 redevelopment of 401 National was approved by the City of Mountain View in conjunction with three properties to the north. The planned redevelopment activities include the construction of a two-story parking garage over most of the current 401 National Avenue property. Building 9 was demolished in November 2014 as part of redevelopment activities.

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

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

2014 Annual Report Remedy Performance Checklist

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	2014 Annual Fairchild Building Reports (Geosyntec, 2015c, d) and the 2014 Annual Regional Report (Geosyntec, 2015b)

☑ 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 2014 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	2014 Annual Fairchild Reports (Geosyntec, 2015c, d)

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 2014 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

2014 Annual Report Remedy Performance Checklist

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

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 2014. In accordance with the Statement of Work for the Vapor Intrusion ROD Amendment (VI SOW), an annual report summarizing the status of the vapor intrusion remedy will be submitted under separate cover (Geosyntec, 2015e).

Summary of Results: Vapor intrusion remedial design and construction activities were performed in the buildings located at the 369, 379, 389, and 399 North Whisman Road properties. Trichloroethene (TCE) was detected in indoor air above the clean-up levels established for the site during 2013 indoor air sampling at 369 and 379 North Whisman Road when the building's heating, ventilation, and air conditioning (HVAC) system was off (Geosyntec, 2014) As a result, sub-slab depressurization (SSD) systems were designed and constructed at these buildings in accordance with the VI ROD Amendment. MEW-specific contaminants of concern (COCs) were not detected above their respective clean-up levels established for the site during 2012 indoor air sampling at 389 and 399 North Whisman Road (Geosyntec, 2013) therefore the VI ROD Amendment does not require engineering controls for these buildings. However, SSD systems were voluntarily installed at 389 and 399 North Whisman Road at the property owner's request. All SSD remedial design and construction work was performed in accordance with the VI SOW, including development of building-specific SSD system designs, building-specific SSD system Operations, Maintenance and Monitoring (OM&M) Plans, initiation of construction of SSD systems, and building-specific Implementation Reports. No VI investigation activities were conducted in 2014. More information is provided in the VI Annual Report (Geosyntec, 2015e).

Problems Encountered: None

Recommendations/Next Steps: Continue ongoing operation, maintenance, and monitoring programs for SSD systems installed in the buildings located at 369, 379, 389, and 399 North Whisman Road, in accordance with the OM&M Plans. Upon receipt of EPA's approval of the Revised Tiering Work Plan (H&A, 2013), evaluate the potential for vapor intrusion in buildings where follow-up sampling is needed, and tier all former Fairchild facilities in accordance with the tiers established in the VI ROD Amendment.

Schedule: Ongoing operation, maintenance, and monitoring programs for SSD systems installed in the buildings located at 369, 379, 389, and 399 North Whisman Road will be conducted in accordance with schedules set forth in the OM&M Plans for these systems. 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, 2015e).

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 trend analysis and reviewing VOC concentrations over time. The analyses show that TCE concentrations in the majority of monitoring wells have 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 2015c, d).

2014 Annual Report Remedy Performance Checklist

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

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

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 2014 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 are 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: 2014 Annual Fairchild Building Reports (Geosyntec, 2015c, d)
2014 Annual Regional Report (Geosyntec, 2015b)
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 2014 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 2015

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

2014 Annual Report Remedy Performance Checklist

Remedy Projections for the upcoming year (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: 2016

Elaborate on Remedy Projections: EPA has requested that the MEW parties work to optimize performance of the groundwater remedy with respect to mass removal. An ISCO pilot study will be implemented at the former Fairchild Building 9 in 2015 to assess the ability of oxidant injections to increase the rate of VOC mass removal at that site.

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: 2016

Elaborate on Remedy Projections: EPA has requested that the MEW parties work to optimize performance of the groundwater remedy with respect to mass removal. Optimization programs for the former Fairchild Buildings 1-4, Building 18, and Building 19 sites are expected to include adjustments to the groundwater extraction remedies to increase the rate of VOC mass removal. The former Fairchild Building 19 site will be the first of the Fairchild sites evaluated for extraction well network optimization.

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: 2016

Elaborate on Remedy Projections:

On 23 September 2014, EPA approved the data collection scope of work and provided comments on the ISCO pilot study work plan for former Fairchild Building 9. These comments included a request for STC to "reassess and evaluate implementation of a treatability study of a funnel-and-gate system in the downgradient (northern) slurry

wall in conjunction with and consideration of the ISCO pilot study work and the redevelopment of the 401 National Avenue property." A work plan to implement a zero-valent iron (ZVI) permeable reactive barrier (PRB) treatability study at the former Fairchild Building 9 site was submitted to EPA on 30 January 2015

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: 2016

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).

An ISCO pilot study will be implemented at the former Fairchild Building 9 site in 2015.

XII. ADMINISTRATIVE ISSUES
Check all that apply:

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

Date of Next EPA Five-Year Review: September, 2019

XIII. RECOMMENDATIONS

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, and that EPA approve the 13 February 2015 Request for Reduction in Groundwater Monitoring Frequency.(Geosyntec, 2015a).

REFERENCES

Geosyntec Consultants, Inc., Northgate Environmental Management, Inc., Schlumberger Water Services, and Weiss Associates. (Geosyntec, et al.), 2008. Optimization Evaluation, Fairchild Sites, Middlefield-Ellis-Whisman Area, Mountain View, California, September 3.

Geosyntec, 2013. 2012 Annual Vapor Intrusion Progress Report, Fairchild Groundwater Remediation Program, Middlefield-Ellis-Whisman Area, Mountain View, April 15.

Geosyntec, 2014. 2013 Annual Vapor Intrusion Progress Report, Fairchild Groundwater Remediation Program, Middlefield-Ellis-Whisman Area, Mountain View, April 15.

Geosyntec, 2015a. Request for Reduction in Groundwater Monitoring Frequency for Middlefield-Ellis-Whisman Study Area Mountain View, California, February 13.

Geosyntec, 2015b. 2014 Annual Progress Report, Regional Groundwater Remediation Program, Middlefield-Ellis-Whisman Area, Mountain View, California, April 15.

Geosyntec, 2015c. 2014 Annual Progress Report for Former Fairchild Buildings 1-4, 9, and 18, Mountain View, California, April 15.

Geosyntec, 2015d. 2014 Annual Progress Report for Former Fairchild Buildings 13, 19, and 23, Mountain View, California, April 15.

Geosyntec, 2015e. 2014 Annual Vapor Intrusion Progress Report, Fairchild Groundwater Remediation Program, Middlefield-Ellis-Whisman Area, Mountain View, April 15.

H&A, 2013. Revised Site-Wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action Tiering, Middlefield-Ellis-Whisman Superfund Area, Mountain View, California and Moffett Field, 22 March.

APPENDIX B

Laboratory Analytical Reports and Chain-of-Custody Documents, January through December 2014

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

APPENDIX C

QA/QC Report, Summary Tables, and Criteria

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: February 3, 2015
Revised March 19, 2015

RE: **2014 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 2014 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:

- Two quarterly sampling events conducted by Weiss of six newly installed monitoring wells located North of 101 as part of the Regional Groundwater Remediation Program (RGRP).

- The annual sampling conducted by Weiss of MEW monitoring and extraction wells that occurred in September and October 2014 for the 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 treatment systems 1, 3, and 19.

FIELD QA/QC SAMPLE REQUIREMENTS

Per the Quality Assurance Project Plan (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 sampling method and contract laboratory. Field duplicates are specified to be collected at a frequency of 1 for every 20 field samples collected.

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[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-14-002, August 2014.

[3] *National Functional Guidelines for Inorganic Superfund Methods Data Review*, prepared by the USEPA Contract Laboratory Program, OSWER 9240.1-51 USEPA-540-R-13-001, August 2014.

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 equipment 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.

Field blank – Field blanks are collected to assess if the source water used on-site for decontamination may affect the samples. The decontamination source water is distilled 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 volatile organic compounds (VOCs). 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 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 the 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;
- 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 the raw data, including bench sheets for calibration standards, quality control data, and the sample analyses.

REVIEW FINDINGS

Well Sampling

This section summarizes well sampling results from the annual and quarterly events.

Field Sampling Data

A total of 286 groundwater monitoring and extraction wells were sampled during 2014 annual and quarterly events, resulting in 315 primary samples. The total numbers of primary analyses, and QA/QC samples for each laboratory test method are summarized on Table 1.

Weiss checked all chain-of-custody forms for completeness and accuracy before the samples were transported to the laboratory. The laboratory 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.

In September, samples from 16 wells and one rinseate blank were analyzed for VOCs outside of holding time due to a laboratory equipment failure. The September results were rejected or "J" flagged because the samples were analyzed outside of holding time. As a result, these 16 wells were resampled and another rinseate blank was collected in October for VOC analysis. The October results were validated and there were no rejected or flagged results on these data. A note has been added to the database to use the October results in lieu of the September results.

Not including the samples mentioned above, a total of 118 sample results were "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 estimated concentration of the analyte in the sample. A "J" flag was applied to the 118 sample results because the result was between the method detection limit (MDL) and the reporting limit.

Field Duplicates. Field duplicates were collected for VOCs and metals (Table 1). 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. Table 2 shows that the RPDs for these analytes were less than their respective precision acceptance limits.

