Andy Saberi
1045 Airport Boulevard
South San Francisco, CA 94080

January 18, 2008

Mr. Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Pangea's Draft CAP and Pilot Test Work Plan**
1230 14th Street, Oakland, California
ACEH Case No. 295

Dear Mr. Wickham:

I, Mr. Andy Saberi, have retained Pangea Environmental Services, Inc. (Pangea) as an environmental consultant for the project referenced above. Pangea is submitting the *Draft Corrective Action Plan and Pilot Test Work Plan* dated January 18, 2008, on my behalf.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

If you have any questions, please call me at (650) 588-3088.

Sincerely,

Andy Saberi

January 18, 2008

Mr. Jerry Wickham
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Draft Corrective Action Plan and Pilot Test Work Plan**
Former Shell Service Station
1230 14th Street
Oakland, California
Fuel Leak Case No. RO0000433

Dear Mr. Wickham:

On behalf of property owner Andy Saberi, Pangea Environmental Services, Inc., has prepared this *Draft Corrective Action Plan and Pilot Test Work Plan* (Draft CAP/WP). The Draft CAP/WP was requested by the Alameda County Environmental Health (ACEH) in a letter dated November 29, 2007.

If you have any questions or comments, please call me at (510) 435-8664 or email briddell@pangeaenv.com.

Sincerely,
Pangea Environmental Services, Inc.

Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: *Draft Corrective Action Plan and Pilot Test Work Plan*

cc: Andy Saberi, 1045 Airport Blvd., South San Francisco, California 94080
Denis Brown, Shell Oil Products US, 20945 S. Wilmington Avenue, Carson, CA 90810-1039
Som Gupta, c/o Carmerlengo & Johnson, 500 Airport Boulevard, Suite 230, Burlingame, CA 94010
Ana Friel, Conestoga-Rovers & Associates, 19449 Riverside Drive, Suite 230, Sonoma, CA 95476

DRAFT CORRECTIVE ACTION PLAN and PILOT TEST WORK PLAN

Former Shell Service Station
1230 14th Street
Oakland, California
Fuel Leak Case No. RO0000433

January 18, 2008

Prepared for:

Andy Saberi
1045 Airport Boulevard
South San Francisco, California 94080

Prepared by:

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Written by:

Brian Busch
Senior Project Scientist

REGISTERED PROFESSIONAL ENGINEER
ROBERT G. CLARK-RIDDELL
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STATE OF CALIFORNIA

Bob Clark-Riddell, P.E.
Principal Engineer

INTRODUCTION

On behalf of property owner Andy Saberi, Pangea Environmental Services, Inc. (Pangea), has prepared this *Draft Corrective Action Plan/ Pilot Test Work Plan* (Draft CAP/WP). The Draft CAP/WP was requested by the Alameda County Environmental Health (ACEH) in a letter dated November 29, 2007 (Appendix A). As required by the ACEH, the Draft CAP/WP proposes pilot testing of soil vapor extraction (SVE), dual-phase extraction (DPE), and air sparging (AS), and includes the evaluation of SVE/AS and DPE/AS as active remedial alternatives for remediation of subsurface contaminants. Described below are the project overview, site background, remedial objectives, evaluation of remedial alternatives, pilot testing work plan, and proposed corrective action plan.

PROJECT OVERVIEW

Petroleum hydrocarbons were first discovered in site soil near the underground storage tanks in February 1991. Since 1991, significant site assessment and several remedial alternatives have been implemented at the subject site. While the extent of the hydrocarbons appears to be located primarily within *onsite* groundwater and saturated soil (soil within the water-bearing zone), previous remedial approaches have not sufficiently mitigated the subsurface hydrocarbons. The prior remediation activities have included feasibility testing of different remedial techniques, implementation of interim remedial measures (e.g., use of oxygen-releasing compounds and periodic extraction events with mobile equipment), and even implementation of a prior Corrective Action Plan (CAP). The prior CAP, in an attempt to quickly remediate residual hydrocarbons without use of a longer-term dedicated system, involved the injection of approximately 4,300 gallons of hydrogen peroxide and 138 gallons of sulfuric acid, a process known as chemical oxidation.

This Draft CAP/WP will provide longer feasibility testing than previously conducted, and proposes the installation and operation of a dedicated remediation system (after testing) to target residual hydrocarbons. To facilitate cost-effective remediation, the proposed pilot testing will determine if SVE or DPE is more appropriate to capture hydrocarbon vapors created by AS. The testing will also allow selection of cost-effective remediation equipment and an effective remediation well network, based on test radius of influence data. The Draft CAP includes a tentative remediation well network for the selected approach, which could be modified based on pilot test results. The Draft CAP proposes operation of the final remediation system until satisfying site remedial objectives. The Draft CAP will become *Final* after completion of the public notification process and satisfactorily incorporating any public and regulatory concerns. The tentative Draft CAP/WP schedule involves public and regulatory comment during the late rainy season, pilot testing during the early dry season, and remediation system installation and startup by the late dry season.

SITE BACKGROUND

This site background section describes the site description, site history, previous environmental work, and site conditions. The site conditions subsection describes the sediment lithology, groundwater depth and flow direction, and hydrocarbon distribution in site soil and groundwater.

Site Description

The former Shell-branded service station is located at the northeast corner of the 14th Street and Union Street intersection in Oakland, California (Figure 1). Currently, an abandoned one-story station building and a pump island canopy occupy the site, and much of the property is unpaved Land use in the surrounding area is currently residential to the north, south, and east, and is commercial/industrial to the west and southwest. The site topography is essentially flat.

Site History

According to City of Oakland records, the current site building was constructed in 1958. Gas station operations at the site reportedly began in 1958 and ceased in 1993. Petroleum hydrocarbons were first discovered in site soil near the underground storage tanks (USTs) during the completion of three borings at the site in February 1991. Four gasoline USTs and one waste oil storage tank were removed from the site on August 24, 1993. The current property owner, Mr. Andy Saberi, purchased the property in the mid 1980's.

Previous Environmental Work

Previous environmental work has included significant site assessment, a sensitive receptor evaluation/well survey, risk evaluation, two rounds of feasibility testing (in 2000 and 2006), several rounds of interim remedial action, and even implementation of a prior CAP. Quarterly groundwater monitoring activities have been performed at the site since 1996. A summary of previous environmental work conducted at the site between 1991 and 2006 and prior boring/well location maps are presented in Appendix B.

In 2007, a series of letters were prepared by Shell Oil's consultant, Mr. Saberi's consultant, and the ACEH regarding site remediation. On behalf of Shell, Cambria Environmental Technology, Inc. (Cambria), of Emeryville, California submitted a *Dual-Phase Extraction Pilot Test Report and Groundwater Monitoring Report – Fourth Quarter 2006* that proposed additional interim groundwater extraction (GWE). On behalf of Mr. Saberi, Pangea Environmental Services, Inc. (Pangea), of Oakland, California, provided comments and presented a more aggressive remedial approach of DPE/AS, and did not proposed SVE based on limited vacuum influence observed during two rounds of prior testing. On May 16, 2007, Conestoga-Rovers Associates (CRA, formerly Cambria) presented a revised work plan that proposed additional feasibility testing

and implementation of SVE and AS. On September 19, 2007, the ACEH requested a pilot test work plan to address ACEH technical comments followed by and a CAP.

On October 31, 2007, property owner Andy Saberi assumed the role as lead responsible party for corrective action at the site. In a letter dated November 5, 2007, Pangea notified the ACEH of the change in remediation lead, and recommended incorporating the pilot test into a Draft CAP to expedite site remediation. In its November 29, 2007 letter, the ACEH concurred that pilot testing during a period of lower water levels is advantageous, and requested preparation of a Draft CAP / Pilot Test Work Plan.

Site Conditions

Sediment Lithology: Site investigations conducted to date indicate that subsurface materials encountered beneath the site consist primarily of silty sand, silty gravel, and sand to the total explored depth of 30 ft. The upper 9 to 10 ft of the filled former tank pit area consists of gravelly sand fill material. United States Geological Survey (USGS) publications and maps indicate the site is underlain by the Merritt Sand formation. Soil samples collected in March 2005 at depths of 5 and 8 feet below grade surface (ft bgs) from three onsite soil borings were submitted to a laboratory for grain size analysis, and the results indicated that the native soil type is silty to very silty sand, which is consistent with the description of the Merritt Sand formation.

Groundwater Depth and Flow Direction: Recorded groundwater depths beneath the site have ranged from 4.8 to 13.9 ft bgs. The shallowest groundwater elevations since monitoring began were observed in February and June 1998 and in March 2000. The groundwater flow direction, as calculated from depth to water measurements in onsite monitoring wells, is typically to the northeast.

Hydrocarbon Distribution in Soil and Groundwater: The primary hydrocarbon impact area is in the central portion of the site (in the vicinity of the former UST locations) and extends downgradient, as illustrated on Figure 2. The primary contaminants of concern at this site are benzene and total petroleum hydrocarbons as gasoline (TPHg), which exceed select Environmental Screening Levels (ESLs) established by the SFRWQCB.

Soil concentrations from post-remediation sampling (November 2003) are compared to ESLs on Table 1. Historical soil analytical results suggest that soil conditions have been improved by remedial activities, but elevated soil concentrations that exceed applicable ESLs were detected in all four post-remediation borings (SB-18 through SB-21).

For groundwater, recent monitoring results indicate that petroleum hydrocarbon concentrations exceed applicable ESLs (final ESLs for drinking water) in ALL site monitoring and remediation wells, except for well MW-2. Historical groundwater concentrations and ESLs are shown on Table 2. Petroleum hydrocarbons are well delineated in groundwater to the east and north by low aqueous-phase hydrocarbon

concentrations in well MW-6 and well MW-7, respectively. Petroleum hydrocarbons are defined to the west by well MW-4 and to the south by well MW-2. Additional grab groundwater samples from *onsite* borings GP-2, GP-4 and GP-5 and *offsite* borings HA-1 through HA-4 provide additional definition of hydrocarbons in groundwater (boring locations shown in Appendix B).

A primary concern for sites like this is the potential for volatile gasoline constituents (especially benzene) to intrude into indoor air where they pose a risk to human health. Benzene concentrations in site soil and groundwater exceed the ESLs protective of indoor air under the commercial site use scenario.

REMEDIAL OBJECTIVES

The remedial objective is to provide sufficient source area removal to justify regulatory case closure. The proposed approach will provide remediation of elevated hydrocarbon concentrations in soil and groundwater. The proposed technique will provide active hydrocarbon removal, and encourage in-situ biodegradation of the less volatile fraction of subsurface contaminants (e.g., heavier hydrocarbons). The remediation will improve site conditions, potentially to the point where constituent concentrations are below or will attenuate below applicable Environmental Screening Levels, and will allow achievement of water quality objectives within a reasonable time.

EVALUATION OF REMEDIAL ALTERNATIVES

To help select a cost-effective alternative for meeting the remediation objectives, Pangea evaluated several site remediation techniques applicable to hydrocarbon-contaminated sites with shallow groundwater. As recommended by the ACEH, Pangea includes the evaluation of SVE/AS and DPE/AS. The evaluated remedial alternatives include:

- Excavation
- Groundwater Extraction
- Air Sparging and Biosparging
- Soil Vapor Extraction and SVE/AS
- Dual Phase Extraction and DPE/AS
- Monitored Natural Attenuation (Groundwater Monitoring)

The evaluation of alternatives is discussed below.

Excavation

Excavation is a proven and effective technique for remediation of petroleum hydrocarbons. Excavation is most appropriate for shallow soils, and especially for low permeability materials where in-situ remedial techniques have very limited effectiveness. This method is also a cost-effective option for undeveloped sites where the excavation area is accessible and not beneath site facilities. Excavation can remove unsaturated soil, capillary fringe soil, and saturated soil. Soil is usually transported offsite for disposal, but soil can be treated and reused at the site in accordance with regulatory guidelines and approval.

Given the fact that previous site assessment activities have identified residual non-aqueous phase liquids (NAPL, also known as free product) in soils between 16 and 18 ft bgs depth, excavation of the source area would be difficult and expensive (e.g., shoring likely required), due to the excavation depth and the significant amount of cleaner overburden soil that would need to be removed and segregated to access the impacted soils for excavation. Also, permeability of site soils suggests that in-situ remedial techniques could successfully remediate hydrocarbons in soil and groundwater. Therefore, Pangea does not recommend excavation and anticipates that other remedial alternatives would be more cost effective.

Groundwater Extraction

Groundwater extraction (GWE) is common approach for remediating hydrocarbon impacts to groundwater, especially where hydraulic control is required. GWE relies on submersible groundwater pumps to extract subsurface groundwater for aboveground treatment and disposal, which can be costly. GWE was used extensively in the 1980's and early 1990's before being displaced by more cost-effective in-situ treatment methods, such as soil vapor extraction (SVE), air sparging (AS), oxidation, and enhanced biodegradation.

GWE is often implemented to facilitate remediation and hydraulic control of MTBE, given MTBE's high solubility and low adsorption rates. GWE is also conducted in conjunction with SVE (i.e., DPE) to help dewater the hydrocarbon smear zone and expose hydrocarbons to vapor extraction. This approach typically requires a network of extraction and discharge piping and equipment to extract, treat and dispose of the extracted water and vapor. Pangea does not recommend GWE alone as a remedial solution for this site for the following reasons: (1) MTBE is not considered a constituent of concern at this site due to the relatively low MTBE concentrations in soil and groundwater, (2) GWE has been ineffective during past GWE activities at the site (GWE performed at the site on a semi-monthly basis for approximately 14 months in 2002-2004 did not significantly improve site conditions), and (3) GWE will not target hydrocarbon-impacted soil in the vadose zone.

Air Sparging / Biosparging

Air sparging is common technique for cost-effectively remediating petroleum hydrocarbons from saturated soil and groundwater. AS involves the injection of compressed air into the saturated zone to 'strip' hydrocarbons from saturated soil and groundwater for capture by SVE or DPE. AS also oxygenates groundwater, and thereby stimulates hydrocarbon degradation. AS is routinely more cost effective than groundwater extraction because no large extraction and treatment equipment is required with AS, and operation and maintenance costs are low. AS wells are typically constructed with well screen starting approximately 10 feet or more below the water table, and well screen intervals are carefully selected to allow capture of hydrocarbon vapors created by sparging if low permeability units are present. Low flow AS (also known as biosparging) is also a cost effective technique to stimulate hydrocarbon degradation of residual contamination that slowly diffuses out of the fine-grained materials at a given site. AS (in conjunction with SVE or DPE) and biosparging appear to be appropriate techniques for this site. Therefore, Pangea recommends pilot testing of AS with SVE and DPE as discussed below.

Soil Vapor Extraction and SVE/AS

Soil vapor extraction is a common approach for remediating unsaturated soil. This approach uses an aboveground vacuum blower to extract vapor-phase hydrocarbons from the site subsurface. SVE also effectively removes hydrocarbons adsorbed to unsaturated soil that could pose a risk to groundwater quality. At sites with a fairly permeable capillary fringe and saturated zones, SVE can improve groundwater quality and can remove NAPL. When saturated zone remediation is required, SVE is commonly combined with other technologies such as air sparging or groundwater extraction. Extracted vapors are typically treated aboveground with oxidizers or granular activated carbon.

Previous test results suggest that SVE would have limited effectiveness at the site due to water upwelling, minimal vacuum influence, low hydrocarbon removal rates, and likely short-circuiting of air flow to the surface or within the backfilled former UST tank cavity. Also, SVE alone does not aggressively target the primary contaminant zone estimated by CRA to contain free product (non-aqueous phase liquid – NAPL) at a depth of 16 to 18 feet.

SVE has the potential to be effective in conjunction with other techniques (such as AS or GWE) while using a properly designed well network. Since SVE/AS is typically more cost effective than SVE/GWE, Pangea recommends conducting additional pilot testing to evaluate if SVE/AS effectively removes and captures subsurface hydrocarbons. This recommendation satisfies the ACEH recommendation to test and evaluate SVE/AS.

Dual Phase Extraction and DPE/AS

Dual-phase extraction is a common technique for remediating sites impacted with elevated concentrations of petroleum hydrocarbons and residual NAPL, or at sites where the hydrocarbon smear zone at the capillary fringe represents a significant source of groundwater contamination. DPE is a technology that simultaneously extracts groundwater and soil vapor, generally from the same well. DPE can be implemented generally by one of three methods: 1) using *submersible pumps* to draw down the water table within the well while using a vacuum pump system to extract soil vapor; 2) *using a powerful vacuum pump* system to extract both groundwater and vapor from the wellhead (generally used only on small diameter wells); 3) *using a powerful vacuum pump and "stinger"* (vacuum tube inserted below the water table) to both depress the water table and extract soil vapor from the vadose zone. Method 1 is generally used in relatively permeable environments, where groundwater production rates are greater than 2 gallons per minute (gpm) per well. Methods 2 and 3 are generally used in lower-permeability environments where groundwater production rates are lower than 2 gpm per well. A benefit of using either Method 2 or 3 at sites where groundwater is confined or semi-confined is that the pressure-drop produced in the well casing can often enhance the rate of extraction of groundwater from the water-bearing zone in comparison to use of submersible pumps. In addition, these methods can often recover SPH from site soils that are not recoverable by bailing and pumping.

DPE testing performed at the site in August 2006 provided significantly greater contaminant removal rates than other tested techniques. Based on the observed groundwater removal rates encountered during prior DPE testing, and the significant seasonal fluctuation of groundwater elevation, Pangea does not recommend implementation of DPE *alone* to lower the water table and expose submerged hydrocarbons for vapor extraction without first evaluating DPE as a method to manage the water upwelling (observed during prior testing). It is possible that limited DPE could be performed to keep well screens open for vapor extraction, allowing capture of hydrocarbon vapor created by AS without the need for significant dewatering. With this method for implementing DPE/AS, the AS technique would provide the primary remediation of site hydrocarbons, with DPE to help ensure optimal capture of hydrocarbon vapors created by AS. If this approach is not successful, using DPE to lower the water table and expose submerged hydrocarbons for vapor extraction would be the recommended approach. This recommendation satisfies the ACEH recommendation to test and evaluate DPE/AS.

Monitored Natural Attenuation (Groundwater Monitoring)

This alternative involves no active remediation, and assumes that residual contaminants will attenuate naturally. To be selected as an appropriate alternative, residual contaminants are often required to attenuate (or are projected to attenuate) to water quality objectives within a reasonable timeframe. Given the persistence of elevated hydrocarbon concentrations in groundwater despite prior interim remediation and CAP implementation, natural attenuation will likely require a very long time to reduce hydrocarbon concentrations

to acceptable levels. This alternative alone is not appropriate to satisfy remedial objectives.

Selected Alternative – SVE/AS or DPE/AS Depending on Test Results

Based on the evaluation presented above, Pangea recommends implementing either SVE/AS or DPE/AS to remediate the site. The final selection will be based on pilot testing described below.

DRAFT CORRECTIVE ACTION PLAN and PILOT TEST WORK PLAN

Our Draft CAP proposes the installation of a dedicated SVE/AS or DPE/AS remediation system. The Draft CAP scope of work includes pilot testing of SVE/AS and DPE/AS to determine the most cost-effective method for the site. The testing will also allow selection of cost-effective remediation equipment and an effective remediation well network, based on test radius of influence data. To facilitate pilot testing, the Draft CAP work scope includes replacement of damaged wells and the installation of new AS and SVE/DPE wells for more thorough technique evaluation.

Figure 3 presents our tentative remediation well network to target site contaminants, which could be modified based on pilot test results. A dedicated system can be operated as long as necessary to satisfy cleanup objectives. To provide further cost control, the extraction method (DPE or SVE) could be discontinued after vapor concentrations sufficiently decrease, with continued AS operation for added groundwater remediation. The tentative CAP/WP schedule involves public and regulatory comment during the late rainy season, pilot testing during the early dry season, and remediation system installation and startup by the late dry season.

Task 1 – Test Well Installation Pre-Field Activities

Prior to initiating test well installation, Pangea will conduct the following tasks:

- Obtain the necessary well installation permits from Alameda County;
- Pre-mark the well locations with white paint, notify Underground Service Alert (USA) of the drilling and sampling activities at least 72 hours before work begins, and conduct private line locating as merited;
- Prepare a site-specific health and safety plan to educate personnel and minimize their exposure to potential hazards related to site activities; and
- Coordinate with drilling subcontractor, analytical laboratory and other involved parties.

Task 2 – Test Well Installation

The proposed test well locations are shown on Figure 4. Pangea will coordinate installation of three new DPE/SVE wells (DP-1 through DP-3) and three new air sparge wells (AS-1 through AS-3). The test well locations were selected to evaluate remedial effectiveness within the primary impact area, and to evaluate conditions at varying distances from the former UST cavity to evaluate potential short-circuiting. The well spacing will also allow measurement of vacuum influence at varying distances from the extraction well, with closer well spacing than prior site testing. Closer well spacing is important since very limited vacuum influence was measured during prior testing from wells spaced further apart.

Consistent with recommendations in the December 2006 *DPE Pilot Test Report*, Pangea will also replace damaged groundwater monitoring well MW-5, and destroy damaged coaxial wells VW/AS-1 and VW/AS-3.

The well installation will be conducted using a hollow-stem auger rig. New SVE/DPE wells and the replacement for well MW-5 will be constructed using 4-inch diameter Schedule 40 polyvinyl chloride (PVC) casing, 0.02-inch slotted PVC screen and #2-12 sand, with a bentonite seal and grout to the surface. The wells will be screened from approximately 8 to 20 ft bgs, except for the replacement well for MW-5, which will duplicate the screened interval of existing well MW-5, which is screened from 5 to 20 ft bgs. These wells will also include blank casing from 20 to 23 ft bgs to facilitate contingency groundwater extraction with a submersible pump, if merited to improve DPE performance. The blank casing acts as a pump sump.

The new AS wells will be constructed using 1-inch diameter Schedule 80 polyvinyl chloride (PVC) casing, 0.02-inch slotted PVC screen and #2-12 sand, with a bentonite seal and grout to the surface. The AS wells will be screened from approximately 22 to 25 feet bgs. With the depth to groundwater fluctuating seasonally at the site from approximately 6.5 to 12.5 ft bgs, the proposed AS screen depth is approximately 10 ft below the seasonal low groundwater elevation.

