



Annual Progress Report—2011

Facility-Specific Work
405 National Avenue
Mountain View, California

Submitted to:

Vishay GSI, Inc.
951 Wendell Blvd., Wendell, NC

SUMCO Phoenix Corporation
537 Grandlin Road, Maineville, OH

Schlumberger Technology Corporation
225 Schlumberger Drive, Sugar Land, TX

Submitted by:

AMEC Environment & Infrastructure, Inc., Oakland, CA

April 2012

Project 0014860012 CC



April 13, 2012

Project 0014860012 CC

Ms. Alana Lee
Project Manager
Superfund Program SFD 7-3
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Subject: Annual Progress Report—2011
Facility-Specific Work
Mountain View, California

Dear Ms. Lee:

This progress report is submitted by AMEC Environment & Infrastructure, Inc., on behalf of Vishay GSI, Inc. (Vishay), SUMCO Phoenix Corporation (SUMCO), and Schlumberger Technology Corporation (Schlumberger) in compliance with Section XV.D of the Administrative Order for Remedial Design and Remedial Action, Docket No. 91-4 (the Order). This report describes facility-specific work activities for the 405 National Avenue property (the site) performed on behalf of Vishay and SUMCO and the work activities associated with wells GSF 1A, GSF-1B1, and GSF-1B2 performed on behalf of Vishay, SUMCO, and Schlumberger according to the terms of Section XV.A of the Order.

If you have any questions regarding this annual progress report or the site facility-specific work in general, please contact the undersigned.

Sincerely yours,
AMEC Environment & Infrastructure, Inc.

Rendell Camacho
System Engineer
Direct Tel.: (510) 663-4116
E-mail: rendell.camacho@amec.com

Harold C. Rush
Project Manager
Direct Tel.: (510) 663-4234
E-mail: harold.rush@amec.com

Frank S. Szerdy, Ph.D., PE
Principal Engineer
Direct Tel.: (510) 663-4113
E-mail: frank.szerdy@amec.com

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Enclosure

cc: MEW Distribution List

AMEC Environment & Infrastructure, Inc.
2101 Webster Street, 12th Floor
Oakland, California 94612-3066
USA
Tel (510) 663-4100
Fax (510) 663-4141
amec.com

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ANNUAL PROGRESS REPORT—2011
FACILITY-SPECIFIC WORK
405 National Avenue
Mountain View, California

1.0 INTRODUCTION

This progress report is submitted by AMEC Environment & Infrastructure, Inc. (AMEC), on behalf of Vishay GSI Inc. (Vishay), SUMCO Phoenix Corporation (SUMCO), and Schlumberger Technology Corporation (Schlumberger) in compliance with Section XV.D of the Administrative Order for Remedial Design and Remedial Action, Docket No. 91-4 (the Order). This report describes facility-specific work activities for the 405 National Avenue property (the site) performed in 2011 on behalf of Vishay and SUMCO and the work activities associated with wells GSF-1A, GSF-1B1, and GSF-1B2 performed in 2011 on behalf of Vishay, SUMCO, and Schlumberger according to the terms of Section XV.A of the Order. The format of this report is consistent with the 2010 Annual Progress Report.

1.1 SITE BACKGROUND

The 405 National Avenue site is located within the Middlefield-Ellis-Whisman (MEW) Study Area in Mountain View, California (Figures 1 and 2). The site is located approximately 1,200 ft south of U.S. Highway 101, approximately midway between Ellis Street and Whisman Road. The site measures approximately 290 ft (ft) by 170 ft and is bounded to the north by National Avenue, to the east by 425 National Avenue, to the west by 401 National Avenue, and to the south by the Hetch-Hetchy Easement. In addition, there is a 10-foot-wide public utility easement along the southern property boundary.

Until the site was redeveloped in 2001, there was a one-story industrial building, measuring approximately 200 ft by 100 ft and oriented approximately north-south on the site, and the west side of the building was coincident with the western property boundary. The building was constructed in the mid-1960s and was first occupied by Elmat Corporation from 1967 to 1969. Semimetals, a subsidiary of General Instrument Corporation (now Vishay) occupied the building between 1969 and 1978. Siltec Corporation (now SUMCO Phoenix Corporation) then purchased the property and occupied the building from 1978 to 1987. The property was sold to UniSil Corporation (UniSil) in 1989, and UniSil occupied the building until the spring of 1999, when UniSil ceased operations at 405 National Avenue.

In 2001, the 405 and 423 National Avenue properties were redeveloped. The redevelopment activities included demolition of existing buildings and construction of a new two-story

commercial building, along with associated parking, drainage, and utility facilities. As part of that redevelopment, the 405 and 423 National Avenue properties were combined and are now collectively referred to as 425 National Avenue. The building and parking lot footprints of the redeveloped structure are shown in relation to the old footprints of 405 and 423 National Avenue properties on Figure 2. W.F. Batton Management Company of San Carlos, California purchased the 425 National Avenue property in August 2006 and completed interior renovation of the building in April 2008.

1.1.1 Previous Investigations

Numerous investigations have been performed at the site to characterize the nature and extent of chemicals present in soil and groundwater. Wahler Associates performed five investigations of soil and groundwater (Wahler Associates, 1982; 1985; 1986a; 1986b; and 1988a) and issued a summary report of their findings (Wahler Associates, 1988b). R.L. Stollar & Associates (1990) conducted an investigation in 1989. In 1992, Watkins-Johnson Environmental, Inc. (WJE, formerly R.L. Stollar & Associates) performed an additional investigation (WJE, 1992) to characterize the extent and concentration of the chemicals of concern specified in the 106 Order, primarily trichloroethene (TCE). In 1995, Geomatrix Consultants, Inc. (Geomatrix) performed studies to further estimate chemical concentrations in the groundwater at the site (Geomatrix, 1996b).

1.2 LOCAL HYDROGEOLOGY

Groundwater aquifers within the MEW Study Area consist of shallow and deep aquifer systems, which are separated by a laterally extensive aquitard approximately 40 ft thick. The shallow aquifer system is generally less than 160 ft below ground surface (bgs) south of U.S. Highway 101 and generally less than 100 ft bgs north of U.S. Highway 101. Subdivisions within the shallow aquifer have been designated the "A" and "B" aquifers. The regional aquitard is designated the "B/C" aquitard. The zones below the "B/C" aquitard are termed the "C" aquifer and the deep aquifers (Locus, 2000).

Groundwater flow in the shallow aquifer zone is generally to the north. Groundwater in the "C" and deep aquifers is used as drinking water supply by the City of Mountain View from wells that are in the vicinity of the MEW Study Area but are located outside and upgradient of the MEW plume. The shallow and deep aquifer systems in the MEW Study Area are not used for drinking water.

1.3 DESCRIPTION OF FINAL REMEDY

Pursuant to the Consent Decree and 106 Order, Vishay and SUMCO, as successors to General Instrument Corporation and Siltec Corporation, respectively, were required to implement source control measures at the 405 National Avenue property. The results of site

characterization work provided the basis for the source control remedial design at the site. Detailed site characterization information was summarized in the Revised Combined Intermediate and Final Source Control Remedial Design (Revised FSCRD) dated, April 27, 1995. The source control remedial design for the site included both soil vapor and groundwater extraction and treatment systems described in six documents: (1) Revised FSCRD; (2) Addendum and Response to the U.S. Environmental Protection Agency's (U.S. EPA's) Comments on Revised FSCRD dated June 30, 1995; (3) letter to U.S. EPA dated July 13, 1995; (4) Revised Construction Operation and Maintenance Plan (COMP) dated January 1996; (5) Addendum to the Revised FSCRD dated, April 1996; and (6) Revised Operation and Maintenance Plan dated August 1997.

The soil vapor extraction system (VES) included one vertical vapor extraction well on the south side of the former 405 National Avenue building, and four inclined dual-purpose vapor and groundwater extraction wells on the property boundary between the 401 and former 405 National Avenue properties. Vapor extracted from these wells was piped to a vapor treatment system on 401 National Avenue and treated using granular activated carbon (GAC) beds. Treated vapor from the VES was discharged to the atmosphere under a Bay Area Air Quality Management District (BAAQMD) permit. Confirmation soil sampling was conducted at the site in January 1999. Analytical results of the soil sampling indicated that volatile organic compound (VOC) concentrations in the samples were below the cleanup objectives specified in the Record of Decision (ROD) for soils outside slurry walls. Following approval by the U.S. EPA (U.S. EPA, 1999b) of the confirmation soil sampling report, the VES was permanently shut down on March 22, 1999 and later decommissioned.

The groundwater extraction and treatment system (GETS) includes five on- and three off-site groundwater extraction wells (Figure 4a). On-site groundwater is extracted using one vertical well on the south side of the former 405 National Avenue property (SIL15A) and four inclined dual-purpose vapor and groundwater extraction wells (EX-1, EX-2, EX-3, and EX-4). The four inclined wells used for the GETS are the same four inclined wells that were formerly used for the VES. The three off-site groundwater extraction wells (GSF-1A, GSF-1B1, and GSF-1B2) are located about 200 ft north of the site and are jointly operated by Vishay/SUMCO and Schlumberger as part of the source control measures of both the 401 and 405 National Avenue sites (Figure 4a). Recovered groundwater from the five on- and three off-site extraction wells is piped to a groundwater treatment system at 401 National Avenue.

The groundwater treatment system consists of pretreatment by an ultraviolet light-hydrogen peroxide (UV-H₂O₂) oxidation unit followed by final treatment through a shallow tray air stripper (Figure 4b). Until December 2004, treated groundwater was discharged to the sanitary sewer under a discharge permit from the City of Mountain View. As of December 31, 2004, the GETS

discharges to the storm drain under a National Pollutant Discharge Elimination System (NPDES) permit (the Permit) for sites with groundwater impacted by VOCs (see Section 3.3 of the 2004 Annual Progress Report for further details). Operation of the groundwater extraction and treatment system is ongoing.

1.4 SUMMARY OF ACTIVITIES AND DELIVERABLES—2011

Actions taken to comply with the Order during 2011 included operation and maintenance of the groundwater extraction and treatment system; monitoring of system performance and permit compliance; reporting; and attending “All-Parties” meetings. These actions are summarized in Table 1 and discussed further below.

1.4.1 Operation and Maintenance

Operation and maintenance of the GETS as described in the Revised Operation and Maintenance Plan (O&M Plan; Geomatrix, 1997), for 405 National Avenue including on-site and off-site wells, continued full-time throughout the reporting period. The system operated continuously during 2011 with only minor unscheduled shutdowns as described in Section 2.2. A summary of GETS performance is included in the 2011 Annual Remedy Performance Checklist (Appendix A).

1.4.2 Monitoring and Permit Compliance

As required by the Permit, groundwater samples were collected monthly from the treatment system effluent and at least semiannually from the influent. Water samples from the treatment system were collected directly from in-line sampling ports. The volume of water treated and discharged was recorded weekly. Standard observations and field measurement of water quality parameters (pH and temperature) for the influent, midstream, and effluent samples were also collected at least quarterly in accordance with the Permit.

In accordance with the Permit, effluent water samples were analyzed for: (1) halogenated VOCs on a monthly basis using U.S. EPA Method 8260B with a reduced list by formerly known U.S. EPA Method 8010; (2) turbidity using U.S. EPA Method 180.1 on March 14, 2011; (3) a fish bioassay using U.S. EPA Method 821/R-02/012 on October 11, 2011; (4) 1,4-Dioxane by EPA Method 8270SIM as required every three years by the Permit on July 28, 2011; (5) SVOCs by EPA Method 8270C as required every three years by the Permit on July 28, 2011; and (6) total cyanide by SM4500CN-E as required every three years by the Permit on October 11 and December 8, 2011.

Total cyanide was detected above the Permit's trigger concentration of 2.9 µg/L in the effluent sample at 30 µg/L during the October 2011 sampling event. In accordance with the Permit, Provision VI.C.6, three additional samples (three influent and three effluent) for Cyanide have

been collected by the end of the first quarter of 2012. Sampling events for Cyanide took place on December 8, 2011, January 12, February 8, and March 1, 2012. Cyanide effluent results from the December, January, February and March sampling events are as follows: 60, 70, 10, and <10 µg/L. In accordance with the Permit's Provision VI.C.8, we have investigated source control and treatment options for cyanide. Our investigation included analyzing components added to the system for possible external cyanide introduction (i.e. water, anti-scalant, hydrogen peroxide). In addition, we are performing quality assurance and quality control with our laboratory facilities by requesting analysis with different certified laboratories. Furthermore, in order to decompose the cyanide within the influent we have increased the percent concentration of hydrogen peroxide to 20% from 10% injected into the treatment flow. With these investigative steps we have identified the source of cyanide, which is the influent flow, and identified a treatment method, which is the increased percentage of hydrogen peroxide. Cyanide concentrations have decreased since the implementation of the increased percentage of hydrogen peroxide in late February and are currently at non-detectable concentrations for the month of March. One caveat of this approach is that a high concentration of hydrogen peroxide leads to a failure of the Fish Bio-Assay test. Monitoring of total cyanide and fish bio assay results will continue throughout the year and as prescribed by the Permit. Additionally, monthly influent and midstream samples were also analyzed for VOCs to monitor the GETS performance. The monthly influent, midstream and effluent results are used to calculate VOC mass removal by the extraction well network and subsequent destruction by the UV-H₂O₂ oxidation unit, and to calculate vapor mass discharge from the low-profile air stripper as required by the BAAQMD permit.

Samples analyzed for VOCs were collected in 40-milliliter (ml) glass VOA vials preserved with hydrochloric acid. The sample analyzed for turbidity was collected in an unpreserved 250-ml plastic bottle. The sample analyzed for a fish bioassay was collected in a 5-gallon plastic bottle. The samples analyzed for total cyanide was collected in a 500-mL poly preserved with sodium hydroxide. The sample analyzed for SVOCs and 1-4 Dioxane was collected in a 1-L glass amber jar. Samples were placed in ice-cooled chests and transported under AMEC chain-of-custody procedures to either a National or California Environmental Laboratory Accreditation Program Certified Laboratory (NELAP or CELAP certified laboratory). Samples collected this reporting period were delivered to Curtis & Tompkins Limited (Curtis & Tompkins) of Berkeley, California.

Based on the data obtained to meet NPDES requirements, the groundwater extraction and treatment system operated in compliance with the site's NPDES permit effluent limitations. No spills, bypasses, or other permit violations occurred during the report period.

Other monitoring and permit compliance activities performed during the reporting period included:

- In January and July 2011, AMEC submitted Water Production Statements to the Santa Clara Valley Water District.
- On March 24 and September 15, 2011, AMEC collected water level measurements as part of the MEW-area semiannual monitoring program.
- On October 6 and 7, 2011, AMEC collected groundwater samples from the extraction wells and monitoring wells as part of the MEW-area annual groundwater sampling event.

1.4.3 Reporting

On April 15, 2011, AMEC submitted the 2010 Annual Progress Report to U.S. EPA in accordance with Section XV.D of the Order.

On May 13, 2011, AMEC submitted the First Quarter NPDES Self-Monitoring Report for the period from January to March 2011.

On August 12, 2011, AMEC submitted the Second Quarter NPDES Self-Monitoring Report for the period from April to June 2011.

On November 14, 2011, AMEC submitted the Third Quarter NPDES Self-Monitoring Report for the period from July to September 2011.

On February 15, 2012, AMEC submitted the NPDES Self-Monitoring Report Combined 2011 Annual and Fourth Quarter Report.

The capture zone analysis, based on March and September 2011 water level and pumping rate data, has been included in this annual progress report (see Section 2.3.2), and was prepared in accordance with a six step approach developed by the U.S. EPA (U.S. EPA, 2004).

1.4.4 “All-Parties” Meetings

No “All-Parties” meetings were scheduled in 2011. However, on behalf of Vishay and SUMCO, AMEC attended several meetings with various participants of “All-Parties” meetings to discuss development of both the Groundwater Feasibility Study and the Vapor Intrusion Plan.

1.4.5 Data Generated—January to December 2011

Water samples were collected from the treatment system in accordance with both the sampling program presented in the O&M Plan and the NPDES Permit (see Section 2.0). A summary of the extraction well network and GETS operating parameters is provided in Table 2. A summary of GETS extraction rates and volatile organic mass removed for the 2011 calendar year is provided in Table 3 and discussed in Section 2.1.

Water levels were measured by AMEC on behalf of Vishay and SUMCO on March 24 and September 15, 2011, and are summarized in Table 4. The data were submitted to Weiss Associates for incorporation into the MEW-area regional database. The data generated as part of the water level monitoring program during this year were collected in accordance with procedures described in Section 5.6.1 of the Unified Quality Assurance Project Plan dated December 1991.

Groundwater samples were collected from on- and off-site monitoring and extraction wells in accordance with the annual groundwater monitoring program for the Regional Groundwater Remediation Program for the site on October 6 and 7, 2011. These data were submitted to Weiss Associates for incorporation into the MEW-area regional database. The results are presented in Table 5 and further concentration trend analysis of the monitoring and extraction well network is provided in Step 5 of Section 2.3.2. Further discussion of the data generated from the groundwater sampling events is provided in Section 2.4.2. The chemical analytical result reports are included in Appendix B.

Additionally, as part of the annual groundwater monitoring program AMEC collected groundwater samples from monitoring wells SIL4A and SIL12A on October 7, 2011. The samples were relinquished under chain of custody directly to the laboratory for Weiss Associates, which arranged for analysis and incorporation of analytical results into the MEW-area regional database.

2.0 GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

2.1 GETS PERFORMANCE, OPERATIONS AND MAINTENANCE DURING 2011

Figures 4a, 4b, and 4c show the GETS and a process flow schematic diagram, including the influent and effluent sampling locations, and discharge location to the municipal storm drain system from the site. Tetrachloroethene (PCE); TCE; 1,1,2-trichlorotrifluoroethane (Freon 113); cis-1,2-dichloroethene (cis-1,2-DCE); 1,1-dichloroethene (1,1-DCE); 1,1-dichloroethane (1,1-DCA); 1,1,1-trichloroethane (1,1,1-TCA); trans-1,2-dichloroethene (trans-1,2-DCE); and vinyl chloride (VC) were detected in the influent samples collected monthly throughout the calendar year 2011, and the results are consistent with historical influent concentrations. No

target VOCs were detected in effluent samples during the calendar year 2011 (Table 2). Groundwater samples were also analyzed for SVOCs, 1,4-Dioxane and total cyanide in accordance with Permit requirements. Total cyanide was detected in the effluent sample at a concentration of 30 µg/L. The effluent sample exceeded total cyanide's trigger concentration of 2.9 µg/L. SVOCs and 1,4-Dioxane were not detected in the effluent sample

Throughout the 2011 calendar year, monthly influent, midstream, and effluent water samples were collected to meet the requirements of the Permit and track GETS performance. Duplicate influent samples were collected every quarter during the 2011 calendar year and submitted to Curtis and Tompkins for chemical analyses. AMEC followed established procedures for work at the site, which generally followed the quality assurance and quality control (QA/QC) goals and analytical laboratory quality assurance manual included in the Unified Quality Assurance Project Plan (UQAPP; Canonie Environmental, 1991), as approved by the U.S. EPA for the MEW site on February 3, 1993.

Further discussion of data validation procedures in accordance with the U.S. EPA National Functional Guidelines for Organic Compounds (U.S. EPA, 1999a) is provided in Appendix C.

A summary of monthly averaged extraction rates from groundwater extraction wells and groundwater treatment system operating parameters is provided in Table 2. Measurements of water quality parameters (pH and temperature) were collected from influent and effluent sampling ports throughout the calendar year, although required annually by the Permit. Extraction well network total monthly and cumulative flow volumes are quantified from readings recorded by individual well totalizers and the GETS totalizer (Figure 5a). Additionally, the GETS average flow rates and monthly average influent VOC concentrations were used to calculate the daily VOC mass removal rate in pounds per day (lbs/day) achieved by the UV-H₂O₂ oxidation unit (Table 3). Midstream VOC concentrations are tracked in a similar manner to calculate vapor mass discharge from the air stripper as required by the BAAQMD permit. The cumulative pounds of VOCs removed by the GETS and average influent VOC concentrations are illustrated in Figure 5b.

The total gallons of groundwater treated in 2011 and cumulative groundwater treated since 1996 are approximately 9,677,470 gallons and 161,359,130 gallons, respectively. The total mass of VOCs removed in 2011 and cumulative mass of VOCs removed since 1996 is approximately 142.6 pounds and 7,854 pounds, respectively. Historical influent VOC concentration trends of the GETS, cumulative volume of treated groundwater, and cumulative mass of VOCs removed since 1996 are summarized in Table 3 and graphically represented in Figures 5a and 5b.

2.2 PROBLEMS ENCOUNTERED DURING 2011

From January to December 2011, the GETS operated continuously. In April 2011, there were two equipment malfunctions: the solenoid valve for the hydrogen peroxide injection developed a leak and a breaker within the circuit board failed. Both the solenoid valve and breaker were replaced and the system continued normal operation. Also in April, piping within the EX-2 well vault was cleaned and replaced to increase the flow rate of EX-2. Further, during the third and fourth quarters of 2011, UV bulbs in reactor number 1 of the UV-H₂O₂ oxidation unit were burning out prematurely. It is unknown whether or not the UV bulbs were defective or the reactor was malfunctioning. All failed UV bulbs were replaced and the UV system is currently operating normally.

The property at 401 National Avenue recently changed ownership. The new owner has changed the lock on the entry gate, limiting AMEC's access to time periods when a building employee is present. To date, AMEC's efforts to contact the building owner to setup an access agreement have been unsuccessful. AMEC will therefore continue to coordinate site access with the on-site building employee until an access agreement has been negotiated with the new owner of 401 National Avenue.

No spills or other equipment malfunctions occurred in 2011.

Other unscheduled shutdown events were less than 24 hours in duration during the reporting period. The total hours of unscheduled system downtime were attributable to UV-H₂O₂ oxidation unit maintenance and repairs.

2.3 HYDRAULIC CONTROL AND CAPTURE ZONE ANALYSES

2.3.1 Methodology

The U.S. EPA Office of Research and Development (ORD) has developed a guidance document on a systematic approach for the evaluation of capture zones for pump and treat systems (U.S. EPA, 2004). This systematic approach includes six steps for capture zone analysis:

- Step 1: Review site data, site conceptual model, and remedy goals.
- Step 2: Define site-specific Target Capture Zone(s).
- Step 3: Interpret water levels (potentiometric maps and water levels at pairs of wells).
- Step 4: Perform appropriate calculations (flow budget calculation, capture zone width calculation and/or modeling).
- Step 5: Evaluate concentration trends at monitoring wells.
- Step 6: Interpret actual capture and compare to Target Capture Zone(s), assess uncertainties and data gaps.

This stepwise methodology provides a foundation for analysis and facilitates consideration of multiple lines of evidence in capture zone evaluation. Each step is addressed in Section 2.3.2 below.

2.3.2 Estimated Capture Zones for 2011

Step 1: Review Site Data, Conceptual Model, Remedial Objectives:

Understanding of the hydrostratigraphy and hydraulics at the site is based on lithologic logs of borings at the site, regional cross-sections (Locus, 2000), regional and site-specific water level data and potentiometric surface maps, VOC concentration data, groundwater extraction locations, aquifer testing, and modeling. Groundwater aquifers within the MEW Study Area are described in Section 1.2.

The shallow aquifer system is divided into A and B-aquifer depth intervals separated by an intervening interval of relatively fine-grained and lower permeability material that is termed the A/B aquitard. The B-aquifer has been subdivided into three depth interval zones, the shallower B1, and deeper B2 and B3 aquifers (e.g., Smith, 1996). The B-aquifer subdivisions tend to be separated by intervening lower permeability “aquitard” intervals; however, the subintervals vary in thickness and are not laterally contiguous across the MEW site. Figure 6 is a conceptual cross section of the hydrostratigraphy at the site illustrating the idealized aquifer and aquitard layers, their depths, thicknesses, generalized hydraulic properties, well-screen intervals, and model layers. Groundwater flow in the shallow aquifer system is generally to the north.

As described in Section 1.3, groundwater extraction from five wells (EX-1, EX-2, EX-3, EX-4, SIL15A) provides on-site source control at the 401 and 425 National Avenue sites, and off-site groundwater extraction from three wells (GSF-1A, GSF-1B1, GSF-1B2) provides source control of chemicals in the A, B1, and B2-aquifers that are believed to have originated from the 401 and 425 National Avenue sites and commingled downgradient of the site. Vishay, SUMCO and Schlumberger jointly operate the off-site GSF wells as part of the source control measures for both the 401 and 425 National Avenue sites. Well locations in the A-aquifer and the B1 and B2-aquifers are shown on Figure 3.

In 2011, the average annual extraction well pumping rate for GSF-1B2 was 0.10 gallons per minute (gpm), significantly lower than the originally anticipated design flow rate of 2 gpm (Geomatrix, 1997), but similar to historic flow rates from the well. The low pumping capacity of GSF-1B2 is a consequence of low permeability in the B2 aquifer in the vicinity of GSF-1B2. Field data and analysis show significant hydraulic connection between the B1 and B2 aquifers in the vicinity of the GSF extraction wells. Due to the hydraulic connection between the B1 and

B2-aquifer intervals in the vicinity of the GSF extraction wells, pumping from GSF-1B1 provides containment within the B2 aquifer (Geomatrix, 2004a) as discussed below.

Step 2: Site Specific Target Capture Zones:

The objective lateral extent of on-site hydraulic containment in the A-aquifer (i.e., the target capture zone) for the 405 National Avenue site was established in the Revised FSCRD (Geomatrix, 1995a) and is shown on Figure 3. The vertical extent of the on-site target containment zone is the base of the A-aquifer interval, which is at a depth of approximately 45 ft as described in the Revised FSCRD (Geomatrix, 1995a) and the Revised Aquifer Test and Off-Site and B2 Source Control Evaluation Report (Revised Aquifer Test Report; Geomatrix, 2004a). Most of the A-aquifer at 405 National Avenue is enclosed within a slurry wall.

The target capture zones for the off-site source control wells were generally established in the Revised Final Design, Regional Groundwater Remediation Program (Smith, 1996). The objective of the GSF wells is to hydraulically contain chemicals migrating from 401 and 425 National to downgradient A, B1 and B2-aquifer intervals. At 405 National Avenue, accordingly, the target capture zone for the GSF extraction wells is the combined extent of the remediation area at 425 National and the slurry wall at 401 National Avenue to a depth of approximately 90 ft (Figure 3; Geomatrix 1995a, 2004a).

Step 3: Interpretation of Water Levels:

Historically, potentiometric surface contour maps and estimated capture zones were submitted to U.S. EPA on a quarterly basis. On December 9, 2004, U.S. EPA provided verbal approval to reduce the frequency of monitoring and reporting to a semiannual basis. The influence of slurry walls on the water levels in the area complicates the use of standard contouring software to produce reasonable potentiometric surface maps. Potentiometric surface contours therefore were manually drawn based on linear interpolation between data points at monitoring wells. Water level data from pumping wells were generally not used explicitly in drawing the contours because water level data in pumping wells are generally substantially lower than water levels in the surrounding aquifer. However, the cones of depression of pumping wells are estimated in developing the estimated zones of hydraulic capture.

The capture zones were estimated by calculating stagnation points downgradient of pumping wells and using potentiometric maps based on the method described in the Revised Aquifer Test Report (Geomatrix 2004a). The boundaries of the capture zones were plotted by starting at these stagnation points and then tracing flowpaths perpendicular to the contour lines of the potentiometric surface, in the upgradient direction.

The formula used to calculate the distance to the stagnation point from the pumping well was based on Darcy's Law and uses pumping rate (Q), transmissivity (T), and hydraulic gradient (i), to calculate the stagnation point distance (e.g., Todd, 1980):

$$X = \frac{(0.75) Q}{2 \pi T i}$$

The factor of 0.75 was included to add an element of conservatism.

The calculated distances to stagnation points using this method are general approximations that are overly conservative for several reasons. The gradient used in the calculation is measured from potentiometric surface maps constructed from data collected for pumping conditions, but the gradient assumed in the equation is for non-pumping conditions. Multiple pumping wells and slurry wall barriers in the region complicate accurate estimation of regional hydraulic gradients. Moreover, the equation is only strictly valid for a two-dimensional flow system.

The historical calculations of distances to stagnation points provided a reasonable systematic method to provide starting points for drawing estimated capture zones, but numerical modeling provides more reliable estimates of these stagnation point distances.

Hydraulic capture zones are estimated by hand from stagnation point distances, potentiometric surface contour maps, hydraulic model results, and a factor of safety mentioned above. Correction factors are applied to the calculated stagnation locations to compensate for variation in average flow and/or deviation between actual and target pumping rates as follows:

EX-4 downgradient extent of capture is expected to be 10 ft at design extraction rate:

$$(10 \text{ ft}) \times \frac{Q_{EX4_avg} (gpm)}{1.5 gpm}$$

GSF-1A downgradient extent of capture is expected to be 45 ft at design extraction rate:

$$(45 \text{ ft}) \times \frac{Q_{GSF-1Aavg} (gpm)}{5 gpm}$$

GSF-1B1 and GSF-1B2 downgradient extent of capture is expected to be 90 ft at design extraction rate:

$$(90 \text{ ft}) \times \frac{Q_{GSF-1B1avg} (gpm)}{10 gpm}$$

The average pumping rates for January through December 2011 of the individual extraction wells, including calibrated stagnation points for the following extraction wells based on an annual average pumping rate, are provided in Table 2. The location of the stagnation points in the B1 and B2-aquifers are about 60 ft downgradient from GSF-1B1 and GSF-1B2, 37 ft downgradient from well GSF-1A, and about 15 ft downgradient from well EX-4.

Figures 8a through 8f are potentiometric surface contour maps using groundwater level data obtained during the semi-annual water level measurement events in March and September 2011. Figures 8a through 8c show the estimated extent of capture using a stagnation point from Table 2 and discrete groundwater levels and flow rates observed during the March 2011 water level measurement event. Figures 8d through 8f show the estimated extent of capture using the stagnation point calculated in Table 2 and discrete groundwater levels and flow rates observed during the September 2011 water level measurement event.

Water level data collected during the semi-annual measurement events were compiled for pairs of wells to evaluate if inward gradient direction was maintained toward the extraction wells. The water level pair method for individual on-site extraction wells is of limited use in evaluating achievement of target capture for the on-site remediation area because on-site hydraulic containment is a consequence of the cumulative influence of the five on-site extraction wells. However, a compilation of water level pair data for SIL13A and EX-2 provides a general assessment of inward gradient for the sequence of on-site extraction wells. SIL13A is approximately 40 ft east of EX-2, which is in the central portion of the sequence of on-site extraction wells. SIL13A would be roughly cross-gradient from EX-2 for non-pumping conditions. Water level data for SIL13A and EX-2 are listed in Table 4. Hydrographs and a plot of water level difference (Figure 7) illustrate that, historically, during the last several years the hydraulic gradient consistently has been inward toward the on-site extraction wells from SIL13A. This trend was temporarily disrupted by the decrease in operational flow rate caused by the conveyance pipe blockage beginning in 2006 and continuing through 2007, but inward gradients have been reestablished since 2008 as GETS operational flow rates approached target flow rates. In 2011, the inward gradient towards the onsite extraction wells show a slight decrease overall. Further, on-site extraction well flow rates have increased from the beginning to the end of 2011 by cleaning out the conveyance lines, resulting in a more consistent inward gradient.

Water level data were compiled for the off-site GSF extraction wells and a regional monitoring well cluster (REG-MW1A, REG-MW1B1, REG-MW1B2) to evaluate if inward gradient direction was maintained toward the off-site GSF extraction wells. The three regional (REG) monitoring wells are located 30 to 60 ft northwest from the off-site GSF extraction wells. Under non-pumping conditions the REG wells would be downgradient of the GSF wells. The water level

data and well pair differences for the GSF wells are listed in Table 9. Hydrographs and water level difference graphs (Figure 7) illustrate that hydraulic gradients in all three aquifers have been consistently inward toward the GSF extraction wells from the REG monitoring wells except in 2007 when the operational flow rates in off-site extraction wells decreased because of the conveyance pipe blockage. It should be noted that the elevation difference between GSF-1B1 and REG-MW-1B(1) has decreased to the level prior to 2004. The reduced head difference results from conveyance line cleaning and redevelopment of GSF-1B1 in July 2011. As with the SIL13A and EX-2 well pair, the hydraulic gradient again became inward to the GSF extraction wells in 2008 and continued through 2011 when operational flow rates increased.

Step 4: Perform Appropriate Calculations:

Flow budget and capture zone width calculations:

Darcy's Law can be used to calculate groundwater flux rate or calculate width of containment for a given rate of extraction.

$$Q_{aq} = T i w_t$$

or

$$Q_{ex} = T i w_c, \text{ so } w_c = Q_{ex} / (T i)$$

where Q_{aq} is the groundwater flux through aquifer, Q_{ex} is the pumping rate, T is transmissivity, i is hydraulic gradient, w_t is target width of containment, and w_c is the calculated width of hydraulic containment.

For the on-site A-aquifer, the design target width of containment, w_t is 100 ft as seen on Figure 3, the conservatively high estimate of transmissivity is 900 square ft per day (ft^2/day), and the regional hydraulic gradient is in the range of 0.003 to 0.005. Using these values, the calculated range of Q_{aq} through the target aquifer width is in the range of 1.4 to 2.3 gpm. For a conservatively steep hydraulic gradient of 0.007, groundwater flux through a target aquifer width of 100-ft is 3.3 gpm. On-site pumping rates from the A-aquifer interval during the March and September 2011 water level measurement events are 6.5 and 8.3 gpm, respectively, a value greater than the calculated flux required to maintain the target width of containment. The average annual pumping rate from the on-site A-aquifer is 7.6 gpm, which is greater than the range necessary to reach the target width of containment of 100 ft.

For the combined on- and off-site portion of the A-aquifer, the design target width of containment, w_t is 400 ft as seen on Figure 3. Using the same estimated transmissivity of 900 ft^2/day and regional hydraulic gradient in the range of 0.005 and 0.007, the calculated range of groundwater flux through the target aquifer width is 9.4 to 13.1 gpm. Pumping rates from the GSF-1A, EX-1 through EX-4, and SIL15A extraction wells during the March and September

2011 water level measurement events is approximately 11.0 gpm and 12.0 gpm. The pumping rates are within the conservative range of the calculated flux required to maintain the target width of containment. The average annual pumping rate from the combined on- and off-site portion of the A-aquifer is 11.7 gpm, which is within the conservative range necessary to reach the target aquifer width of containment of 400 ft.

The calculated widths (w_c) of containment during the March 2011 water level measurement event are approximately 278 ft and 199 ft for hydraulic gradients of 0.005 and 0.007, transmissivity of 900 ft²/day, and the March on-site extraction rate of 6.5 gpm. During the September 2011 monitoring event, the calculated w_c are approximately 355 ft and 254 ft for the hydraulic gradients and transmissivity value with the September on-site extraction rate of 8.3 gpm. The estimated cumulative width of the combined on-site and off-site A-aquifer zone pumping is approximately 200 ft based on the potentiometric surface maps. These values are greater than the target width of containment of 100 ft.

The calculated w_c using the combined flow rates of the on- and off-site A-aquifer extraction GSF-1A, EX-1 through EX-4, and SIL15A wells (11.0 gpm), the estimated transmissivity of 900 ft²/day and the conservative range of regional hydraulic gradients (0.005 and 0.007), in the A-aquifer is approximately 471 ft to 336 ft for the March 2011 event. For the September event, the w_c in the A-aquifer is approximately 513 ft to 367 ft at a total extraction rate of 12.0 gpm. The estimated capture width from the March and September 2011 event indicates the on and off-site A-aquifer extraction rates are generally in the target width of 400 ft.

For the off-site B-aquifer, w_t is 400 ft, the estimated cumulative transmissivity in the B1 and B2-aquifer intervals is 406 ft²/day and the regional hydraulic gradient is in the range of 0.004 and 0.008. Using these values, the calculated range of groundwater flux (Q_{aq}) through the target aquifer width is approximately 3.4 to 6.8 gpm. The average pumping rates from the GSF-1B1 and GSF-1B2 extraction wells for the March and September 2011 sampling events are approximately 4.5 gpm and 10.0 gpm, which is within the required range of estimated flow rates to maintain the target width of containment.

The w_c of containment for the combined B-aquifers provided by extraction from GSF-1B1 and GSF-1B2 are approximately 533 ft and 267 ft for hydraulic gradients of 0.004 and 0.008, transmissivity of 406 ft²/day, and average extraction rate of 4.5 gpm for the March 2011 reporting period. For the September 2011 reporting period, the w_c of containment for the combined B-aquifers provided by extraction from GSF-1B1 and GSF-1B2 are approximately 1185 ft and 593 ft for an extraction rate of 10.0 gpm. These values indicate the extraction rates capture a width greater than the desired width of containment of 400 ft.

GSF-1B1 has a design pumping rate of 10 gpm, but only achieved an average of 4.3 gpm for 2010. After corrected measures were implemented in July 2011, (i.e. conveyance line cleaning and well redevelopment) the average pumping rate for GSF-1B1 increased from about 4.5 gpm to about 10 gpm. GSF-1B1 is now operating at the design pumping rate and achieving the desired width of containment.

This flow budget approach assumes two dimensional flow conditions and does not account for vertical flow between the A- and B-aquifers. Accordingly, the capture width calculated with this method is generally too large if vertical flow components are substantial. However, at the MEW site this approach is conservative because slurry walls remove large portions of the aquifer from the flow system upgradient of the extraction wells in the A-aquifer. The width of the A-aquifer influenced by pumping is increased by the approximate width of the upgradient slurry walls. In addition, upgradient pumping, which reduces the ambient groundwater flow from the upgradient direction, also contributes to an increase in the capture zone width.

Numerical Modeling:

A calibrated, three-dimensional, numerical groundwater flow and particle tracking model was constructed using MODFLOW (McDonald and Harbaugh, 1988) and MODPATH (Pollock, 1994). The model serves as a tool to evaluate the extent of hydraulic containment by incorporating hydraulic properties based on site-specific aquifer testing and accounting for the hydraulic influence of the slurry walls. The model was calibrated by comparing modeled drawdown from simulated wells to measured drawdown from an extended pumping test at GSF-1B1. The model design, calibration, and sensitivity analyses are presented in the Revised Report on Aquifer Test and Off-Site B2 Source Control Evaluation (Geomatrix, 2004a).

Figures 9a through 9c depict the modeled extent of hydraulic containment for the A, B1 and B2 aquifers provided by pumping at 5 gpm from GSF-1A and 7 gpm from GSF-1B1, using discrete extraction rates from the March 2011 water level measurement event. Figures 9d through 9f depict the groundwater flow model during September 2011 water level measurement event when the GETS was pumping at discrete rates of 5 gpm from GSF-1A and 5 gpm from GSF-1B1. No pumping is included from GSF-1B2 in the model; the hydraulic containment within the B2 aquifer is a consequence of upward flow from the B2 aquifer into the B1 aquifer, which occurs because of hydraulic connection between the aquifers through the leaky B1/B2 aquitard.

A north-south cross sectional view, which depicts the model results in the vicinity of the GSF extraction wells (Figures 10a and 10b), shows that pumping from well GSF-1B1 results in: (1) an upward vertical gradient from the B2 aquifer into the B1-aquifer, and (2) hydraulic

capture of groundwater particles originating near the bottom of the B2-aquifer. Vertical gradient data for monitoring well clusters confirm the upward hydraulic gradient from the B2 to B1-aquifer. The model results show a width of hydraulic containment in the A-aquifer and the B1/B2-aquifer that exceeds the objective containment.

Step 5: Evaluation of Concentration Trends at Monitoring Wells:

TCE is the primary chemical impacting groundwater at the site. An evaluation of the ratios of TCE to other constituents is minor to negligible, so TCE alone can be used to evaluate concentration trends to evaluate capture. Figure 11a shows TCE concentrations detected in monitoring wells screened in the A-aquifer in October 2011.

Historical TCE concentration data were compiled for monitoring wells 108A, 116A and SIL9A, which are downgradient of the on-site target hydraulic containment area. A decreasing trend in TCE concentrations is observed at 108A (Figure 12c), 116A (Figure 12d), and SIL9A (Figure 12e). Table 6 provides historical chemical concentration data, and Figures 12c through 12e include historical TCE data from wells 108A, 116A and SIL9A respectively. These figures show that TCE concentrations at wells 108A and 116A have consistently decreased since operation of the GETS began. In previous years, TCE concentrations in all wells have shown a generally decreasing trend until the last few years. The 2007 TCE results may have been attributable to the operational lapse of the GETS during access vault installation; however, the GETS operated at near design flow rates since 2008. Well 108A for the past 5 years, well 107B2 for 4 years, and well SIL9A for the past 2 years have shown stabilized concentrations of TCE relative to the decreasing trends observed in previous years. AMEC will continue to closely monitor and assess future concentrations.

Additionally, Figure 11b shows PCE concentrations, Figure 11c shows cis-1,2-DCE concentrations and Figure 11d shows vinyl chloride concentrations detected in monitoring wells screened in the A-aquifer in October 2011.

In October 2011, PCE was detected in its highest concentration at extraction well EX-1 at 38 µg/L. PCE concentrations remained localized in the EX-1 area at similar concentrations and has a historically decreasing trend within EX-1 (Figure 11b). Cis-1,2-DCE was detected highest in the well SIL14A area and the well 116A area. Well SIL14A had a detection of 4,800 µg/L and well 116A had a detection of 7,600 µg/L of cis-1,2-DCE. Well SIL14A had an increase in cis-1,2-DCE concentrations in 2007 and has observed a decreasing trend through 2011. Well 116A has observed a decrease in cis-1,2-DCE concentrations in the early 2000's however there has been an increase in concentrations from 2007 to 2011. Also, cis-1,2-DCE was detected at 580 µg/L at well 152A (Figure 11c). Vinyl Chloride was detected highest at well SIL14A at 1,900 µg/L and is localized in the well SIL14A area (Figure 11d). Well SIL14A

had an increase in vinyl chloride concentrations in 2007 and has observed a decreasing trend through 2011.

Figure 12b shows historical TCE concentrations in groundwater pumped at the GSF extraction wells. The results of the capture zone analysis presented above and historic decreasing trends of TCE concentrations at GSF-1A and GSF-1B1 indicate effective remediation and hydraulic isolation of the upgradient source area. A decreasing trend in TCE concentration has not yet occurred at GSF-1B2. A longer lag time between shallow on-site source control and decreasing concentrations of TCE in the B2 interval at depth is expected (refer to monitoring well 107B2 of Figure 12d). Groundwater velocities are also slower in the B2 interval because of lower hydraulic conductivity relative to the B1 and A intervals.

Historical TCE concentration data were also compiled for monitoring wells 147A, 77B1 and 143B1, which are approximately 200 ft downgradient of the GSF extraction wells. Decreasing trends of TCE concentrations at 147A and 143B1 (Figure 13) support that the GSF extraction wells are hydraulically containing groundwater with elevated concentrations of TCE in the off-site area.

Step 6: Discussion of Analyses of Extent of Hydraulic Containment:

Factors with potential to change the extent of hydraulic containment include pumping rates, regional hydraulic gradient, and saturated thickness of the A-aquifer. Figure 5a show historical compilation of pumping rates.

Figure 14 shows hydrographs for five A-aquifer monitoring wells. These data show that seasonal water level variation of a few ft for individual monitoring wells and a general, yet small, decreasing trend of water levels over the last ten years. These data show that the saturated thickness of the A-aquifer has varied by less than 10 percent.

Regional hydraulic gradient influences the rate and direction of flow of groundwater through the aquifer system. The numerical modeling uses regional gradients based on water level data removed from influence of extraction wells. As long as the regional hydraulic gradient, pumping rates, and A-aquifer saturated thickness do not change significantly, the model results will continue to be valid. The potentiometric surface maps that are the basis for the hand drawn estimates of capture provide compensation for variation in gradient.

Multiple lines of evidence indicate that the extent of hydraulic containment provided by on-site groundwater extraction meets or exceeds the target capture zones. Table 7 summarizes the findings of capture zone analyses. The site-specific analyses indicate that the objective hydraulic containment is attained for the A-aquifer, and for the B1 and B2 aquifers.

2.3.3 Horizontal and Vertical Hydraulic Gradients

As documented in historical potentiometric surface maps, the horizontal hydraulic gradient is consistently north to northwest in the shallow aquifer system at the MEW site.

Vertical hydraulic gradient is the difference in head elevations between shallow and deep wells (dH) divided by the vertical distance between the mid points of saturated well screens in adjacent depth intervals (dL) as shown in the equation below.

$$\text{Vertical Gradient} = \frac{dH}{dL}$$

Positive vertical gradient indicates downward flow, while a negative value indicates upward flow.

Table 8 provides vertical gradient data between the A and B1-aquifers, and between the B1 and B2-aquifers based on data from monitoring well clusters in the vicinity of the site. Table 8 includes vertical gradient data from February 1996 to December 2011 for two monitoring well clusters: Group I (116A, 109B1, and 107B2); and Group II (108A, 104B1, and 108B2). Table 9 includes available data from August 1999 to December 2011 for off-site extraction well cluster Group III (GSF-1A, GSF-1B1 and GSF-1B2).

Figure 15 includes graphs illustrating vertical gradients with time between the A and B1 intervals and between the B1 and B2 intervals. Since 1998, the vertical gradient between the A and B1-aquifers has been consistently downward. Vertical gradient between the B1 and B2 aquifers is stronger and consistently upward. A decline in vertical gradient can be observed during 2006 and 2007, which is consistent with the restriction of flow due to conveyance pipe blockage; however, the trend returns during 2008 and continues through 2011. The upward gradient from B2 to B1 is consistent with (1) field observations recorded during aquifer testing, which showed an observable hydraulic influence on the B2-aquifer due to pumping from GSF-1B1, and (2) numerical model results, which indicated hydraulic influence and capture of B2-aquifer groundwater due to pumping from GSF-1B1 (Geomatrix, 2004a).

2.4 INTERPRETATION OR EXPLANATION OF THE DATA

2.4.1 2011 Groundwater Extraction and Treatment System

Operating parameters of the GETS between January and December 2011 are summarized in Table 2, and mass removal by the extraction well network is summarized in Table 3. The data in Tables 2 and 3 and graphical representations in Figures 5a and 5b indicate that the GETS continues to effectively remove VOCs from the extracted groundwater, and provide hydraulic

containment of impacted groundwater at the site in the A-aquifer, as well as the B1 and B2 aquifers.

2.4.2 2011 Groundwater Monitoring Event Results

Similar to 2008, low flow sampling was conducted during the October 2011 sampling event in accordance with U.S. EPA guidance (U.S. EPA, 1996). Prior to the December 2004 sampling event, groundwater samples were collected following purging of four casing volumes of water by bailer followed by sample collection.

Groundwater samples were collected from on and off-site monitoring wells in accordance with the annual groundwater monitoring program for the site. With the exception of two wells, 116A and SIL14A, concentrations of VOCs detected during the October 2011 sampling event were consistent with historical concentration trends observed at the site:

- Compared to historical concentrations, TCE in monitoring well 116A are observed at elevated concentrations from 2007 through 2011 (approximately 56,000 micro grams per liter [$\mu\text{g/L}$]).
- Concentrations of VOCs in monitoring well SIL14A have varied in the past two years. In 2008, data indicated a significant increase in VC and cis-1,2-DCE, which then decreased through 2011. This trend in VOC concentrations is consistent with biologically-induced dechlorination of TCE. Further monitoring of this well is necessary to determine any continued trends.

The analytical results from the October 2011 sampling event are summarized in Table 5. The chemical analytical result reports are included in Appendix B.

Historical TCE concentration data were also compiled for the monitoring wells in the network (Figures 12a through 12f). Decreasing trends of TCE concentrations can be observed in the concentration versus time plots for the A and B1 intervals, but less so in the B2 interval (as described in Section 2.3.2).

QA/QC procedures used to collect and analyze data during the calendar year of 2011 were summarized in a quality assurance report submitted as Appendix C.

2.4.3 Isoconcentration Maps

Figure 11a through 11d provide TCE, PCE, cis-1,2-DCE and vinyl chloride isoconcentration maps for the A-aquifer. Figures 12a through 12f show TCE, cis-1,2-DCE, vinyl chloride, and PCE concentration trends versus time for different wells screened in each of the A, B1, and B2-aquifer intervals.

3.0 OTHER 2011 ACTIVITIES

3.1 NPDES SAMPLING PROGRAM

On September 14, 2004, AMEC submitted an application to the California Regional Water Quality Control Board (RWQCB) to operate the GETS under the conditions described in the General Waste Discharge Requirements for Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds, NPDES permit number CAG912003. The site received authorization to operate under the Permit in a letter from the RWQCB dated November 29, 2004, and has been discharging under the Permit since January 1, 2005. The GETS is currently subject to RWQCB Order No. R2-2011-0059 adopted by the RWQCB on August 12, 2009.

In accordance with the NPDES Permit, AMEC prepared a detailed summary table of the NPDES sampling, reporting, and compliance requirements for the NPDES Permit (See Appendix D). AMEC also prepared an NPDES memorandum that summarizes the sampling, reporting, and compliance requirements for the NPDES Permit, and includes the following:

- Summary Monitoring Requirements,
- Sampling and Reporting Schedule,
- Summary of Analytical Methods and Sampling Handling,
- Summary of NPDES effluent discharge and trigger level requirements,
- Summary of Reporting Requirements,
- Summary of Records and Notification Requirements,
- RWQCB Discharge Authorization Letter,
- Copies of NPDES Permit Order No. R2-2011-0059, Self-Monitoring Program for NPDES Permit Order No. R2-2011-0059, and Notice of Intent for NPDES Permit Order No. R2-2011-0059,
- Ultra Clean Sampling Technique (U.S. EPA Method 1669) Protocols, and
- NPDES sampling field form.

On February 17, 2006, AMEC submitted a letter to Mr. Farhad Azimzadeh of the RWQCB, which requested modifications to the Self Monitoring Program for three chemical groups. The letter, entitled "Request to Modify Self Monitoring Program under VOC General NPDES Permit," was submitted on behalf of Vishay, SUMCO, and Schlumberger, and requested the following modifications for three chemical groups:

- Volatile Organic Compounds: Reduction in the number of compounds analyzed by U.S. EPA Method 8260B from the full list to the halogenated VOC list (formerly U.S. EPA Method 8010).
- SVOCs: Reduction in effluent monitoring frequency for SVOCs to once every three years, with the next event to be performed in 2014.
- 1,4-Dioxane: Reduction in effluent monitoring frequency for 1,4-Dioxane to once every three years, with the next event to be performed in 2014.

As directed in an email response from Mr. Azimzadeh on February 17, 2006, the modifications to the Self Monitoring Program were approved and initiated during the March 2006 sampling event and have continued since this event.

4.0 PROBLEMS ENCOUNTERED

During 2011, AMEC performed unscheduled activities on the GETS related to both operation and maintenance, and NPDES monitoring and reporting.

During the October 2011 NPDES sampling event, cyanide was detected above the Permit's trigger concentration in the effluent sample. In accordance with the Permit, Provision VI.C.6, three additional samples (three influent and three effluent) for Cyanide have been collected by the end of the first quarter of 2012. Sampling events for Cyanide took place on December 8, 2011, January 12, February 8, March 1, 2012. Cyanide effluent results from the December, January, February and March sampling events are as follows: 60, 70, 10 and <10 µg/L. In accordance with the Permit's Provision VI.C.8, we have investigated source control and treatment options for cyanide. Our investigation included analyzing components added to the system for possible external cyanide introduction (i.e. water, anti-scalant, hydrogen peroxide). In addition, we are performing quality assurance and quality control with our laboratory facilities by requesting analysis with different certified laboratories. Furthermore, in order to decompose the cyanide within the influent we have increased the percent concentration of hydrogen peroxide to 20% from 10% injected into the treatment flow. With these investigative steps we have identified the source of cyanide, which is the influent flow, and identified a treatment method, which is the increased percentage of hydrogen peroxide. Cyanide concentrations have decreased since the implementation of the increased percentage of hydrogen peroxide in late February and are currently at non-detectable concentrations for the month of March. One caveat of this approach is that a high concentration of hydrogen peroxide leads to a failure of the Fish Bio-Assay test. Monitoring of total cyanide and fish bio assay results will continue throughout the year and as prescribed by the Permit. Reporting of monitoring results will be completed in accordance with the Permit.

4.1 UNSCHEDULED OPERATION AND MAINTENANCE

As described in Section 2.2, several shutdown events cumulatively shut the system down for a period of approximately 10 days. No spills or other equipment malfunctions occurred in 2011.

5.0 TECHNICAL ASSESSMENT

For 2011, the GETS treated impacted groundwater at flow rates ranging from approximately 11.6 to 22.3 gpm, with an average of 18.4 gpm. The minimum rate occurred in April 2011 when piping in EX-1 and EX-2 was being serviced and a breaker within the circuit panel was being replaced. Beneath the suspected source areas and throughout most of the plume extent, VOC concentrations are declining in groundwater and the plume extent is decreasing.

Table 2 summarizes the average flow rates for the extraction well network and operating parameters of the GETS between January and December 2011. The data indicate that the GETS complied with the conditions of the NPDES Permit, and effectively removed VOCs from the influent stream. Figure 5a illustrates the total volume of groundwater treated, average flow rates recorded by the GETS flow totalizer, and the sum of the flow rates for individual flow totalizers. Influent VOC concentrations have displayed a continuous downward trend since system startup, and the cumulative mass of VOCs removed has also steadily increased (Figure 5b).

The evaluation of hydraulic containment for the March and September 2011 water level event is discussed in Section 2.3.2. Multiple lines of evidence generally indicate that the extent of hydraulic containment provided by on-site extraction meets the target capture zones, and is attained with a margin of safety.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The GETS is operating, and will continue to operate in conformance with the design parameters outlined in the Final Remedy. As requested by U.S. EPA, AMEC submitted an Optimization Evaluation Report (AMEC, 2008) that presented potential methods to optimize the groundwater extraction and treatment system in September 2008. Opportunities for treatment system optimization may include: (1) implementing an optimized pumping program to remove VOCs more efficiently, and (2) evaluating and implementing in-situ remedial treatment technologies that are capable of decreasing VOC groundwater concentrations in groundwater underlying the site and/or lowering annual operating costs.

7.0 FOLLOW-UP ACTIONS

The TCE concentrations in well 116A and the VOC concentrations in well SIL14A may require more frequent monitoring in the future to more closely observe the concentration trends.

Total cyanide detections will be monitored according to the NPDES permit requirements.

8.0 WORK PLANNED FOR 2012

The following actions are planned for the remainder of the year:

- Continue to operate and maintain the groundwater extraction and treatment system as described in the O&M Plan.
- Collect water level measurements in September in accordance with the semiannual monitoring schedule.
- Attend “All-Parties” meetings (dates to be determined).
- Prepare and submit quarterly NPDES Self Monitoring Reports in May, August, and November in accordance with the requirements of the NPDES Permit.
- Prepare and submit a Santa Clara Valley Water District Water Production Statement in July.
- Collect and analyze groundwater samples from extraction and monitoring wells in October in accordance with the regional groundwater monitoring program.
- BAAQMD Data Update in July.

9.0 REFERENCES

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TABLES



TABLE 1
MONITORING AND REPORTING SCHEDULE
JANUARY–DECEMBER 2011
 405 National Avenue
 Mountain View, California

Operations and Maintenance	Frequency
Routine Inspections ¹	Weekly
Quarterly Inspections ¹	Four times per year
Annual Inspection ¹	Once per year
Monitoring	Frequency
Groundwater Extraction and Treatment System (GETS) Sampling Events	Monthly
Groundwater Level Measurements	Semiannually
Groundwater Sampling Event	Annually
Permit Compliance	Submitted
NPDES Self Monitoring Plan Reports	February, May, August, and November 2011
Santa Clara Valley Water District Water Production Statement and Fees	January and July 2011
Bay Area Air Quality Management District (BAAQMD) Permit Annual Data Update	July 2011
BAAQMD Permit Annual Fee	August 2011
Reporting	Submitted
Annual Progress Report for 2010	April 2011
Annual Capture Zone Analyses—2010	April 2011
Meetings	Attended
All Parties Meeting	None Scheduled

Note

1. As described in the Operations and Maintenance Plan, Geomatrix, 1997.

TABLE 2

**AVERAGE FLOW RATES FOR EXTRACTION WELL NETWORK,
CALCULATED STAGNATION POINTS AND
GROUNDWATER TREATMENT SYSTEM OPERATING PARAMETERS**

JANUARY–DECEMBER 2011 ¹

405 National Avenue
Mountain View, California

Month	Average Flow Rate by Month (gpm)							
	Extraction Well Name							
	SIL15A	EX-1	EX-2	EX-3	EX-4	GSF-1A	GSF-1B1	GSF-1B2
January-11	1.5	0.5	0.5	1.5	2.1	4.6	4.7	0.1
February-11	1.4	0.6	0.2	1.5	2.0	4.5	4.6	0.1
March-11	1.4	0.3	0.3	1.6	2.9	4.5	4.4	0.1
April-11	1.4	0.3	0.2	1.5	2.8	4.1	4.1	0.1
May-11	1.4	1.0	0.7	1.6	2.7	4.3	4.7	0.1
June-11	1.4	1.6	0.8	1.7	2.7	4.4	4.0	0.1
July-11	1.7	2.0	1.6	1.7	2.4	4.5	5.9	0.1
August-11	1.7	1.6	1.8	1.6	2.0	4.1	8.7	0.1
September-11	1.7	1.3	1.8	1.6	1.9	3.7	9.9	0.1
October-11	1.6	1.8	1.7	1.5	1.9	3.7	9.6	0.1
November-11	1.6	1.6	1.7	1.5	1.9	3.6	9.7	0.1
December-11	1.6	1.3	1.2	1.5	1.8	3.5	9.5	0.1
Annual Average Flow Rate	1.5	1.2	1.0	1.6	2.3	4.1	6.7	0.10
Stagnation Point (ft) ²	-- ³	--	--	--	15	37	60	60

Groundwater Treatment System Parameter	Influent			Effluent		
	Min	Max	Avg	Min	Max	Avg
Flow Rate (gpm) ⁴	11.55	22.28	18.43	11.55	22.28	18.43
pH	6.3	7.1	6.8	7.1	8.3	7.7
Temperature ° ⁴	15.5	19.7	17.6	15.1	19.6	18.1
Total VOCs (mg/l) ⁴	1.48	2.09	1.78	ND (0.0005) ⁵	ND (0.02)	--

Notes

1. Average monthly flow rate is calculated by individual well flow totalizers.
2. Stagnation points are based on model results, a factor of safety of two, and correction factors to account for variation in average pumping rates using the average annual pumping rates.
3. -- = Not Applicable
4. gpm = gallons per minute; °C = degrees centigrade; mg/l = milligrams per liter.
5. ND = Not Detected; detection limits are shown in parentheses.