RPDs were not calculated for antimony, cadmium, or lead because they were not detected above reporting limits in the duplicate pairs (Table 3). The UCL for arsenic was not calculated because there was only one duplicate pair.

Matrix Spike/Matrix Spike Duplicates. A total of 36 MS/MSD samples were analyzed for VOCs or metals. The required frequency of 1 for every 20 field samples collected was met. The RPDs for all 36 MS/MSD sample pairs were below the 35% limit specified in the QAPP.

Rinseate Blanks. A total of 16 rinseate blank samples were collected (Table 1). The required frequency of 1 rinseate blank for every 20 field samples collected was met. No VOCs were detected above reporting limits in the rinseate blanks.

Field Blanks. A total of 20 field blanks were collected (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 41 trip blanks were analyzed for VOCs (Table 1). One blank was collected per shipping container with samples for VOC analysis. No VOCs were detected above reporting limits in any of the blanks except for cis-1,2-DCE and TCE in one trip blank (Table 4). However, these VOCs were detected in the associated primary samples at significantly greater concentrations, so no data qualifiers were necessary.

Field Audit. Weiss performed an internal audit of sampling activities on September 25 and September 26, 2014 as required by the QAPP. The audit consisted of observing sampling activities conducted by two field technicians. 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 Environmental Laboratory Accreditation Program of the California Department of Public Health 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. However, the holding time for some VOCs were not met. This significant deviation from the required holding times was identified and data were rejected. As mentioned above, the wells and rinseate blank associated with the holding time exceedance were resampled; there were no deviations identified and no data were rejected or flagged within the resampled data set. 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 and 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 USEPA 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 2014 data. The laboratory LCS ranges were not met for six compounds across two data packets. The six compounds had a LCS recovery limit higher than the laboratory's limit. However, there were no detections of these analytes in the associated field samples, so there were no qualifications.

Groundwater Extraction and Treatment System Sampling

Field Sampling Data

A total of 263 primary samples and 50 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 5.

The samples were collected, stored, transported, and managed according to USEPA protocols based on Weiss's 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 200 sample results. DNQ qualifier applies when an analyte is detected between the MDL and the reporting limit. The DNQ naming convention is unique to the

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

treatment system data because the National Pollutant Discharge Elimination System Permit requires this qualification code. A "J" flag was applied to four sample results. During the year, two "J" flags were applied because the field duplicate relative percent difference was outside of limits based on professional judgement in accordance with the USEPA data review guidelines[2] and two "J" flags were applied because the surrogate recoveries were below established limits.

Field Duplicates. The required frequency of 1 for every 20 field samples collected was satisfied as specified in the QAPP. Table 6 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 vinyl chloride. All RPDs were below the precision acceptance limits and no additional J flags were applied. Table 7 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-one trip blanks were analyzed for VOCs, meeting the QAPP requirement of one trip blank for each GWETS sample shipment to the laboratory. No VOCs were detected above method detection limits in the trip blanks.

Laboratory Data

The samples were analyzed by TestAmerica Laboratories, Inc., Pleasanton, California, a laboratory certified by the Environmental Laboratory Accreditation Program of the California Department of Public Health 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. However, as mentioned above, DNQ qualifiers were applied to 200 sample results.

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 limits. The required frequency was met. Trace amounts of methylene chloride and TCE were detected in some laboratory method blanks, but these compounds were not detected in the associated field samples. Therefore, no flags were applied.

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 not met for compounds in two data packets. These two compounds had a recovery

higher than the laboratory LCS range. However, there were no detections of these analytes in the associated field samples, so there were no qualifications applied.

Surrogates. In one data packet, a surrogate spike was recovered below laboratory limits for one sample, and thus, the associated positive result was J flagged. In a second data packet, a surrogate recovery was below laboratory limits for one sample. Because the sample was non-detect, the result was qualified with an elevated reporting limit, and this result was flagged with a “UJ”. In a third data packet, a surrogate recovery was above laboratory limits, but there were no detections of associated analytes and no flags were applied.

COMPLETENESS STATEMENT

A total of 42,909 results were generated from the well and system sampling for the RGRP and Fairchild in 2014. Due to a laboratory equipment failure, 16 well samples and one rinseate blank were analyzed outside of the method holding time. Thus, 353 individual laboratory results were qualified as "rejected," leaving 99% of the data in the project database for this year as valid. The QAPP requires that valid data constitute at least 90% of the total data collected.

The wells that yielded the "rejected" sample results were promptly resampled, and all of the results of the resampling were valid. Therefore, usable and reliable data are available for 100% of the locations sampled in 2014.

TABLES

Table 1. Quantities of Primary Well and Associated Quality Assurance Samples Analyzed in 2014, 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	309	19	16	16	41	35	436
Metals	USEPA Method 6010	6	4	4	0	0	1	15
Total		**315**	**23**	**20**	**16**	**41**	**36**	**451**

Abbreviations:

RGRP - Regional Groundwater Remediation Program

USEPA - United States Environmental Protection Agency

VOCs - volatile organic compounds

Table 2. VOC Results for Groundwater Duplicate Samples Collected from Wells in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

		cis-1,2-DCE		PCE		TCE		Vinyl Chloride	
Well ID	**Sample Date**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**
103B1	9/22/2014	10		<0.50		120		<0.50	
103B1 (DUP)	9/22/2014	7.1	34	<0.50	NC	160	29	<0.50	NC
10B2	9/29/2014	<0.50		<0.50		<0.50		<0.50	
10B2 (DUP)	9/29/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
134B2	9/22/2014	<0.50		<0.50		<0.50		<0.50	
134B2 (DUP)	9/22/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
134B2	10/16/2014	<0.50		<0.50		<0.50		<0.50	
134B2 (DUP)	10/16/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
139B1	9/2/2014	<0.50		<0.50		<0.50		<0.50	
139B1 (DUP)	9/2/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
147A	9/17/2014	11		0.73		130		<0.50	
147A (DUP)	9/17/2014	11	0	0.71	3	130	0	<0.50	NC
156B1	9/26/2014	40		<0.50		75		<0.50	
156B1 (DUP)	9/26/2014	23	54	<0.50	NC	48	44	<0.50	NC
42A	9/17/2014	57		1.9		400		0.83	
42A (DUP)	9/17/2014	81	35	2.0	5	390	3	0.80	4
62A	9/25/2014	4,900		<50		<50		<50	
62A (DUP)	9/25/2014	4,500	9	<25	NC	<25	NC	<25	NC
68B1	9/3/2014	33		<2.5		330		5.3	
68B1 (DUP)	9/3/2014	53	47	<10	NC	460	33	<10	NC
82A	9/8/2014	490		<5.0		310		<5.0	
82A (DUP)	9/8/2014	500	2	<5.0	NC	310	0	<5.0	NC
AK-1-A	12/17/2014	<0.50		<0.50		1.9		<0.50	
AK-1-A (DUP)	12/17/2014	<0.50	NC	<0.50	NC	1.9	0	<0.50	NC
NEC8B2	10/3/2014	<0.50		<0.50		<0.50		<0.50	
NEC8B2 (DUP)	10/3/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC
REG-9B(1)	9/5/2014	390		1.9		260		11	
REG-9B(1) (DUP)	9/5/2014	450	14	<5.0	NC	300	14	12	9
RW-1(B1)	10/1/2014	6.3		<0.50		48		<0.50	
RW-1(B1) (DUP)	10/1/2014	6.1	3	<0.50	NC	45	6	<0.50	NC
RW-16A	10/1/2014	280		<2.5		250		<2.5	
RW-16A (DUP)	10/1/2014	280	0	<2.5	NC	250	0	<2.5	NC

Table 2. VOC Results for Groundwater Duplicate Samples Collected from Wells in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

		cis-1,2-DCE		PCE		TCE		Vinyl Chloride	
Well ID	**Sample Date**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**
RW-2(B1)	9/26/2014	22		<2.5		240		<2.5	
RW-2(B1) (DUP)	9/26/2014	20	10	<2.5	NC	230	4	<2.5	NC
RW-4(B1)	9/29/2014	240		<0.50		1,300		<0.50	
RW-4(B1) (DUP)	9/29/2014	240	0	<0.50	NC	1,400	7	<0.50	NC
RW-7(B2)	9/30/2014	15		<0.50		2.2		<0.50	
RW-7(B2) (DUP)	9/30/2014	15	0	<0.50	NC	2.2	0	<0.50	NC
Average RPD			16		4		11		6
UCL			56		4		43		8
Precision Acceptance Limit			72		7		54		14

Notes:

For duplicates where both results are not detected, no calculation is performed. For duplicate pairs where the analyte was detected in one sample but not in the other and the detection limit is below the detected value, half the reporting limit was used as the concentration for the sample with no analyte detected. For duplicate pairs where the analyte was detected in one sample but not in the other sample and the detection limit is higher than the detected value, no calculation is performed.