After a minimum of 72 hours after well installation, Pangea will develop the new wells using surge-block agitation and purge approximately 10 well casing volumes or until the well water clears (whichever occurs first). Upon completion of well development, Pangea will conduct groundwater sampling from all new remediation wells to provide additional lateral and vertical plume delineation prior to remediation. To provide cost savings, Pangea will sample the wells immediately after development rather than remobilizing to the site approximately 48 hours later and purging additional groundwater. Pangea does not plan to conduct soil sampling during well installation. All new wells will be protected by traffic-rated well vaults. Pangea will install the wells in accordance with our standard procedures, which are included in Appendix C.

Task 3 – SVE/AS and DPE/AS Pilot Testing

Test Goals

The primary goals of the proposed SVE/AS and DPE/AS pilot testing are as follows:

- To determine which technique, SVE or DPE, is more appropriate to capture hydrocarbon vapors;
- To evaluate the effectiveness of AS in further enhancing hydrocarbon vapor capture via SVE or DPE;
- To collect vacuum influence data to confirm the appropriateness of the tentative remediation well network, or allow design of a more effective well network; and,
- To facilitate selection of cost-effective remediation extraction and treatment equipment, and appropriate air compressor equipment.

The pilot testing will also allow comparison of the relative effectiveness of SVE and DPE for hydrocarbon removal, and the effect of AS on enhancing hydrocarbon removal rates during SVE and DPE.

Test Overview

The overall test work scope will be conducted in three phases and involves the following approximate test tasks and durations, although test durations may change based on test observations:

- **Phase 1 - One day SVE and SVE/AS testing** on well DP-1/AS-1
- Subsurface equilibration for 12-24 hours before subsequent testing
- **Phase 2 - One to three days DPE testing**
- **Phase 3 - One to three days DPE/AS testing**
- DPE and DPE/AS testing will be focused on key well DP-1, with shorter testing on wells DP-2, DP-3 and MW-5
- DPE and SVE testing will be conducted with a **300-cfm liquid-ring blower/oxidizer assembly capable of 28" of mercury vacuum** (Previous testing was conducted with a positive-displacement blower with lower vacuum capability). Note that SVE testing may be conducted a smaller blower if the selected vendor's liquid-ring blower cannot sustain the low vacuums required for SVE within wells with limited screen available.
- Longer-term testing will continue overnight, if appropriate, for added test value and contaminant removal

Water generated during testing will be stored pending future disposal in a 21,000-gallon aboveground storage tank. Pangea will notify the Bay Area Air Quality Management District (BAAQMD) prior to testing.

Phase 1 - SVE and SVE/AS Testing

This phase involves SVE testing followed by simultaneous SVE/AS testing. The SVE testing will be conducted from new well DP-1, with sparging later commenced on nearby well AS-1. Due to the high potential for water upwelling, the SVE testing will be conducted primarily at or below vacuum rates equivalent to the exposed well screen in DP-1, which may correspond to approximately 48" of water (approximately 4" mercury). Testing will be also conducted at higher vacuums, unless water upwelling is observed. To control equipment costs, Pangea will attempt to use the same extraction equipment for SVE as planned for DPE, which is a 300-cfm liquid-ring blower/oxidizer assembly capable of 28" of mercury (Hg) vacuum. Note that if the selected vendor's liquid-ring blower cannot sustain the low vacuums required for SVE at this site, a smaller SVE blower will be utilized. Extracted soil vapor will be treated either by a thermal/catalytic oxidizer or vapor-phase granular activated carbon before being discharged to the atmosphere.

Pangea will collect the following data to evaluate SVE system performance and mass removal rates: applied vacuum, vacuum influence, hydrocarbon concentrations in extracted vapor, and vapor extraction flow rates. Pangea will also observe water upwelling and depth to water in the extraction well with a water level meter installed through a special wellhead fitting. The depth to water measurement from before SVE testing will be used to calculate the length of well screen exposed in the well for vapor flow. If the applied vacuum nears the rate at which it could inhibit vapor flow from the length of exposed well screen, Pangea will look carefully for evidence of water upwelling (e.g.: rising water elevation in the extraction well, fluctuating vapor flow rates, entrained water in the extraction piping, and water accumulation within the water knockout vessel). Pangea will use a short section of clear extraction piping, as a minimum, to allow observation of water flow in the SVE piping. A grab vapor sample will be collected at the beginning and end of the test for submittal to an analytical laboratory for TPHg, BTEX and MTBE quantification. Additional information about test data collection (frequency, instrumentation, and purpose) is shown in Appendix D.

After establishing baseline conditions during SVE from DP-1, AS will be commenced in well AS-1. Test monitoring will evaluate changes in hydrocarbon concentrations in extracted vapor, and changes in the subsurface vacuum/pressure regime. Pangea will also monitor the injection pressures and flow rates, recording the air pressure required for breakthrough and sustained air flow. Dissolved oxygen (DO) and the oxidation-reduction potential (ORP) will be measured in nearby observation wells before and after SVE/AS testing. A grab vapor sample will be collected at the beginning and end of SVE/AS testing for submittal to an analytical laboratory for TPHg, BTEX and MTBE quantification. An appropriate air compressor will be selected to conduct AS testing at flow rates of approximately 2-5 cubic feet per minute (cfm). Additional information about test data collection (frequency, instrumentation, and purpose) is shown in Appendix D.

Phase 2 - DPE Testing with Liquid-Ring Blower

After establishing baseline conditions during SVE/AS from well DP-1 and allowing the subsurface to equilibrate for 12-24 hours, DPE testing will be conducted initially from well DP-1, with shorter tests from DP-2, DP-3 and MW-5, over a duration of 1 to 3 days. The extraction equipment will consist of a 300-cfm liquid-ring vacuum pump capable of generating applied vacuum rates of up to 28 "Hg and a drop tube "stinger" added to the extraction piping assembly. The stinger will be placed within the well and lowered as necessary to optimize DPE performance. As with the introduction of AS, test monitoring during the addition of DPE will evaluate changes in hydrocarbon concentrations in extracted vapor, and changes in the subsurface vacuum/pressure regime. Test monitoring will also evaluate water production rates and water drawdown in observation wells, as well as hydrocarbon removal rates. The testing will continue for 1 to 3 days as necessary to fully evaluate longer-term effects of DPE on groundwater production, dewatering, and vacuum influence. To control cost, Pangea will measure water levels in observation wells manually and does not plan to use pressure transducers. Dissolved oxygen (DO) and the oxidation-reduction potential (ORP) will be measured in nearby observation wells before and after DPE testing. A grab vapor sample will be collected at the beginning and end of testing from each well for submittal to an analytical laboratory for TPHg, BTEX and MTBE quantification. Additional information about test data collection (frequency, instrumentation, and purpose) is shown in Appendix D.

Phase 3 - DPE/AS Testing with Liquid-Ring Blower

After 1 to 3 days of DPE testing, DPE/AS testing will be conducted primarily from well DP-1 using the 300-cfm liquid-ring vacuum pump and "stinger" and the air compressor described in the above SVE/AS testing section. Shorter testing will be performed from wells DP-2, DP-3, and MW-5. During initial DPE/AS testing, the stinger will be placed just below the water table to keep the well screen open for vapor extraction, allowing capture of hydrocarbon vapor created by AS without the need for significant dewatering. Additional testing will be performed by lowering the stinger into the well to the bottom of the screened interval to evaluate well dewatering and hydrocarbon concentrations in submerged soils. Test monitoring will evaluate water production rates, water drawdown in observation wells, hydrocarbon removal rate changes, hydrocarbon concentrations in extracted vapor, and changes in the subsurface vacuum/pressure regime. Pangea will also monitor the AS injection pressures and flow rates, recording the air pressure required for breakthrough and sustained air flow. Dissolved oxygen (DO) and the oxidation-reduction potential (ORP) will be measured in nearby observation wells before and after DPE/AS testing. A grab vapor sample will be collected at the beginning and end of testing from each well for submittal to an analytical laboratory for TPHg, BTEX and MTBE quantification. Additional information about test data collection (frequency, instrumentation, and purpose) is shown in Appendix D.

Task 4 – Pilot Test Evaluation and Reporting

Upon completion of pilot testing, Pangea will evaluate test data and prepare a pilot test report. The pilot test report will summarize test procedures and results, select SVE/AS or DPE/AS as the final remedial approach, and provide design recommendations for the selected approach. The design recommendations will state if the tentative well network requires modification, will propose appropriate extraction and treatment equipment (PD or liquid-ring blower) and air compressor equipment, and will include submersible groundwater pumps if merited based on test results. Upon receipt of ACEH concurrence, Pangea will commence design, final well installation, permitting, and equipment procurement for installation of the selected final remedial alternative.

Task 5 - System Design

After selecting the final remedial approach, Pangea will design the system and prepare construction drawings. The drawings will include system layout, trenching, piping, wellhead, equipment compound, and equipment anchoring details. Electrical single line and process and instrumentation diagrams will also be included. The treatment equipment may be located inside the existing building to reduce noise levels. The DPE or SVE and AS remediation piping to each well will be manifolded near the treatment equipment, and will include valves, meters, gauges and/or sampling ports to facilitate flow control flow and parameter measurement for individual wells. If DPE is selected as a remedial approach, the design will include contingency piping for augmentation with submersible pumps, if required for future additional dewatering.

Task 6 – System Permitting

Pangea will conduct discharge permitting for the final remedial design. Pangea will conduct air discharge permitting with the Bay Area Air Quality Management District (BAAQMD) as necessary. Limited permitting with BAAQMD will be required if we rent a blower/oxidizer system with a BAAQMD various location permit. If DPE is implemented, a groundwater discharge permit will be obtained from the East Bay Municipal Utility District (EBMUD), the local sanitary sewer agency. Pangea anticipates that the remediation installation contractor will obtain permits from the City of Oakland Building Department as required.

Task 7 – Final Remediation Well Installation – Pre-Field Activities

The pre-field activities for final remediation well installation will be identical to those specified above for test well installation (Task 1).

Task 8 – Final Remediation Well Installation

The final test well locations will be the tentative locations shown on Figure 3, unless modified based on test results and subsequent discussion with the ACEH. Based on the tentative well locations, the only additional remediation wells requiring installation are extraction well DP-4 and DP-5 and sparge wells AS-4 and AS-5. The well installation, development and sampling procedures would be identical to those specified above for test well installation (Task 2).

Task 9 – Equipment Procurement

Pangea will coordinate procurement of remediation equipment for the proposed remediation. If SVE is selected, Pangea anticipates using of a PD blower. If DPE is selected, Pangea anticipates using either a PD or liquid-ring vacuum pump. Pangea may rent a blower/oxidizer system with a BAAQMD various location permit, if available and deemed cost effective. If vapor-phase hydrocarbon concentrations are low enough, granular activated carbon may be used to abate soil vapor to control costs. An appropriate air compressor will be selected to conduct sparging at flow rates of approximately 2-5 cubic feet per minute (cfm) per well during aggressive AS and rates of approximately 1 cfm for low-flow AS (biosparging).

Task 10 – Remediation System Installation, Startup, Operation and Maintenance

Upon completion of the additional remediation wells, Pangea will observe installation of the remediation system by a licensed contractor. The installation contractor will be retained to install the system in accordance with building and use permit conditions. The remediation piping manifold and equipment compound will be located near or within the existing building at the site. Electrical service will be provided to the equipment location as required. An electrical ground will be provided for the remediation equipment. Supplemental propane or natural gas may also be provided for the thermal/catalytic oxidizer. The remediation piping will be installed aboveground or underground. All underground piping will be buried at least 18 inches below grade with magnetic warning tape within each trench. Long-radius elbow piping will be used to ease pulling of hose and reduce pressure loss during extraction and injection. The underground piping will be tested prior to completion of installation activities. All conveyance piping will be pneumatically tested at 10 psi for one hour, or in accordance with additional specifications or manufacturer requirements. The piping manifold will include valves, gauges and sampling ports to control and measure flow within each well. An autodialer may be installed to alert Pangea technicians in the event of a system shutdown.

Upon completion of system installation and groundwater sampling of new wells, Pangea will commence equipment testing and system startup. The remediation system will be started and operated in accordance with BAAQMD air permit requirements and manufacturer recommendations. Pangea will monitor the applied vacuum, vapor extraction flow rates, hydrocarbon concentrations in extracted vapor for individual

wells and the system influent. Pangea will monitor the air injection pressures and flow rates for each air sparge well. Vapor samples will be periodically collected from each vapor extraction well and analyzed using a PID or organic vapor analyzer. Vapor samples will also be periodically collected for laboratory analysis.

To help ensure capture of hydrocarbon vapors created by sparging, Pangea will first conduct either SVE or DPE without AS to establish initial vapor-phase concentrations in the subsurface. Pangea will then commence AS within a few AS wells located within the center of the extraction network. After hydrocarbon concentrations in extracted vapor decrease to near initial pre-AS levels, Pangea will commence sparging in additional wells. Pangea will also keep the AS rate well below the SVE rate. Vacuum/pressure influence will be monitored periodically in site monitoring wells.

Again, AS with SVE or DPE will be conducted aggressively at first, using sufficiently large equipment to sparge the site and capture and treat contaminant vapors created by sparging. After aggressive AS with SVE or DPE, Pangea may also use different remediation equipment, if merited to provide more cost-effective extraction and treatment of water and vapor as concentrations decrease. Pangea may also decrease air sparge injection rates to perform low-flow air sparging (biosparging). With biosparging, air sparging is intentionally conducted at low flow rates to avoid the creation of significant vapor-phase contaminants. The focus of biosparging is to oxygenate groundwater, thereby enhancing the natural degradation of contaminants.

Pangea plans to conduct operation and maintenance at least weekly during the first three months of operation. We will perform routine system maintenance, record meter readings, and collect vapor samples to comply with permit conditions and evaluate system performance. We will manage discharge of any groundwater extracted by the system.

Task 11 – System Installation and Startup Report Preparation

Upon completion of startup and initial operation, Pangea will prepare a system startup report. The report will describe the remedial activities, present tabulated data, and offer conclusions and recommendations for future site remediation. Site remediation performance data will be included in quarterly monitoring reports.

Task 12 – Geotracker Information and Surveying

Upon completion of wellhead modifications during system installation, Pangea will retain a licensed surveyor to survey the modified elevations of the remediation wells to facilitate uploading to the state Geotracker database. Technical reports will also be uploaded to the state Geotracker database.

SCHEDULE

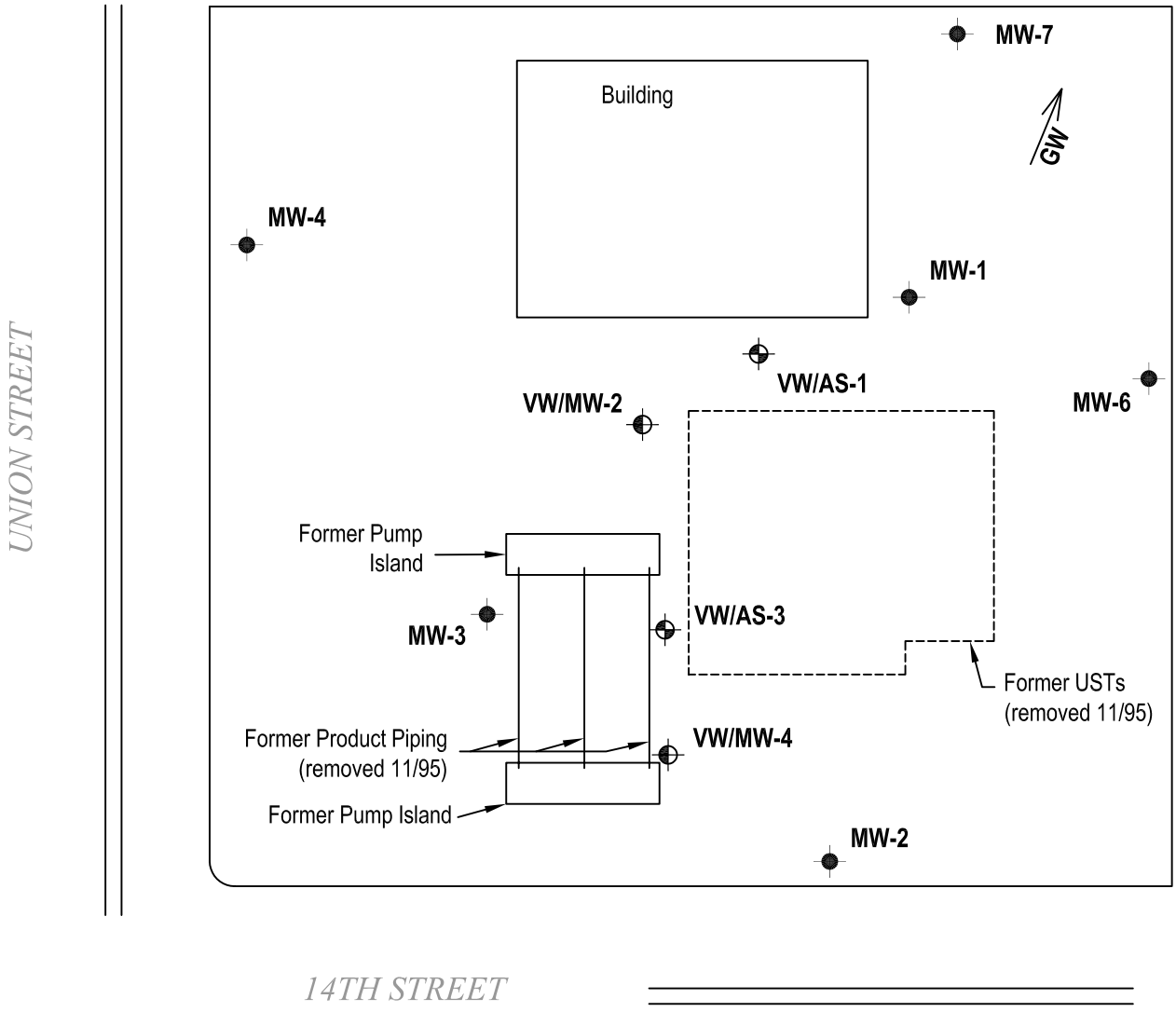
Based on site conditions and the seasonal fluctuation of groundwater, Pangea anticipates that site remediation would be most effective during the drier months of the year (June through November). Assuming CAP approval by the end of March 2008, test well installation and pilot testing could occur in the early dry season (May-June 2008). System installation could be performed over the summer, with the goal of system startup by the late summer/early fall 2008.

ATTACHMENTS

Figure 1 – Site Map
Figure 2 – Primary Contaminant Impact Area
Figure 3 – Tentative DPE/AS Well Locations and Influence Area
Figure 4 – Proposed Test Well Locations

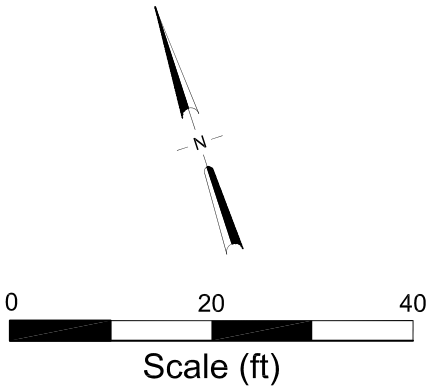
Table 1 – Soil Analytical Data and ESLs
Table 2 – Groundwater Analytical Data and ESLs

Appendix A – Agency Correspondence
Appendix B – Site History and Historical Figures
Appendix C – Standard Operating Procedures
Appendix D – Pilot Test Data Collection



EXPLANATION

- Groundwater monitoring well
- Combination air sparge/soil vapor extraction well
- Combination soil vapor extraction well/monitoring well
- GW — Estimated groundwater flow direction



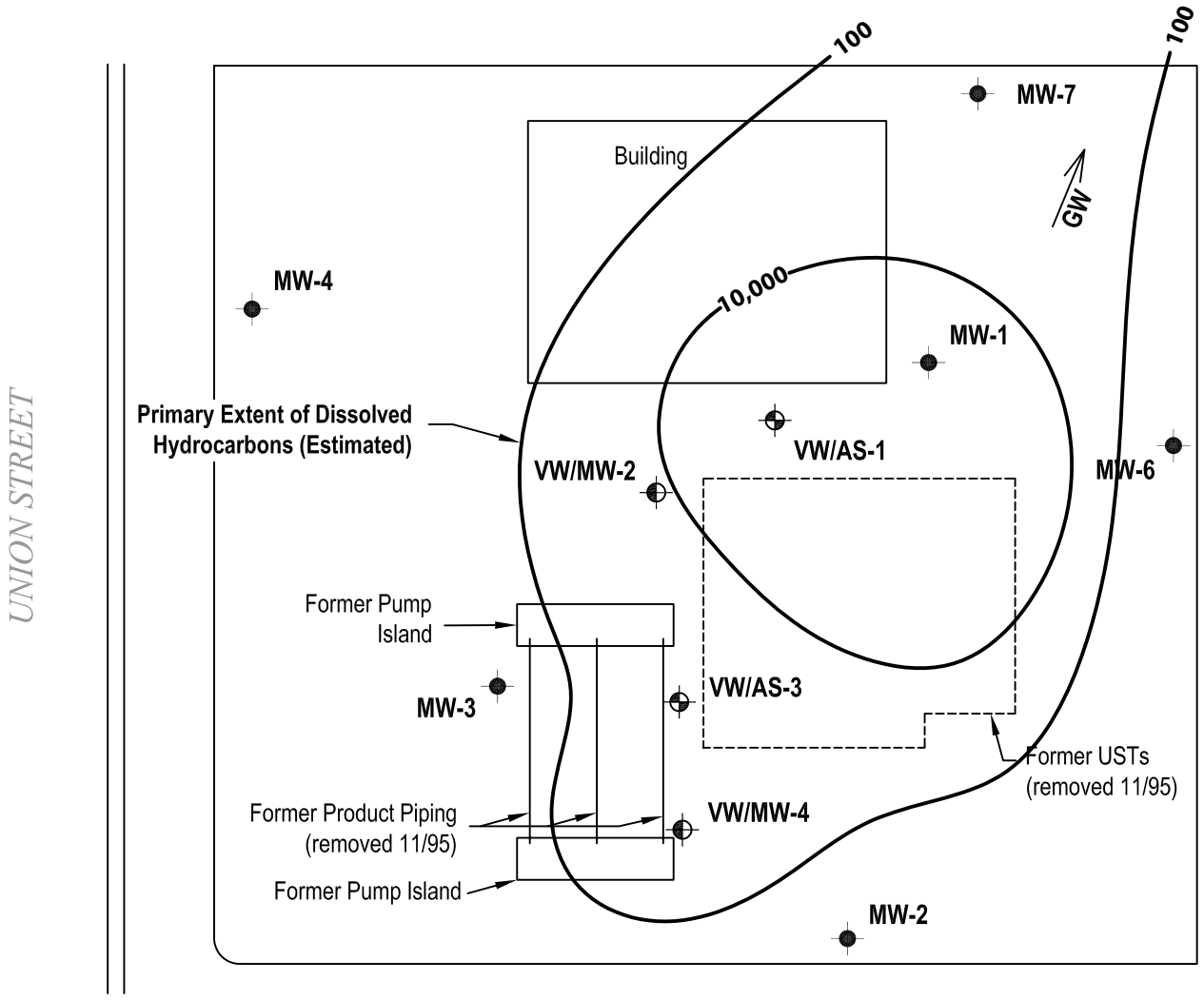
Figure

1

Former Shell Service Station
1230 14th Street
Oakland, California

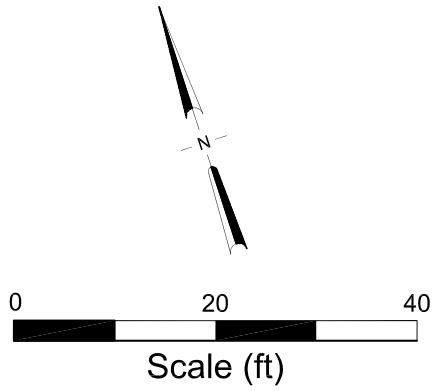
PANGEA

Site Map



EXPLANATION

- Groundwater monitoring well
- Combination air sparge/soil vapor extraction well
- Combination soil vapor extraction well/monitoring well
- Estimated primary extent of dissolved hydrocarbons in ppb
- GW — Estimated groundwater flow direction