TABLE 3

**GROUNDWATER EXTRACTION AND TREATMENT SYSTEM (GETS)
VOLUME AND VOC MASS REMOVAL
JANUARY–DECEMBER 2011**
405 National Avenue
Mountain View, California

Date of Inspection	Flow Between Inspections (gallons) ¹	Average Flow Rate (gpm) ¹	Influent VOC ² Concentration ³ (µg/l) ⁴	Average VOC Removal Rate ⁵ (lb/day) ⁶
1/7/2011	201,590	15.5	1,868	0.35
1/12/2011	111,200			
1/19/2011	157,820			
1/24/2011	112,260			
2/3/2011	219,990	14.9	1,800	0.32
2/11/2011	174,020			
2/15/2011	83,680			
2/23/2011	169,120			
3/2/2011	155,600	15.5	1,672	0.31
3/9/2011	158,080			
3/14/2011	109,450			
3/24/2011	223,450			
3/28/2011	92,500			
4/4/2011	155,950	14.6	1,733	0.30
4/12/2011	137,460			
4/21/2011	196,100			
4/28/2011	156,060			
5/3/2011	108,370	16.5	1,690	0.34
5/12/2011	216,280			
5/17/2011	126,800			
5/26/2011	218,650			
6/1/2011	149,760	16.6	1,878	0.37
6/9/2011	187,910			
6/13/2011	98,070			
6/21/2011	188,570			
6/28/2011	166,320			
7/7/2011	205,770	19.6	1,478	0.35
7/13/2011	166,100			
7/19/2011	186,170			
7/28/2011	282,760			
8/2/2011	153,620	21.5	2,090	0.54
8/8/2011	185,330			
8/19/2011	338,580			
8/23/2011	125,640			
8/29/2011	184,650			
9/6/2011	257,730	21.8	1,650	0.43
9/15/2011	282,890			
9/22/2011	211,950			
9/29/2011	227,610			
10/7/2011	251,640	21.9	1910	0.50
10/11/2011	122,070			
10/18/2011	226,560			
10/27/2011	280,040			

TABLE 3

**GROUNDWATER EXTRACTION AND TREATMENT SYSTEM (GETS)
VOLUME AND VOC MASS REMOVAL
JANUARY–DECEMBER 2011**
405 National Avenue
Mountain View, California

Date of Inspection	Flow Between Inspections (gallons) ¹	Average Flow Rate (gpm) ¹	Influent VOC ² Concentration ³ (µg/l) ⁴	Average VOC Removal Rate ⁵ (lb/day) ⁶
11/3/2011	221,200	21.5	1750	0.45
11/10/2011	215,770			
11/14/2011	126,570			
11/21/2011	217,420			
11/29/2011	239,460			
12/8/2011	261,650	20.7	1850	0.46
12/12/2011	121,880			
12/21/2011	270,950			
12/29/2011	238,400			
Annual Cumulative Flow for 2011 (gallons) ⁷				9,677,470
Historical Cumulative Flow from 1996 to present (gallons) ⁷				161,359,130
Annual Cumulative VOC Mass Removed for 2011 (lbs) ⁸				142.6
Historical Cumulative VOC Mass Removed from 1996 to present (lbs) ⁸				7,854

Notes

1. Cumulative flow measurement from extraction wells EX-1 through EX-4, SIL15A, GSF-1A, GSF-1B1, and GSF-1B2 recorded at groundwater treatment system totalizer.
2. VOC = volatile organic compound (values are total VOC concentrations).
3. Based on monthly influent water sampling analytical results.
4. µg/l = micrograms per liter.
5. Average VOC removal rate = average flow rate multiplied by influent VOC concentrations.
6. lb/day = pounds per day.
7. Calculated from flow meter readings. Flow measurements averaged over time period between weekly measurements.
8. lbs = pounds

TABLE 4

**SEMIANNUAL WATER LEVEL MEASUREMENTS
MARCH AND SEPTEMBER 2011**

405 National Avenue
Mountain View, California

Well Name	Date Measured	Depth to Water ¹	Measuring Point Elevation ²	Water Level Elevation ²
SIL1A	3/24/2011	10.58	44.01	33.43
	9/15/2011	12.11	44.01	31.90
SIL2A	3/24/2011	10.28	43.42	33.14
	9/15/2011	11.64	43.42	31.78
SIL4A	3/24/2011	10.54	44.15	33.61
	9/15/2011	11.82	44.15	32.33
SIL5A	3/24/2011	9.97	45.15	35.18
	9/15/2011	11.21	45.15	33.94
SIL8A	3/24/2011	11.07	44.41	33.34
	9/15/2011	12.34	44.41	32.07
SIL9A	3/24/2011	9.43	41.21	31.78
	9/15/2011	10.67	41.21	30.54
SIL10A	3/24/2011	9.59	41.99	32.40
	9/15/2011	10.87	41.99	31.12
SIL11A	3/24/2011	9.84	42.66	32.82
	9/15/2011	11.09	42.66	31.57
SIL12A	3/24/2011	10.18	43.25	33.07
	9/15/2011	11.53	43.25	31.72
SIL13A	3/24/2011	11.08	43.50	32.42
	9/15/2011	12.43	43.50	31.07
SIL14A	3/24/2011	10.62	43.07	32.45
	9/15/2011	11.96	43.07	31.11
SIL15A ³	3/24/2011	9.43	42.17	32.74
	9/15/2011	10.80	42.17	31.37
SIL16A	3/24/2011	10.53	43.51	32.98
	9/15/2011	11.83	43.51	31.68
SIL17A	3/24/2011	10.32	43.43	33.11
	9/15/2011	11.78	43.43	31.65
EX-1 ^{3,4}	3/24/2011	12.93	41.61	32.47
	9/15/2011	17.44	41.61	29.28
EX-2 ^{3,4}	3/24/2011	12.51	41.50	32.65
	9/15/2011	15.21	41.50	30.74
EX-3 ^{3,4}	3/24/2011	13.56	41.47	31.88
	9/15/2011	15.19	41.47	30.73

TABLE 4

**SEMIANNUAL WATER LEVEL MEASUREMENTS
MARCH AND SEPTEMBER 2011**

405 National Avenue
Mountain View, California

Well Name	Date Measured	Depth to Water ¹	Measuring Point Elevation ²	Water Level Elevation ²
EX-4 ^{3,4}	3/24/2011	13.14	41.07	31.78
	9/15/2011	14.63	41.07	30.73
GSF-1A ³	3/24/2011	10.07	39.57	29.50
	9/15/2011	11.23	39.57	28.34
GSF-1B1 ³	3/24/2011	42.51	39.61	-2.90
	9/15/2011	19.54	39.61	20.07
GSF-1B2 ³	3/24/2011	14.84	39.61	24.77
	9/15/2011	14.63	39.61	24.98

Notes

1. Depth to water in feet below top of casing.
2. Elevations are expressed in feet above mean sea level.
3. Extraction well water level measurements may vary depending on cycle of well pump.
4. Depth to water parameters corrected for the 45-degree orientation of the well casings.
Depths are not considered accurate due to measuring difficulties in the inclined wells.

TABLE 5

GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS SUMMARY¹

OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Sampling Technique	Date Sampled	1,1-DCA	1,1-DCE	MC	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE
Extraction Wells												
EX-1	Sample Port	10/6/11	<20	<20	< 800	690	<20	<20	2700	130	69	38
EX-1 (Dup)			<10	<10	< 400	850	<10	<10	2400	140	60	33
EX-2			6.4	6.4	<170	480	<4.2	7	690	25	14	<4.2
EX-3			2.7	3.6	<100	54	<2.5	3	330	<10	<2.5	<2.5
EX-4			<5	<5	<200	220	<5	5	890	24	<5	<5
SIL15A			6.7	8.9	<100	190	3.2	7	360	21	<2.5	<2.5
GSF-1A			<5	<5	<200	240	6.8	<5	700	<20	<5	<5
GSF-1B1			<17	<17	<670	34	<17	<17	2500	280	<17	<17
GSF-1B2			<36	<36	<1400	<36	<36	<36	<36	6900	350	<36
Monitoring Wells												
108A	Low Flow	10/6/11	<1.3	<1.3	<50	9.5	<1.3	<1.3	120	<5	<1.3	<1.3
116A			<310	<310	<13000	7600	<310	<310	56000	2600	<310	<310
104B1			<1	1.4	<40	8.1	<1	<1	330	5	<1	<1
109B1			<5	<5	<200	12	<5	<5	530	25	<5	<5
25B1			2.2	5.1	<50	50	<1.3	1.4	370	<5	<1.3	<1.3
42B2			<0.5	<0.5	<20	<0.5	<0.5	<0.5	16	<2	<0.5	<0.5
108B2			<3.6	<3.6	<140	<3.6	<3.6	<3.6	620	<14	<3.6	<3.6
107B2			<0.5	<0.5	<20	2.2	<0.5	<0.5	69	<2	<0.5	<0.5
SIL1A			<13	14	<500	1700	14	<13	940	<50	<13	19
SIL9A			<3.6	<3.6	<140	48	<3.6	<3.6	400	<14	<3.6	<3.6
SIL9A (Dup)		<3.6	<3.6	<140	48	<3.6	<3.6	400	<14	<3.6	<3.6	
SIL13A		2.5	<2.5	<100	41	<2.5	<2.5	300	<10	<2.5	<2.5	
SIL14A		<36	<36	<1400	4800	<36	<36	<36	1800	<140	1900	<36

Note

- Groundwater samples analyzed by U.S. Environmental Protection Agency Method 8260B, including 1,1-DCE and Freon 113, by Curtis & Tompkins, Ltd., of Berkeley, California.

Abbreviations

1,1-DCA = 1,1-dichloroethane
 1,1-DCE = 1,1-dichloroethene
 1,2-DCB = 1,2-dichlorobenzene
 cis-1,2-DCE = cis-1,2-dichloroethene
 1,1,1-TCA = 1,1,1-trichloroethane

Freon 113 = 1,1,2-trichlorotrifluoroethane
 PCE = tetrachloroethene
 TCE = trichloroethene
 trans-1,2-DCE = trans-1,2-dichloroethene



TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
Extraction Wells											
EX-1	12/7/1995	<5	<5	<5	30	<5	845	<5	<5	<5	
EX-1	12/7/1995	210	190	6,600	30	1700	400,000	120	370	580	
EX-1 (Dup)	12/7/1995	<5	<5	<5	-- ²	<5	799	<5	<5	<5	
EX-1	10/28/1997	<1000	<500	2,000	<1000	<1000	110,000	<4000	<4000	<1000	
EX-1	6/2/1998	<1000	<1000	1,000	<1000	<1000	35,000	<4000	<2000	<1000	
EX-1	12/1/1998	<63	<63	1,200	<63	120	18,000	<630	220	--	
EX-1	6/3/1999	<25	<25	850	<25	76	12,000	--	210	--	1,1,2-TCA 410
EX-1	12/10/1999	<83	<83	1,100	<83	<83	12,000	<83	240	<83	
EX-1 (Dup)	12/10/1999	<83	<83	1,300	<83	<83	13,000	<83	280	<83	
EX-1	12/4/2000	<36	<36	1,200	<36	54	8,500	<36	230	47	
EX-1 (Dup)	12/4/2000	<31	<31	1,400	<31	40	10,000	<31	230	35	
EX-1	12/5/2001	<25	<25	1,200	51	27	8,100	<25	200	36	
EX-1 (Dup)	12/5/2001	<25	<25	1,200	<25	<25	6,900	<25	190	28	
EX-1	12/16/2002	<20	<20	1,100	<20	<20	6,800	<40	150	34	
EX-1	12/10/2003	<20	<20	1,100	21	<20	5,500	<40	150	39	
EX-1	12/13/2004	<31	<31	1,200	<31	<31	4,900	<63	120	46	
EX-1	11/10/2005	<42	<42	960	<42	<42	4,600	290	81	62	
EX-1 (Dup)	11/10/2005	<36	<36	960	<36	<36	4,700	280	93	68	
EX-1	11/16/2006	<17	<17	920	<17	<17	3,800	150	74	65	
EX-1	12/10/2007	NM ³	NM	NM	NM	NM	NM	NM	NM	NM	
EX-1	12/4/2008	<20	<20	1,300	<20	<20	4,000	250	85	56	
EX-1 (Dup)	12/4/2008	8.6	11	1,200	15	12	3,900	240	83	51	
EX-1	12/2/2009	<20	<20	1,200	20	<20	2,900	210	69	55	
EX-1 (Dup)	12/2/2009	<10	15	1,200	18	<10	2,700	210	72	57	
EX-1	12/16/2010	<20	<20	840	<20	<20	2,500	120	71	45	
EX-1 (Dup)	12/16/2010	6.3	8.6	850	28	5.9	2,400	130	71	48	
EX-1	10/6/2011	<20	<20	690	<20	<20	2,700	130	69	38	
EX-1 (Dup)	10/6/2011	<10	<10	850	<10	<10	2,400	140	60	33	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other	
EX-2	12/7/1995	<0.5	<0.5	2.37	--	<0.5	55.1	<0.5	<0.5	<0.5		
EX-2	12/7/1995	<30	<30	4,600	<30	40	12,000	<100	120	<30	MC	0.57
EX-2 (Dup)	12/7/1995	<0.5	<0.5	2.3	--	<0.5	54	<0.5	<0.5	<0.5	1,2-DMB	1.02
											1,2,4-TMB	1.42
											1,3,5-TMB	0.9
											xylenes	0.77
EX-2	10/28/1997	<10	<10	370	<10	10	1,400	<40	<40	<10	1,2,4-TMB	2.32
EX-2	6/2/1998	<0.5	<0.5	3.1	<0.5	<0.5	1.6	4	<0.5	<0.5		
EX-2	12/1/1998	6.7	11	330	<6.3	18	1,600	<63	11	--		
EX-2	6/3/1999	8.2	9.2	390	6.6	21	980	<36	14	--		
EX-2	12/10/1999	<3.1	11	410	7.9	18	1,000	<3.1	15	<3.1		
EX-2	12/04/2000	<3.1	10	340	8.3	22	870	<3.1	11	3.2	1,2-DCA	9.4
EX-2	12/05/2001	7.6	7.7	400	17	13	830	<4.2	9.6	<4.2		
EX-2	12/16/2002	6.3	3.9	400	28	12	950	<6.3	9.5	<3.1		
EX-2	12/10/2003	8.4	12	510	7.7	15	830	<5	14	2.6		
EX-2	12/13/2004	9.1	12	490	<7.1	16	930	<14	10	<7.1		
EX-2	11/10/2005	7.8	12	470	12	14	780	62	11	<7.1		
EX-2	11/16/2006	8.0	11	430	4.4	15	750	35	9.8	<3.1		
EX-2	12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM		
EX-2	12/4/2008	9.2	10	590	6.6	14	860	54	22	<3.1		
EX-2	12/2/2009	6.7	8.7	600	24	10	560	35	25	<4.2		
EX-2	12/16/2010	6.8	8.4	560	21	6.7	590	< 20	31	< 5		
EX-2	10/6/2011	6.4	6.4	480	<4.2	7	690	25	14	<4.2		
EX-3	12/05/1995	<0.5	<0.5	2.11	--	0.53	83.9	<0.5	<0.5	<0.5		
EX-3	12/5/1995	<10	27	170	<10	26	1,900	<10	<10	<10	1,2,4-TMB	0.69
EX-3 (Dup)	12/05/1995	<0.5	<0.5	2.15	--	0.57	83.7	<0.5	<0.5	<0.5	1,2,4-TMB	1.65
											1,3,5-TMB	0.52
EX-3	10/28/1997	<10	<10	60	<10	<10	1,300	<40	<40	<10		
EX-3	6/2/1998	<10	<10	<10	30	<10	630	<40	<20	<10	1,1,2-TCA	20
EX-3	12/1/1998	<2.5	<2.5	35	<2.5	3.8	570	<25	<2.5	--		
EX-3	6/3/1999	<4	<4	43	<4	6	1,100	120	<4	<4	1,1,2-TCA	120
EX-3	12/10/1999	<3.1	3.2	53	<3.1	5.2	1,000	<3.1	<6.3	<3.1		
EX-3	12/4/2000	<1.7	<1.7	33	<1.7	3.9	510	<1.7	<3.3	<1.7	1,2-DCA	6

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
EX-3	12/05/2001	<2.5	2.9	43	2.9	5	730	<2.5	<2.5	<2.5	
EX-3	12/16/2002	<2	2.5	43	<2	3.6	710	<4	<2	<2	
EX-3	12/10/2003	3.7	4.2	64	<2.5	6.7	680	<5	<2.5	<2.5	
EX-3	12/13/2004	<4.2	<4.2	59	<4.2	5.8	690	<8.3	<4.2	<4.2	
EX-3	11/10/2005	3.7	5.4	72	1.0	6.5	550	28	<0.5	2.2	1,2-DCB 0.7
EX-3	11/16/2006	3.6	2.7	64	<2.5	5.4	470	18	<2.5	<2.5	
EX-3	12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	
EX-3	12/4/2008	5.1	4.1	110	<1.7	7.1	460	24	<1.7	<1.7	
EX-3	12/2/2009	6.7	8.7	600	24	10	560	35	25	<4.2	
EX-3	12/2/2009	3.7	3.3	78	3.8	5.1	310	16	<2.5	<2.5	
EX-3	12/16/2010	4	4	83	5.1	4	370	< 13	< 3.1	< 3.1	
EX-3	10/6/2011	2.7	3.6	54	<2.5	3	330	<10	<2.5	<2.5	
EX-4	12/4/1995	<0.05	<0.05	0.406	--	0.146	15.6	<0.05	<0.05	<0.05	
EX-4	12/4/1995	<30	<30	200	<30	<30	1,100	<30	<30	<30	1,2,4-TMB 0.201 1,3,5-TMB 0.084
EX-4 (Dup)	12/4/1995	<0.05	<0.05	0.426	--	0.143	15.2	<0.05	<0.05	<0.05	1,2-DMB 1.02 1,2,4-TMB 0.106 xylenes 0.086
EX-4	10/28/1997	<30	<30	160	<30	<30	1,100	<100	<100	<30	
EX-4	6/2/1998	<30	<30	180	<30	<30	1,300	<100	<50	<30	1,1,2-TCA 30
EX-4	12/1/1998	<6.3	10	150	<6.3	16	1,300	<63	<6.3	--	
EX-4	6/3/1999	6	7.5	110	3.3	13	760	<25	<2.5	--	1,2-DCB 2.9
EX-4	12/10/1999	<2.5	9.7	120	2.8	14	880	<2.5	<5	2.5	1,2-DCB 2.7
EX-4	12/4/2000	<2.5	7.4	110	4.1	15	770	<2.5	<5	3.3	1,2-DCB 2.7
EX-4	12/05/2001	4.6	4.7	110	4.1	6.6	630	<2.5	<2.5	<2.5	
EX-4	12/16/2002	3.7	6.2	85	<2	6.9	620	<4	<2	<2	
EX-4	12/10/2003	5.3	6.3	130	2.5	9.9	700	<5	<2.5	<2.5	
EX-4	12/13/2004	5.3	6	120	<4.2	8.5	680	<8.3	<4.2	<4.2	
EX-4	11/10/2005	6.1	8.0	150	<5.0	9.2	600	39	<5.0	<5.0	
EX-4	11/16/2006	5.6	7.6	150	<5.0	9.9	800	45	<5.0	<5.0	
EX-4	12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	
EX-4	12/4/2008	7.6	7.8	200	<5.0	13	1,100	59	<5.0	<5.0	
EX-4	12/2/2009	6.1	8.1	190	4.6	9.8	830	46	<2.5	<2.5	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
EX-4	12/16/2010	6.4	8.2	220	6.4	6.6	750	28	< 5	< 5	
EX-4	10/6/2011	<5	<5	220	<5	5	890	24	<5	<5	
GSF-1A	7/17/1996	<30	<30	920	<30	<30	3,500	<100	<100	<30	
GSF-1A	10/14/1996	<10	<10	540	<10	<10	2,100	<40	<40	<10	
GSF-1A	10/15/1996	<50	<50	260	<50	<50	1,200	<200	<200	<50	
GSF-1A	10/16/1996	<30	<30	590	<30	<30	2,500	<100	<100	<30	
GSF-1A	10/17/1996	<30	<30	590	<30	<30	2,400	<100	<100	<30	
GSF-1A	10/18/1996	<30	<30	610	<30	<30	2,500	<100	<100	<30	
GSF-1A	10/28/1997	<30	<30	630	<30	<30	1,900	<100	<100	<30	
GSF-1A	6/2/1998	<30	<30	520	<30	<30	<30	<100	<50	<30	1,1,2-TCA 1,700
GSF-1A	12/1/1998	<6.3	9.5	380	<6.3	<6.3	1,400	<63	<6.3	--	
GSF-1A	6/3/1999	5.4	7.6	330	5.9	8.1	1,200	<50	<5	--	
GSF-1A	12/10/1999	<3.6	7	290	6.9	7.5	1,100	<3.6	<7.1	<3.6	1,2-DCB 4
GSF-1A	12/04/2000	<3.6	<3.6	200	8.2	6	870	<3.6	<7.1	<3.6	1,2-DCB 4
GSF-1A	12/4/2000	<3.6	<3.6	200	8.2	6	870	<3.6	<7.1	<3.6	1,2-DCA 4.2
GSF-1A	12/05/2001	3.9	4.3	250	16	4.5	810	<2.5	<2.5	<2.5	1,2-DCB 2.9
GSF-1A	12/16/2002	3.4	3.3	210	12	3.7	830	<5	<2.5	<2.5	1,2-DCB 3
GSF-1A	12/10/2003	4.6	6.7	240	5.3	5.3	740	<5	<2.5	6.6	1,2-DCB 3.2
GSF-1A	12/13/2004	5	6.2	230	4.5	5.2	720	<8.3	<4.2	<4.2	
GSF-1A	11/10/2005	<6.3	8.6	190	8.2	<6.3	580	29	<6.3	<6.3	
GSF-1A	11/16/2006	3.7	6.1	190	3.9	4.4	610	19	<3.6	<3.6	
GSF-1A	12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	
GSF-1A	12/4/2008	7.5	9.0	290	7.1	10	950	42	<4.2	<4.2	
GSF-1A	12/2/2009	6.5	9.6	290	8.9	7.6	760	34	<5.0	<5.0	
GSF-1A	12/16/2010	4.8	6	190	8.9	<4.2	580	<17	<4.2	<4.2	
GSF-1A	10/6/2011	<5	<5	240	6.8	<5	700	<20	<5	<5	
GSF-1B1	7/16/1996	<300	<300	<300	<300	<300	33,000	<1000	<1000	<300	
GSF-1B1	10/14/1996	<300	<300	<300	<300	<300	41,000	<1000	<1000	<300	
GSF-1B1	10/15/1996	<300	<300	<300	<300	<300	34,000	<1000	<1000	<300	
GSF-1B1	10/16/1996	<300	<300	<300	<300	<300	39,000	<1000	<1000	<300	
GSF-1B1	10/17/1996	<300	<300	<300	<300	<300	41,000	<1000	<1000	<300	
GSF-1B1	10/18/1996	<300	<300	<300	<300	<300	43,000	<1000	<1000	<300	
GSF-1B1	10/28/1997	<300	<300	<300	<300	<300	22,000	<1000	<1000	<300	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
GSF-1B1	6/2/1998	<300	<300	<300	<300	<300	18,000	<1000	<500	<300	1,1,2-TCA 800
GSF-1B1	12/1/1998	<36	<36	82	<36	<36	14,000	980	<36	--	1,1,2-TCA 980
GSF-1B1	6/3/1999	<50	<50	66	<50	<50	11,000	690	<50	--	1,1,2-TCA 690
GSF-1B1	12/10/1999	<83	<83	<83	<83	<83	11,000	<83	<170	<83	
GSF-1B1	12/04/2000	<31	<31	60	<31	<31	8,900	<31	<63	<31	
GSF-1B1	12/05/2001	<36	<36	50	<36	<36	8,700	<36	<36	<36	
GSF-1B1	12/16/2002	<31	<31	60	<31	<31	8,000	<63	<31	<31	
GSF-1B1	12/10/2003	<25	<25	70	<25	<25	6,700	<50	<25	<25	
GSF-1B1	12/13/2004	<31	<31	65	<31	<31	6,000	<63	<31	<31	
GSF-1B1	11/10/2005	<31	<31	51	<31	<31	4,500	330	<31	<31	
GSF-1B1	11/16/2006	<36	<36	52	<36	<36	4,900	690	<36	<36	
GSF-1B1	12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	
GSF-1B1	12/4/2008	<20	<20	33	<20	<20	3,600	480	<20	<20	
GSF-1B1	12/2/2009	<20	<20	43	<20	<20	2,400	370	<20	<20	
GSF-1B1	12/16/2010	< 20	< 20	44	< 20	< 20	2,500	250	< 20	< 20	
GSF-1B1	10/6/2011	<17	<17	34	<17	<17	2500	280	<17	<17	
GSF-1B2	7/22/1996	<50	<50	<50	<50	<50	5,000	<200	<200	<50	
GSF-1B2	10/14/1996	<10	<10	<10	<10	<10	3,000	<40	<40	<10	
GSF-1B2	10/15/1996	<100	<100	<100	<100	<100	5,000	<400	<400	<100	
GSF-1B2	10/16/1996	<100	<100	<100	<100	<100	6,100	<400	<400	<100	
GSF-1B2	10/17/1996	<50	<50	<50	<50	<50	6,100	<200	<200	<50	
GSF-1B2	10/18/1996	<100	<100	<100	<100	<100	7,000	<400	--	<100	
GSF-1B2	10/28/1997	<300	<300	<300	<300	<300	28,000	<1000	<1000	<300	
GSF-1B2	11/26/1997	<300	<300	<300	<300	<300	28,000	<1000	<1000	<300	
GSF-1B2	6/2/1998	<50	<50	<50	<50	<50	4,700	<200	<100	<50	1,1,2-TCA 200
GSF-1B2	12/2/1998	<17	<17	<17	<17	<17	5,200	350	<17	--	1,1,2-TCA 350
GSF-1B2	6/3/1999	<15	<15	<15	<15	<15	5,100	310	<15	--	1,1,2-TCA 310
GSF-1B2	12/10/1999	<25	<25	<25	<25	<25	6,700	<25	<50	<25	
GSF-1B2	4/27/2000	<20	<20	29	<20	<20	9,300	<20	<40	<20	
GSF-1B2	12/04/2000	<31	<31	<31	<31	<31	6,500	<31	<63	<31	
GSF-1B2	12/06/2001	<31	<31	<31	<31	<31	5,800	<31	<31	<31	
GSF-1B2	12/16/2002	<20	<20	<20	<20	<20	7,100	<40	<20	<20	
GSF-1B2	12/10/2003	<36	<36	<36	<36	<36	11,000	<71	<36	<36	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
 Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
GSF-1B2	12/13/2004	<63	<63	<63	<63	<63	8,300	<130	<63	<63	
GSF-1B2	11/10/2005	<42	<42	<42	<42	<42	6,300	560	<42	<42	
GSF-1B2	11/16/2006	<83	<83	<83	<83	<83	10,000	680	<83	<83	
GSF-1B2	12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	
GSF-1B2	12/18/2008	<63	<63	<63	<63	<63	9,200	650	<63	<63	
GSF-1B2	12/2/2009	<36	<36	<36	<36	<36	6,500	490	<36	<36	
GSF-1B2	12/16/2010	< 71	< 71	< 71	< 71	< 71	6,600	< 290	< 71	< 71	
GSF-1B2	10/6/2011	<36	<36	<36	<36	<36	6900	350	<36	<36	
SIL15A	3/31/1992	<200	<200	3,600	<200	<200	4,800	<200	<400	<200	
SIL15A	12/8/1995	<30	<30	430	<30	55	2,300	<100	<100	<30	
SIL15A	10/28/1997	<5	13	100	<5	12	820	<20	<20	<5	
SIL15A	6/2/1998	7	12	110	<5	12	670	<20	<10	<5	1,1,2-TCA 14
SIL15A	12/1/1998	11	13	<3.1	<3.1	24	650	<31	5.5	--	
SIL15A	6/3/1999	11	8.7	78	<2.5	26	570	<25	4.4	--	
SIL15A	12/10/1999	<2	26	110	4.7	22	560	<2	<4	<2	1,2-DCB 2.1
SIL15A	12/04/2000	<2	12	90	<2	23	490	<2	<4	2.7	1,2-DCA 11
SIL15A	12/05/2001	8.5	10	77	2	15	470	<1.3	<1.3	1.5	
SIL15A	12/16/2002	5.9	8.6	82	1.4	11	440	<2.5	<1.3	<1.3	
SIL15A	12/10/2003	8.6	9.3	150	2.1	12	430	<3.3	2.5	<1.7	
SIL15A	12/13/2004	11	11	190	<3.1	18	450	<6.3	<3.1	<3.1	
SIL15A	11/10/2005	7.8	4.7	180	12	12	390	23	<2.5	<2.5	
SIL15A	11/16/2006	8.3	10	200	2.6	15	480	49	<2.5	<2.5	
SIL15A	12/10/2007	NM	NM	NM	NM	NM	NM	NM	NM	NM	
SIL15A	12/4/2008	12	13	320	5.3	14	490	48	5.0	<2.5	
SIL15A	12/2/2009	9.3	12	300	7.5	9.4	360	35	4.3	<2.0	
SIL15A	12/16/2010	7.1	8.3	210	2.6	7	350	22	< 2.5	< 2.5	
SIL15A	10/6/2011	6.7	8.9	190	3.2	7	360	21	<2.5	<2.5	
Monitoring Wells											
108A	9/16/1986	<5000	<5000	--	--	<5000	38,000	<5000	<10000	<5000	
108A	10/9/1986	<500	<500	9,300	--	<500	8,100	<500	<500	<500	
108A	11/2/1986	<500	<500	11,000	<500	<500	29,000	<500	<500	<500	
108A	12/2/1986	<250	<250	2,800	<100	<250	19,000	<250	<500	<250	
108A	2/24/1987	<500	<500	15,000	<500	<500	26,000	<500	<500	<500	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
108A	6/10/1987	<500	<500	9400	<500	<500	28,000	<500	<500	<500	
108A	9/28/1987	<500	<500	11,000	<500	<500	19,000	<500	<500	<500	
108A	12/30/1987	<500	<500	7,000	<500	<500	12,000	<500	<500	<500	
108A	3/16/1988	<500	<500	13,000	<500	<500	15,000	<500	<500	<500	
108A	9/1/1988	<500	<500	3,500	<500	<500	7,800	<500	<500	<500	
108A	2/16/1989	<500	<500	3,700	<500	<500	9,800	<500	<500	<500	
108A	12/7/1995	<30	<30	38	<30	<30	1,100	<100	<100	<30	
108A	9/11/1996	<25	<25	45	<25	<25	820	<25	<50	<25	
108A	10/28/1997	<5	<5	16	<5	<5	450	<20	<20	<5	
108A	6/2/1998	<5	<5	16	<5	<5	340	<20	<10	<5	
108A	12/2/1998	<1.7	<1.7	16	<1.7	<1.7	300	<17	<1.7	--	
108A	6/4/1999	<1	<1	14	<1	1.8	250	<10	<1	--	
108A	12/10/1999	<1	<1	15	<1	<1	240	<1	<2	<1	
108A	12/05/2000	<1	<1	14	<1	1.7	220	<1	<2	1.1	
108A	12/06/2001	<0.7	0.9	15	<0.7	1.7	210	<0.7	<0.7	1.1	
108A	12/16/2002	<0.7	<0.7	13	<0.7	1.7	220	<1.4	<0.7	1.1	
108A	12/9/2003	0.7	0.8	16	<0.6	1.4	170	<1.3	<0.6	0.8	
108A	12/13/2004	<1.3	<1.3	14	<1.3	1.6	190	<2.5	<1.3	<1.3	
108A	11/10/2005	<1.7	<1.7	9.6	<1.7	<1.7	180	<1.7	<1.7	<1.7	
108A	11/16/2006	<0.7	<0.7	10	<0.7	1.1	130	2.3	<0.7	0.8	
108A	12/10/2007	0.9	<0.7	16	<0.7	1.3	160	1.8	<0.7	0.7	
108A (Dup)	12/10/2007	0.9	<0.7	16	<0.7	1.2	150	2.1	<0.7	1.0	
108A	12/4/2008	<1.3	<1.3	19	<1.3	<1.3	150	<2.5	<1.3	<1.3	
108A	12/2/2009	<1.3	<1.3	35	<1.3	<1.3	200	<5.0	<1.3	1.4	
108A	12/16/2010	< 1.3	< 1.3	16	< 1.3	< 1.3	150	< 5	< 1.3	< 1.3	
108A	10/6/2011	<1.3	<1.3	9.5	<1.3	<1.3	120	<5	<1.3	<1.3	
116A	9/22/1986	<500	<500	--	--	<500	13,000	<500	<500	<500	
116A	10/7/1986	<500	<500	37,000	--	790	39,000	<500	<500	<500	1,2-DCA 1200
116A	11/2/1986	<5000	<5000	33,000	<5000	<5000	160,000	<5000	<5000	<5000	
116A	12/1/1986	<500	<500	48,000	<630	<500	120,000	<500	<1000	<500	
116A	1/5/1987	<5000	<5000	--	<5000	<5000	440,000	<5000	<5000	<5000	
116A	2/24/1987	<500	<500	11,000	<500	<500	54,000	<500	<500	<500	
116A	6/10/1987	<5000	<5000	15,000	<5000	<5000	140,000	<5000	<5000	<5000	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
116A	9/25/1987	<5000	<5000	38,000	<5000	<5000	220,000	<5000	<5000	<5000	
116A	12/30/1987	<5000	<5000	21,000	<5000	<5000	82,000	<5000	<5000	<5000	
116A	3/16/1988	<500	<500	3,300	<500	<500	13,000	<500	<500	<500	
116A	9/1/1988	<5000	<5000	16,000	<5000	<5000	170,000	<5000	<5000	<5000	
116A	2/16/1989	<5000	<5000	14,000	<5000	<5000	200,000	<5000	<5000	<5000	
116A	11/10/1992	<5000	<5000	8,400	<5000	<5000	52,000	<5000	<5000	<5000	
116A	9/17/1996	<250	<250	6,700	<250	<250	12,000	<250	<500	<250	
116A	10/28/1997	<100	<100	5,100	<100	<100	9,600	<400	<400	<100	
116A	6/2/1998	<100	<100	3,500	<100	<100	3,500	<400	<200	<100	
116A	12/2/1998	24	24	2,400	77	<8.3	2,800	<83	61	--	
116A	6/4/1999	34	55	4,000	27	<25	8,300	<250	39	--	
116A	12/10/1999	<13	29	2,200	47	<13	3,700	<13	54	<13	
116A	12/05/2000	<130	230	9,000	<130	270	48,000	<130	370	<130	
116A	12/5/2000	<130	230	9,000	<130	270	48,000	<130	370	<130	
116A	2/22/2001	<170	<170	8,500	<170	240	46,000	<170	290	<170	
116A	12/06/2001	9.7	7.4	860	54	10	2,200	<6.3	20	<6.3	
116A	12/6/2001	9.7	7.4	860	54	10	2,200	<6.3	20	<6.3	
116A	12/16/2002	<42	46	2,800	<42	<42	14,000	<83	87	<42	
116A	12/9/2003	<36	<36	1,700	<36	<36	7,200	<71	67	<36	
116A	12/13/2004	<100	<100	1,900	<100	<100	17,000	<200	<100	<100	
116A	11/9/2005	<83	<83	1,800	<83	<83	14,000	360	<83	<83	
116A	2/11/2005	<100	<100	2,400	<100	<100	17,000	660	110	<100	
116A (Dup)	2/11/2005	<100	<100	2,000	<100	<100	17,000	690	120	<100	
116A	2/11/2005	<63	<63	2,000	<63	<63	11,000	420	83	<63	
116A (Dup)	2/11/2005	<100	<100	2,300	<100	<100	12,000	550	<100	<100	
116A	11/16/2006	<71	<71	2,000	<71	<71	13,000	730	75	<71	
116A	12/10/2007	<83	110	5,000	<83	130	36,000	1,300	230	<83	
116A	12/4/2008	<200	<200	6,700 J	<200	<200	39,000 J	1,900 J	290 J	<200	
116A	12/2/2009	<310	<310	6,600	<310	<310	40,000	1,900	<310	<310	
116A	12/16/2010	< 50	65	4600	59	57	38,000	1200	180	< 50	
116A	10/6/2011	<310	<310	7600	<310	<310	56000	2600	<310	<310	
104B1	9/16/1986	<5000	<5000	610	<50	<5000	25,000	<5000	<10000	<5000	
104B1	10/9/1986	55	190	800	--	93	490	<50	<50	<50	1,2-DCA 200



TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
104B1	11/2/1986	<500	<500	<500	<500	600	16,000	<500	<500	<500	
104B1	12/1/1986	<50	<50	620	<13	<50	2,500	<50	<100	<50	
104B1	2/24/1987	<50	<50	450	<50	<50	6,400	<50	<50	<50	
104B1	6/4/1987	<50	<50	220	<50	<50	2,100	<50	<50	<50	
104B1	7/9/1987	<50	<50	270	<50	<50	2,300	<50	<50	<50	
104B1	9/23/1987	<50	<50	310	<50	<50	2,100	<50	<50	<50	
104B1	12/18/1987	<50	<50	150	<50	<50	2,000	<50	<50	<50	
104B1	2/8/1988	<500	<500	<500	<500	<500	5,200	<500	<500	<500	
104B1	2/17/1989	<50	<50	92	<50	<50	1,800	<50	<50	<50	
104B1	9/11/1996	<25	<25	<25	<25	<25	1,000	<40	<50	<25	
104B1	10/28/1997	<5	<5	13	<5	<5	580	<20	<20	<5	
104B1	6/3/1998	<5	<5	15	<5	<5	670	<20	<10	<5	1,1,2-TCA 7
104B1	12/2/1998	<25	<25	28	<25	<25	6,100	380	<25	--	1,1,2-TCA 380
104B1	6/4/1999	<13	<13	16	<13	<13	2,900	150	<13	--	1,1,2-TCA 150
104B1	12/10/1999	<1.7	2.5	21	<1.7	1.8	530	<1.7	<3.3	<1.7	
104B1	12/05/2000	<13	<13	22	<13	<13	3,700	<13	<25	<13	
104B1	2/22/2001	<13	<13	23	<13	<13	3,300	<13	<13	<13	
104B1	12/06/2001	1.2	3.5	21	<1	<1	320	<1	<1	<1	
104B1	12/6/2001	1.2	3.5	21	<1	<1	320	<1	<1	<1	
104B1	12/18/2002	<17	<17	24	<17	<17	5100	<33	<17	<17	
104B1	12/9/2003	<1.3	1.5	13	<1.3	<1.3	310	<2.5	<1.3	<1.3	
104B1	12/14/2004	<500	<500	<500	<500	<500	100,000	2300	<500	<500	
104B1	2/11/2005	<2.0	<2.0	15	<2.0	<2.0	230	6.0	<2.0	<2.0	
104B1	2/11/2005	<31	<31	<31	<31	<31	3,600	430	<31	<31	
104B1	11/9/2005	<1.0	1.9	14	<1.0	<1.0	190	3.8	<1.0	<1.0	
104B1	11/16/2006	<1.3	1.6	11	<1.3	<1.3	180	2.8	<1.3	<1.3	
104B1	12/10/2007	<1.3	1.6	9.3	<1.3	<1.3	160	<2.5	<1.3	<1.3	
104B1	12/4/2008	<1.3	1.7	12	<1.3	<1.3	160	<2.5	<1.3	<1.3	
104B1	12/2/2009	<1.3	<1.3	10	<1.3	<1.3	140	<5.0	<1.3	<1.3	
104B1	12/16/2010	< 1	< 1	8.4	< 1	< 1	120	< 4	< 1	< 1	
104B1	10/6/2011	<1	1.4	8.1	<1	<1	330	5	<1	<1	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
109B1	9/19/1986	<500	<500	--	--	<500	31,000	<500	<1000	<500	
109B1	10/9/1986	110	350	2,800	--	230	470	<50	<50	<50	1,2-DCA 480
109B1	11/2/1986	<500	<500	1,100	<500	1100	33,000	<500	<500	<500	
109B1	12/2/1986	<500	<500	256	<50	<500	11,000	<500	<1000	<500	
109B1	2/24/1987	<500	<500	<500	<500	<500	13,000	<500	<500	<500	
109B1	6/5/1987	<500	<500	500	<500	<500	20,000	<500	<500	<500	
109B1	9/25/1987	<500	<500	<500	<500	<500	20,000	<500	<500	<500	
109B1	12/11/1987	<500	<500	<500	<500	<500	22,000	<500	<500	<500	
109B1	2/8/1988	<500	<500	<500	<500	<500	24,000	<500	<500	<500	
109B1	6/23/1988	<500	<500	<500	<500	<500	39,000	<500	<500	<500	
109B1	7/29/1988	<500	<500	600	<500	<500	30,000	<500	<500	<500	
109B1	8/31/1988	<500	<500	<500	<500	<500	31,000	<500	<500	<500	
109B1	9/28/1988	<500	<500	<500	<500	<500	32,000	<500	<500	<500	
109B1	10/31/1988	<500	<500	<500	<500	<500	30,000	<500	<500	<500	
109B1	11/30/1988	<500	<500	<500	<500	<500	33,000	<500	<500	<500	
109B1	12/30/1988	<500	<500	<500	<500	<500	30,000	<500	<500	<500	
109B1	1/20/1989	<500	<500	<500	<500	<500	34,000	<500	<500	<500	
109B1	2/28/1989	<500	<500	<500	<500	<500	21,000	<500	<500	<500	
109B1	3/30/1989	<500	<500	<500	<500	<500	28,000	<500	<500	<500	
109B1	4/21/1989	<500	<500	<500	<500	<500	27,000	<500	<500	<500	
109B1	5/30/1989	<500	<500	<500	<500	<500	26,000	<500	<500	<500	
109B1	10/6/1992	<500	<500	<500	<500	<500	17,000	<500	<500	<500	
109B1	9/11/1996	<50	<50	<50	<50	<50	2,500	<100	<100	<50	
109B1	10/28/1997	<10	<10	50	<10	<10	1,800	<40	<40	<10	1,1,2-TCA 30
109B1	6/3/1998	<10	<10	40	<10	<10	1,100	<40	<20	<10	1,1,2-TCA 10
109B1	12/2/1998	<6.3	<6.3	40	<6.3	<6.3	1,900	100	<6.3	--	1,1,2-TCA 100
109B1	6/4/1999	<5	6.7	36	<5	<5	1,600	85	<5	--	1,1,2-TCA 85
109B1	12/10/1999	<5	5.8	34	<5	<5	1,500	<5	<10	<5	
109B1	12/05/2000	<5	<5	41	<5	<5	1,800	<5	<10	<5	
109B1	12/05/2001	<5	<5	29	<5	<5	1,400	<5	<5	<5	
109B1	12/17/2002	<6.3	<6.3	26	<6.3	<6.3	2,000	<13	<6.3	<6.3	
109B1	12/10/2003	<4.2	4.2	26	<4.2	<4.2	1,300	<8.3	<4.2	<4.2	
109B1	12/14/2004	<13	<13	16	<13	<13	1,400	<25	<13	<13	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
109B1	11/9/2005	<5.0	<5.0	17	<5.0	<5.0	840	61	<5.0	<5.0	
109B1	11/16/2006	<4.2	<4.2	12	<4.2	<4.2	820	70	<4.2	<4.2	
109B1	12/10/2007	<7.1	<7.1	17	<7.1	<7.1	840	34	<7.1	<7.1	
109B1	12/4/2008	<5.0	<5.0	15 J	<5.0	<5.0	700 J	25 J	<5.0	<5.0	
109B1	12/2/2009	<5.0	<5.0	20	<5.0	<5.0	890	31	<5.0	<5.0	
109B1	12/16/2010	< 5	< 5	12	< 5	< 5	570	27	< 5	< 5	
109B1	10/6/2011	<5	<5	12	<5	<5	530	25	<5	<5	
25B1	10/31/1985	40	44	--	1	<0.5	7,400	<0.5	<0.5	<0.5	1,2-DCA 95
25B1	12/5/1985	<100	120	--	--	170	15,000	<100	<100	<100	
25B1	12/16/1985	<50	<50	--	<50	170	7,200	<50	<50	<50	
25B1	10/23/1986	<50	60	1,000	<50	<50	10,000	<50	<50	<50	MC 1600
25B1	2/8/1988	50	70	1,200	<50	70	2,700	<50	<50	<50	
25B1	9/11/1996	<12	<12	110	<12	<12	750	<20	<25	<12	
25B1	10/29/1997	<10	<10	110	<10	<10	780	<40	<40	<10	
25B1	6/2/1998	<10	<10	500	<10	<10	<10	<40	<20	<10	
25B1	12/1/1998	3.2	4.5	250	12	<2	300	<20	<2	--	
25B1	6/3/1999	1.9	1.5	310	1.5	<1	5.2	<10	<1	--	
25B1	12/10/1999	<10	<10	290	<10	<10	70	<10	<20	<10	
25B1	12/06/2000	<1.7	6.7	150	1.8	2.5	410	<1.7	<3.3	<1.7	1,2-DCA 2.9
25B1	12/05/2001	2.2	3.7	80	<1	1.2	270	<1	<1	<1	
25B1	12/17/2002	3.5	6.6	80	<2	2.4	610	<4	<2	<2	
25B1	12/8/2003	1.5	2.2	35	<0.8	1.1	240	<1.7	<0.8	<0.8	
25B1	12/14/2004	<5	5.3	69	<5	<5	520	<10	<5	<5	
25B1	11/9/2005	2.2	3.6	55	2.3	1.5	450	1.3	<1.0	<1.0	
25B1	11/16/2006	2.5	7.9	61	<0.5	2.2	430	<3.1	<0.5	<0.5	
25B1	12/10/2007	2.9	4.4	48	<2.0	<2.0	380	<4.0	<2.0	<2.0	
25B1	12/4/2008	<2.5	3.2	45	<2.5	<2.5	320	<5.0	<2.5	<2.5	
25B1	12/2/2009	<1.3	2.0	25	<1.3	1.4	190	<5.0	<1.3	<1.3	
25B1	12/16/2010	< 1.7	3	37	< 1.7	< 1.7	300	< 6.7	< 1.7	< 1.7	
25B1	10/6/2011	2.2	5.1	50	<1.3	1.4	370	<5	<1.3	<1.3	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
42B2	10/31/1985	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
42B2	11/20/1985	-0-	--	--	--	--	--	--	--	--	
42B2	12/16/1985	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
42B2	10/16/1986	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
42B2	11/21/1992	<1	<1	<1	<1	<1	<1	<1	<1	<1	
42B2	9/11/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
42B2	10/29/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<0.5	
42B2	6/2/1998	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<1	<0.5	
42B2	12/1/1998	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	--	
42B2	6/3/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	--	
42B2	12/10/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	
42B2	12/06/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	
42B2	12/05/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
42B2	12/16/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	
42B2	12/8/2003	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	
42B2	12/14/2004	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	
42B2	11/9/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
42B2	11/16/2006	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	0.6	<0.5	<0.5	
42B2	12/10/2007	<0.5	<0.5	<0.5	<0.5	<0.5	3.6	<1.0	<0.5	<0.5	
42B2	12/4/2008	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	
42B2	12/2/2009	<0.5	<0.5	<0.5	<0.5	<0.5	8.5	<1.0	<0.5	<0.5	
42B2	12/16/2010	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	15	< 2	< 0.5	< 0.5	
42B2	10/6/2011	<0.5	<0.5	<0.5	<0.5	<0.5	16	<2	<0.5	<0.5	
108B2	9/19/1986	<500	<500	<5	<5	<500	2,500	<500	<1000	<500	
108B2	10/8/1986	<50	<50	<0.5	--	<50	620	<50	<50	<50	
108B2	12/1/1986	<50	<50	--	--	<50	3,100	<50	<100	<50	
108B2	1/5/1987	<50	<50	--	<50	<50	3,000	<50	<50	<50	
108B2	1/9/1987	<50	<50	<50	<50	<50	2,700	<50	<50	<50	
108B2	2/23/1987	<50	<50	<50	<50	<50	4,400	<50	<50	<50	
108B2	6/4/1987	<50	<50	<50	<50	<50	3,600	<50	<50	<50	
108B2	9/24/1987	<50	<50	<50	<50	<50	3,000	<50	<50	<50	
108B2	12/17/1987	<50	<50	<50	<50	<50	3,500	<50	<50	<50	
108B2	3/8/1988	<50	<50	<50	<50	<50	3,900	<50	<50	<50	



TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
108B2	11/24/1992	<100	<100	<100	<100	<100	2,300	<100	<100	<100	
108B2	9/11/1996	<50	<50	<50	<50	<50	1,900	<50	<100	<50	
108B2	10/29/1997	<30	<30	<30	<30	<30	3,100	<100	<100	<30	1,1,2-TCA 160
108B2	6/2/1998	<30	<30	960	<30	<30	1,300	<100	<50	<30	1,1,2-TCA 60
108B2	12/2/1998	<8.3	<8.3	52	<8.3	<8.3	2,700	130	<8.3	--	1,1,2-TCA 130
108B2	6/3/1999	<6.3	<6.3	<6.3	<6.3	<6.3	1,700	<63	<6.3	--	
108B2	12/10/1999	<5	<5	<5	<5	<5	1,800	<5	<10	<5	
108B2	4/27/2000	<6.3	<6.3	<6.3	<6.3	<6.3	1,700	<6.3	<13	<6.3	
108B2	12/05/2000	<6.3	<6.3	<6.3	<6.3	<6.3	1,700	<6.3	<13	<6.3	
108B2	12/06/2001	<4.2	<4.2	12	<4.2	<4.2	1,400	<4.2	<4.2	<4.2	
108B2	12/18/2002	<5	<5	6.3	<5	<5	1,900	<10	<5	<5	
108B2	12/9/2003	<13	<13	<13	<13	<13	3,200	<25	<13	<13	
108B2	12/14/2004	<7.1	<7.1	<7.1	<7.1	<7.1	930	<14	<7.1	<7.1	
108B2	11/9/2005	<7.1	<7.1	<7.1	<7.1	<7.1	930	<7.1	<7.1	<7.1	
108B2 ⁴	11/16/2006	<0.5	0.8	5.7	<0.5	<0.5	760	<5.0	<0.5	<0.5	
108B2	3/16/2009	<3.6	<3.6	4.0	<3.6	<3.6	480	<3.6	<7.1	<3.6	
108B2	12/3/2009	<3.6	<3.6	3.8	<3.6	<3.6	600	<3.6	<7.1	<3.6	
108B2	12/16/2010	< 5	< 5	< 5	< 5	< 5	640	< 20	< 5	< 5	
108B2	10/6/2011	<3.6	<3.6	<3.6	<3.6	<3.6	620	<14	<3.6	<3.6	
107B2	9/19/1986	<5	<5	--	--	<5	120	<5	<10	<5	
107B2	10/8/1986	<5	<5	<5	--	<5	340	<5	<5	<5	
107B2	12/2/1986	<5	<5	--	--	<5	240	<5	<10	<5	
107B2	1/5/1987	<5	<5	--	<5	<5	230	<5	<5	<5	
107B2	1/8/1987	<5	<5	<0.5	<5	<5	200	<5	<5	<5	
107B2	2/23/1987	<5	<5	<5	<5	<5	340	<5	<5	<5	
107B2	6/2/1987	<5	<5	<5	<5	<5	270	<5	<5	<5	
107B2	9/17/1987	<5	<5	14	<5	7	260	14	<5	<5	
107B2	12/14/1987	<5	<5	<5	<5	<5	140	<5	<5	<5	
107B2	3/11/1988	<50	<50	<50	<50	<50	510	<50	<50	<50	
107B2	6/15/1988	<5	<5	<5	<5	<5	320	<5	<5	<5	
107B2	7/26/1988	<5	<5	<5	<5	<5	480	<5	<5	<5	
107B2	8/25/1988	<5	<5	5	<5	<5	360	<5	<5	<5	
107B2	9/22/1988	<5	<5	<5	<5	<5	430	<5	<5	<5	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
107B2	10/26/1988	<5	<5	<5	<5	<5	320	<5	<5	<5	
107B2	11/28/1988	<5	<5	<5	<5	<5	240	<5	<5	<5	
107B2	12/16/1988	<5	<5	<5	<5	<5	210	<5	<5	<5	
107B2	1/16/1989	<5	<5	<5	<5	<5	270	<5	<5	<5	
107B2	2/23/1989	<0.5	<0.5	<0.5	<0.5	<0.5	190	<0.5	<0.5	<0.5	
107B2	3/27/1989	<5	<5	<5	<5	<5	260	<5	<5	<5	
107B2	4/17/1989	<5	<5	<5	<5	<5	190	<5	<5	<5	
107B2	5/24/1989	<5	<5	<5	<5	<5	190	<5	<5	<5	
107B2	9/11/1996	<3	<3	<3	<3	<3	200	<10	<10	<3	
107B2	10/28/1997	<10	<10	10	<10	<10	740	<40	<40	<10	
107B2	6/3/1998	<3	<3	3	<3	<3	170	<10	<5	<3	
107B2	12/1/1998	<0.7	<0.7	1.4	<0.7	<0.7	190	<7.1	<0.7	--	
107B2	6/4/1999	<0.5	<0.5	160	0.8	<0.5	1.6	<5	<0.5	--	
107B2	12/10/1999	<0.5	<0.5	3.2	<0.5	<0.5	170	<0.5	<1	<0.5	
107B2	4/27/2000	<0.5	<0.5	5.4	<0.5	<0.5	150	<0.5	<1	<0.5	
107B2	12/06/2000	<0.5	<0.5	6.2	<0.5	<0.5	140	<0.5	<1	<0.5	
107B2	12/06/2001	<0.5	<0.5	2.7	<0.5	<0.5	120	<0.5	<0.5	<0.5	
107B2	12/17/2002	<0.5	<0.5	3.4	<0.5	<0.5	120	<1	<0.5	<0.5	
107B2	12/10/2003	<0.5	<0.5	3.4	<0.5	<0.5	92	<1	<0.5	<0.5	
107B2	12/13/2004	<0.6	<0.6	2.3	<0.6	<0.6	110	<1.3	<0.6	<0.6	
107B2	11/9/2005	<0.5	<0.5	0.7	<0.5	<0.5	84	<0.5	<0.5	<0.5	
107B2	11/16/2006	<0.5	<0.5	0.7	<0.5	<0.5	94	<1.0	<0.5	<0.5	
107B2	12/10/2007	<0.5	<0.5	1.1	<0.5	<0.5	95	<1.0	<0.5	<0.5	
107B2	12/4/2008	<0.5	<0.5	1.1	<0.5	<0.5	88	<1.0	<0.5	<0.5	
107B2	12/2/2009	<0.5	<0.5	2.3	<0.5	<0.5	87	<1.0	<0.5	<0.5	
107B2	12/16/2010	< 0.5	< 0.5	2.3	< 0.5	< 0.5	74	< 2	< 0.5	< 0.5	
107B2	10/6/2011	<0.5	<0.5	2.2	<0.5	<0.5	69	<2	<0.5	<0.5	
SIL1A	9/1/1982	--	200	--	24,000	--	17,000	--	150	1400	
SIL1A	8/29/1984	8	100	--	5,950	8	3,347	--	220	907	
SIL1A	8/1/1985	--	120	--	47,000	<1	20,000	--	460	370	t-1,3-DCP 47,000 toluene 6
SIL1A	10/10/1985	<250	<250	--	18,000	<250	26,000	<500	240	560	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
SIL1A	12/18/1985	<10	52	--	--	8.3	41,000		1200	1000	1,1,2-TCA 58
SIL1A	7/8/1986	<130	<130	--	--	<130	22,000	<130	<500	370	MC 330
SIL1A	10/16/1986	<50	<50	--	--	<50	27,000	<10	<500	440	
SIL1A	9/8/1987	<1	340	--	--	830	9,000	--	<1	41,000	
SIL1A	2/4/1988	<500	<500	20,000	<500	<500	2,300	<500	<500	<500	
SIL1A	4/27/1988	<500	<500	--	--	<500	13,000	--	<500	<500	
SIL1A	8/30/1988	<500	<500	24,000	<500	<500	13,000	<500	<500	<500	
SIL1A	8/31/1988	<2500	<2500	--	--	<2500	6,900	--	<2500	<2500	
SIL1A	6/24/1989	<500	<500	11,000	<500	<500	12,000	<1000	<500	<500	
SIL1A	2/20/1992	<100	<100	2,000	<100	<100	5,700	<100	<200	180	
SIL1A	12/8/1995	<100	<100	1,300	<100	<100	9,400	<400	<400	460	
SIL1A	9/12/1996	<50	<50	1,000	<50	<50	8,600	<200	<200	240	
SIL1A	10/29/1997	<50	<50	4,500	<50	<50	2,800	<200	<200	60	
SIL1A	6/2/1998	<50	<50	970	<50	<50	7.9	<200	<100	160	
SIL1A	12/1/1998	<36	<36	780	<36	<36	6,900	<360	<36	120	
SIL1A	6/3/1999	4.5	9.1	2,500	27	2.8	4,000	<5	120	110	
SIL1A	12/10/1999	<25	<25	8,100	52	<25	4,200	<25	200	100	
SIL1A	12/07/2000	<17	<17	580	<17	<17	4,000	<17	<33	69	
SIL1A	12/06/2001	<6.3	<6.3	730	8.1	<6.3	1,700	<6.3	13	32	
SIL1A	12/16/2002	<10	<10	1,600	95	<10	3,800	<20	18	70	
SIL1A	12/10/2003	<2.5	<2.5	840	12	<2.5	530	<5	7.5	9.1	
SIL1A	12/14/2004	<17	<17	1,000	<17	<17	3,100	<33	<17	58	
SIL1A	11/9/2005	<5.0	6.2	440	10	13	2,400	<10	<5.0	46	
SIL1A	11/16/2006	4.5	8.4	460	7.4	16	2,300	17	<2.0	57	
SIL1A	12/10/2007	<50	<50	6,400	<50	<50	870	<100	91	<50	
SIL1A	12/4/2008	<31	<31	5,000	51	<31	380	<63	35	<31	
SIL1A	12/3/2009	<62.50	<62.50	6,000	58	<62.50	320	<130	<62.50	<62.50	
SIL1A	12/17/2010	< 17	< 17	2500	23	< 17	810	< 67	< 17	25	
SIL1A	10/7/2011	<13	14	1700	14	<13	940	<50	<13	19	
SIL9A	8/1/1985	130	140	--	1,200	320	5,200	--	<100	<100	
SIL9A	10/10/1985	130	100	--	3,700	110	11,000	<200	<200	<100	
SIL9A	12/18/1985	81	59	--	--	43	29,000	--	9.8	29	
SIL9A	7/8/1986	<130	<130	--	--	<130	4,400	<130	<500	<130	



TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
SIL9A	10/16/1986	38	38	--	--	72	8,300	<10	<500	34	
SIL9A	2/4/1988	<500	<500	2,100	<500	<500	2,100	<500	<500	<500	
SIL9A	4/27/1988	<50	<50	--	--	<100	3,300	--	<50	<50	
SIL9A	8/30/1988	<500	<500	1,100	<500	<500	7,500	<500	<500	<500	
SIL9A	8/31/1988	<250	<250	--	--	<250	6,000	--	<250	<250	MC 4600
SIL9A	10/16/1988	<50	<50	--	--	<50	8,300	--	<50	<50	
SIL9A	7/24/1989	29	55	--	440	43	4,600	<100	<10	<10	
SIL9A	2/20/1992	<100	<100	1,500	<100	<100	6,500	<100	<200	<100	
SIL9A	12/7/1995	<30	<30	290	<30	<30	1,700	<100	<100	<30	
SIL9A	9/12/1996	<30	<30	340	<30	<30	2,700	<100	<100	<30	
SIL9A	10/29/1997	<10	<10	180	<10	<10	1,700	<40	<40	<10	
SIL9A	6/2/1998	<10	<10	200	<10	<10	1,200	<40	<20	<10	
SIL9A	12/1/1998	6.5	9.8	210	6.1	9.3	1,100	18	<0.5	2	1,1,2-TCA 18 1,2-DCB 5.3
SIL9A	6/3/1999	6	4.7	130	6.7	12	900	<42	<4.2	--	
SIL9A	12/10/1999	<3.1	5.9	170	8.5	9	940	<6.3	<6.3	<3.1	
SIL9A	12/07/2000	<4.2	4.7	160	14	10	1,100	<4.2	<8.3	<4.2	
SIL9A (Dup)	12/07/2000	<4.2	<4.2	170	17	13	1,100	<4.2	<8.3	<4.2	1,2-DCA 5.7
SIL9A	12/06/2001	4.3	3.6	120	4.7	4.8	610	<3.1	<3.1	<3.1	
SIL9A (Dup)	12/06/2001	4.1	5.5	140	3.6	5	700	<2.5	<2.5	<2.5	
SIL9A	12/16/2002	3.9	4.6	140	6.7	<3.1	1,300	<6.3	<3.1	<3.1	
SIL9A	12/9/2003	3.5	3.7	110	3.7	4.8	760	<6.3	<3.1	<3.1	
SIL9A	12/14/2004	<10	<10	73	<10	<10	1,200	<20	<10	<10	
SIL9A	11/9/2005	<3.6	<3.6	53	<3.6	<3.6	920	<7.1	<3.6	<3.6	
SIL9A (Dup)	11/9/2005	<4.2	<4.2	54	<4.2	<4.2	820	<8.3	<4.2	<4.2	
SIL9A	11/16/2006	<2.0	<2.0	48	2.0	2.0	930	12	<2.0	<2.0	
SIL9A	12/10/2007	<3.6	<3.6	190	<3.6	12	510	29	<3.6	<3.6	
SIL9A	12/4/2008	<3.6	<3.6	43	<3.6	<3.6	550	<7.1	<3.6	<3.6	
SIL9A (Dup)	12/4/2008	<3.1	<3.1	35	<3.1	<3.1	530	<6.3	<3.1	<3.1	
SIL9A	12/3/2009	<2.5	<2.5	34	<2.5	<2.5	450	<10	<2.5	<2.5	
SIL9A (Dup)	12/3/2009	<2.5	<2.5	35	<2.5	<2.5	470	<10	<2.5	<2.5	
SIL9A	12/17/2010	< 3	< 3	46	< 3	< 3	470	< 13	< 3	< 3	
SIL9A (Dup)	12/17/2010	< 3	< 3	46	< 3	< 3	450	< 14	< 3	< 3	

TABLE 6

HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011

405 National Avenue
Mountain View, California

Results reported in micrograms per liter (µg/l)

Well	Date Sampled	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Freon 113	Vinyl Chloride	PCE	Other
SIL9A	10/7/2011	<3.6	<3.6	48	<3.6	<3.6	400	<14	<3.6	<3.6	
SIL9A (Dup)	10/7/2011	<3.6	<3.6	48	<3.6	<3.6	400	<14	<3.6	<3.6	
SIL13A	2/4/1988	<500	<500	<500	<500	<500	550	<500	<500	<500	
SIL13A	4/27/1988	<250	<250	--	--	<250	8,100	--	<250	<250	
SIL13A	12/07/2000	<3.1	<3.1	34	<3.1	5.7	860	<3.1	<6.3	<3.1	
SIL13A	12/06/2001	<1.7	<1.7	29	<1.7	3	600	<1.7	<1.7	<1.7	
SIL13A	12/16/2002	<2	<2	25	<2	2.7	700	<4	<2	<2	
SIL13A	12/9/2003	<1.7	<1.7	22	<1.7	2.2	410	<3.3	<1.7	<1.7	
SIL13A	12/14/2004	<3.1	<3.1	20	<3.1	3.6	620	<6.3	<3.1	<3.1	
SIL13A	11/9/2005	<2.5	<2.5	22	<2.5	<2.5	440	<5.0	<2.5	<2.5	
SIL13A	11/16/2006	<2.5	<2.5	22	<2.5	2.8	420	9.5	<2.5	<2.5	
SIL13A	12/10/2007	<1.7	<1.7	12	<1.7	2.6	340	3.3	<1.7	<1.7	
SIL13A	12/4/2008	<3.1	<3.1	28	<3.1	<3.1	360	<6.3	<3.1	<3.1	
SIL13A	12/3/2009	3.6	3.5	42	<2.0	4.2	320	8.2	<2.0	<2.0	
SIL13A	12/16/2010	2.7	2.6	37	<2.5	<2.5	310	<10	<2.5	<2.5	
SIL13A	10/6/2011	2.5	<2.5	41	<2.5	<2.5	300	<10	<2.5	<2.5	
SIL14A	1/6/1990	<50	<50	90	<50	<50	230	<50	<50	<50	
SIL14A	2/20/1992	<5000	<5000	19,000	<5000	<5000	270,000	<5000	<10000	<5000	
SIL14A	12/07/2000	<25	37	4,500	29	30	5,900	<25	1800	<25	
SIL14A	12/06/2001	<13	24	4,500	49	<13	3,100	<13	2300	<13	
SIL14A	12/16/2002	8.5	12	2,200	120	11	4,600	<17	960	<8.3	
SIL14A	12/18/2002	<0.7	<0.7	11	<0.7	1.1	140	<1.4	<0.7	1	
SIL14A	12/10/2003	<25	28	4900	<25	<25	3,600	<50	2,100	<25	
SIL14A	12/14/2004	<200	<200	23,000	<200	<200	9,700	<400	13,000	<200	
SIL14A	2/11/2005	<63	<63	8,600	<63	<63	4,200	210	2,500	<63	
SIL14A	2/11/2005	<25	<25	1,900	<25	<25	3,800	150	550	<25	
SIL14A	11/9/2005	<50	<50	5,500	<50	<50	3,500	<100	1,700	<50	
SIL14A	11/16/2006	<20	27	3,500	<20	<20	3,500	130	920	<20	
SIL14A	12/10/2007	<310	<310	54,000	<310	<310	6,900	<630	18,000	<310	
SIL14A	12/4/2008	<310	360	120,000	<310	<310	660	<630	37,000	<310	
SIL14A	12/3/2009	<125.0	140	34,000	77	<125.0	7,900	<125.0	8,100	<125.0	
SIL14A	12/16/2010	<100	<100	17,000	<100	<100	6,600	<400	4,300	<100	
SIL14A	10/6/2011	<36	<36	4,800	<36	<36	1,800	<140	1,900	<36	

TABLE 6

**HISTORICAL GROUNDWATER SAMPLING CHEMICAL ANALYTICAL RESULTS¹
OCTOBER 1985–OCTOBER 2011**

405 National Avenue
Mountain View, California

Notes

1. Chemicals listed are those detected in the influent and midstream sample(s) by analytical methods specified in NPDES Permit No. CAG912003 (the Permit); under NPDES Order No. R2-2004-0055. The constituents, which appear in abbreviated form in the table headings, are:
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; 1,1,1-TCA= 1,1,1-trichloroethane;
1,1,2-TCA= 1,1,2-trichloroethane; TCE= trichloroethene; Freon 113= 1,1,2-trichlorotrifluoroethane; PCE= tetrachloroethene;
1,2,4-TMB= 1,2,4-trimethylbenzene; 1,3,5-TMB= 1,3,5-trimethylbenzene; 1,2-DCB = 1,2-dichlorobenzene; MC= Methylene Chloride;
1,2-DMB= 1,2-dimethylbenzene; xylenes = o-xylenes; and t-1,3-DCP= trans-1,3-dichloropropene.
2. -- = No data.
3. NM = Not measured; no groundwater samples were obtained from the GETS wells as the system was shutdown due to non-routine maintenance of the conveyance piping. Sampling will resume in 2008.
4. The EPA approved the removal of this well from all monitoring, starting with the November/December 2007 sampling event.