VOCs analyzed by USEPA Method 8260B

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:

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 by United States Environmental Protection Agency Method 8260B
µg/L - micrograms per liter
< # - analyte not detected above the reporting limit of "#"

Table 3. Metal Results for Groundwater Duplicate Samples Collected from Wells in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

		Antimony		Arsenic		Cadmium		Lead	
Well ID	**Sample Date**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**	**(µg/L)**	**RPD**
10B2	9/29/2014	---		21		---		---	
10B2 (DUP)	9/29/2014	---	---	15	33	---	---	---	---
42A	9/17/2014	<10		---		<2.5		---	
42A (DUP)	9/17/2014	<10	NC	---	---	<2.5	NC	---	---
RW-1(B1)	10/1/2014	---		---		---		<5	
RW-1(B1) (DUP)	10/1/2014	---	---	---	---	---	---	<5	NC
RW-2(B1)	9/26/2014	---		---		---		<5	
RW-2(B1) (DUP)	9/26/2014	---	---	---	---	---	---	<5	NC

Notes:

For duplicates where both results are not detected, no calculation is performed.

Metals analyzed by United States Environmental Protection Agency Method 6010B

Abbreviations:

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

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

--- - not analyzed

Table 4. Detections in Trip Blanks from Well Sampling in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Sample Name	Sample Date	Method	Detections micrograms per liter (µg/L)
TB0914-013	9/17/2014	TA/8260	0.61µg/L cis-1,2-dichloroethene 1.3 µg/L trichloroethene

Notes:

No volatile organic compounds detected above reporting limits in 40 other travel blank samples analyzed by United States Environmental Protection Agency Method 8260B.

Table 5. Quantities of System and Associated Quality Assurance Samples Analyzed in 2014, 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
Volatile organic compounds	USEPA Method 8260B	216	26	61	28	331
1,4-Dioxane	USEPA Method 8270C	29	16	0	0	45
Metals	USEPA Method 200.8	8	8	0	3	19
Turbidity	USEPA Method 180.1	5	0	0	1	6
96-hour Fish Bioassay	E2000 (821-R-02-012)	5	0	0	0	5
Total		**263**	**50**	**61**	**32**	**406**

Notes:

Matrix Spike/Matrix Spike duplicates are not required for 1,4-Dioxane.

Abbreviations:

RGRP - Regional Groundwater Remediation Program

USEPA - United States Environmental Protection Agency

Table 6. Summary of Results for VOCs and 1,4-Dioxane Duplicate Samples Collected during Treatment System Sampling in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	cis-1,2-DCE		PCE		TCE		Vinyl Chloride		1,4-Dioxane	
				(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD
RGRP	N101	Influent	1/15/2014	280		<10		880		<10		---	
RGRP	N101	Influent (DUP)	1/15/2014	260	7	<5.0	NC	830	6	<5.0	NC	---	---
RGRP	N101	Influent	2/11/2014	---		---		---		---		1.7	
RGRP	N101	Influent (DUP)	2/11/2014	---	---	---	---	---	---	---	---	1.6	6
RGRP	N101	Influent	3/11/2014	280		<10		880		<10		---	
RGRP	N101	Influent (DUP)	3/11/2014	260	7	2.1	NC	830	6	<5.0	NC	---	---
RGRP	N101	Influent	4/15/2014	230		<10		780		<10		---	
RGRP	N101	Influent (DUP)	4/15/2014	270	16	<5.0	NC	890	13	<5.0	NC	---	---
RGRP	N101	Influent	6/9/2014	230		<10		720		<10		---	
RGRP	N101	Influent (DUP)	6/9/2014	240	4	<5.0	NC	660	9	<5.0	NC	---	---
RGRP	N101	Influent	7/23/2014	200		<10		670		<10		---	
RGRP	N101	Influent (DUP)	7/23/2014	210	5	<5.0	NC	670	0	<5.0	NC	---	---
RGRP	N101	Influent	8/12/2014	---		---		---		---		2.0	
RGRP	N101	Influent (DUP)	8/12/2014	---	---	---	---	---	---	---	---	1.9	5
RGRP	N101	Influent	9/16/2014	240		<10		680		<10		---	
RGRP	N101	Influent (DUP)	9/16/2014	230	4	<5.0	NC	660	3	<5.0	NC	---	---
RGRP	N101	Influent	10/24/2014	210		<10		660		<10		---	
RGRP	N101	Influent (DUP)	10/24/2014	220	5	<5.0	NC	690	4	<5.0	NC	---	---
RGRP	N101	Influent	12/17/2014	190		<5.0		510		<5.0		---	
RGRP	N101	Influent (DUP)	12/17/2014	200	5	<5.0	NC	540	6	<5.0	NC	---	---
RGRP	N101	Effluent	5/14/2014	---		---		---		---		1.2	
RGRP	N101	Effluent (DUP)	5/14/2014	---	---	---	---	---	---	---	---	1.2	0
RGRP	N101	Effluent	11/18/2014	---		---		---		---		1.5	
RGRP	N101	Effluent (DUP)	11/18/2014	---	---	---	---	---	---	---	---	1.2	22
RGRP	N101	Effluent	12/17/2014	---		---		---		---		1.3	
RGRP	N101	Effluent (DUP)	12/17/2014	---	---	---	---	---	---	---	---	1.6	21
RGRP	S101	Influent	2/11/2014	59		0.89		2,100		<0.50		---	
RGRP	S101	Influent (DUP)	2/11/2014	64	8	<25	NC	1,900	10	<25	NC	---	---

Table 6. Summary of Results for VOCs and 1,4-Dioxane Duplicate Samples Collected during Treatment System Sampling in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	cis-1,2-DCE		PCE		TCE		Vinyl Chloride		1,4-Dioxane	
				(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD
RGRP	S101	Influent	5/14/2014	41		<10		680		<10		---	
RGRP	S101	Influent (DUP)	5/14/2014	59	36	<25	NC	940	32	<25	NC	---	---
RGRP	S101	Influent	8/12/2014	45		<10		740		<10		---	
RGRP	S101	Influent (DUP)	8/12/2014	33	31	<5.0	NC	560	28	<5.0	NC	---	---
RGRP	S101	Influent	11/18/2014	56		<10		1,000		<10		---	
RGRP	S101	Influent (DUP)	11/18/2014	71	24	<25	NC	1,400	33	<25	NC	---	---
Fairchild	System 1	Midpoint 1	4/17/2014	<0.50		<0.50		<0.50		1.8		---	
Fairchild	System 1	Midpoint 1 (DUP)	4/17/2014	<0.50	NC	<0.50	NC	<0.50	NC	1.0	57	---	---
Fairchild	System 1	Midpoint 1	6/9/2014	<0.50		<0.50		<0.50		<0.50		---	
Fairchild	System 1	Midpoint 1 (DUP)	6/9/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	---	---
Fairchild	System 1	Midpoint 1	7/17/2014	<0.50		<0.50		<0.50		<0.50		---	
Fairchild	System 1	Midpoint 1 (DUP)	7/17/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	---	---
Fairchild	System 1	Midpoint 1	10/24/2014	<0.50		<0.50		<0.50		<0.50		---	
Fairchild	System 1	Midpoint 1 (DUP)	10/24/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	---	---
Fairchild	System 1	Midpoint 1	12/18/2014	<0.50		<0.50		<0.50		0.20		---	
Fairchild	System 1	Midpoint 1 (DUP)	12/18/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	---	---
Fairchild	System 1	Effluent	3/14/2014	---		---		---		---		0.59	
Fairchild	System 1	Effluent (DUP)	3/14/2014	---	---	---	---	---	---	---	---	<1.0	17
Fairchild	System 3	Influent	2/13/2014	---		---		---		---		1.1	
Fairchild	System 3	Influent (DUP)	2/13/2014	---	---	---	---	---	---	---	---	1.3	17
Fairchild	System 3	Influent	5/22/2014	---		---		---		---		1.5	
Fairchild	System 3	Influent (DUP)	5/22/2014	---	---	---	---	---	---	---	---	1.5	0
Fairchild	System 3	Influent	8/14/2014	620		6.7		980		<10		1.0	
Fairchild	System 3	Influent (DUP)	8/14/2014	730	16	6.5	3	1,100	12	2.2	NC	<1.0	67
Fairchild	System 3	Influent	11/18/2014	---		---		---		---		<1.0	
Fairchild	System 3	Influent (DUP)	11/18/2014	---	---	---	---	---	---	---	---	1.6	105
Fairchild	System 3	Midpoint 1	1/29/2014	<0.50		<0.50		<0.50		0.85		---	
Fairchild	System 3	Midpoint 1 (DUP)	1/29/2014	<0.50	NC	<0.50	NC	<0.50	NC	0.88	3	---	---