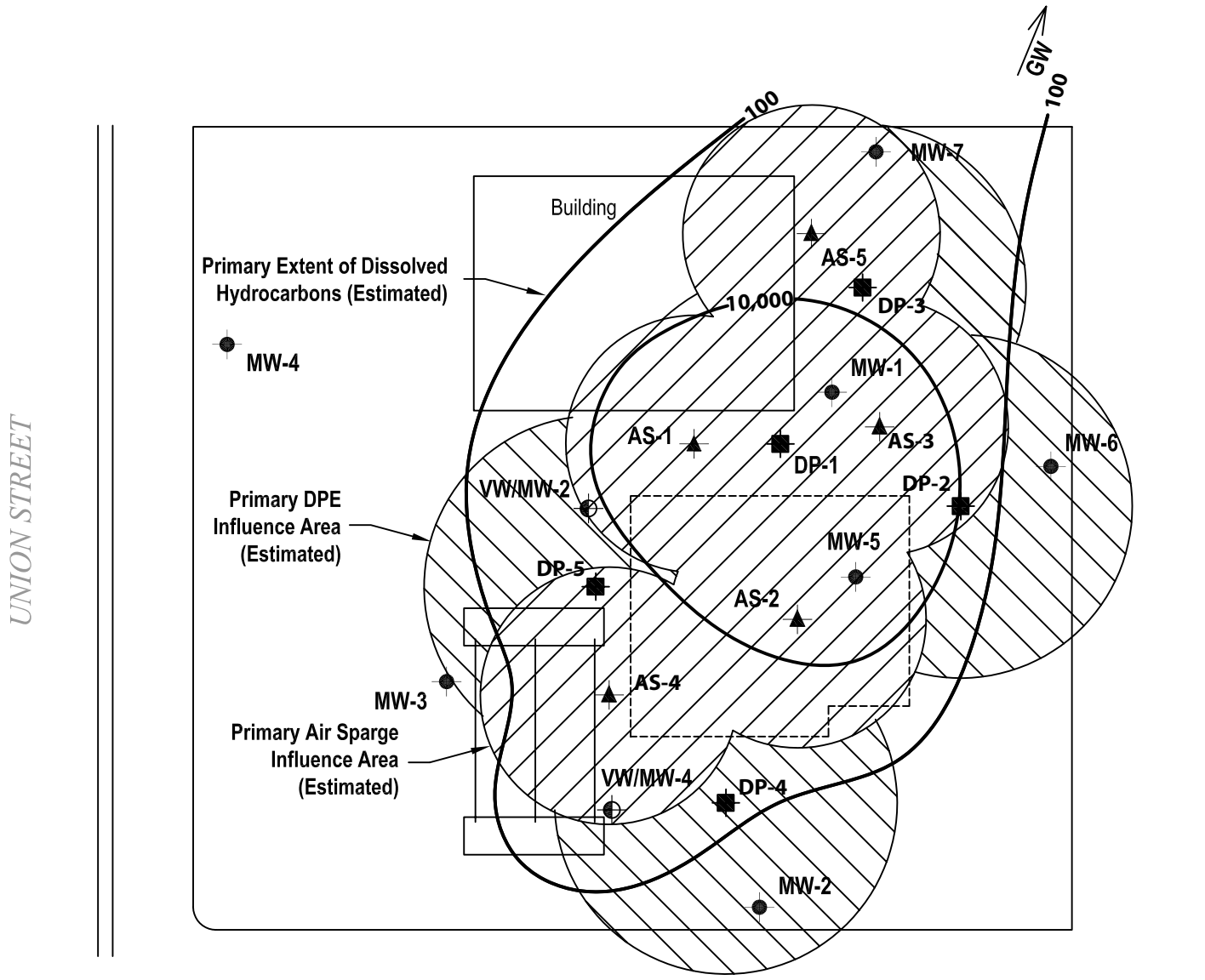
Figure

2

Former Shell Service Station
1230 14th Street
Oakland, California

PANGEA

Primary Contaminant Impact Area



EXPLANATION

- DP-1 — Proposed dual phase extraction (DPE) well (5 wells); estimated 20' influence radius
- AS-1 — Proposed air sparge well (AS) (5 wells); estimated 15' influence radius (AS-1 and AS-3 to replace damaged VW/AS wells)
- Groundwater monitoring well
- Combination soil vapor extraction well/monitoring well
- Estimated primary extent of dissolved hydrocarbons in ppb
- GW — Estimated groundwater flow direction

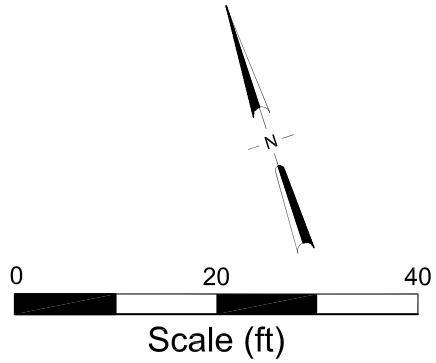
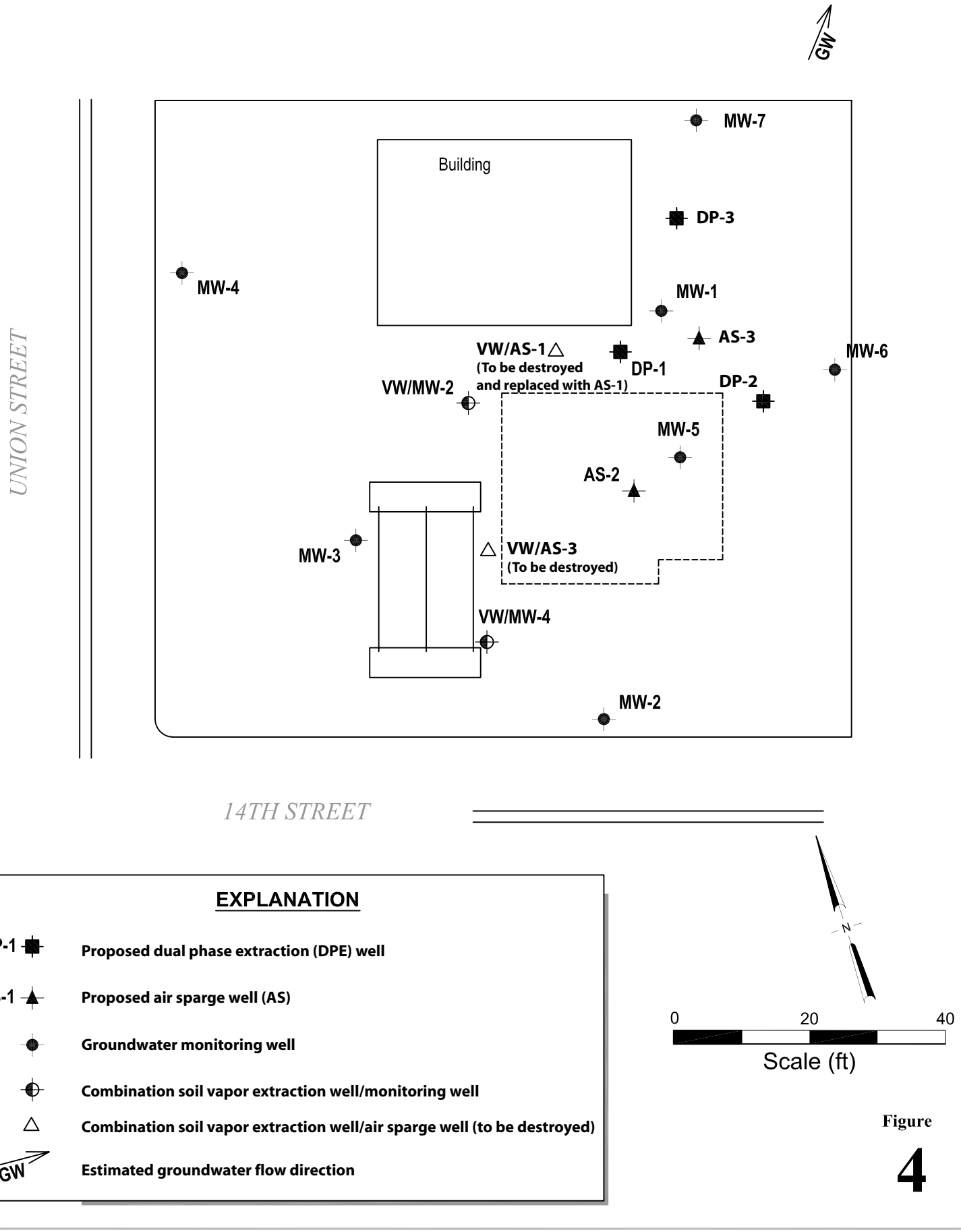


Figure
3

Former Shell Service Station
1230 14th Street
Oakland, California

PANGEA

Tentative DPE/AS Well Locations and Influence Area



Figure

4

Former Shell Service Station
1230 14th Street
Oakland, California

PANGEA

Proposed Test Well Locations

Table 1 Soil Analytical Data and ESLs - Former Shell-branded Service Station, 1230 14th St., Oakland, California

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Oil and Grease	TPHd
			←			(ppm)		→		
Commercial ESL, drinking water			**83**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**2,500**	**83**
Residential ESL, drinking water			83	0.044	2.9	3.3	2.3	0.023	410	83
Commercial ESL, non-drinking water			450	0.26	29	33	100	8.4	2,500	150
Residential ESL, non-drinking water			100	0.12	29	33	31	8.4	410	100
November 2003 Post-Peroxide Injection Sampling										
S-18-4	11/7/2003	4	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-18-9	11/7/2003	9	**1,800**	**4.0**	**35**	**21**	**150**	--	--	--
S-18-14	11/7/2003	14	**2,000**	**27**	**120**	**42**	**230**	--	--	--
S-18-19	11/7/2003	19	<1.0	0.028	0.073	0.019	0.10	--	--	--
S-18-24	11/7/2003	24	<4.6	<0.023	0.027	<0.023	0.061	--	--	--
S-19-4	11/7/2003	4	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-19-8	11/7/2003	8	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-19-9	11/7/2003	9	3.5	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-19-14	11/7/2003	14	**2,000**	**9.6**	**71**	**34**	**190**	--	--	--
S-19-19	11/7/2003	19	<1.0	0.0075	0.017	0.0079	0.036	--	--	--
S-20-9	11/7/2003	9	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-20-15	11/7/2003	15	<5.0	**1.2**	<0.025	0.095	0.026	--	--	--
S-20-19.5	11/7/2003	19.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-20-21	11/7/2003	21	<4.6	**0.84**	<0.023	0.067	0.026	--	--	--
S-20-24	11/7/2003	24	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-21-4	11/7/2003	4	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-21-9	11/7/2003	9	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
S-21-11	11/7/2003	11	**680**	<0.50	<0.50	**4.4**	**14**	--	--	--
S-21-14	11/7/2003	14	**1,400**	**5.5**	**67**	**26**	**130**	--	--	--
S-21-19	11/7/2003	19	<1.0	0.0083	0.033	0.010	0.044	--	--	--
S-21-24	11/7/2003	24	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--
June 2002 Soil Investigation										
S-10 5.0-5.5	6/7/2002	5.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-10 8.5-9.0	6/7/2002	8.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-10 10-10.5	6/7/2002	10.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-10 12.5-13	6/7/2002	12.5	1,700	1.2	6.3	25	120	--	--	--
S-10 15-15.5	6/7/2002	15.0	4,300	4.3	46	57	470	--	--	--
S-10 17.5-18	6/7/2002	17.5	<1.0	0.012	0.012	0.012	0.062	--	--	--
S-10 20-20.5	6/7/2002	20.0	690	2	9.1	11	56	--	--	--
S-10 22.5-23	6/7/2002	22.5	<1.0	<.005	<.005	<.005	<.005	--	--	--

Table 1 Soil Analytical Data and ESLs - Former Shell-branded Service Station, 1230 14th St., Oakland, California

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Oil and Grease	TPHd
			←			(ppm)			→	
Commercial ESL, drinking water			**83**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**2,500**	**83**
Residential ESL, drinking water			83	0.044	2.9	3.3	2.3	0.023	410	83
Commercial ESL, non-drinking water			450	0.26	29	33	100	8.4	2,500	150
Residential ESL, non-drinking water			100	0.12	29	33	31	8.4	410	100
S-10 24.5-25	6/7/2002	24.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-11 5-5.5	6/7/2002	5.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-11 7.5-8	6/7/2002	7.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-11 10.5-11	6/7/2002	10.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-11 12.5-13	6/7/2002	12.5	1,400	3.7	26	21	140	--	--	--
S-11 15-15.5	6/7/2002	15.5	3,200	8.6	55	42	230	--	--	--
S-11 17.5-18	6/7/2002	17.5	330	1.3	5.9	4.2	24	--	--	--
S-11 20-20.5	6/7/2002	20.0	<1.0	0.015	0.018	<0.005	0.019	--	--	--
S-11 22.5-23	6/7/2002	22.5	<1.0	0.019	0.045	0.015	0.092	--	--	--
S-11 24.5-25	6/7/2002	24.5	<1.0	0.01	0.023	0.062	0.037	--	--	--
S-11 26-26.5	6/7/2002	26.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-11 28.5-29	6/7/2002	28.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-12 5-5.5	6/7/2002	5.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-12 7.5-8	6/7/2002	7.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-12 13.5-14	6/7/2002	13.5	650	5.7	30	12	64	--	--	--
S-12 15-15.5	6/7/2002	15.0	13,000	130	740	290	1,500	--	--	--
S-12 17.5-18	6/7/2002	17.5	16	0.65	2.1	0.42	2.3	--	--	--
S-12 20-20.5	6/7/2002	20.0	2	0.058	0.19	0.049	0.29	--	--	--
S-12 22.5-23	6/7/2002	22.5	220	1.3	9	4.2	24	--	--	--
S-12 24.5-25	6/7/2002	24.5	1.9	0.047	0.2	0.052	0.26	--	--	--
S-13 5-5.5	6/7/2002	5.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-13 7.5-8	6/7/2002	7.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-13 12.5-13	6/7/2002	12.5	9,800	26	310	130	1,100	--	--	--
S-13 15-15.5	6/7/2002	15.0	3,900	37	180	76	360	--	--	--
S-13 17.5-18	6/7/2002	17.5	4,700	6.5	130	59	580	--	--	--
S-13 20-20.5	6/7/2002	20.0	<1.0	0.028	0.0085	<0.005	0.068	--	--	--
S-14 5.5-6	6/10/2002	5.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-14 7.5-8	6/10/2002	7.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-14 9-9.5	6/10/2002	9.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-14 11.5-12	6/10/2002	11.5	<1.0	<.005	<.005	<.005	0.0078	--	--	--
S-14 12.5-13	6/10/2002	12.5	670	<0.25	0.71	5.4	19	--	--	--

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Commercial ESL, non-drinking water			450	0.26	29	33	100	8.4	2,500	150
Residential ESL, non-drinking water			100	0.12	29	33	31	8.4	410	100
S-14 15-15.5	6/10/2002	15.0	1,100	0.88	25	22	120	--	--	--
S-14 17.5-18	6/10/2002	17.5	3.8	0.1	0.3	0.89	0.48	--	--	--
S-14 20-20.5	6/10/2002	20.0	4	0.39	0.51	0.12	0.5	--	--	--
S-15 5-5.5	6/10/2002	5.0	<1.0	<.005	<.005	<.005	0.011	--	--	--
S-15 7.5-8	6/10/2002	7.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-15 10-10.5	6/10/2002	10.0	**2.3**	<.005	<.005	<.005	<.005	--	--	--
S-15 12.5-13	6/10/2002	12.5	<1.0	<.005	<.005	<.005	0.032	--	--	--
S-15 15-15.5	6/10/2002	15.0	1,200	1.9	4.3	22	110	--	--	--
S-15 17.5-18	6/10/2002	17.5	24	1.3	1.9	0.4	1.9	--	--	--
S-15 20-20.5	6/10/2002	20.0	270	0.51	3.5	4.2	21	--	--	--
S-16 7.5-8	6/10/2002	7.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-16 10-10.5	6/10/2002	10.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-16 11.5-12	6/10/2002	11.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-16 15-15.5	6/10/2002	15.0	4,500	<1.0	4	94	460	--	--	--
S-16 17.5-18	6/10/2002	17.5	5,000	<1.0	23	76	360	--	--	--
S-16 20-20.5	6/10/2002	20.0	1.3	0.12	0.0088	0.08	0.08	--	--	--
S-17 5-5.5	6/10/2002	5.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-17 10-10.5	6/10/2002	10.0	<1.0	<.005	<.005	<.005	<.005	--	--	--
S-17 12.5-13	6/10/2002	12.5	4,300	0.64	6.8	48	340	--	--	--
S-17 15-15.5	6/10/2002	15.0	590	0.41	5.8	11	58	--	--	--
S-17 17.5-18	6/10/2002	17.0	5.2	0.57	0.073	0.16	0.66	--	--	--
S-17 20-20.5	6/10/2002	20.0	<1.0	<.005	<.005	<.005	0.013	--	--	--
S-18 2.5-3	6/10/2002	2.5	<1.0	<.005	<.005	<.005	<.005	--	--	--
MW-5 Installation										
MW-5-9.5	9/27/2001	9.5	3.9	<0.0050	<0.0050	0.0069	0.019	<0.50	--	--
MW-5-14.0	9/27/2001	14.5	790	2.7	30	11	67	<1.0	--	--
December 2000 Geoprobe Investigation										
GP-1-5	12/11/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-1-10	12/11/2000	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-1-15	12/11/2000	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--

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Commercial ESL, non-drinking water			450	0.26	29	33	100	8.4	2,500	150
Residential ESL, non-drinking water			100	0.12	29	33	31	8.4	410	100
GP-1-20	12/11/2000	20.0	120	<0.020	0.022	0.64	1.1	<0.020	--	--
GP-2-5	12/11/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-2-10.5	12/11/2000	10.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-2-15	12/11/2000	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-3-5	12/11/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-3-10.0	12/11/2000	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-3-15.0	12/11/2000	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-4-5	12/11/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-4-10	12/11/2000	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-4-15	12/11/2000	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-5-5	12/11/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-5-10	12/11/2000	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
GP-5-15	12/11/2000	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--
March 1996 Investigation										
SB-A/(MW-1)-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	160	--
SB-A/(MW-1)-16.0	03/06/96	16.0	9.8	1.9	0.4	0.22	1.1	--	57	--
SB-A/(MW-1)-20.5	03/06/96	20.5	5.9	0.89	0.049	0.19	0.25	--	80	--
SB-B/(MW-2)-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-B/(MW-2)-16.0	03/06/96	16.0	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-C-11.75	03/06/96	11.8	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-C-15.5	03/06/96	15.5	1.9	0.022	0.12	0.086	0.32	--	--	--
SB-D/(MW-3)-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-D/(MW-3)-15.5	03/06/96	15.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-E-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	<50	--
SB-E-16.0	03/06/96	16.0	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	200	--
SB-F(VW/AS)-1-5.5	03/07/96	5.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-F(VW/AS-1)-10.5	03/07/96	10.5	62	0.97	4.2	1.4	8.0	--	--	--
SB-F(VW/AS-1)-15.5	03/07/96	15.5	7.4	1.7	0.44	0.2	0.6	--	--	--

Table 1 Soil Analytical Data and ESLs - Former Shell-branded Service Station, 1230 14th St., Oakland, California