TABLE 7

SUMMARY OF RESULTS FROM CAPTURE ZONE EVALUATION

405 National Avenue
Mountain View, California

Line of Evidence	Is Capture Sufficient?	Comments
Water Levels: Potentiometric surface maps Water level pairs	Yes CWC ¹	<ul style="list-style-type: none"> • Target capture extents met for the A- and B1/B2-aquifers. • Inward gradient in A-aquifer toward on-site extraction wells. • Inward gradient from REG-MW1 toward GSF extraction wells in A, B1, and B2-aquifer intervals.
Calculations: Flow budget (Darcy flux) Capture zone width calculations Numerical modeling	Yes Yes Yes	<ul style="list-style-type: none"> • Extraction rate exceeds Darcy Flux • Calculated containment width exceeds target capture zone width in Aquifers A and B1/B2. • Model width exceeds target capture zone width for Aquifers A and B1/B2.
Concentration Trends: Downgradient of on-site Downgradient of GSF	CWC CWC	<ul style="list-style-type: none"> • Decreasing chemical concentrations between on-site and off-site extraction wells is consistent with on-site source control. • Decreasing chemical concentrations downgradient of GSF wells is consistent with off-site hydraulic containment.
Overall Conclusion: Multiple lines of evidence indicate that extent of hydraulic containment (capture) generally meets target zones for Aquifers A and B1/B2.		

Note

1. CWC = Consistent with capture



TABLE 8

GROUNDWATER ELEVATIONS AND VERTICAL GRADIENT IN WELL PAIRS
FEBRUARY 1996–SEPTEMBER 2011
 405 National Avenue
 Mountain View, California

Date	Vertical Gradient Between Aquifer Zones											
	Nested Well Group I (116A, 109B1, 107B2)						Nested Well Group II (108A, 104B1, 108B2)					
	B1 to B2			A to B1			B1 to B2			A to B1		
	109B1	107B2	Vertical Gradient	116A	109B1	Vertical Gradient	104B1	108B2	Vertical Gradient	108A	104B1	Vertical Gradient
	Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point		
	-20.6	-42.4		12.7	-20.6		-22.8	-37.8		18.2	-22.8	
Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	
02/22/96	31.09	32.64	-0.07	30.38	31.09	-0.02	31.13	33.05	-0.13	30.71	31.13	-0.01
05/23/96	30.72	33.44	-0.12	30.29	30.72	-0.01	30.79	33.43	-0.18	30.53	30.79	-0.01
08/22/96	29.81	32.38	-0.12	29.47	29.81	-0.01	29.86	32.73	-0.19	29.78	29.86	0.00
09/23/96	29.40	32.00	-0.12	29.19	29.40	-0.01	29.42	32.36	-0.20	29.62	29.42	0.00
09/30/96	29.94	32.96	-0.14	30.11	29.94	0.01	30.17	32.93	-0.18	30.43	30.17	0.01
10/07/96	29.46	32.04	-0.12	28.74	29.46	-0.02	29.51	32.44	-0.20	29.29	29.51	-0.01
10/14/96	28.19	31.40	-0.15	28.53	28.19	0.01	28.22	31.95	-0.25	29.32	28.22	0.03
10/21/96	27.85	30.57	-0.12	28.15	27.85	0.01	27.92	31.70	-0.25	28.96	27.92	0.03
10/28/96	28.00	30.60	-0.12	28.27	28.00	0.01	28.04	31.58	-0.24	29.00	28.04	0.02
11/04/96	27.90	30.69	-0.13	28.06	27.90	0.00	27.95	31.47	-0.23	28.78	27.95	0.02
11/21/96	29.28	31.88	-0.12	28.42	29.28	-0.03	29.38	31.61	-0.15	28.99	29.38	-0.01
12/16/96	29.29	31.97	-0.12	28.52	29.29	-0.02	29.38	32.19	-0.19	29.01	29.38	-0.01
01/20/97	30.43	32.72	-0.11	29.60	30.43	-0.02	30.56	33.43	-0.19	30.08	30.56	-0.01
02/20/97	30.57	33.24	-0.12	29.94	30.57	-0.02	30.69	33.41	-0.18	30.43	30.69	-0.01
03/20/97	29.71	32.90	-0.15	29.69	29.71	0.00	29.82	33.06	-0.22	30.25	29.82	0.01
04/21/97	29.87	33.08	-0.15	29.80	29.87	0.00	29.96	33.49	-0.24	30.30	29.96	0.01
05/22/97	29.41	31.83	-0.11	29.77	29.41	0.01	29.48	32.19	-0.18	30.38	29.48	0.02
06/26/97	28.87	30.93	-0.09	29.36	28.87	0.01	28.94	31.34	-0.16	30.07	28.94	0.03
07/21/97	28.90	31.28	-0.11	29.91	28.90	0.03	28.90	31.38	-0.17	30.26	28.90	0.03



TABLE 8

GROUNDWATER ELEVATIONS AND VERTICAL GRADIENT IN WELL PAIRS
FEBRUARY 1996–SEPTEMBER 2011
 405 National Avenue
 Mountain View, California

Date	Vertical Gradient Between Aquifer Zones											
	Nested Well Group I (116A, 109B1, 107B2)						Nested Well Group II (108A, 104B1, 108B2)					
	B1 to B2			A to B1			B1 to B2			A to B1		
	109B1	107B2	Vertical Gradient	116A	109B1	Vertical Gradient	104B1	108B2	Vertical Gradient	108A	104B1	Vertical Gradient
	Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point		
	-20.6	-42.4		12.7	-20.6		-22.8	-37.8		18.2	-22.8	
Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	
08/28/97	29.51	31.27	-0.08	29.85	29.51	0.01	29.52	31.67	-0.14	30.28	29.52	0.02
09/15/97	28.81	31.03	-0.10	29.83	28.81	0.03	28.84	31.21	-0.16	30.33	28.84	0.04
10/20/97	29.41	32.56	-0.14	30.35	29.41	0.03	29.55	32.90	-0.22	30.80	29.55	0.03
11/17/97	30.23	32.78	-0.12	30.75	30.23	0.02	30.30	33.13	-0.19	31.14	30.30	0.02
12/22/97	30.83	33.27	-0.11	31.27	30.83	0.01	32.33	33.77	-0.10	31.64	32.33	-0.02
01/15/98	29.11	31.56	-0.11	31.22	29.11	0.06	31.57	31.56	0.00	31.69	31.57	0.00
02/26/98	30.18	32.24	-0.09	32.37	30.18	0.07	30.21	32.79	-0.17	32.80	30.21	0.06
03/16/98	28.99	31.70	-0.12	31.30	28.99	0.07	29.03	31.55	-0.17	31.70	29.03	0.07
04/20/98	28.59	31.24	-0.12	30.58	28.59	0.06	28.63	31.34	-0.18	30.84	28.63	0.05
05/25/98	28.60	31.20	-0.12	30.62	28.60	0.06	28.61	31.25	-0.18	31.07	28.61	0.06
06/25/98	28.74	31.21	-0.11	30.45	28.74	0.05	28.73	31.28	-0.17	30.99	28.73	0.06
07/23/98	29.67	32.58	-0.13	31.08	29.67	0.04	29.68	32.51	-0.19	31.48	29.68	0.04
08/27/98	28.11	30.25	-0.10	30.26	28.11	0.06	28.09	30.29	-0.15	30.83	28.09	0.07
11/19/98	27.60	29.19	-0.07	29.53	27.60	0.06	27.60	29.25	-0.11	30.16	27.60	0.06
05/27/99	28.31	30.10	-0.08	30.74	28.31	0.07	28.01	30.31	-0.15	30.67	28.01	0.06
08/20/99	27.66	29.47	-0.08	29.92	27.66	0.07	27.66	29.54	-0.13	30.37	27.66	0.07
11/18/99	27.62	29.65	-0.09	29.79	27.62	0.07	27.60	29.64	-0.14	30.18	27.60	0.06
02/24/00	30.57	31.66	-0.05	31.45	30.57	0.03	30.55	31.49	-0.06	31.54	30.55	0.02
03/13/00	29.39	30.84	-0.07	31.50	29.39	0.06	29.29	30.88	-0.11	31.76	29.29	0.06

TABLE 8

GROUNDWATER ELEVATIONS AND VERTICAL GRADIENT IN WELL PAIRS
FEBRUARY 1996–SEPTEMBER 2011
 405 National Avenue
 Mountain View, California

Date	Vertical Gradient Between Aquifer Zones											
	Nested Well Group I (116A, 109B1, 107B2)						Nested Well Group II (108A, 104B1, 108B2)					
	B1 to B2			A to B1			B1 to B2			A to B1		
	109B1	107B2	Vertical Gradient	116A	109B1	Vertical Gradient	104B1	108B2	Vertical Gradient	108A	104B1	Vertical Gradient
	Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point		
	-20.6	-42.4		12.7	-20.6		-22.8	-37.8		18.2	-22.8	
Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	
05/25/00	28.10	29.76	-0.08	30.22	28.10	0.06	27.99	29.70	-0.11	30.54	27.99	0.06
08/24/00	27.56	29.47	-0.09	29.79	27.56	0.07	27.52	29.58	-0.14	30.14	27.52	0.06
11/16/00	27.14	29.08	-0.09	29.27	27.14	0.06	27.11	29.14	-0.14	29.86	27.11	0.07
02/22/01	27.15	29.39	-0.10	29.30	27.15	0.06	27.46	29.50	-0.14	29.91	27.46	0.06
05/24/01	27.22	29.27	-0.09	29.21	27.22	0.06	27.23	29.33	-0.14	29.87	27.23	0.06
08/23/01	28.27	29.55	-0.06	29.15	28.27	0.03	28.21	29.43	-0.08	29.65	28.21	0.04
09/06/01	26.97	28.92	-0.09	28.87	26.97	0.06	26.90	29.07	-0.14	29.58	26.90	0.07
11/15/01	27.01	29.20	-0.10	28.83	27.01	0.05	26.98	29.31	-0.16	29.61	26.98	0.06
02/28/02	27.38	29.56	-0.10	29.17	27.38	0.05	27.38	29.81	-0.16	29.72	27.38	0.06
05/23/02	27.33	29.71	-0.11	29.09	27.33	0.05	27.26	30.02	-0.18	29.72	27.26	0.06
08/22/02	27.15	29.52	-0.11	28.96	27.15	0.05	27.08	29.81	-0.18	29.65	27.08	0.06
11/21/02	27.16	29.61	-0.11	28.97	27.16	0.05	27.09	29.88	-0.19	29.55	27.09	0.06
02/27/03	27.83	30.29	-0.11	29.52	27.83	0.05	27.84	30.80	-0.20	30.08	27.84	0.05
05/22/03	29.35	32.44	-0.14	31.55	29.35	0.07	29.74	32.92	-0.21	31.37	29.74	0.04
08/28/03	28.36	30.93	-0.12	30.51	28.36	0.06	28.30	31.02	-0.18	31.05	28.30	0.07
11/20/03	27.73	30.33	-0.12	29.43	27.73	0.05	27.73	30.36	-0.18	30.07	27.73	0.06
03/25/04	28.37	31.34	-0.14	29.84	28.37	0.04	28.65	31.5	-0.19	30.4	28.65	0.04
05/27/04	27.99	30.59	-0.12	29.30	27.99	0.04	27.96	30.91	-0.20	30.12	27.96	0.05
08/26/04	27.66	30.45	-0.13	29.36	27.66	0.05	27.65	30.69	-0.20	29.93	27.65	0.06

TABLE 8
GROUNDWATER ELEVATIONS AND VERTICAL GRADIENT IN WELL PAIRS
FEBRUARY 1996–SEPTEMBER 2011
 405 National Avenue
 Mountain View, California

Date	Vertical Gradient Between Aquifer Zones											
	Nested Well Group I (116A, 109B1, 107B2)						Nested Well Group II (108A, 104B1, 108B2)					
	B1 to B2			A to B1			B1 to B2			A to B1		
	109B1	107B2	Vertical Gradient	116A	109B1	Vertical Gradient	104B1	108B2	Vertical Gradient	108A	104B1	Vertical Gradient
	Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point			Well Screen Mid-Point		
	-20.6	-42.4		12.7	-20.6		-22.8	-37.8		18.2	-22.8	
Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	Groundwater Elevations	
11/18/04	27.14	30.01	-0.13	28.87	27.14	0.05	27.15	30.02	-0.19	29.47	27.15	0.06
03/24/05	28.73	31.50	-0.13	30.19	28.73	0.04	28.69	31.77	-0.21	30.70	28.69	0.05
11/17/05	27.75	30.51	-0.13	29.22	27.75	0.04	27.77	30.60	-0.19	29.74	27.77	0.05
03/23/06	29.35	32.14	-0.13	30.44	29.35	0.03	29.32	32.52	-0.21	31.19	29.32	0.05
11/16/06	28.93	31.70	-0.13	29.75	28.93	0.02	28.89	32.06	-0.21	30.30	28.89	0.03
03/22/07	30.94	33.43	-0.11	30.95	30.94	0.00	30.96	31.22	-0.02	33.69	30.96	0.07
11/15/07	30.39	32.03	-0.08	30.97	30.39	0.02	30.41	--	--	31.09	30.41	0.02
04/02/08	28.99	31.45	-0.11	28.29	28.99	-0.02	28.99	30.64	-0.11	31.67	28.99	0.07
11/20/08	28.23	30.57	-0.11	29.73	28.23	0.05	28.19	30.59	-0.16	30.15	28.19	0.05
03/26/09	30.92	31.51	-0.03	30.43	30.92	-0.01	29.90	31.79	-0.13	30.82	29.90	0.02
11/19/09	28.32	30.35	-0.09	29.60	28.32	0.04	28.37	30.49	-0.14	29.88	28.37	0.04
03/27/10	29.48	31.68	-0.10	30.54	29.48	0.03	29.45	31.86	-0.16	30.82	29.45	0.03
11/18/10	28.36	30.7	-0.11	29.50	28.36	0.03	28.33	30.91	-0.17	29.80	28.33	0.04
03/24/11	30.26	32.74	-0.11	31.13	30.26	0.03	30.24	32.98	-0.18	31.33	30.24	0.03
09/15/11	28.1	31.15	-0.14	29.80	28.1	0.05	28.05	31.41	-0.22	29.98	28.05	0.05
Average Vertical Gradient Values		-0.11		0.03				-0.17			0.04	

Notes

1. All water level and well screen measurements are expressed as feet mean sea level (ft msl).
2. All vertical gradients can be expressed as unitless values, or as feet per feet (ft/ft).
3. Positive vertical gradients indicate downward vertical flow, negative gradients indicate upward vertical flow.
4. The EPA approved the removal of this well from all monitoring. Groundwater elevations were not obtained during the November/December 2007 sampling event for this reason; however, in order to monitor the vertical gradient between aquifer zones, the groundwater elevation at well 108B2 was obtained during 2008.



TABLE 9

VERTICAL GRADIENT DATA IN VICINITY OF OFF-SITE EXTRACTION WELLS

SEPTEMBER 1996 to SEPTEMBER 2011

Shared Off-Site Source Control Wells

405 National Avenue

Mountain View, California

Date	Vertical Gradient Between Aquifer Zones					
	Nested Well Group III (GSF-1A, GSF-1B1, GSF-1B2)					
	B1 to B2			A to B1		
	GSF-1B1	GSF-1B2	Vertical Gradient	GSF-1A	GSF-1B1	Vertical Gradient
	Well Screen Mid-Point			Well Screen Mid-Point		
	-28.39	-37.89		15.07	-28.39	
Water Levels			Water Levels			
9/23/1996	10.25	29.76	-2.05	28.33	10.25	0.42
9/30/1996	9.99	28.46	-1.94	30.04	9.99	0.46
10/7/1996	10.21	29.83	-2.07	28.12	10.21	0.41
10/14/1996	15.35	-12.89	2.97	27.49	15.35	0.28
10/21/1996	15.87	-11.91	2.92	27.1	15.87	0.26
10/28/1996	15.74	-10.90	2.80	27.12	15.74	0.26
11/4/1996	15.88	-16.57	3.42	26.91	15.88	0.25
11/21/1996	11.32	26.56	-1.60	27.33	11.32	0.37
12/16/1996	11.46	23.44	-1.26	27.43	11.46	0.37
1/20/1997	10.26	24.19	-1.47	28.46	10.26	0.42
2/20/1997	10.27	24.48	-1.50	28.85	10.27	0.43
3/20/1997	13.73	22.1	-0.88	28.8	13.73	0.35
4/21/1997	13.69	26.88	-1.39	28.67	13.69	0.34
5/22/1997	14.13	27.49	-1.41	28.66	14.13	0.33
6/26/1997	14.74	28.5	-1.45	28.22	14.74	0.31
7/21/1997	14.65	22.45	-0.82	28.52	14.65	0.32
8/28/1997	14.16	27.02	-1.35	28.58	14.16	0.33
9/15/1997	15.2	27.26	-1.27	28.55	15.2	0.31
10/20/1997	13.89	27.5	-1.43	26.21	13.89	0.28
11/17/1997	13.32	26.45	-1.38	29.6	13.32	0.37
12/22/1997	12.47	28.97	-1.74	30.14	12.47	0.41
1/15/1998	14.36	29.8	-1.63	29.32	14.36	0.34
2/26/1998	13.52	28.85	-1.61	31.18	13.52	0.41
3/16/1998	14.79	30.48	-1.65	29.99	14.79	0.35
4/20/1998	15.23	28.2	-1.37	29.38	15.23	0.33
5/28/1998	15.18	27.96	-1.35	29.39	15.18	0.33
6/25/1998	15.05	28.1	-1.37	29.25	15.05	0.33
7/23/1998	13.85	28.07	-1.50	29.74	13.85	0.37
8/27/1998	15.46	29.02	-1.43	27.8	15.46	0.28
11/19/1998	16.24	25.9	-1.02	28.34	16.24	0.28
5/27/1999	15.86	26.98	-1.17	28.51	15.86	0.29
8/26/1999	16.91	26.5	-1.01	28.45	16.91	0.27
11/18/1999	17.67	24.96	-0.77	28.28	17.67	0.24
2/24/2000	9.84	30.02	-2.12	30.39	9.84	0.47
3/13/2000	17.65	23.00	-0.56	29.9	17.65	0.28
5/25/2000	18.86	24.68	-0.61	28.64	18.86	0.23
8/24/2000	17.4	24.86	-0.79	28.25	17.40	0.25
11/16/2000	16.58	23.49	-0.73	27.77	16.58	0.26

TABLE 9

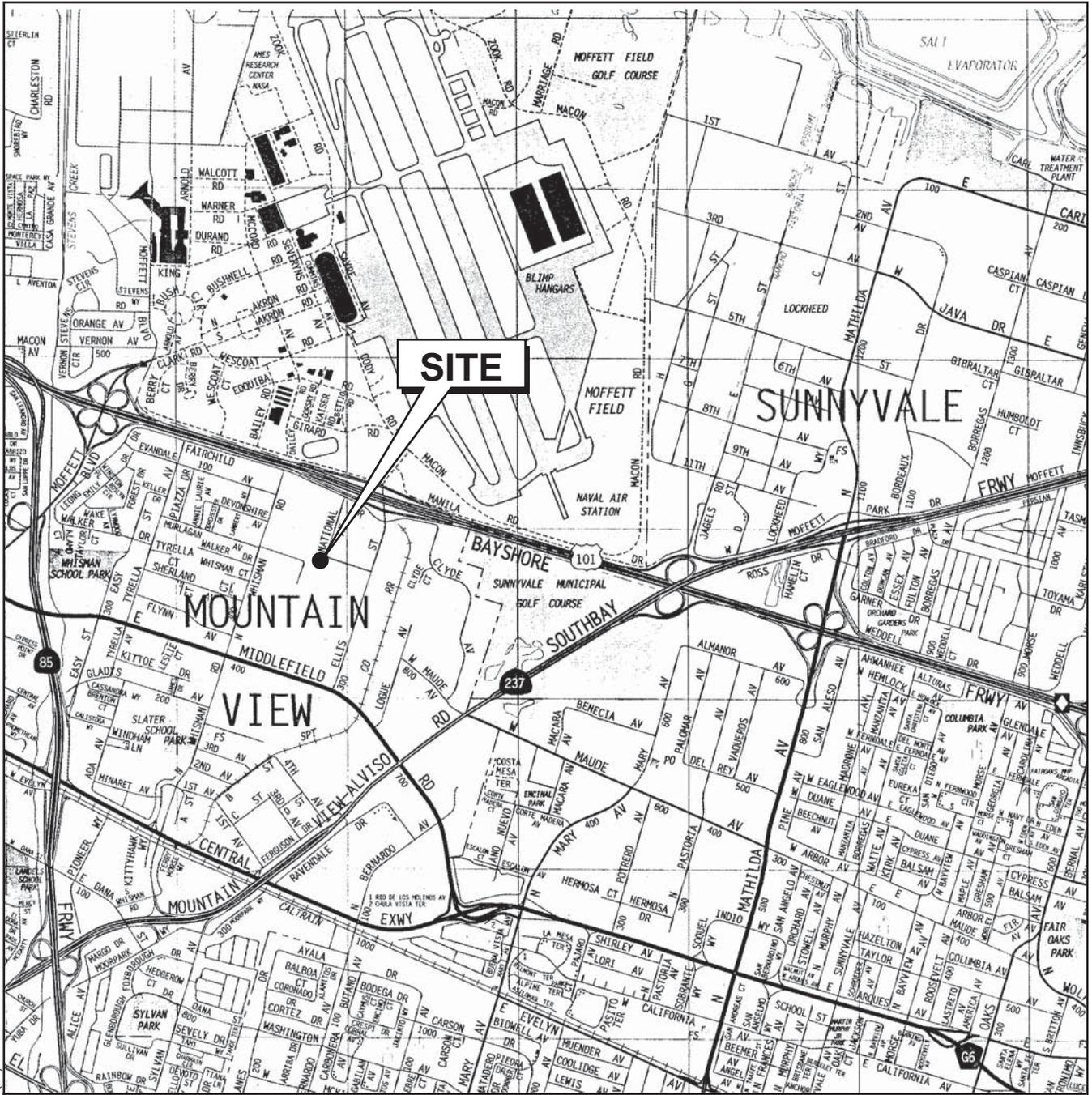
VERTICAL GRADIENT DATA IN VICINITY OF OFF-SITE EXTRACTION WELLS
SEPTEMBER 1996 to SEPTEMBER 2011
 Shared Off-Site Source Control Wells
 405 National Avenue
 Mountain View, California

Date	Vertical Gradient Between Aquifer Zones					
	Nested Well Group III (GSF-1A, GSF-1B1, GSF-1B2)					
	B1 to B2			A to B1		
	GSF-1B1	GSF-1B2	Vertical Gradient	GSF-1A	GSF-1B1	Vertical Gradient
	Well Screen Mid-Point			Well Screen Mid-Point		
	-28.39	-37.89		15.07	-28.39	
Water Levels			Water Levels			
2/22/2001	15.44	24.86	-0.99	27.9	15.44	0.29
5/24/2001	14.46	23.7	-0.97	27.74	14.46	0.31
8/27/2001	12.04	27.9	-1.67	28.24	12.04	0.37
9/6/2001	11.97	23.42	-1.21	27.48	11.97	0.36
11/15/2001	11.57	24.43	-1.35	27.46	11.57	0.37
2/28/2002	11.57	24.43	-1.35	27.46	11.57	0.37
5/23/2002	11.71	24.63	-1.36	27.47	11.71	0.36
8/22/2002	14.37	24.65	-1.08	27.44	14.37	0.30
11/21/2002	13.16	22.99	-1.03	27.45	13.16	0.33
2/27/2003	13.69	24.59	-1.15	27.86	13.69	0.33
5/22/2003	14.45	23.18	-0.92	29.15	14.45	0.34
8/28/2003	12.69	23	-1.09	28.91	12.69	0.37
11/20/2003	12.32	24.3	-1.26	27.84	12.32	0.36
3/25/2004	15.56	23.22	-0.81	28.24	15.56	0.29
5/27/2004	11.02	23.68	-1.33	27.96	11.02	0.39
8/26/2004	8.56	24.76	-1.71	27.84	8.56	0.44
11/18/2004	9.1	24.3	-1.60	27.37	9.1	0.42
3/24/2005	7.71	25.78	-1.90	28.56	7.71	0.48
11/17/2005	5.69	24.17	-1.95	27.65	5.69	0.51
3/23/2006	12.31	23.65	-1.19	29.08	12.31	0.39
11/16/2006	11.73	23.07	-1.19	28.27	11.73	0.38
3/22/2007	18.04	24.75	-0.71	29.54	18.04	0.26
11/15/2007 ⁴	29.8	30.23	-0.05	29.89	29.80	0.00
4/2/2008	9.55	25.12	-1.64	29.21	9.55	0.45
11/20/2008	-4.64	25.09	-3.13	-28.22	-4.64	-0.54
3/26/2009	-7.16	23.56	-3.23	28.90	-7.16	0.83
11/19/2009	-8.26	24.35	-3.43	27.99	-8.26	0.83
3/27/2010	3.03	24.81	-2.29	28.89	3.03	0.60
11/18/2010	-3.64	24.63	-2.98	27.91	-3.64	0.73
3/24/2011	-2.9	24.77	-2.91	29.50	-2.9	0.75
9/15/2011	20.07	24.98	-0.52	39.57	20.07	0.45
Average Vertical Gradient Values	-1.18			0.36		

Notes

1. All water level and well screen measurements are expressed as feet mean sea level (ft msl).
2. All vertical gradients can be expressed as unitless values, or as feet per feet (ft/ft).
3. Positive vertical gradients indicate downward vertical flow, negative gradients indicate upward vertical flow.
4. Vertical gradients for the November 15, 2007 sampling event are expected to reflect non-pumping conditions in the wells for the GETS shutdown from November 6, 2007 through December 17, 2007.

FIGURES



Base map from *The Thomas Guide, 1997 Golden Gate Street Guide and Directory*. Reproduced with permission granted by THOMAS BROS. MAPS®. This map is copyrighted by THOMAS BROS. MAPS®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission. All rights reserved.

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0 0.5 mile

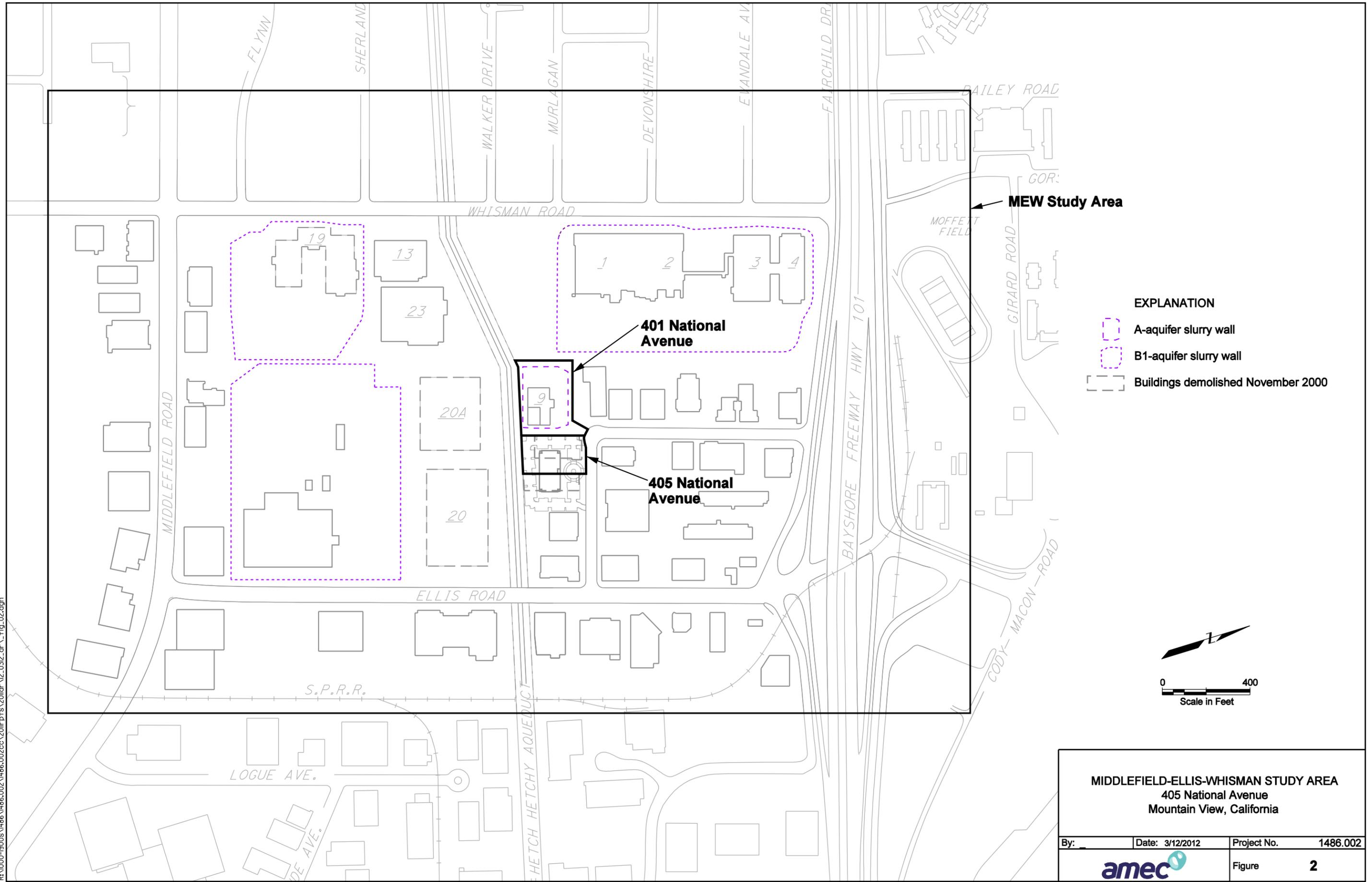
SITE LOCATION MAP
 405 National Avenue
 Mountain View, California

By: JKB Date: 03/28/2011 Project No. 1486.002

AMEC Geomatrix

Figure 1

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steve.wessels



MEW Study Area

401 National Avenue

405 National Avenue

EXPLANATION

-  A-aquifer slurry wall
-  B1-aquifer slurry wall
-  Buildings demolished November 2000

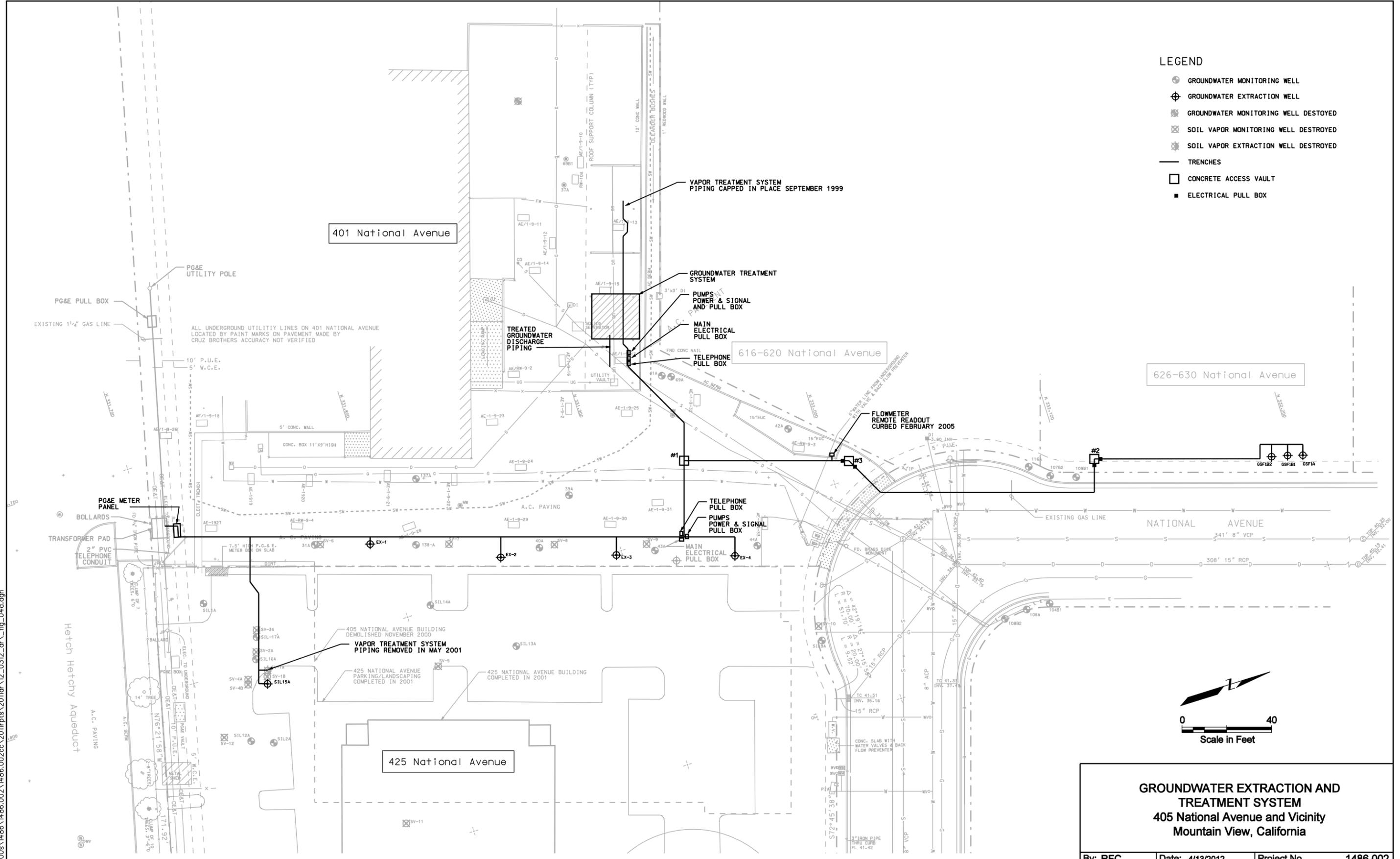
MIDDLEFIELD-ELLIS-WHISMAN STUDY AREA
405 National Avenue
Mountain View, California

By: _____ Date: 3/12/2012 Project No. 1486.002



Figure 2

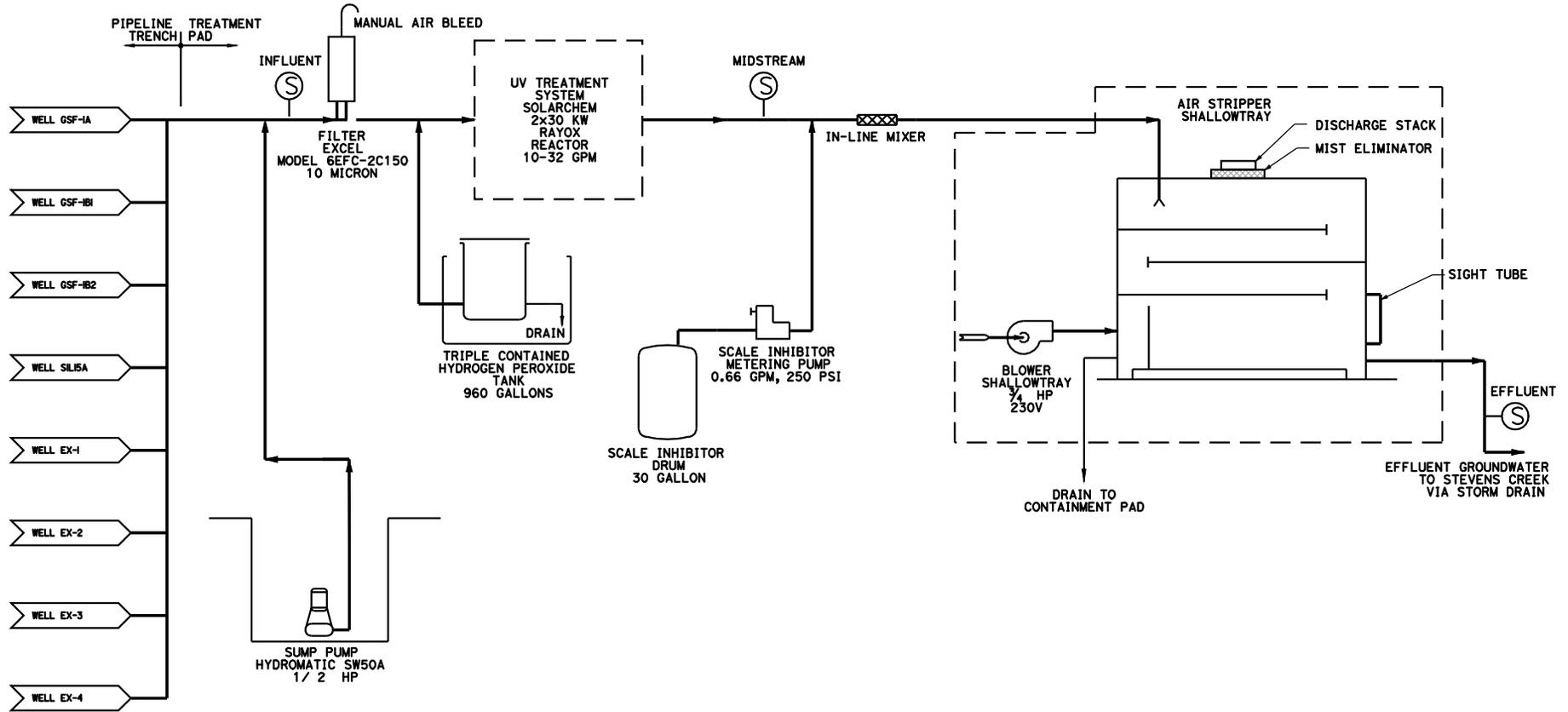
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 kristin.uber



- LEGEND**
- ⊕ GROUNDWATER MONITORING WELL
 - ⊕ GROUNDWATER EXTRACTION WELL
 - ⊗ GROUNDWATER MONITORING WELL DESTROYED
 - ⊗ SOIL VAPOR MONITORING WELL DESTROYED
 - ⊗ SOIL VAPOR EXTRACTION WELL DESTROYED
 - TRENCHES
 - CONCRETE ACCESS VAULT
 - ELECTRICAL PULL BOX

GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
405 National Avenue and Vicinity
Mountain View, California

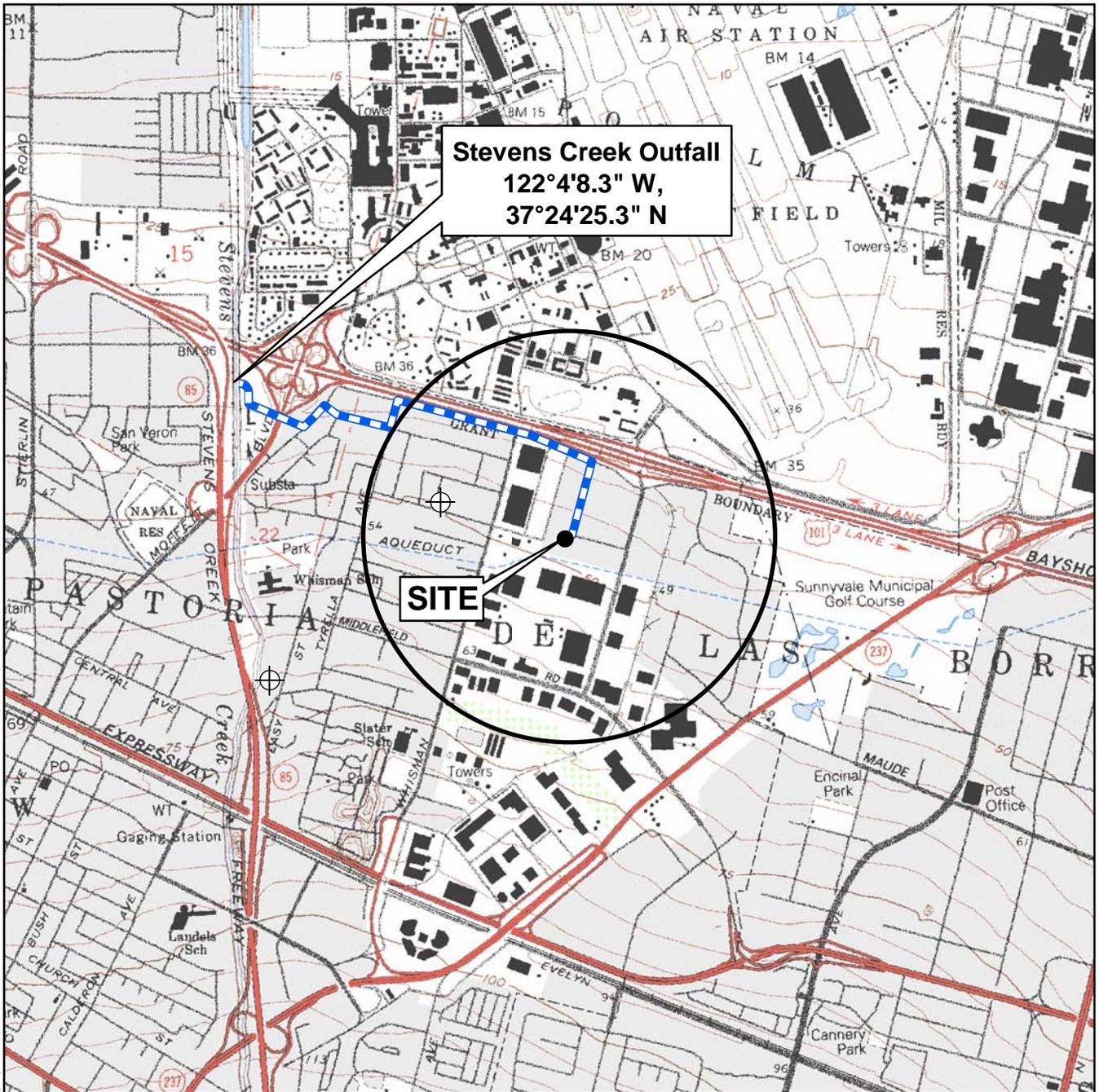
By: RFC	Date: 4/13/2012	Project No.	1486.002
		Figure	4a



LEGEND

-  BLOWER
-  METERING PUMP
-  SUBMERSIBLE PUMP
-  SAMPLE PORT

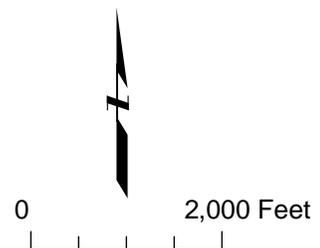
PROCESS FLOW SCHEMATIC 405 National Avenue Mountain View, California		
By: JKB	Date: 3/12/2012	Project No. 1486.002
AMEC Geomatrix		Figure 4b



Base map from U.S.G.S. 7.5' Mountain View, California topographic quadrangle.

EXPLANATION

-  Domestic well (not in operation)
-  Storm drain alignment



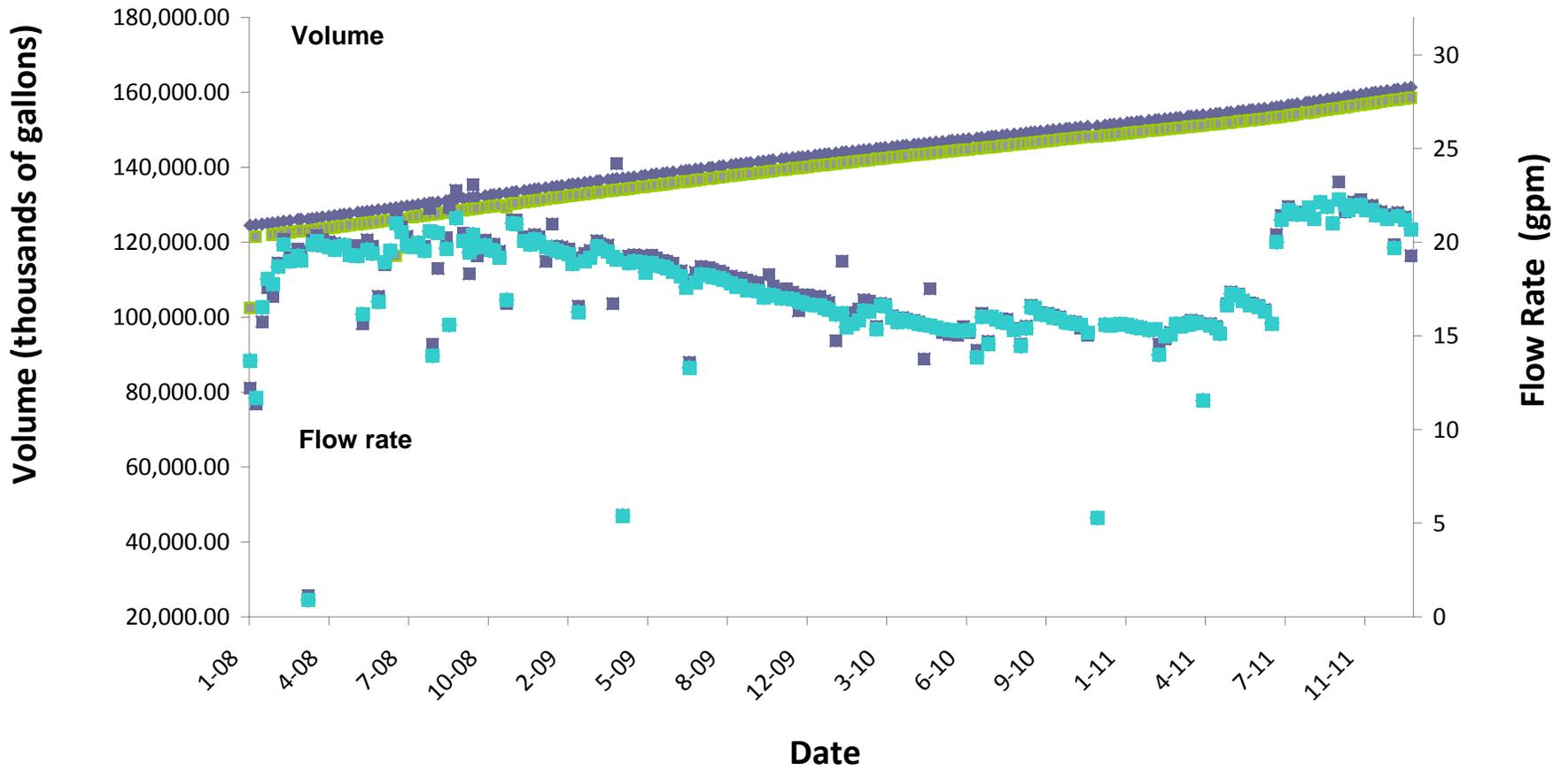
DISCHARGE LOCATION MAP
405 National Avenue
Mountain View, California

By: _	Date: 03/26/2012	Project No. 1486.002
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Figure	4c
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Total Volume of Treated Groundwater and System Flow Rates



- ◆ System (thousands of gallons)
- Sum of Wells (thousands of gallons)
- Sum of Wells (gpm)
- System (gpm)

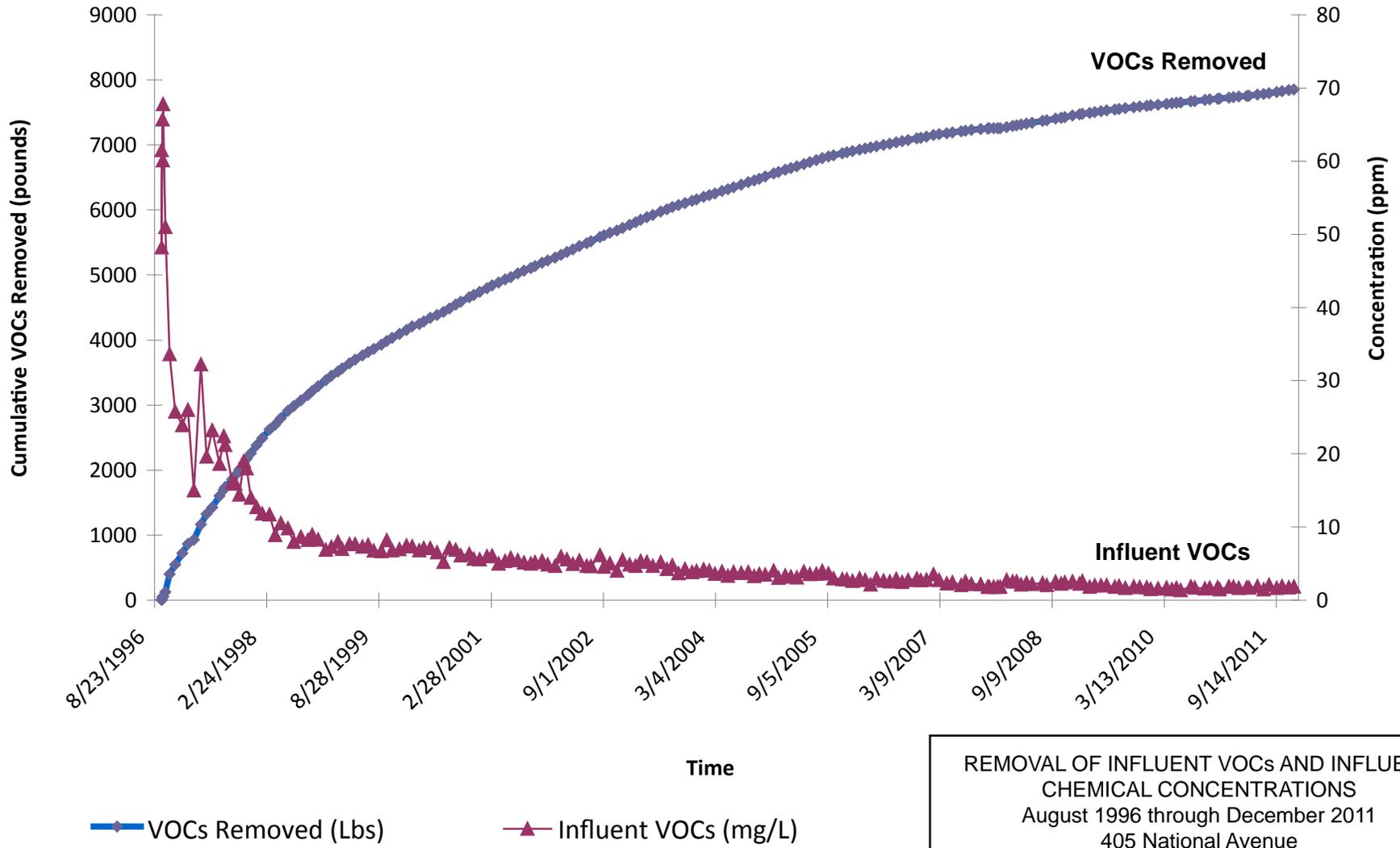
CUMULATIVE VOLUME OF
 EXTRACTED GROUNDWATER AND AVERAGE MONTHLY
 GROUNDWATER TREATMENT SYSTEM FLOW RATES
 January 2008 through December 2011
 405 National Avenue
 Mountain View, California

By: RFC	Date: 04/12/2012	Project No. 1486.002
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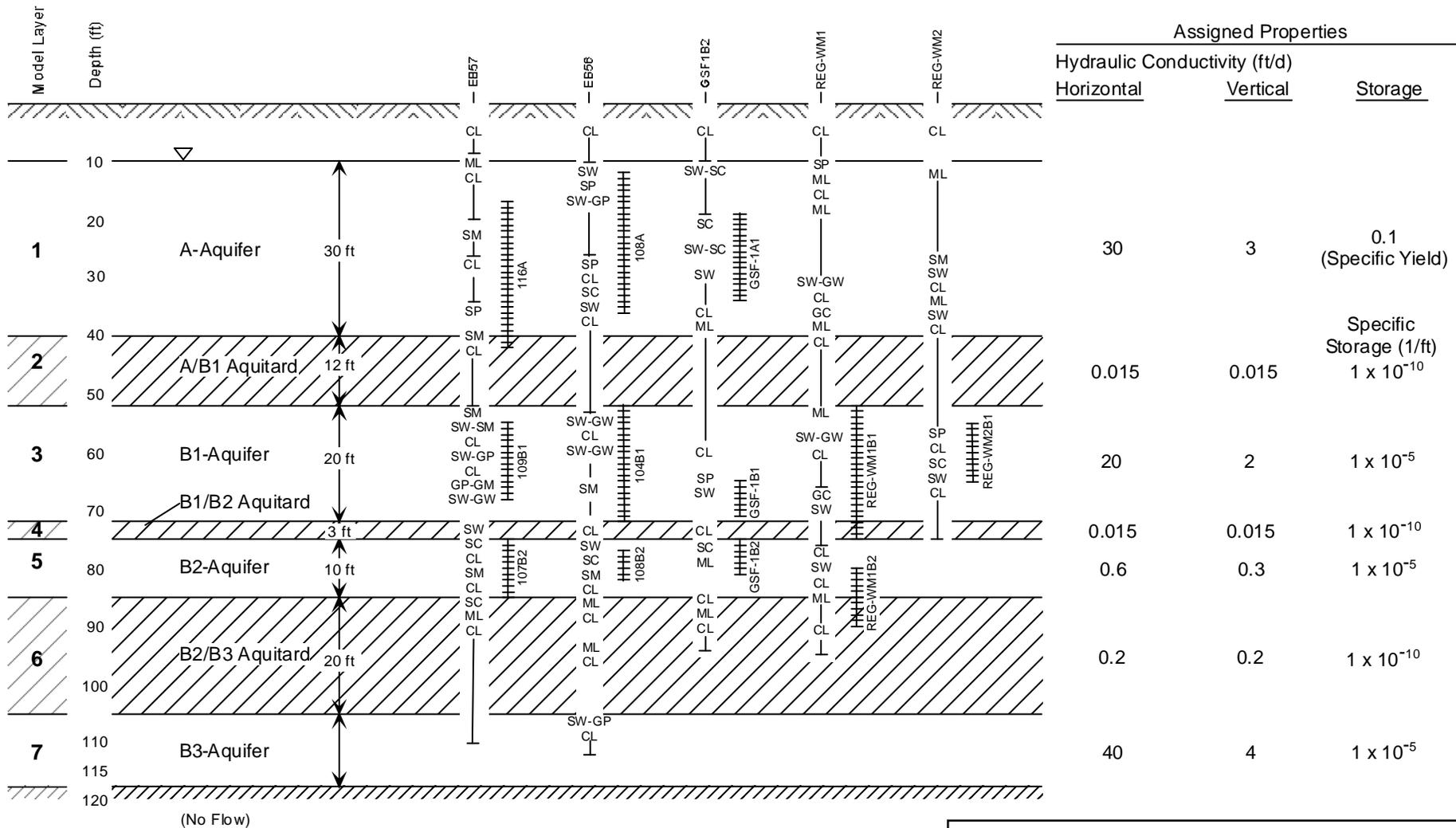
Figure **5a**

Total VOCs Removed and Influent Chemical Concentration



REMOVAL OF INFLUENT VOCs AND INFLUENT
 CHEMICAL CONCENTRATIONS
 August 1996 through December 2011
 405 National Avenue
 Mountain View, California

By: _	Date: 03/26/2012	Project No. 1486.002
		Figure 5b

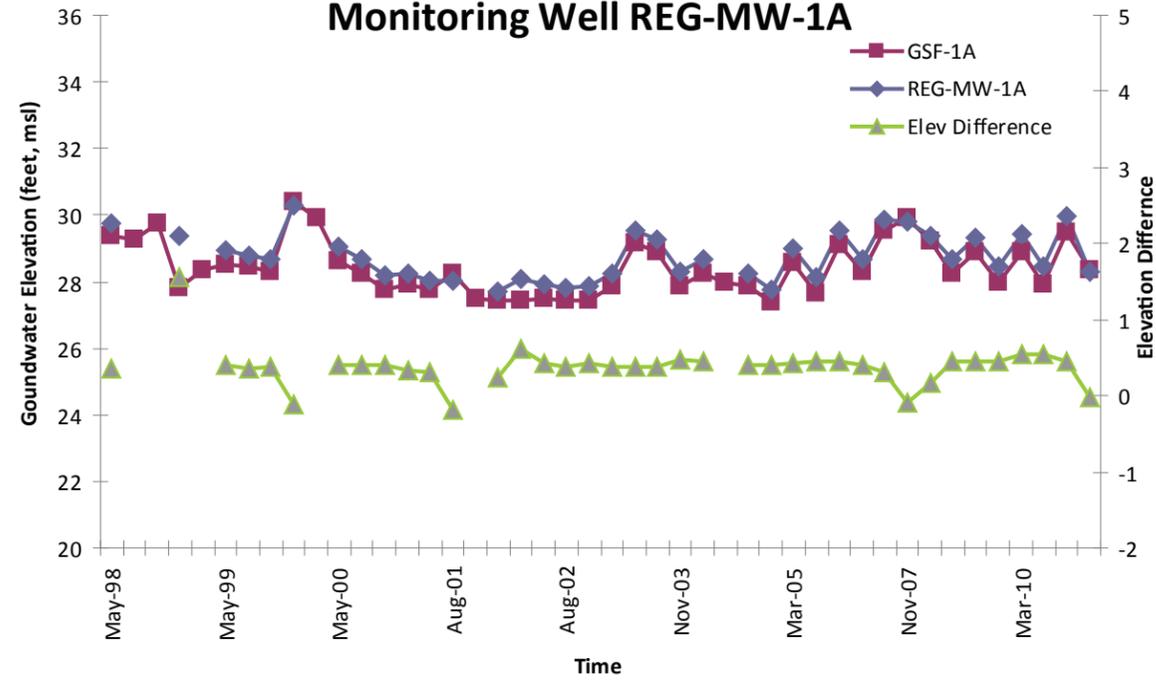


Explanation
 Well screen interval

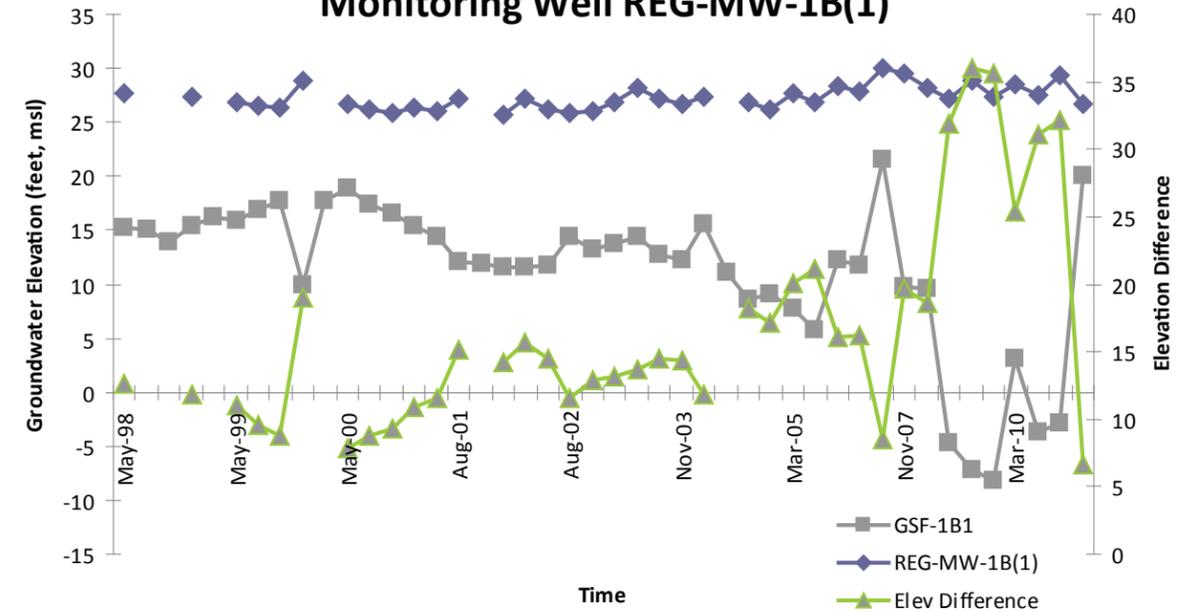
CONCEPTUAL CROSS SECTION
 405 National Avenue
 Mountain View, California

By: _	Date: 03/26/2012	Project No. 1486.002
		Figure 6

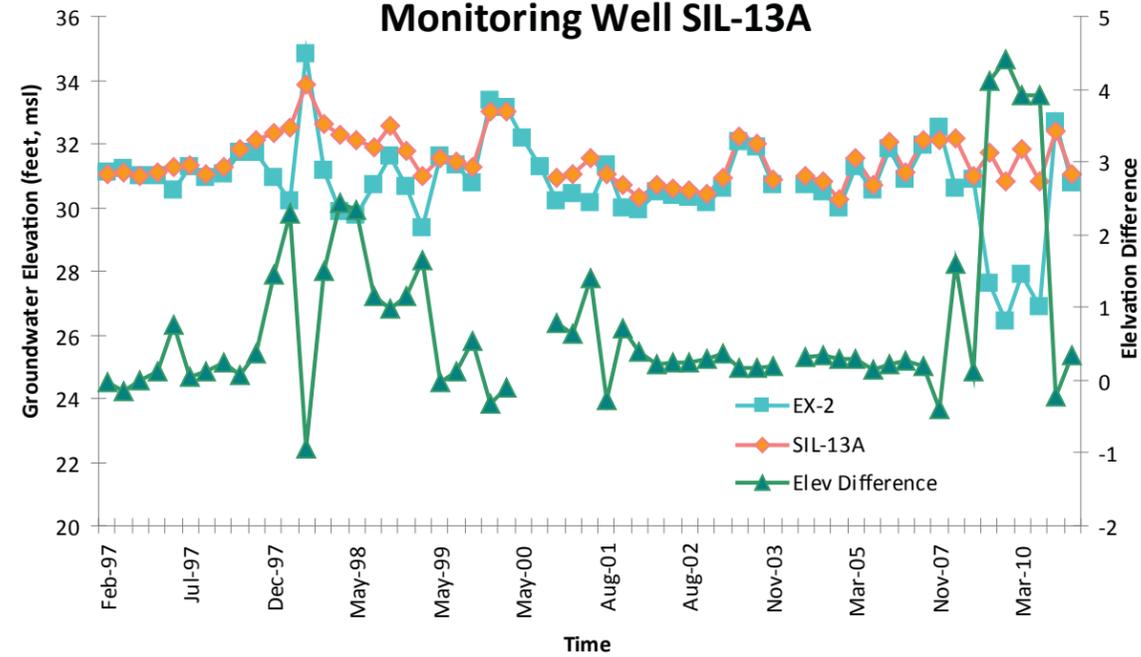
Hydrograph for Extraction Well GSF-1A and Monitoring Well REG-MW-1A



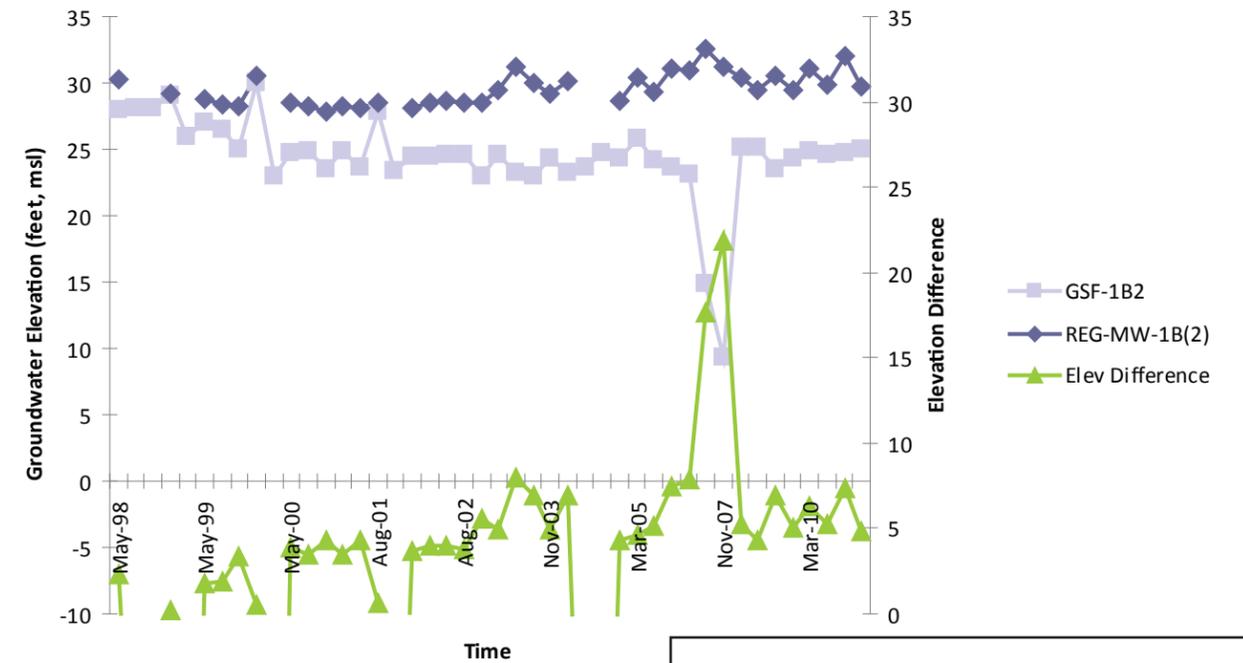
Hydrograph for Extraction Well GSF-1B1 and Monitoring Well REG-MW-1B(1)



Hydrograph for Extraction Well EX-2 and Monitoring Well SIL-13A



Hydrograph for Extraction Well GSF-1B2 and Monitoring well REG-MW-1B(2)



Note:

1. Non-pumping conditions (i.e., a decrease in elevation difference) is expected for the water level data observed during the November 15, 2007 sampling event (e.g., the last data point) during which time the GETS was shutdown.