Table 6. Summary of Results for VOCs and 1,4-Dioxane Duplicate Samples Collected during Treatment System Sampling in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	cis-1,2-DCE		PCE		TCE		Vinyl Chloride		1,4-Dioxane	
				(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD	(µg/L)	RPD
Fairchild	System 3	Midpoint 1	3/13/2014	<0.50		<0.50		<0.50		1.5		---	
Fairchild	System 3	Midpoint 1 (DUP)	3/13/2014	<0.50	NC	<0.50	NC	<0.50	NC	1.4	7	---	---
Fairchild	System 3	Effluent	1/29/2014	---		---		---		---		<1.0	
Fairchild	System 3	Effluent (DUP)	1/29/2014	---	---	---	---	---	---	---	---	<1.0	NC
Fairchild	System 3	Effluent	4/17/2014	<0.50		<0.50		<0.50		<0.50		2.0	
Fairchild	System 3	Effluent (DUP)	4/17/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	2.2	10
Fairchild	System 3	Effluent	6/9/2014	<0.50		<0.50		<0.50		<0.50		<1.0	
Fairchild	System 3	Effluent (DUP)	6/9/2014	<0.50	NC	<0.50	NC	<0.50	NC	<0.50	NC	<1.0	NC
Fairchild	System 3	Effluent	7/17/2014	---		---		---		---		1.8	
Fairchild	System 3	Effluent (DUP)	7/17/2014	---	---	---	---	---	---	---	---	2.0	11
Fairchild	System 3	Effluent	9/11/2014	---		---		---		---		<1.0	
Fairchild	System 3	Effluent (DUP)	9/11/2014	---	---	---	---	---	---	---	---	<1.0	NC
Fairchild	System 3	Effluent	12/18/2014	---		---		---		---		<1.0	
Fairchild	System 3	Effluent (DUP)	12/18/2014	---	---	---	---	---	---	---	---	<1.0	NC
Fairchild	System 19	Influent	2/13/2014	250		<5.0		610		5.9		---	
Fairchild	System 19	Influent (DUP)	2/13/2014	220	13	<5.0	NC	540	12	5.5	7	---	---
Fairchild	System 19	Influent	5/22/2014	190		<5.0		440		4.5		---	
Fairchild	System 19	Influent (DUP)	5/22/2014	180	5	<5.0	NC	420	5	4.0	12	---	---
Fairchild	System 19	Influent	11/18/2014	230		<10		590		5.4		---	
Fairchild	System 19	Influent (DUP)	11/18/2014	250	8	<5.0	NC	580	2	4.7	14	---	---
Fairchild	System 19	Midpoint 1	9/11/2014	<0.50		<0.50		<0.50		0.30		---	
Fairchild	System 19	Midpoint 1 (DUP)	9/11/2014	<0.50	NC	<0.50	NC	<0.50	NC	0.25	18	---	---
Average RPD					12		3		11		17		23
UCL					29		0		31		51		89
Precision Acceptance Limit					41		3		42		68		113

Table 6. Summary of Results for VOCs and 1,4-Dioxane Duplicate Samples Collected during Treatment System Sampling in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, 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

Notes:

For duplicates where both results are not detected, no calculation is performed. For duplicate pairs where the analyte was detected in one sample but not in the other and the detection limit is below the detected value, half the reporting limit was used as the concentration for the sample with no analyte detected. For duplicate pairs where the analyte was detected in one sample but not in the other sample and the detection limit is higher than the detected value, no calculation is performed.

VOCs analyzed by USEPA Method 8260B

1,4-Dioxane analyzed by USEPA Method 8270C

Per the 1991Quality 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:

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

Table 7. Selenium Results for Duplicate Samples from Treatment System Sampling in 2014, RGRP and Fairchild Sampling, Middlefield-Ellis-Whisman Area, Mountain View, California

Treatment System Owner	Treatment System	Sample Location	Sample Date	Selenium (µg/L)	RPD
RGRP	N101	Effluent	2/11/2014	4.2	
RGRP	N101	Effluent (DUP)	2/11/2014	4.3	2
RGRP	N101	Effluent	5/14/2014	4.9	
RGRP	N101	Effluent (DUP)	5/14/2014	5.2	6
RGRP	N101	Effluent	8/12/2014	4.7	
RGRP	N101	Effluent (DUP)	8/12/2014	5.0	6
RGRP	N101	Effluent	11/18/2014	5.0	
RGRP	N101	Effluent (DUP)	11/18/2014	4.7	6
Fairchild	System 1	Effluent	2/13/2014	6.0	
Fairchild	System 1	Effluent (DUP)	2/13/2014	5.9	2
Fairchild	System 1	Effluent	5/22/2014	7.5	
Fairchild	System 1	Effluent (DUP)	5/22/2014	7.6	1
Fairchild	System 1	Effluent	8/14/2014	7.6	
Fairchild	System 1	Effluent (DUP)	8/14/2014	7.3	4
Fairchild	System 1	Effluent	11/18/2014	6.6	
Fairchild	System 1	Effluent (DUP)	11/18/2014	6.5	2
Average RPD					4
UCL (three standard deviations)					6
Precision Acceptance Limit					10

Notes:

Selenium analyzed by 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

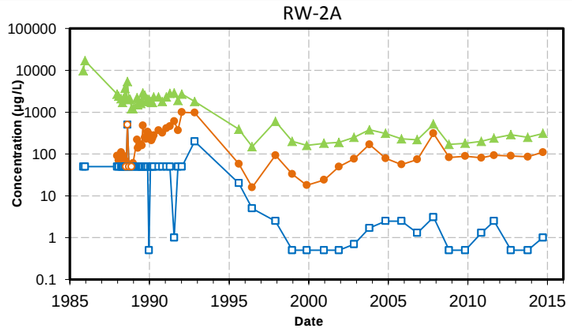
UCL - upper confidence level

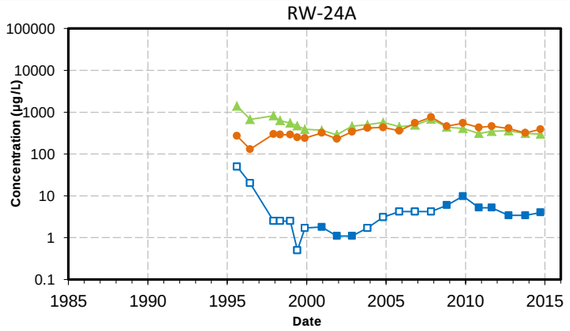
USEPA - United States Environmental Protection Agency