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Oil and Grease	TPHd
			←			(ppm)				→
Commercial ESL, drinking water			**83**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**2,500**	**83**
Residential ESL, drinking water			83	0.044	2.9	3.3	2.3	0.023	410	83
Commercial ESL, non-drinking water			450	0.26	29	33	100	8.4	2,500	150
Residential ESL, non-drinking water			100	0.12	29	33	31	8.4	410	100
SB-F(VW/AS-1)-20.5	03/07/96	20.5	20	2.6	1.7	0.5	2.0	--	--	--
SB-G(VW/MW-2)-8.5	03/07/96	8.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-G(VW/MW-2)-10.5	03/07/96	10.5	<1.0	0.0032	<0.0025	<0.0025	<0.0025	--	--	--
SB-G(VW/MW-2)-20.5	03/07/96	20.5	2.9	0.47	0.34	0.15	0.57	--	--	--
SB-H(VW/AS-3)-8.5	03/07/96	8.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-H(VW/AS-3)-10.5	03/07/96	10.5	<1.0	0.018	<0.0025	<0.0025	0.014	--	--	--
SB-H(VW/AS-3)-21.0	03/07/96	21.0	1.0	0.047	0.016	0.0037	0.017	--	--	--
SB-I(VW/MW-4)-5.5	03/08/96	5.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-I(VW/MW-4)-8.5	03/08/96	8.5	80	0.14	0.33	1.3	5.2	--	--	--
SB-I(VW/MW-4)-15.5	03/08/96	15.5	3.4	0.23	0.093	0.1	0.42	--	--	--
SB-J-10.5	03/08/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
SB-K(MW-4)-10.5	03/08/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--
Product Piping Samples										
TS-1-4.0	11/27/1995	4	<1.0	<0.0050	0.005	<0.0050	<0.0050	--	--	--
TS-2-2.0	11/27/1995	2	<1.0	<0.0050	0.0057	<0.0050	0.0075	--	--	--
TS-3-3.0	11/27/1995	3	<1.0	<0.0050	<0.0050	<0.0050	0.0069	--	--	--
TS-4-3.0	11/27/1995	3	<0.005	0.011	0.038	0.0073	0.043	--	--	--
TS-5-2.5	11/27/1995	2.5	46	<0.10	<0.10	<0.10	2	--	--	--
TS-6-3.0	11/27/1995	3	3,100	30	<6.0	33	230	--	--	--
Tankpit Excavation Confirmation Samples										
S2-15.0	11/27/1995	15	3,600	<6.0	140	78	430	--	--	--
S3-15.0	11/27/1995	15	1,000	7.6	33	19	100	--	--	--
S4-15.0	11/27/1995	15	5,600	72	280	110	580	--	--	--
S5-15.0	11/27/1995	15	2,800	36	160	64	350	--	--	--
S6-15.0	11/27/1995	15	3,800	<6.0	<6.0	76	350	--	--	--
S7-15.0	11/27/1995	15	570	<0.50	<0.50	4.9	13	--	--	--
S8-15.0	11/27/1995	15	3,200	60	200	69	350	--	--	--
S9-15.0	11/27/1995	15	5,100	62	260	110	570	--	--	--
1993 UST and Dispenser Removal Samples										

Table 1 Soil Analytical Data and ESLs - Former Shell-branded Service Station, 1230 14th St., Oakland, California

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Oil and Grease	TPHd
			←			(ppm)			→	
Commercial ESL, drinking water			**83**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**2,500**	**83**
Residential ESL, drinking water			83	0.044	2.9	3.3	2.3	0.023	410	83
Commercial ESL, non-drinking water			450	0.26	29	33	100	8.4	2,500	150
Residential ESL, non-drinking water			100	0.12	29	33	31	8.4	410	100
S-1	08/25/93	8.5	67	0.038	0.089	0.110	0.380	--	7,700	1,200
S-2	08/25/93	14.0	2,200	1.4	3.2	3.5	13	--	--	--
S-3	08/25/93	11.0	530	0.4	0.76	0.83	3.1	--	--	--
S-4	08/25/93	11.0	40	0.031	0.059	0.066	0.29	--	--	--
S-5	08/25/93	11.0	1.4	<0.005	0.0063	0.0081	0.025	--	--	--
S-6	08/25/93	13.0	1,600	0.97	2.3	2.7	10	--	--	--
S-7	08/25/93	11.0	11,000	6.7	16	18	69	--	--	--
S-8	08/25/93	11.0	18,000	11	26	30	110	--	--	--
S-9	08/25/93	11.0	6,200	3.7	8.7	10	37	--	--	--
DS-1	08/25/93	1.0	0.013	0.0070	0.017	0.021	0.072	--	--	--
DS-2	08/25/93	1.0	0.0020	0.0053	0.0089	0.012	0.031	--	--	--
DS-3	08/25/93	1.0	0.0013	<0.0050	0.0059	0.0061	0.018	--	--	--
DS-4	08/25/93	1.0	0.0027	0.0055	0.0094	0.016	0.047	--	--	--
DS-5	08/25/93	1.0	0.0034	0.0059	0.011	0.018	0.061	--	--	--
DS-6	08/25/93	1.0	0.011	0.0068	0.015	0.018	0.064	--	--	--
VSW-1	08/25/93	6.0	4,800	2.9	7.0	8.0	30	--	--	--
VSW-2	08/25/93	6.0	0.021	0.15	0.29	0.33	1.3	--	--	--
1991 Soil Borings										
SB1-6-6.5	2/21/1991	6.0	11	0.014	0.37	0.22	1.2	--	--	--
SB1-10.5-11	2/21/1991	10.5	4.6	0.15	0.5	0.13	0.68	--	--	--
SB1-15.5-16	2/21/1991	15.5	7.5	2.1	1.8	0.18	1.1	--	--	--
SB2-6-6.5	2/21/1991	6.0	<1.0	<.0050	<.0050	<.0050	0.034	--	--	--
SB2-10.5-11	2/21/1991	10.5	1.8	0.062	0.038	0.035	0.085	--	--	--
SB2-15.5-16	2/21/1991	15.5	6.1	1.2	1.4	0.15	0.8	--	--	--
SB3-6-6.5	2/21/1991	6.0	<1.0	0.038	0.0054	0.015	0.034	--	--	--
SB3-10.5-11	2/21/1991	10.5	1,600	18	98	35	190	--	--	--
SB3-15.5-16	2/21/1991	15.5	2.4	0.31	0.21	0.064	0.35	--	--	--

Table 1 Soil Analytical Data and ESLs - Former Shell-branded Service Station, 1230 14th St., Oakland, California

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Oil and Grease	TPHd
			←			(ppm)	→			
Commercial ESL, drinking water			**83**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**2,500**	**83**
Residential ESL, drinking water			83	0.044	2.9	3.3	2.3	0.023	410	83
Commercial ESL, non-drinking water			450	0.26	29	33	100	8.4	2,500	150
Residential ESL, non-drinking water			100	0.12	29	33	31	8.4	410	100

Notes:

Commercial/Residential ESL, drinking water = Table A - Environmental Screening Levels for Shallow Soil (<3 meters) where groundwater **is** a current or potential source of drinking water, as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2007).

Commercial/Residentail ESL, non-drinking water = Table B - Environmental Screening Levels for Shallow Soil (<3 meters) where groundwater is a not current or potential source of drinking water, as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2007).

130 = Soil concentrations from after the 2003 peroxide injection that exceed the applicable ESLs (commercial site, potential drinking water) are shown in **bold**.

Sample depth = Feet below ground surface

ppm = parts per million (milligrams per kilogram).

TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015C.

TPHg = Total Petroleum Hydrocarbons as gasoline, analyzed by EPA Method 8015 in 3/6/96 event; by EPA Method 8260B for susequent events.

Benzene, toluene, ethylbenzene, and xylene analyzed by EPA Method 8020 in 3/6/96 event; by EPA Method 8260B for subsequent events

MTBE = Methyl tertiary butyl ether, analyzed by EPA Method 8260B.

Oil and grease by Standard Method 5520.

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Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water	GW Elevation (MSL)	TPHg (TPH gasolines)	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
		(ft)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Final ESL for groundwater, non-dw:		--	--	5,000	540	400	300	5,300	1,800
Final ESL for groundwater, dw:		--	--	100	1.0	40	30	20	5
Ceiling Value, non-dw:		--	--	5,000	20,000	400	300	5,300	1,800
Drinking Water Toxicity:		--	--	210	1.0	150	300	1,800	13
Indoor Air Impacts:		--	--	SG	540	380,000	170,000	160,000	24,000
Aquatic Habitat Goal:		--	--	500	46	130	290	100	8,000
MW-1	03/25/96	9.53	9.05	37,000	7,400	1,500	720	3,300	<500
18.58	06/21/96	10.72	7.86	35,000	9,900	460	340	3,500	890
	09/26/96	12.88	5.70	19,000	8,200	510	780	790	<250
	12/19/96	12.59	5.99	27,000	120	1,200	1,400	2,800	<100
	12/19/96	12.59	5.99	32,000	12,000	1,300	1,600	3,100	830
	03/25/97	11.10	7.48	39,000	13,000	1,600	840	3,100	730
	06/26/97	12.42	6.16	--	--	--	--	--	--
	09/26/97	13.31	5.27	--	--	--	--	--	--
	12/05/97	12.65	5.93	--	--	--	--	--	--
	02/19/98	6.46	12.12	16,000	5,500	450	500	800	<500
	06/08/98	6.62	11.96	--	--	--	--	--	--
	08/25/98	11.83	6.75	--	--	--	--	--	--
	12/28/98	12.01	6.57	--	--	--	--	--	--
	03/26/99	9.15	9.43	--	--	--	--	--	--
	06/30/99	11.22	7.36	--	--	--	--	--	--
	09/30/99	11.89	6.69	--	--	--	--	--	--
	12/27/99	13.55	5.03	34,800	8,660	953	956	2,770	<1,000
	01/21/00	13.42	5.16	40,600	14,700	1,850	1,210	3,670	<500
	03/07/00	8.11	10.47	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	04/17/00	9.78	8.80	--	--	--	--	--	--
	04/18/00	--	--	18,300	8,060	543	528	872	<50.0
(MW- 1 cont'd)	09/21/00	13.11	5.47	--	--	--	--	--	--
	10/17/00	12.61	5.97	15,800	6,720	435	587	887	351(<66.7)
	01/09/01	12.94	5.64	--	--	--	--	--	--
	04/27/01	10.73	7.85	1,400	650	28	58	48	(<10)
	07/03/01	12.00	6.58	--	--	--	--	--	--
	12/06/01	10.53	8.05	4,500	1,500	85	160	210	(<50)
	01/23/02	9.33	9.25	--	--	--	--	--	--
	04/17/02	10.49	8.09	230	12	<0.50	4.6	2.5	(<5.0)
	07/18/02	11.98	6.60	--	--	--	--	--	--
	11/11/02	13.00	5.58	12,000	2,600	240	470	640	(-8.5)
	01/16/03	9.68	8.90	--	--	--	--	--	--
	03/13/03	10.45	8.13	820	340	2.7	<2.0	3.2	(<20)
	04/23/03	10.32	8.26	900	550	19	49	49	(<50)
	05/13/03	10.28	8.30	740	510	18	43	46	(<50)
	06/13/03	11.16	7.42	<5,000	1,500	82	180	250	(<500)
	07/14/03	11.66	6.92	5,300	3,400	160	340	420	(<20)
	09/29/03	12.44	6.14	10,000	5,700	400	670	1,000	(<50)
	10/29/03	12.63	5.95	19,000	6,600	560	820	1,300	(26)
	01/05/04	10.17	8.41	380	140	7.1	6.2	16	(<1.0)
	04/01/04	9.57	9.01	79	0.59	<0.50	<0.50	<1.0	(<0.50)
	07/02/04	11.81	6.77	4,100	2,100	33	110	81	(<10)
	11/03/04	12.53	6.05	8,000	3,800	150	480	460	(<25)
	01/04/05	9.39	9.19	120	23	1.6	2.0	3.5	(<0.50)
	04/13/05	7.63	10.95	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/13/05	10.85	7.73	930 e	400	6.1	<5.0	10	(<5.0)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	10/28/05	12.44	6.14	8,300	5,500	190	590	470	(<25)
	01/17/06	8.61	9.97	<50	2.2	1.1	1.4	4.8	(<0.50)
	02/23/06	9.60	8.98	--	18.1	2.22	1.89	4.50	--
(MW- 1 cont'd)	03/09/06	7.65	10.93	--	1.80	<0.500	<0.500	1.82	--
	04/21/06	6.35	12.23	<50.0	1.54	1.03	4.20	5.82	(<0.500)
	05/01/06	7.38	11.20	268	41.3	4.62	3.83	26.1	(<0.500)
	06/23/06	10.09	8.49	3,990	362	13.1	12.4	71.5	(<0.500)
	07/11/06	10.09	8.49	6,190	3,740	52.0	67.8	982	(<0.500)
	08/30/06	11.55	7.03	29,200	7,380	596	443	1,680	(4.45)
	09/29/06	11.97	6.61	76,100	9,300	859 i	1,290	2,820 i	(<5.00)
	10/13/06	12.08	6.50	49,500	7,580	770	1,030	2,860	-2.75
	11/03/06	12.47	6.11	42,600	8,450	592	869	1,970	-2.69
	12/26/06	11.80	6.78	19,000	4,600	360	640	1,300	(<5.0)
	01/11/07	11.84	6.74	23,000	6,000	320	780	1,100	(<25)
	01/30/07	12.18	6.40	3,700	890	74	170	220	(<25)
	03/01/07	10.74	7.84	2,600	670	32	41	180	(<10)
	04/26/07	10.90	7.68	12,000 k,l	2,800	220	400	560	(<20)
	06/01/07	11.49	7.09	15,000 k	3,900	380	670	1,010	(1.8)
	06/21/07	12.07	6.51	13,000 k	3,800	400	620	1,060	(<50)
	07/03/07	12.00	6.58	21,000 k	6,100	510	960	1,760	(<50)
	08/16/07	12.55	6.03	20,000 k	5,800	460	1,100	1,730	(<50)
	12/06/07	**13.00**	**5.58**	**53,000**	**9,400**	**560**	**1,400**	**3,000**	**(<25)**
MW-2	03/25/96	8.19	9.71	<50	<0.50	<0.50	<0.50	<0.50	<2.5
17.90	06/21/96	9.94	7.96	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/26/96	12.15	5.75	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/19/96	11.70	6.20	<50	<0.5	<0.5	<0.5	<0.5	<2.5

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	03/25/97	9.25	8.65	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/26/97	11.36	6.54	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/26/97	12.56	5.34	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/26/97	12.56	5.34	<50	<0.50	<0.50	<0.50	<0.50	<2.5
(MW-2 Cont'd)	12/05/97	11.15	6.75	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	02/19/98	5.61	12.29	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/08/98	5.58	12.32	<50	<0.30	<0.30	<0.30	<0.60	<10
	08/25/98	10.67	7.23	--	--	--	--	--	--
	12/28/98	11.65	6.25	<50.0	<0.500	<0.500	<0.500	<0.500	<2.00
	03/26/99	8.60	9.30	--	--	--	--	--	--
	06/30/99	10.30	7.60	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00
	09/30/99	10.77	7.13	--	--	--	--	--	--
	12/27/99	12.21	5.69	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00
	03/07/00	7.13	10.77	--	--	--	--	--	--
	04/17/00	8.35	9.55	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50
	09/21/00	11.76	6.14	--	--	--	--	--	--
	10/17/00	11.80	6.10	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50
	01/09/01	12.14	5.76	--	--	--	--	--	--
	04/27/01	9.85	8.05	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/03/01	11.20	6.70	--	--	--	--	--	--
	12/06/01	10.77	7.13	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	01/23/02	8.64	9.26	--	--	--	--	--	--
	04/17/02	9.61	8.29	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	07/18/02	11.09	6.81	--	--	--	--	--	--
	11/11/02	12.16	5.74	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	01/16/03	8.92	8.98	--	--	--	--	--	--
	03/13/03	9.60	8.30	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	04/23/03	9.48	8.42	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	05/13/03	9.45	8.45	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	06/13/03	10.28	7.62	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	07/14/03	10.67	7.23	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	09/29/03	11.58	6.32	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
(MW-2 cont'd)	10/29/03	11.76	6.14	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	01/05/04	9.36	8.54	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	04/01/04	8.77	9.13	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	07/02/04	11.04	6.86	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	11/03/04	11.71	6.19	<50	<0.50	<0.50	<0.50	<1.0	(0.54)
	01/04/05	8.68	9.22	<50	<0.50	<0.50	<0.50	<1.0	(0.62)
	04/13/05	7.13	10.77	<50	<0.50	<0.50	<0.50	<0.50	(1.7)
	07/13/05	10.30	7.60	<50	<0.50	<0.50	<0.50	<1.0	(2.3)
	10/28/05	11.61	6.29	<50	<0.50	<0.50	<0.50	<1.0	(4.2)
	01/17/06	8.21	9.69	<50	<0.50	<0.50	<0.50	<0.50	(5.0)
	03/09/06	7.70	10.20	--	--	--	--	--	--
	04/21/06	5.83	12.07	--	--	--	--	--	--
	05/01/06	6.34	11.56	<50.0	<0.500	<0.500	<0.500	<0.500	(4.33)
	08/30/06	10.71	7.19	<50.0	<0.500	<0.500	<0.500	<0.500	(1.98)
	09/29/06	11.03	6.87	--	--	--	--	--	--
	11/03/06	11.62	6.28	<50.0	<0.500	<0.500	<0.500	<0.500	(3.08)
	01/30/07	11.30	6.60	<50	<0.50	<0.50	<0.50	<1.0	(2.9)
	06/01/07	10.52	7.38	<50 k	0.71	<1.0	0.20 m	0.39 m	(1.7)
	08/16/07	11.60	6.30	<50 k	<0.50	<1.0	<1.0	<1.0	(1.3)
	12/06/07	**12.39**	**5.51**	**<50**	**0.97**	**<0.5**	**0.56**	**1.5**	**0.99**
MW-3	03/25/96	8.47	9.71	<50	<0.50	<0.50	<0.50	<0.50	<2.5