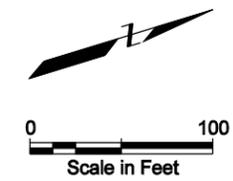
GROUNDWATER ELEVATIONS IN WELL PAIRS
ACROSS AQUIFERS
405 National Avenue
Mountain View, California

By: _____	Date: 03/26/2012	Project No. 1486.002
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Figure **7**

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 kristin.uber



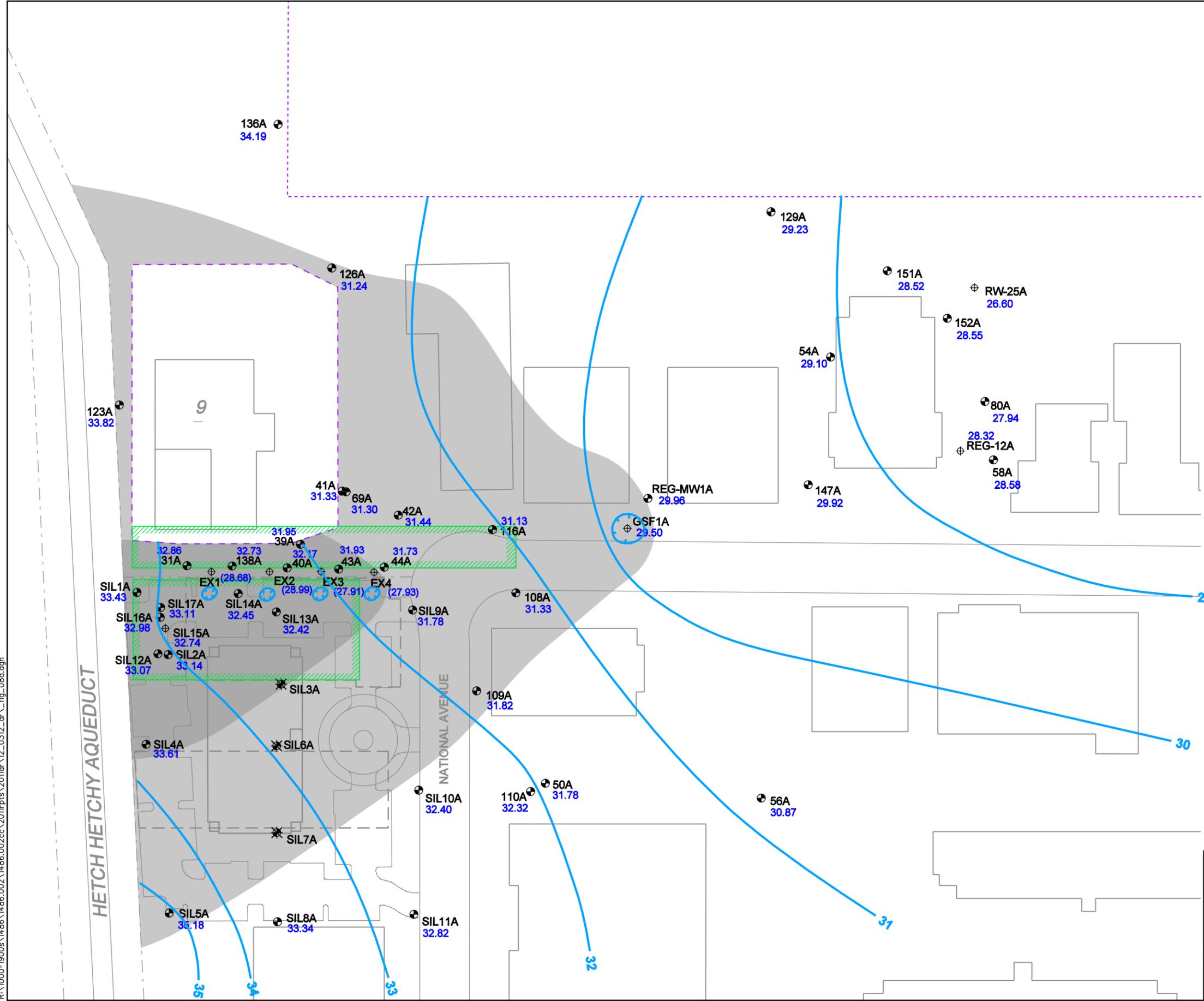
EXPLANATION

- Monitoring wells
- ⊕ Extraction wells
- ✱ Monitoring wells Destroyed November 16, 2000
- GSF-1A estimated containment area
- Extraction well estimated containment area
- ⋈ A-aquifer slurry wall
- - - Buildings demolished November 2000
- ▭ Target capture zone
- 28 Potentiometric contour line and elevation. Dashed were approximate
- ⊕ (29.98) Closely spaced groundwater contour
- (29.98) Water level measurements were not used in interpolation of potentiometric surface

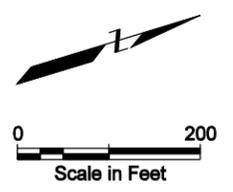
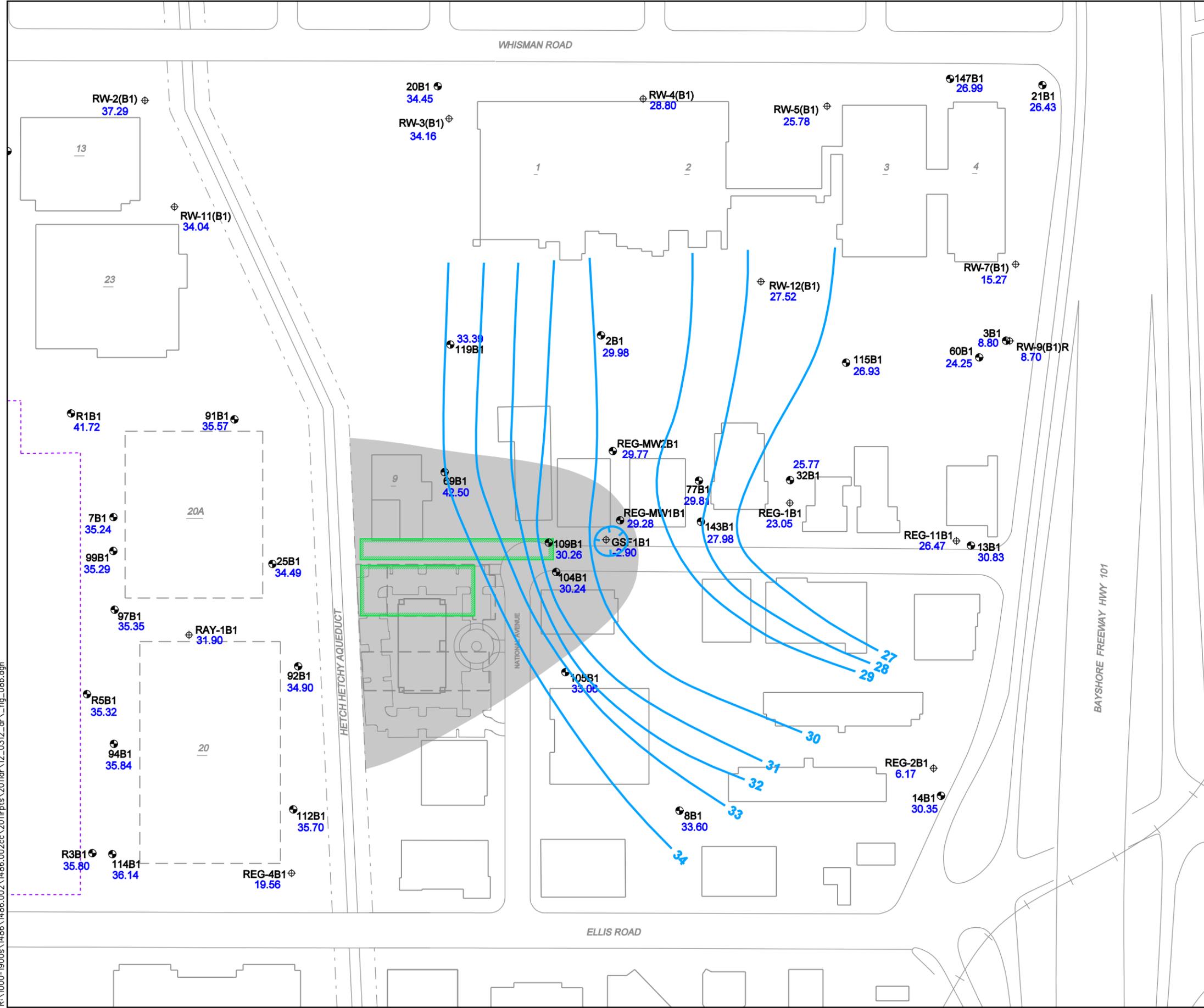
NOTES:

1. Contours based on interpolation of water level measurements collected on March 24, 2011.
2. EX-1, 2, 3 and 4 are 45° angle wells. Cone of depression shown in approximate location of well screen.
3. Elevation data shown in ft. msl.
4. NM = Not measured.

ESTIMATED EXTENT OF CONTAINMENT PROVIDED FOR A-AQUIFER BY PUMPING FROM ONSITE EXTRACTION WELLS AND GSF1A			
March 24, 2011			
405 National Avenue and Vicinity Mountain View, California			
By: RFC	Date: 4/13/2012	Project No.	1486.002
		Figure	8a



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 kristin.uber



EXPLANATION

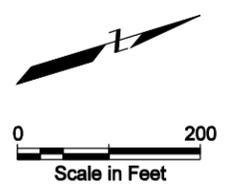
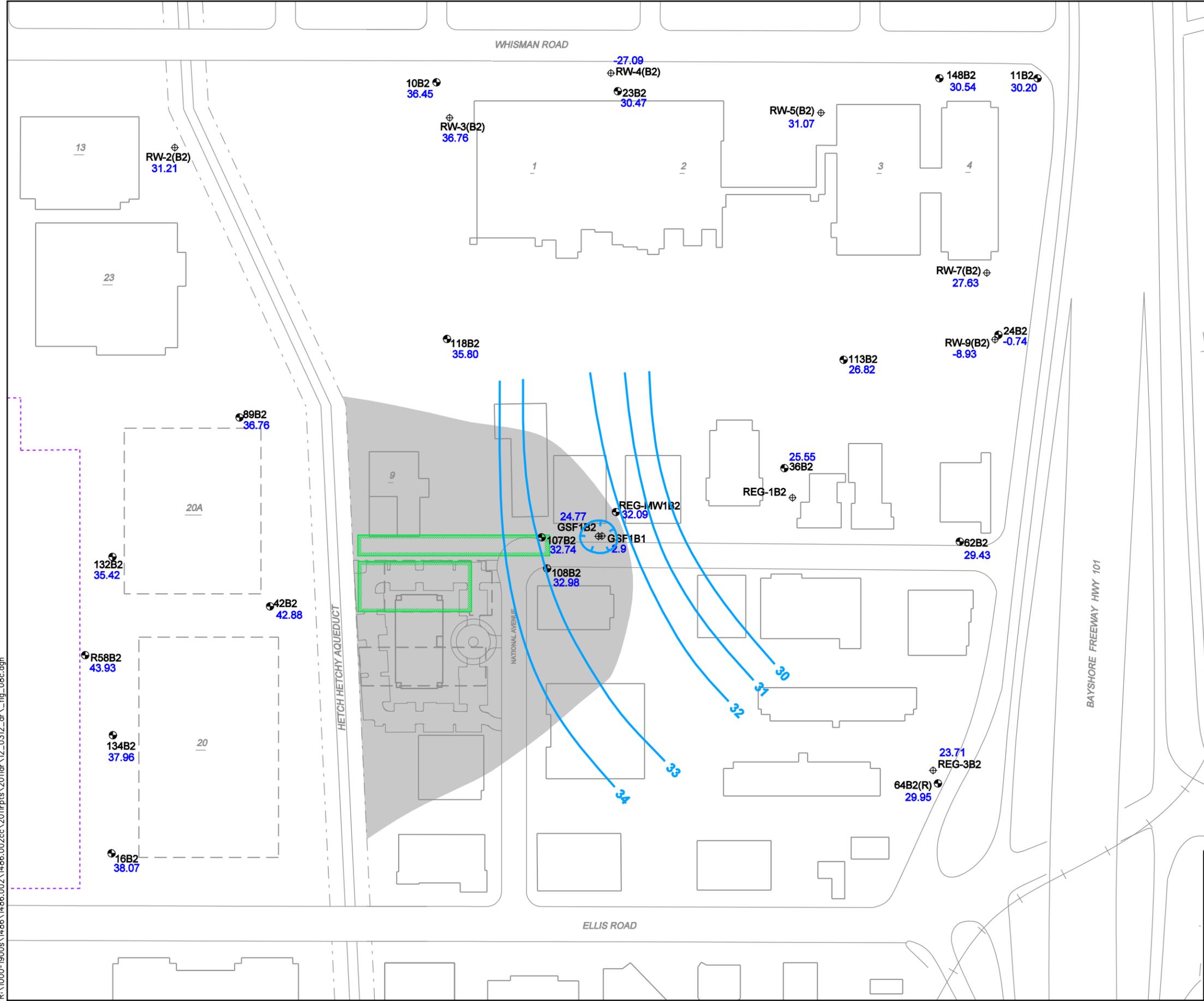
- ⊕ Monitoring wells
- ⊕ Extraction wells
- ⊕ GSF-1B1 estimated containment area
- ⊕ B1-aquifer slurry wall
- ⊕ Buildings demolished November 2000
- ⊕ Target capture zone
- 28 Potentiometric contour line and elevation. Dashed were estimated
- ⊕ Closely spaced groundwater contour
- (29.98) Water level measurements were not used in interpolation of potentiometric surface

NOTES:

1. Contours based on interpolation of water level measurements collected on March 24, 2011.
2. Elevation data shown in ft. msl.
3. NM = Not Measured.

ESTIMATED EXTENT OF CONTAINMENT PROVIDED FOR B1-AQUIFER BY PUMPING FROM GSF1B1 March 24, 2011 405 National Avenue and Vicinity Mountain View, California			
By: RFC	Date: 4/13/2012	Project No.	1486.002
		Figure	8b

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 kristin.uber



EXPLANATION

-  Monitoring wells
-  Extraction wells
-  GSF-1B2 estimated containment area
-  B2-aquifer slurry wall
-  Buildings demolished November 2000
-  Target capture zone
-  28 Potentiometric contour line and elevation. Dashed were estimated
-  Closely spaced groundwater contour
-  (29.98) Water level measurements were not used in interpolation of potentiometric surface

NOTES:

1. Contours based on interpolation of water level measurements collected on March 24, 2011.
2. Elevation data shown in ft. msl.
3. NM = Not Measured.

ESTIMATED EXTENT OF CONTAINMENT PROVIDED FOR B2-AQUIFER BY PUMPING FROM GSF1B1			
March 24, 2011			
405 National Avenue and Vicinity Mountain View, California			
By: RFC	Date: 4/13/2012	Project No.	1486.002
			Figure 8c

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 kristin.uber



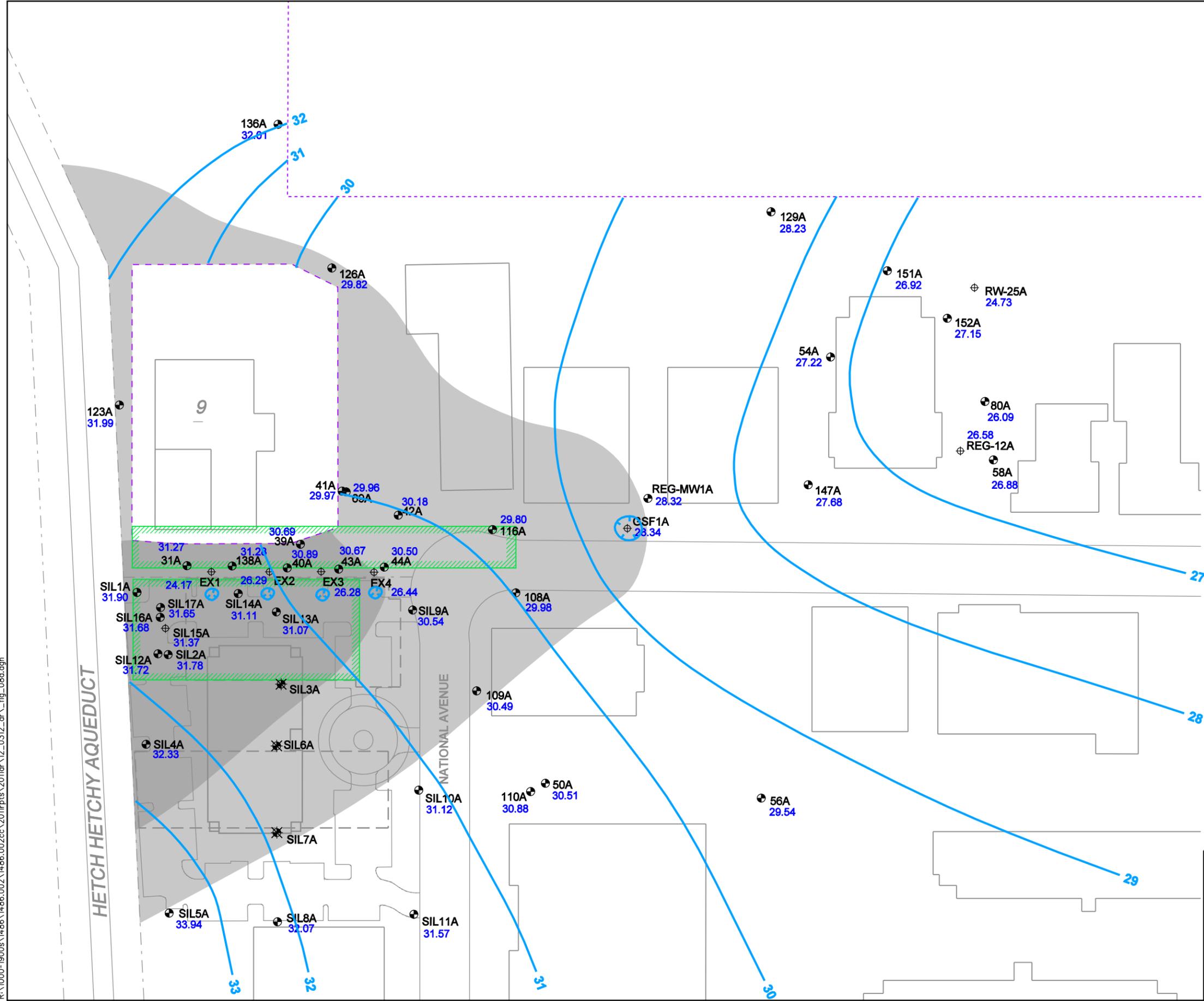
EXPLANATION

- ⊕ Monitoring wells
- ⊕ Extraction wells
- ⊗ Monitoring wells Destroyed November 16, 2000
- ⬤ GSF-1A estimated containment area
- ⬤ Extraction well estimated containment area
- ⬤ A-aquifer slurry wall
- ⬤ Buildings demolished November 2000
- ⬤ Target capture zone
- 28 Potentiometric contour line and elevation. Dashed were approximate
- ⊕ Closely spaced groundwater contour
- (29.98) Water level measurements were not used in interpolation of potentiometric surface

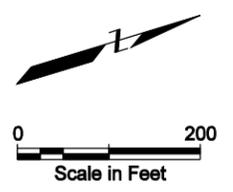
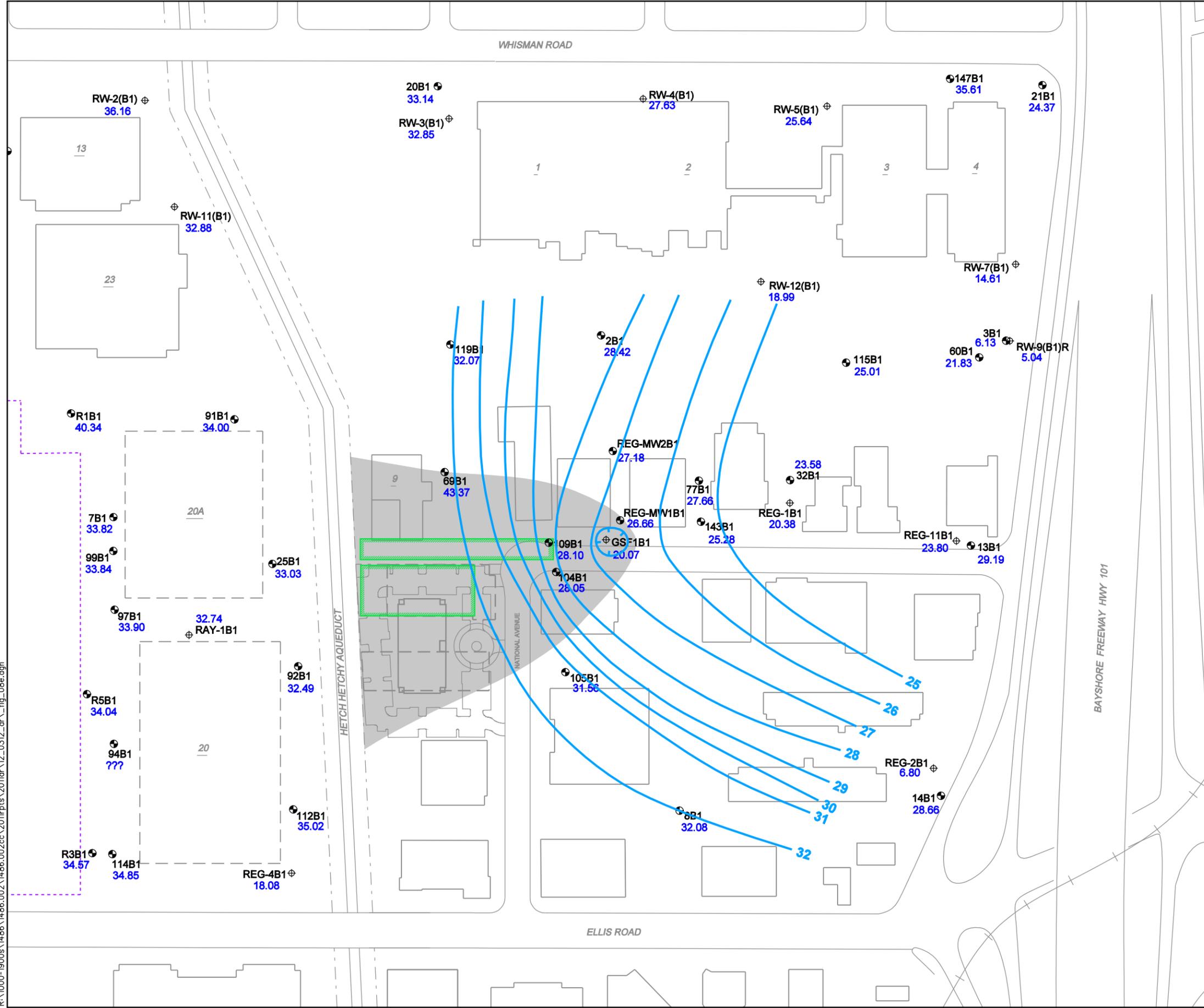
NOTES:

1. Contours based on interpolation of water level measurements collected on September 15, 2011, during non-pumping conditions at all on- and off-site wells.
2. Cone of depression shown in approximate location of well screen. EX-1, 2, 3 and 4 are 45° angle wells.
3. Elevation data shown in ft. msl.
4. NM = Not measured.

ESTIMATED EXTENT OF CONTAINMENT PROVIDED FOR A-AQUIFER BY PUMPING FROM ONSITE EXTRACTION WELLS AND GSF1A			
September 15, 2011			
405 National Avenue and Vicinity			
Mountain View, California			
By: RFC	Date: 4/13/2012	Project No.	1486.002
			Figure 8d



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 kristin.uber



EXPLANATION

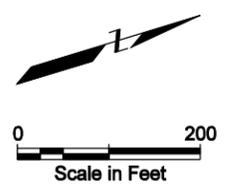
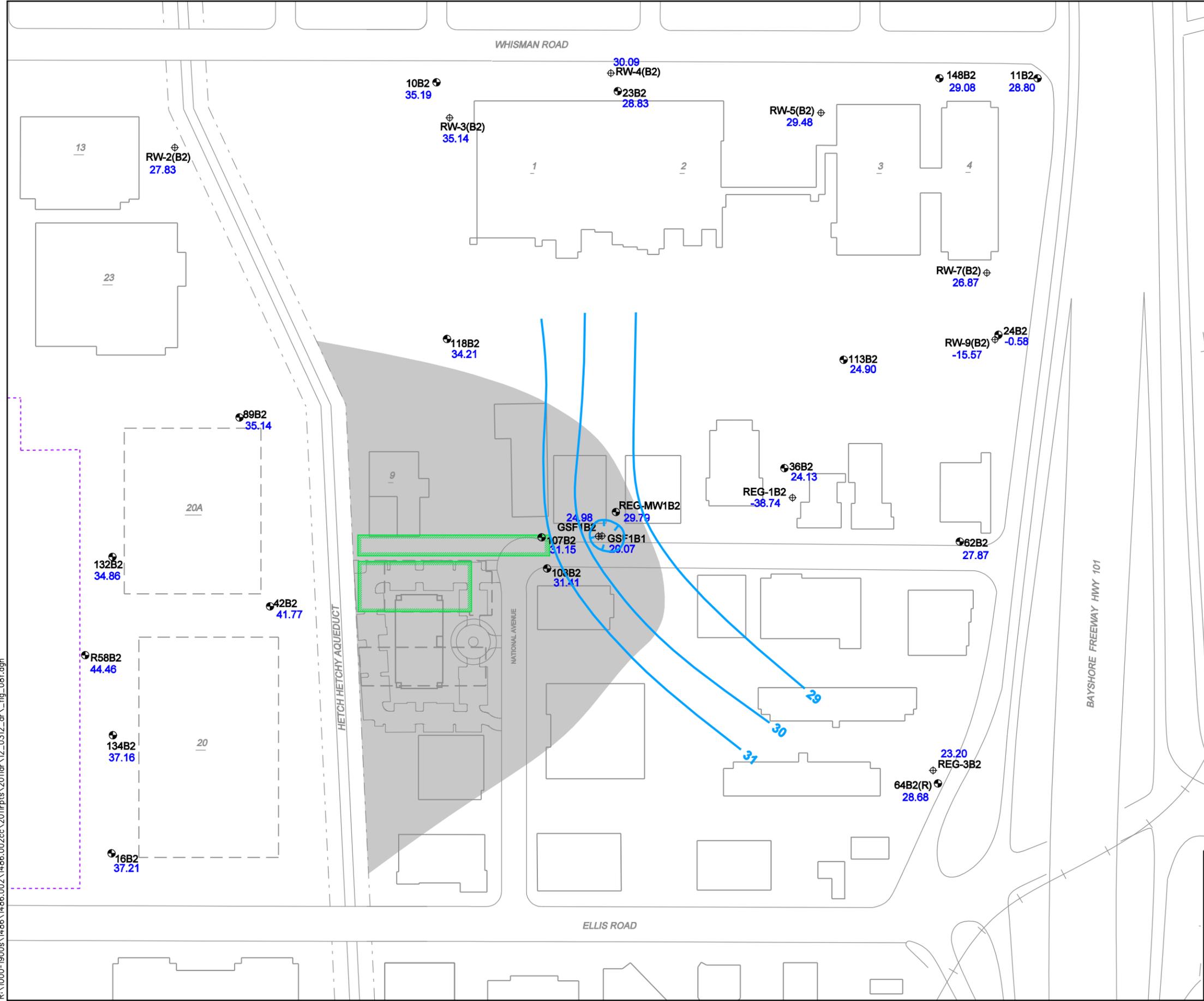
- Monitoring wells
- ⊕ Extraction wells
- GSF-1B1 estimated containment area
- B1-aquifer slurry wall
- Buildings demolished November 2000
- ▭ Target capture zone
- 28 Potentiometric contour line and elevation. Dashed were estimated
- Closely spaced groundwater contour
- (29.98) Water level measurements were not used in interpolation of potentiometric surface

NOTES:

1. Contours based on interpolation of water level measurements collected on September 15, 2011, during non-pumping conditions at aff-site wells.
2. Elevation data shown in ft. msl.
3. NM = Not Measured.

ESTIMATED EXTENT OF CONTAINMENT PROVIDED FOR B1-AQUIFER BY PUMPING FROM GSF1B1 September 15, 2011 405 National Avenue and Vicinity Mountain View, California			
By: RFC	Date: 4/13/2012	Project No.	1486.002
		Figure	8e

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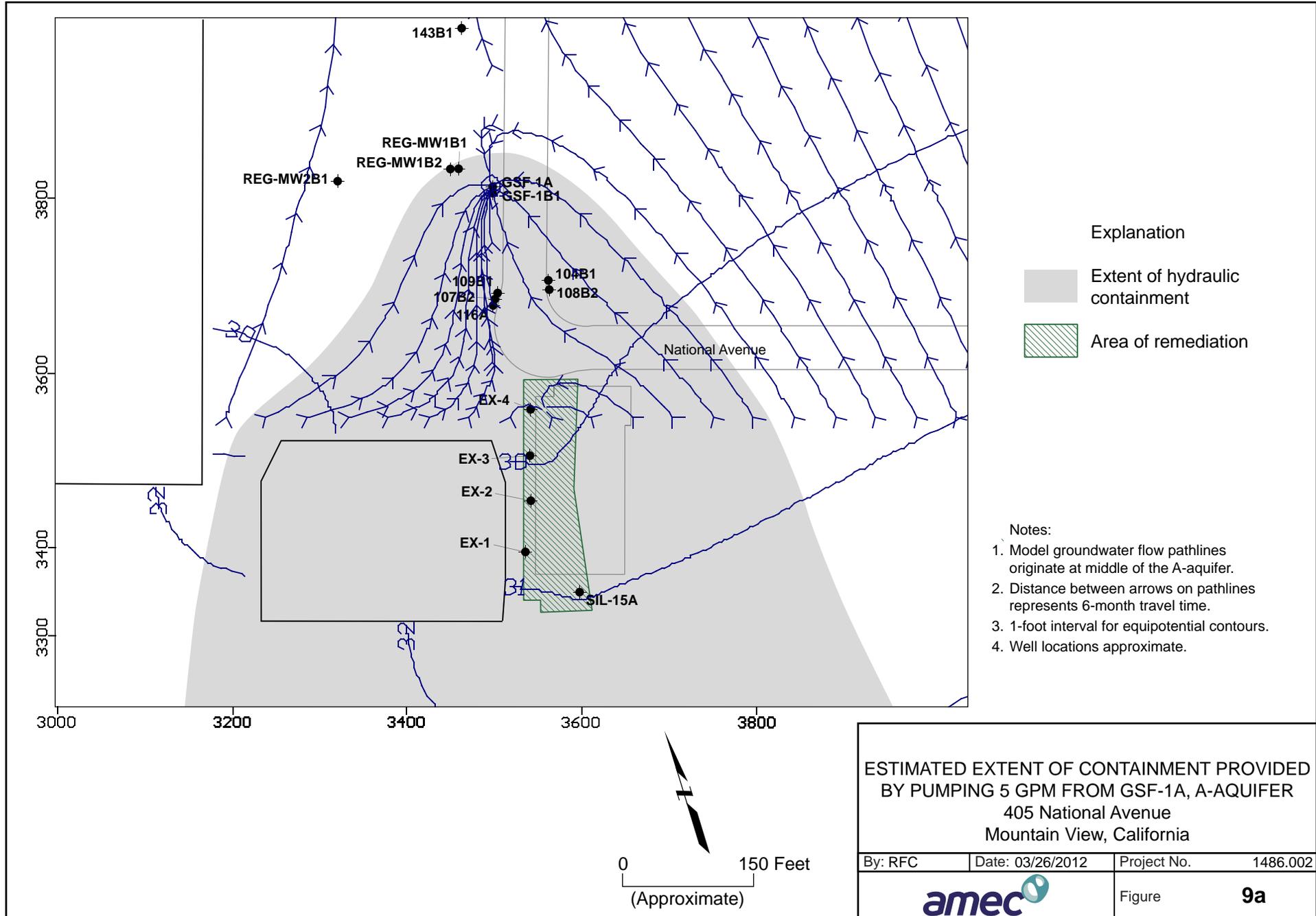
EXPLANATION

- Monitoring wells
- ⊕ Extraction wells
- GSF-1B2 estimated containment area
- ▭ B2-aquifer slurry wall
- - - Buildings demolished November 2000
- ▨ Target capture zone
- 28 Potentiometric contour line and elevation. Dashed were estimated
- Closely spaced groundwater contour
- (29.98) Water level measurements were not used in interpolation of potentiometric surface

NOTES:

1. Contours based on interpolation of water level measurements collected on September 15, 2011.
2. Elevation data shown in ft. msl.
3. NM = Not Measured.

ESTIMATED EXTENT OF CONTAINMENT PROVIDED FOR B2-AQUIFER BY PUMPING FROM GSF1B1 September 15, 2011 405 National Avenue and Vicinity Mountain View, California			
By: RFC	Date: 4/13/2012	Project No.	1486.002
		Figure	8f



Explanation

- Extent of hydraulic containment
- Area of remediation

Notes:

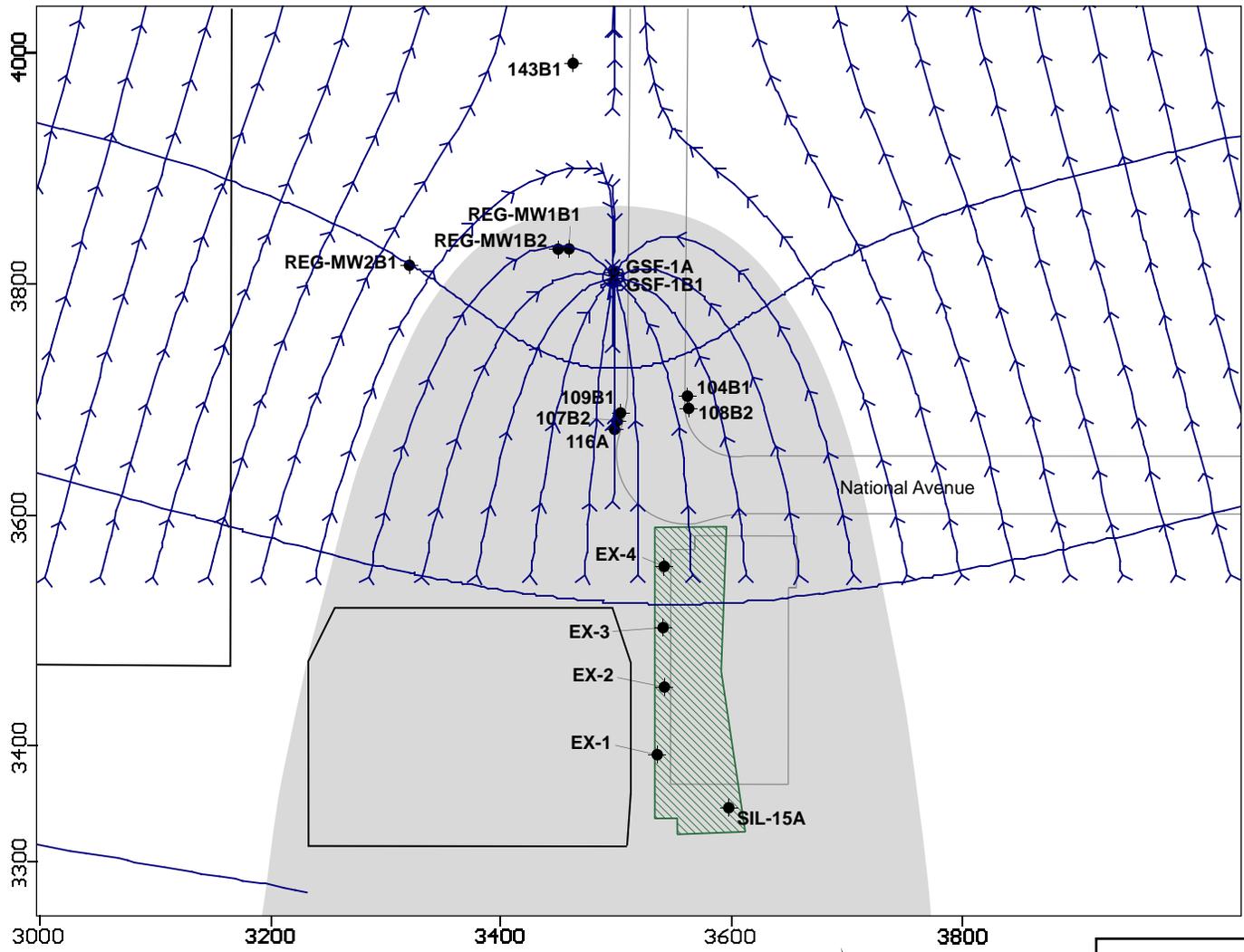
1. Model groundwater flow pathlines originate at middle of the A-aquifer.
2. Distance between arrows on pathlines represents 6-month travel time.
3. 1-foot interval for equipotential contours.
4. Well locations approximate.

**ESTIMATED EXTENT OF CONTAINMENT PROVIDED
BY PUMPING 5 GPM FROM GSF-1A, A-AQUIFER
405 National Avenue
Mountain View, California**

By: RFC	Date: 03/26/2012	Project No. 1486.002
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Figure **9a**

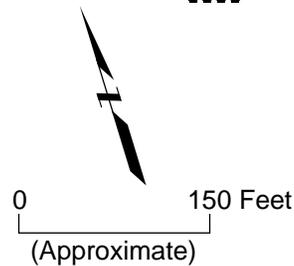


Explanation

- Extent of hydraulic containment
- Area of remediation

Notes:

1. Model groundwater flow pathlines originate at middle of the B1-aquifer.
2. Distance between arrows on pathlines represents 6-month travel time.
3. 1-foot interval for equipotential contours.
4. Well locations approximate.

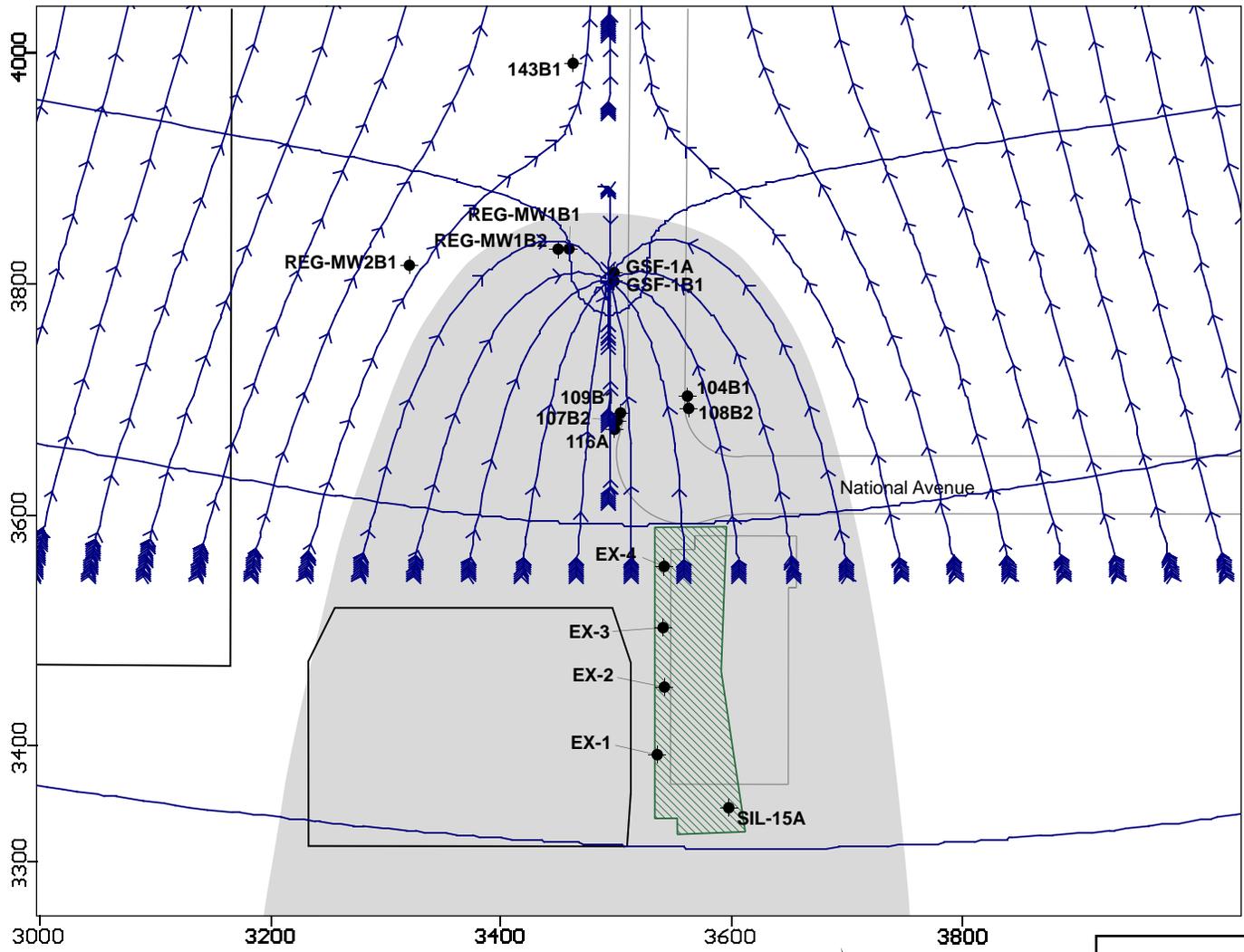


ESTIMATED EXTENT OF CONTAINMENT PROVIDED
 BY PUMPING 7 GPM FROM GSF-1B1, B1-AQUIFER
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No.	1486.002
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Figure **9b**

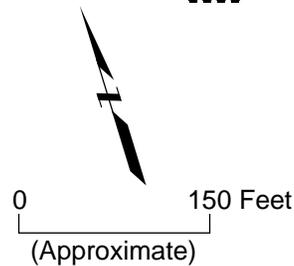


Explanation

- Extent of hydraulic containment
- Area of remediation

Notes:

1. Model groundwater flow pathlines originate near the base of the B2-aquifer.
2. Distance between arrows on pathlines represents 6-month travel time.
3. Closely spaced arrows at beginning of pathlines are due to slow velocity as groundwater flows upward through the aquitard between the B2- and B1-aquifers.
4. 1-foot interval for equipotential contours.
5. Well locations approximate.

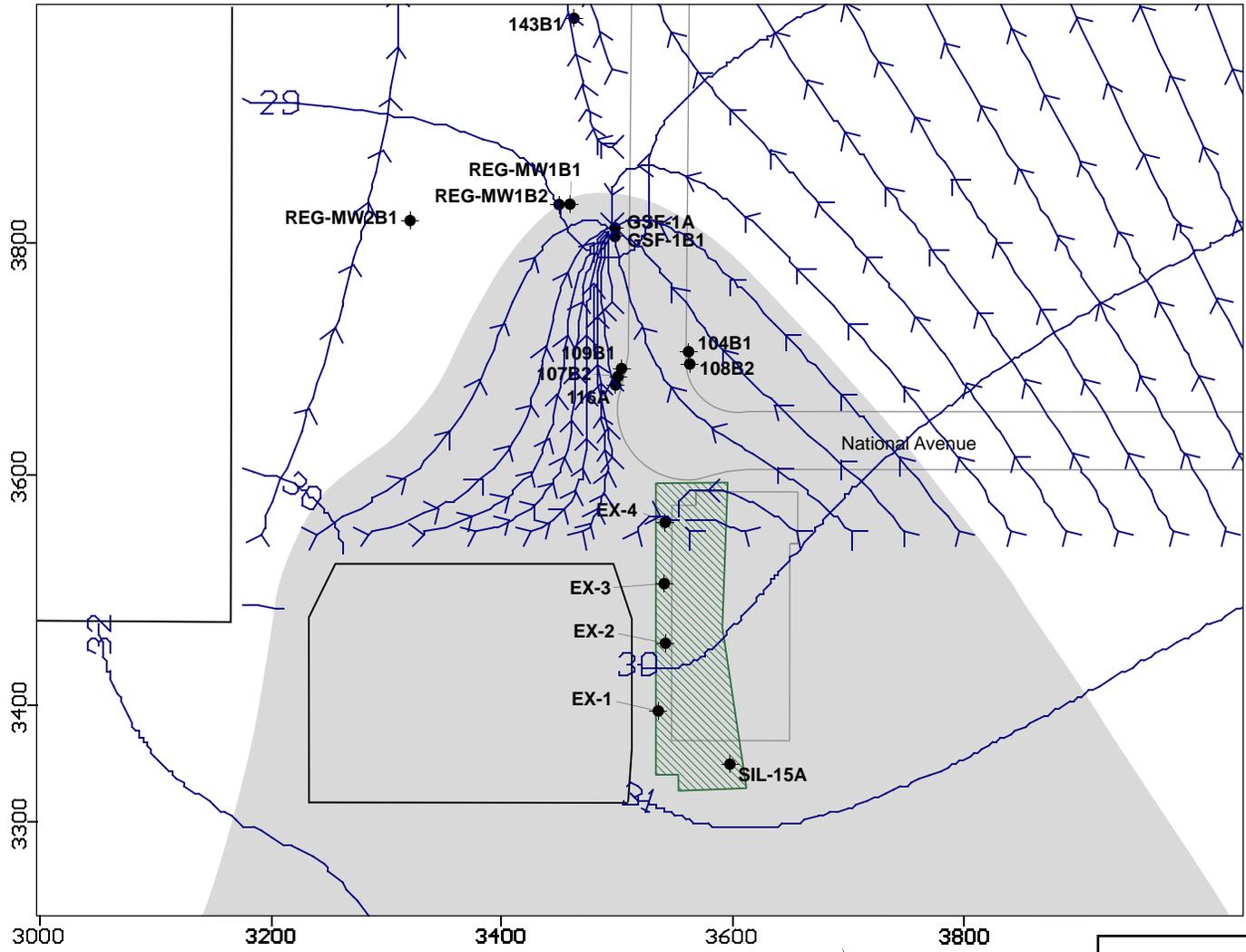


ESTIMATED EXTENT OF CONTAINMENT PROVIDED
 BY PUMPING 7 GPM FROM GSF-1B1, B2-AQUIFER
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No. 1486.002
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Figure	9c
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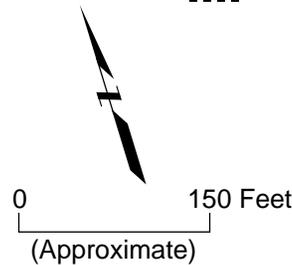


Explanation

- Extent of hydraulic containment
- Area of remediation

Notes:

1. Model groundwater flow pathlines originate at middle of the A-aquifer.
2. Distance between arrows on pathlines represents 6-month travel time.
3. 1-foot interval for equipotential contours.
4. Well locations approximate.

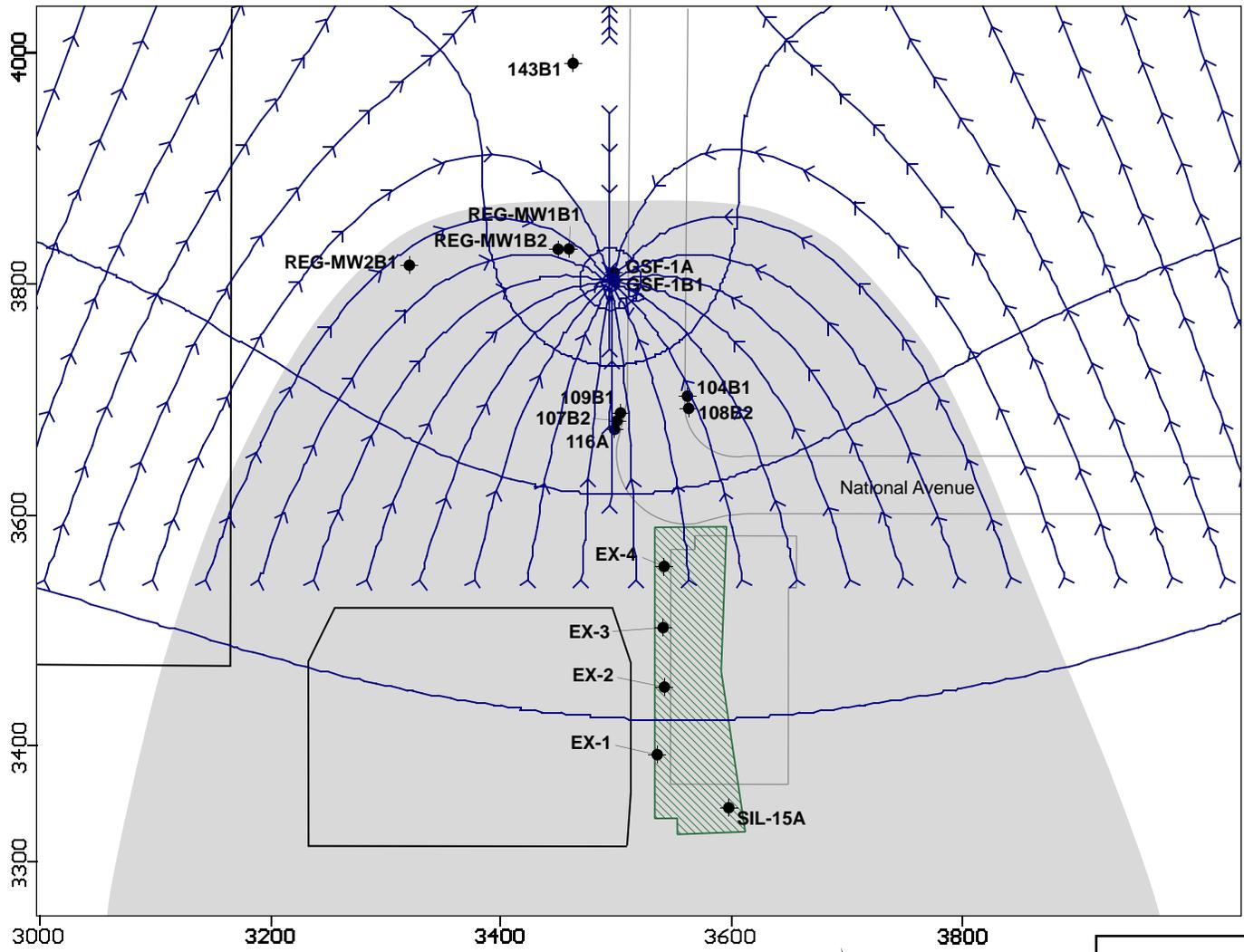


ESTIMATED EXTENT OF CONTAINMENT PROVIDED
 BY PUMPING 5 GPM FROM GSF-1A, A-AQUIFER
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No. 1486.002
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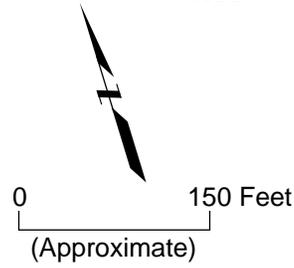
Figure	9d
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Explanation

- Extent of hydraulic containment
- Area of remediation

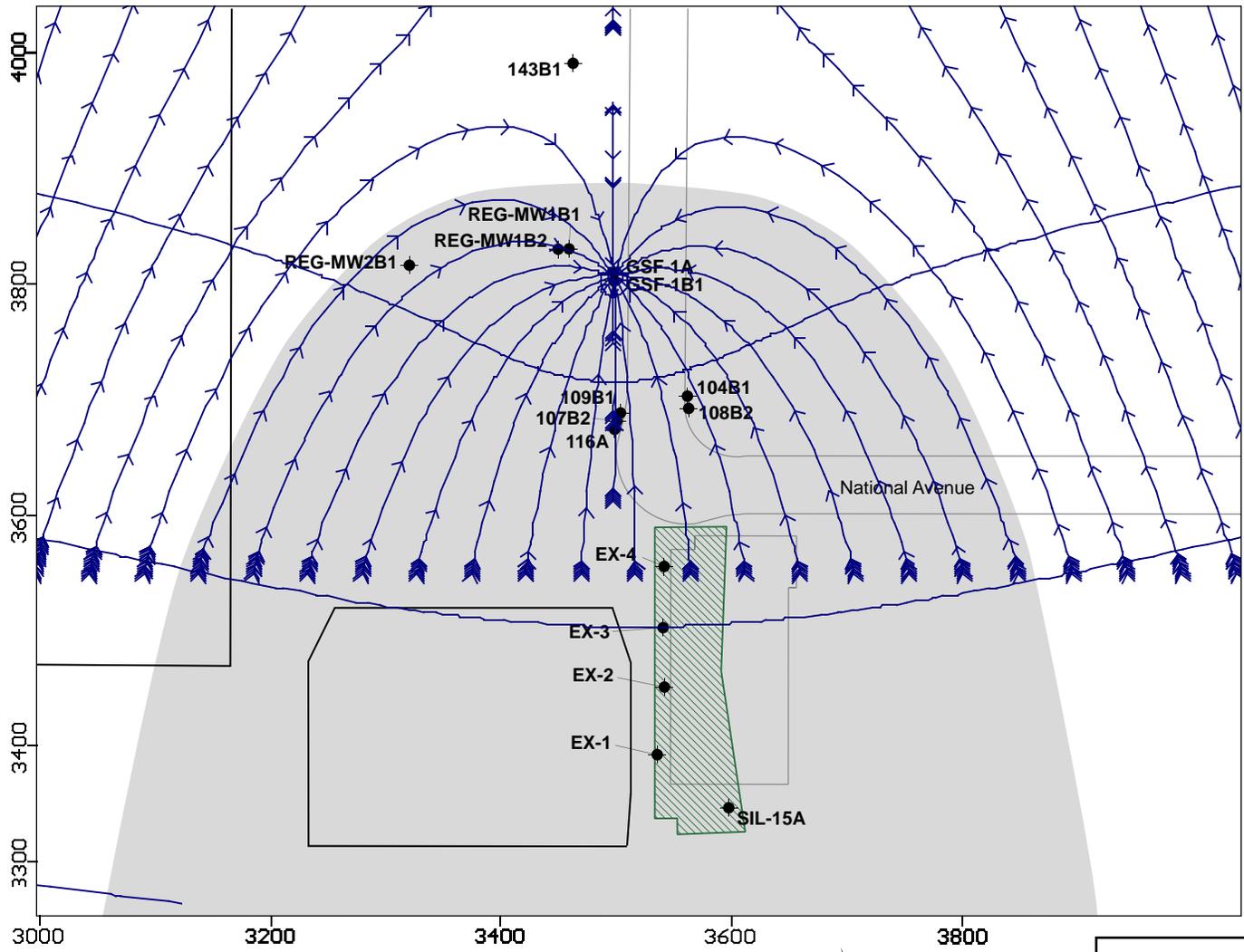
- Notes:**
1. Model groundwater flow pathlines originate at middle of the B1-aquifer.
 2. Distance between arrows on pathlines represents 6-month travel time.
 3. 1-foot interval for equipotential contours.
 4. Well locations approximate.



**ESTIMATED EXTENT OF CONTAINMENT PROVIDED
BY PUMPING 5 GPM FROM GSF-1B1, B1-AQUIFER
405 National Avenue
Mountain View, California**

By: RFC	Date: 03/26/2012	Project No. 1486.002
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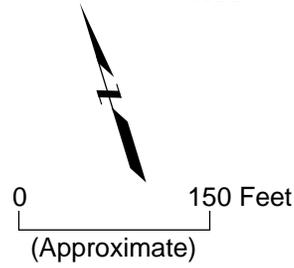


Explanation

- Extent of hydraulic containment
- Area of remediation

Notes:

1. Model groundwater flow pathlines originate near the base of the B2-aquifer.
2. Distance between arrows on pathlines represents 6-month travel time.
3. Closely spaced arrows at beginning of pathlines are due to slow velocity as groundwater flows upward through the aquitard between the B2- and B1-aquifers.
4. 1-foot interval for equipotential contours.
5. Well locations approximate.