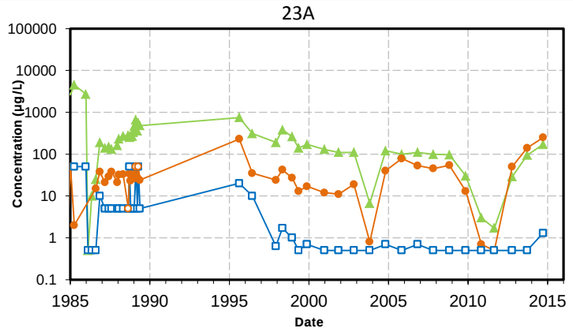
µg/L - micrograms per liter

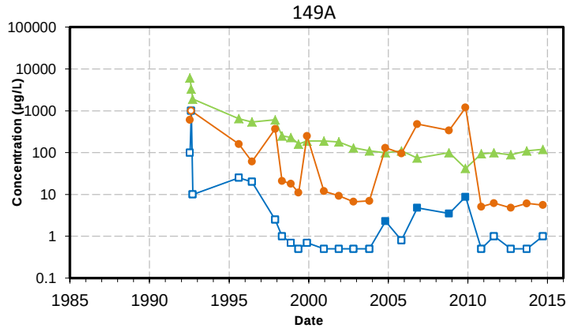
APPENDIX D

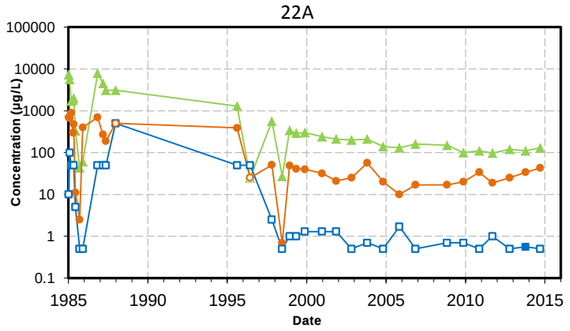
VOCs versus Time Graph

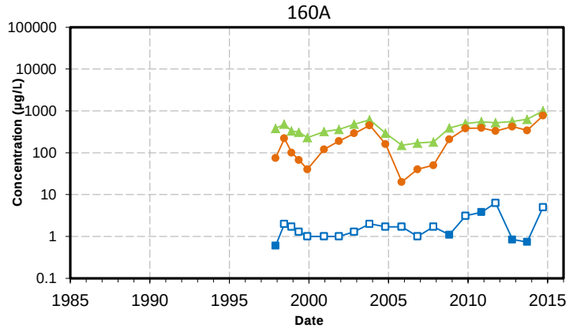


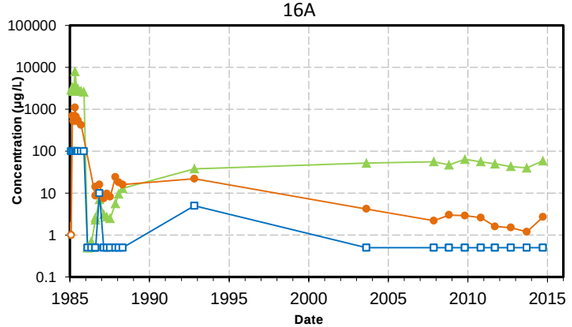


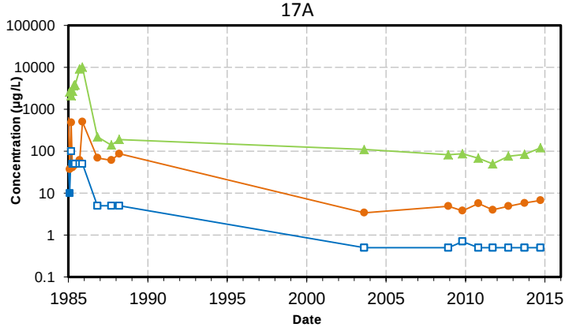


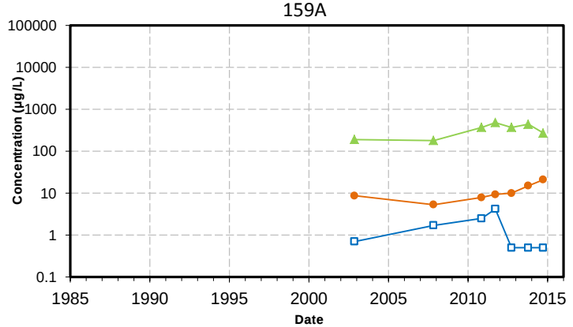


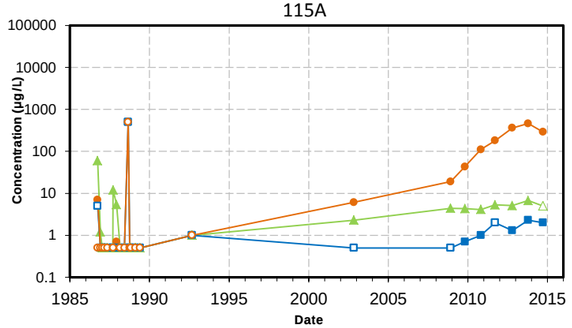


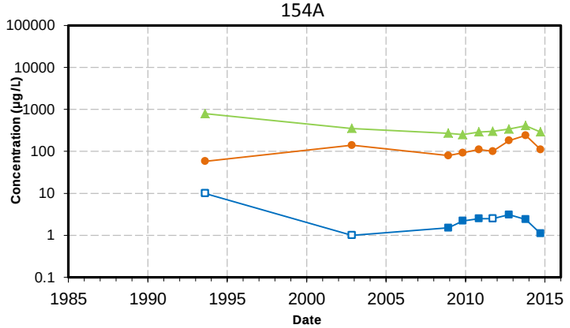


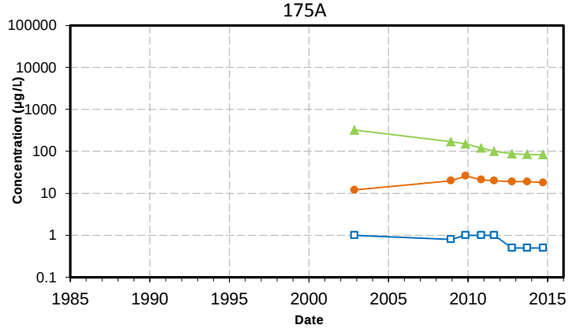






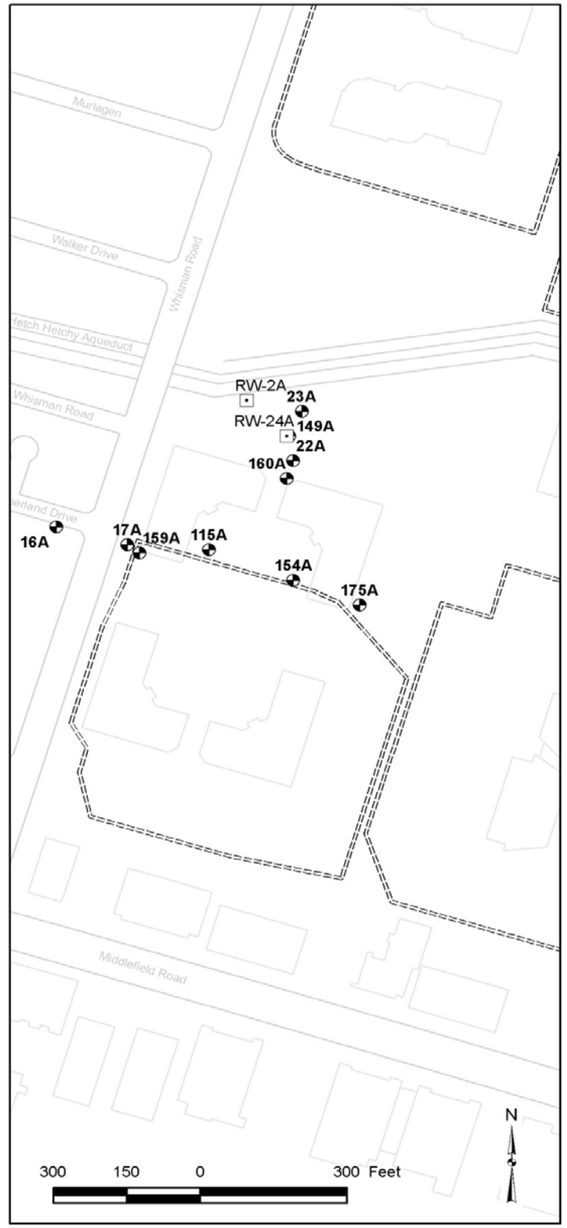






Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

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 2015

Figure **D-1**

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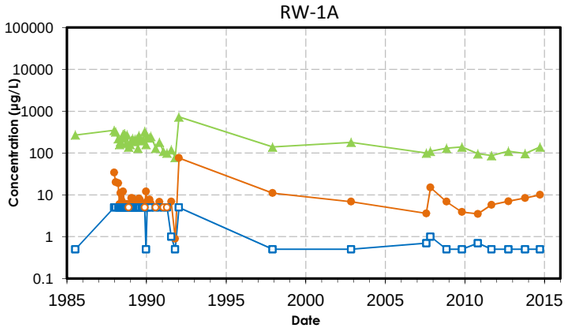
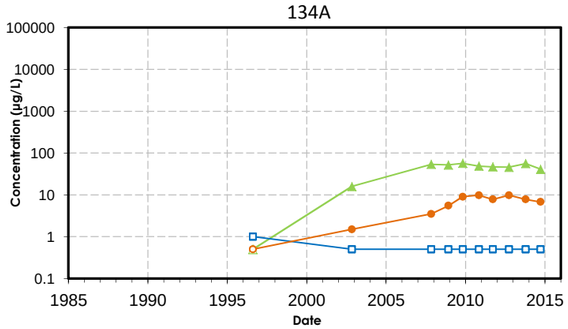
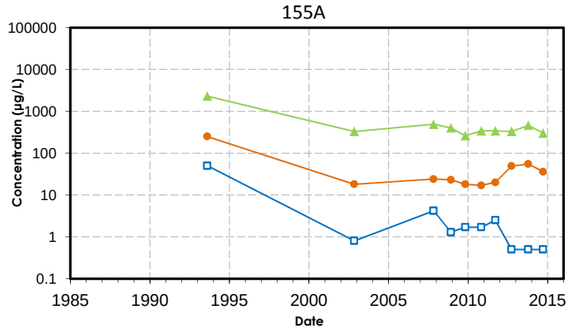
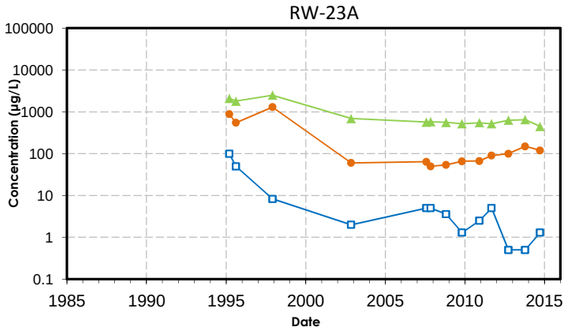
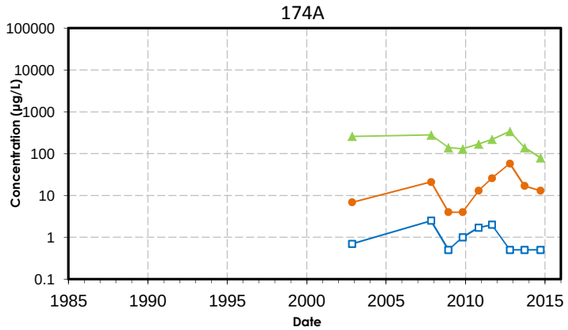
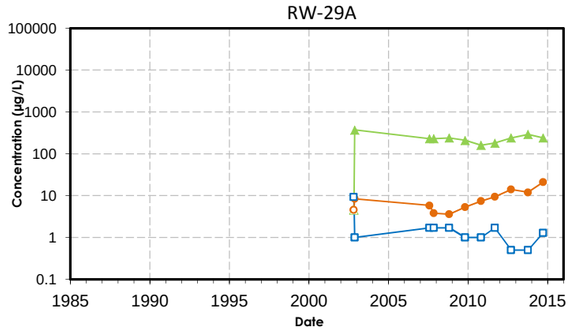