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
18.18	06/21/96	10.40	7.78	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/26/96	12.45	5.73	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/19/96	12.14	6.04	<50	<0.5	<0.5	<0.5	<0.5	<2.5
	03/25/97	9.54	8.64	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/26/97	11.66	6.52	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/26/97	12.85	5.33	<50	<0.50	<050	<0.50	<0.50	<2.5
(MW-3 cont'd)	12/05/97	11.44	6.74	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	02/19/98	6.78	11.40	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/08/98	6.82	11.36	<50	<0.30	<0.30	<0.30	<0.60	<10
	06/08/98	6.82	11.36	<50	<0.30	<0.30	<0.30	<0.60	<10
	08/25/98	11.09	7.09	--	--	--	--	--	--
	12/28/98	11.84	6.34	<50.0	<0.500	<0.500	<0.500	<0.500	<2.00
	03/26/99	8.57	9.61	--	--	--	--	--	--
	06/30/99	10.61	7.57	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00
	09/30/99	11.53	6.65	--	--	--	--	--	--
	12/27/99	12.35	5.83	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00
	03/07/00	7.36	10.82	--	--	--	--	--	--
	04/17/00	8.39	9.79	<50.0	<0.500	<0.500	<0.500	<0.500	19.3
	09/21/00	12.01	6.17	--	--	--	--	--	--
	10/17/00	12.10	6.08	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50
	01/09/01	12.43	5.75	--	--	--	--	--	--
	04/27/01	10.10	8.08	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/03/01	11.45	6.73	--	--	--	--	--	--
	12/06/01	11.07	7.11	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	01/23/02	8.89	9.29	--	--	--	--	--	--
	04/17/02	9.92	8.26	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	07/18/02	11.42	6.76	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	11/11/02	12.44	5.74	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	01/16/03	9.25	8.93	--	--	--	--	--	--
	03/13/03	9.84	8.34	--	--	--	--	--	--
	04/23/03	9.71	8.47	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	05/13/03	9.70	8.48	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	06/13/03	10.58	7.60	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	07/14/03	10.98	7.20	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
(MW-3 cont'd)	09/29/03	11.84	6.34	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	10/29/03	12.05	6.13	58 b	<0.50	<0.50	<0.50	<1.0	(<0.50)
	01/05/04	9.70	8.48	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	04/01/04	9.03	9.15	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	07/02/04	11.15	7.03	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	11/03/04	11.98	6.20	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	01/04/05	8.98	9.20	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	04/13/05	7.22	10.96	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/13/05	10.30	7.88	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	10/28/05	11.81	6.37	<50 f	<0.50	<0.50	<0.50	<1.0	(<0.50)
	01/17/06	8.17	10.01	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	03/09/06	6.45	11.73	--	--	--	--	--	--
	04/21/06	5.96	12.22	--	--	--	--	--	--
	05/01/06	6.40	11.78	<50.0	<0.500	<0.500	<0.500	<0.500	<0.500(<0.500)
	08/30/06	10.95	7.23	<50.0	<0.500	<0.500	<0.500	<0.500	<0.500(<0.500)
	09/29/06	11.40	6.78	--	--	--	--	--	--
	11/03/06	11.91	6.27	<50.0	<0.500	<0.500	<0.500	<0.500	<0.500(<0.500)
	01/30/07	11.55	6.63	<50	<0.50	<0.50	<0.50	<1.0	<0.50(<0.50)
	06/01/07	10.86	7.32	<50 k	0.34 m	<1.0	<1.0	<1.0	<1.0(<1.0)
	08/16/07	11.87	6.31	<50 k	<0.50	<1.0	<1.0	<1.0	<1.0(<1.0)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	12/06/07	**14.43**	**3.75**	**<50**	**1.8**	**1.0**	**0.90**	**4.4**	**(<0.5)**
MW-4	03/25/96	9.20	8.81	<50	<0.50	<0.50	<0.50	<0.50	<2.5
18.01	06/21/96	10.25	7.76	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/26/96	12.29	5.72	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/19/96	12.47	5.54	<50	<0.5	<0.5	<0.5	<0.5	<2.5
	03/25/97	9.44	8.57	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/26/97	11.57	6.44	<50	<0.50	<0.50	<0.50	<0.50	<2.5
(MW-4 cont'd)	06/26/97	11.57	6.44	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/26/97	12.75	5.26	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/05/97	11.37	6.64	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/05/97	11.37	6.64	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	02/19/98	5.59	12.42	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/08/98	5.65	12.36	<50	<0.30	<0.30	<0.30	<0.60	<10
	08/25/98	10.98	7.03	--	--	--	--	--	--
	12/28/98	11.83	6.18	<50.0	<0.500	<0.500	<0.500	<0.500	<2.00
	03/26/99	8.40	9.61	--	--	--	--	--	--
	06/30/99	10.53	7.48	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00
	09/30/99	11.03	6.98	--	--	--	--	--	--
	12/27/99	12.53	5.48	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00
	03/07/00	7.00	11.01	--	--	--	--	--	--
	04/17/00	8.57	9.44	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50
	09/21/00	12.05	5.96	--	--	--	--	--	--
	10/17/00	11.96	6.05	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50
	01/09/01	12.33	5.68	--	--	--	--	--	--
	04/27/01	9.96	8.05	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/03/01	11.35	6.66	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water	GW Elevation (MSL)	TPHg (TPH gasolines)	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
		(ft)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
	12/06/01	10.99	7.02	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	01/23/02	8.80	9.21	--	--	--	--	--	--
	04/17/02	9.75	8.26	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	07/18/02	11.32	6.69	--	--	--	--	--	--
	11/11/02	12.36	5.65	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	01/16/03	10.33	7.68	--	--	--	--	--	--
	03/13/03	10.06	7.95	--	--	--	--	--	--
	04/23/03	9.57	8.44	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	05/13/03	9.55	8.46	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
(MW-4 cont'd)	06/13/03	10.50	7.51	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	07/14/03	10.86	7.15	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	09/29/03	11.74	6.27	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	10/29/03	11.95	6.06	58 b	<0.50	<0.50	<0.50	<1.0	(<0.50)
	01/05/04	10.35	7.66	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	04/01/04	8.81	9.20	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	07/02/04	11.10	6.91	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	11/03/04	11.85	6.16	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	01/04/05	9.06	8.95	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	04/13/05	6.84	11.17	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/13/05	10.20	7.81	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	10/28/05	11.75	6.26	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	01/17/06	8.00	10.01	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	03/09/06	6.55	11.46	--	--	--	--	--	--
	04/21/06	5.45	12.56	--	--	--	--	--	--
	05/01/06	6.14	11.87	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	08/30/06	10.82	7.19	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	09/29/06	11.29	6.72	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	11/03/06	11.81	6.20	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	01/30/07	11.45	6.56	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	06/01/07	10.72	7.29	67 k	<0.50	<1.0	<1.0	<1.0	(<1.0)
	08/16/07	11.81	6.20	<50 k	<0.50	<1.0	<1.0	<1.0	(<1.0)
	12/06/07	**12.34**	**5.67**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**(<0.50)**
MW-5	12/03/01	11.86	6.61	--	--	--	--	--	--
18.47	12/06/01	11.40	7.07	31,000	3,000	2,000	1,100	3,000	(<50)
	01/23/02	9.24	9.23	--	--	--	--	--	--
	04/17/02	10.35	8.12	33,000	3,800	2,400	1,300	4,400	(<200)
(MW-5 cont'd)	07/18/02	11.82	6.65	--	--	--	--	--	--
	11/11/02	12.86	5.61	100,000	7,100	12,000	3,000	17,000	-5.1
	01/16/03	9.57	8.90	--	--	--	--	--	--
	03/13/03	10.30	8.17	33,000	2,800	2,200	980	4,600	(<100)
	04/07/03	10.29	8.18	--	--	--	--	--	--
	04/23/03	10.15	8.32	33,000	2,900	3,100	960	5,800	(<250)
	05/13/03	10.12	8.35	30,000	2,600	1,500	850	4,500	(<250)
	06/13/03	11.00	7.47	33,000	3,400	2,300	1,000	4,400	(<500)
	07/14/03	11.39	7.08	41,000	5,100	3,500	1,400	5,100	(<50)
	09/29/03	12.24	6.23	59,000	6,600	4,200	1,500	6,500	(<50)
	10/29/03	12.45	6.02	45,000	6,800	3,500	1,500	6,400	(21)
	01/05/04	9.97	8.50	26,000	4,900	1,700	1,100	3,300	(<50)
	04/01/04	9.43	9.04	29,000	5,300	2,700	880	2,900	(<50)
	07/02/04	11.62	6.85	19,000	5,300	740	1,100	1,400	(<50)
	11/03/04	12.26	6.21	31,000	7,500	2,300	1,400	4,400	(<50)
	01/04/05	9.13	9.34	18,000	3,500	1,200	730	2,300	(<25)
	04/13/05	7.60	10.87	7,000	100	460	180	880	(<1.0)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	07/13/05	10.63	7.84	9,400	2,400	840	440	1,100	(<13)
	10/28/05	12.14	6.33	28,000	16,000	2,900	1,400	3,100	(<50)
	01/17/06	8.52	9.95	6,700	1,200	720	400	1,500	(1.3)
	02/23/06	9.22	9.25	--	4,630	1,470	709	2,310	--
	03/09/06	7.15	11.32	--	474	90.3	63.3	169	--
	04/21/06	5.82	12.65	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	05/01/06	7.23	11.24	779	6.77	41.1	20.0	130	(<0.500)
	06/23/06	10.06	8.41	22,600	2,830	557	469	1,210	(<0.500)
	07/11/06	10.06	8.41	31,100	3,880	2,080	857	3,700	(<0.500)
	08/30/06	11.32	7.15	28,200	4,840	1,320	705	2,430	(5.35)
	09/29/06	11.81	6.66	94,900	10,100	2,960	1,810	5,310 i	(7.20)
(MW-5 cont'd)	10/13/06	12.01	6.46	48,200	7,710	1,360	1,250	3,460	(5.64)
	11/03/06	12.31	6.16	50,600	11,300	1,730	1,250	3,840	(<0.500)
	12/26/06	11.58	6.89	32,000	11,000	780	1,200	2,800	(<10)
	01/11/07	11.61	6.86	35,000	11,000	1,100	1,200	3,100	(<50)
	01/30/07	11.95	6.52	27,000	9,800	610	860	2,400	(<50)
	03/01/07	10.95	7.52	23,000	9,400	640	1,200	3,100	(<50)
	04/26/07	10.69	7.78	48,000 k,l	14,000	1,300	1,600	3,600	(<100)
	06/01/07	11.25	7.22	54,000 k	15,000	2,800	2,200	6,100	(<100)
	06/21/07	11.96	6.51	32,000 k	12,000	1,200	1,400	2,780	(<100)
	07/03/07	11.81	6.66	41,000 k	15,000	1,800	1,900	4,050	(<100)
	08/16/07	12.36	6.11	43,000 k,l	13,000	2,000	2,000	4,150	(<100)
	12/06/07	**12.81**	**5.66**	**37,000**	**7,900**	**640**	**1,100**	**1,500**	**(<17)**
MW-6	12/03/01	12.19	6.65	--	--	--	--	--	--
18.84	12/06/01	11.70	7.14	76	5.7	3.8	1.4	7.0	(<5.0)
	01/23/02	9.57	9.27	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	04/17/02	10.73	8.11	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	07/18/02	12.27	6.57	--	--	--	--	--	--
	11/11/02	13.24	5.60	580	55	<0.50	<0.50	2.8	(<5.0)
	01/16/03	9.89	8.95	--	--	--	--	--	--
	03/13/03	10.66	8.18	--	--	--	--	--	--
	04/23/03	10.57	8.27	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	05/13/03	10.56	8.28	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	06/13/03	11.48	7.36	<50	<0.50	<0.50	<0.50	<1.0	(<5.0)
	07/14/03	11.83	7.01	230 b	3.4	<0.50	<0.50	<1.0	(<0.50)
	09/29/03	12.70	6.14	910 b	46	<2.5	<2.5	<5.0	(<2.5)
	10/29/03	12.91	5.93	830	38	0.53	<0.50	3.3	(0.60)
	01/05/04	10.35	8.49	93	0.92	<0.50	<0.50	<1.0	(<0.50)
(MW-6 cont'd)	04/01/04	9.80	9.04	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	07/02/04	12.09	6.75	370	3.0	<0.50	<0.50	<1.0	(<0.50)
	11/03/04	12.84	6.00	540	22	0.73	<0.50	1.5	-0.82
	01/04/05	9.55	9.29	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	04/13/05	7.89	10.95	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/13/05	11.13	7.71	170	6.2	1.1	<0.50	<1.0	(0.71)
	10/28/05	12.74	6.10	490	22	<0.50	<0.50	<1.0	(<0.50)
	01/17/06	8.80	10.04	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	02/23/06	9.54	9.30	--	<0.500	<0.500	<0.500	<0.500	--
	03/09/06	7.25	11.59	--	<0.500	<0.500	<0.500	<0.500	--
	04/21/06	6.34	12.50	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	05/01/06	7.32	11.52	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	06/23/06	10.12	8.72	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	07/11/06	10.12	8.72	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	08/30/06	11.79	7.05	<50.0	3.32	<0.500	<0.500	<0.500	(<0.500)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	09/29/06	12.32	6.52	<50.0	1.59	<0.500	<0.500	<0.500	(<0.500)
	10/13/06	12.38	6.46	934	3.14	<0.500	<0.500	<0.500	(<0.500)
	11/03/06	12.77	6.07	112	10.6	<0.500	<0.500	<0.500	(<0.500)
	12/26/06	12.05	6.79	690	62	<0.50	<0.50	4.5	(<0.50)
	01/11/07	12.12	6.72	660	11	<0.50	<0.50	2.3	(<0.50)
	01/30/07	12.44	6.40	310	1.5	<0.50	<0.50	<1.0	(<0.50)
	03/01/07	10.97	7.87	360	3.6	<0.50	<0.50	0.87	(<0.50)
	04/26/07	11.18	7.66	210 k	0.72	<1.0	<1.0	<1.0	(<1.0)
	06/01/07	11.72	7.12	640 k	3.1	<1.0	<1.0	0.27 m	(<1.0)
	06/21/07	12.22	6.62	390 k	3.0	<1.0	<1.0	0.17 m	(<1.0)
	07/03/07	12.22	6.62	360 k	3.0	<1.0	0.36 m	1.2	(<1.0)
	08/16/07	12.74	6.10	400 k,l	2.8	<1.0	<1.0	<1.0	(<1.0)
	12/06/07	**13.24**	**5.60**	**130**	**<0.5**	**1.6**	**<0.5**	**<0.5**	**(<0.5)**
MW-7	12/03/01	12.66	6.18	--	--	--	--	--	--
19.20	12/06/01	12.20	6.64	1,800	390	<2.0	6.2	<2.0	(<20)
	01/23/02	10.00	8.84	--	--	--	--	--	--
	04/17/02	11.21	7.63	<50	<0.50	<0.50	<0.50	<0.50	(<5.0)
	07/18/02	12.69	6.15	--	--	--	--	--	--
	11/11/02	13.69	5.15	3,000	190	<0.50	<0.50	4.3	(5.2)
	01/16/03	10.36	8.48	--	--	--	--	--	--
	03/13/03	11.16	7.68	--	--	--	--	--	--
	04/23/03	11.02	7.82	250	48	<0.50	<0.50	<1.0	(<5.0)
	05/13/03	11.00	7.84	1,700	550	<2.5	<2.5	<5.0	(<25)
	06/13/03	11.90	6.94	1,500 b	470	<2.5	<2.5	<5.0	(<25)
	07/14/03	12.29	6.55	1300 b	1,200	<10	<10	<20	(<10)
	09/29/03	13.12	5.72	5,200	1,200	<10	<10	<20	(<10)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	10/29/03	13.34	5.50	4,800	1,100	<5.0	<5.0	<10	(8.9)
	01/05/04	10.85	7.99	53	6.7	<0.50	<0.50	<1.0	(<0.50)
	04/01/04	10.28	8.56	<50	<0.50	<0.50	<0.50	<1.0	(<0.50)
	07/02/04	12.48	6.36	8,100 d	3,400	<25	<25	<50	(<25)
	11/03/04	13.25	5.59	3,700	1,200	<5.0	<5.0	<10	(<5.0)
	01/04/05	10.02	8.82	<50	2.0	<0.50	<0.50	<1.0	(<0.50)
	04/13/05	8.46	10.38	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/13/05	11.57	7.27	1,100	380	9.2	<2.5	37	(<2.5)
	10/28/05	13.15	5.69	5,100	2,900	<13	<13	<25	(<13)
	01/17/06	9.30	9.54	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	02/23/06	10.03	8.81	--	<0.500	<0.500	<0.500	<0.500	--
	03/09/06	7.70	11.14	--	<0.500	<0.500	<0.500	<0.500	--
	04/21/06	6.66	12.18	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	05/01/06	7.72	11.12	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
(MW-7 cont'd)	06/23/06	10.55	8.29	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	07/11/06	10.55	8.29	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	08/30/06	12.35	6.49	1,520	150	13.3	5.78	53.0	(0.640)
	09/29/06	12.66	6.18	2,420	384	1.80	<0.500	5.44	(0.850)
	10/13/06	12.85	5.99	5,980	549	0.540	0.680	11.7	(0.930)
	11/03/06	13.73	5.11	3,190	501	<0.500	<0.500	5.38	(0.560)
	12/26/06	12.51	6.33	4,600	570	<0.50	44	2.1	(<0.50)
	01/11/07	12.55	6.29	3,900	490	<2.5	46	<5.0	(<2.5)
	01/30/07	12.89	5.95	2,500	380	<2.5	40	<5.0	(<2.5)
	03/01/07	11.45	7.39	2,600	350	<2.5	35	3.5	(<2.5)
	04/26/07	11.62	7.22	2,300 k	290	<5.0	31	1.3 m	(<5.0)
	06/01/07	12.23	6.61	4,400 k	350	<2.0	19	<2.0	(1.1 m)
	06/21/07	12.67	6.17	2,600 k	260	<2.0	12	<2.0	(1.4 m)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water	GW Elevation (MSL)	TPHg (TPH gasolines)	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
		(ft)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
	07/03/07	12.76	6.08	1,700 k	170	<1.0	7.7	0.86 m	(<1.0)
	08/16/07	13.20	5.64	1,900 k	44	<1.0	<1.0	<1.0	(<1.0)
	12/06/07	**13.73**	**5.11**	**510**	**21**	**3.1**	**5.8**	**14**	**(1.2)**
VW/MW-2	03/25/96	9.04	9.26	13,000	900	920	180	1,500	<250
18.30	06/21/96	10.48	7.82	27,000	4,100	1,100	1,400	3,200	700
	09/26/96	12.52	5.78	27,000	5,300	1,900	980	2,200	<500
	09/26/96	12.52	5.78	29,000	5,800	2,200	1,100	2,500	<250
	12/19/96	12.42	5.88	50,000	6,200	5,100	1,700	5,600	590
	03/25/97	9.83	8.47	210	5.6	<0.50	0.52	<0.50	14
	03/25/97	9.83	8.47	250	1.7	0.58	0.51	<0.50	4.7
	06/26/97	12.43	5.87	--	--	--	--	--	--
	09/26/97	12.98	5.32	--	--	--	--	--	--
	12/05/97	12.20	6.10	--	--	--	--	--	--
	02/19/98	5.83	12.47	<50	1.5	<0.50	<0.50	0.71	<2.5
(VW/MW-2 cont'd)	06/08/98	5.80	12.50	--	--	--	--	--	--
	08/25/98	11.72	6.58	--	--	--	--	--	--
	12/28/98	11.69	6.61	--	--	--	--	--	--
	03/26/99	8.75	9.55	--	--	--	--	--	--
	06/30/99	10.72	7.58	--	--	--	--	--	--
	09/30/99	12.24	6.06	--	--	--	--	--	--
	12/27/99	13.92	4.38	13,500	1,330	1,310	490	1,400	<250
	01/21/00	13.26	5.04	12,100	2,200	1,080	429	1,120	<250
	03/07/00	7.87	10.43	--	--	--	--	--	--
	04/17/00	9.65	8.65	--	--	--	--	--	--
	04/18/00	--	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50
	09/21/00	12.75	5.55	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	10/17/00	12.21	6.09	4,070	763	589	214	501	<50.0
	01/09/01	12.51	5.79	--	--	--	--	--	--
	04/27/01	10.21	8.09	80	5.7	<0.50	2.7	4.9	(<0.50)
	07/03/01	11.60	6.70	--	--	--	--	--	--
	12/06/01	11.15	7.15	160	1.7	1.0	1.8	4.6	(<5.0)
	01/23/02	9.07	9.23	--	--	--	--	--	--
	04/17/02	10.11	8.19	<50	2.1	<0.50	<0.50	<0.50	(<5.0)
	07/18/02	11.61	6.69	--	--	--	--	--	--
	11/11/02	12.63	5.67	15,000	1,300	1,300	680	1,800	(<5.0)
	01/16/03	9.35	8.95	--	--	--	--	--	--
	03/13/03	10.09	8.21	--	--	--	--	--	--
	04/07/03	10.09	8.21	--	--	--	--	--	--
	04/23/03	9.95	8.35	1,100	76	29	45	66	(<5.0)
	05/13/03	9.90	8.40	1,200	38	16	16	24	(<5.0)
	06/13/03	10.80	7.50	9,600	1,300	1,100	440	890	(<250)
	07/14/03	11.20	7.10	11,000	1,300	1,800	430	1,500	(<5.0)
(VW/MW-2 cont'd)	09/29/03	12.05	6.25	12,000	860	980	410	1,100	(<10)
	10/29/03	12.29	6.01	12,000	1,100	940	530	1,200	(<10)
	01/05/04	9.82	8.48	190 b	<0.50	<0.50	<0.50	<1.0	(<0.50)
	04/01/04	9.24	9.06	410	1.4	0.54	1.6	1.0	(<0.50)
	07/02/04	11.33	6.97	5,500	440	370	170	410	(<2.5)
	11/03/04	12.14	6.16	3,800	260	210	150	600	(<2.5)
	01/04/05	9.03	9.27	280	5.8	20	7.8	26	(<0.50)
	04/13/05	7.38	10.92	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/13/05	10.45	7.85	350	19	9.3	9.8	14	(<0.50)
	10/28/05	11.98	6.32	3,400	440	350	150	320	(<2.5)
	01/17/06	8.34	9.96	700	3.1	5.1	7.7	66	(<0.50)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	02/23/06	9.42	8.88	--	97.9	17.2	40.0	80.6	--
	03/09/06	7.35	10.95	--	<0.500	29.2	57.8	486	--
	04/21/06	5.99	12.31	<50.0	<0.500	0.960	<0.500	2.71	(<0.500)
	05/01/06	7.25	11.05	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	06/23/06	10.05	8.25	3,150	35.6	9.24	20.7	113	(<0.500)
	07/11/06	10.05	8.25	9,270	413	78.2	91.5	341	(2.40)
	08/30/06	11.12	7.18	4,900	135	45.5	73.3	180	(2.40)
	09/29/06	11.61	6.69	12,300	243	142	290	634	(2.50)
	10/13/06	12.01	6.29	19,300	292	169	384	1,080	(1.84)
	11/03/06	12.12	6.18	9,300	655	233	366	729	(4.15)
	12/26/06	11.41	6.89	2,600	61	50	74	250	(<0.50)
	01/11/07	11.45	6.85	5,200	160	190	170	570	(<0.50)
	01/30/07	12.21	6.09	2,200	160	20	84	200	(<2.5)
	03/01/07	10.40	7.90	520	0.50	0.53	3.3	15	(<0.50)
	04/26/07	10.51	7.79	5,700 k	220	140	170	420	(<2.0)
	06/01/07	11.00	7.30	4,300 k	150	150	140	380	(<2.0)
	06/21/07	11.78	6.52	9,000 k	540	500	350	870	(1.8 m)
(VW/MW-2 cont'd)	07/03/07	11.64	6.66	4,500 k	230	160	160	440	(<5.0)
	08/16/07	12.12	6.18	8,800 k	550	520	430	1,020	(<5.0)
	12/06/07	**12.43**	**5.87**	**2,600**	**110**	**84**	**64**	**180**	**(2.4)**
VW/MW-4	03/25/96	8.45	9.69	83,000	6,500	7,000	2,000	11,000	<250
18.14	03/25/96	8.45	9.69	84,000	6,400	7,000	2,100	12,000	<250
	06/21/96	10.38	7.76	110,000	14,000	15,000	3,700	17,000	1,700
	06/21/96	10.38	7.76	100,000	12,000	12,000	2,900	13,000	<1,000
	09/26/96	12.43	5.71	52,000	13,000	2,700	2,100	3,200	<500
	12/19/96	11.87	6.27	75,000	15,000	6,600	3,000	7,600	<1,250