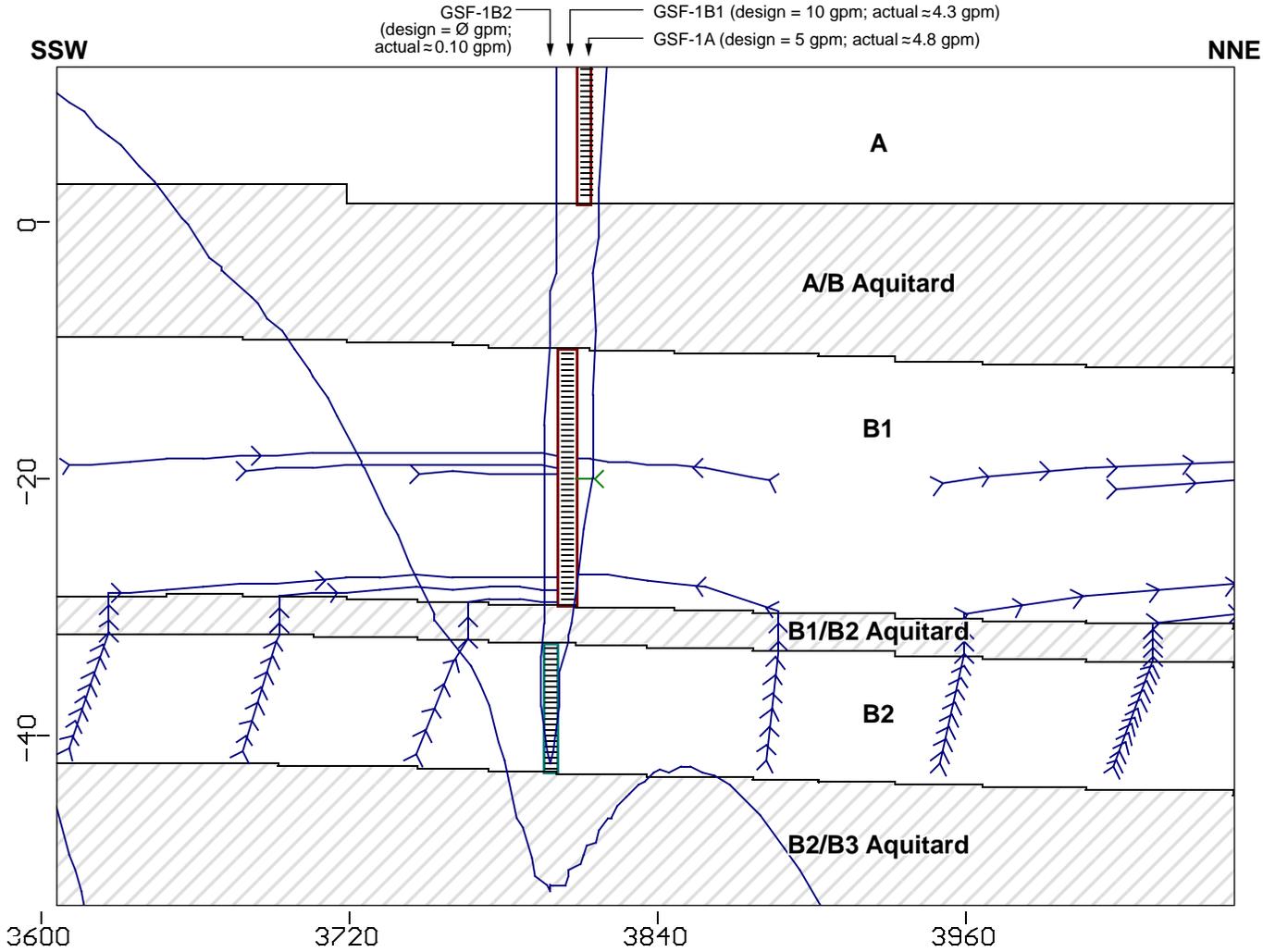


ESTIMATED EXTENT OF CONTAINMENT PROVIDED
 BY PUMPING 5 GPM FROM GSF-1B1, B2-AQUIFER
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No. 1486.002
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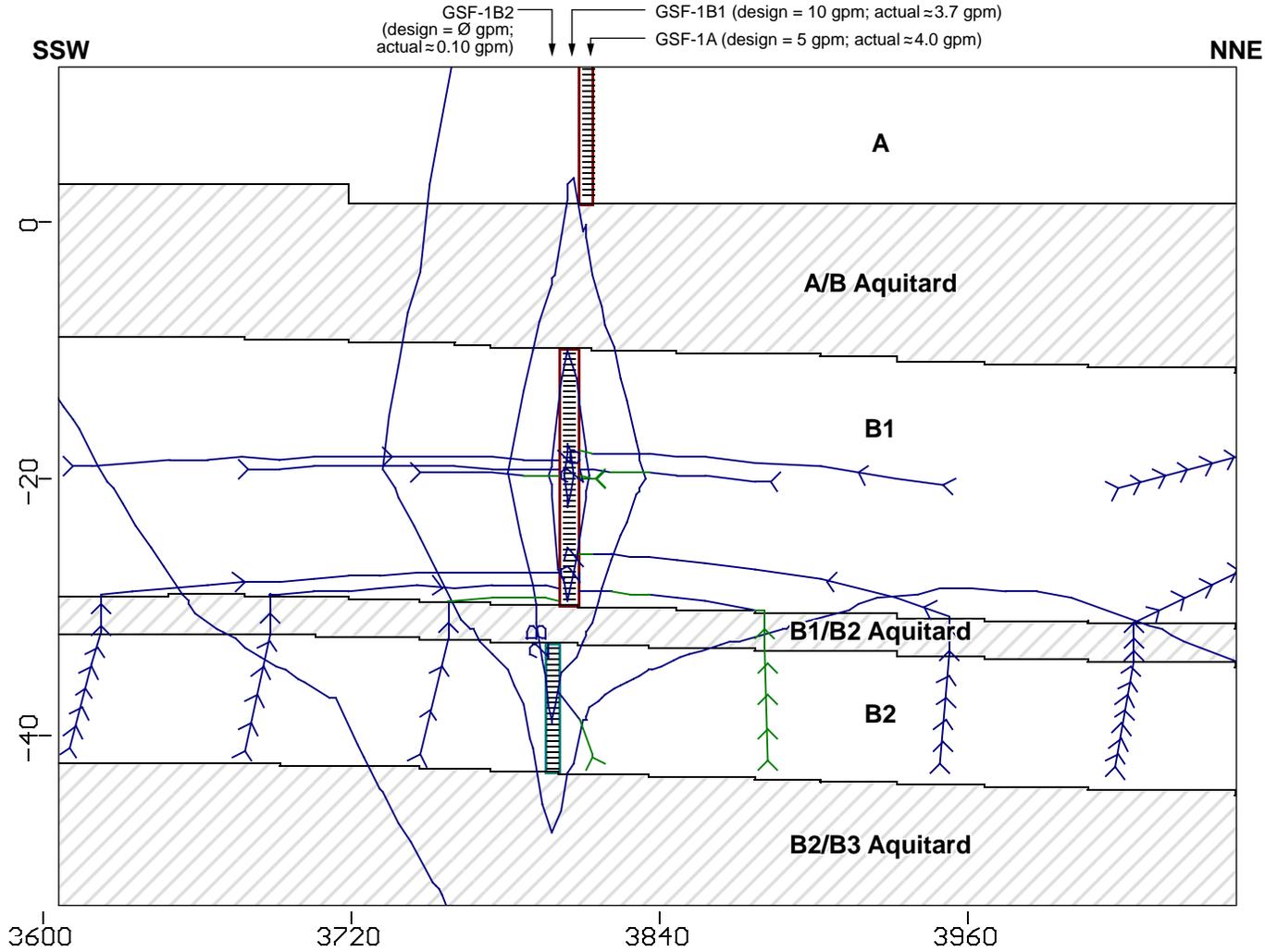
Figure **9f**



- Notes:
- 1) Distance between arrows on pathlines represent 6-month travel time.
 - 2) 1-foot interval for equipotential contours.
 - 3) Equipotential contours show upward hydraulic gradient from B2 to B1.
 - 4) Groundwater particles released near base of B2-interval are captured by extraction from GSF-1B2.
 - 5) No pumping from GSF-1B2 for this simulation. Actual average extraction rate from GSF-1B2 is approx 0.10 gpm.

**CROSS SECTIONAL VIEW OF MODEL FLOW
BETWEEN B1 AND B2-AQUIFERS**
 March 2011
 405 National Avenue
 Mountain View, California

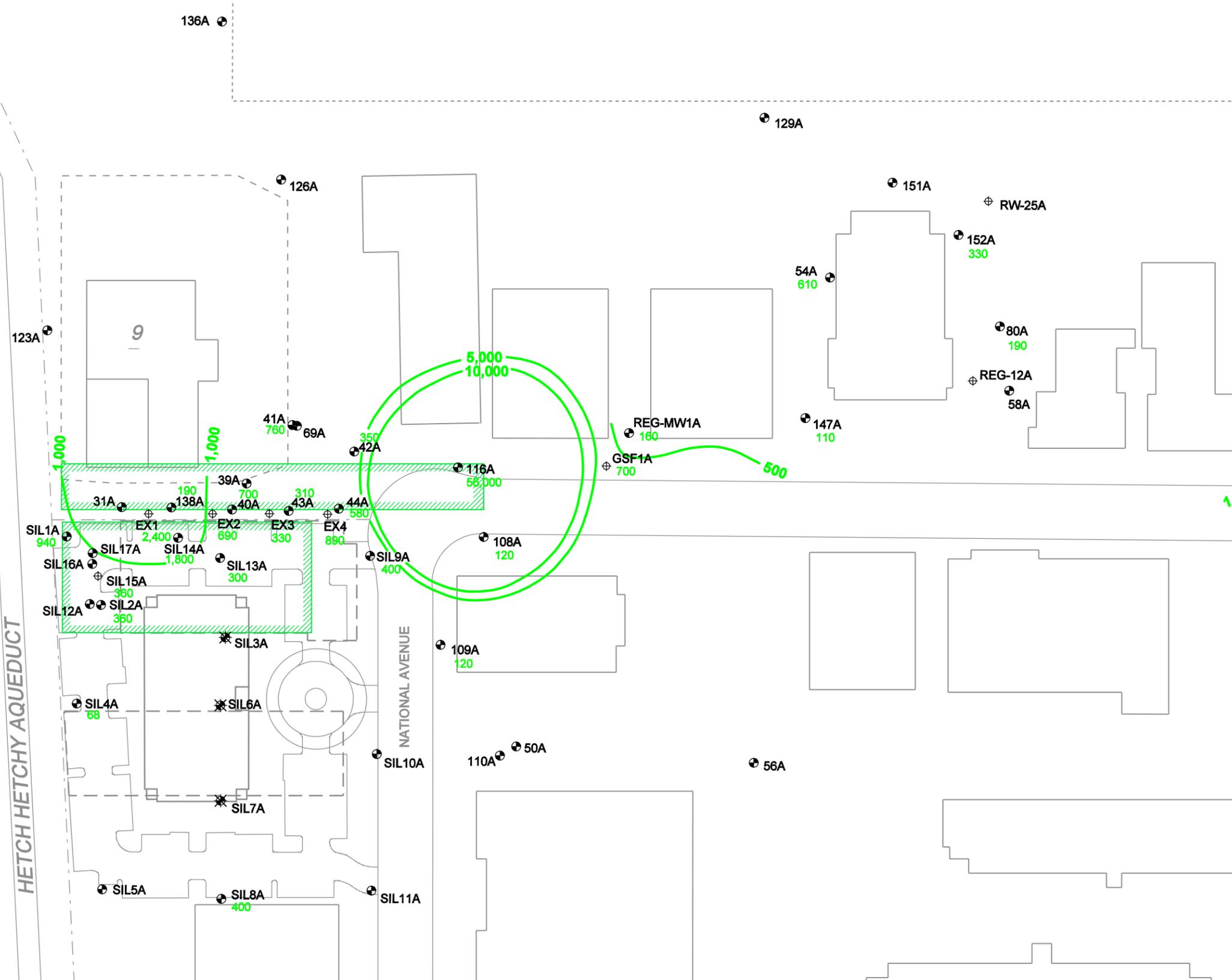
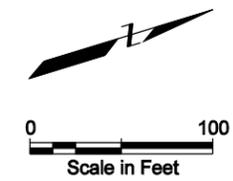
By: RFC	Date: 03/26/2012	Project No.	1486.002
		Figure	10a



- Notes:
- 1) Distance between arrows on pathlines represent 6-month travel time.
 - 2) 1-foot interval for equipotential contours.
 - 3) Equipotential contours show upward hydraulic gradient from B2 to B1.
 - 4) Groundwater particles released near base of B2-interval are captured by extraction from GSF-1B2.
 - 5) No pumping from GSF-1B2 for this simulation. Actual average extraction rate from GSF-1B2 is approx 0.10 gpm.

**CROSS SECTIONAL VIEW OF MODEL FLOW
BETWEEN B1 AND B2-AQUIFERS**
September 2011
405 National Avenue
Mountain View, California

By: _	Date: 03/26/2012	Project No.	1486.002
		Figure	10b



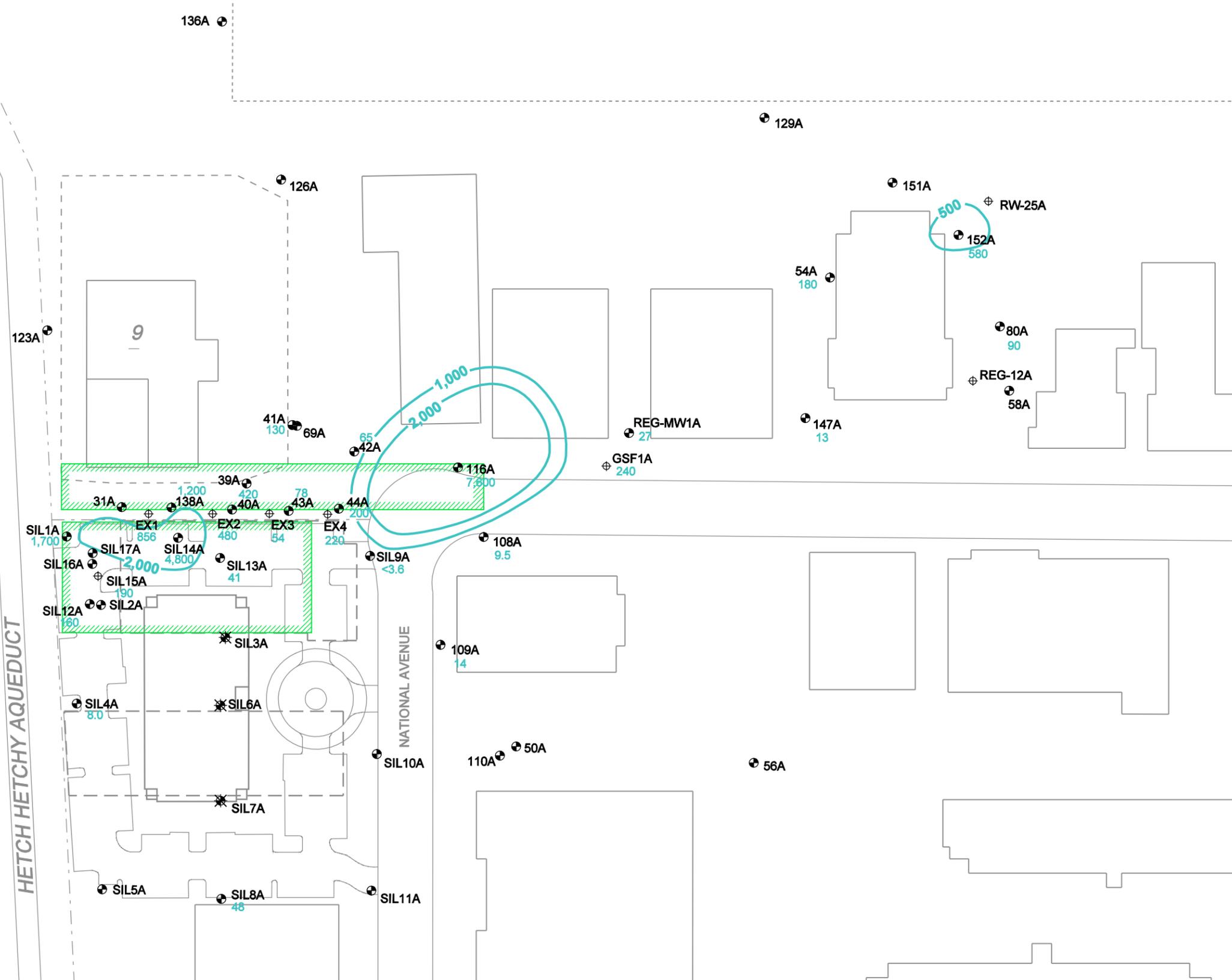
- EXPLANATION**
- ⊕ Monitoring wells
 - ⊕ Extraction wells
 - ⊗ Monitoring wells destroyed November 16, 2000
 - ⊖ A-aquifer slurry wall
 - ⊖ Buildings demolished November 2000
 - ▭ Target capture zone
 - 770 TCE concentration in groundwater samples collected from A-zone monitoring wells in µg/L
 - A-zone TCE iso-concentration line in µg/L

- NOTES:**
1. Contours based on interpolation of data collected from the October 2011 groundwater sampling events.
 2. Groundwater concentration data in micrograms per liter (µg/L).

**2011 TCE CONCENTRATION MAP
FOR A-AQUIFER
October 2011
405 National Avenue and Vicinity
Mountain View, California**

By: RFC	Date: 4/13/2012	Project No. 1486.002	
		Figure 11a	

Q:\plot\ctb\amec.ctb
 R:\1000-1900s\1486\1486.002\1486.002cc\2011rpts\2011or_12_0312_or_fig_11a.dgn
 kristin.uber



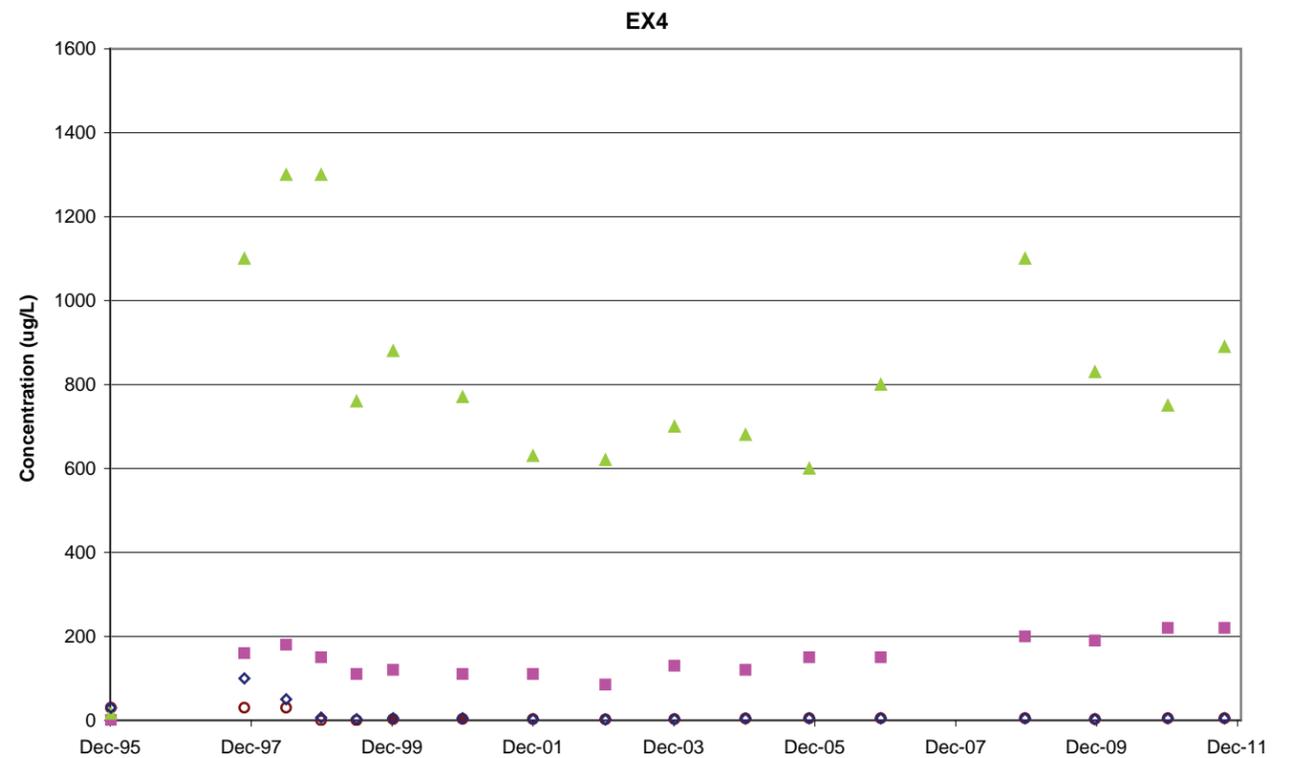
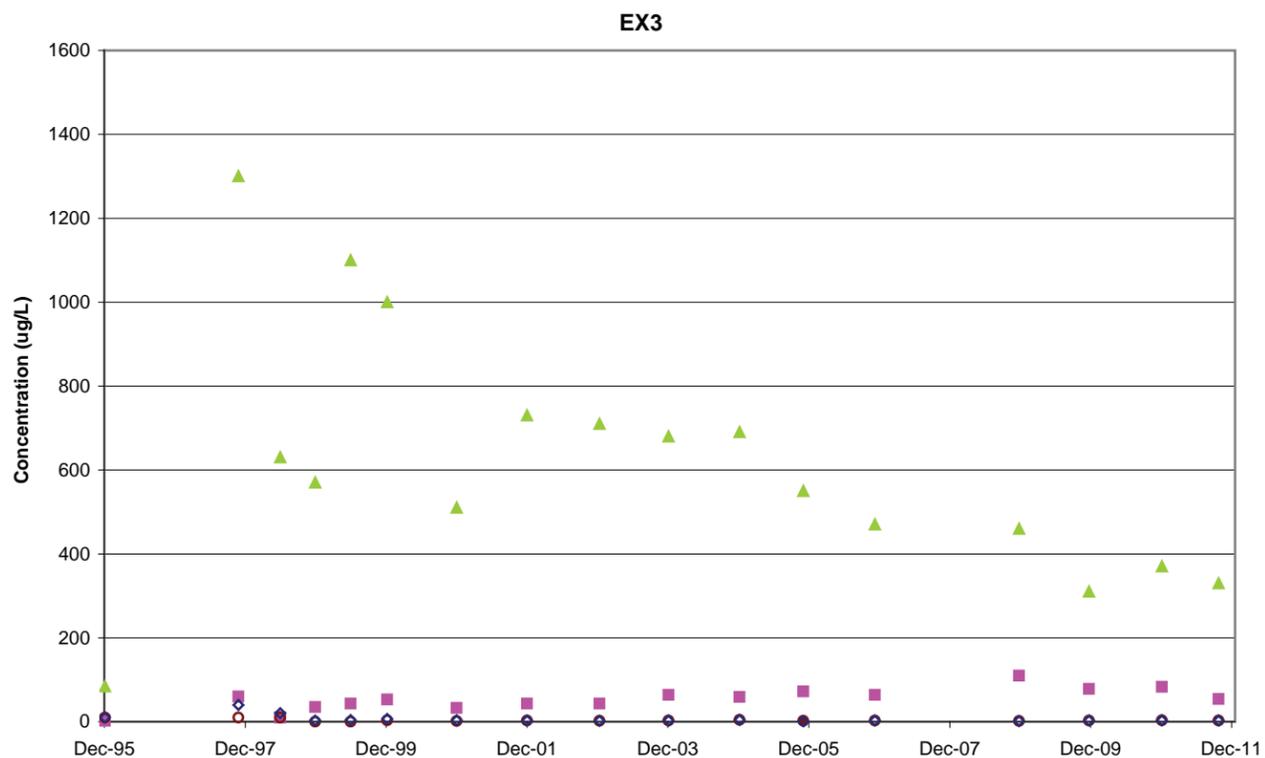
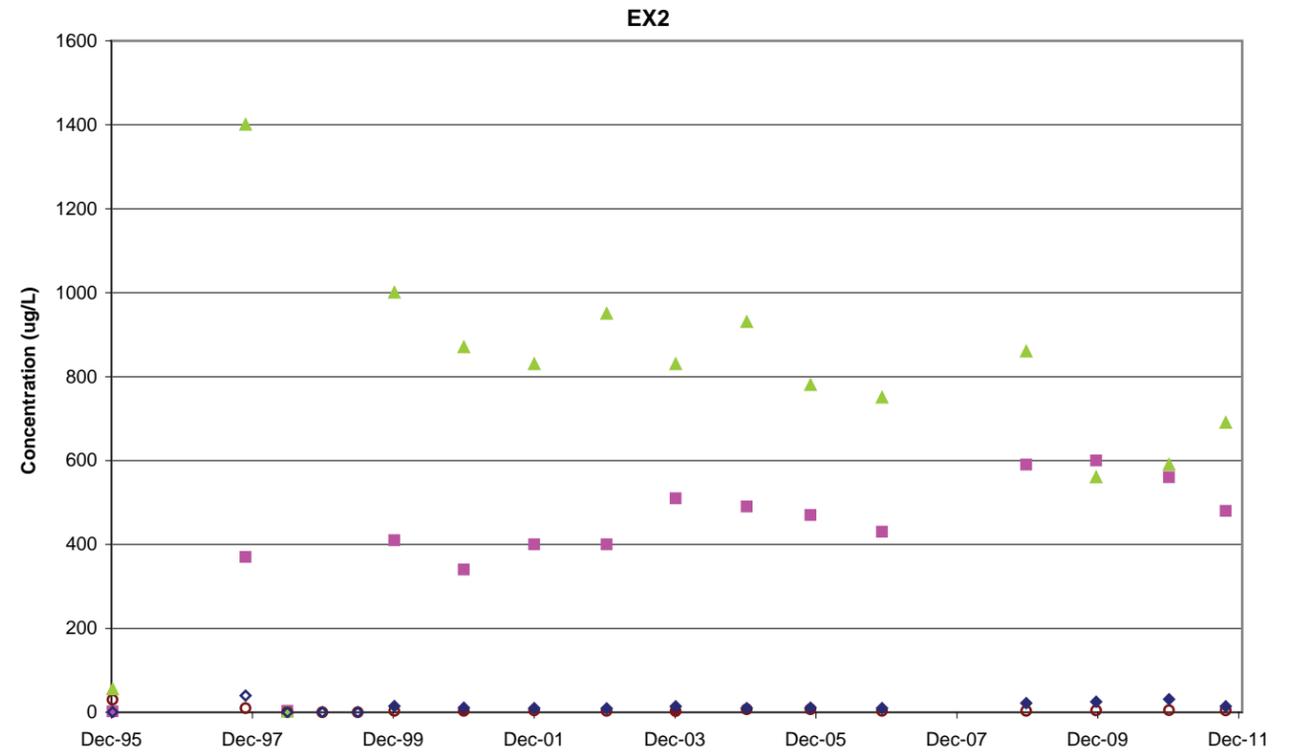
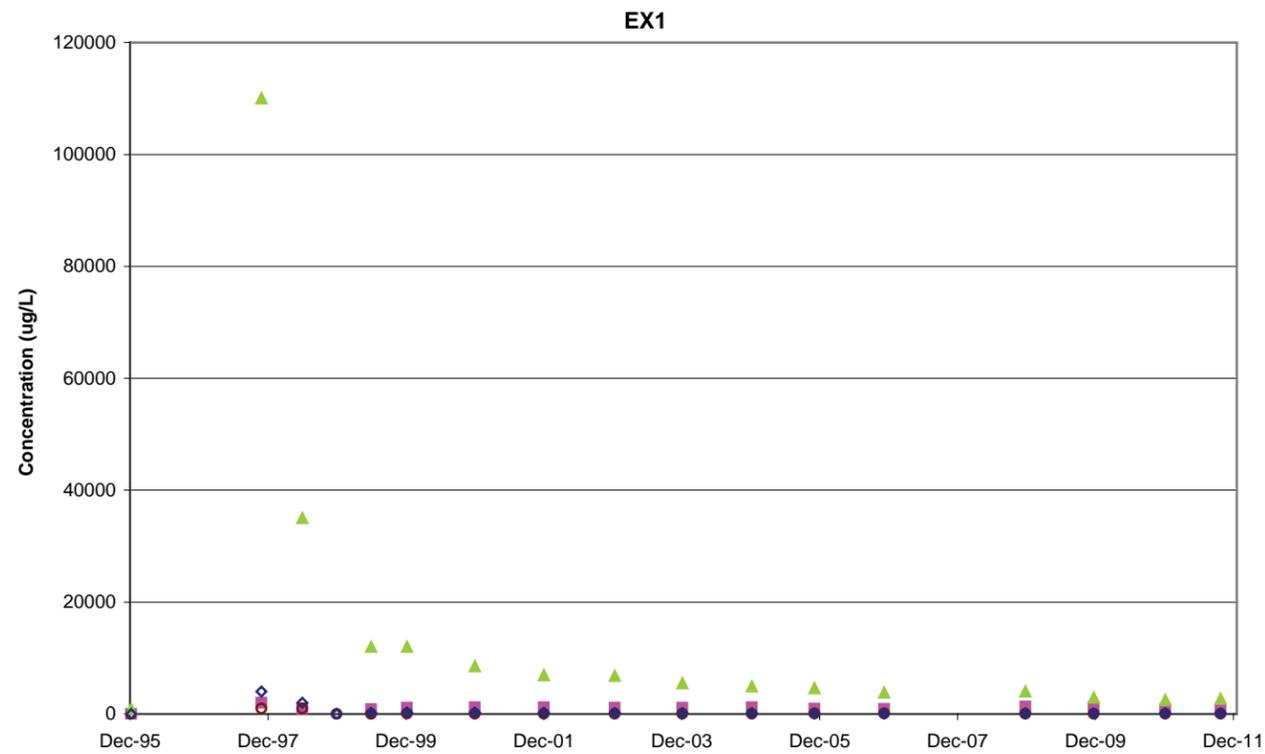
- EXPLANATION**
- Monitoring wells
 - ⊕ Extraction wells
 - ✱ Monitoring wells destroyed November 16, 2000
 - ⊖ A-aquifer slurry wall
 - ⊖ Buildings demolished November 2000
 - ▨ Target capture zone
 - 13 CIS-1,2-DCE concentration in groundwater samples collected from A-zone monitoring wells in µg/L
 - 500 A-zone CIS-1,2-DCE iso-concentration line in µg/L

- NOTES:**
1. Contours based on interpolation of data collected from the October 2011 groundwater sampling events.
 2. Groundwater concentration data in micrograms per liter (µg/L).
 3. CIS-1,2-DCE = CIS-1,2 Dichloroethene.

**2011 CIS-1,2-DCE CONCENTRATION MAP
FOR A-AQUIFER
October 2011
405 National Avenue and Vicinity
Mountain View, California**

By: RFC	Date: 4/13/2012	Project No.	1486.002
		Figure	11c

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 R:\1000-1900s\1486\1486.002\1486.002cc\2011rpts\2011or_12_0312_or_fig_11c.dgn
 kristin.uber



■ CIS-1,2-DCE
 □ CIS-1,2-DCE
 ● PCE
 ○ PCE
 ▲ TCE
 ◆ VC
 ▲ VC
 ◇ VC

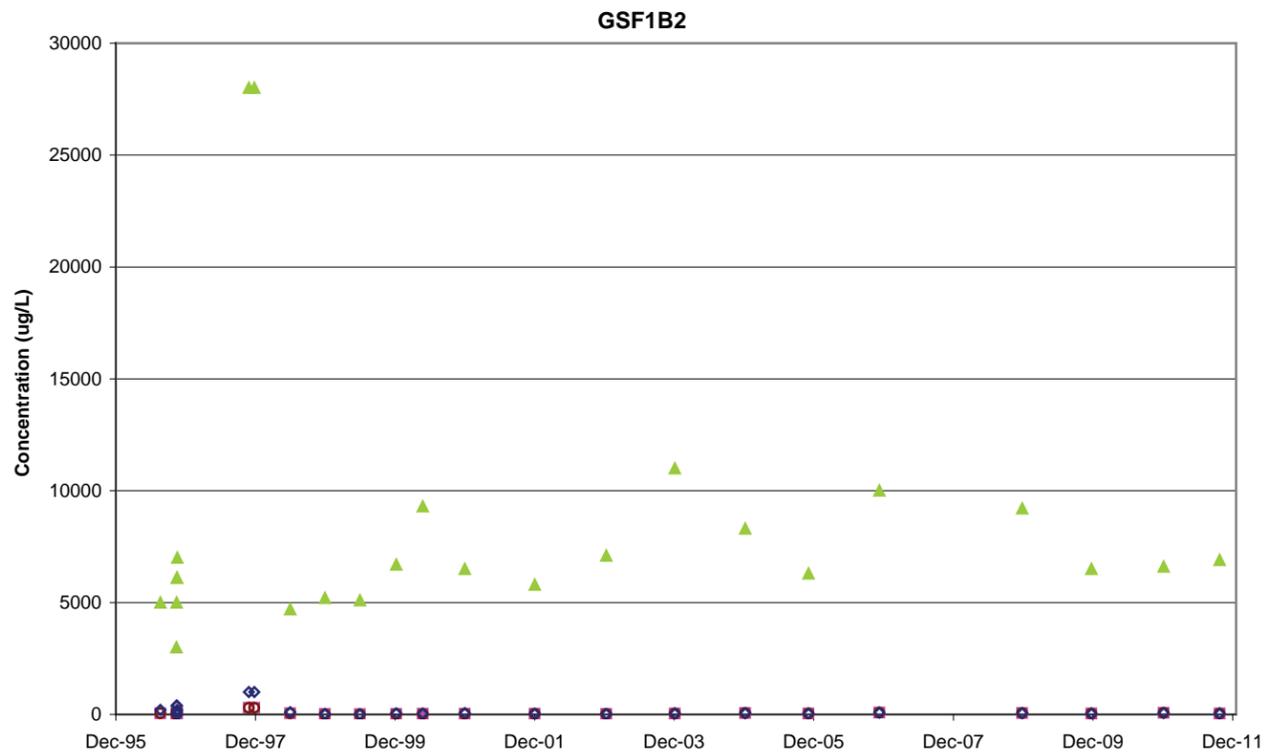
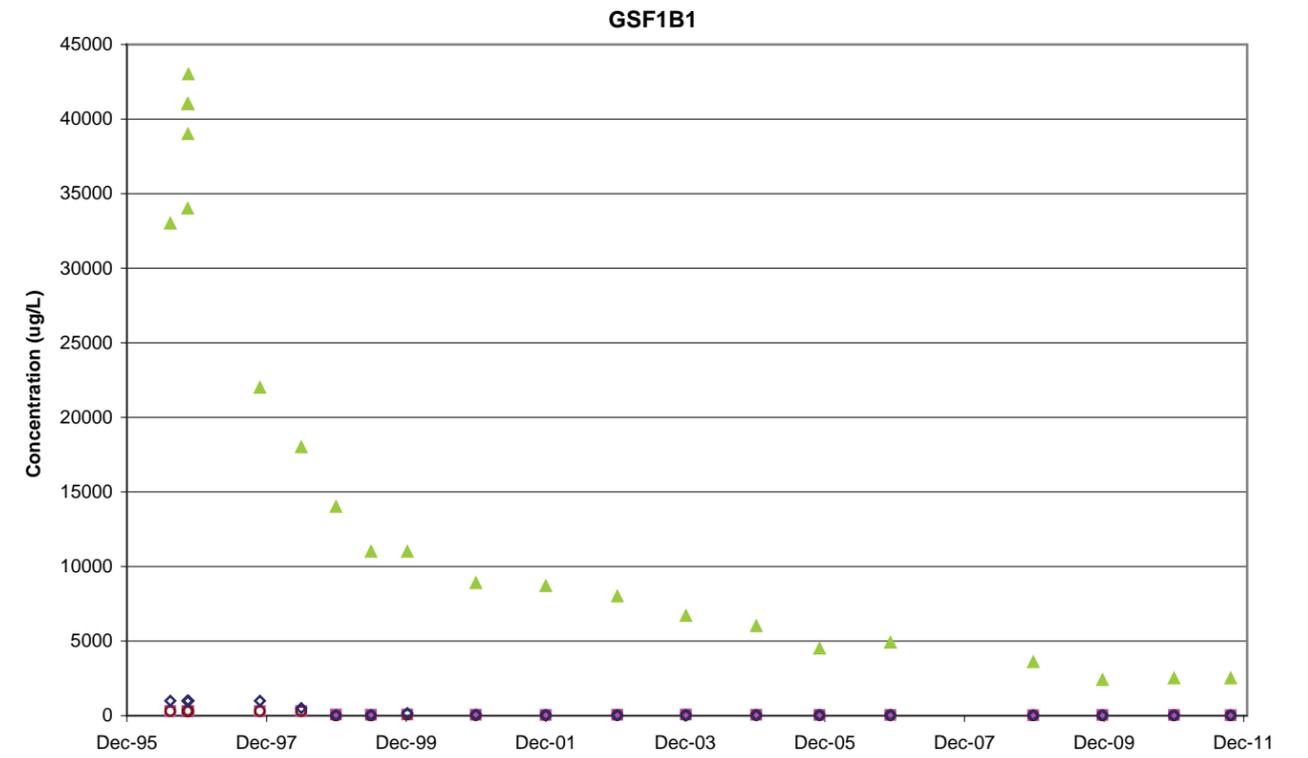
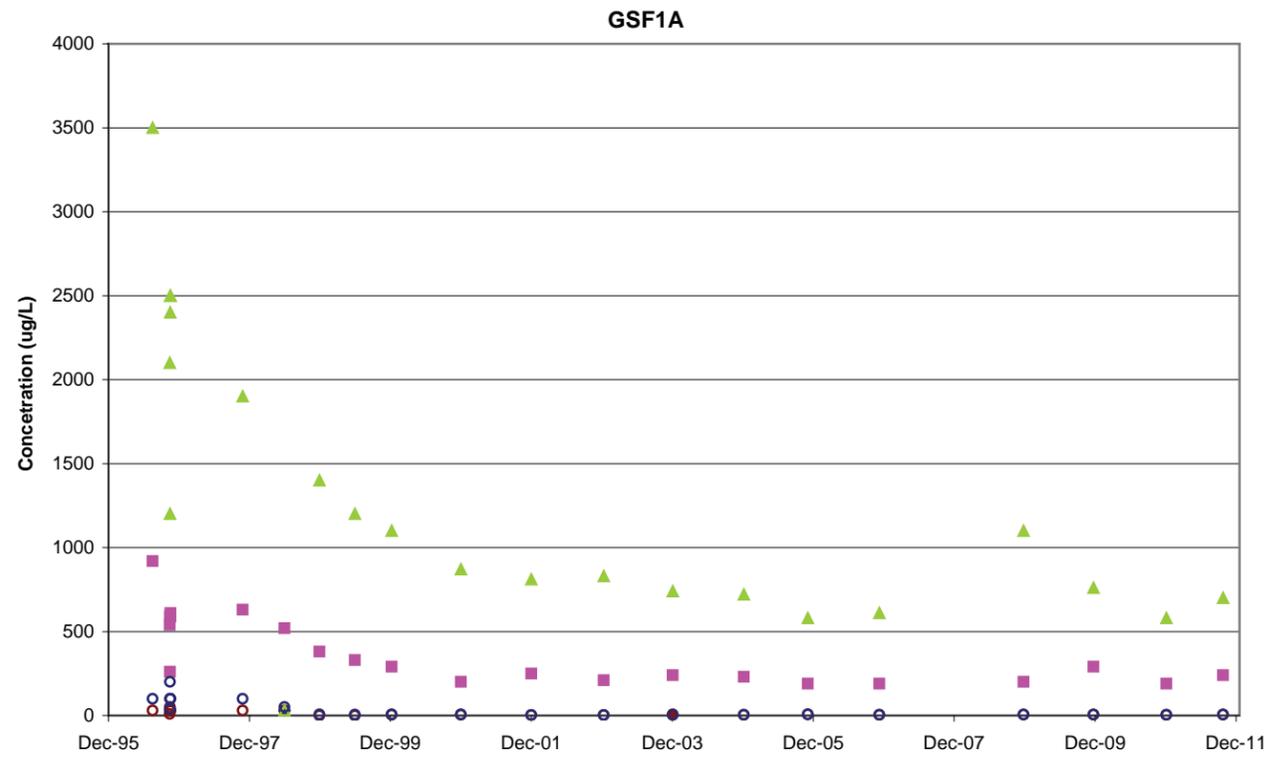
- Notes:
1. Y-axis on different scales.
 2. Open symbol means the constituent was not detected at or above the reporting limit (See Table 6).
 3. Closed symbol means the constituent was detected at or above the reporting limit (See Table 6).
 4. There is no 2007 data for these wells due to operational suspension of GETS during November-December 2007 when the sampling event occurred.

VOC CONCENTRATIONS VS. TIME
 EXTRACTION WELLS EX-1, EX-2, EX-3, EX-4
 405 National Avenue
 Mountain View, California

By: RFC | Date: 03/26/2012 | Project No. 1486.002



Figure 12a



■ CIS-1,2-DCE
 □ CIS-1,2-DCE
 ● PCE
 ○ PCE
 ▲ TCE
 △ TCE
 ◆ VC
 ◇ VC

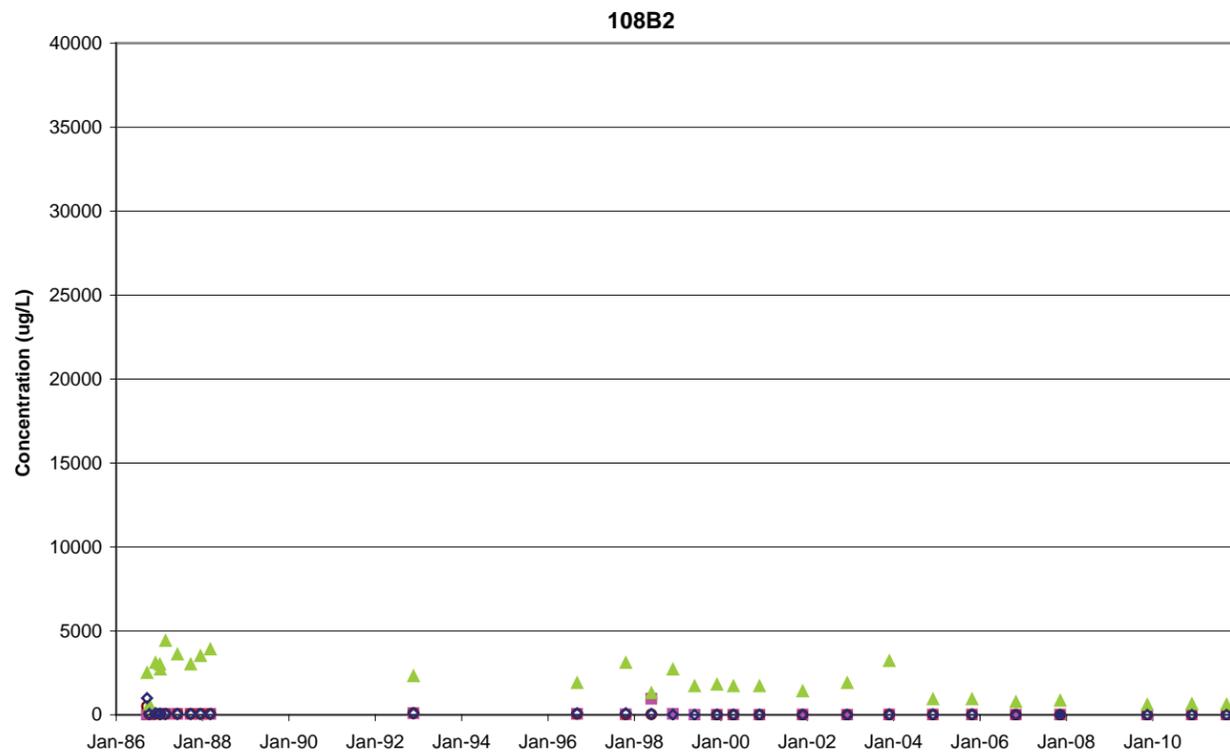
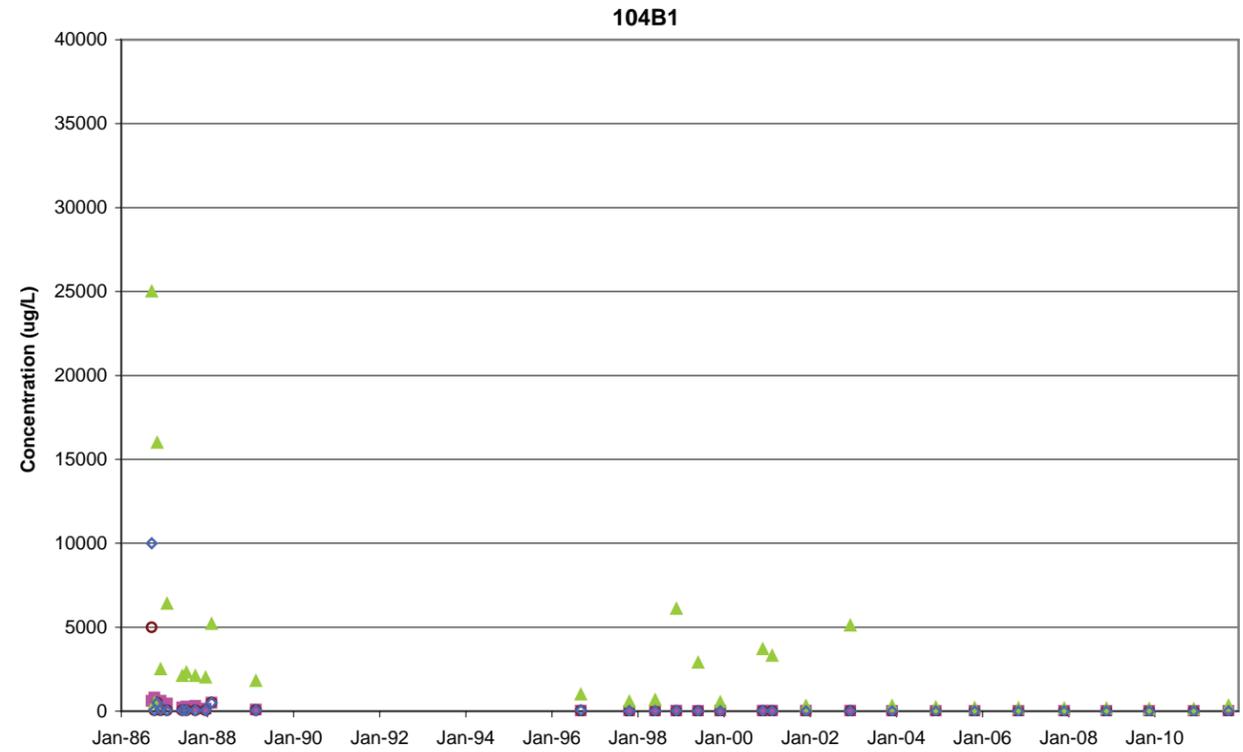
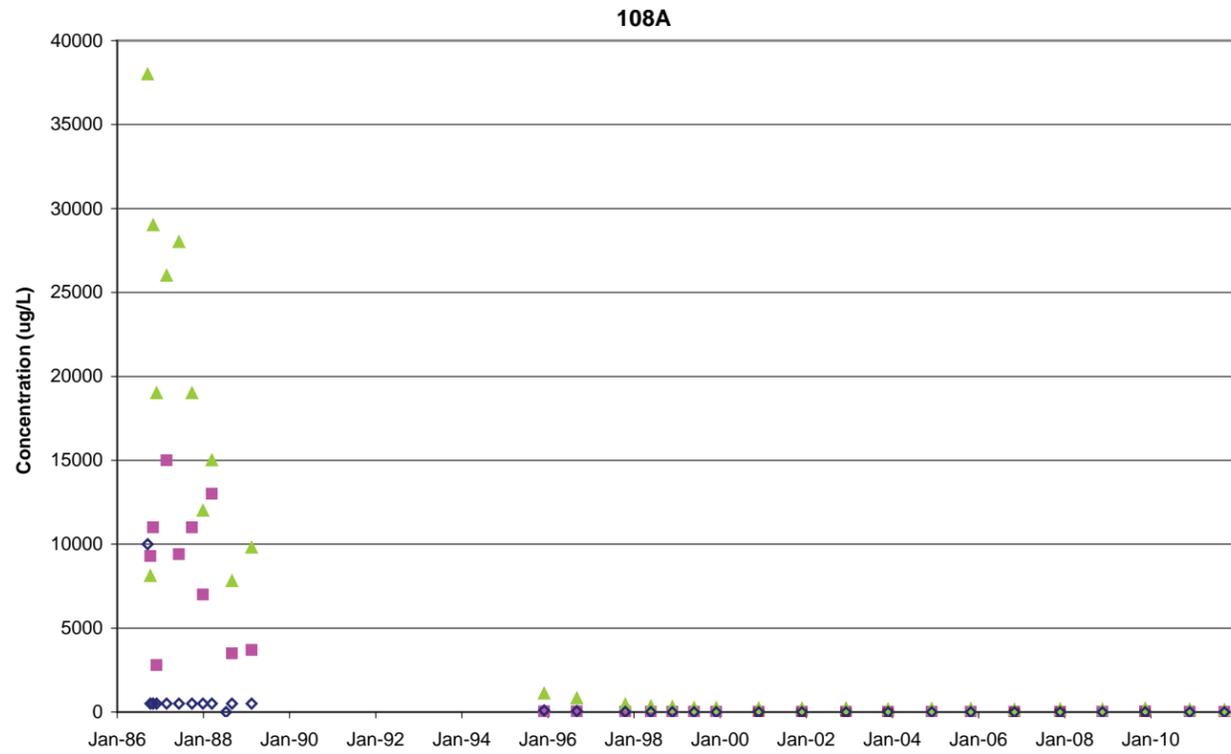
- Notes:
1. Y-axis on different scales.
 2. Open symbol means the constituent was not detected at or above the reporting limit (See Table 6).
 3. Closed symbol means the constituent was detected at or above the reporting limit (See Table 6).
 4. There is no 2007 data for these wells due to operational suspension of GETS during November-December 2007 when the sampling event occurred.

VOC CONCENTRATIONS VS. TIME
 EXTRACTION WELLS GSF-1A, GSF-1B1,
 GSF-1B2, AND SIL-15A
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No. 1486.002
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Figure **12b**



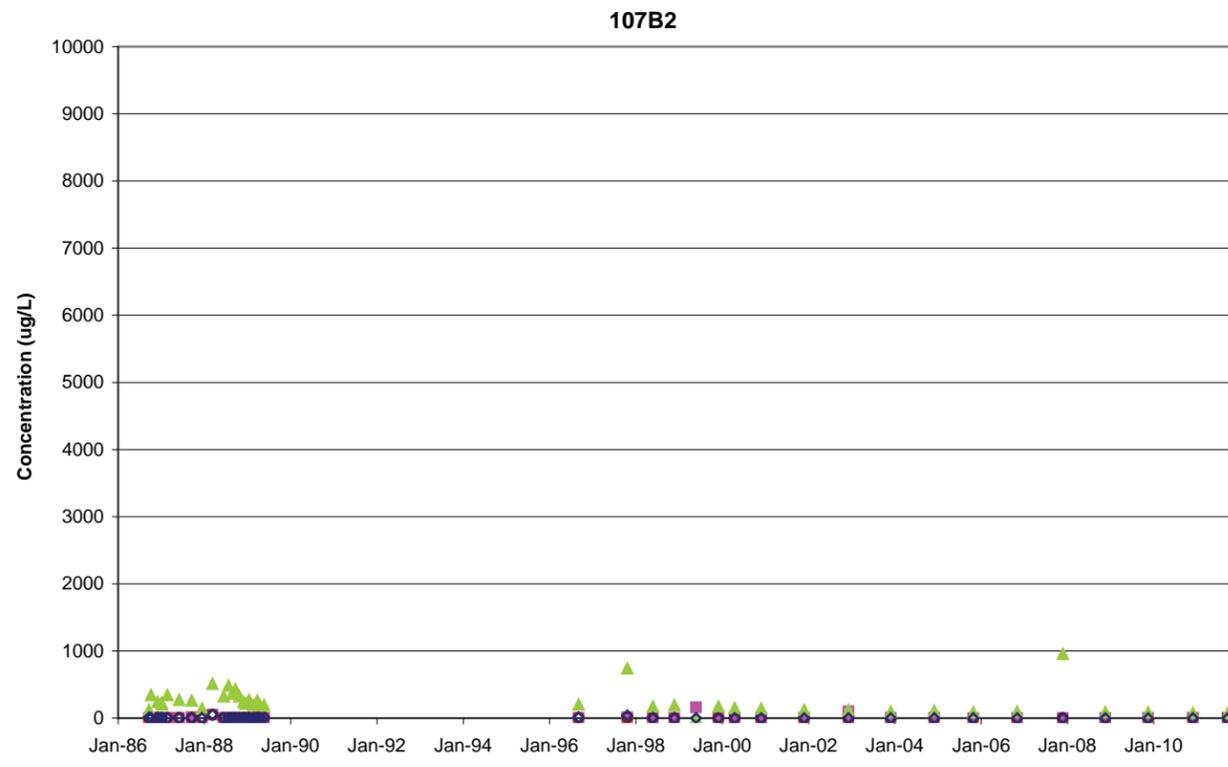
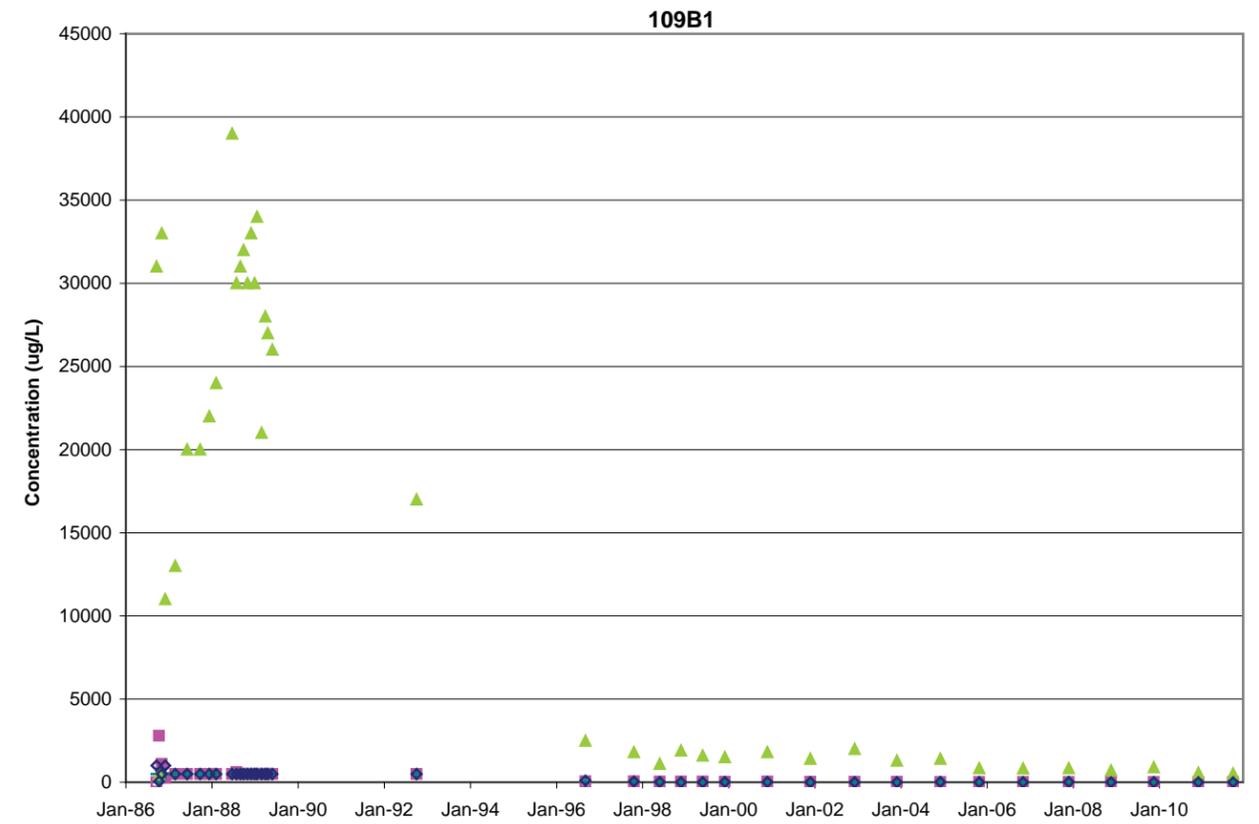
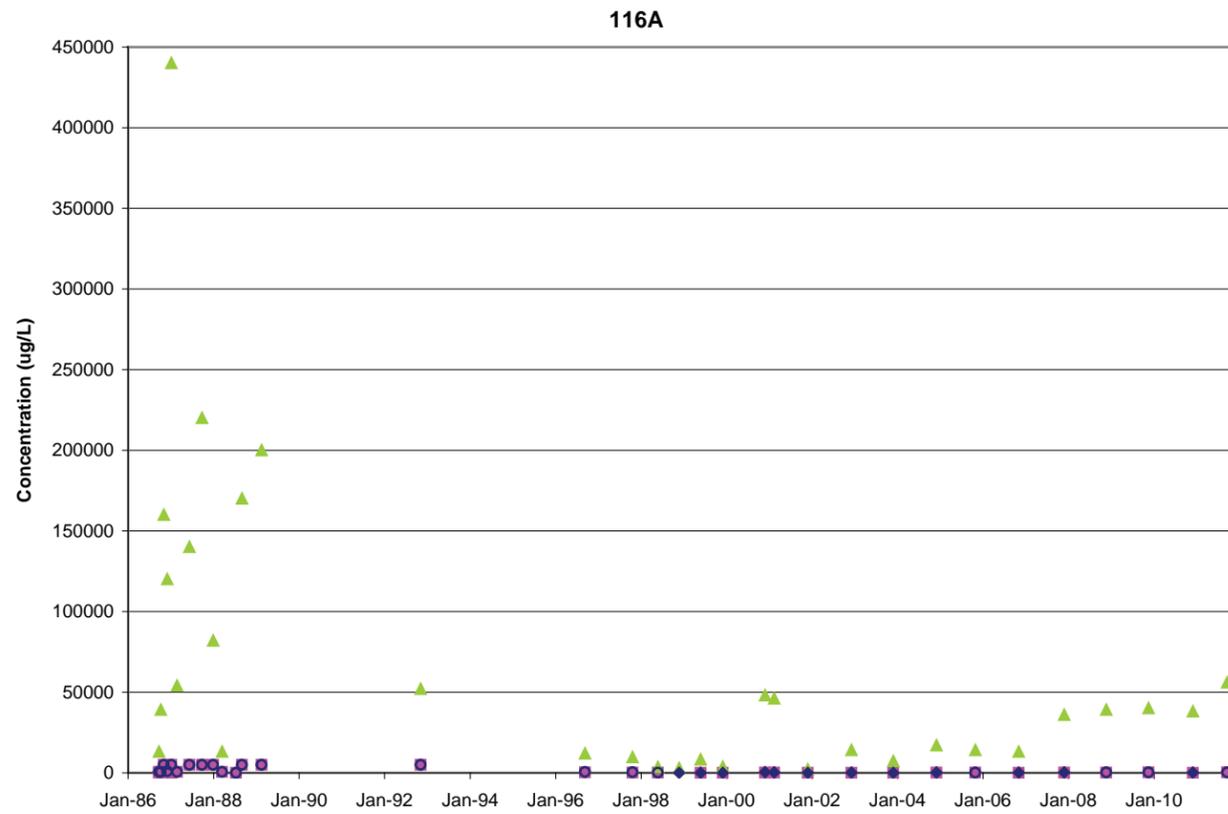
■ CIS-1,2-DCE
 □ CIS-1,2-DCE
 ● PCE
 ○ PCE
 ▲ TCE
 △ TCE
 ◆ VC
 ◇ VC

- Notes:
1. Y-axis on different scales.
 2. Open symbol means the constituent was not detected at or above the reporting limit (See Table 6).
 3. Closed symbol means the constituent was detected at or above the reporting limit (See Table 6).
 4. Well 108B2 was approved by the Environmental Protection Agency (E.P.A.) in 2007 to be removed from the list of monitored wells. No more analytical data will be collected from this well until further notice.