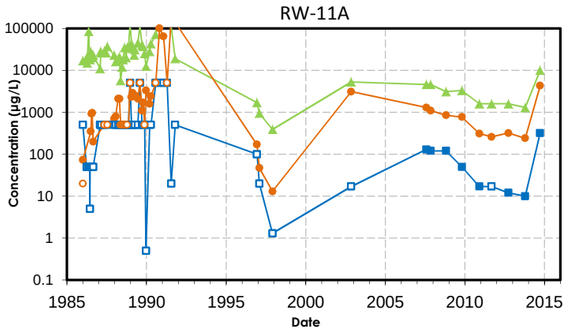


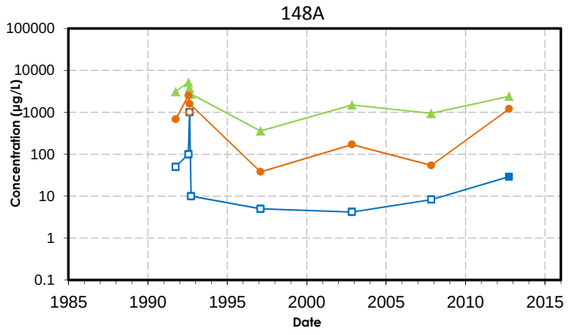


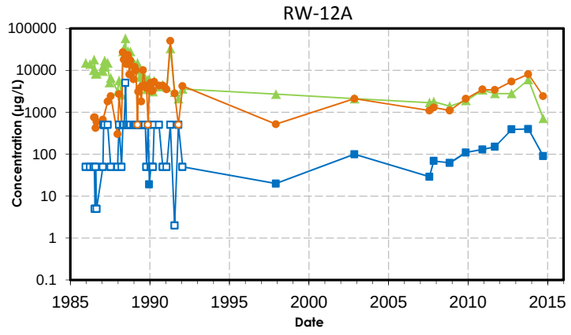


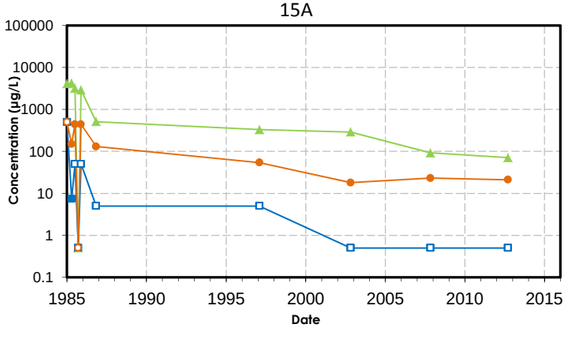


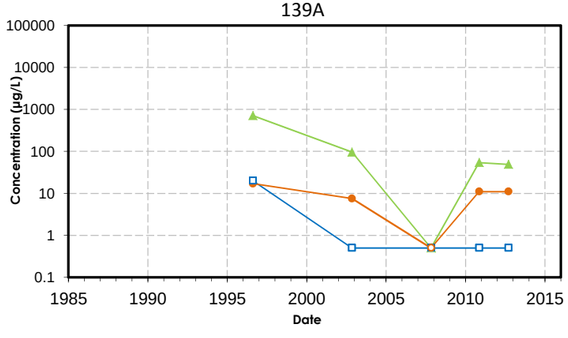


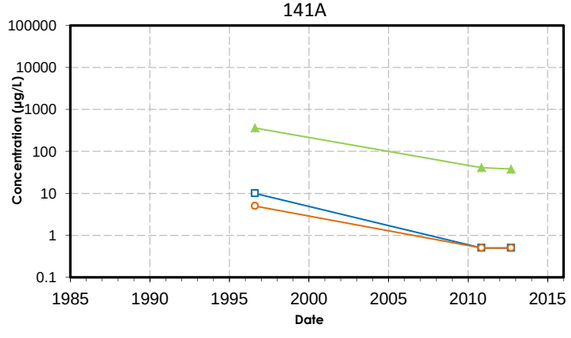






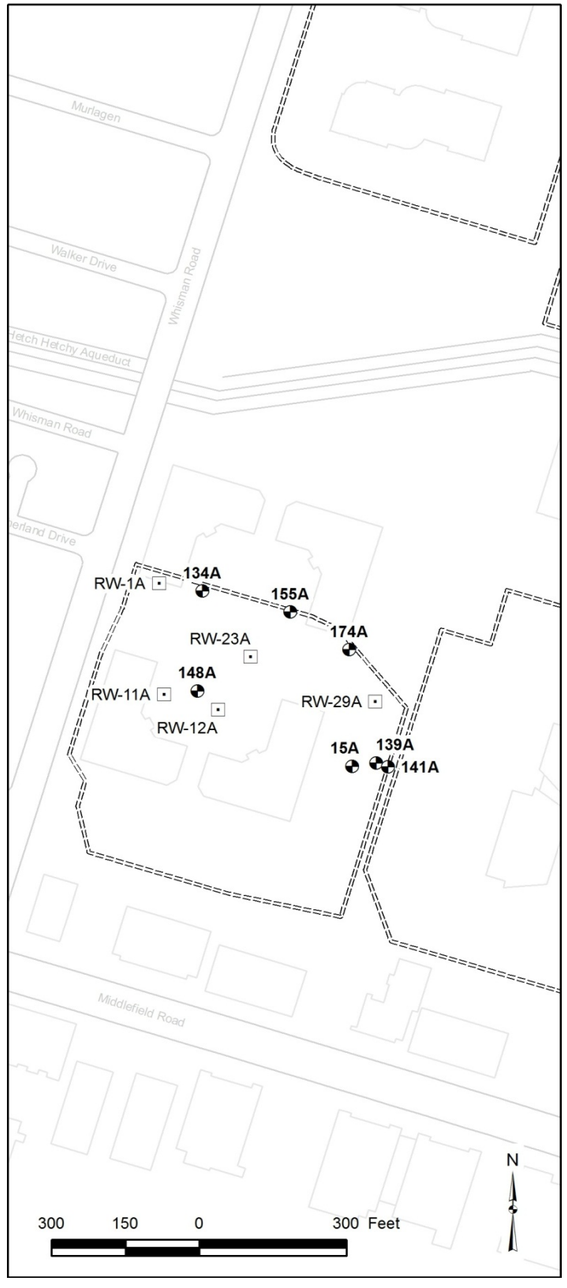






Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

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

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Figure **D-2**

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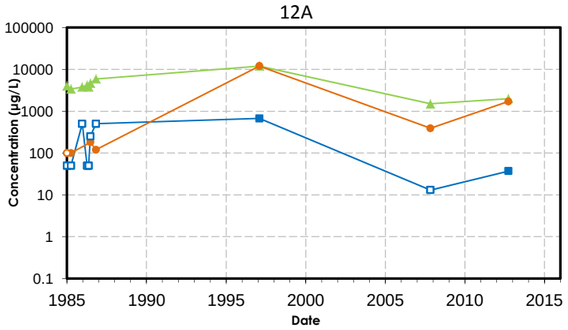