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	03/25/97	9.60	8.54	56,000	4,700	1,500	2,500	6,300	580
	06/26/97	12.36	5.78	--	--	--	--	--	--
	09/26/97	12.82	5.32	--	--	--	--	--	--
	12/05/97	12.15	5.99	--	--	--	--	--	--
	02/19/98	5.85	12.29	4,100	320	40	44	520	<50
	02/19/98	5.85	12.29	4,300	340	44	47	540	<50
	06/08/98	5.87	12.27	--	--	--	--	--	--
	08/25/98	10.96	7.18	--	--	--	--	--	--
	12/28/98	11.28	6.86	--	--	--	--	--	--
	03/26/99	8.45	9.69	--	--	--	--	--	--
	06/30/99	9.70	8.44	--	--	--	--	--	--
	09/30/99	11.78	6.36	--	--	--	--	--	--
	12/27/99	12.63	5.51	33,900	3,740	2,000	1,130	5,090	587
	01/21/00	13.07	5.07	13,900	1,560	568	227	1,990	<500(21.0a)
	03/07/00	7.82	10.32	--	--	--	--	--	--
	04/17/00	9.18	8.96	--	--	--	--	--	--
	04/18/00	--	--	757	103	8.59	30.8	84.2	<25.0
	09/21/00	12.18	5.96	--	--	--	--	--	--
(VW/MW-4 cont'd)	10/17/00	12.03	6.11	8,360	2,060	391	468	1,170	147
	01/09/01	12.42	5.72	--	--	--	--	--	--
	04/27/01	10.13	8.01	7,100	2,300	50	460	250	(<10)
	07/03/01	11.42	6.72	--	--	--	--	--	--
	12/06/01	11.02	7.12	7,700	750	90	300	350	(<25)
	01/23/02	8.89	9.25	--	--	--	--	--	--
	04/17/02	9.89	8.25	4,800	760	27	240	150	(<25)
	07/18/02	11.37	6.77	--	--	--	--	--	--
	11/11/02	12.41	5.73	14,000	2,800	480	700	1,300	(<100)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	01/16/03	9.17	8.97	--	--	--	--	--	--
	03/13/03	9.85	8.29	--	--	--	--	--	--
	04/23/03	9.74	8.40	2,400	710	28	160	100	(<50)
	05/13/03	9.70	8.44	3,300	720	35	170	160	(<50)
	06/13/03	10.55	7.59	8,200	1,700	220	460	790	(<250)
	07/14/03	10.90	7.24	3,700	900	190	220	540	(<10)
	09/29/03	11.83	6.31	7,500	1,800	300	390	860	(<20)
	10/29/03	12.03	6.11	10,000	2,600	400	510	1,200	(<13)
	01/05/04	9.60	8.54	1,000	70	12	30	56	(<1.0)
	04/01/04	9.00	9.14	1,000	64	7.0	22	18	(<1.0)
	07/02/04	11.00	7.14	5,600	1,500	57	380	180	(<10)
	11/03/04	11.85	6.29	9,400	2,400	210	560	890	(<10)
	01/04/05	8.89	9.25	110	12	<0.50	2.3	<1.0	(<0.50)
	04/13/05	7.25	10.89	<50	<0.50	<0.50	<0.50	<0.50	(<0.50)
	07/13/05	10.20	7.94	1,300	520	5.1	100	17	(<2.5)
	10/28/05	11.84	6.30	2,500	830	44	170	140	(5.4)
	01/17/06	8.05	10.09	<50	<0.50	<0.50	0.56	<0.50	(<0.50)
	02/23/06	8.77	9.37	--	1.42	0.930	0.580	<0.500	--
	03/09/06	6.75	11.39	--	<0.500	<0.500	<0.500	0.680	--
(VW/MW-4 cont'd)	04/21/06	5.69	12.45	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	05/01/06	6.65	11.49	<50.0	<0.500	<0.500	<0.500	<0.500	(<0.500)
	06/23/06	9.22	8.92	920	8.69	1.32	5.63	9.68	(<0.500)
	07/11/06	9.22	8.92	<50.0	109	<0.500	3.91	<0.500	(<0.500)
	08/30/06	10.87	7.27	2,360	331	12.8	65.4	29.3	(2.64)
	09/29/06	11.40	6.74	5,920	327	23.2 i	146	112 i	(2.63)
	10/13/06	11.53	6.61	6,560	299	16.6	134	90.4	(3.58)
	11/03/06	11.87	6.27	3,530	212	9.14	87.8	52.8	(5.11)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	12/26/06	11.17	6.97	960	43	1.0	17	2.7	(<0.50)
	01/11/07	11.18	6.96	830	86	1.8	41	3.9	(1.40)
	01/30/07	11.53	6.61	2,100	450	15	99	46	(3.0)
	03/01/07	10.00	8.14	700	4.8	<0.50	1.8	0.77	(<0.50)
	04/26/07	10.26	7.88	930 k	84	5.2	21	9.5	(<1.0)
	06/01/07	10.80	7.34	2,000 k	340	7.6	58	17.6	(1.7 m)
	06/21/07	11.32	6.82	1,400 k	360	9.7	46	26.1	(2.2)
	07/03/07	11.39	6.75	2,700 k	650	24	91	65	(<2.0)
	08/16/07	11.87	6.27	1,400 k	240	8.8	32	42.3	(<5.0)
	12/06/07	**12.40**	**5.74**	**3,600**	**480**	**16**	**39**	**29**	**(3.5)**
VW/AS-1	03/25/96	8.98	9.62	--	--	--	--	--	--
18.60	06/21/96	10.95	7.65	--	--	--	--	--	--
	09/26/96	12.98	5.62	--	--	--	--	--	--
	12/19/96	12.67	5.93	--	--	--	--	--	--
	03/25/97	10.12	8.48	--	--	--	--	--	--
	06/26/97	12.34	6.26	--	--	--	--	--	--
	09/26/97	13.40	5.20	--	--	--	--	--	--
	12/05/97	11.96	6.64	--	--	--	--	--	--
	02/19/98	6.22	12.38	--	--	--	--	--	--
(VW/AS-1 cont'd)	06/08/98	6.20	12.40	--	--	--	--	--	--
	08/25/98	11.59	7.01	--	--	--	--	--	--
	12/28/98	11.74	6.86	--	--	--	--	--	--
	03/26/99	9.20	9.40	--	--	--	--	--	--
	06/30/99	11.08	7.52	--	--	--	--	--	--
	09/30/99	11.94	6.66	--	--	--	--	--	--
	12/27/99	11.01	7.59	8,940	2,000	95.7	1,200	570	606

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	03/07/00	7.35	11.25	--	--	--	--	--	--
	04/17/00	9.08	9.52	--	--	--	--	--	--
	04/18/00	--	--	20,800	6,550	1,220	2,270	1,720	<250
	09/21/00	11.98	6.62	--	--	--	--	--	--
	10/17/00	12.62	5.98	38,400	7,240	5,980	1,960	5,730	534(72.4)
	01/09/01	13.03	5.57	--	--	--	--	--	--
	04/27/01	10.71	7.89	34,000	8,000	2,100	2,500	2,000	(<25)
	07/03/01	12.03	6.57	--	--	--	--	--	--
	12/06/01	11.63	6.97	6,000	990	35	820	59	(<25)
	01/23/02	9.34	9.26	--	--	--	--	--	--
	04/17/02	10.41	8.19	12,000	2,900	57	1,400	98	(<200)
	07/18/02	12.13	6.47	--	--	--	--	--	--
	11/11/02	13.15	5.45	2,200	340	7.3	250	24	(<20)
	01/16/03	9.73	8.87	--	--	--	--	--	--
	03/13/03	10.45	8.15	11,000	2,500	55	1,800	170	(<100)
	04/07/03	10.40	8.20	--	--	--	--	--	--
	04/23/03	10.28	8.32	9,500	4,100	200	1,400	200	(<250)
	05/13/03	10.26	8.34	9,700	2,300	110	1,100	140	(<250)
	06/13/03	11.15	7.45	9,300	2,300	77	820	<100	(<500)
	07/15/03	11.62	6.98	5,500	2,000	230	620	360	(20)
	09/29/03	12.48	6.12	9,600	2,300	100	1,200	670	(<20)
(VW/AS-1 cont'd)	10/29/03	12.73	5.87	10,000	2,000	39	1,000	370	(16)
	01/05/04	10.25	8.35	2,000	710	18	410	18	(13)
	04/01/04	9.60	9.00	27,000	9,100	1,200	2,200	1,400	(<50)
	07/02/04	11.80	6.80	18,000	6,500	170	1,200	1,200	(<50)
	11/03/04	12.56	6.04	4,500	1,700	23	280	55	(9.8)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	01/04/05	9.50	9.10	7,500	2,500	74	540	110	(<13)
	04/13/05	7.84	10.76	34,000	6,600	290	930	2,100	(<15)
	07/13/05	10.90	7.70	--	--	--	--	--	--
	07/22/05	10.96	7.64	8,200	5,900	86	340	320	(<25)
	10/28/05	12.30	6.30	2,100	1,300	18	63	21	(<5.0)
	01/17/06	8.65	9.95	6,200 g	2,900	190	400	600	(4.70)
	02/23/06	9.33	9.27	--	3,080	222	414	778	--
	03/09/06	7.40	11.20	--	1,350	88.5	128	164	--
	04/21/06	6.44	12.16	18,200	4,460	167	419	717	(2.79)
	05/01/06	7.22	11.38	19,700	5,300	261	664	1,050	(<0.500)
	06/23/06	9.73	8.87	20,600	3,820	305	259	435	(3.31 h)
	07/11/06	9.73	8.87	9,130	6,200	108	232	254	(<0.500)
	08/30/06	11.60	7.00	164,000	3,190	6,240	3,780	17,900	(<10.0)
	09/29/06	11.97	6.63	130,000	6,160	6,370 i	2,910	11,600 i	(<25.0)
	10/13/06	12.18	6.42	144,000	6,320	5,710	2,930	13,100	(1.03)
	11/03/06	12.21	6.39	112,000	8,290	5,670	2,760	12,100	(<0.500)
	12/26/06	11.74	6.86	94,000	6,900	5,100	3,100	13,000	(<50)
	01/11/07	11.83	6.77	73,000	6,600	5,500	3,000	12,000	(<50)
	01/30/07	12.12	6.48	54,000	6,800	4,500	2,200	8,800	(<50)
	03/01/07	10.71	7.89	52,000	6,300	3,700	3,400	12,000	(<50)
(VW/AS-1 cont'd)	04/26/07	10.84	7.76	72,000 k	7,200	4,500	3,000	10,900	(<50)
	06/01/07	11.40	7.20	70,000 k	7,600	4,900	3,200	12,100	(<50)
	06/21/07	11.92	6.68	59,000 k	7,300	3,700	3,200	12,100	(<50)
	07/03/07	11.98	6.62	70,000 k	8,800	4,700	3,500	13,500	(<50)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	08/16/07	12.53	6.07	67,000 k	9,000	5,500	3,900	14,200	(<50)
	12/06/07	**12.97**	**5.63**	**180,000**	**9,500**	**5,000**	**4,100**	**16,000**	**(<17)**
VW/AS-2	03/09/06	6.95	--	--	--	--	--	--	--
VW/AS-3	03/25/96	8.50	9.67	--	--	--	--	--	--
18.17	06/21/96	10.42	7.75	--	--	--	--	--	--
	09/26/96	12.49	5.68	--	--	--	--	--	--
	12/19/96	12.28	5.89	--	--	--	--	--	--
	03/25/97	9.61	8.56	--	--	--	--	--	--
	06/26/97	11.80	6.37	--	--	--	--	--	--
	09/26/97	12.89	5.28	--	--	--	--	--	--
	12/05/97	11.38	6.79	--	--	--	--	--	--
	02/19/98	6.24	11.93	--	--	--	--	--	--
	06/08/98	6.25	11.92	--	--	--	--	--	--
	08/25/98	11.43	6.74	--	--	--	--	--	--
	12/28/98	11.63	6.54	--	--	--	--	--	--
	03/26/99	8.92	9.25	--	--	--	--	--	--
	06/30/99	10.71	7.46	--	--	--	--	--	--
	09/30/99	11.78	6.39	--	--	--	--	--	--
	12/27/99	12.57	5.60	488	47.9	2.60	16.9	8.50	35.4
	03/07/00	4.82	13.35	--	--	--	--	--	--
	04/17/00	8.69	9.48	--	--	--	--	--	--
(VW/AS-3 cont'd)	04/18/00	--	--	3,110	871	<5.00	141	56.8	78.2
	09/21/00	11.65	6.52	--	--	--	--	--	--
	10/17/00	12.13	6.04	7,730	2,700	<50.0	542	344	<250(42.1)

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	01/09/01	12.51	5.66	--	--	--	--	--	--
	04/27/01	10.20	7.97	14,000	3,900	62	690	560	(46.00)
	07/03/01	11.55	6.62	--	--	--	--	--	--
	12/06/01	11.10	7.07	5,000	1,200	19	380	320	(<50)
	01/23/02	8.93	9.24	--	--	--	--	--	--
	04/17/02	10.00	8.17	17,000	5,000	<25	1,100	390	(<250)
	07/18/02	11.49	6.68	--	--	--	--	--	--
	11/11/02	12.43	5.74	1,700	290	1.5	150	2.8	(<10)
	01/16/03	9.32	8.85	--	--	--	--	--	--
	03/13/03	9.88	8.29	--	--	--	--	--	--
	04/23/03	9.85	8.32	150	47	0.67	8.5	3.2	(<5.0)
	05/13/03	9.81	8.36	440	35	<0.50	1.7	<1.0	(<5.0)
	06/13/03	10.77	7.40	580	71	<2.5	40	<5.0	(<25)
	07/14/03	11.12	7.05	1,100	120	4.9	63	9.3	(16)
	09/29/03	12.02	6.15	160	54	2.2	6.9	8.7	(1.1)
	10/29/03	12.25	5.92	350	16	<0.50	1.1	<1.0	(6.3)
	01/05/04	9.74	8.43	2,700	870	39	130	250	(5.5)
	04/01/04	9.06	9.11	1,300	240	4.1	36	45	(12.0)
	07/02/04	11.29	6.88	610	59	<1.0	3.6	<2.0	(10.0)
	11/03/04	12.02	6.15	200	<0.50	<0.50	<0.50	<1.0	(10.0)
	01/04/05	8.99	9.18	2,500	730	42	36	190	(<10)
	04/13/05	7.25	10.92	<50	1.6	<0.50	<0.50	<0.50	(0.61)
	07/13/05	10.30	7.87	--	--	--	--	--	--
	07/22/05	10.51	7.66	160	36	0.65	<0.50	2.5	(2.60)
	10/28/05	11.93	6.24	100	<0.50	<0.50	<0.50	<1.0	(1.70)
(VW/AS-3 cont'd)	01/17/06	8.25	9.92	1,400	510	29	16	47	(5.40)
	04/21/06	6.06	12.11	--	--	--	--	--	--

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water (ft)	GW Elevation (MSL)	TPHg (TPH gasolines) (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
	05/01/06	6.83	11.34	1,350	74.4	<0.500	12.5	0.520	(3.30)
	08/30/06	11.00	7.17	940	77.7	2.67	2.94	5.57	(3.45)
	09/29/06	11.30	6.87	--	--	--	--	--	--
	11/03/06	12.29	5.88	346 j	83.6 j	5.17 j	2.34 j	13.5 j	(3.47 j)
	01/30/07	12.59	5.58	130	13	0.64	<0.50	7.2	(3.4)
	06/01/07	10.82	7.35	2,200 k	650	13	3.2 m	143	(7.8)
	08/16/07	11.95	6.22	1,000 k	200	4.0	1.1	47.7	(3.3)
	12/06/07	**12.43**	**5.74**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**(<0.5)**

Notes:

a = Sample was analyzed outside of the EPA recommended holding time.

b = Hydrocarbon reported does not match the pattern of the laboratory's standard.

c = Top of casing change due to maintenance.

d = Sample contains discrete peak in addition to gasoline.

e = Quantity of unknown hydrocarbon(s) in sample based on gasoline.

f = The concentration reported reflects individual or discrete unidentified peaks not matching a typical fuel pattern.

g = The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.

h = Secondary ion abundances were outside method requirements. Identification based on a'--lytical judgement.

i = Analyte was detected in the associated Method Blank.

j = pH>2

k = Analyzed by EPA Method 8015B (M).

l = The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

m = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

Final ESL for groundwater, non-dw = Table F1b - Environmental Screening Levels for Groundwater where groundwat**is not** a current or potential source of drinking water, as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2007).

Table 2. Groundwater Elevation, Analytical Data and ESLs - Saberi, 1230 14th Street, Oakland, CA

Well ID	Date Measured	Depth to Water	GW Elevation (MSL)	TPHg (TPH gasolines)	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
		(ft)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)

Final ESL for groundwater, dw = Table F1a - Environmental Screening Levels for Groundwater where groundwater **is** a current or potential source of drinking water, as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2007).

Ceiling Value, non-dw = Table F1b - Environmental Screening Levels for Groundwater where groundwater **is not** a current or potential source of drinking water, as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2007).

Drinking Water Toxicity = Table F3 - Summary of Drinking Water Screening Levels, as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2007).

Indoor Air Impacts = Table E1 - Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion Concerns (volatile chemicals only), as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2007).

Aquatic Habitat Goal = Table F-4c - Summary of US EPA and Other Published Aquatic Habitat Goals, as established by the RWQCB-SFBR, Interim Final February 20((Revised November 2007) and Table F-4a - Summary of Selected Aquatic Habitat Goals, as established by the RWQCB-SFBR, Interim Final February 2005 (Revised November 2006). Note: November 2007 levels are pending revision.

Site surveyed November 1, 2001 by Virgil Chavez Land Surveying of Vallejo, CA.

( ) = MTBE 8260

-- = Not applicable

ug/L = Parts per billion

ppm = Parts per million

MSL = Mean sea level

ft. = Feet

<n = Below detection limit

(D) = Duplicate sample

n/n = Pre-purge/Post-purge DO Readings

APPENDIX A

Agency Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

September 19, 2007

Denis Brown
Shell Oil Products US
20945 S. Wilmington Ave.
Carson, CA 90810-1039

Som Gupta
c/o Carmerlengo & Johnson
500 Airport Blvd., Suite 230
Burlingame, CA 94010

Andrew Saberi
Sabek, Inc.
1045 Airport Blvd.
South San Francisco, CA 94080

Subject: Fuel Leak Case No. RO0000433 and Geotracker Global ID T0600101691, Shell/Sabek Inc, 1230 14th Street, Oakland, CA 94607

Dear Mr. Brown, Mr. Gupta, and Mr. Saberi:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site, which includes several recent reports and correspondence regarding proposed remediation at the site. The primary documents that discuss the proposed next phase of remediation are reports entitled, "Dual-Phase Extraction Pilot Test Report and Groundwater Monitoring Report – Fourth Quarter 2006," dated December 27, 2006 (prepared on Shell's behalf by Cambria/Conestoga-Rovers & Associates), "Pangea's Comments on Dual Phase Extraction Pilot Test Report," dated February 16, 2007 (prepared on behalf of Mr. Andy Saberi by Pangea Environmental Services, Inc.), "Response Letter and Revised Remediation Work Plan," dated May 16, 2007 (prepared on Shell's behalf by Conestoga-Rovers & Associates), and "Response Letter," dated August 23, 2007 (prepared on Shell's behalf by Conestoga-Rovers & Associates).

Currently, Shell is proposing a one-day air sparge pilot test to confirm the feasibility of air sparging to be followed by full-scale implementation of a soil vapor extraction/air sparging (SVE/AS) system. In the document entitled, "Pangea's Comments on Dual Phase Extraction Pilot Test Report," dated February 16, 2007, Pangea has proposed on Mr. Saberi's behalf to implement full-scale remediation using a dual-phase extraction/air sparging (DPE/AS) system without pilot testing. The two proposals are generally similar in scope with both proposing air sparging over similar areas of the site. The primary difference in the proposals is the addition of vacuum-enhanced groundwater extraction in the DPE/AS proposal.

We are not concurring with full-scale remediation using either of the proposed technologies. Instead, we are requiring pilot testing of the proposed remedial technology prior to preparation of a Corrective Action Plan (CAP). The final remedial alternative for full-scale implementation will be selected following completion of the pilot testing and CAP. Based on our review of site-specific conditions from previous investigation, remediation, and monitoring activities, we believe that the additional benefit from lowering the water table using vacuum-enhanced groundwater extraction does not justify the implementation of a DPE/AS pilot test versus a SVE/AS pilot test. Therefore, we request that Shell prepare a Pilot Test Work Plan for SVE/AS that addresses the technical

contamination and to allow lateral air movement from the sparge point to affect a larger area within the zone of contamination. Please review the depths of soil contamination targeted and revise the depths of the sparge wells as necessary.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **November 5, 2007** – SVE/AS Pilot Test Work Plan
- **Draft Corrective Action Plan** – 90 days after ACEH approval of Work Plan
- **45 days following the end of each quarter** – Quarterly Monitoring Reports

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the

attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Larry Blazer, Alameda County District Attorney's Office, Airport Corporate Center, 7677 Oakport Street, Suite 650, Oakland, CA 94621

Ana Friel, Conestoga-Rovers & Associates, 19449 Riverside Drive, Suite 230, Sonoma, CA 95476

Joan Mack, Caldwell, Leslie, Proctor & Pettit, PC, 1000 Wilshire Blvd., Suite 600, Los Angeles, CA 90017-2463

Robert Clark-Ridell, Pangea, 1710 Franklin Street, Suite 200, Oakland, CA 94612

Ellen Wyrick-Parkinson, 1420 Magnolia Street, Oakland, CA 94607

M. Willingham, 1418-1420 Union Street, Oakland, CA 94607

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

November 5, 2007

Mr. Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Lead Change Notification and Draft CAP Recommendation**
1230 14th Street
Oakland, California
ACEH Case No. RO0000433

Dear Mr. Wickham:

On behalf of property owner Andy Saberi, Pangea Environmental Services, Inc. (Pangea) prepared this letter to notify the ACEH of the pending change in remediation lead for the subject site, and to offer a recommendation to expedite site remediation in response to the September 19, 2007, letter from the Alameda County Environmental Health (ACEH).

Change in Remediation Lead

In late September 2007, Mr. Andy Saberi and Shell Oil Products (Shell) reached a tentative settlement agreement. Pangea understands that under the terms of the agreement Mr. Andy Saberi will be responsible for implementing all site corrective action conducted after October 31, 2007. Court confirmation of the final settlement agreement is anticipated in the near future.

Recommendation to Expedite Site Remediation – Test Workplan within Draft CAP

The ACEH letter requests preparation of a SVE/AS pilot test workplan and then, following agency approval of the workplan, preparation of Draft Corrective Action Plan (CAP) for agency and public review. Under the current ACEH schedule, Pangea anticipates that SVE/AS pilot testing would likely be approved by January/February 2008, which is the middle of the wet season. However, Pangea does not recommend SVE pilot testing during the wet season due to seasonally elevated water table elevation and rain infiltration that limits the effectiveness of SVE. To best evaluate SVE at this site where adequate vacuum influence not been demonstrated during previous pilot testing, Pangea recommends conducting pilot testing during the dry season (about June) to give SVE the best chance of success. If pilot testing were conducted in late spring/early summer 2008, the Draft CAP incorporating pilot test results would likely be submitted in late summer/early fall 2008. The agency and public review would occur within the fall 2008, and CAP implementation would likely be performed in the dry season of 2009. Our recommendation below accelerates the site remediation, reduces the amount of agency review, and shortens the agency/public review schedule.

To expedite initiation of site remediation, Pangea recommends submitting the pilot test workplan within the required Draft CAP. The Draft CAP would propose SVE/AS pilot testing as the first task. The selected final remedial approach would be based on the pilot test results. Pangea anticipates that the final remedial approach will be SVE/AS or DPE/AS, although other remedial

alternatives will be evaluated and discussed in the Draft CAP. This approach of preparing a CAP with feasibility testing and rationale for final remedy selection based on the test results was recently *requested by the RWQCB* for another site under corrective action by Pangea. With this RWQCB-approved approach, the Draft CAP/Test Workplan could be submitted shortly after court confirmation of the final settlement (estimate submittal by December 20, 2007), and agency/public review could occur during the wet season. Assuming CAP approval by March 20, 2008, test well installation and pilot testing could occur in the early dry season (May 2008). System installation could be performed over the summer, with the goal of system startup by the late summer 2008. This recommended approach could allow site remediation to commence up to 6 to 12 months earlier than the current approach. Furthermore, to help avoid system installation delay, Pangea recommends initiating service connection with PG&E concurrently with the Draft CAP review.

Clarification

The ACEH's September 19, 2007 letter references a number of reports reviewed by ACEH staff. Please clarify that the ACEH received and reviewed Pangea's letter report dated July 11, 2007 *Comments on Revised Remediation Work Plan*. Pangea's July 11, 2007 letter report addressed a number of concerns regarding implementing SVE at the site. If the ACEH concurs with information presented in this July 11 letter, the ACEH could allow implementation of DPE/AS and even further accelerate the cleanup schedule. If the ACEH has already reviewed the July 11, 2007 letter, Pangea could reference the letter and not need to restate relevant information in the requested test workplan and/or Draft CAP.