VOC CONCENTRATIONS VS. TIME
 MONITORING WELLS 108A, 108B2 AND 104B1
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No. 1486.002
		Figure 12c

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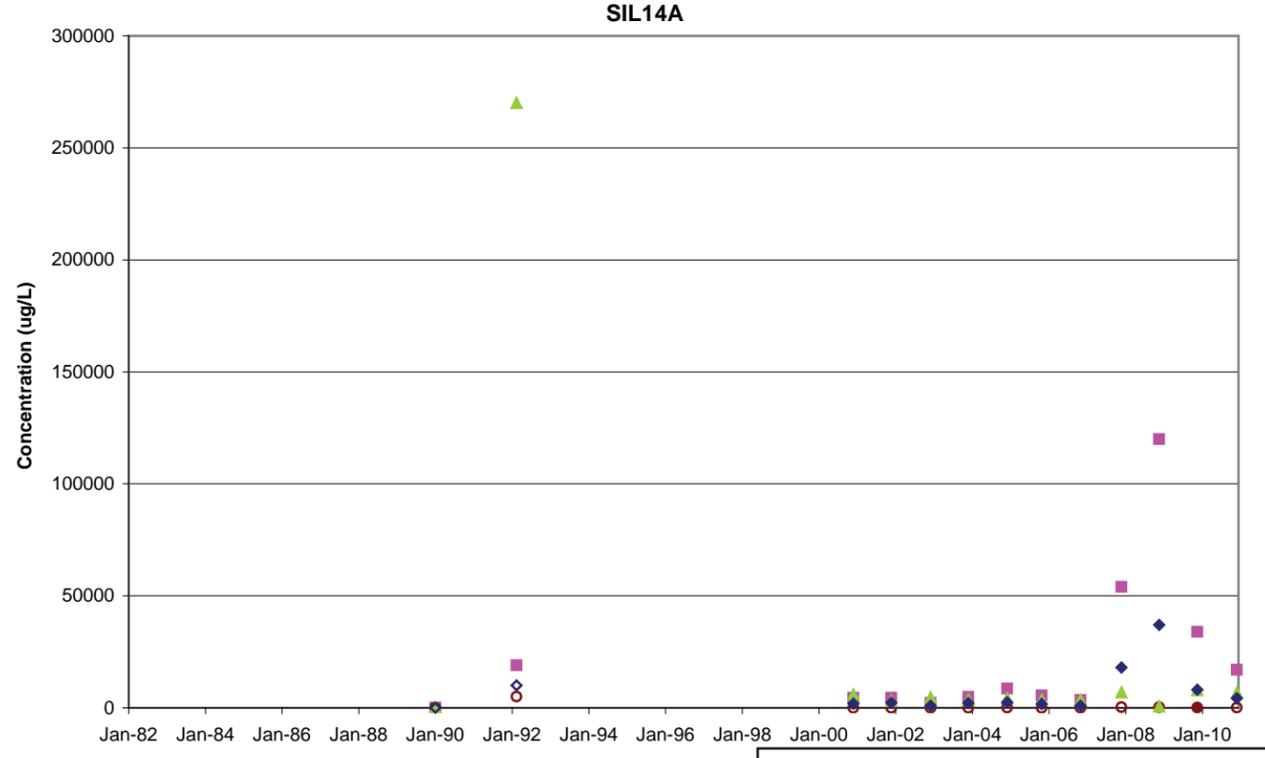
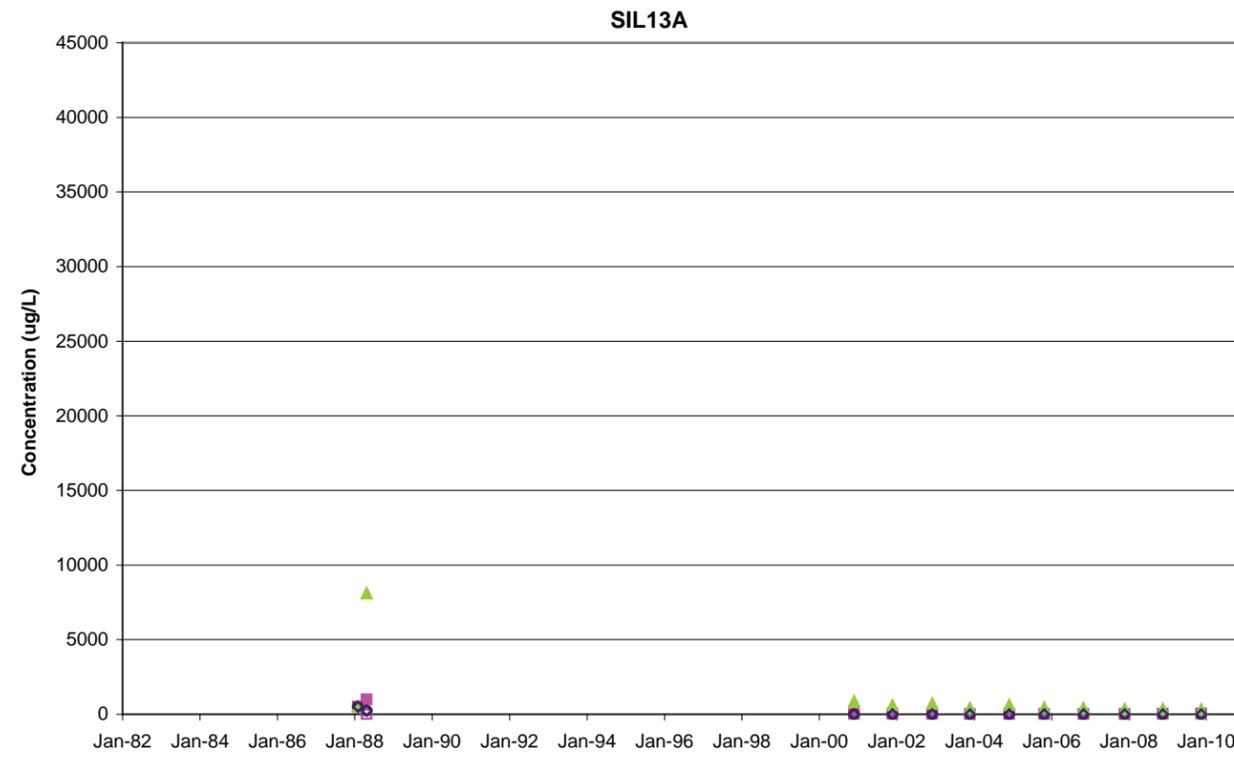
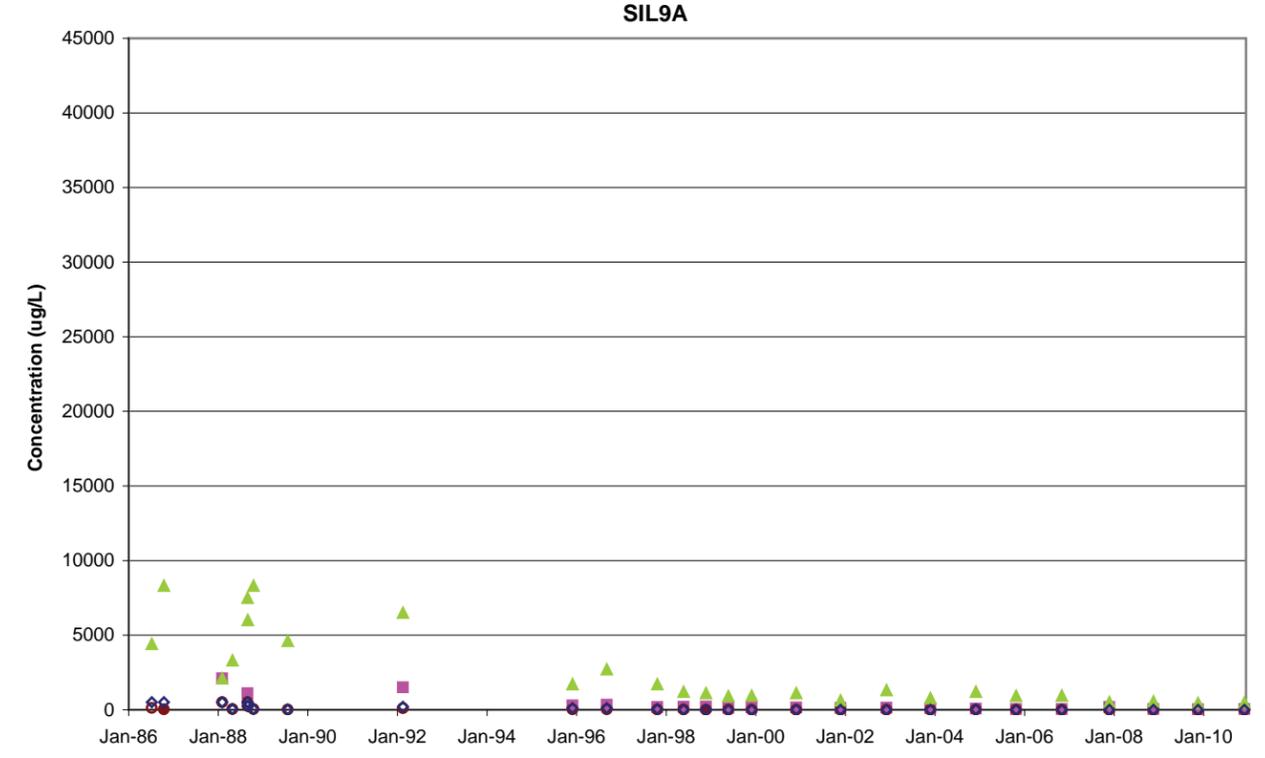
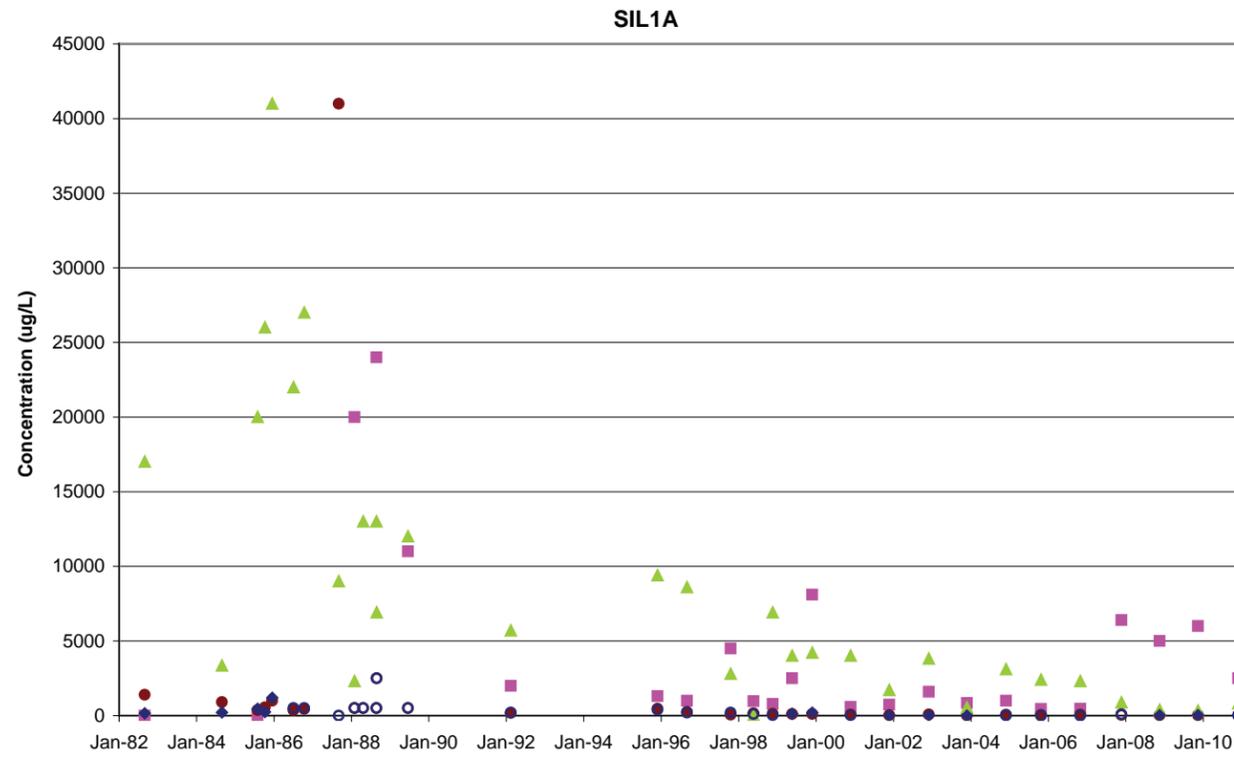
● CIS-1,2-DCE
 □ CIS-1,2-DCE
 ○ PCE
 ■ PCE
 ▲ TCE
 △ TCE
 ◆ VC
 ◇ VC

Notes:
 1. Y-axis on different scales.
 2. Open symbol means the constituent was not detected at or above the reporting limit (See Table 6).
 3. Closed symbol means the constituent was detected at or above the reporting limit (See Table 6).

VOC CONCENTRATIONS VS. TIME
 MONITORING WELLS 116A, 109B1, and 107B2
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No.	1486.002
		Figure	12d

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■ CIS-1,2-DCE □ CIS-1,2-DCE ● PCE ○ PCE ▲ TCE △ TCE ◆ VC ◇ VC

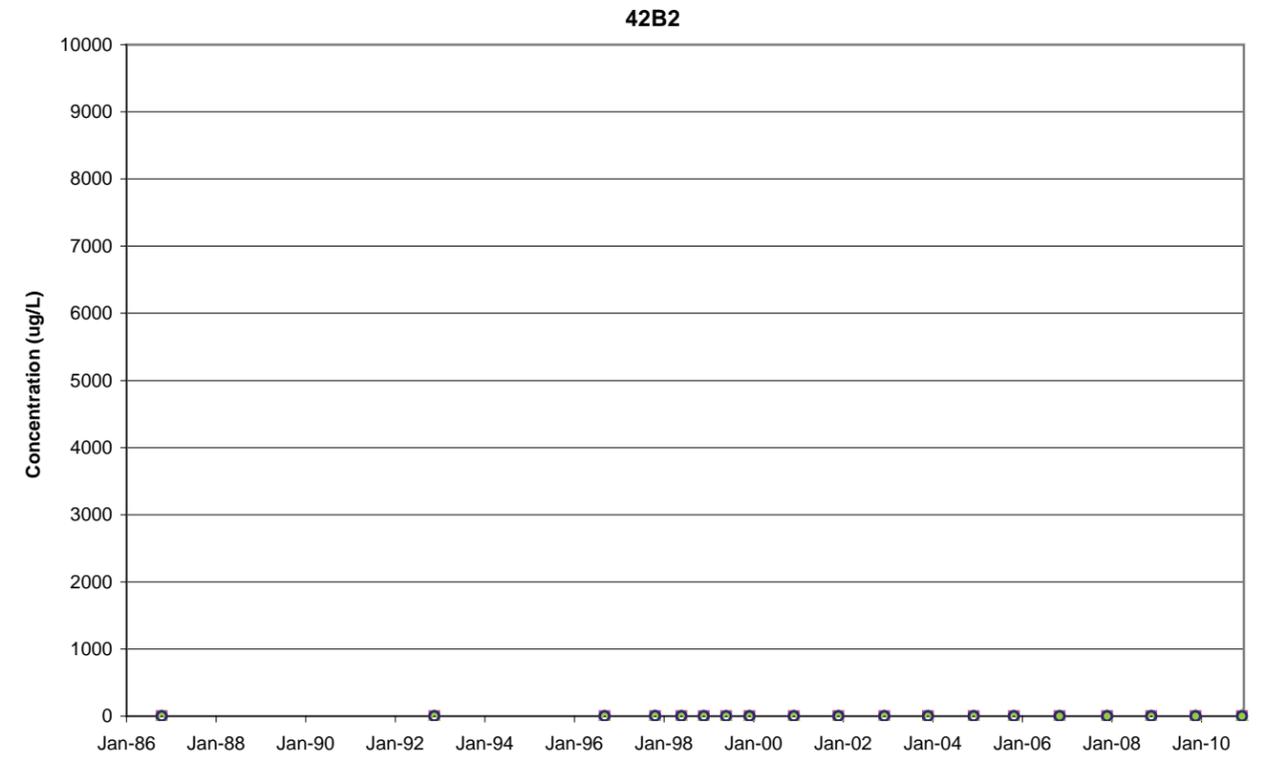
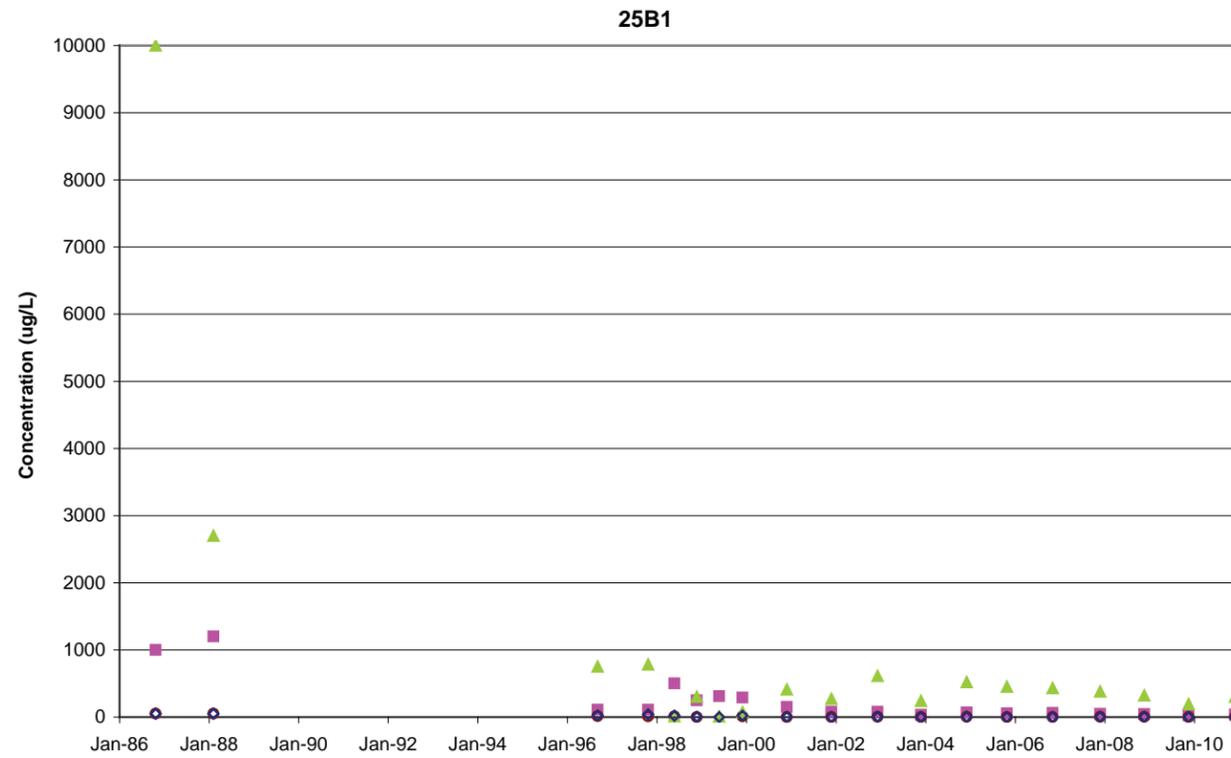
- Notes:
1. Y-axis on different scales.
 2. Open symbol means the constituent was not detected at or above the reporting limit (See Table 6).
 3. Closed symbol means the constituent was detected at or above the reporting limit (See Table 6).

VOC CONCENTRATIONS VS. TIME
 MONITORING WELLS SIL1A, SIL9A,
 SIL13A, and SIL14A
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No.	1486.002
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Figure **12e**



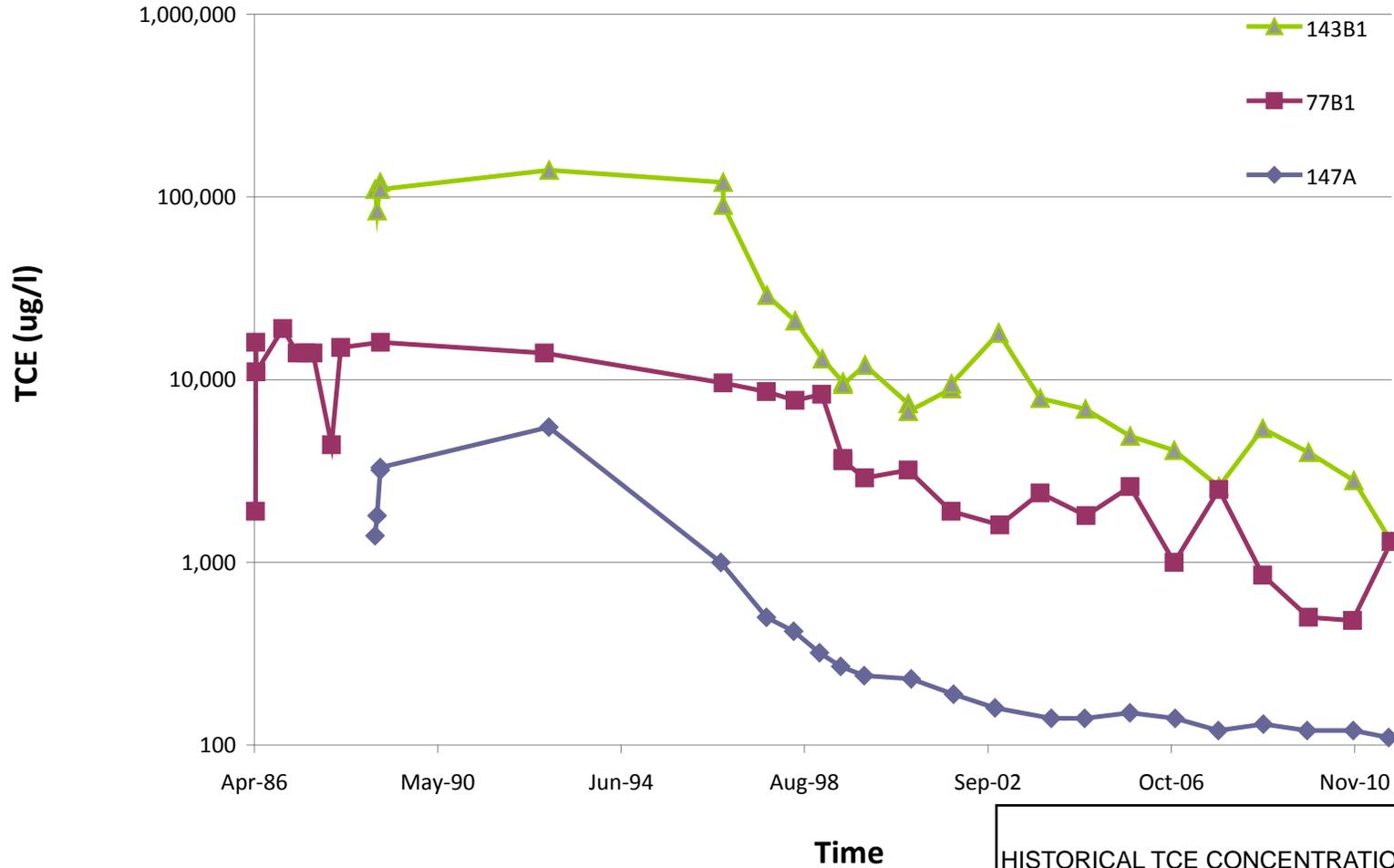
■ CIS-1,2-DCE
 □ CIS-1,2-DCE
 ● PCE
 ○ PCE
 ▲ TCE
 △ TCE
 ◆ VC
 ◇ VC

- Notes:
1. Y-axis on different scales.
 2. Open symbol means the constituent was not detected at or above the reporting limit (See Table 6).
 3. Closed symbol means the constituent was detected at or above the reporting limit (See Table 6).

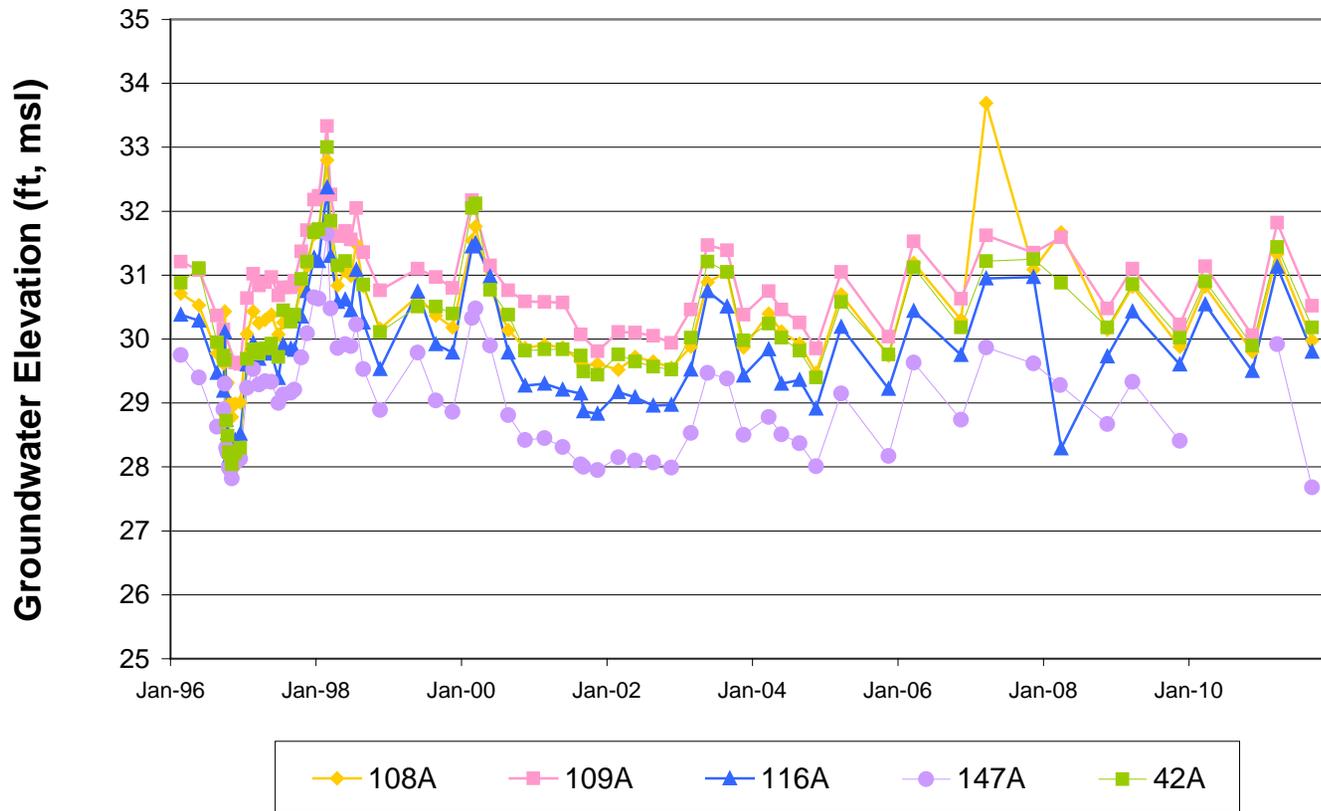
VOC CONCENTRATIONS VS. TIME
 MONITORING WELLS 25B1 and 42B1
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No.	1486.002
		Figure	12f

Historical TCE Concentrations



A-Aquifer Hydrographs



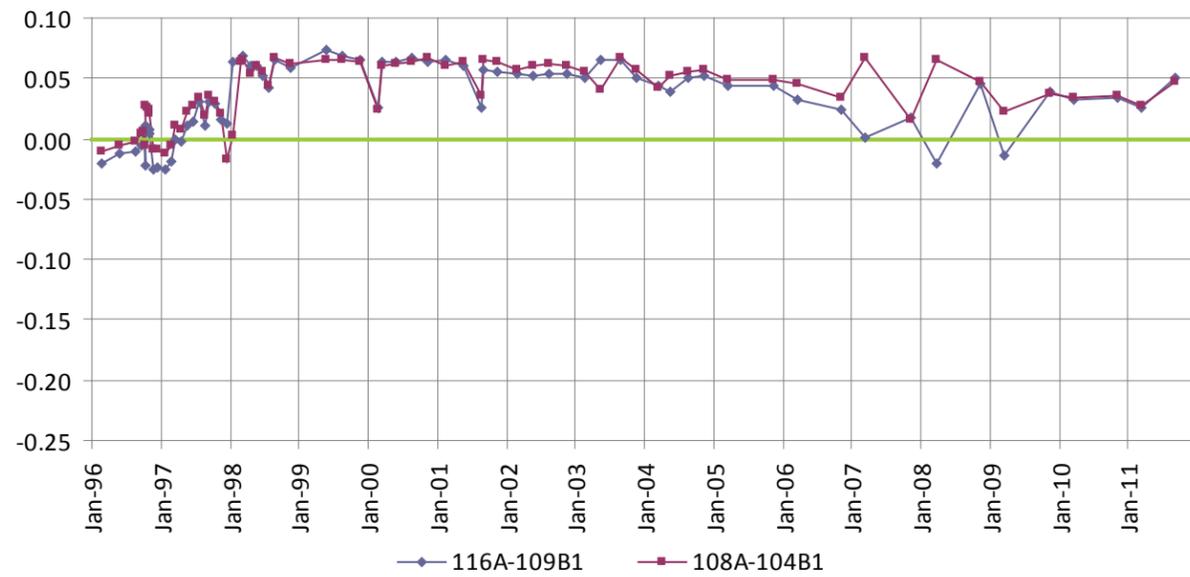
A-AQUIFER HYDROGRAPHS OF SELECTED WELLS
 405 National Avenue
 Mountain View, California

By: RFC	Date: 03/26/2012	Project No. 1486.002
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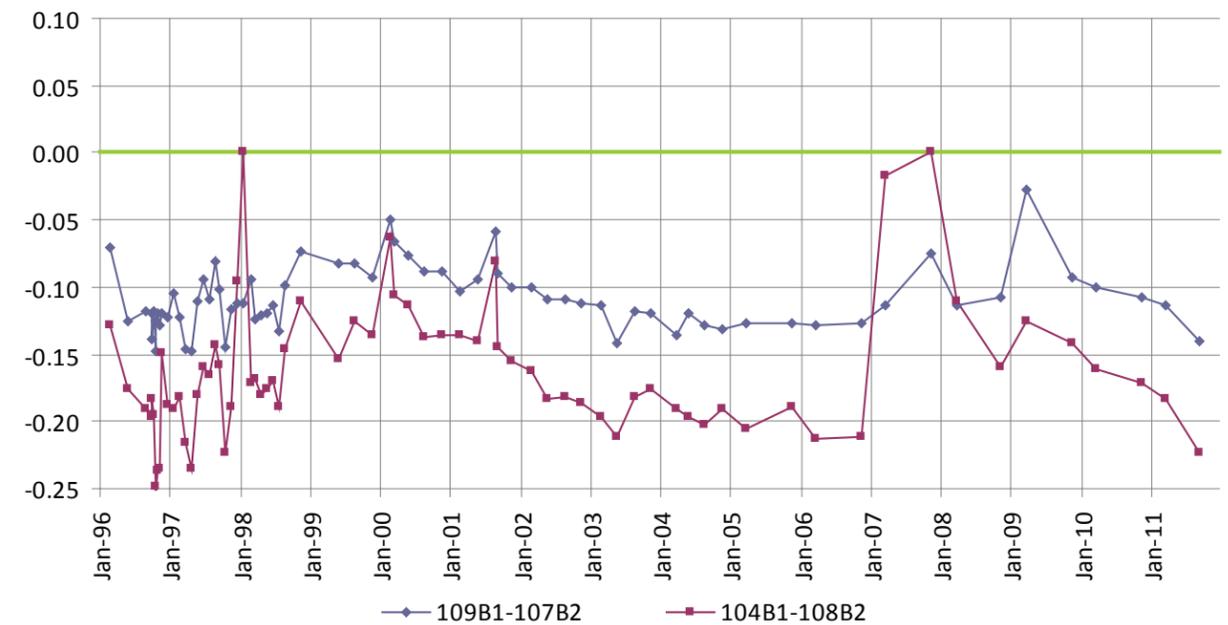


Figure	14
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Vertical Gradient Between A and B1 Intervals



Vertical Gradient Between B1 and B2 Intervals



Notes:

- 1) Vertical hydraulic gradient is the difference in head elevations between shallow and deep wells (dH) divided by the vertical distance between the mid points of saturated well screens in adjacent depth intervals (dL) as shown in the equation below.
- 2) Vertical Gradient = dH/dL
- 3) Positive vertical gradient indicates downward flow, while a negative value indicates upward flow.

VERTICAL GRADIENTS
BETWEEN SELECTED WELL PAIRS
405 National Avenue
Mountain View, California

By: RFC	Date: 04/04/2012	Project No.	1486.002
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Figure **15**



APPENDIX A

2011 Annual Remedy Performance Checklist



2011 Annual Report Remedy Performance Checklist

I. GENERAL SITE INFORMATION			
Facility Name: 405 National Avenue			
Facility Address, City, State: 405 National Avenue, Mountain View, California			
Checklist completion date: March 24, 2012		EPA Site ID: CAD088839105	
Site Lead: <input type="checkbox"/> Fund <input checked="" type="checkbox"/> PRP <input type="checkbox"/> State <input type="checkbox"/> State Enforcement <input type="checkbox"/> Federal Facility <input type="checkbox"/> Other, specify:			
Site Remedy Components (Include Other Reference Documents for More Information, as appropriate): <div style="padding-left: 20px;">Five on-site extraction wells and three off-site extraction wells.</div> <div style="padding-left: 20px;">Extracted water is pre-treated by an Ultra-Violet (UV)/Oxidation unit followed by final treatment through a shallow tray air stripper.</div> <div style="padding-left: 20px;">See: Revised Combined Intermediate and Final Source Control Remedial Design (Geomatrix, 1995)</div>			
II. CONTACTS			
<u>List important personnel associated with the Site:</u> Name, title, phone number, e-mail address:			
	Name/Title	Phone	E-mail
PRP / Facility Representative	Greg Hedger SUMCO Phoenix Corporation EHS Director	<u>(480) 473-6603</u>	<u>greg.hedger@sumcousa.com</u>
	Donald M. Clark Vishay GSI, Inc. Vice President, EHS	<u>(919) 676-5324</u>	<u>donald.clark@vishay.com</u>
PRP Contractor/ Consultant	<u>Harold Rush</u> <u>AMEC Geomatrix, Inc.</u> <u>Project Manager</u>	<u>(510) 663-4234</u>	<u>harold.rush@amec.com</u>
O&M Contractor	<u>NA</u>		
Other	<u>NA</u>		

2011 Annual Report Remedy Performance Checklist

III. O&M COSTS (OPTIONAL)
<p>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 %):</p> <ul style="list-style-type: none"> • 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): _____
<p>Describe unanticipated/unusually high or low O&M costs (go to section [fill in] to recommend optimization methods):</p> <p style="padding-left: 40px;">During 2011, there were no unanticipated or unusually high or low O&M costs.</p>
IV. ON-SITE DOCUMENTS AND RECORDS (Check all that apply)
<p> <input checked="" type="checkbox"/> O&M Manual <input checked="" type="checkbox"/> O&M Maintenance Logs <input checked="" type="checkbox"/> O&M As-built drawings <input type="checkbox"/> O&M reports <input checked="" type="checkbox"/> Daily access/Security logs <input checked="" type="checkbox"/> Site-Specific Health & Safety Plan <input checked="" type="checkbox"/> Contingency/Emergency Response Plan <input type="checkbox"/> O&M/OSHA Training Records <input type="checkbox"/> Settlement Monument Records <input type="checkbox"/> Gas Generation Records <input type="checkbox"/> Groundwater monitoring records <input type="checkbox"/> Leachate extraction records <input checked="" type="checkbox"/> Discharge Compliance Records <input checked="" type="checkbox"/> Air discharge permit <input checked="" type="checkbox"/> Effluent discharge permit <input type="checkbox"/> Waste disposal, POTW permit </p> <p>Are these documents currently readily available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, where are records kept?</p>
V. INSTITUTIONAL CONTROLS (as applicable)
<p>List institutional controls called for (and from what enforcement document):</p> <p>Status of their implementation:</p> <p>Where are the ICs documented and/or reported?</p> <p>ICs are being properly implemented and enforced? <input type="checkbox"/> Yes <input type="checkbox"/> No, elaborate below ICs are adequate for site protection? <input type="checkbox"/> Yes <input type="checkbox"/> No, elaborate below</p> <p>Additional remarks regarding ICs:</p>

2011 Annual Report Remedy Performance Checklist

VIII. GROUNDWATER REMEDY (reference isoconcentration, capture zone maps, trend analysis, and other documentation to support analysis)	
<u>Groundwater Quality Data</u> List the types of data that are available:	What is the source report?
<u>Historical Groundwater Monitoring Tables;</u> concentration trend plots for individual wells; isoconcentration maps; capture zone analyses and figures	2011 Annual Progress Report
<input checked="" type="checkbox"/> Contaminant trend(s) tracked during O&M (i.e., temporal analysis of groundwater contaminant trends). <input type="checkbox"/> Groundwater data tracked with software for temporal analyses. <input type="checkbox"/> Reviewed MNA parameters to ensure health of substrate (e.g., DO, pH, temperature), if appropriate?	
<u>Groundwater Pump & Treat Extraction Well and Treatment System Data</u> List the types of data that are available:	What is the source report?
<u>Total volume extracted for reporting periods and historical;</u> <u>influent, midstream, and effluent concentrations; VOC mass removed;</u> <u>Monitoring reports</u> <u>individual well and treatment system extraction rates; QA/QC</u>	2011 Annual Progress Report and Quarterly NPDES Self
<input checked="" type="checkbox"/> The system is functioning adequately. <input type="checkbox"/> The system has been shut down for significant periods of time in the past year. Please elaborate below.	
<u>Discharge Data</u> List the types of data that are available:	What is the source report?
<u>Monthly influent, midfluent, and effluent concentration data;</u> <u>influent and effluent temperature and pH;</u> <u>flow rates</u>	2011 Annual Progress Report and Quarterly NPDES SMP Reports
<input checked="" type="checkbox"/> The system is in compliance with discharge permits.	
<u>Slurry Wall Data</u> List the types of data that are available:	What is the source report?
_____ _____ _____	
Is slurry wall operating as designed? <input type="checkbox"/> Yes <input type="checkbox"/> No If not, what is being done to correct the situation? _____ _____	
<u>Elaborate on technical data and/or other comments</u> _____ _____	



2011 Annual Report Remedy Performance Checklist

IX. AIR MONITORING/VAPOR INTRUSION PATHWAY EVALUATION (Include in Annual Progress Report and reference document)
Walk-through/Surveys: See Pathway Sampling Report for 425 National Avenue, Mountain View, California (Geomatrix Consultants, Inc., June 2004)
Air testing/monitoring conducted: Post-renovation indoor air sampling conducted at 425 National Avenue building on September 20, 2007 and March 27, 2008.
Summary of Results: Air monitoring results from the 2007 and 2008 sampling events indicated that all first and second floor ambient air samples were below the current EPA action level of 5.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
Problems Encountered: <u>None.</u>
Recommendations/Next Steps: Monitoring and/or institutional controls may be necessary in accordance with EPA's final plan to address the Indoor air pathway at the MEW Site.
Schedule: The air monitoring results for the March 2008 sampling event were submitted to EPA on May 29 and June 6, 2008.
X. REMEDY PERFORMANCE ASSESSMENT
A. Groundwater Remedies
What are the remedial goals for groundwater? <input checked="" type="checkbox"/> Plume containment (prevent plume migration); <input checked="" type="checkbox"/> Plume restoration (attain ROD-specific cleanup levels in aquifer); <input type="checkbox"/> Other goals, please explain: _____ _____
Have you done a trend analysis? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No; If Yes, what does it show? Multiple lines of evidence indicate that the extent of hydraulic containment provided by on-site groundwater extraction meets or exceeds the target capture zones. (Refer to Annual Progress Report – 2011, AMEC, Inc.) (Is it inconclusive due to inadequate data? Are the concentrations increasing or decreasing?) Explain and provide source document reference _____ _____
If plume containment is a remedial goal, check all that apply: <input checked="" type="checkbox"/> Plume migration is under control (explain basis below) <input type="checkbox"/> Plume migration is not under control (explain basis below) <input type="checkbox"/> 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)

2011 Annual Report Remedy Performance Checklist

<p>Elaborate on basis for determining that plume containment goal is being met or not being met: See Section 2.3.2 of the Annual Progress Report—2011.</p>
<p>If plume restoration is a cleanup objective, check all that apply: <input checked="" type="checkbox"/> Progress is being made toward reaching cleanup levels (explain basis below) <input type="checkbox"/> Progress is not being made toward reaching cleanup levels (explain basis below) <input type="checkbox"/> Insufficient data to determine progress toward restoration goal (explain below)</p>
<p>Elaborate on basis for determining progress or lack of progress toward restoration goal: Plume containment, Decreasing concentration trends in both on-site and off-site monitoring wells and in down gradient regional monitoring wells (See: Annual Progress Report—2011, AMEC, Inc.).</p>
<p>B. Vertical Migration</p>
<p>Have you done an assessment of vertical gradients? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No; If Yes, what does it show? (Is it inconclusive due to inadequate data?)</p> <p>Are the concentrations increasing or decreasing? Explain and provide source document reference</p> <p>Concentrations are decreasing. See Section 2.3.2 of the Annual Progress Report - 2011.</p>
<p>C. Source Control Remedies</p>
<p>What are the remedial goals for source control?</p> <p style="padding-left: 40px;">The Administrative Order for Remedial Design and Remedial Action, U.S. EPA Docket No. 91-4, (106 Order):EPA Region IX;</p> <p style="padding-left: 40px;">Revised Combined Intermediate and Final Source Control Remedial Design, 405 National Avenue, Mountain View, California; Geomatrix (April 1995)</p> <p>Elaborate on basis for determining progress or lack of progress toward these goals: There is a general decreasing trend in concentrations of target constituents for the groundwater extraction and treatment system and the monitoring well network (on-site and off-site). Refer to Section 2.0 of the 2011 Annual Progress Report.</p>

2011 Annual Report Remedy Performance Checklist

XI. PROJECTIONS
<p><u>Administrative Issues</u> Dates of next monitoring and sampling events for next annual reporting period: See Section 8.0 of 2011 Annual Progress Report.</p>
<p>A. Groundwater Remedies - Projections for the upcoming year and long-term (Check all that apply)</p>
<p><u>Remedy Projections for the upcoming year (2012)</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> No significant changes projected. <input type="checkbox"/> Groundwater remedy will be converted to monitored natural attenuation. Target date: <input type="checkbox"/> Groundwater Pump & Treat will be shut down. Target date: <input type="checkbox"/> Groundwater cleanup standards to be modified. Target date: <input type="checkbox"/> PRP will request remedy modification. Target date of request: <input type="checkbox"/> Change in the number of monitoring wells. <input type="checkbox"/> Increasing or <input type="checkbox"/> decreasing? Target date: <input type="checkbox"/> Change in the number and/or types of analytes being analyzed. <input type="checkbox"/> Increasing or <input type="checkbox"/> decreasing? Target date: <input type="checkbox"/> Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date: <input checked="" type="checkbox"/> Modification on groundwater treatment? Elaborate below. Target date: Dates To Be Determined <input type="checkbox"/> Change in discharge location. Target date: <input type="checkbox"/> Other modification(s) anticipated: _____ Elaborate below. Target date: _____
<p>Elaborate on Remedy Projections:</p> <p style="padding-left: 40px;">Modification of extraction rates in accordance with recommendations in Optimization Evaluation Report (AMEC Geomatrix, September 2008).</p>
<p><u>Remedy Projections for the long-term</u> (Check all that apply)</p> <ul style="list-style-type: none"> <input type="checkbox"/> No significant changes projected. <input type="checkbox"/> Groundwater remedy will be converted to monitored natural attenuation. Target date: <input type="checkbox"/> Groundwater Pump & Treat will be shut down. Target date: <input type="checkbox"/> Groundwater cleanup standards to be modified. Target date: <input type="checkbox"/> PRP will request remedy modification. Target date of request: <input type="checkbox"/> Change in the number of monitoring wells. <input type="checkbox"/> Increasing or <input type="checkbox"/> decreasing? Target date: <input type="checkbox"/> Change in the number and/or types of analytes being analyzed. <input type="checkbox"/> Increasing or <input type="checkbox"/> decreasing? Target date: <input type="checkbox"/> Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date: <input checked="" type="checkbox"/> Modification on groundwater treatment? Elaborate below. Target date: Dates To Be Determined <input type="checkbox"/> Change in discharge location. Target date: <input type="checkbox"/> Other modification(s) anticipated: _____ Elaborate below. Target date: _____
<p>Elaborate on Remedy Projections:</p> <p style="padding-left: 40px;">Evaluation of alternative treatment technologies that are capable of accelerating the reduction of VOC concentrations in groundwater (See Section 6.2 of the Optimization Evaluation Report).</p>

2011 Annual Report Remedy Performance Checklist

<p>B. Projections—Slurry Walls (Check all that apply)</p>
<p><u>Remedy Projections for the upcoming year</u></p> <p><input checked="" type="checkbox"/> No significant changes projected.</p> <p><input type="checkbox"/> PRP will request remedy modification. Target date of request:</p> <p><input type="checkbox"/> Change in the number of monitoring wells. <input type="checkbox"/> Increasing or <input type="checkbox"/> decreasing? Target date:</p> <p><input type="checkbox"/> Other modification(s) anticipated: _____ Elaborate below. Target date: _____</p>
<p>Elaborate on Remedy Projections:</p>
<p><u>Remedy Projections for the long-term</u></p> <p><input checked="" type="checkbox"/> No significant changes projected.</p> <p><input type="checkbox"/> PRP will request remedy modification. Target date of request:</p> <p><input type="checkbox"/> Change in the number of monitoring wells. <input type="checkbox"/> Increasing or <input type="checkbox"/> decreasing? Target date:</p> <p><input type="checkbox"/> Other modification(s) anticipated: _____ Elaborate below. Target date: _____</p>
<p>Elaborate on Remedy Projections:</p>
<p>C. Projections—Other Remedial Options Being Reviewed to Enhance Cleanup</p> <p>Progress implementing recommendations from last report or Five-Year Review</p> <p>Has optimization study been implemented or scheduled? <input checked="" type="checkbox"/> Yes; <input type="checkbox"/> No; If Yes, please elaborate.</p> <p>See Section 7.2 of Optimization Evaluation Report (AMEC Geomatrix, September 2008).</p>
<p>XII. ADMINISTRATIVE ISSUES</p> <p style="text-align: center;">Check all that apply:</p>
<p><input type="checkbox"/> Explanation of Significant Differences in progress <input type="checkbox"/> ROD Amendment in progress</p> <p><input type="checkbox"/> Site in operational and functional ("shake down") period;</p> <p><input type="checkbox"/> Notice of Intent to Delete in progress <input type="checkbox"/> Partial site deletion in progress <input type="checkbox"/> TI Waivers</p> <p><input type="checkbox"/> Other administrative issues:</p> <p>Date of Next EPA Five-Year Review: <u>September 30, 2014</u></p>
<p><u>XII. RECOMMENDATIONS</u></p>

APPENDIX B

Analytical Results Report and Chain-of-Custody Documents



Curtis & Tompkins, Ltd.

Analytical Laboratories, Since 1878



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 225528
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486.0002.EE
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-012411	225528-001
INF-012411	225528-002
MID-012411	225528-003
TB-012411	225528-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 02/01/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 225528
Client: AMEC Geomatrix, Inc.
Project: 1486.0002.EE
Location: MEW
Request Date: 01/25/11
Samples Received: 01/25/11

This data package contains sample and QC results for four water samples, requested for the above referenced project on 01/25/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

Methylene chloride was detected between the MDL and the RL in TB-012411 (lab # 225528-004); this analyte is a common laboratory contaminant. No other analytical problems were encountered.

CHAIN-OF-CUSTODY RECORD

225528

OAK 15937

PROJECT NAME: MEW
 PROJECT NUMBER: 1486.0002.EE
 RESULTS TO: Rendell Camacho
 TURNAROUND TIME: Standard
 SAMPLE SHIPMENT METHOD: Courier
 LABORATORY NAME: Carbis & Impskins
 LABORATORY ADDRESS:
 LABORATORY CONTACT: Tracy Babiar
 LABORATORY PHONE NUMBER:
 DATE: 01/24/11 PAGE 1 OF 1
 REPORTING REQUIREMENTS:

CLIENT INFORMATION:
 GEOTRACKER REQUIRED: YES NO
 SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): *[Signature]*

DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
01/24/11	1118	EFF-012411	40mL VOA	WV	WV	HCl	Y	M	3	
	1226	INF-012411								
	1236	MTD-012411								
	--	TB-012411								

ANALYSES

① VOCs

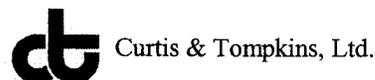
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	TOTAL NUMBER OF CONTAINERS:
<i>[Signature]</i>	01/24	1530	<i>[Signature]</i>	1/24	1100	11
PRINTED NAME: Rendell Camacho			PRINTED NAME: Tracy Babiar			
COMPANY: AMEC Geomatrix			COMPANY: AMEC			
SIGNATURE:			SIGNATURE:			
PRINTED NAME:			PRINTED NAME:			
COMPANY:			COMPANY:			
SIGNATURE:			SIGNATURE:			
PRINTED NAME:			PRINTED NAME:			
COMPANY:			COMPANY:			

SAMPLING COMMENTS: ① VOCs by 8260B (halogenated list J)



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Login # 225528 Date Received 1/25/11 Number of coolers 1
 Client AMEC Project MEW

Date Opened 1/25/11 By (print) R. Parks (sign) [Signature]
 Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(°C) 3.9

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Are bubbles > 6mm absent in VOA samples? YES NO N/A

16. Was the client contacted concerning this sample delivery? _____ YES NO
 If YES, Who was called? _____ By _____ Date: _____

COMMENTS

ID on labels do not agree with C.O.C.
ID on labels reads "JEFF-0124200 pp 11"
INF-0124201 pp
MID-0124201

Purgeable Halocarbons by GC/MS

Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	EFF-012411	Batch#:	171240
Lab ID:	225528-001	Sampled:	01/24/11
Matrix:	Water	Received:	01/25/11
Units:	ug/L	Analyzed:	01/26/11
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.1
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.1
Chloroethane	ND	1.0	0.1
Trichlorofluoromethane	ND	1.0	0.1
Freon 113	ND	2.0	0.1
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.1
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.1
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Purgeable Halocarbons by GC/MS

Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	INF-012411	Batch#:	171291
Lab ID:	225528-002	Sampled:	01/24/11
Matrix:	Water	Received:	01/25/11
Units:	ug/L	Analyzed:	01/27/11
Diln Fac:	16.67		

Analyte	Result	RL	MDL
Chloromethane	ND	17	1.7
Vinyl Chloride	2.2 J	8.3	1.7
Bromomethane	ND	17	2.8
Chloroethane	ND	17	1.7
Trichlorofluoromethane	ND	17	1.7
Freon 113	130	33	2.1
1,1-Dichloroethene	7.0 J	8.3	2.1
Methylene Chloride	ND	330	2.1
trans-1,2-Dichloroethene	3.7 J	8.3	1.7
1,1-Dichloroethane	4.9 J	8.3	1.7
cis-1,2-Dichloroethene	210	8.3	1.7
Chloroform	ND	8.3	1.7
1,1,1-Trichloroethane	5.8 J	8.3	2.5
Carbon Tetrachloride	ND	8.3	1.7
1,2-Dichloroethane	ND	8.3	1.7
Trichloroethene	1,500	8.3	1.7
1,2-Dichloropropane	ND	8.3	1.7
Bromodichloromethane	ND	8.3	1.7
cis-1,3-Dichloropropene	ND	8.3	1.9
trans-1,3-Dichloropropene	ND	8.3	1.7
1,1,2-Trichloroethane	ND	8.3	1.7
Tetrachloroethene	4.4 J	8.3	1.8
Dibromochloromethane	ND	8.3	1.7
Chlorobenzene	ND	8.3	1.7
Bromoform	ND	8.3	1.7
1,1,2,2-Tetrachloroethane	ND	8.3	1.7
1,3-Dichlorobenzene	ND	8.3	1.7
1,4-Dichlorobenzene	ND	8.3	1.7
1,2-Dichlorobenzene	ND	8.3	1.7

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	71-146
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Purgeable Halocarbons by GC/MS

Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	MID-012411	Batch#:	171240
Lab ID:	225528-003	Sampled:	01/24/11
Matrix:	Water	Received:	01/25/11
Units:	ug/L	Analyzed:	01/26/11
Diln Fac:	1.429		

Analyte	Result	RL	MDL
Chloromethane	ND	1.4	0.1
Vinyl Chloride	ND	0.7	0.1
Bromomethane	ND	1.4	0.1
Chloroethane	ND	1.4	0.2
Trichlorofluoromethane	ND	1.4	0.1
Freon 113	100	2.9	0.2
1,1-Dichloroethene	ND	0.7	0.1
Methylene Chloride	ND	29	0.2
trans-1,2-Dichloroethene	ND	0.7	0.1
1,1-Dichloroethane	2.8	0.7	0.1
cis-1,2-Dichloroethene	ND	0.7	0.1
Chloroform	0.3 J	0.7	0.1
1,1,1-Trichloroethane	4.3	0.7	0.1
Carbon Tetrachloride	ND	0.7	0.1
1,2-Dichloroethane	ND	0.7	0.1
Trichloroethene	4.2	0.7	0.1
1,2-Dichloropropane	ND	0.7	0.1
Bromodichloromethane	ND	0.7	0.1
cis-1,3-Dichloropropene	ND	0.7	0.1
trans-1,3-Dichloropropene	ND	0.7	0.1
1,1,2-Trichloroethane	ND	0.7	0.2
Tetrachloroethene	ND	0.7	0.1
Dibromochloromethane	ND	0.7	0.1
Chlorobenzene	ND	0.7	0.1
Bromoform	ND	0.7	0.1
1,1,2,2-Tetrachloroethane	ND	0.7	0.1
1,3-Dichlorobenzene	ND	0.7	0.1
1,4-Dichlorobenzene	ND	0.7	0.1
1,2-Dichlorobenzene	ND	0.7	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	96	80-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Purgeable Halocarbons by GC/MS

Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	TB-012411	Batch#:	171240
Lab ID:	225528-004	Sampled:	01/24/11
Matrix:	Water	Received:	01/25/11
Units:	ug/L	Analyzed:	01/26/11
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.1
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.1
Chloroethane	ND	1.0	0.1
Trichlorofluoromethane	ND	1.0	0.1
Freon 113	ND	2.0	0.1
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	0.8 J	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.1
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.1
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	96	80-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	171240
Units:	ug/L	Analyzed:	01/26/11
Diln Fac:	1.000		

Type: BS Lab ID: QC577586

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.48	102	65-138
Trichloroethene	25.00	24.89	100	78-122
Chlorobenzene	25.00	24.83	99	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	93	80-120

Type: BSD Lab ID: QC577587

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	23.14	93	65-138	10	20
Trichloroethene	25.00	23.96	96	78-122	4	20
Chlorobenzene	25.00	24.34	97	80-120	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	92	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC577588	Batch#:	171240
Matrix:	Water	Analyzed:	01/26/11
Units:	ug/L		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.1
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.1
Chloroethane	ND	1.0	0.1
Trichlorofluoromethane	ND	1.0	0.1
Freon 113	ND	2.0	0.1
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.1
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.1
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	171291
Units:	ug/L	Analyzed:	01/27/11
Diln Fac:	1.000		

Type: BS Lab ID: QC577776

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	28.55	114	65-138
Trichloroethene	25.00	25.86	103	78-122
Chlorobenzene	25.00	24.84	99	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC577777

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	27.84	111	65-138	3	20
Trichloroethene	25.00	25.33	101	78-122	2	20
Chlorobenzene	25.00	24.44	98	80-120	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	225528	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC577778	Batch#:	171291
Matrix:	Water	Analyzed:	01/27/11
Units:	ug/L		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.1
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.1
Trichlorofluoromethane	ND	1.0	0.1
Freon 113	ND	2.0	0.1
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.1
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.1
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



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**Laboratory Job Number 226004
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 0014860010.0002
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EX-5-021511	226004-001
EFF-021511	226004-002
MID-021511	226004-003
INF-021511	226004-004
TRIP BLANK	226004-005

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Project Manager

Date: 02/23/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 226004
Client: AMEC Geomatrix, Inc.
Project: 0014860010.0002
Location: MEW
Request Date: 02/16/11
Samples Received: 02/16/11

This data package contains sample and QC results for five water samples, requested for the above referenced project on 02/16/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

226004

CHAIN-OF-CUSTODY RECORD

PROJECT NAME: MEW
 PROJECT NUMBER: 0014860010.0002
 RESULTS TO: Rendell Company
 TURNAROUND TIME: Standard
 SAMPLE SHIPMENT METHOD: Lab pick up

LABORATORY NAME: Curtis Tompkins
 LABORATORY ADDRESS:
 LABORATORY CONTACT:
 LABORATORY PHONE NUMBER:

DATE: 2-15-11
 REPORTING REQUIREMENTS:
 GEOTRACKER REQUIRED: YES NO
 SITE SPECIFIC GLOBAL ID NO.:

SAMPLERS (SIGNATURE):		DATE	TIME	SAMPLE NUMBER	ANALYSES	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
R. David Pearson													
2-15-11	1330	EX-5-021511	X	8260B*		40ml VOA	W		HC1	X		3	*8010 List
	1357	EFF-021511	X									3	
	1405	MID-021511	X									3	
	1417	INF-021511	X									3	
		trip blank	X									3	

RELINQUISHED BY: R. David Pearson
 SIGNATURE: [Signature]
 PRINTED NAME: R. David Pearson
 COMPANY: Amec

RECEIVED BY: [Signature]
 SIGNATURE: [Signature]
 PRINTED NAME: [Signature]
 COMPANY: [Signature]

DATE: 2/15/11
 TIME: 1540

TOTAL NUMBER OF CONTAINERS: 14
 SAMPLING COMMENTS:

2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141



1 2 3 4 5

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 226004 Date Received 2/16/11 Number of coolers 1
Client AMEC Project MEU

Date Opened 2/16/11 By (print) [Signature] (sign) [Signature]
Date Logged in 2/16/11 By (print) R. Paris (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info _____

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(°C) 4.0

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO

If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are samples in the appropriate containers for indicated tests? _____ YES NO

11. Are sample labels present, in good condition and complete? _____ YES NO

12. Do the sample labels agree with custody papers? _____ YES NO

13. Was sufficient amount of sample sent for tests requested? _____ YES NO

14. Are the samples appropriately preserved? _____ YES NO N/A

15. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

16. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Purgeable Halocarbons by GC/MS

Lab #:	226004	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EX-5-021511	Batch#:	171923
Lab ID:	226004-001	Sampled:	02/15/11
Matrix:	Water	Received:	02/16/11
Units:	ug/L	Analyzed:	02/17/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	110	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	200	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,500	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	104	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226004	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EFF-021511	Batch#:	171923
Lab ID:	226004-002	Sampled:	02/15/11
Matrix:	Water	Received:	02/16/11
Units:	ug/L	Analyzed:	02/17/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	71-146
Toluene-d8	103	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226004	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	MID-021511	Batch#:	171923
Lab ID:	226004-003	Sampled:	02/15/11
Matrix:	Water	Received:	02/16/11
Units:	ug/L	Analyzed:	02/17/11
Diln Fac:	2.000		

Analyte	Result	RL
Chloromethane	ND	2.0
Vinyl Chloride	ND	1.0
Bromomethane	ND	2.0
Chloroethane	ND	2.0
Trichlorofluoromethane	ND	2.0
Freon 113	120	4.0
1,1-Dichloroethene	ND	1.0
Methylene Chloride	ND	40
trans-1,2-Dichloroethene	ND	1.0
1,1-Dichloroethane	3.0	1.0
cis-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
1,1,1-Trichloroethane	4.7	1.0
Carbon Tetrachloride	ND	1.0
1,2-Dichloroethane	ND	1.0
Trichloroethene	ND	1.0
1,2-Dichloropropane	ND	1.0
Bromodichloromethane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
Tetrachloroethene	ND	1.0
Dibromochloromethane	ND	1.0
Chlorobenzene	ND	1.0
Bromoform	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	71-146
Toluene-d8	103	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226004	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	INF-021511	Batch#:	171923
Lab ID:	226004-004	Sampled:	02/15/11
Matrix:	Water	Received:	02/16/11
Units:	ug/L	Analyzed:	02/17/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	110	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	190	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,500	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226004	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	171923
Lab ID:	226004-005	Sampled:	02/15/11
Matrix:	Water	Received:	02/16/11
Units:	ug/L	Analyzed:	02/17/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	71-146
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	226004	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	171923
Units:	ug/L	Analyzed:	02/17/11
Diln Fac:	1.000		

Type: BS Lab ID: QC580364

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	22.57	90	65-138
Trichloroethene	25.00	23.79	95	78-122
Chlorobenzene	25.00	24.40	98	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	101	80-120
Bromofluorobenzene	96	80-120

Type: BSD Lab ID: QC580365

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	25.35	101	65-138	12	20
Trichloroethene	25.00	25.67	103	78-122	8	20
Chlorobenzene	25.00	25.89	104	80-120	6	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	71-146
Toluene-d8	101	80-120
Bromofluorobenzene	96	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	226004	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC580366	Batch#:	171923
Matrix:	Water	Analyzed:	02/17/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	71-146
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected

RL= Reporting Limit



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**Laboratory Job Number 226589
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-031411	226589-001
FB-031411	226589-002
MID-031411	226589-003
INF-031411	226589-004
TRIP BLANK	226589-005

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 03/21/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 226589
Client: AMEC Geomatrix, Inc.
Project: 1486
Location: MEW
Request Date: 03/14/11
Samples Received: 03/14/11

This data package contains sample and QC results for five water samples, requested for the above referenced project on 03/14/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Turbidity (SM2130B):

No analytical problems were encountered.