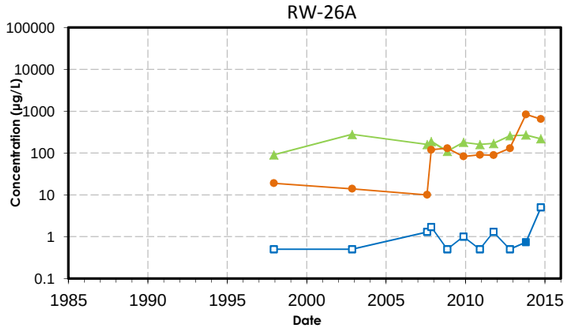

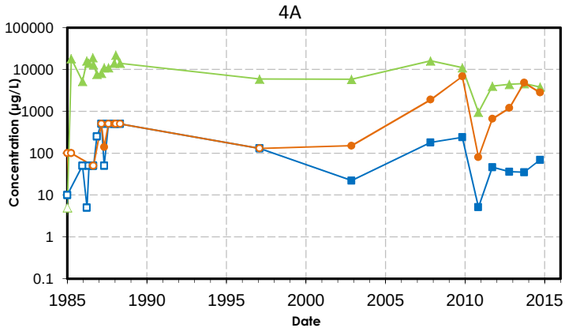

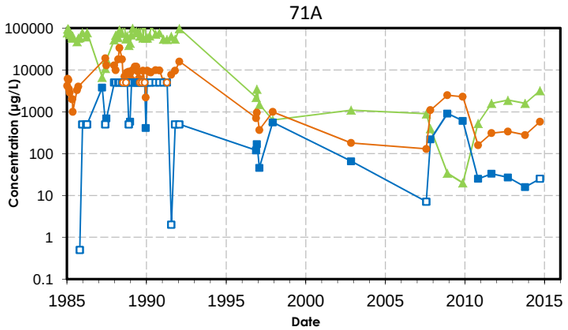

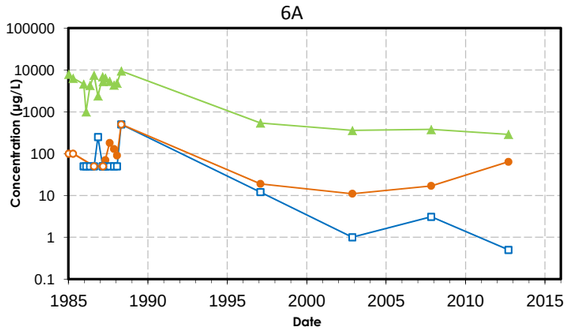

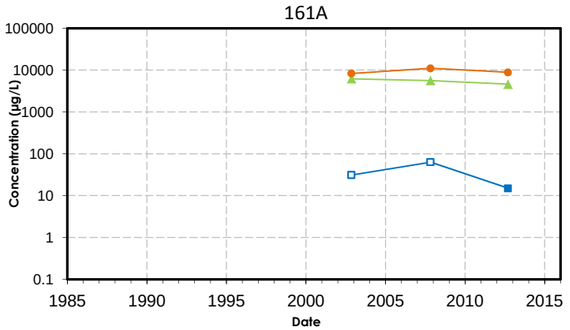

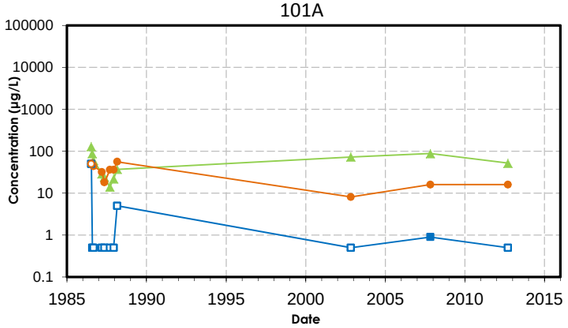

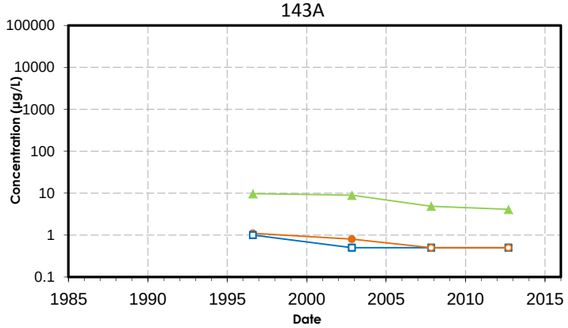

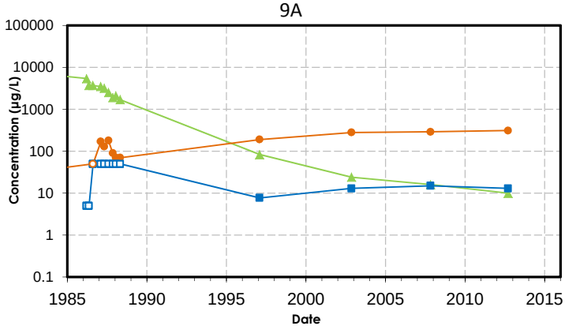

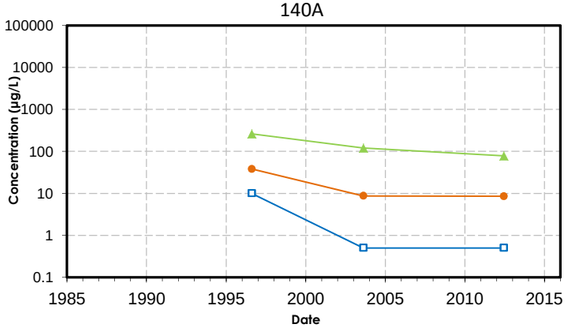

Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

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

140A ◓ Monitoring Well
71A ⊡ Extraction Well (On)
RW-26A ⊠ Extraction Well (Off)

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 2015

Figure **D-3**

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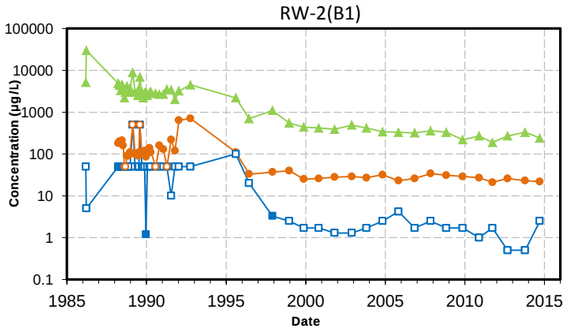
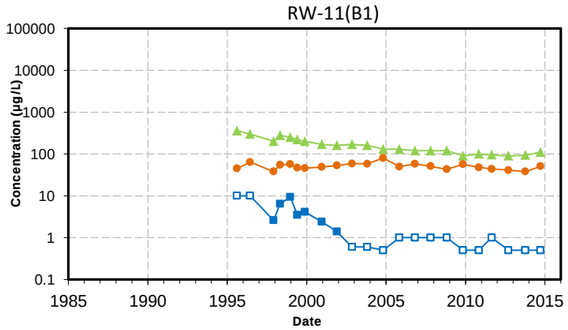
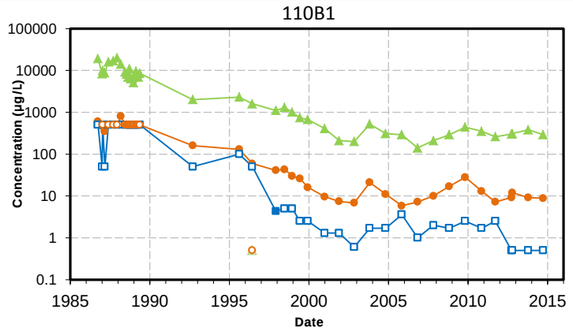
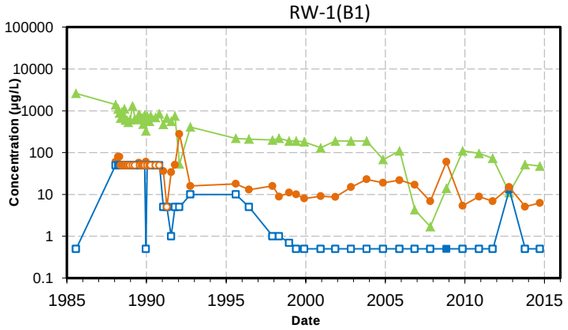
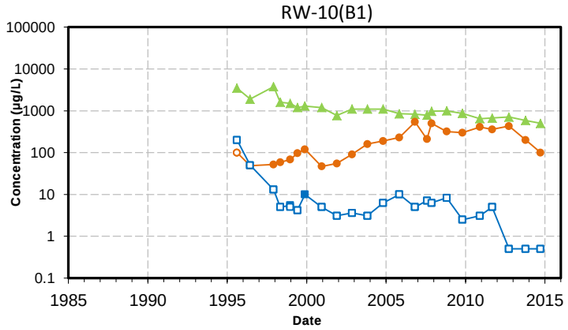
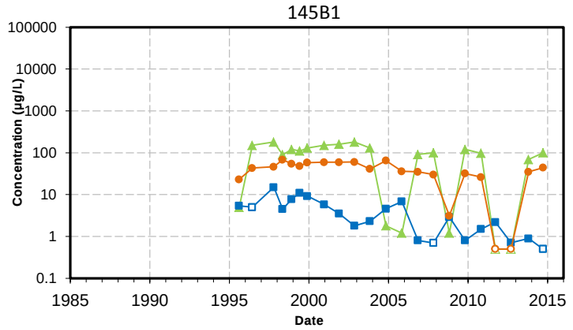