Pangea respectfully requests an extension for the Draft CAP/Test Workplan of December 20, 2007, with the assumption that the final settlement agreement will be completed shortly. If you have any questions or comments, please contact me at (510) 510-435-8664 or briddell@pangeaenv.com.

Sincerely,
Pangea Environmental Services, Inc.

Bob Clark-Riddell
Principal Engineer

cc: Andy Saberi, 1045 Airport Boulevard, South San Francisco, CA 94080

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

November 29, 2007

Denis Brown
Shell Oil Products US
20945 S. Wilmington Ave.
Carson, CA 90810-1039

Som Gupta
c/o Carmerlengo & Johnson
500 Airport Blvd., Suite 230
Burlingame, CA 94010

Andrew Saberi
Sabek, Inc.
1045 Airport Blvd.
South San Francisco, CA 94080

Subject: Fuel Leak Case No. RO0000433 and Geotracker Global ID T0600101691, Shell/Sabek Inc, 1230 14th Street, Oakland, CA 94607

Dear Mr. Brown, Mr. Gupta, and Mr. Saberi:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site, including the recently submitted correspondence entitled, "Lead Change Notification and Draft CAP Recommendation," dated November 5, 2007. The November 5, 2007 correspondence, which was prepared on behalf of property owner, Andy Saberi by Pangea Environmental Services, Inc., indicates that Mr. Andy Saberi and Shell Oil Products reached a tentative settlement agreement and that under the terms of the agreement, Mr. Saberi will be responsible for implementing all site corrective action conducted after October 31, 2007 with court confirmation of the final settlement agreement anticipated in the near future. The November 5, 2007 correspondence also recommends an alternative schedule for submittal of a Draft Corrective Action Plan/Pilot Test Work Plan that would allow pilot testing and system installation during the dry season of 2008. We have no objection to the proposed schedule since conducting the pilot test during a period of lower water levels is advantageous. Therefore, we request that you **submit a Draft Corrective Action Plan/Pilot Test Work Plan by January 11, 2008.**

As previously discussed in our September 19, 2007 correspondence, we are requiring pilot testing of proposed remedial technologies prior to implementation of a full-scale remediation system. The Draft CAP is to evaluate three active remedial alternatives (in addition to no action or monitored natural attenuation). We recommend that soil vapor extraction (SVE)/air sparging (AS) and dual phase extraction (DPE)/AS be two of the three active remedial alternatives evaluated in the Draft CAP. The remedial alternative for the site will be selected based upon results of the pilot testing.

Pangea previously submitted technical comments dated July 11, 2007, regarding the predicted effectiveness of soil vapor extraction (SVE) and air sparging (AS) versus dual phase extraction (DPE) and AS. The Pilot Test Work Plan is to include testing to help evaluate the effectiveness of SVE, DPE, and AS.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **January 11, 2008** – Draft CAP/Pilot Test Work Plan
- **45 days following the end of each quarter** – Quarterly Monitoring Reports

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

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All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Larry Blazer, Alameda County District Attorney's Office, Airport Corporate Center, 7677 Oakport Street, Suite 650, Oakland, CA 94621

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Robert Clark-Ridell, Pangea, 1710 Franklin Street, Suite 200, Oakland, CA 94612

Ellen Wyrick-Parkinson, 1420 Magnolia Street, Oakland, CA 94607

M. Willingham, 1418-1420 Union Street, Oakland, CA 94607

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

From: Wickham, Jerry, Env. Health
To: Bob Clark-Riddell;
Subject: RE: 1230 14th Street - Draft CAP Submittal
Date: Tuesday, January 15, 2008 8:04:30 AM

Bob,

Based upon your request, the schedule for Draft CAP and Pilot Test Work Plan submittal is extended to January 18, 2008.

Regards,
Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
510-567-6791 phone
510-337-9335 fax
jerry.wickham@acgov.org

From: Bob Clark-Riddell [mailto:BRiddell@pangeaenv.com]
Sent: Sunday, January 13, 2008 10:22 PM
To: Wickham, Jerry, Env. Health
Subject: RE: 1230 14th Street - Draft CAP Submittal

Jerry,

Pangea has nearly completed the requested Draft CAP and Pilot Test Work Plan. We are currently awaiting some useable electronic files from Shell' consultant to make the report more complete and better organized. However, if we do not receive the electronic information within a few days, we will submit the report in a slightly diminished form by the end of the week (January 18, 2008).

Pangea therefore respectfully requests an extension until January 18, 2008 for report submittal. Please contact me with any questions or comments. Thank you.

Bob Clark-Riddell, P.E.
Principal Engineer
Pangea Environmental Services, Inc.
(510) 435.8664 Phone

From: Wickham, Jerry, Env. Health [mailto:jerry.wickham@acgov.org]
Sent: Thursday, November 29, 2007 2:19 PM

To: Bob Clark-Riddell
Subject: RE: 1230 14th Street - Draft CAP?

Directive letter attached.

Regards,
Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
510-567-6791 phone
510-337-9335 fax
jerry.wickham@acgov.org

APPENDIX B

Site History and Historical Figures

Site History

Former Shell Service Station
1230 14th Street
Oakland, California
Revised May 2007

PREVIOUS WORK

February 1991 Soil Borings: On February 2, 1991, Tank Protect Engineering (TPE) of Northern California advanced soil borings SB-1, SB-2, and SB-3. Maximum concentrations of 1,600 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHg) and 18 ppm benzene were detected in the soil sample collected at 10.5 fbg in boring SB-3, located immediately downgradient of the gasoline USTs.

August 1993 Tank Removal and Sampling: On August 24, 1993, TPE supervised the removal of two 7,500-gallon unleaded USTs, one 7,500-gallon leaded UST, one 8,000-gallon leaded UST, and one 550-gallon waste-oil tank from the site. Soil sample S-1 was collected from beneath the fill end of the waste oil tank. Soil samples S-2 through S-9 were collected at depths ranging from 8.5 to 12.0 fbg from the floor of the fuel UST excavation. Two sidewall samples (VSW-1 and VSW-2) were collected at 6.0 ft depth from the west side of the UST pit. Soil samples DS-1 through DS-6 were collected at a depth of 1.0 ft from beneath the former dispensers. TPHg and benzene were detected at concentrations ranging from 1.3 ppm to 18,000 ppm and from <5.0 ppm to 11,000 ppm, respectively. Total petroleum hydrocarbons as diesel (TPHd) and oil and grease were detected in the waste-oil tank pit sample at 1,200 ppm and 7,700 ppm, respectively. Maximum concentrations of 13 ppm TPHg and 0.007 ppm benzene were detected in soil samples collected beneath the product dispensers. The tank pit was not back-filled after the UST removals. On September 17, 1993, TPE filed a UST Unauthorized Release (Leak)/ Contamination Site Report form on behalf of the property owner. The results were presented in TPE's December 29, 1993 *Tank Closure Report*.

November 1995 Piping Removal and Tank Pit Re-Sampling: On November 27, 1995, Cambria collected eight soil samples (S-2 though S-9) at depths of approximately 15 fbg from the open tank pit at the ends of the former USTs and six soil samples (TS-1 through TS-6) beneath the former product piping. TPHg was detected in all tank pit samples at concentrations ranging from 570 ppm to 5,600 ppm. Benzene was detected in the tank pit samples at concentrations ranging from <0.5 ppm to 72 ppm. TPHg was detected in two soil samples collected beneath former piping locations at concentrations of 46 ppm and 3,100 ppm, and benzene was detected at concentrations ranging from <0.005 ppm to 30 ppm. The results were presented in Cambria's December 28, 1995 *Piping Removal Sampling and Tankpit Re-Sampling* report.

March 1996 Subsurface Investigation: On March 6 - 8, 1996, Cambria advanced 11 soil borings on site. Four borings were converted to groundwater monitoring wells (MW-1 through MW-4), two borings were converted to combined air-sparge and soil-vapor-extraction (SVE) wells (VW/AS-1 and VW/AS-3), and two borings were converted to combined SVE and groundwater monitoring wells (VW/MW-2 and

VW/MW-4). The remaining borings (SB-C, SB-E, and SB-J) were backfilled with neat cement. Selected soil samples were analyzed for TPHg, benzene, toluene, ethylbenzene and xylenes (BTEX), and oil and grease. The results were presented in Cambria's July 22, 1996 *Subsurface Investigation Report.*

1997 Oxygen Releasing Compound (ORC) Installation*:* As agreed during a January 1997 meeting with Alameda County Health Care Services Agency (ACHCSA), Cambria installed ORC "socks" in wells MW-1, VW/MW-2, and VW/MW-4 on March 25, 1997. The ORC socks were replaced periodically until September 21, 2000. On October 17, 2000, the ORC socks were removed permanently.

1997 to 2000 Activities: Shell, Cambria, and ACHCSA met on January 21, 1997 to discuss the site investigation and activities. Between March 1997 and October 2000, as agreed during the January 21, 1997 meeting and per subsequent communications with ACHCSA, and in compliance with ACHCSA's requirements, Shell's contractors installed ORC "socks" and maintained them until October 2000. Also, as ACHCSA required, site groundwater was monitored and sampled quarterly, and Cambria submitted quarterly monitoring reports. Periodically, Cambria's reports also made additional recommendations and responded to agency requests. Cambria's May 15, 1997 *First Quarter Monitoring Report* recommended preparing a work plan for additional investigation. However, ACHCSA's case notes (obtained from an agency file review) indicate the caseworker "decided not to ask for more SWI" *(soil and water investigation)* "because the 7/23/96 rpt *(report)* included *(boring)* SBE (SB-E) to the N *(north)* and SBJ *(SB-J)* to the S *(south)* of MW1. They were low to ND conc *(concentrations)* for benz *(benzene)* in gw *(groundwater)* and ND in soil (although soil samples were below gw)."

Cambria's September 7, 1997 *Second Quarter Monitoring Report* noted that Cambria had discussed evaluating further groundwater investigation with ACHCSA on May 20, 1997, and requested that ACHCSA review the report's results and contact Cambria to discuss this recommendation further. Cambria's December 22, 1997 *Third Quarter Monitoring Report* again recommended evaluating further site investigation. ACHCSA's September 23, 1998 letter concurred with Cambria's recommendation to reduce the sampling of wells MW-2, MW-3, and MW-4 to semi-annual. ACHCSA's September 23, 1999 letter requested that the quarterly monitoring reports provide additional detail and that wells MW-1, VW/MW-2, and VW/MW-4 be sampled. ACHCSA's March 1, 2000 letter concurred with Cambria's recommendation that all site monitoring wells' elevation be resurveyed. As recommended, all wells were surveyed on March 8, 2000 by Virgil Chavez Land Surveying, and the revised well casing elevation data was used to calculate groundwater elevations in subsequent monitoring reports. Following a May 1, 2000 telephone conversation with Cambria regarding further downgradient investigation, ACHCSA's May 11, 2000 letter requested an SCM. On May 11, 2000, Cambria discussed the elevated benzene concentrations in well MW-1 and site closure requirements with ACHCSA.

October 2000 SVE Testing: On October 16, 2000, Cambria performed SVE testing to determine the feasibility of SVE as a remedial alternative at the site. Although groundwater interfered with the SVE testing, Cambria concluded that SVE might be an effective method to remove hydrocarbons from soils above the groundwater table. However, subsequent investigations have detected little or no hydrocarbon impacts in soil samples collected above the range of water table fluctuations. Cambria's June 6, 2001 *Soil*

Vapor Extraction and Site Investigation Report presented the SCM and results of the October 2000 SVE testing and the December 2000 Geoprobe® investigation.

December 2000 Subsurface Investigation and SCM: On December 11, 2000, Cambria advanced five soil borings (GP-1 through GP-5) to depths ranging from 16 to 20.5 fbg. Soil samples were collected from each boring at 5-ft intervals, and groundwater samples were collected when groundwater was encountered. No TPHg, benzene, or methyl tertiary butyl ether (MTBE) was detected in any of the soil samples. TPHg was detected in groundwater samples from GP-1 and GP-3 at concentrations of 11 and 4,400 parts per billion (ppb), respectively. Benzene was detected in groundwater from GP-1 and GP-3 at concentrations of 11 and 4,400 ppb, respectively. MTBE was only detected in groundwater collected from boring GP-1 at 0.067 ppb (analyzed by EPA Method 8260). Along with October 2000 SVE testing results and the SCM, the Geoprobe® investigation results were presented in Cambria's June 6, 2001 *Soil Vapor Extraction and Site Investigation Report.*

September 2001 Subsurface Investigation: On September 27, 2001, Cambria installed three monitoring wells (MW-5 through MW-7), each to a depth of 20 ft. Two soil samples were collected from the tank pit boring (MW-5) for chemical analysis. TPHg was detected at concentrations of 3.9 ppm and 790 ppm in soil at depths of 9.5 and 14.5 ft. Benzene was detected at a concentration of 2.7 ppm in soil at a depth of 14.5 ft. Groundwater samples were collected from the new wells during the regularly scheduled quarterly monitoring event on December 6, 2001. TPHg was detected at concentrations of 31,000 ppb, 76 ppb, and 1,800 ppb in wells MW-5, MW-6, and MW-7, respectively. Benzene was detected at concentrations of 3,000 ppb, 5.7 ppb, and 390 ppb in the respective wells. No MTBE was detected in any soil or groundwater samples from the new wells. Cambria's November 2001 *Monitoring Well Installation Report* presented results.

March 2002 Well Survey: On March 22, 2002, Cambria submitted a *Well Survey* report which identified three potential receptor wells (one cathodic protection well, and two wells of unknown, presumably irrigation or industrial, use) within ½ mile of the site. The report concluded that due to either distance or location upgradient and cross-gradient of the site, it is unlikely that any known well would be impacted by hydrocarbons originating from the site.

March 2002 RBCA Report: Cambria prepared a March 7, 2002 *Risk-Based Corrective Action (RBCA) Report,* based on the City of Oakland's ULR Program RBCA *Guidance Document* and using historical soil and groundwater data. The Tier 2 RBCA analysis considered BTEX as the chemicals of concern (COCs). Benzene in groundwater was found to be the primary COC driving risks at this site. Based on the predominantly sand/sandy silt/silty-sand stratigraphy observed by Cambria in soil borings drilled at the site, Cambria used the "sandy silts" soil type option to select the appropriate Oakland SSTLs in this analysis. The results found that the representative soil and groundwater concentrations were below the applicable Oakland SSTLs. Based on the parameters used, Cambria concluded that the results showed residual hydrocarbons at this site would not pose a significant health risk to future on-site commercial occupants or off-site residential occupants. Cambria also concluded that hydrocarbon concentrations in groundwater were decreasing with time and distance from the former UST complex, indicating shrinkage

of the groundwater plume due to natural attenuation. In a meeting between ACHCSA, Shell, and Cambria on May 6, 2002, ACHCSA expressed concern over the parameters used for the risk assessment, and requested that further investigation be conducted at the site.

July 2002 Door-to-Door Well Survey: On July 23, 2002, Cambria conducted a door-to-door well survey that included the residential block north-northeast (downgradient) of the site to determine whether there are any active water wells or basements in the survey area. A response to the survey was obtained from 23 of the 36 properties included in the survey. None of the respondents indicated the presence of a water well on the site, nine respondents reported that either a half or full basement was present at their dwelling, and one respondent noted a sump pump on the property. Cambria's August 26, 2002 *Subsurface Investigation Report and Corrective Action Plan* presented survey results.

June 2002 On-Site Subsurface Investigation: Between June 7 and June 10, 2002, Cambria advanced nine borings, (S-10 through S-18), in and near the former tank pit to further assess the extent of impacted soil in both the vadose and saturated zones onsite. Unsaturated soil samples collected at approximately 2.5-ft intervals and grab groundwater samples showed that the hydrocarbon impacts were limited to saturated soils and that the hydrocarbon plume in groundwater was relatively well-defined within an area approximately 10 ft to the west, 10 ft to the south, 15 ft to the east, and 30 ft to the north of the tank pit. Analytical results obtained from saturated soil samples indicated that hydrocarbon concentrations attenuated vertically to very low concentrations within 10 ft below the static groundwater level. Cambria submitted investigation results in the August 26, 2002 *Subsurface Investigation Report and Corrective Action Plan*.

July 2002 Off-Site Subsurface Investigation: On July 7, 2002, Cambria advanced four hand-auger borings (HA-1 through HA-4) on two adjacent off-site properties and collected grab-groundwater samples to further define the extent of impacted groundwater downgradient of the site. No benzene was detected in any of the grab-groundwater samples collected from any of the off-site hand-auger borings at depths of 14 fbg (HA-1 and HA-2) and 16 fbg (HA-3 and HA-4). However, TPHg was detected at concentrations of 55 ppb and 85 ppb in hand-auger borings HA-1 and HA-2, respectively, on the property adjacent (east) of the site. Toluene was detected at a concentration of 0.77 ppb in HA-2 only, ethylbenzene was detected at a concentration of 0.52 ppb in HA-2 only, and xylenes were detected in borings HA-1 and HA-2 at concentrations of 1.2 and 2.8 ppb, respectively. Cambria submitted investigation results in the August 26, 2002 *Subsurface Investigation Report and Corrective Action Plan*.

August 2002 Subsurface Investigation Report (SIR) and Corrective Action Plan (CAP): In addition to presenting results of the June and July 2002 subsurface investigations noted above, Cambria prepared a CAP for the site in the August 2002 report. Cambria determined that the remedial objective for the site should be to reduce benzene concentrations in groundwater to levels considered protective of human health and the environment in the shortest time frame feasible. To meet this objective, Cambria recommended conducting a 5-day pilot test of in-situ oxidation using hydrogen peroxide (H_2O_2).

September 2002 SIR and CAP Addendum: To clarify concerns ACHCSA raised in its August 30, 2002 e-mail message, Cambria prepared the September 12, 2002 *Subsurface Investigation Report and Corrective Action Plan – Addendum.* In it, Cambria:

- Acknowledged that a 30-day public review comment period would be required prior to ACHCSA approval of the CAP. Cambria provided the names and addresses of the property owners and residents of the immediate neighboring homes and businesses;
- Confirmed the basis for concluding the non-existence of the well formerly located in DeFremery Park;
- Clarified the basis for the proposed cleanup goals;
- Summarized the results of evaluation of the potential remedial alternatives, including anticipated effectiveness of each alternative, anticipated costs and expected time for remediation and monitoring activities;
- Discussed its consideration of residual pollution effects in relation to decreasing water levels;
- Proposed a soil and groundwater verification monitoring plan;
- Confirmed Cambria's belief that the proposed H_2O_2 injection work would not pose any risk to neighboring residents, and discussed the measures to prevent and monitor for any hazardous conditions; and
- Provided additional technical information to be made available to concerned citizens.

November 2002 SIR and CAP Addendum 2: To address concerns in ACHCSA's October 21, 2002 letter, Cambria submitted the November 2002 *Subsurface Investigation Report and Corrective Action Plan 2*. In it, Cambria:

- Provided assessor parcel numbers for neighboring properties;
- Confirmed the basis for concluding the non-existence of the well formerly located in DeFremery Park;
- Clarified and provided proposed cleanup levels and cleanup goals for soil and groundwater;
- Discussed Cambria's use of TPHg data in the prior RBCA analysis and proposal of cleanup levels;
- Discussed Cambria's evaluation of all complete exposure pathways;
- Provided a copy of the Oakland RBCA Eligibility Checklist as submitted with the March 7, 2002 report;
- Agreed to provide a soil grain size analysis from post-remediation soil samples to evaluate the selection of soil type used in the Oakland RBCA analysis;
- Discussed the evaluation of human health risk considering current and historic depths to water;
- Agreed to provide a post- remediation verification sampling plan, including sampling of soil and groundwater; and
- Agreed to post informational signs on the perimeter fence while remedial activities are in progress.

In a February 18, 2003 letter, ACHCSA approved the CAP and concurred with the proposed final cleanup levels. ACHCSA stated the cleanup goals would be the Water Quality Objectives established in the Regional Water Quality Control Board's Basin Plan. In addition, ACHCSA requested that additional work be performed to evaluate the concerns of Mr. Matthew Willingham, owner of the property at 1418-1420 Union Street, including location of all utilities and the evaluation of risk of volatilization to indoor air and residential exposure.

2002-2004 Groundwater Extraction (GWE) and Dual Phase Vapor Extraction (DVE): Beginning on June 11, 2002, Cambria conducted semi-monthly mobile GWE using well MW-5 in an attempt to reduce hydrocarbon concentrations in groundwater in the suspected source area. Cambria changed semi-monthly mobile GWE to semi-monthly mobile DVE beginning on September 19, 2002. DVE was discontinued on March 4, 2003 prior to the start of hydrogen peroxide injection pilot testing. Monthly DVE was re-instated between November 10, 2003 and April 28, 2004. GWE has been on-going. GWE and DVE removed approximately 6.0 pounds of dissolved-phase hydrocarbons and 5.6 pounds of vapor-phase hydrocarbons from the subsurface.

2003 H_2O_2 Injection Remediation: After receiving ACHCSA's concurrence with the final CAP recommendations, Cambria directed implementation of H_2O_2 injection on March 17 through 20, 2003. Approximately 3,521 gallons of 15 % H_20_2, 9.5 gallons of sulfuric acid (H_2SO_4), and 60 gallons of water were injected into 16 locations (A-1, A-3, A-6, A-8, C-4, C-6, C-7, D-3, D-4, E-6, F-2, F-7, G-1, G-4, G-6, and G-8) at depths ranging from 3.5 to 19.5 fbg. Blaine conducted baseline groundwater sampling immediately prior to the H_2O_2 injection on March 13, 2003, and conducted monthly post-injection groundwater monitoring on April 23, 2003, May 13, 2003, June 13, 2003, and July 14, 2003.

After reviewing the post-remediation groundwater monitoring results, Cambria directed a repeated H_2O_2 injection event from September 22 through 24, 2003. Approximately 805 gallons of 15% to 22% H_20_2 solution, 128 gallons of H_2SO_4 solution, and 15 gallons of water were injected into 12 3/4-inch temporary injection wells (P-1 through P-12) at depths ranging from 7 to 22 fbg.