CHAIN-OF-CUSTODY RECORD

PROJECT NAME: MEW DATE: 3-14-11 PAGE 1 OF 1

LABORATORY NAME: CAT CLIENT INFORMATION:

LABORATORY ADDRESS:

LABORATORY CONTACT:

LABORATORY PHONE NUMBER:

REPORTING REQUIREMENTS:

GEOTRACKER REQUIRED YES NO

SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):		ANALYSES										ADDITIONAL COMMENTS
DATE	TIME	SAMPLE NUMBER	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers				
3/14/11	1053	EFF-031411	W		HCl	X		5	* 8010 List			
	1104	FB-031411	W			X		3				
	1110	MID-031411	W			X		3				
	1120	INF-031411	W			X		3				
		trip blank	W			X		2				

CONTAINER TYPE AND SIZE: 40ml VOA, 250

RELINQUISHED BY: R Daniel Parnum DATE: 3/14/11 TIME: 1350

SIGNATURE: [Signature] RECEIVED BY: [Signature] DATE: 3/14/11 TIME: 1350

PRINTED NAME: R Daniel Parnum COMPANY: CAT

PRINTED NAME: [Signature] COMPANY: CAT

TOTAL NUMBER OF CONTAINERS: 16

SAMPLING COMMENTS:

2101 Webster Street, 12th Floor
Oakland, California 94612-3066
Tel 510.663.4100 Fax 510.663.4141

ameco

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 226589 Date Received 3/14/11 Number of coolers 1
Client Geomatrix Project MEW

Date Opened 3/14/11 By (print) R. Paric (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(C) 13.0

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Are bubbles > 6mm absent in VOA samples? YES NO N/A

16. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Purgeable Halocarbons by GC/MS

Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	EFF-031411	Batch#:	172859
Lab ID:	226589-001	Sampled:	03/14/11
Matrix:	Water	Received:	03/14/11
Units:	ug/L	Analyzed:	03/17/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	108	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	FB-031411	Batch#:	172859
Lab ID:	226589-002	Sampled:	03/14/11
Matrix:	Water	Received:	03/14/11
Units:	ug/L	Analyzed:	03/17/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	113	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	MID-031411	Batch#:	172910
Lab ID:	226589-003	Sampled:	03/14/11
Matrix:	Water	Received:	03/14/11
Units:	ug/L	Analyzed:	03/18/11
Diln Fac:	1.429		

Analyte	Result	RL
Chloromethane	ND	1.4
Vinyl Chloride	ND	0.7
Bromomethane	ND	1.4
Chloroethane	ND	1.4
Trichlorofluoromethane	ND	1.4
Freon 113	100	2.9
1,1-Dichloroethene	ND	0.7
Methylene Chloride	ND	29
trans-1,2-Dichloroethene	ND	0.7
1,1-Dichloroethane	3.8	0.7
cis-1,2-Dichloroethene	0.8	0.7
Chloroform	ND	0.7
1,1,1-Trichloroethane	4.8	0.7
Carbon Tetrachloride	ND	0.7
1,2-Dichloroethane	ND	0.7
Trichloroethene	9.5	0.7
1,2-Dichloropropane	ND	0.7
Bromodichloromethane	ND	0.7
cis-1,3-Dichloropropene	ND	0.7
trans-1,3-Dichloropropene	ND	0.7
1,1,2-Trichloroethane	ND	0.7
Tetrachloroethene	ND	0.7
Dibromochloromethane	ND	0.7
Chlorobenzene	ND	0.7
Bromoform	ND	0.7
1,1,2,2-Tetrachloroethane	ND	0.7
1,3-Dichlorobenzene	ND	0.7
1,4-Dichlorobenzene	ND	0.7
1,2-Dichlorobenzene	ND	0.7

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	INF-031411	Batch#:	172910
Lab ID:	226589-004	Sampled:	03/14/11
Matrix:	Water	Received:	03/14/11
Units:	ug/L	Analyzed:	03/18/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	92	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	180	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,400	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	172859
Lab ID:	226589-005	Sampled:	03/14/11
Matrix:	Water	Received:	03/14/11
Units:	ug/L	Analyzed:	03/17/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	71-146
Toluene-d8	103	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	172859
Units:	ug/L	Analyzed:	03/17/11
Diln Fac:	1.000		

Type: BS Lab ID: QC584151

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.26	101	65-138
Trichloroethene	25.00	25.89	104	78-122
Chlorobenzene	25.00	25.38	102	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	71-146
Toluene-d8	97	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC584152

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	22.92	92	65-138	10	20
Trichloroethene	25.00	25.09	100	78-122	3	20
Chlorobenzene	25.00	26.21	105	80-120	3	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC584153	Batch#:	172859
Matrix:	Water	Analyzed:	03/17/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	71-146
Toluene-d8	106	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	172910
Units:	ug/L	Analyzed:	03/18/11
Diln Fac:	1.000		

Type: BS Lab ID: QC584357

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	22.35	89	65-138
Trichloroethene	25.00	25.83	103	78-122
Chlorobenzene	25.00	24.68	99	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	102	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC584358

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	22.59	90	65-138	1	20
Trichloroethene	25.00	26.79	107	78-122	4	20
Chlorobenzene	25.00	25.74	103	80-120	4	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	96	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC584359	Batch#:	172910
Matrix:	Water	Analyzed:	03/18/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected

RL= Reporting Limit

Turbidity			
Lab #:	226589	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Analysis:	SM2130B
Project#:	1486		
Analyte:	Turbidity	Diln Fac:	1.000
Field ID:	EFF-031411	Batch#:	172796
Lab ID:	226589-001	Sampled:	03/14/11 10:53
Matrix:	Water	Received:	03/14/11
Units:	NTU	Analyzed:	03/15/11 18:30

Result	RL
0.38	0.02

Batch QC Report

Turbidity				
Lab #:	226589	Location:	MEW	
Client:	AMEC Geomatrix, Inc.	Analysis:	SM2130B	
Project#:	1486			
Analyte:	Turbidity	Units:	NTU	
Field ID:	EFF-031411	Diln Fac:	1.000	
Type:	SDUP	Batch#:	172796	
MSS Lab ID:	226589-001	Sampled:	03/14/11 10:53	
Lab ID:	QC583886	Received:	03/14/11	
Matrix:	Water	Analyzed:	03/15/11 18:30	
MSS Result	Result	RL	RPD	Lim
0.3800	0.3700	0.02000	2	20

RL= Reporting Limit

RPD= Relative Percent Difference



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 227467
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486.0002.EE
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-04212011	227467-001
INF-04212011	227467-002
MID-04212011	227467-003
TB	227467-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 04/28/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 227467
Client: AMEC Geomatrix, Inc.
Project: 1486.0002.EE
Location: MEW
Request Date: 04/22/11
Samples Received: 04/22/11

This data package contains sample and QC results for four water samples, requested for the above referenced project on 04/22/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

Methylene chloride was detected between the MDL and the RL in TB (lab # 227467-004); this analyte is a common laboratory contaminant. No other analytical problems were encountered.

PROJECT NAME: MW DATE: 4/21/2011 PAGE 1 OF 1
 PROJECT NUMBER: 1486-002EE CLIENT INFORMATION:
 RESULTS TO: Rendell Camacho LABORATORY NAME: Cochs & Thompson
 LABORATORY ADDRESS:
 TURNAROUND TIME: Standard LABORATORY CONTACT: Berkley
 LABORATORY PHONE NUMBER:
 SAMPLE SHIPMENT METHOD: Carrier GEOTRACKER REQUIRED: YES NO
 SITE SPECIFIC GLOBAL ID NO.:

SAMPLERS (SIGNATURE):		ANALYSES										ADDITIONAL COMMENTS							
DATE	TIME	SAMPLE NUMBER																	
4/21/2011	1020	EFF-04212011	X																
4/21/2011	1025	INF-04212011	X																
4/21/2011	1030	MID-04212011	X																
4/21/2011	--	TB	X																

CONTAINER TYPE AND SIZE: 40 mL vOA Filtered: Y Preservative Type: MC1 Cooled: Y MS/MSD: 3 No. of Containers: 3
 Soil (S), Water (W), Vapor (V), or Other (O): W Soil (S), Water (W), Vapor (V), or Other (O): W Soil (S), Water (W), Vapor (V), or Other (O): W Soil (S), Water (W), Vapor (V), or Other (O): W

RECEIVED BY: [Signature] DATE: 4/21/11 15:15
 PRINTED NAME: Passelle Paris
 COMPANY: CAT

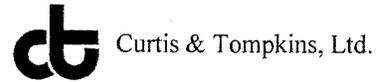
RELINQUISHED BY: [Signature] DATE: 4/21/2011 TIME: 830
 PRINTED NAME: Rendell Camacho
 COMPANY: AMEC hematrix

SIGNATURE: PRINTED NAME: COMPANY:
 SIGNATURE: PRINTED NAME: COMPANY:
 SIGNATURE: PRINTED NAME: COMPANY:
 SIGNATURE: PRINTED NAME: COMPANY:



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Login # 227467 Date Received 4/22/11 Number of coolers 1
Client AMEC Project MEN

Date Opened 4/22/11 By (print) R. Paris (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
Shipping info

2A. Were custody seals present? ... X YES (circle) on cooler on samples NO
How many 1 Name signature Date 4/22/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation:

Type of ice used: X Wet Blue/Gel None Temp(C) 6.3

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Did you check preservatives for all bottles for each sample? YES NO N/A

16. Did you document your preservative check YES NO N/A

17. Are bubbles > 6mm absent in VOA samples? YES NO N/A

18. Was the client contacted concerning this sample delivery? YES (NO)
If YES, Who was called? By Date:

COMMENTS

[Blank lines for comments]

Purgeable Halocarbons by GC/MS

Lab #:	227467	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	EFF-04212011	Batch#:	174080
Lab ID:	227467-001	Sampled:	04/21/11
Matrix:	Water	Received:	04/22/11
Units:	ug/L	Analyzed:	04/25/11
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.2
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.2
Trichlorofluoromethane	ND	1.0	0.2
Freon 113	ND	2.0	0.2
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.2
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.2
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Purgeable Halocarbons by GC/MS

Lab #:	227467	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	INF-04212011	Batch#:	174080
Lab ID:	227467-002	Sampled:	04/21/11
Matrix:	Water	Received:	04/22/11
Units:	ug/L	Analyzed:	04/26/11
Diln Fac:	20.00		

Analyte	Result	RL	MDL
Chloromethane	ND	20	4.3
Vinyl Chloride	ND	10	2.4
Bromomethane	ND	20	3.4
Chloroethane	ND	20	3.3
Trichlorofluoromethane	ND	20	3.7
Freon 113	110	40	3.1
1,1-Dichloroethene	6.4 J	10	2.0
Methylene Chloride	ND	400	2.9
trans-1,2-Dichloroethene	3.9 J	10	2.0
1,1-Dichloroethane	4.0 J	10	2.0
cis-1,2-Dichloroethene	200	10	2.0
Chloroform	ND	10	2.0
1,1,1-Trichloroethane	4.4 J	10	2.0
Carbon Tetrachloride	ND	10	2.0
1,2-Dichloroethane	ND	10	2.0
Trichloroethene	1,400	10	2.0
1,2-Dichloropropane	ND	10	3.0
Bromodichloromethane	ND	10	2.0
cis-1,3-Dichloropropene	ND	10	2.0
trans-1,3-Dichloropropene	ND	10	2.0
1,1,2-Trichloroethane	ND	10	3.2
Tetrachloroethene	4.6 J	10	2.0
Dibromochloromethane	ND	10	2.0
Chlorobenzene	ND	10	2.3
Bromoform	ND	10	2.0
1,1,2,2-Tetrachloroethane	ND	10	2.0
1,3-Dichlorobenzene	ND	10	2.0
1,4-Dichlorobenzene	ND	10	2.0
1,2-Dichlorobenzene	ND	10	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	111	71-146
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Purgeable Halocarbons by GC/MS

Lab #:	227467	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	MID-04212011	Batch#:	174080
Lab ID:	227467-003	Sampled:	04/21/11
Matrix:	Water	Received:	04/22/11
Units:	ug/L	Analyzed:	04/26/11
Diln Fac:	1.429		

Analyte	Result	RL	MDL
Chloromethane	ND	1.4	0.3
Vinyl Chloride	ND	0.7	0.2
Bromomethane	ND	1.4	0.2
Chloroethane	ND	1.4	0.2
Trichlorofluoromethane	ND	1.4	0.3
Freon 113	120	2.9	0.2
1,1-Dichloroethene	ND	0.7	0.1
Methylene Chloride	ND	29	0.2
trans-1,2-Dichloroethene	0.2 J	0.7	0.1
1,1-Dichloroethane	3.8	0.7	0.1
cis-1,2-Dichloroethene	4.4	0.7	0.1
Chloroform	0.4 J	0.7	0.1
1,1,1-Trichloroethane	4.4	0.7	0.1
Carbon Tetrachloride	ND	0.7	0.1
1,2-Dichloroethane	ND	0.7	0.1
Trichloroethene	49	0.7	0.1
1,2-Dichloropropane	ND	0.7	0.2
Bromodichloromethane	ND	0.7	0.1
cis-1,3-Dichloropropene	ND	0.7	0.1
trans-1,3-Dichloropropene	ND	0.7	0.1
1,1,2-Trichloroethane	ND	0.7	0.2
Tetrachloroethene	0.4 J	0.7	0.1
Dibromochloromethane	ND	0.7	0.1
Chlorobenzene	ND	0.7	0.2
Bromoform	ND	0.7	0.1
1,1,2,2-Tetrachloroethane	ND	0.7	0.1
1,3-Dichlorobenzene	ND	0.7	0.1
1,4-Dichlorobenzene	ND	0.7	0.1
1,2-Dichlorobenzene	ND	0.7	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	71-146
Toluene-d8	99	80-120
Bromofluorobenzene	103	80-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Purgeable Halocarbons by GC/MS

Lab #:	227467	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Field ID:	TB	Batch#:	174080
Lab ID:	227467-004	Sampled:	04/21/11
Matrix:	Water	Received:	04/22/11
Units:	ug/L	Analyzed:	04/25/11
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.2
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.2
Trichlorofluoromethane	ND	1.0	0.2
Freon 113	ND	2.0	0.2
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	0.2 J	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.2
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.2
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	71-146
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	227467	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC588935	Batch#:	174080
Matrix:	Water	Analyzed:	04/25/11
Units:	ug/L		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.2
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.2
Trichlorofluoromethane	ND	1.0	0.2
Freon 113	ND	2.0	0.2
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.2
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.2
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	97	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	227467	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	174080
Units:	ug/L	Analyzed:	04/25/11
Diln Fac:	1.000		

Type: BS Lab ID: QC588936

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	21.25	22.35	105	65-138
Trichloroethene	21.25	21.46	101	78-122
Chlorobenzene	21.25	22.89	108	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	71-146
Toluene-d8	94	80-120
Bromofluorobenzene	95	80-120

Type: BSD Lab ID: QC588937

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	21.25	20.91	98	65-138	7	20
Trichloroethene	21.25	20.16	95	78-122	6	20
Chlorobenzene	21.25	22.44	106	80-120	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	93	71-146
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	227467	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.0002.EE	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC588938	Batch#:	174080
Matrix:	Water	Analyzed:	04/25/11
Units:	ug/L		

Analyte	Result	RL	MDL
Chloromethane	ND	1.0	0.2
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.2
Trichlorofluoromethane	ND	1.0	0.2
Freon 113	ND	2.0	0.2
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	20	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
cis-1,2-Dichloroethene	ND	0.5	0.1
Chloroform	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.2
Bromodichloromethane	ND	0.5	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.2
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
Bromoform	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	71-146
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 227761
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 0014860010.0002
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-050311	227761-001
MID-050311	227761-002
INF-050311	227761-003
TRIP BLANK	227761-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 05/11/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 227761
Client: AMEC Geomatrix, Inc.
Project: 0014860010.0002
Location: MEW
Request Date: 05/04/11
Samples Received: 05/04/11

This data package contains sample and QC results for four water samples, requested for the above referenced project on 05/04/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

PROJECT NAME: MEW
 PROJECT NUMBER: 001480010-0002-EEV
 RESULTS TO: Rendell Comoro
 TURNAROUND TIME: Standard
 SAMPLE SHIPMENT METHOD: Lab pick up
 LABORATORY NAME: Curtis Tompkins
 LABORATORY ADDRESS:
 LABORATORY CONTACT:
 LABORATORY PHONE NUMBER:
 DATE: 5-3-11
 REPORTING REQUIREMENTS:
 GEOTRACKER REQUIRED: YES (NO)
 SITE SPECIFIC GLOBAL ID NO.

DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	M/MSD	No. of Containers	ADDITIONAL COMMENTS
5-3-11	1054	EFF-050311	40ml VOA	W		H21	X		3	*8010 List
	1102	MID-050311		W			X		3	
	1110	INF-050311		W			X		3	
		tip Blank		W			X		2	

ANALYSES

* ROR

RELINQUISHED BY: R. David Brown
 DATE: 5/3/11
 TIME: 1400
 SIGNATURE: R. David Brown
 PRINTED NAME: R. David Brown
 COMPANY: AMEC

RECEIVED BY:
 SIGNATURE:
 PRINTED NAME:
 COMPANY:

TOTAL NUMBER OF CONTAINERS: 11

SAMPLING COMMENTS:



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 227761 Date Received 5/4/11 Number of coolers 1
Client Geomatrix Project MEW

Date Opened 5/4/11 By (print) Vidya Gashi (sign) [Signature]
Date Logged in 5/5/11 By (print) R. PAVES (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO VG
How many 1 Name Signature Date 5/3/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO VG

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap
- Foam blocks
- Bags
- None
- Cloth material
- Cardboard
- Styrofoam
- Paper towels

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(°C) 3.5

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Did you check preservatives for all bottles for each sample? YES NO N/A

16. Did you document your preservative check YES NO N/A

17. Are bubbles > 6mm absent in VOA samples? YES NO N/A

18. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Purgeable Halocarbons by GC/MS

Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EFF-050311	Batch#:	174498
Lab ID:	227761-001	Sampled:	05/03/11
Matrix:	Water	Received:	05/04/11
Units:	ug/L	Analyzed:	05/06/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	134	71-146
Toluene-d8	104	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	MID-050311	Batch#:	174498
Lab ID:	227761-002	Sampled:	05/03/11
Matrix:	Water	Received:	05/04/11
Units:	ug/L	Analyzed:	05/06/11
Diln Fac:	2.000		

Analyte	Result	RL
Chloromethane	ND	2.0
Vinyl Chloride	ND	1.0
Bromomethane	ND	2.0
Chloroethane	ND	2.0
Trichlorofluoromethane	ND	2.0
Freon 113	100	4.0
1,1-Dichloroethene	ND	1.0
Methylene Chloride	ND	40
trans-1,2-Dichloroethene	ND	1.0
1,1-Dichloroethane	4.2	1.0
cis-1,2-Dichloroethene	4.6	1.0
Chloroform	ND	1.0
1,1,1-Trichloroethane	5.2	1.0
Carbon Tetrachloride	ND	1.0
1,2-Dichloroethane	ND	1.0
Trichloroethene	50	1.0
1,2-Dichloropropane	ND	1.0
Bromodichloromethane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
Tetrachloroethene	ND	1.0
Dibromochloromethane	ND	1.0
Chlorobenzene	ND	1.0
Bromoform	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	134	71-146
Toluene-d8	105	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	INF-050311	Batch#:	174556
Lab ID:	227761-003	Sampled:	05/03/11
Matrix:	Water	Received:	05/04/11
Units:	ug/L	Analyzed:	05/09/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	110	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	180	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,400	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	115	71-146
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	174498
Lab ID:	227761-004	Sampled:	05/03/11
Matrix:	Water	Received:	05/04/11
Units:	ug/L	Analyzed:	05/06/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	131	71-146
Toluene-d8	104	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	174498
Units:	ug/L	Analyzed:	05/06/11
Diln Fac:	1.000		

Type: BS Lab ID: QC590598

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	26.91	108	65-138
Trichloroethene	25.00	25.98	104	78-122
Chlorobenzene	25.00	25.11	100	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	131	71-146
Toluene-d8	104	80-120
Bromofluorobenzene	95	80-120

Type: BSD Lab ID: QC590599

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	24.75	27.06	109	65-138	2	20
Trichloroethene	24.75	27.33	110	78-122	6	20
Chlorobenzene	24.75	25.94	105	80-120	4	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	127	71-146
Toluene-d8	104	80-120
Bromofluorobenzene	95	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC590600	Batch#:	174498
Matrix:	Water	Analyzed:	05/06/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	126	71-146
Toluene-d8	105	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	174556
Units:	ug/L	Analyzed:	05/09/11
Diln Fac:	1.000		

Type: BS Lab ID: QC590833

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	24.51	23.01	94	65-138
Trichloroethene	24.51	26.24	107	78-122
Chlorobenzene	24.51	25.06	102	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	112	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	91	80-120

Type: BSD Lab ID: QC590834

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	24.27	21.45	88	65-138	6	20
Trichloroethene	24.27	26.54	109	78-122	2	20
Chlorobenzene	24.27	25.14	104	80-120	1	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	113	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	91	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	227761	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC590835	Batch#:	174556
Matrix:	Water	Analyzed:	05/09/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	116	71-146
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected

RL= Reporting Limit



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Analytical Laboratories, Since 1878



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 228686
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 0014860010.0002
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-061311	228686-001
MID-061311	228686-002
FB-061311	228686-003
INF-061311	228686-004
EX-5-061311	228686-005
TRIP BLANK	228686-006

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 06/21/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 228686
Client: AMEC Geomatrix, Inc.
Project: 0014860010.0002
Location: MEW
Request Date: 06/14/11
Samples Received: 06/14/11

This data package contains sample and QC results for six water samples, requested for the above referenced project on 06/14/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

CHAIN-OF-CUSTODY RECORD

PROJECT NAME: MEU DATE: 6-13-11 PAGE 1 OF 1

LABORATORY NAME: Watts & Tompkins CLIENT INFORMATION:

LABORATORY ADDRESS:

LABORATORY CONTACT:

LABORATORY PHONE NUMBER:

GEOTRACKER REQUIRED: YES NO

SITE SPECIFIC GLOBAL ID NO.:

DATE	TIME	SAMPLE NUMBER	ANALYSES	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V) or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
6/13/11	1426	EFF-061311	8260B*	40 ml VOA	W		HEC	X		3	*8010 List
	1434	MID-061311	X		W			X		3	
	1440	FB-061311	X		W			X		3	
	1450	INF-061311	X		W			X		3	
	1512	EX-5-061311	X		W			X		3	
		TRIP BLANK	X		W			X		2	

RELIQUISHED BY: R Donald Pearson DATE: 6/13/11 TIME: 1430 RECEIVED BY: Russel Pans DATE: 6/14/11 TIME: 11:30

SIGNATURE: R Donald Pearson PRINTED NAME: Russel Pans COMPANY: CIT

SIGNATURE: AMEC PRINTED NAME: _____ COMPANY: _____

SIGNATURE: _____ PRINTED NAME: _____ COMPANY: _____

SIGNATURE: _____ PRINTED NAME: _____ COMPANY: _____

SIGNATURE: _____ PRINTED NAME: _____ COMPANY: _____

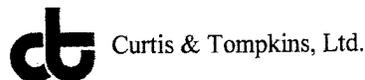
TOTAL NUMBER OF CONTAINERS: 17

SAMPLING COMMENTS: SAMPLE EFF-061311 - Full SCAN



2101 Webster Street, 12th Floor
Oakland, California 94612-3066
Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Login # 228686 Date Received 6/14/11 Number of coolers 1
Client AMEC Project MEW

Date Opened 6/14/11 By (print) R. Pans (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many 1 Name R. David Pearson Date 6/14/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Cloth material, Foam blocks, Cardboard, Bags, Styrofoam, None, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 2.9

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO

If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Did you check preservatives for all bottles for each sample? YES NO N/A

16. Did you document your preservative check? YES NO N/A

17. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

18. Are bubbles > 6mm absent in VOA samples? YES NO N/A

19. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Purgeable Organics by GC/MS

Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EFF-061311	Batch#:	175902
Lab ID:	228686-001	Sampled:	06/13/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/16/11
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	0.5
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EFF-061311	Batch#:	175902
Lab ID:	228686-001	Sampled:	06/13/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/16/11
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	116	80-127
1,2-Dichloroethane-d4	119	73-145
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	MID-061311	Batch#:	175902
Lab ID:	228686-002	Sampled:	06/13/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/16/11
Diln Fac:	1.429		

Analyte	Result	RL
Chloromethane	ND	1.4
Vinyl Chloride	ND	0.7
Bromomethane	ND	1.4
Chloroethane	ND	1.4
Trichlorofluoromethane	ND	1.4
Freon 113	89	2.9
1,1-Dichloroethene	ND	0.7
Methylene Chloride	ND	29
trans-1,2-Dichloroethene	ND	0.7
1,1-Dichloroethane	4.0	0.7
cis-1,2-Dichloroethene	4.0	0.7
Chloroform	ND	0.7
1,1,1-Trichloroethane	4.8	0.7
Carbon Tetrachloride	ND	0.7
1,2-Dichloroethane	ND	0.7
Trichloroethene	36	0.7
1,2-Dichloropropane	ND	0.7
Bromodichloromethane	ND	0.7
cis-1,3-Dichloropropene	ND	0.7
trans-1,3-Dichloropropene	ND	0.7
1,1,2-Trichloroethane	ND	0.7
Tetrachloroethene	ND	0.7
Dibromochloromethane	ND	0.7
Chlorobenzene	ND	0.7
Bromoform	ND	0.7
1,1,2,2-Tetrachloroethane	ND	0.7
1,3-Dichlorobenzene	ND	0.7
1,4-Dichlorobenzene	ND	0.7
1,2-Dichlorobenzene	ND	0.7

Surrogate	%REC	Limits
Dibromofluoromethane	117	80-127
1,2-Dichloroethane-d4	124	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	FB-061311	Batch#:	175902
Lab ID:	228686-003	Sampled:	06/13/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/16/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	116	80-127
1,2-Dichloroethane-d4	120	73-145
Toluene-d8	100	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	INF-061311	Batch#:	175902
Lab ID:	228686-004	Sampled:	06/13/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/17/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	110	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	18	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	250	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,500	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	115	80-127
1,2-Dichloroethane-d4	124	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EX-5-061311	Batch#:	175951
Lab ID:	228686-005	Sampled:	06/13/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/17/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	93	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	220	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,400	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-127
1,2-Dichloroethane-d4	93	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	175951
Lab ID:	228686-006	Sampled:	06/13/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/17/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-127
1,2-Dichloroethane-d4	92	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC596517	Batch#:	175902
Matrix:	Water	Analyzed:	06/16/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	0.5
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	121	73-145
Toluene-d8	95	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC596517	Batch#:	175902
Matrix:	Water	Analyzed:	06/16/11
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	0.5
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC596517	Batch#:	175902
Matrix:	Water	Analyzed:	06/16/11
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	0.5
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	121	73-145
Toluene-d8	95	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC596570	Batch#:	175902
Matrix:	Water	Analyzed:	06/16/11
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	26.63	107	64-133
Trichloroethene	25.00	27.08	108	78-120
Chlorobenzene	25.00	23.38	94	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-127
1,2-Dichloroethane-d4	116	73-145
Toluene-d8	96	80-120
Bromofluorobenzene	93	80-120

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC596570	Batch#:	175902
Matrix:	Water	Analyzed:	06/16/11
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	26.63	107	64-133
Benzene	25.00	26.50	106	80-122
Trichloroethene	25.00	27.08	108	78-120
Toluene	25.00	23.93	96	80-120
Chlorobenzene	25.00	23.38	94	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-127
1,2-Dichloroethane-d4	116	73-145
Toluene-d8	96	80-120
Bromofluorobenzene	93	80-120

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	175902
MSS Lab ID:	228708-001	Sampled:	06/14/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/17/11
Diln Fac:	1.000		

Type: MS Lab ID: QC596623

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	0.1819	25.00	27.87	111	73-126
Trichloroethene	31.07	25.00	55.26	97	69-122
Chlorobenzene	<0.1000	25.00	23.84	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	116	80-127
1,2-Dichloroethane-d4	124	73-145
Toluene-d8	96	80-120
Bromofluorobenzene	93	80-120

Type: MSD Lab ID: QC596624

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	27.13	108	73-126	3	20
Trichloroethene	25.00	53.52	90	69-122	3	20
Chlorobenzene	25.00	23.41	94	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-127
1,2-Dichloroethane-d4	124	73-145
Toluene-d8	97	80-120
Bromofluorobenzene	92	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	175902
MSS Lab ID:	228708-001	Sampled:	06/14/11
Matrix:	Water	Received:	06/14/11
Units:	ug/L	Analyzed:	06/17/11
Diln Fac:	1.000		

Type: MS Lab ID: QC596623

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	0.1819	25.00	27.87	111	73-126
Benzene	<0.1000	25.00	27.54	110	80-120
Trichloroethene	31.07	25.00	55.26	97	69-122
Toluene	<0.1000	25.00	24.76	99	80-120
Chlorobenzene	<0.1000	25.00	23.84	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	116	80-127
1,2-Dichloroethane-d4	124	73-145
Toluene-d8	96	80-120
Bromofluorobenzene	93	80-120

Type: MSD Lab ID: QC596624

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	27.13	108	73-126	3	20
Benzene	25.00	26.76	107	80-120	3	20
Trichloroethene	25.00	53.52	90	69-122	3	20
Toluene	25.00	24.16	97	80-120	2	20
Chlorobenzene	25.00	23.41	94	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-127
1,2-Dichloroethane-d4	124	73-145
Toluene-d8	97	80-120
Bromofluorobenzene	92	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	175951
Units:	ug/L	Analyzed:	06/17/11
Diln Fac:	1.000		

Type: BS Lab ID: QC596725

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	20.00	16.93	85	64-133
Trichloroethene	20.00	18.20	91	78-120
Chlorobenzene	20.00	19.21	96	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-127
1,2-Dichloroethane-d4	93	73-145
Toluene-d8	99	80-120
Bromofluorobenzene	96	80-120

Type: BSD Lab ID: QC596726

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	20.00	16.80	84	64-133	1	20
Trichloroethene	20.00	18.08	90	78-120	1	20
Chlorobenzene	20.00	19.10	96	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-127
1,2-Dichloroethane-d4	92	73-145
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	228686	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC596727	Batch#:	175951
Matrix:	Water	Analyzed:	06/17/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	0.5
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-127
1,2-Dichloroethane-d4	92	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected

RL= Reporting Limit



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Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 229410
ANALYTICAL REPORT

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486.002
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
INF-071311	229410-001
MID-071311	229410-002
EFF-071311	229410-003
FB-071311	229410-004
TRIP BLANK	229410-005

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 07/20/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 229410
Client: AMEC Geomatrix, Inc.
Project: 1486.002
Location: MEW
Request Date: 07/14/11
Samples Received: 07/14/11

This data package contains sample and QC results for five water samples, requested for the above referenced project on 07/14/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

529410

CHAIN-OF-CUSTODY RECORD

OAK 15533

PROJECT NAME: MEW
 PROJECT NUMBER: 1486.002
 RESULTS TO: Rendell Camacho
 TURNAROUND TIME: Standand
 SAMPLE SHIPMENT METHOD: Courier

LABORATORY NAME: Curt's & Tompkins
 LABORATORY ADDRESS:
 Berkeley
 LABORATORY CONTACT: Tracy Babior
 LABORATORY PHONE NUMBER:

DATE: 7/13/11
 REPORTING REQUIREMENTS:
 GEOTRACKER REQUIRED: YES NO

SITE SPECIFIC GLOBAL ID NO.:

SAMPLERS (SIGNATURE):		ANALYSES										ADDITIONAL COMMENTS
DATE	TIME	SAMPLE NUMBER	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers				
7/13/11	0830	INF-071311	W	N	HCl	Y	N	3				
	0845	MID-071311	↓	↓	↓	↓	↓	↓				
	0900	EFF-071311	↓	↓	↓	↓	↓	↓				
	0915	FB-071311	↓	↓	↓	↓	↓	↓				
	--	TRIP BLANK	↓	↓	↓	↓	↓	2				*

CONTAINER TYPE AND SIZE: 40ml vials

RELINQUISHED BY: [Signature]
 DATE: 0713
 TIME: 1530

RECEIVED BY: [Signature]
 DATE: 2011
 TIME:

TOTAL NUMBER OF CONTAINERS: * trip blanks have bubbles

SAMPLING COMMENTS:

AMTEL WACHOUSE



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Login # 229410 Date Received 7/14/11 Number of coolers 1
Client AMEC Project MEW

Date Opened 7/14/11 By (print) Vidya Doshi (sign) [Signature]
Date Logged in [initials] By (print) [initials] (sign) [initials]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many 1 Name Signature Date 7/14/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 1.5

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Did you check preservatives for all bottles for each sample? YES NO N/A

16. Did you document your preservative check? YES NO N/A

17. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

18. Are bubbles > 6mm absent in VOA samples? YES NO N/A

19. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

18. -004 -005 2 of 2 VOAs w/ bubbles

Purgeable Halocarbons by GC/MS

Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Field ID:	INF-071311	Batch#:	176809
Lab ID:	229410-001	Sampled:	07/13/11
Matrix:	Water	Received:	07/14/11
Units:	ug/L	Analyzed:	07/15/11
Diln Fac:	16.67		

Analyte	Result	RL
Chloromethane	ND	17
Vinyl Chloride	ND	8.3
Bromomethane	ND	17
Chloroethane	ND	17
Trichlorofluoromethane	ND	17
Freon 113	88	33
1,1-Dichloroethene	ND	8.3
Methylene Chloride	ND	330
trans-1,2-Dichloroethene	ND	8.3
1,1-Dichloroethane	ND	8.3
cis-1,2-Dichloroethene	190	8.3
Chloroform	ND	17
1,1,1-Trichloroethane	ND	8.3
Carbon Tetrachloride	ND	8.3
1,2-Dichloroethane	ND	8.3
Trichloroethene	1,200	8.3
1,2-Dichloropropane	ND	8.3
Bromodichloromethane	ND	8.3
cis-1,3-Dichloropropene	ND	8.3
trans-1,3-Dichloropropene	ND	8.3
1,1,2-Trichloroethane	ND	8.3
Tetrachloroethene	ND	8.3
Dibromochloromethane	ND	8.3
Chlorobenzene	ND	8.3
Bromoform	ND	8.3
1,1,2,2-Tetrachloroethane	ND	8.3
1,3-Dichlorobenzene	ND	8.3
1,4-Dichlorobenzene	ND	8.3
1,2-Dichlorobenzene	ND	8.3

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	118	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS			
Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Field ID:	MID-071311	Units:	ug/L
Lab ID:	229410-002	Sampled:	07/13/11
Matrix:	Water	Received:	07/14/11

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Chloromethane	ND	1.0	1.000	176868	07/18/11
Vinyl Chloride	ND	0.5	1.000	176868	07/18/11
Bromomethane	ND	1.0	1.000	176868	07/18/11
Chloroethane	ND	1.0	1.000	176868	07/18/11
Trichlorofluoromethane	ND	1.0	1.000	176868	07/18/11
Freon 113	77	4.0	2.000	176809	07/15/11
1,1-Dichloroethene	ND	0.5	1.000	176868	07/18/11
Methylene Chloride	ND	20	1.000	176868	07/18/11
trans-1,2-Dichloroethene	ND	0.5	1.000	176868	07/18/11
1,1-Dichloroethane	3.4	0.5	1.000	176868	07/18/11
cis-1,2-Dichloroethene	6.4	0.5	1.000	176868	07/18/11
Chloroform	ND	1.0	1.000	176868	07/18/11
1,1,1-Trichloroethane	4.7	0.5	1.000	176868	07/18/11
Carbon Tetrachloride	ND	0.5	1.000	176868	07/18/11
1,2-Dichloroethane	ND	0.5	1.000	176868	07/18/11
Trichloroethene	73	0.5	1.000	176868	07/18/11
1,2-Dichloropropane	ND	0.5	1.000	176868	07/18/11
Bromodichloromethane	ND	0.5	1.000	176868	07/18/11
cis-1,3-Dichloropropene	ND	0.5	1.000	176868	07/18/11
trans-1,3-Dichloropropene	ND	0.5	1.000	176868	07/18/11
1,1,2-Trichloroethane	ND	0.5	1.000	176868	07/18/11
Tetrachloroethene	0.7	0.5	1.000	176868	07/18/11
Dibromochloromethane	ND	0.5	1.000	176868	07/18/11
Chlorobenzene	ND	0.5	1.000	176868	07/18/11
Bromoform	ND	0.5	1.000	176868	07/18/11
1,1,2,2-Tetrachloroethane	ND	0.5	1.000	176868	07/18/11
1,3-Dichlorobenzene	ND	0.5	1.000	176868	07/18/11
1,4-Dichlorobenzene	ND	0.5	1.000	176868	07/18/11
1,2-Dichlorobenzene	ND	0.5	1.000	176868	07/18/11

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
1,2-Dichloroethane-d4	119	73-145	1.000	176868	07/18/11
Toluene-d8	98	80-120	1.000	176868	07/18/11
Bromofluorobenzene	96	80-120	1.000	176868	07/18/11

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Field ID:	EFF-071311	Batch#:	176809
Lab ID:	229410-003	Sampled:	07/13/11
Matrix:	Water	Received:	07/14/11
Units:	ug/L	Analyzed:	07/15/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	115	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Field ID:	FB-071311	Batch#:	176809
Lab ID:	229410-004	Sampled:	07/13/11
Matrix:	Water	Received:	07/14/11
Units:	ug/L	Analyzed:	07/15/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	116	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	176809
Lab ID:	229410-005	Sampled:	07/13/11
Matrix:	Water	Received:	07/14/11
Units:	ug/L	Analyzed:	07/15/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	118	73-145
Toluene-d8	100	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC600211	Batch#:	176809
Matrix:	Water	Analyzed:	07/15/11
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	10.00	10.91	109	80-120
Trichloroethene	10.00	11.39	114	80-120
Chlorobenzene	10.00	11.72	117	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	115	73-145
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-120

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC600212	Batch#:	176809
Matrix:	Water	Analyzed:	07/15/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	118	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	176809
MSS Lab ID:	229376-004	Sampled:	07/12/11
Matrix:	Water	Received:	07/14/11
Units:	ug/L	Analyzed:	07/15/11
Diln Fac:	1.000		

Type: MS Lab ID: QC600262

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.1000	12.50	12.13	97	40-150
Trichloroethene	<0.1161	12.50	12.50	100	40-150
Chlorobenzene	<0.1000	12.50	12.89	103	40-150

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	121	73-145
Toluene-d8	94	80-120
Bromofluorobenzene	100	80-120

Type: MSD Lab ID: QC600263

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	10.90	87	40-150	11	35
Trichloroethene	12.50	11.50	92	40-150	8	35
Chlorobenzene	12.50	11.98	96	40-150	7	35

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	117	73-145
Toluene-d8	101	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	176868
Units:	ug/L	Analyzed:	07/18/11
Diln Fac:	1.000		

Type: BS Lab ID: QC600429

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	10.00	9.318	93	80-120
Trichloroethene	10.00	9.335	93	80-120
Chlorobenzene	10.00	9.694	97	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	118	73-145
Toluene-d8	99	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC600430

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	10.00	8.867	89	80-120	5	35
Trichloroethene	10.00	10.19	102	80-120	9	35
Chlorobenzene	10.00	10.08	101	80-120	4	35

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	118	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	229410	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486.002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC600431	Batch#:	176868
Matrix:	Water	Analyzed:	07/18/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	119	73-145
Toluene-d8	100	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit



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**Laboratory Job Number 229836
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486.002
Location : MEW
Level : II

Sample ID
EFF-072811
TRIP BLANK

Lab ID
229836-001
229836-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 08/05/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 229836
Client: AMEC Geomatrix, Inc.
Project: 1486.002
Location: MEW
Request Date: 07/29/11
Samples Received: 07/29/11

This data package contains sample and QC results for one water sample, requested for the above referenced project on 07/29/11. The sample was received cold and intact.

Semivolatile Organics by GC/MS (EPA 8270C):

Bis(2-ethylhexyl)phthalate was detected above the RL in the method blank for batch 177360; this analyte was not detected in the sample at or above the RL. No other analytical problems were encountered.

Semivolatile Organics by GC/MS SIM (EPA 8270C-SIM):

No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Login # 229836 Date Received 7/29/11 Number of coolers 1
Client AMEC Project MEW

Date Opened 7/29/11 By (print) Vidia Qashir (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many 1 Name Signature Date 7/20/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 3.5

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Did you check preservatives for all bottles for each sample? YES NO N/A

16. Did you document your preservative check? YES NO N/A

17. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

18. Are bubbles > 6mm absent in VOA samples? YES NO N/A

19. Was the client contacted concerning this sample delivery? YES (NO)
If YES, Who was called? By Date:

COMMENTS

[Blank lines for comments]

Semivolatile Organics by GC/MS			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C
Field ID:	EFF-072811	Batch#:	177360
Lab ID:	229836-001	Sampled:	07/28/11
Matrix:	Water	Received:	07/29/11
Units:	ug/L	Prepared:	08/01/11
Diln Fac:	1.000	Analyzed:	08/02/11

Analyte	Result	RL
N-Nitrosodimethylamine	ND	9.4
Phenol	ND	9.4
bis(2-Chloroethyl) ether	ND	9.4
2-Chlorophenol	ND	9.4
1,3-Dichlorobenzene	ND	9.4
1,4-Dichlorobenzene	ND	9.4
Benzyl alcohol	ND	9.4
1,2-Dichlorobenzene	ND	9.4
2-Methylphenol	ND	9.4
bis(2-Chloroisopropyl) ether	ND	9.4
4-Methylphenol	ND	9.4
N-Nitroso-di-n-propylamine	ND	9.4
Hexachloroethane	ND	9.4
Nitrobenzene	ND	9.4
Isophorone	ND	9.4
2-Nitrophenol	ND	19
2,4-Dimethylphenol	ND	9.4
Benzoic acid	ND	47
bis(2-Chloroethoxy)methane	ND	9.4
2,4-Dichlorophenol	ND	9.4
1,2,4-Trichlorobenzene	ND	9.4
Naphthalene	ND	9.4
4-Chloroaniline	ND	9.4
Hexachlorobutadiene	ND	9.4
4-Chloro-3-methylphenol	ND	9.4
2-Methylnaphthalene	ND	9.4
Hexachlorocyclopentadiene	ND	19
2,4,6-Trichlorophenol	ND	9.4
2,4,5-Trichlorophenol	ND	9.4
2-Chloronaphthalene	ND	9.4
2-Nitroaniline	ND	19
Dimethylphthalate	ND	9.4
Acenaphthylene	ND	9.4
2,6-Dinitrotoluene	ND	9.4
3-Nitroaniline	ND	19
Acenaphthene	ND	9.4
2,4-Dinitrophenol	ND	19
4-Nitrophenol	ND	19
Dibenzofuran	ND	9.4
2,4-Dinitrotoluene	ND	9.4
Diethylphthalate	ND	9.4
Fluorene	ND	9.4
4-Chlorophenyl-phenylether	ND	9.4
4-Nitroaniline	ND	19
4,6-Dinitro-2-methylphenol	ND	19
N-Nitrosodiphenylamine	ND	9.4
Azobenzene	ND	9.4
4-Bromophenyl-phenylether	ND	9.4
Hexachlorobenzene	ND	9.4
Pentachlorophenol	ND	19
Phenanthrene	ND	9.4
Anthracene	ND	9.4
Di-n-butylphthalate	ND	9.4
Fluoranthene	ND	9.4

ND= Not Detected
 RL= Reporting Limit

Semivolatile Organics by GC/MS			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C
Field ID:	EFF-072811	Batch#:	177360
Lab ID:	229836-001	Sampled:	07/28/11
Matrix:	Water	Received:	07/29/11
Units:	ug/L	Prepared:	08/01/11
Diln Fac:	1.000	Analyzed:	08/02/11

Analyte	Result	RL
Pyrene	ND	9.4
Butylbenzylphthalate	ND	9.4
3,3'-Dichlorobenzidine	ND	19
Benzo(a)anthracene	ND	9.4
Chrysene	ND	9.4
bis(2-Ethylhexyl)phthalate	ND	9.4
Di-n-octylphthalate	ND	9.4
Benzo(b)fluoranthene	ND	9.4
Benzo(k)fluoranthene	ND	9.4
Benzo(a)pyrene	ND	9.4
Indeno(1,2,3-cd)pyrene	ND	9.4
Dibenz(a,h)anthracene	ND	9.4
Benzo(g,h,i)perylene	ND	9.4

Surrogate	%REC	Limits
2-Fluorophenol	67	48-120
Phenol-d5	66	49-120
2,4,6-Tribromophenol	73	54-120
Nitrobenzene-d5	69	54-120
2-Fluorobiphenyl	75	54-120
Terphenyl-d14	57	18-120

ND= Not Detected
 RL= Reporting Limit
 Page 2 of 2

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC602434	Batch#:	177360
Matrix:	Water	Prepared:	08/01/11
Units:	ug/L	Analyzed:	08/02/11

Analyte	Result	RL
N-Nitrosodimethylamine	ND	10
Phenol	ND	10
bis(2-Chloroethyl) ether	ND	10
2-Chlorophenol	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
Benzyl alcohol	ND	10
1,2-Dichlorobenzene	ND	10
2-Methylphenol	ND	10
bis(2-Chloroisopropyl) ether	ND	10
4-Methylphenol	ND	10
N-Nitroso-di-n-propylamine	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Isophorone	ND	10
2-Nitrophenol	ND	20
2,4-Dimethylphenol	ND	10
Benzoic acid	ND	50
bis(2-Chloroethoxy)methane	ND	10
2,4-Dichlorophenol	ND	10
1,2,4-Trichlorobenzene	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	10
4-Chloro-3-methylphenol	ND	10
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	20
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	10
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	20
Dimethylphthalate	ND	10
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	10
3-Nitroaniline	ND	20
Acenaphthene	ND	10
2,4-Dinitrophenol	ND	20
4-Nitrophenol	ND	20
Dibenzofuran	ND	10
2,4-Dinitrotoluene	ND	10
Diethylphthalate	ND	10
Fluorene	ND	10
4-Chlorophenyl-phenylether	ND	10
4-Nitroaniline	ND	20
4,6-Dinitro-2-methylphenol	ND	20
N-Nitrosodiphenylamine	ND	10
Azobenzene	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	10
Pentachlorophenol	ND	20
Phenanthrene	ND	10
Anthracene	ND	10
Di-n-butylphthalate	ND	10

b= See narrative
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC602434	Batch#:	177360
Matrix:	Water	Prepared:	08/01/11
Units:	ug/L	Analyzed:	08/02/11

Analyte	Result	RL
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	20
Benzo (a) anthracene	ND	10
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	33 b	10
Di-n-octylphthalate	ND	10
Benzo (b) fluoranthene	ND	10
Benzo (k) fluoranthene	ND	10
Benzo (a) pyrene	ND	10
Indeno (1,2,3-cd) pyrene	ND	10
Dibenz (a,h) anthracene	ND	10
Benzo (g,h,i) perylene	ND	10

Surrogate	%REC	Limits
2-Fluorophenol	92	48-120
Phenol-d5	87	49-120
2,4,6-Tribromophenol	76	54-120
Nitrobenzene-d5	78	54-120
2-Fluorobiphenyl	80	54-120
Terphenyl-d14	77	18-120

b= See narrative
 ND= Not Detected
 RL= Reporting Limit
 Page 2 of 2

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC602435	Batch#:	177360
Matrix:	Water	Prepared:	08/01/11
Units:	ug/L	Analyzed:	08/02/11

Analyte	Spiked	Result	%REC	Limits
Phenol	80.00	78.21	98	56-120
2-Chlorophenol	80.00	75.40	94	60-120
1,4-Dichlorobenzene	80.00	64.83	81	48-120
N-Nitroso-di-n-propylamine	80.00	77.89	97	53-120
1,2,4-Trichlorobenzene	80.00	62.83	79	49-120
4-Chloro-3-methylphenol	80.00	77.73	97	60-120
Acenaphthene	30.00	27.23	91	58-120
4-Nitrophenol	80.00	75.35	94	57-120
2,4-Dinitrotoluene	80.00	74.85	94	62-120
Pentachlorophenol	80.00	76.43	96	59-120
Pyrene	30.00	27.78	93	59-120

Surrogate	%REC	Limits
2-Fluorophenol	81	48-120
Phenol-d5	88	49-120
2,4,6-Tribromophenol	83	54-120
Nitrobenzene-d5	74	54-120
2-Fluorobiphenyl	70	54-120
Terphenyl-d14	73	18-120

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C
Field ID:	ZZZZZZZZZZ	Batch#:	177360
MSS Lab ID:	229848-002	Sampled:	07/30/11
Matrix:	Water	Received:	08/01/11
Units:	ug/L	Prepared:	08/01/11
Diln Fac:	1.000	Analyzed:	08/02/11

Type: MS Lab ID: QC602436

Analyte	MSS Result	Spiked	Result	%REC	Limits
Phenol	1.304	75.47	65.44	85	63-120
2-Chlorophenol	<0.8624	75.47	66.73	88	62-120
1,4-Dichlorobenzene	<1.449	75.47	65.74	87	38-120
N-Nitroso-di-n-propylamine	<1.219	75.47	77.43	103	56-120
1,2,4-Trichlorobenzene	<1.344	75.47	60.47	80	43-120
4-Chloro-3-methylphenol	<1.453	75.47	73.23	97	57-120
Acenaphthene	<1.313	28.30	25.28	89	53-120
4-Nitrophenol	<1.343	75.47	63.58	84	54-120
2,4-Dinitrotoluene	<1.290	75.47	66.30	88	61-120
Pentachlorophenol	<1.320	75.47	72.45	96	62-120
Pyrene	<1.186	28.30	24.18	85	59-120

Surrogate	%REC	Limits
2-Fluorophenol	74	48-120
Phenol-d5	74	49-120
2,4,6-Tribromophenol	73	54-120
Nitrobenzene-d5	74	54-120
2-Fluorobiphenyl	68	54-120
Terphenyl-d14	66	18-120

Type: MSD Lab ID: QC602437

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Phenol	75.47	71.86	93	63-120	9	30
2-Chlorophenol	75.47	73.18	97	62-120	9	30
1,4-Dichlorobenzene	75.47	70.36	93	38-120	7	32
N-Nitroso-di-n-propylamine	75.47	85.54	113	56-120	10	30
1,2,4-Trichlorobenzene	75.47	63.21	84	43-120	4	30
4-Chloro-3-methylphenol	75.47	80.22	106	57-120	9	30
Acenaphthene	28.30	27.05	96	53-120	7	30
4-Nitrophenol	75.47	69.08	92	54-120	8	31
2,4-Dinitrotoluene	75.47	72.26	96	61-120	9	30
Pentachlorophenol	75.47	77.35	102	62-120	7	33
Pyrene	28.30	26.82	95	59-120	10	30

Surrogate	%REC	Limits
2-Fluorophenol	80	48-120
Phenol-d5	81	49-120
2,4,6-Tribromophenol	75	54-120
Nitrobenzene-d5	82	54-120
2-Fluorobiphenyl	73	54-120
Terphenyl-d14	71	18-120

RPD= Relative Percent Difference

1,4-Dioxane by 8270-SIM			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C-SIM
Field ID:	EFF-072811	Sampled:	07/28/11
Matrix:	Water	Received:	07/29/11
Units:	ug/L	Prepared:	08/03/11
Diln Fac:	1.000	Analyzed:	08/04/11
Batch#:	177447		

Type: SAMPLE Lab ID: 229836-001

Analyte	Result	RL
1,4-Dioxane	ND	0.94

Surrogate	%REC	Limits
Nitrobenzene-d5	82	51-120
2-Fluorobiphenyl	66	54-120

Type: BLANK Lab ID: QC602774

Analyte	Result	RL
1,4-Dioxane	ND	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	86	51-120
2-Fluorobiphenyl	74	54-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

1,4-Dioxane by 8270-SIM			
Lab #:	229836	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 3520C
Project#:	1486.002	Analysis:	EPA 8270C-SIM
Matrix:	Water	Batch#:	177447
Units:	ug/L	Prepared:	08/03/11
Diln Fac:	1.000	Analyzed:	08/04/11

Type: BS Lab ID: QC602775

Analyte	Spiked	Result	%REC	Limits
1,4-Dioxane	3.000	2.143	71	48-120

Surrogate	%REC	Limits
Nitrobenzene-d5	110	51-120
2-Fluorobiphenyl	71	54-120

Type: BSD Lab ID: QC602776

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,4-Dioxane	3.000	2.444	81	48-120	13	35

Surrogate	%REC	Limits
Nitrobenzene-d5	120	51-120
2-Fluorobiphenyl	82	54-120

RPD= Relative Percent Difference



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 230055
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-080811	230055-001
MID-080811	230055-002
INF-080811	230055-003
TRIP BLANK	230055-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 08/12/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 230055
Client: AMEC Geomatrix, Inc.
Project: 1486
Location: MEW
Request Date: 08/08/11
Samples Received: 08/08/11

This data package contains sample and QC results for four water samples, requested for the above referenced project on 08/08/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

CHAIN-OF-CUSTODY RECORD

230055

OAK 15601

PROJECT NAME: **MEW** DATE: **8-8-11** PAGE **1** OF **1**
 PROJECT NUMBER: **1486** REPORTING REQUIREMENTS:
 RESULTS TO: **Rendell Camacho** CLIENT INFORMATION:
 TURNAROUND TIME: **standalone** LABORATORY NAME: **Curtis + Tompkins**
 SAMPLE SHIPMENT METHOD: **Lab Pick-up** LABORATORY ADDRESS:
 LABORATORY CONTACT: LABORATORY PHONE NUMBER:
 LABORATORY CONTACT: LABORATORY PHONE NUMBER:
 GEOTRACKER REQUIRED: YES NO
 SITE SPECIFIC GLOBAL ID NO.

ANALYSES		CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
8/8/11	1226	EFF-080811	W			X		3	* 8010 List
	1233	MID-080811	W			X		3	
	1240	INF-080811	W			X		3	
		trip blank	W			X		3	

SAMPLERS (SIGNATURE):
R. David Pearson

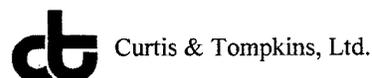
RELINQUISHED BY: DATE TIME RECEIVED BY: DATE TIME TOTAL NUMBER OF CONTAINERS:
 SIGNATURE: **R. David Pearson** 8/8/11 1352 SIGNATURE: **[Signature]** 8/8/11 15:18
 PRINTED NAME: **R. David Pearson** COMPANY: **AMEC** PRINTED NAME: **ISABELLE CHOY** COMPANY:
 SIGNATURE: PRINTED NAME: COMPANY: SIGNATURE: PRINTED NAME: COMPANY:
 SIGNATURE: PRINTED NAME: COMPANY: SIGNATURE: PRINTED NAME: COMPANY:
 SIGNATURE: PRINTED NAME: COMPANY: SIGNATURE: PRINTED NAME: COMPANY:



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

1234

COOLER RECEIPT CHECKLIST



Login # 230055 Date Received 8/8/11 Number of coolers 1
Client AMEC GEOMATRIX Project MEW

Date Opened 8/8/11 By (print) IGABELLE C. (sign) [Signature]
Date Logged in [Arrow] By (print) [Arrow] (sign) [Arrow]

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
Shipping info

2A. Were custody seals present? ... [X] YES (circle) on cooler on samples [] NO
How many 1 Name SIGNATURE Date 8/8/11

2B. Were custody seals intact upon arrival? [X] YES NO N/A

3. Were custody papers dry and intact when received? [X] YES NO

4. Were custody papers filled out properly (ink, signed, etc)? [X] YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) [X] YES NO

6. Indicate the packing in cooler: (if other, describe)

- [] Bubble Wrap [] Foam blocks [X] Bags [] None
[] Cloth material [] Cardboard [] Styrofoam [] Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: [X] Wet [X] Blue/Gel [] None Temp(°C)

[X] Samples Received on ice & cold without a temperature blank

[X] Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)

If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? [X] YES NO

10. Are samples in the appropriate containers for indicated tests? [X] YES NO

11. Are sample labels present, in good condition and complete? [X] YES NO

12. Do the sample labels agree with custody papers? [X] YES NO

13. Was sufficient amount of sample sent for tests requested? [X] YES NO

14. Are the samples appropriately preserved? [X] YES NO N/A

15. Did you check preservatives for all bottles for each sample? YES NO (N/A)

16. Did you document your preservative check? YES NO (N/A)

17. Did you change the hold time in LIMS for unpreserved VOAs? YES NO (N/A)

18. Are bubbles > 6mm absent in VOA samples? YES (NO) N/A

19. Was the client contacted concerning this sample delivery? YES (NO)

If YES, Who was called? By Date:

COMMENTS

18) -003 rec'd 1 of 3 VOAs w/ BUBBLE
-004 rec'd 3 of 3 VOAs w/ BUBBLES

Purgeable Halocarbons by GC/MS

Lab #:	230055	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	EFF-080811	Batch#:	177623
Lab ID:	230055-001	Sampled:	08/08/11
Matrix:	Water	Received:	08/08/11
Units:	ug/L	Analyzed:	08/09/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-127
1,2-Dichloroethane-d4	82	73-145
Toluene-d8	89	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	230055	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	MID-080811	Batch#:	177623
Lab ID:	230055-002	Sampled:	08/08/11
Matrix:	Water	Received:	08/08/11
Units:	ug/L	Analyzed:	08/09/11
Diln Fac:	1.429		

Analyte	Result	RL
Chloromethane	ND	1.4
Vinyl Chloride	ND	0.7
Bromomethane	ND	1.4
Chloroethane	ND	1.4
Trichlorofluoromethane	ND	1.4
Freon 113	130	2.9
1,1-Dichloroethene	ND	0.7
Methylene Chloride	ND	29
trans-1,2-Dichloroethene	ND	0.7
1,1-Dichloroethane	2.4	0.7
cis-1,2-Dichloroethene	ND	0.7
Chloroform	ND	0.7
1,1,1-Trichloroethane	3.5	0.7
Carbon Tetrachloride	ND	0.7
1,2-Dichloroethane	ND	0.7
Trichloroethene	ND	0.7
1,2-Dichloropropane	ND	0.7
Bromodichloromethane	ND	0.7
cis-1,3-Dichloropropene	ND	0.7
trans-1,3-Dichloropropene	ND	0.7
1,1,2-Trichloroethane	ND	0.7
Tetrachloroethene	ND	0.7
Dibromochloromethane	ND	0.7
Chlorobenzene	ND	0.7
Bromoform	ND	0.7
1,1,2,2-Tetrachloroethane	ND	0.7
1,3-Dichlorobenzene	ND	0.7
1,4-Dichlorobenzene	ND	0.7
1,2-Dichlorobenzene	ND	0.7

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-127
1,2-Dichloroethane-d4	87	73-145
Toluene-d8	89	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	230055	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	INF-080811	Batch#:	177623
Lab ID:	230055-003	Sampled:	08/08/11
Matrix:	Water	Received:	08/08/11
Units:	ug/L	Analyzed:	08/09/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	160	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	230	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,700	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-127
1,2-Dichloroethane-d4	88	73-145
Toluene-d8	89	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	230055	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	177623
Lab ID:	230055-004	Sampled:	08/08/11
Matrix:	Water	Received:	08/08/11
Units:	ug/L	Analyzed:	08/09/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-127
1,2-Dichloroethane-d4	84	73-145
Toluene-d8	90	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	230055	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	177623
Units:	ug/L	Analyzed:	08/09/11
Diln Fac:	1.000		

Type: BS Lab ID: QC603491

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	28.53	114	64-133
Trichloroethene	25.00	27.02	108	78-120
Chlorobenzene	25.00	24.30	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-127
1,2-Dichloroethane-d4	81	73-145
Toluene-d8	89	80-120
Bromofluorobenzene	95	80-120

Type: BSD Lab ID: QC603492

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	28.99	116	64-133	2	20
Trichloroethene	25.00	28.34	113	78-120	5	20
Chlorobenzene	25.00	25.18	101	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-127
1,2-Dichloroethane-d4	85	73-145
Toluene-d8	89	80-120
Bromofluorobenzene	96	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	230055	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC603493	Batch#:	177623
Matrix:	Water	Analyzed:	08/09/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-127
1,2-Dichloroethane-d4	82	73-145
Toluene-d8	89	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit



Curtis & Tompkins, Ltd.