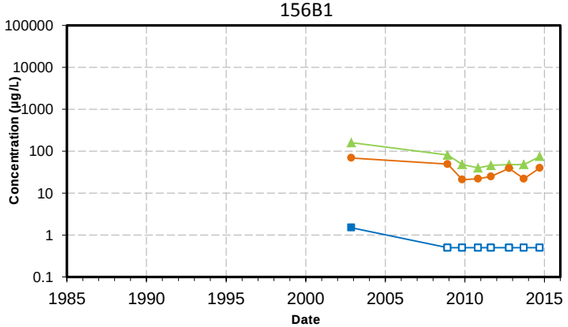


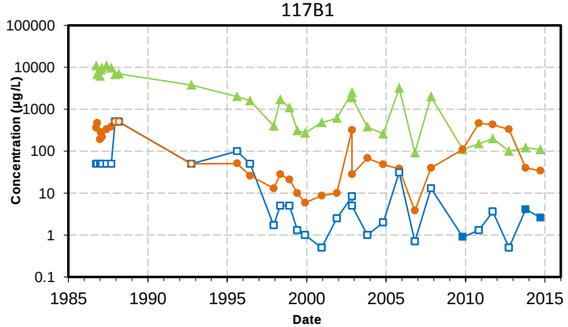


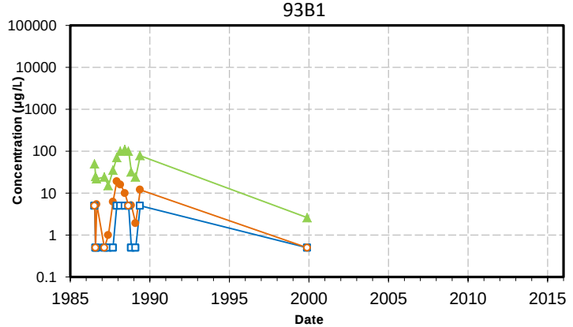


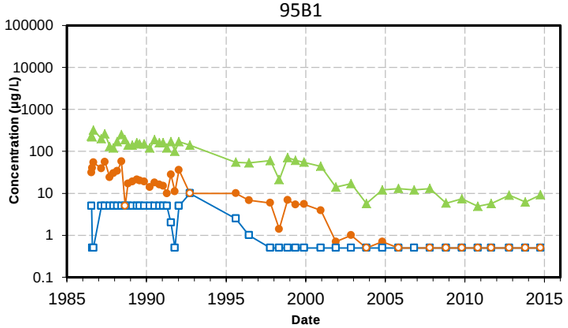


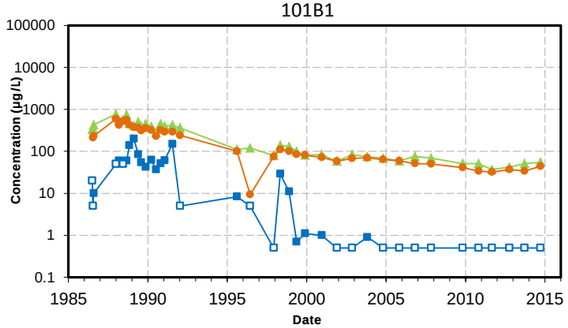






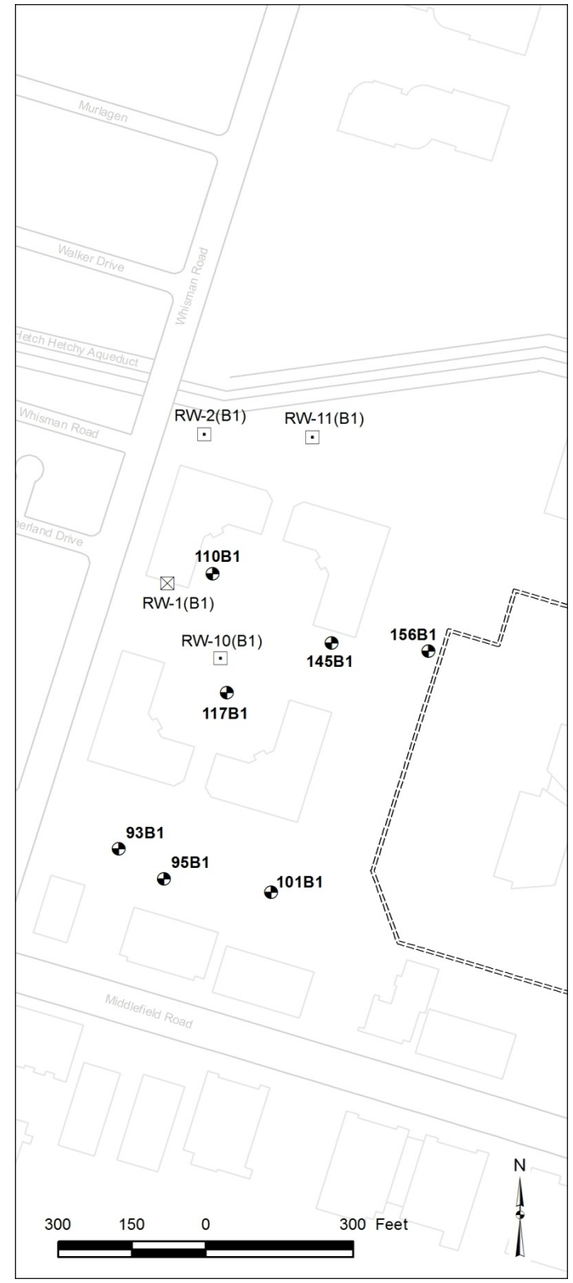






Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

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

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Figure **D-4**

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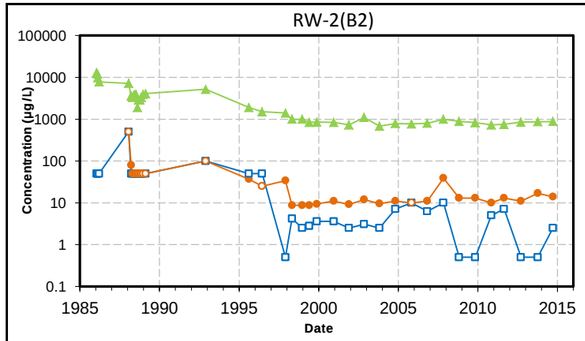

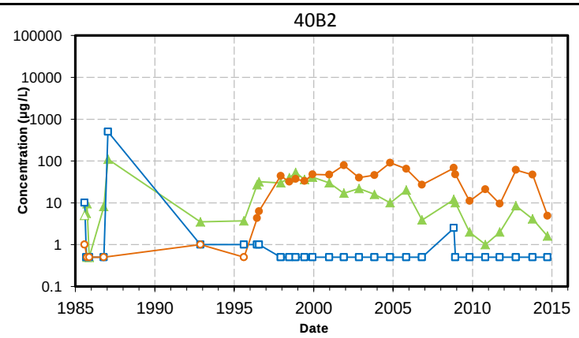

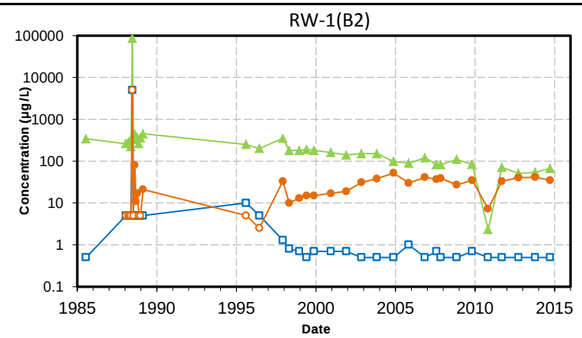

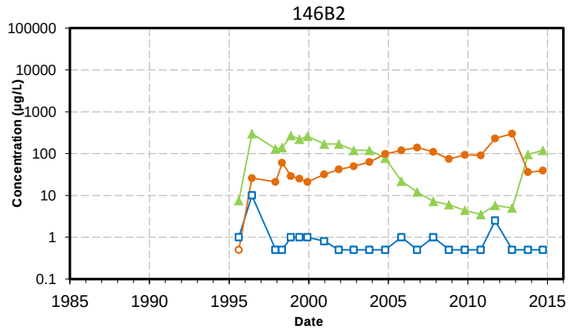

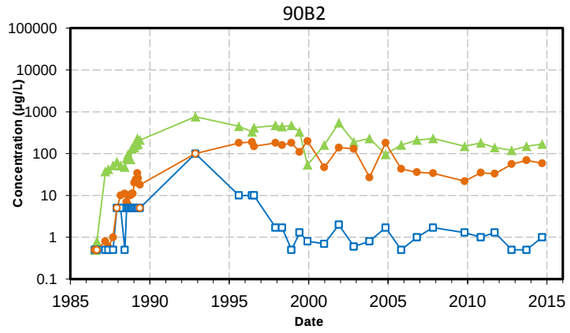

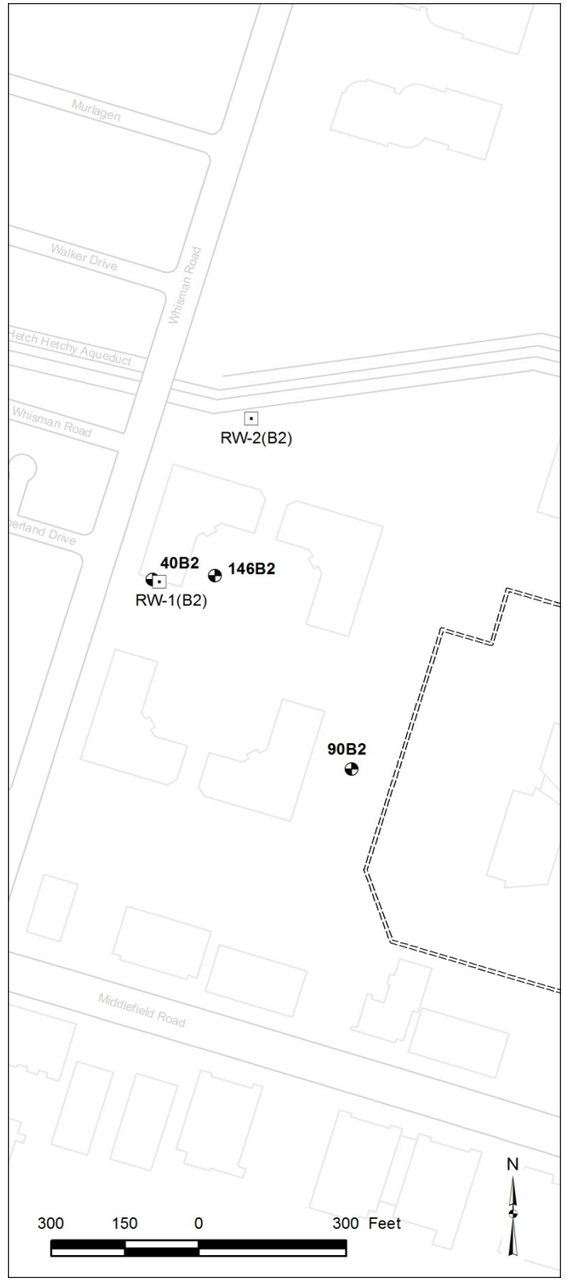

Trichloroethene
cis-1,2-Dichloroethene
Vinyl Chloride

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

Oakland | April 2015

Figure **D-5**

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