Following review of post-injection groundwater monitoring results, and noting increased concentrations in some wells, Cambria directed monthly DVE from well MW-5. Monthly DVE was re-initiated on November 10, 2003, and continued until April 28, 2004. During the DVE events following H_2O_2 injections, an estimated 0.45 lbs of TPHg and 0.08 lbs benzene were removed in the liquid phase, and an estimated 1.51 lbs of TPHg and 0.02 lbs benzene were removed in the vapor phase.

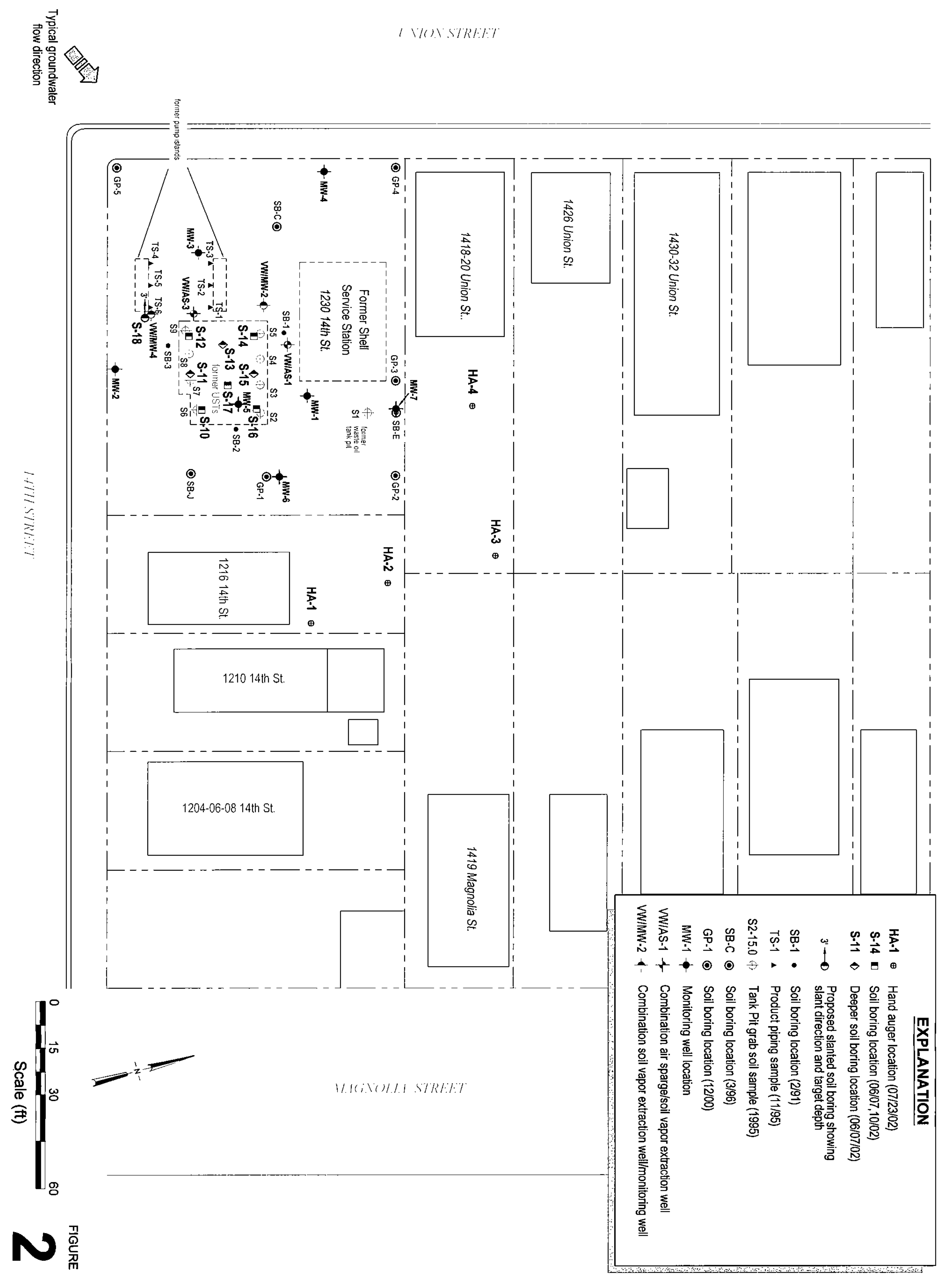
To evaluate the H_2O_2 injection's effectiveness, Cambria directed the installation of four verification soil borings (S-18 though S-21) to 25 fbg, to collect soil and grab groundwater samples from three locations within the treated UST backfill area and from one on-site, downgradient location. Soil samples were collected at approximately 5.0 ft intervals from each boring. Grab groundwater samples were collected using a bailer from each open boring.

Temporary injection wells P-1 through P-12 were destroyed on January 11, 2005. Quarterly groundwater monitoring continued. Cambria's March 17, 2005 *Remediation, Verification Sampling, and Post-Remediation Monitoring Report* reported the remediation activities, and evaluated the H_2O_2 injection's effectiveness.

2006 Periodic Groundwater Extraction (GWE): Between December of 2005 and August of 2006, Cambria conducted periodic GWE from wells MW-1, MW-5, and VW/MW-2. During this period GWE removed approximately 10,785 gallons of groundwater resulting in the removal of approximately 0.515 pounds of TPHg and 0.125 pounds of benzene.

August 2006 – DPE Pilot Test: In August 2006, Cambria performed a dual-phase extraction (DPE) pilot test on select site wells. Testing was performed on wells MW-1 and VW/AS-1, over 5 days. Well MW-5 had been targeted for testing, but due to damaged casing, the testing equipment could not be used in that well. The results of the testing indicate that DPE is not an appropriate remedial technology for this site. Hydrocarbon vapor concentrations were moderately low, which suggests that vadose soils are not significantly impacted near the test wells and/or that residual hydrocarbon impacts can't be effectively removed by DPE. Interim GWE was recommended in conjunction with performing a soil-gas vapor investigation to assess whether vapor migration was occurring. The results of this work was submitted in Cambria's December 27, 2006 *Dual-Phase Extraction Pilot Test Report and Groundwater Monitoring Report – Fourth Quarter 2006.*

1996 – Present Groundwater Monitoring: Groundwater monitoring has been conducted at the site since 1996. The highest TPHg, benzene and MTBE concentrations detected in groundwater monitoring samples collected at the site were 164,000 parts per billion (ppb), 16,000 ppb, and 1,700 ppb, respectively. Monitoring results for January 30, 2007 indicate that the current highest TPHg, benzene, and MTBE concentrations in site monitoring wells are 54,000 (VW/AS-1), 9,800 (MW-5), and 3.4 (VW/AS-3) ppb, respectively.



Former Shell Service Station

1230 14th Street

Oakland, California

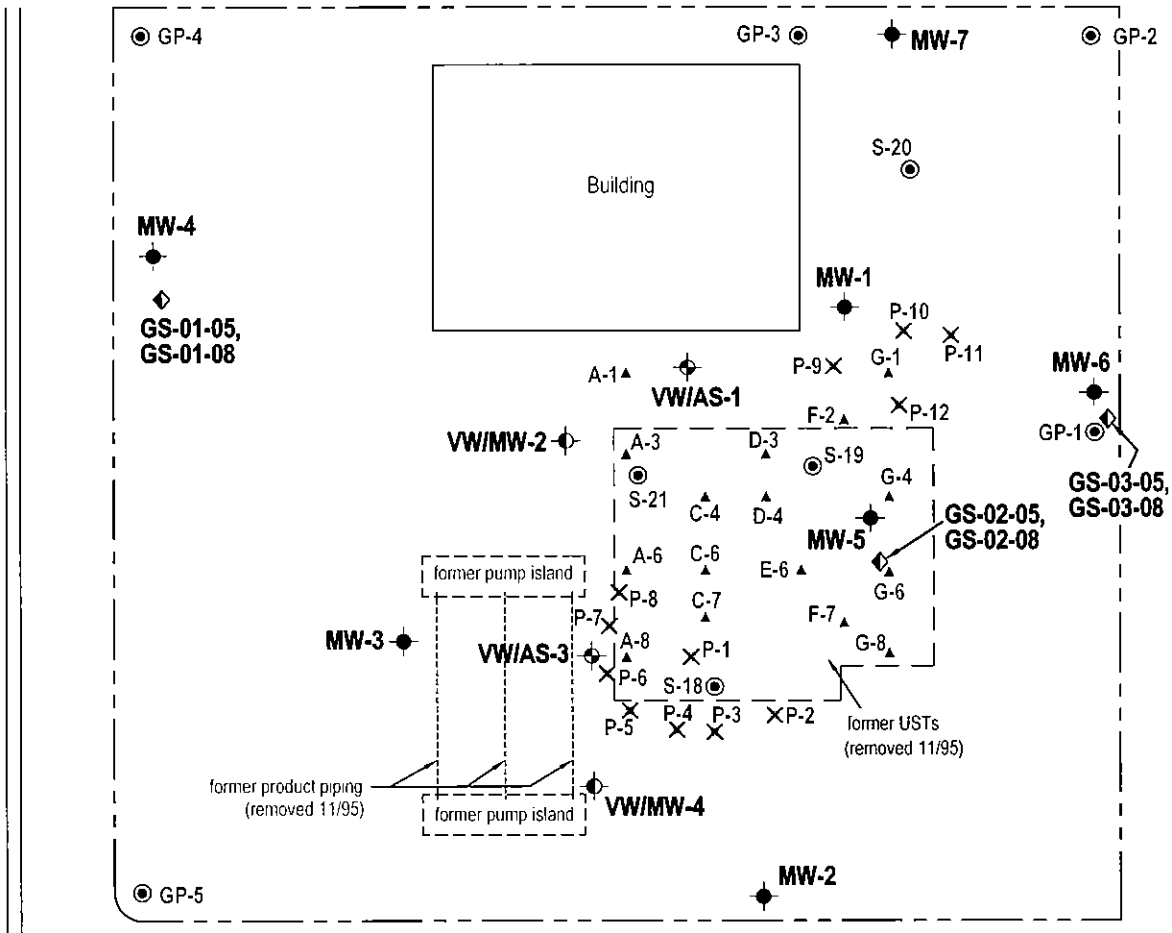
Incident No.97088250

CAMBRIA

Extended Site Plan

EXPLANATION

- GS-01-05 ◆ Grain-size analysis soil boring location
- MW-1 ⊕ Monitoring well location
- VW/AS-1 ⊕ Combination air sparge/soil vapor extraction well
- VW/MW-2 ⊕ Combination soil vapor extraction well/monitoring well
- S-18 ◉ Confirmation soil boring (11/07/03)
- P-1 × Destroyed peroxide injection port
- A-1 ▲ Peroxide injection location (03/17-20/03)
- GP-1 ◉ Soil boring location (12/11/00)



0 10 20

Scale (ft)

FIGURE

3

G:\OAKLAND 1230 14TH\FIGURES\SITE PLAN GRAIN-SIZE 3-05.DWG

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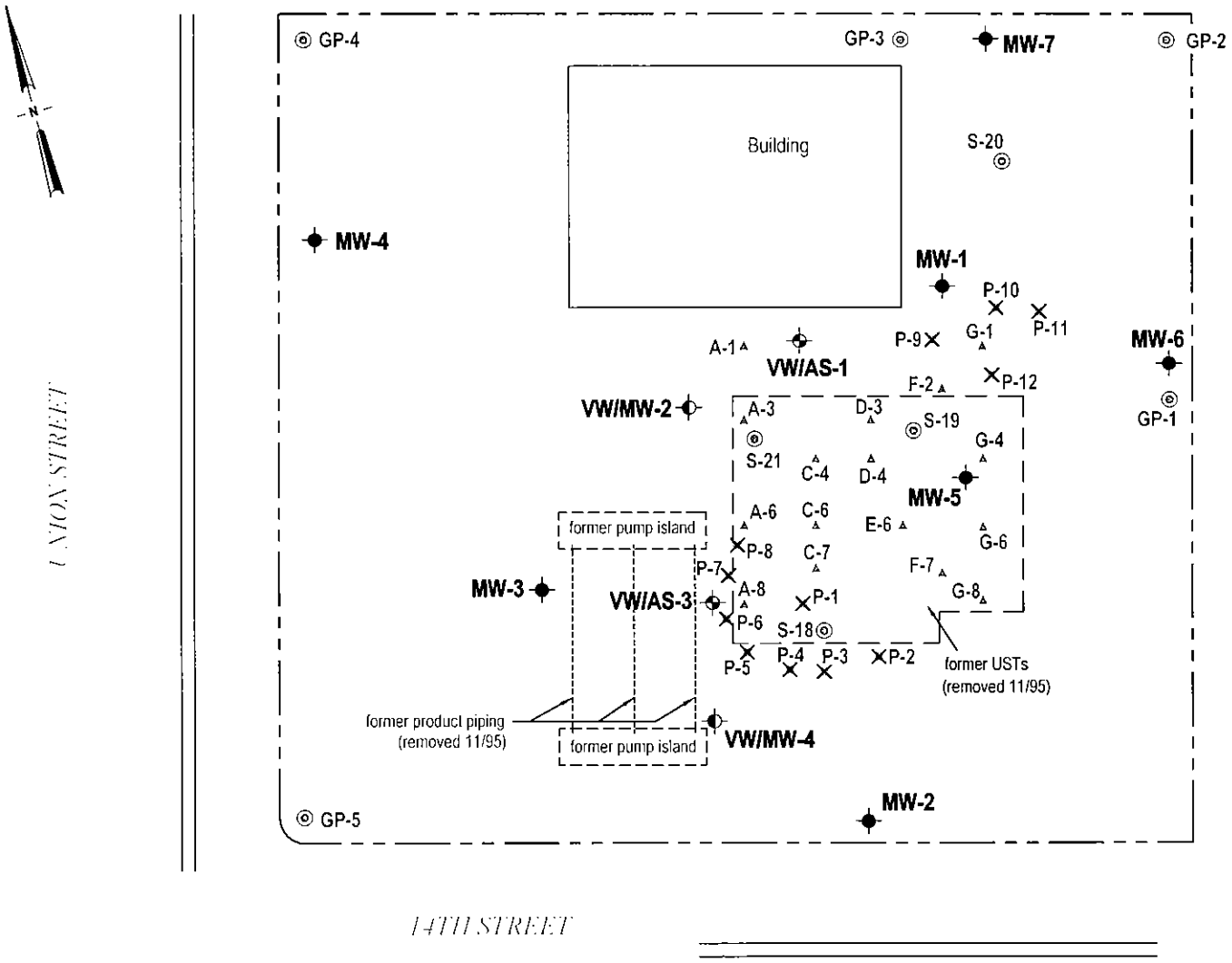
Grain Size Analysis Boring Locations

March 18, 2005

EXPLANATION

- MW-1 — Monitoring well location
- VW/AS-1 — Combination air sparge/soil vapor extraction well
- VW/MW-2 — Combination soil vapor extraction well/monitoring well
- S-18 — Confirmation soil boring (11/07/03)
- P-1 — Destroyed peroxide injection port
- A-1 — Peroxide injection location (03/17-20/03)
- GP-1 — Soil boring location (12/11/00)



0 10 20

Scale (ft)

FIGURE

4

G:\OAKLAND 1230 14TH\FIGURES\SITE PLAN 1-05.DWG

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Incident No.97088250

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2003 Hydrogen Peroxide Injection Locations

APPENDIX C

Standard Operating Procedures

STANDARD FIELD PROCEDURES FOR MONITORING WELLS

This document describes Pangea Environmental Services' standard field methods for drilling, installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Construction and Surveying

Groundwater monitoring wells are installed in soil borings to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I, II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Pangea Environmental Services' standard field methods for drilling and sampling soil borings. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality, and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist, scientist or engineer working under the supervision of a California Registered Engineer, California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic-push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. With hollow-stem drilling, samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. With hydraulic-push drilling, samples are typically collected using acetate liners. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.
Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes or cut acetate liners chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

Soil samples collected during drilling will be analyzed in the field for ionizable organic compounds using a photo-ionization detector (PID) with a 10.2 eV lamp. The screening procedure will involve placing an undisturbed soil sample in a sealed container (either a zip-lock bag, glass jar, or a capped soil tube). The container will be set aside, preferably in the sun or warm location. After approximately fifteen minutes, the head space within the container will be tested for total organic vapor, measured in parts per million on a volume to volume basis (ppmv) by the PID. The PID instrument will be calibrated prior to boring using hexane or isobutylene. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples collected from borings are either collected from the open borehole, from within screened PVC inserted into the borehole, or from a driven Hydropunch-type sampler. Groundwater is typically extracted using a bailer, check valve and/or a peristaltic pump. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Pangea often performs electrical conductivity (EC) logging and/or continuous coring to identify potential water-bearing zones. Hydropunch-type sampling is then performed to provide discrete-depth grab groundwater sampling within potential water-bearing zones for vertical contaminant delineation. Hydropunch-type sampling typically involves driving a cylindrical sheath of hardened steel with an expendable drive point to the desired depth within undisturbed soil. The sheath is retracted to expose a stainless steel or PVC screen that is sealed inside the sheath with Neoprene O-rings to prevent infiltration of formation fluids until the desired depth is attained. The groundwater is extracted using tubing inserted down the center of the rods into the screened sampler.

Duplicates and Blanks

Blind duplicate water samples are collected usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

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Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

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Groundwater Sampling

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Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes or cut acetate liners chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

Soil samples collected during drilling will be analyzed in the field for ionizable organic compounds using a photo-ionization detector (PID) with a 10.2 eV lamp. The screening procedure will involve placing an undisturbed soil sample in a sealed container (either a zip-lock bag, glass jar, or a capped soil tube). The container will be set aside, preferably in the sun or warm location. After approximately fifteen minutes, the head space within the container will be tested for total organic vapor, measured in parts per million on a volume to volume basis (ppmv) by the PID. The PID instrument will be calibrated prior to boring using

hexane or isobutylene. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

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Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

APPENDIX D

Pilot Test Data Collection

SVE/AS and DPE/AS Pilot Test Data Collection

Former Shell Service Station
1230 14th Street, Oakland, CA

SVE/DPE TESTING

SVE/DPE Test Wells: DP-1, DP-2, DP-3, and MW-5

Observation Wells: MW-1 through MW-7 and DP-1 through DP-3

Data Type	Data Collection Frequency	Data Collection Instrument	Data Collection Location	Purpose
Soil Vapor Flow Rate	About every 15-30 minutes	Hot-Wire Anemometer	Port on oxidizer inlet piping between vacuum blower and oxidizer (record info relating to any dilution air)	Understand vapor flow from subsurface and vapor throughput to oxidizer
Applied Vacuum	About every 15-30 minutes	Vacuum Gauge	Gauge on extraction well piping	Evaluate relationship between applied vacuum and vapor flow rates.
Soil Vapor Hydrocarbon Concentrations	About every 15-30 minutes with FID. Vapor samples for lab analysis collected at beginning, middle and end of each test.	Flame Ionizing Detector (FID), and 1-liter Tedlar bags or Summa Canisters for Laboratory Analysis	Sample ports on oxidizer influent and effluent piping	Evaluate contaminant mass removal rates in soil vapor and optimize SVE/DPE system performance.
Soil Vapor Temperature	About every 60 minutes or during system adjustment.	Dedicated Thermometer	Port on oxidizer inlet piping between vacuum blower and oxidizer	Calculation of hydrocarbon mass removal rates
Groundwater Production Rates	About every 15 minutes	Visual Observation and Flow Meter	Sight tube on vapor/liquid separator, marked to allow water flow estimation in gallons per minute, flow meter on transfer pump outlet	Evaluate DPE effectiveness at extracting water. Selection of appropriate extraction and treatment equipment.
Water Table Drawdown	Before testing, about every hour during testing, and water recovery after testing	Water Level Meter	Groundwater monitoring wells and DP wells near extraction well	Evaluate DPE effectiveness at exposing subsurface soil for vapor extraction. Assist with design of well network.

SVE/DPE TESTING

SVE/DPE Test Wells: DP-1, DP-2, DP-3, and MW-5

Observation Wells: MW-1 through MW-7 and DP-1 through DP-3

Data Type	Data Collection Frequency	Data Collection Instrument	Data Collection Location	Purpose
Vacuum Radius of Influence	Before testing, about every 30 minutes, and after test	Vacuum Gauges and Test Plugs	Groundwater monitoring wells and DP wells near extraction well	Estimate influence area. Assist with design of well network.
Groundwater Hydrocarbon Concentrations	Before and after testing from each extraction well.	Disposable Bailer; Samples Submitted for Lab Analysis	Monitoring and Extraction wells	Evaluate SVE/DPE effect on reducing aqueous-phase hydrocarbon concentrations.

SVE/ DPE with AS Pilot Test Data Collection

US Gas Station
938 13th Street, Richmond CA

SVE/DPE TESTING WITH AS

SVE/DPE Test Wells: DP-1, DP-2, DP-3, and MW-5

AS Test Wells: AS-1, AS-2, and AS-3

Observation Wells: MW-1 through MW-7 and DP-1 through DP-3

Data Type	Data Collection Frequency	Data Collection Instrument	Data Collection Location	Purpose
Air Delivery Pressure	About every 15-30 minutes	Pressure Gauge on Wellhead	Wellhead of AS well	Evaluate air pressure required to induce air flow at low and higher rates. Assist with equipment selection.
Soil Vapor Hydrocarbon Concentrations	About every 15 minutes with FID and immediately before and after AS startup and any major adjustments. Vapor samples for lab analysis collected just before AS, 15 minutes after AS, and at end of AS.	Flame Ionizing Detector (for field measurement) and Laboratory Analysis	Sample ports on oxidizer influent and effluent piping	Evaluate contaminant mass removal rates in soil vapor and optimize SVE/DPE system performance.
Subsurface Vacuum and Pressure	About every hour. More frequently if test shortened.	Vacuum/Pressure Gauges and Test Plugs	Observation Wells	Assess vapor capture and AS system radius of influence.
Dissolved Oxygen (DO)	Before and after AS testing	Dissolved Oxygen Meter	Observation Wells	Monitor for increasing DO concentrations.
Oxidation Reduction Potential (ORP)	Before and after AS testing	ORP Meter	Observation Wells. Lower sensor into wells.	Monitor for increasing ORP readings.

Note: Establish baseline concentrations during SVE/DPE before commencing AS. SVE/DPE monitoring continues during AS testing: Applied vacuum, soil vapor flow rate, soil vapor temperature, groundwater production rates, water table drawdown, and vacuum radius of influence.