Analytical Laboratories, Since 1878



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 231110
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 0014860010.0002
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EX5-091511	231110-001
EFF-091511	231110-002
FB-091511	231110-003
MID-091511	231110-004
INF-091511	231110-005
TRIP BLANK	231110-006

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Deviné N. Tetrault

Signature: _____
Project Manager

Date: 09/23/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 231110
Client: AMEC Geomatrix, Inc.
Project: 0014860010.0002
Location: MEW
Request Date: 09/16/11
Samples Received: 09/16/11

This data package contains sample and QC results for six water samples, requested for the above referenced project on 09/16/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

PROJECT NAME: **MEW** DATE: **9-15-11** PAGE **1** OF **1**

LABORATORY NAME: **Curtis & Tompkins** CLIENT INFORMATION:

LABORATORY ADDRESS: **Rendell Cannacho**

LABORATORY CONTACT: **standards**

LABORATORY PHONE NUMBER: **Lab pick up**

SAMPLE SHIPMENT METHOD: **NO**

SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):		ANALYSES										ADDITIONAL COMMENTS
DATE	TIME	SAMPLE NUMBER	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers				
9-15-11	1454	EX5-091511	W		Hel	X		3	*8010 List			
		1509 EFF-091511	W			X		3				
		1514 FB-091511	W			X		3				
		1523 MID-091511	W			X		3				
		1530 TNE-091511	W			X		3				
		TRIP blank	W			X		2				
REF												

RELINQUISHED BY: **R. David Paern** DATE: **9/15/11** TIME: **0540** RECEIVED BY: **[Signature]** DATE: **9/16/11** TIME: **1000**

SIGNATURE: **R. David Paern** PRINTED NAME: **ISABELLE C.** COMPANY: **CPT**

SIGNATURE: **[Signature]** PRINTED NAME: **[Blank]** COMPANY: **[Blank]**

TOTAL NUMBER OF CONTAINERS: **17**

SAMPLING COMMENTS:



2101 Webster Street, 12th Floor
Oakland, California 94612-3066
Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 231110 Date Received 9/16/11 Number of coolers 1
Client AMEC Project MEW

Date Opened 9/16/11 By (print) Victoria Quinshi (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
Shipping info

2A. Were custody seals present? ... [X] YES (circle) on cooler on samples [] NO
How many 1 Name Signature Date 9/16/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (if so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- [X] Bubble Wrap [] Foam blocks [X] Bags [] None
[] Cloth material [] Cardboard [] Styrofoam [] Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: [X] Wet [X] Blue/Gel [] None Temp(°C) 5.9

[] Samples Received on ice & cold without a temperature blank

[] Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Did you check preservatives for all bottles for each sample? YES NO N/A

16. Did you document your preservative check? YES NO N/A

17. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

18. Are bubbles > 6mm absent in VOA samples? YES NO N/A

19. Was the client contacted concerning this sample delivery? YES (NO)
If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Purgeable Halocarbons by GC/MS

Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EX5-091511	Batch#:	179064
Lab ID:	231110-001	Sampled:	09/15/11
Matrix:	Water	Received:	09/16/11
Units:	ug/L	Analyzed:	09/19/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	150	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	150	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,500	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-127
1,2-Dichloroethane-d4	108	73-145
Toluene-d8	108	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EFF-091511	Batch#:	179049
Lab ID:	231110-002	Sampled:	09/15/11
Matrix:	Water	Received:	09/16/11
Units:	ug/L	Analyzed:	09/18/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-127
1,2-Dichloroethane-d4	102	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	FB-091511	Batch#:	179049
Lab ID:	231110-003	Sampled:	09/15/11
Matrix:	Water	Received:	09/16/11
Units:	ug/L	Analyzed:	09/18/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-127
1,2-Dichloroethane-d4	100	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	MID-091511	Units:	ug/L
Lab ID:	231110-004	Sampled:	09/15/11
Matrix:	Water	Received:	09/16/11

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Chloromethane	ND	1.0	1.000	179049	09/18/11
Vinyl Chloride	ND	0.5	1.000	179049	09/18/11
Bromomethane	ND	1.0	1.000	179049	09/18/11
Chloroethane	ND	1.0	1.000	179049	09/18/11
Trichlorofluoromethane	ND	1.0	1.000	179049	09/18/11
Freon 113	120	10	5.000	179064	09/19/11
1,1-Dichloroethene	ND	0.5	1.000	179049	09/18/11
Methylene Chloride	ND	20	1.000	179049	09/18/11
trans-1,2-Dichloroethene	ND	0.5	1.000	179049	09/18/11
1,1-Dichloroethane	2.5	0.5	1.000	179049	09/18/11
cis-1,2-Dichloroethene	4.3	0.5	1.000	179049	09/18/11
Chloroform	ND	0.5	1.000	179049	09/18/11
1,1,1-Trichloroethane	2.9	0.5	1.000	179049	09/18/11
Carbon Tetrachloride	ND	0.5	1.000	179049	09/18/11
1,2-Dichloroethane	ND	0.5	1.000	179049	09/18/11
Trichloroethene	65	0.5	1.000	179049	09/18/11
1,2-Dichloropropane	ND	0.5	1.000	179049	09/18/11
Bromodichloromethane	ND	0.5	1.000	179049	09/18/11
cis-1,3-Dichloropropene	ND	0.5	1.000	179049	09/18/11
trans-1,3-Dichloropropene	ND	0.5	1.000	179049	09/18/11
1,1,2-Trichloroethane	ND	0.5	1.000	179049	09/18/11
Tetrachloroethene	0.7	0.5	1.000	179049	09/18/11
Dibromochloromethane	ND	0.5	1.000	179049	09/18/11
Chlorobenzene	ND	0.5	1.000	179049	09/18/11
Bromoform	ND	0.5	1.000	179049	09/18/11
1,1,2,2-Tetrachloroethane	ND	0.5	1.000	179049	09/18/11
1,3-Dichlorobenzene	ND	0.5	1.000	179049	09/18/11
1,4-Dichlorobenzene	ND	0.5	1.000	179049	09/18/11
1,2-Dichlorobenzene	ND	0.5	1.000	179049	09/18/11

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	84	80-127	1.000	179049	09/18/11
1,2-Dichloroethane-d4	83	73-145	1.000	179049	09/18/11
Toluene-d8	102	80-120	1.000	179049	09/18/11
Bromofluorobenzene	98	80-120	1.000	179049	09/18/11

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	INF-091511	Batch#:	179049
Lab ID:	231110-005	Sampled:	09/15/11
Matrix:	Water	Received:	09/16/11
Units:	ug/L	Analyzed:	09/19/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	110	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	140	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,400	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	88	80-127
1,2-Dichloroethane-d4	90	73-145
Toluene-d8	104	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	179049
Lab ID:	231110-006	Sampled:	09/15/11
Matrix:	Water	Received:	09/16/11
Units:	ug/L	Analyzed:	09/18/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-127
1,2-Dichloroethane-d4	99	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC609450	Batch#:	179049
Matrix:	Water	Analyzed:	09/18/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-127
1,2-Dichloroethane-d4	99	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	179049
Units:	ug/L	Analyzed:	09/18/11
Diln Fac:	1.000		

Type: BS Lab ID: QC609451

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	20.00	16.20	81	64-133
Trichloroethene	20.00	18.36	92	78-120
Chlorobenzene	20.00	19.82	99	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	90	80-127
1,2-Dichloroethane-d4	98	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC609452

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	20.00	15.00	75	64-133	8	20
Trichloroethene	20.00	17.39	87	78-120	5	20
Chlorobenzene	20.00	19.11	96	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	91	80-127
1,2-Dichloroethane-d4	99	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	179064
Units:	ug/L	Analyzed:	09/19/11
Diln Fac:	1.000		

Type: BS Lab ID: QC609526

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.07	92	64-133
Trichloroethene	25.00	23.89	96	78-120
Chlorobenzene	25.00	25.72	103	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-127
1,2-Dichloroethane-d4	95	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC609527

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	22.30	89	64-133	3	20
Trichloroethene	25.00	23.12	92	78-120	3	20
Chlorobenzene	25.00	25.10	100	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-127
1,2-Dichloroethane-d4	97	73-145
Toluene-d8	107	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	231110	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC609528	Batch#:	179064
Matrix:	Water	Analyzed:	09/19/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

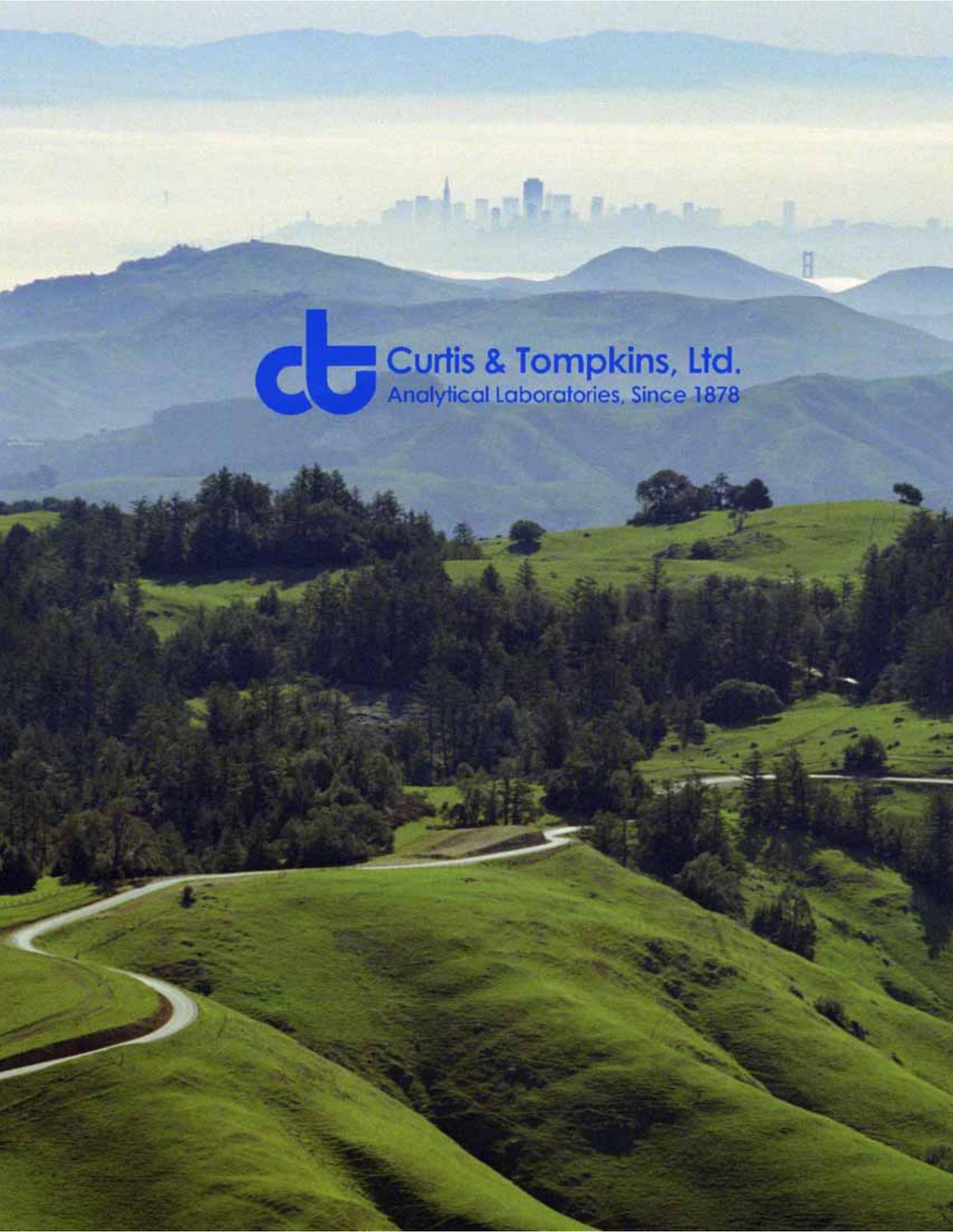
Surrogate	%REC	Limits
Dibromofluoromethane	94	80-127
1,2-Dichloroethane-d4	99	73-145
Toluene-d8	107	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected

RL= Reporting Limit



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 231874
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-101111	231874-001
MID-101111	231874-002
INF-101111	231874-003
TRIP BLANK	231874-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 10/25/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 231874
Client: AMEC Geomatrix, Inc.
Project: 1486
Location: MEW
Request Date: 10/12/11
Samples Received: 10/12/11

This data package contains sample and QC results for four water samples, requested for the above referenced project on 10/12/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Total Cyanide (SM4500CN-E):

High recovery was observed for cyanide in the MS for batch 180154; the parent sample was not a project sample, and the LCS was within limits. High RPD was also observed for cyanide in the MS/MSD for batch 180154. No other analytical problems were encountered.

CHAIN-OF-CUSTODY RECORD

PROJECT NAME: MEW
 PROJECT NUMBER: 1486
 RESULTS TO: Rendell Comacho
 TURNAROUND TIME: standard
 SAMPLE SHIPMENT METHOD: Lab pick up
 LABORATORY NAME: Custis & Tompkins
 LABORATORY ADDRESS:
 LABORATORY CONTACT: Tracey
 LABORATORY PHONE NUMBER:
 DATE: 10-11-11
 REPORTING REQUIREMENTS:
 GEOTRACKER REQUIRED: YES NO
 SITE SPECIFIC GLOBAL ID NO:

SAMPLERS (SIGNATURE):		ANALYSES										ADDITIONAL COMMENTS
DATE	TIME	SAMPLE NUMBER	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers				
10-11-11	1108	EFF-101111	W		HCl	X		4				
	1120	MID-101111	W			X		3				
	1127	INF-101111	W			X		3				
		trip blank	W			X		2				

SAMPLERS (SIGNATURE): R. David Pearson

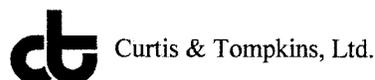
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	TOTAL NUMBER OF CONTAINERS:
SIGNATURE: R. David Pearson	10/11/11	1100	SIGNATURE: [Signature]	10/12/11	1200	12
PRINTED NAME: R. David Pearson			PRINTED NAME: Vidya Dharshi			
COMPANY: Aines			COMPANY: GT			

SAMPLING COMMENTS: 8260 - 8010 mg



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Login # 231874 Date Received 10/12/11 Number of coolers 1
 Client AMEC Project MIEW
 Date Opened 10/12/11 By (print) Victoria Condit (sign) [Signature]
 Date Logged in ✓ By (print) ✓ (sign) ✓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many 1 Name Signature Date 10/11/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap
- Foam blocks
- Bags
- None
- Cloth material
- Cardboard
- Styrofoam
- Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C
 Type of ice used: Wet Blue/Gel None Temp(°C) 2.0

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? _____ YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO
 If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Curtis & Tompkins Sample Preservation for 231874

<u>Sample</u>	<u>pH: <2</u>	<u>>12</u>	<u>Other</u>
-001a	[]	[]	_____
b	[]	[]	_____
c	[]	[]	_____
d	[]	[]	_____

Analyst:
Date:
Page 1 of 1

VRQ
10/12/11

Purgeable Halocarbons by GC/MS

Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	EFF-101111	Batch#:	180352
Lab ID:	231874-001	Sampled:	10/11/11
Matrix:	Water	Received:	10/12/11
Units:	ug/L	Analyzed:	10/21/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-127
1,2-Dichloroethane-d4	118	73-145
Toluene-d8	102	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	MID-101111	Batch#:	180352
Lab ID:	231874-002	Sampled:	10/11/11
Matrix:	Water	Received:	10/12/11
Units:	ug/L	Analyzed:	10/21/11
Diln Fac:	1.429		

Analyte	Result	RL
Chloromethane	ND	1.4
Vinyl Chloride	ND	0.7
Bromomethane	ND	1.4
Chloroethane	ND	1.4
Trichlorofluoromethane	ND	1.4
Freon 113	140	2.9
1,1-Dichloroethene	ND	0.7
Methylene Chloride	ND	29
trans-1,2-Dichloroethene	ND	0.7
1,1-Dichloroethane	2.5	0.7
cis-1,2-Dichloroethene	ND	0.7
Chloroform	ND	0.7
1,1,1-Trichloroethane	4.0	0.7
Carbon Tetrachloride	ND	0.7
1,2-Dichloroethane	ND	0.7
Trichloroethene	0.8	0.7
1,2-Dichloropropane	ND	0.7
Bromodichloromethane	ND	0.7
cis-1,3-Dichloropropene	ND	0.7
trans-1,3-Dichloropropene	ND	0.7
1,1,2-Trichloroethane	ND	0.7
Tetrachloroethene	ND	0.7
Dibromochloromethane	ND	0.7
Chlorobenzene	ND	0.7
Bromoform	ND	0.7
1,1,2,2-Tetrachloroethane	ND	0.7
1,3-Dichlorobenzene	ND	0.7
1,4-Dichlorobenzene	ND	0.7
1,2-Dichlorobenzene	ND	0.7

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	128	73-145
Toluene-d8	107	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	INF-101111	Batch#:	180352
Lab ID:	231874-003	Sampled:	10/11/11
Matrix:	Water	Received:	10/12/11
Units:	ug/L	Analyzed:	10/21/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	150	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	160	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,600	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	111	80-127
1,2-Dichloroethane-d4	129	73-145
Toluene-d8	108	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	180352
Lab ID:	231874-004	Sampled:	10/11/11
Matrix:	Water	Received:	10/12/11
Units:	ug/L	Analyzed:	10/21/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	125	73-145
Toluene-d8	107	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	180352
Units:	ug/L	Analyzed:	10/21/11
Diln Fac:	1.000		

Type: BS Lab ID: QC614853

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	31.25	30.04	96	64-133
Trichloroethene	31.25	28.79	92	78-120
Chlorobenzene	31.25	30.20	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-127
1,2-Dichloroethane-d4	125	73-145
Toluene-d8	105	80-120
Bromofluorobenzene	104	80-120

Type: BSD Lab ID: QC614854

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	31.25	29.28	94	64-133	3	20
Trichloroethene	31.25	28.53	91	78-120	1	20
Chlorobenzene	31.25	29.89	96	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-127
1,2-Dichloroethane-d4	123	73-145
Toluene-d8	105	80-120
Bromofluorobenzene	104	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Halocarbons by GC/MS			
Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	EPA 5030B
Project#:	1486	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC614855	Batch#:	180352
Matrix:	Water	Analyzed:	10/21/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	109	80-127
1,2-Dichloroethane-d4	124	73-145
Toluene-d8	106	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected

RL= Reporting Limit

Total Cyanide			
Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	METHOD
Project#:	1486	Analysis:	SM4500CN-E
Analyte:	Cyanide	Batch#:	180154
Field ID:	EFF-101111	Sampled:	10/11/11
Matrix:	Water	Received:	10/12/11
Units:	mg/L	Analyzed:	10/17/11
Diln Fac:	1.000		

Type	Lab ID	Result	RL
SAMPLE	231874-001	0.03	0.01
BLANK	QC614006	ND	0.01

ND= Not Detected
 RL= Reporting Limit

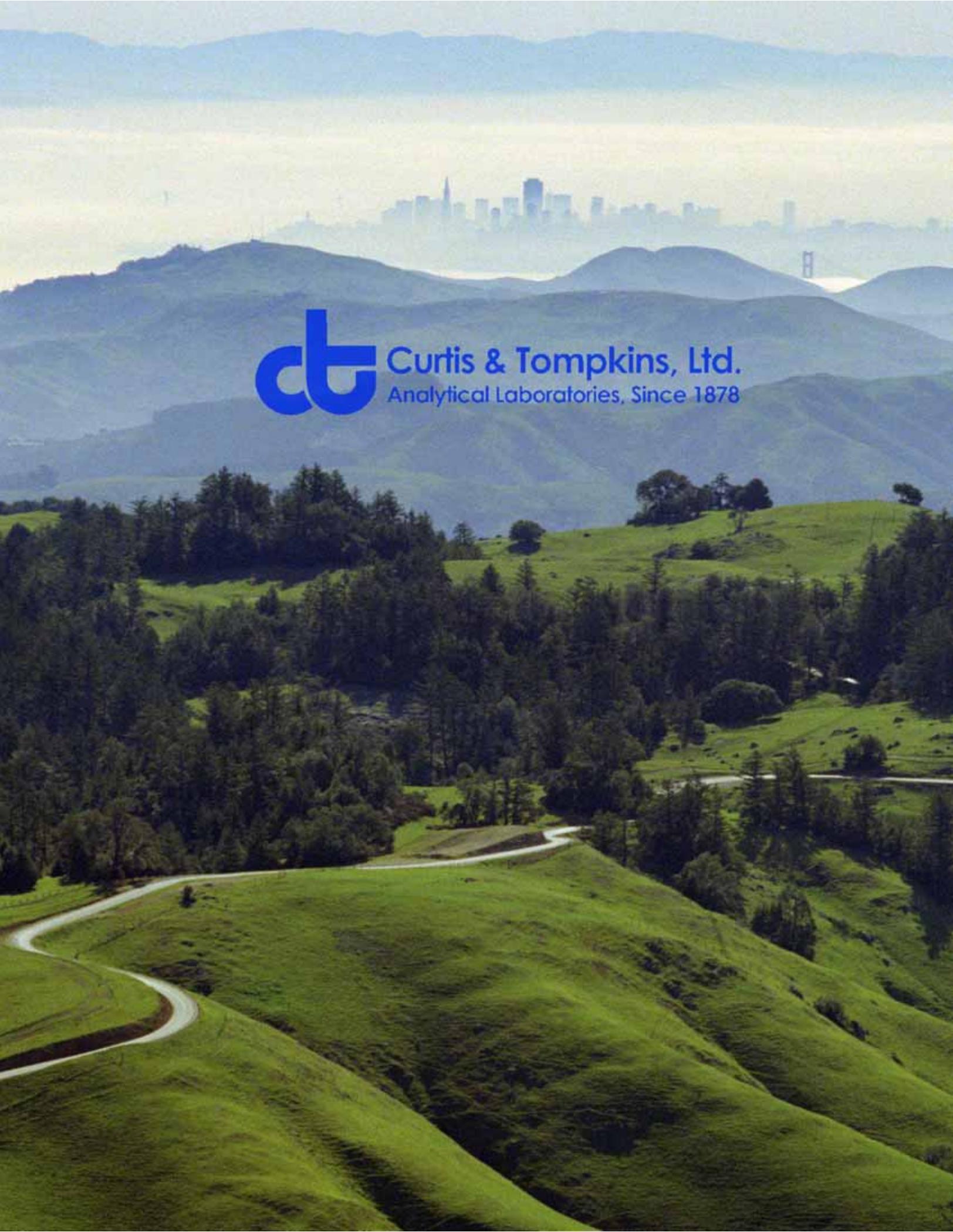
Batch QC Report

Total Cyanide			
Lab #:	231874	Location:	MEW
Client:	AMEC Geomatrix, Inc.	Prep:	METHOD
Project#:	1486	Analysis:	SM4500CN-E
Analyte:	Cyanide	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	180154
MSS Lab ID:	231986-002	Sampled:	10/14/11
Matrix:	Water	Received:	10/17/11
Units:	mg/L	Analyzed:	10/17/11

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC614007		0.2000	0.1854	93	80-120		
MS	QC614008	0.01200	0.2000	0.2673	128 *	78-120		
MSD	QC614009		0.2000	0.2060	97	78-120	26 *	20

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 231875
ANALYTICAL REPORT**

AMEC Geomatrix, Inc.
2101 Webster Street
Oakland, CA 94612

Project : 1486
Location : MEW
Level : II

Sample ID
EFF-101111

Lab ID
231875-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Project Manager

Date: 10/21/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 231875
Client: AMEC Geomatrix, Inc.
Project: 1486
Location: MEW
Request Date: 10/12/11
Samples Received: 10/12/11

This data package contains sample and QC results for one water sample, requested for the above referenced project on 10/12/11. The sample was received cold and intact.

Bioassay (EPA):

Block Environmental in Pleasant Hill, CA performed the analysis (not NELAP certified). Please see the Block Environmental case narrative.

COOLER RECEIPT CHECKLIST



Login # 23187C Date Received 10/12/11 Number of coolers 1
 Client AMEC Project MIEW
 Date Opened 10/12/11 By (print) Victoria Conshi (sign) [Signature]
 Date Logged in ✓ By (print) ✓ (sign) ✓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many 1 Name Signature Date 10/12/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) _____
 Bubble Wrap Foam blocks Bags None
 Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C
 Type of ice used: Wet Blue/Gel None Temp(°C) 2.0

Samples Received on ice & cold without a temperature blank
 Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? _____ YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO
 If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Laboratory Job Number 231875

Subcontracted Products

Block Environmental

2451 Estand Way
Pleasant Hill, CA 94523-3911
(925) 682-7200 FAX 686-0399

**Static Percent Survival Aquatic Toxicity Screening Test Results for
One Water Sample – Project Number: 1486**

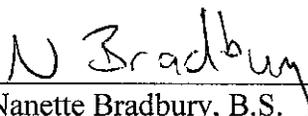
October 2011

Prepared For:
Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710

BES Sample # 28086

Prepared By:
Block Environmental Services, Inc.
2451 Estand Way
Pleasant Hill, CA 94523-3911
(925) 682-7200

October 18, 2011



Nanette Bradbury, B.S.
Laboratory Manager



David Block, Ph.D.
Laboratory Director

1. INTRODUCTION

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500), the Clean Water Act (CWA) of 1977 (PL 95-217), and the Water Quality Act of 1987 (PL 100-4) explicitly state that it is the national policy that the discharge of toxic substances in toxic amounts be prohibited. Toxicity to aquatic life is one of the criteria used to gauge the hazardous potential of a discharged waste. The type of toxicity test and particular species used for testing of effluents is dictated under the framework of the National Pollutant Discharge Elimination System and falls under the jurisdiction of the local Regional Water Quality Control Board.

This report describes the procedures used and the results obtained for the static percent survival aquatic toxicity-screening test performed by Block Environmental Services (BES) for Curtis & Tompkins, Ltd.

BES is an Environmental Laboratory Accreditation Program certified laboratory (#1812).

2. MATERIALS AND METHODS

2.1 TEST ORGANISMS

- Rainbow Trout, *Oncorhynchus mykiss*, obtained from a commercial supplier.

2.2 TEST PROCEDURES

A detailed procedure for this test is outlined in DPHS-ELAP approved standard operating procedures (SOPs), which are on file at the BES laboratory. These SOPs are based upon the following references:

- Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Receiving Waters to Freshwater and Marine Organisms, 3rd Edition (EPA/600/4-85/013)

2.3 DATA ANALYSIS

Toxicity testing results will be reported as the percent of surviving organisms during the exposure period.

3. RESULTS

Client Sample Identification	BES Sample #	Sample Collection Date	Date Received	Testing Period
EFF-101111	28086	10/11/2011	10/11/2011	10/11-10/15/2011

3.2 SUMMARY OF SAMPLE WATER CHEMISTRY - These values represent the water quality of the sample as received at the BES laboratory.

Water Chemistry	28086
D.O. (mg/L)	9.10
pH	8.50
Conductivity (µS/cm)	997
Salinity (ppt)	0.50
Temperature (°C)	21.00
Total Chlorine (mg/L)	0.86
Ammonia (ppm as N)	0.09
Alkalinity (mg/L as CaCO ₃)	358
Hardness (mg/L as CaCO ₃)	464

3.3 *O. mykiss* TEST RESULTS

Treatment (%)	96-Hour Percent Survival
Control	100
100	90

3.4 Statistical Analysis

LC-50 (mg/L)	>100
95% Confidence Limits	NA
Method	NA

NA – Not Applicable

3.5 NOTES

EPA Whole Effluent Testing Guidelines (EPA/821/R-02/012) requires that all effluent samples be cooled to 4 ± 2 °C immediately upon collection in order to maintain sample integrity. The California Department of Health Services Environmental Laboratory Accreditation Program highly recommends that the temperature of all outgoing samples



designated for subcontract analyses be documented on the chain of custody in order to assess the effect of transit on sample temperature.

For the present study, the temperature of the client's sample was $> 6^{\circ}\text{C}$ upon receipt at the BES Laboratory. The outgoing sample temperature for the sample was not recorded on the client chain of custody.

The photocopied data sheet and chain-of-custody for testing are attached. If you have any questions concerning this report please contact the BES laboratory, (925) 682 - 7200.

BLOCK ENVIRONMENTAL SERVICES

96 Hr Acute Screening Static Test Data Sheet

Client: CURTIS & TOMPKINS Client ID #: EFF-101111 BES Sample #: 28080
 Species: O. mykiss Common Name: R. trout Stock #: 8-19-11 water
 Control Water: CFW Avg. Fish Length (mm): 25.4 Avg. Fish Weight
 (g): 0.06

Treatment	Survival		D.O. (mg/L)		pH		Temperature (°C)		Technician
	A	B	A	B	A	B	A	B	
Control	10	10	11.1	11.1	7.9	7.9	13.0	13.0	Tech: SC
100	10	10	9.9	10.0	8.0	8.0	13.0	13.0	Date: 10-11-11 Time: 1410
Control	10	10	7.8	8.5	7.4	7.4	13.0	13.0	Tech: SC
100	10	10	7.0	7.7	8.4	8.4	13.0	13.0	Date: 10-12-11 Time: 1520
Control	10	10	8.2	9.1	7.5	7.5	12.9	13.0	Tech: SC
100	9	10	8.0	8.3	8.3	8.3	13.0	13.0	Date: 10-13-11 Time:
Control	10	10	8.2	8.7	7.5	7.5	13.0	13.0	Tech: AK
100	9	9	8.4	8.5	8.3	8.3	13.0	13.0	Date: 10-14-11 Time: 1510
Control	10	10	7.8	8.4	7.5	7.5	13.0	13.0	Tech: AK
100	9	9	7.9	7.9	8.3	8.3	13.0	13.0	Date: 10-15-11 Time: 1610

Subsamples taken:

SC 0Hr

AK 96Hr

	Control		100		Control		100	
Hardness (mg/L as CaCO ₃)	66	66	464	464	62	62	476	476
Alkalinity (mg/L as CaCO ₃)	54	54	358	358	52	52	398	398
Ammonia (mg/L as N)	0.03	0.03	0.09	0.09	0.66	0.66	0.76	0.76
Total Chlorine (mg/L)	0.06	0.06	0.86	0.86	0.05	0.05	0.65	0.65
Conductivity (µS/cm)	273	273	988	988	284	284	991	991
Salinity (ppt)	0.1	0.1	0.5	0.5	0.1	0.1	0.5	0.5

ND - Not Detected (detection limit 0.03 mg/L)

Notes: _____

Test Supervisor: N Bradbury

QA/QC Check: K Green



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 232787
ANALYTICAL REPORT**

AMEC Environmental & Infrastructure
2101 Webster Street
Oakland, CA 94612

Project : 0014860010.0002
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-111411	232787-001
FB-111411	232787-002
MID-111411	232787-003
INF-111411	232787-004
EX5-111411	232787-005
TRIP BLANK	232787-006

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 12/01/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 232787
Client: AMEC Environmental & Infrastructure
Project: 0014860010.0002
Location: MEW
Request Date: 11/15/11
Samples Received: 11/15/11

This data package contains sample and QC results for six water samples, requested for the above referenced project on 11/15/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

CHAIN-OF-CUSTODY RECORD

PROJECT NAME: **MEW**
 PROJECT NUMBER: **0014860010.002**
 RESULTS TO: **Rodriguez Camacho**
 TURNAROUND TIME: **standard**
 SAMPLE SHIPMENT METHOD: **Lab pick up**
 LABORATORY NAME: **Gutis & Tompkins**
 LABORATORY ADDRESS:
 LABORATORY CONTACT:
 LABORATORY PHONE NUMBER:
 GEOTRACKER REQUIRED: YES NO

DATE		TIME	SAMPLE NUMBER	ANALYSES						CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
11-14-11	1135		EFF-111411	X	X	X	X	X	X	X		HE1	X		3	*8010 List	
			1144 F.B.-111411	X	X	X	X	X	X	X			X		3		
			1151 MID-111411	X	X	X	X	X	X	X			X		3		
			1200 INF-111411	X	X	X	X	X	X	X			X		3		
			1221 EX5-111411	X	X	X	X	X	X	X			X		3		
			TRIP blank	X	X	X	X	X	X	X			X		2		

SAMPLERS (SIGNATURE): **R. David Pearson**
 *8260 B
 RELINQUISHED BY: **R. David Pearson** DATE: 11/14/11 TIME: 1520
 SIGNATURE: **R. David Pearson**
 PRINTED NAME: **R. David Pearson**
 COMPANY: **AMEC**
 RECEIVED BY: **V. G. Kashmi** DATE: 11/15/11 TIME: 1720
 SIGNATURE: **V. G. Kashmi**
 PRINTED NAME: **V. G. Kashmi**
 COMPANY: **CTI**
 TOTAL NUMBER OF CONTAINERS: 17
 SAMPLING COMMENTS:



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 232787 Date Received 11/15/11 Number of coolers 1
Client AMEC Project MEW

Date Opened 11/15/11 By (print) Victoria ... (sign) ...
Date Logged in 1 By (print) 1 (sign) 1

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many 2 Name Signature Date 11/15/11

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)
Bubble Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C
Type of ice used: Wet Blue/Gel None Temp(°C) 2.5

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES (NO)
If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Volatile Organics			
Lab #:	232787	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EFF-111411	Batch#:	181634
Lab ID:	232787-001	Sampled:	11/14/11
Matrix:	Water	Received:	11/15/11
Units:	ug/L	Analyzed:	11/24/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	122	80-127
1,2-Dichloroethane-d4	115	73-145
Toluene-d8	99	80-120
Bromofluorobenzene	87	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	232787	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	FB-111411	Batch#:	181634
Lab ID:	232787-002	Sampled:	11/14/11
Matrix:	Water	Received:	11/15/11
Units:	ug/L	Analyzed:	11/24/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	118	80-127
1,2-Dichloroethane-d4	114	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	87	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	232787	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	MID-111411	Batch#:	181634
Lab ID:	232787-003	Sampled:	11/14/11
Matrix:	Water	Received:	11/15/11
Units:	ug/L	Analyzed:	11/24/11
Diln Fac:	1.429		

Analyte	Result	RL
Chloromethane	ND	1.4
Vinyl Chloride	ND	0.7
Bromomethane	ND	1.4
Chloroethane	ND	1.4
Trichlorofluoromethane	ND	1.4
Freon 113	130	2.9
1,1-Dichloroethene	ND	0.7
Methylene Chloride	ND	29
trans-1,2-Dichloroethene	ND	0.7
1,1-Dichloroethane	2.4	0.7
cis-1,2-Dichloroethene	ND	0.7
Chloroform	ND	0.7
1,1,1-Trichloroethane	3.6	0.7
Carbon Tetrachloride	ND	0.7
1,2-Dichloroethane	ND	0.7
Trichloroethene	1.2	0.7
1,2-Dichloropropane	ND	0.7
Bromodichloromethane	ND	0.7
cis-1,3-Dichloropropene	ND	0.7
trans-1,3-Dichloropropene	ND	0.7
1,1,2-Trichloroethane	ND	0.7
Tetrachloroethene	ND	0.7
Dibromochloromethane	ND	0.7
Chlorobenzene	ND	0.7
Bromoform	ND	0.7
1,1,2,2-Tetrachloroethane	ND	0.7
1,3-Dichlorobenzene	ND	0.7
1,4-Dichlorobenzene	ND	0.7
1,2-Dichlorobenzene	ND	0.7

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	110	73-145
Toluene-d8	99	80-120
Bromofluorobenzene	87	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	232787	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	INF-111411	Batch#:	181634
Lab ID:	232787-004	Sampled:	11/14/11
Matrix:	Water	Received:	11/15/11
Units:	ug/L	Analyzed:	11/24/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	180	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	170	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,400	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-127
1,2-Dichloroethane-d4	114	73-145
Toluene-d8	100	80-120
Bromofluorobenzene	88	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	232787	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EX5-111411	Batch#:	181634
Lab ID:	232787-005	Sampled:	11/14/11
Matrix:	Water	Received:	11/15/11
Units:	ug/L	Analyzed:	11/24/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	190	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	170	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,600	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	115	73-145
Toluene-d8	100	80-120
Bromofluorobenzene	88	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	232787	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	181634
Lab ID:	232787-006	Sampled:	11/14/11
Matrix:	Water	Received:	11/15/11
Units:	ug/L	Analyzed:	11/24/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-127
1,2-Dichloroethane-d4	108	73-145
Toluene-d8	100	80-120
Bromofluorobenzene	86	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Volatile Organics			
Lab #:	232787	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC620178	Batch#:	181634
Matrix:	Water	Analyzed:	11/24/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-127
1,2-Dichloroethane-d4	110	73-145
Toluene-d8	99	80-120
Bromofluorobenzene	89	80-120

ND= Not Detected

RL= Reporting Limit



Curtis & Tompkins, Ltd.

Analytical Laboratories, Since 1878



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 233245
ANALYTICAL REPORT**

AMEC Environmental & Infrastructure
2101 Webster Street
Oakland, CA 94612

Project : 0014860010.0002
Location : MEW
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EFF-120811	233245-001
MID-120811	233245-002
INF-120811	233245-003
TRIP BLANK	233245-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 12/15/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 233245
Client: AMEC Environmental & Infrastructure
Project: 0014860010.0002
Location: MEW
Request Date: 12/09/11
Samples Received: 12/09/11

This data package contains sample and QC results for four water samples, requested for the above referenced project on 12/09/11. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Total Cyanide (SM4500CN-E):

Low recoveries were observed for cyanide in the MS/MSD of EFF-120811 (lab # 233245-001); the LCS was within limits, and the associated RPD was within limits. No other analytical problems were encountered.

233245

OAK 15999

CHAIN-OF-CUSTODY RECORD

PROJECT NAME: **MEW** DATE: **12-8-11** PAGE **1** OF **1**

PROJECT NUMBER: **0014860010.00002** REPORTING REQUIREMENTS:

RESULTS TO: **Rendell Comas**

TURNAROUND TIME: **standard**

SAMPLE SHIPMENT METHOD: **lab pick up**

LABORATORY NAME: **Curtis & Compkins**

LABORATORY ADDRESS:

LABORATORY CONTACT:

LABORATORY PHONE NUMBER:

CLIENT INFORMATION: **0014860010.00002.EES (1/3 charge)**
0014860010.00002.EEV (2/3 charge)

PM: **Harold Rush**

ER REQUIRED: YES NO

FIC GLOBAL ID NO.

DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
12-8-11	1434	EFF-120811	8260 B * Cyanide	W			X		4	* 8010 List
	1444	MID-120811		W			X		4	
	1455	INF-120811		W			X		4	
		tip blank					X		2	

ANALYSIS

RELINQUISHED BY: **R. David Pearson** DATE: **12/8/11** TIME: **1612**

SIGNATURE: *[Signature]* RECEIVED BY: **C. Morrow** DATE: **12/14/11** TIME: **1356**

PRINTED NAME: **R. David Pearson** COMPANY: **Ameo**

SIGNATURE: _____ PRINTED NAME: _____

COMPANY: _____ COMPANY: _____

SIGNATURE: _____ PRINTED NAME: _____

COMPANY: _____ COMPANY: _____

TOTAL NUMBER OF CONTAINERS: **14**

SAMPLING COMMENTS:



2101 Webster Street, 12th Floor
 Oakland, California 94612-3066
 Tel 510.663.4100 Fax 510.663.4141

COOLER CHECKLIST



Login # 233245 Date Received 12/9/11 Number of coolers 1
Client Amcc Project MEW

Date Opened 12/9/11 By (print) C. Morrow (sign) [Signature]
Date Logged in [Arrow] By (print) [Arrow] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? YES (circle) on cooler on samples NO
How many () Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C
Type of ice used: Wet Blue/Gel None Temp(°C) 1.8

- Samples Received on ice & cold without a temperature blank
Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Volatile Organics			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	EFF-120811	Batch#:	182093
Lab ID:	233245-001	Sampled:	12/08/11
Matrix:	Water	Received:	12/09/11
Units:	ug/L	Analyzed:	12/12/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	120	73-145
Toluene-d8	103	80-120
Bromofluorobenzene	91	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	MID-120811	Batch#:	182093
Lab ID:	233245-002	Sampled:	12/08/11
Matrix:	Water	Received:	12/09/11
Units:	ug/L	Analyzed:	12/12/11
Diln Fac:	1.429		

Analyte	Result	RL
Chloromethane	ND	1.4
Vinyl Chloride	ND	0.7
Bromomethane	ND	1.4
Chloroethane	ND	1.4
Trichlorofluoromethane	ND	1.4
Freon 113	140	2.9
1,1-Dichloroethene	ND	0.7
Methylene Chloride	ND	29
trans-1,2-Dichloroethene	ND	0.7
1,1-Dichloroethane	2.8	0.7
cis-1,2-Dichloroethene	3.1	0.7
Chloroform	ND	0.7
1,1,1-Trichloroethane	4.1	0.7
Carbon Tetrachloride	ND	0.7
1,2-Dichloroethane	ND	0.7
Trichloroethene	40	0.7
1,2-Dichloropropane	ND	0.7
Bromodichloromethane	ND	0.7
cis-1,3-Dichloropropene	ND	0.7
trans-1,3-Dichloropropene	ND	0.7
1,1,2-Trichloroethane	ND	0.7
Tetrachloroethene	ND	0.7
Dibromochloromethane	ND	0.7
Chlorobenzene	ND	0.7
Bromoform	ND	0.7
1,1,2,2-Tetrachloroethane	ND	0.7
1,3-Dichlorobenzene	ND	0.7
1,4-Dichlorobenzene	ND	0.7
1,2-Dichlorobenzene	ND	0.7

Surrogate	%REC	Limits
Dibromofluoromethane	109	80-127
1,2-Dichloroethane-d4	119	73-145
Toluene-d8	98	80-120
Bromofluorobenzene	91	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	INF-120811	Batch#:	182093
Lab ID:	233245-003	Sampled:	12/08/11
Matrix:	Water	Received:	12/09/11
Units:	ug/L	Analyzed:	12/12/11
Diln Fac:	20.00		

Analyte	Result	RL
Chloromethane	ND	20
Vinyl Chloride	ND	10
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	20
Freon 113	190	40
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	400
trans-1,2-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
cis-1,2-Dichloroethene	160	10
Chloroform	ND	10
1,1,1-Trichloroethane	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Trichloroethene	1,500	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	111	80-127
1,2-Dichloroethane-d4	120	73-145
Toluene-d8	101	80-120
Bromofluorobenzene	92	80-120

ND= Not Detected
 RL= Reporting Limit

Volatile Organics			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	182093
Lab ID:	233245-004	Sampled:	12/08/11
Matrix:	Water	Received:	12/09/11
Units:	ug/L	Analyzed:	12/12/11
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-127
1,2-Dichloroethane-d4	113	73-145
Toluene-d8	102	80-120
Bromofluorobenzene	93	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Volatile Organics			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	182093
Units:	ug/L	Analyzed:	12/12/11
Diln Fac:	1.000		

Type: BS Lab ID: QC622033

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	24.74	99	64-133
Trichloroethene	25.00	23.96	96	78-120
Chlorobenzene	25.00	25.01	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-127
1,2-Dichloroethane-d4	121	73-145
Toluene-d8	95	80-120
Bromofluorobenzene	95	80-120

Type: BSD Lab ID: QC622034

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	23.46	94	64-133	5	20
Trichloroethene	25.00	23.04	92	78-120	4	20
Chlorobenzene	25.00	24.21	97	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	109	80-127
1,2-Dichloroethane-d4	121	73-145
Toluene-d8	94	80-120
Bromofluorobenzene	95	80-120

RPD= Relative Percent Difference

Batch QC Report

Volatile Organics			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	EPA 5030B
Project#:	0014860010.0002	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC622035	Batch#:	182093
Matrix:	Water	Analyzed:	12/12/11
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-127
1,2-Dichloroethane-d4	121	73-145
Toluene-d8	110	80-120
Bromofluorobenzene	93	80-120

ND= Not Detected

RL= Reporting Limit

Total Cyanide			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	METHOD
Project#:	0014860010.0002	Analysis:	SM4500CN-E
Analyte:	Cyanide	Batch#:	182182
Matrix:	Water	Sampled:	12/08/11
Units:	mg/L	Received:	12/09/11
Diln Fac:	1.000	Analyzed:	12/14/11

Field ID	Type	Lab ID	Result	RL
EFF-120811	SAMPLE	233245-001	0.06	0.01
MID-120811	SAMPLE	233245-002	0.02	0.01
INF-120811	SAMPLE	233245-003	0.02	0.01
	BLANK	QC622406	ND	0.01

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Cyanide			
Lab #:	233245	Location:	MEW
Client:	AMEC Environmental & Infrastructure	Prep:	METHOD
Project#:	0014860010.0002	Analysis:	SM4500CN-E
Analyte:	Cyanide	Diln Fac:	1.000
Field ID:	EFF-120811	Batch#:	182182
MSS Lab ID:	233245-001	Sampled:	12/08/11
Matrix:	Water	Received:	12/09/11
Units:	mg/L	Analyzed:	12/14/11

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC622407		0.2000	0.1833	92	80-120		
MS	QC622408	0.05560	0.2000	0.1989	72 *	78-120		
MSD	QC622409		0.2000	0.1889	67 *	78-120	5	20

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

APPENDIX C

Quality Assurance and Quality Control

APPENDIX C

QUALITY ASSURANCE REPORT JANUARY TO DECEMBER 2011

401 National Avenue
Mountain View, California

This quality assurance (QA) report was prepared by AMEC, Inc. (AMEC), on behalf of Vishay GSI, Inc. (Vishay), SUMCO Phoenix Corporation (SUMCO), Fairchild Semiconductor Corporation (Fairchild), and Schlumberger Technology Corporation (Schlumberger) in response to requirements set forth in Section XVI.C.7 of the U.S. Environmental Protection Agency (U.S. EPA) Section 106(a) Administrative Order for Remedial Design and Remedial Action Docket No. 91-4 (the Order) issued for the Middlefield-Ellis-Whisman (MEW) site in Mountain View, California. As required in the Order, this QA report summarizes the quality assurance and quality control (QA/QC) procedures used to collect and analyze data from January to December 2011.

This report covers activities for the semiannual water-level measurement events, annual groundwater sampling event, monthly groundwater extraction and treatment system (GETS) monitoring, and is submitted as part of the 2011 Annual Progress Report.

This QA report demonstrates that the work performed at the site complied with the standards and protocols specified in the Unified Quality Assurance Project Plan, Middlefield-Ellis-Whisman Site, Mountain View, California (UQAPP), as approved by the U.S. EPA on February 3, 1993. AMEC follows established procedures for work at the site, which generally follows the QA/QC goals and the analytical laboratory quality assurance manual included in the UQAPP. The data validation procedures are in accordance with the U.S. EPA National Functional Guidelines for Organic Compounds (U.S. EPA, October 1999).

1.0 FIELD PROCEDURES

The field methods specified in the UQAPP are intended to ensure that field measurements are consistent and reproducible when performed by different individuals. The protocols discussed below were followed during field activities performed at the site during this report period.

WATER-LEVEL MEASUREMENTS

Water-level measurements were collected by AMEC personnel using a water-level indicator. The water-level probe was inspected, calibrated and tested prior to operation. At each well location, water-level measurements were taken until at least two measurements were in

agreement to the nearest 0.01 foot. Data were then compared with previous measurements to provide an additional check on overall regional water-level trends. The water-level probe was decontaminated between measurements to prevent cross contaminating the wells. There were no unexplained discrepancies between the water-level measurements taken during this report period and measurements taken in previous report periods. The measurements were considered valid.

GROUNDWATER SAMPLING

Monthly groundwater samples were collected from stainless steel sampling ports at the influent of the groundwater extraction and treatment system (GETS), midstream between the UV-H₂O₂ oxidation unit and shallow tray air-stripper, and at the effluent of the GETS. The monthly samples were collected as part of the routine operation and maintenance of the system, and to meet the regulatory requirements of the NPDES Permit.

In accordance with the MEW Regional Groundwater Remediation Program (RGRP), the annual groundwater sampling event was performed on October 6 and 7, 2011. Field blank and equipment blank samples were collected each day of the sampling event. Field blanks are used to confirm that no compounds were introduced during preparation of the sample bottles or in the field during sampling activities. Equipment blanks are used to confirm that no compounds were introduced from the equipment used in collecting the samples. Prior to monitoring well sampling, the initial depth to water was recorded. Water samples were collected using low-flow sampling techniques after it was observed that indicator water quality parameter measurements were stable, specifically pH, temperature and electrical conductivity. The peristaltic pump used to collect water samples was decontaminated between wells, and new tubing was used for each sample collected.

Volatile organic compound (VOC) water samples were collected in 40-milliliter volatile organic analysis vials preserved with dilute hydrochloric acid. The hydrochloric acid preservative was used to facilitate U.S. EPA Method 8260B analyses, and was not specifically required by conditions of the UQAPP. Samples were labeled, placed in an ice-filled cooler for delivery, and transported to Curtis & Tompkins, Ltd. (Curtis & Tompkins), of Berkeley, California, a state-certified analytical laboratory. All sample containers were provided by the analytical laboratory. Chain-of-custody records were filled out for the groundwater samples, and the samples were delivered to Curtis & Tompkins for chemical analysis. An AMEC daily field record is used to record information pertinent to sampling activities.

2.0 ANALYTICAL RESULTS

The laboratory protocols specified in the UQAPP are intended to ensure that the laboratory results meet specified goals for precision, accuracy, and completeness. In accordance with the

UQAPP procedures for internal quality control checks for water samples, at a minimum, one Matrix Spike (MS)/Matrix Spike Duplicate (MSD) sample, a laboratory control sample (LCS), blank spike (BS)/blank spike duplicate (BSD) pairs, one field blank sample, one trip blank sample, and one blind duplicate sample were obtained for every 20 treatment system samples collected and analyzed. The laboratory analyzed method blanks and BS/BSD samples for each sampling event. Analytical holding times were met for all groundwater samples submitted to the analytical laboratory.

The results of the blind duplicate, MS/MSD, and BS/BSD samples were used to assess precision. The UQAPP does not specify a precision goal for blind duplicate or BS/BSD samples; therefore, the precision goal of 35 percent (%) Relative Percent Difference (RPD) for MS/MSD water samples was used. Table C-1 presents the RPDs of the BS/BSD, MS/MSD, and blind duplicate analyses. RPDs for the project sample pairs were within the QA/QC goals for precision specified in the UQAPP.

The results of the LCS, MS/MSD, and BS/BSD samples were used to assess accuracy. Table C - 2 presents the percent recoveries of the LCS, MS/MSD, and BS/BSD analyses specified in the UQAPP. Percent recoveries of the MS/MSD compounds were within the QA/QC goals for accuracy specified in the UQAPP for aqueous MS/MSD samples (75 to 133%), except one instance where a 56% recovery was made. Associated sample results were qualified in accordance with the U.S. EPA Contract Laboratory Program National Function Guidelines. This resulted in detections of TCE in samples SIL4A being J-flagged to denote detections are estimated values. However, sample results are still considered valid and useable. Percent recoveries for the LCS compounds were within the QA/QC goals for accuracy specified in the UQAPP for aqueous LCS samples (65 to 138%).

The UQAPP does not specify an accuracy goal for BS/BSD samples; therefore, the accuracy goal for LCS water samples was used. All the percent recoveries for the BS/BSD compounds were within the QA/QC goals for accuracy.

The UQAPP specifies a maximum reporting limit of 2.0 micrograms per liter ($\mu\text{g/l}$) for compounds analyzed by U.S. EPA Method 8260B. Due to elevated TCE concentrations in the influent, the analytical laboratory is unable to achieve the maximum detection limits for all VOCs within the influent sample analyzed by U.S. EPA Method 8260B. Dilutions performed by the laboratory on samples with high VOC concentrations are necessary for analysis and the corresponding elevated detection limits are considered valid. Detection limits below 2.0 $\mu\text{g/l}$ are achieved for effluent samples, as VOCs are not detected above 0.5 $\mu\text{g/l}$ and dilutions are not necessary. The maximum detection limit stated in the UQAPP is more applicable to

samples with generally low concentrations of VOCs (e.g., less than 100 µg/l) than to samples with high concentrations that require dilution for analysis.

The field blank and equipment blank samples were analyzed by U.S. EPA Method 8260B for the halogenated VOCs list. All analyte results for field blanks and equipment blanks were non-detect for GETS monitoring and the annual groundwater sampling event.

To establish completeness, valid data must constitute 90% of the total data obtained. The analyses met precision and accuracy goals as specified in the UQAPP. All of the data obtained during this investigation are considered valid and are consistent with historical results. Therefore, the data generated during this report period were within the completeness goal specified in the UQAPP.

3.0 GENERAL QUALITY ASSURANCE ASSESSMENT

The water-level measurement data, annual groundwater sample analytical results, and GETS monitoring analytical results generated between January and December 2011 are considered to be representative of actual field conditions. No corrective actions are recommended or deemed necessary.

TABLE C-1

**SUMMARY OF PRECISION DATA
QUALITY ASSURANCE REPORT**

January to December 2011
401 National Avenue
Mountain View, California

Sample Description	Constituent	RPD (%)¹	QA Goal (%)²
Blank Spike Duplicate	1,1-Dichloroethene	0-12	35
	Trichloroethene	1-9	
	Chlorobenzene	0-7	
Matrix Spike Duplicate	1,1-Dichloroethene	3-11	35
	Trichloroethene	3-8	
	Chlorobenzene	2-7	
Blind Duplicate	Freon 113	0-31	35
	cis-1,2-Dichloroethene	0-21	
	1,1,1-Trichloroethane	6	
	Trichloroethene	0-13	
	Tetrachloroethene	14	
	trans-1,2-Dichloroethene	-- ³	
	1,1-Dichloroethane	5	
	1,1-Dichloroethene	2	
	Vinyl Chloride	14	

Notes

- RPD = relative percent difference, $RPD = \frac{2(C_1 - C_2)}{(C_1 + C_2)} \times 100$,
where C_1 = concentration in sample and C_2 = concentration in duplicate.
- QA goal as specified in the UQAPP for MS/MSD water samples.
- trans-1,2-Dichloroethene was detected in the duplicate sample and not in the primary sample. The absolute difference between the sample results is less than the reporting limit, so the results are still considered valid and useable.

TABLE C-2
SUMMARY OF ACCURACY DATA
QUALITY ASSURANCE REPORT
 January to December 2011
 401 National Avenue
 Mountain View, California

Sample Description	Constituent	% R^{1,3}	QA Goal (%)²
Laboratory Control Samples	1,1-Dichloroethene	103-107	65-138
	Trichloroethene	93-114	
	Chlorobenzene	94-117	
Matrix Spike and Matrix Spike Duplicates	1,1-Dichloroethene	87-111	75-133
	Trichloroethene	56-116	
	Chlorobenzene	94-109	
Blank Spike and Blank Spike Duplicates	1,1-Dichloroethene	75-116	65-138
	Trichloroethene	87-113	
	Chlorobenzene	93-109	

Notes

1. % R = percent recovery.
2. QA goal as specified in the UQAPP.
3. MS/MSD 56% recovery of Trichloroethene (TCE) was below the lower range of QA goal. Associated sample results were qualified in accordance with the USEPA Contract Laboratory Program National Function Guidelines. This resulted in detections of TCE in sample SIL4A being J-flagged to denote detections are estimated values. However, sample results are still considered valid and useable.



APPENDIX D

Summary Table of General Waste Discharge Requirements for NPDES Permit

APPENDIX D

SUMMARY TABLE OF GENERAL WASTE DISCHARGE REQUIREMENTS FOR NPDES PERMIT

405 National Avenue
Mountain View, California

Action/Item of Concern	Requirement/Response	Reference ¹ Number
Effluent and Receiving Water Discharge Requirements		
Maximum Daily Effluent Limitation (Discharge to Drinking Water Areas)	Trichlorotrifluoroethane (Freon 113): 5.0 µg/L	1: Section B, 1–3 (pages 6-7)
	Cis-1,2-dichlorethene: 5.0 µg/L	
	Trichloroethene: 5.0 µg/L	
	Tetrachloroethene: 1.6 µg/L (0.8 µg/L) ²	
	1,1-dichloroethane: 0.11µg/L (0.057 µg/L) ³	
	1,1,1-trichloroethane: 5.0 µg/L	
	For additional constituents of concern, see Reference 1, Table B.1	
	pH: <6.5 or >8.5	
	Toxicity: > 90% survival for 96-hour, static renewal fish bioassay	
Effluent Trigger Compounds	Reference 1, Table E.6 outlines trigger levels for metals, SVOCs, PAHs, PCBs, and Organochlorine Pesticides. If the trigger level for a particular constituent is exceeded, a series of monitoring samples is required during the following quarter per Reference 1, E.6 through 9.	1. Sections E.6–9 (pages 10–14)
Maximum Flow Rate	Maximum flow rate through treatment system shall not exceed 30 gpm.	Groundwater Treatment System Constraint
	Average effluent flow rate to storm drain shall not exceed 32 gpm.	3. Authorization Letter
Receiving Water Limitations	Treated water shall be discharged through a storm drain to Stevens Creek.	1. Section C, 1–2 (pages 7–8)
	No floating, suspended, or deposited macroscopic particulate matter or foam	
	No bottom deposits or aquatic growths	
	No alteration of temperature, turbidity, taste, odor, or apparent color beyond present natural background levels	
	No visible, floating, suspended, or deposited oil or other products of petroleum origin	
	No toxic or other deleterious substances to be present in concentrations or quantities that will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration	

APPENDIX D

SUMMARY TABLE OF GENERAL WASTE DISCHARGE REQUIREMENTS FOR NPDES PERMIT

405 National Avenue
Mountain View, California

Action/Item of Concern	Requirement/Response	Reference ¹ Number
Receiving Water Limitations (cont'd)	Dissolved Oxygen: 7.0 mg/L minimum (nontidal waters). For inland surface waters: The median of three consecutive months of monitoring shall be less than 80% saturation. If natural factors result in a dissolved oxygen saturation value less than 80%, the discharger shall not cause further reduction in the concentration of dissolved oxygen.	1. Section C, 1–2 (pages 7–8) (cont'd)
	pH: No variation from natural ambient pH by more than 0.5 pH units	
General Discharge Limitations	Discharge limited to extracted and treated groundwater and those added treatment chemicals approved by the RWQCB Executive Officer.	1. Section A, 1–7 (pages 5–6)
	Discharge shall cause no scouring or erosion at the point where the storm drain discharges into the receiving waters.	
	No pollution, contamination, or nuisance per California Water Code § 13050.	
	No bypass or overflow of untreated or partially treated polluted groundwater to waters of the State either at the treatment system or from any of the collection or transport systems to the treatment system.	
Monitoring Requirements		
Monthly^{4,5,6}		
Influent and Midfluent Sampling and Analysis	Sample influent MONTHLY and analyze for: pH Sample Influent and Midfluent MONTHLY and analyze for: VOCs (EPA Method 8260B (8010-list). These samples are performance based and not motivated by the NPDES monitoring requirements. If BTEX, MTBE, TPHg, or TPHd is believed to be present in the influent at a later date, then monitoring of petroleum constituents will be necessary in accordance with this permit.	2. Table A (pages 12–13)
Effluent Sampling and Analysis	Sample effluent MONTHLY and analyze for: All Applicable Standard Observations pH Temperature (deg. C) VOCs (EPA Method 8260B-full list) ⁷ If BTEX, MTBE, TPHg, or TPHd is believed to be present in the influent at a later date, then monitoring of petroleum constituents in the effluent will be necessary in accordance with this permit.	2. Table A. (pages 12–13)

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SUMMARY TABLE OF GENERAL WASTE DISCHARGE REQUIREMENTS FOR NPDES PERMIT

405 National Avenue
Mountain View, California

Action/Item of Concern	Requirement/Response	Reference ¹ Number
Receiving Water Monitoring	If effluent standards for pH, standard observations, or VOCs are exceeded, sampling of specific constituent exceeded and dissolved oxygen must be completed within 24 hours of known exceedance. If cadmium, chromium (total), copper, lead, nickel, silver, or zinc triggers are exceeded, sampling of hardness and salinity must be completed.	2. Table A (pages 12–13)
Annually, Semiannually, or Quarterly		
Influent Sampling and Analysis	Sample influent Semi-ANNUALLY and analyze for: VOCs (EPA Method 8260B-full list) ⁷ Sample influent ANNUALLY and analyze for: pH If PAHs, EDB, TAME, DIPE, ETBE, TBA, Ethanol, or are believed to be present in the influent at a later date, then monitoring of these constituents will be necessary in accordance with this permit.	2. Table A (pages 12–13)
Effluent Sampling and Analysis	Sample effluent Quarterly and analyze for: Fish Toxicity, 96-hr (% survival) Turbidity (NTU) Sample effluent Semi-ANNUALLY and analyze for: 1,4-Dioxane ⁸ SVOCs ⁸ If PAHs, EDB, TAME, DIPE, ETBE, TBA, Ethanol, or are believed to be present in the influent at a later date, then monitoring of these constituents will be necessary in accordance with this permit.	2. Table A (pages 12–13)
Every 3 Years		
Effluent Sampling and Analysis	Sample effluent EVERY THREE YEARS and analyze for: Antimony, Arsenic, Beryllium, Cadmium, Hexavalent Chromium or total Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc	2. Table A (pages 12–13)

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SUMMARY TABLE OF GENERAL WASTE DISCHARGE REQUIREMENTS FOR NPDES PERMIT

405 National Avenue
Mountain View, California

Reporting Requirements		
Daily		
Discharge Violation Report and Treatment System Bypass	RWQCB should be notified within 24 hours of finding that any discharge is in violation of the discharge specifications. Additionally, a written report shall be submitted to the RWQCB within 5 working days. The written report shall include time, date, duration, and estimated volume of waste bypassed, method used in estimating volume, and person notified of incident. The report should include an explanation for the noncompliance and indication of steps to prevent future reoccurrence.	2. Section H.4 and H.5 (pages 9–10)
Quarterly and Annually		
Annual Fees	\$4,900 plus 18.5% = \$5,806.50	1. Section 5 and CRR Title 23, Section 2200D.
Monitoring Reports	If discharging, submit report to RWQCB no later than 45 days following the end of the calendar quarter. Annual report required by February 15 th of each year. See sampling memo or self-monitoring plan for summary of report content requirements.	2. Section H.2 and H.3 (pages 6–8)
Construction Projects	A written technical report shall be submitted at least 30 days prior to advertising for bid, or 60 days prior to construction, on any construction project which would cause or aggravate the discharge of waste in violation of requirements.	2. Section H.6 (page 10)
Chemical Additives	A report describing the need, method of chemical application, disposal, and toxicity data shall be submitted to the RWQCB at least 30 days before the use of any chemicals in the treatment, or operation and maintenance of the treatment units, is to begin.	2. Section H.7 (page 10)

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SUMMARY TABLE OF GENERAL WASTE DISCHARGE REQUIREMENTS FOR NPDES PERMIT

405 National Avenue
Mountain View, California

Records/Notifications		
Operational and Analytical Records	Maintain records of written reports, strip charts, calibration and maintenance records, and other records for a minimum of five years. Sample records should include: identity of sampling and observation stations by number; date and time of sampling observations, and analysis; sampling method including sample preservation type and amount; name of personnel performing analyses; calculations of results; and results of analyses and/or observations.	2. Section I.1 (page 10)
	Records of weekly discharge flow volume and totalized quarterly and annual flow.	2. Section I.2 (page 11)
	Tabulation of treatment system bypasses and/or accidental waste spills.	2. Section I.3 (page 11)
	Copy of Order No. R2-2004-0055, Authorization Letter, and O&M Manual maintained at the site.	2. Section I.4 (page 11)
Changes in Self Monitoring Program	Following six months of implementation, a request to the RWQCB can be made to modify the Self-Monitoring Program to cover constituents of concern only.	1. Section E.5 (page 10)
Change in Discharge	Submit an amended Notice of Intent at least 60 days before making any material change in the character, location, or volume of discharge.	1. Section E.17 (page 15)
Renewal of Agreement	Order No. CAG912003 expires on September 30, 2014.	1. Section E.19 (page 16)

Notes

1. See Reference section below.
2. Concentration in parenthesis refers to average monthly effluent limitation applicable when three or more days of effluent monitoring results are available.
3. If reported detection limit is greater than effluent limit, then a non-detect result using a 0.5 µg/L detection limit is deemed to be in compliance.
4. Influent and effluent pH and effluent temperature monitoring changes from monthly to quarterly after the first year and quarterly to annually after the second year of operation.
5. Effluent pH and temperature changes from monthly to quarterly after the first year of operation and annually thereafter.
6. Effluent turbidity and fish toxicity monitoring changes from quarterly to annually after the first year of operation.
7. Following six months of sampling, the self-monitoring program the VOC analyte list can be reduced by submitting an amended analyte list covering constituents of concern to the RWQCB for approval.
8. If not detected during first sampling round, with adequate laboratory detection limits, a request to reduce the monitoring schedule to every three years may be submitted to the RWQCB for approval.

APPENDIX D

SUMMARY TABLE OF GENERAL WASTE DISCHARGE REQUIREMENTS FOR NPDES PERMIT

405 National Avenue
Mountain View, California

References

1. General Waste Discharge Requirements from California Regional Water Quality Control Board (RWQCB) Order No. R2-2009-0059 for Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted Volatile Organic Compounds (National Pollutant Discharge Elimination System (NPDES) General Fuel Permit, Permit No. CAG912003).
2. Self Monitoring Program from California Regional Water Quality Control Board (RWQCB) Order No. R2-2009-0059 for Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted Volatile Organic Compounds (National Pollutant Discharge Elimination System (NPDES) General Fuel Permit, Permit No. CAG912003).
3. Regional Water Quality Control Board (RWQCB), Letter to Bernard Yurash, SUMCO Oregon, Authorization to discharge treated groundwater under the requirements of Order No. R2-2004-0055, NPDES Permit No. CAG912003 (VOC) for the Groundwater Treatment System Located at 401 National Avenue, Mountain View, Santa Clara County, CA 94043, November 29, 2004.

Abbreviations

µg/L = micrograms per liter
BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes
DIPE = diisopropyl ether
EDB = ethylene dibromide
ETBE = ethyl tertiary-butyl ether
MTBE = methyl tertiary-butyl ether
PAH = Polynuclear Aromatic Hydrocarbons
Semi-VOC = Semi-Volatile Organic Compound
TAME = tertiary-amyl methyl ether
TBA = tertiary-butyl alcohol
TCE = Trichloroethylene
TPHd = total petroleum hydrocarbons as diesel
TPHg = total petroleum hydrocarbons as gasoline
VOC = Volatile Organic Compound