ARCADIS
Infrastructure · Water · Environment · Buildings

ARCADIS U.S., Inc.
1000 Cobb Place Blvd.
Bldg. 500-A
Kennesaw
Georgia 30144
Tel 770 428 9009
Fax 770 428 4004

e-Transmittal Letter

To:
Barbara Jakub
Alameda County Department of
Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Copies:
Hugh Devery
File

From:
Jennifer Halcomb-LeBeau

Date:
May 15, 2012

Subject:
UPS Oakland Pilot Test Injection Work Plan

ARCADIS Project No.:
B0038398.0007

We are sending you:

☒ **Attached** ☐ **Under Separate Cover Via ________ the Following Items:**

☐ Shop Drawings ☐ Plans ☐ Specifications ☐ Change Order
☐ Prints ☐ Samples ☐ Copy of Letter ☐ Reports
☒ Other: Work Plan

Copies	Date	Drawing No.	Rev.	Description	Action*
1	5.15.12			UPS Oakland Pilot Test Injection Work Plan	FA

Action*
☐ A Approved ☐ CR Correct and Resubmit ☐ Resubmit _____ Copies
☐ AN Approved As Noted ☐ F File ☐ Return _____ Copies
☐ AS As Requested ☒ FA For Approval ☐ Review and Comment
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☒ Other: Upload to FTP website

Comments: ____________________

Ms. Barbara Jakub
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Subject:
Pilot Test Injection Work Plan
UPS Oakland Hub
8400 Pardee Drive, Oakland, CA 94621
Global ID T0600100939
State ID # 583
EPA ID # CAD 09707509

Dear Ms. Jakub:

Attached please find the Pilot Test Injection Work Plan for the above-referenced site. The work plan, which was prepared for United Parcel Service (UPS) by ARCADIS U.S., Inc. (ARCADIS), includes a plan to reduce residual total petroleum hydrocarbon diesel range organic (TPH-DRO) impacts at the UPS Oakland Hub.

I declare under penalty of perjury, that the information and/or recommendations contained in the attached Groundwater Monitoring and Injection Report are true and correct.

Please feel free to contact me directly at 404.828.8991 should you have any questions or comments.

Sincerely,

United Parcel Service

Paul Harper
Remediation and Assessment Manager

ARCADIS

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Imagine the result

Pilot Test Injection Work Plan

United Parcel Service

UPS – Oakland Hub
8400 Pardee Drive, Oakland, California

May 2012

ARCADIS

David M. Sonders.
Project Environmental Engineer

PROFESSIONAL GEOLOGIST • GREGORY R ALBRIGHT No. 5098 • STATE OF CALIFORNIA

Gregory Albright, P.G.
Principal Geologist

Pilot Test Work Plan

UPS-Oakland Hub
8400 Pardee Drive
Oakland, CA

Prepared for:
United Parcel Service

Prepared by:
ARCADIS U.S., Inc.
6413 Congress Avenue
Suite110
Boca Raton, FL 33487
Tel 561.995.8415
Fax 561.995.8477

Our Ref.:
B0038398.00007

Date:
May 15, 2012

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Section 1 – Introduction

In a letter dated, March 28, 2010 (sic 2012), to Ms Julie Straub of United Parcel Service, Inc.(UPS), Alameda County Health Care Services Agency requested pilot testing prior to CAP submittal. This pilot test work plan is in response to the technical comments received in the letter to Ms. Straub. The goal of this pilot test work plan is to determine the effectiveness of enhanced anaerobic bio-oxidation (ABOx) as a remedial strategy to reduce residual and dissolved-phase impacts to soil and groundwater from petroleum discharges associated with the former diesel underground storage tanks (USTs) to achieve cleanup criteria. Specifically, our goal is to reduce the high concentrations of dissolved total petroleum hydrocarbons – diesel range organis (TPH-DRO).

UPS operates a package distribution center at the Oakland Hub. Fuel dispensing to trucks and minor vehicle maintenance also occurs at the site; this includes vehicle oil/lubricant changing operations and oil filter replacement.

The location of the site is shown on the topographic map [United States Geological Survey (USGS) 7.5 minute San Leandro quadrangle] presented as **Figure 1**. The land surface is flat with a ground elevation at the site of approximately 10 feet above mean sea level (ft-amsl). **Figure 2** is an aerial photograph of the site and its vicinity, showing the location of adjacent and nearby properties. **Figure 3** is a site map that depicts the location of the site relative to the surrounding area.

Section 2 – Constituents of Concern and Site Conditions

The constituents of concern (COCs) at the site are limited to petroleum hydrocarbons; specifically diesel fuel,/TPH-DRO. . Initial discover of the release occurred in 1989. In June 1990, a limited Site Assessment was performed on the southern diesel fuel dispensing facility. Five monitoring wells and three soil borings were installed on the site in August 1990. Monthly free –product, or phase-separated hydrocarbons (PSH) removal and semi-annual groundwater sampling continued from the mid-1990's into 2009 when the southern fueling area diesel USTs were closed via removal. The monitoring wells have been sampled and analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), and total petroleum hydrocarbons (TPH)-gasoline range organics (GRO), DRO and methyl tertiary butyl ether (MTBE). Historically, TPH-GRO and TPH-DRO have been detected above laboratory reporting limits. **Tables 1A**, **1B**, and **2** outline the current and historical analytical results for both soil and groundwater.

During the most recent soil and groundwater assessment events, the COCs identified above the San Francisco Bay Regional Water Quality Control Board Environmental Screening Level (ESL) were TPH-DRO and TPH-GRO. TPH-DRO concentrations above ESLs were detected in the soil and groundwater. PSH has been intermittently identified in up to three monitoring wells on-site and is currently being recovered by a passive skimmer system.

As presented in the "Summary of Soil and Groundwater Investigation Activities" dated February 15, 2011 prepared by ARCADIS and submitted to the Alameda County Department of Environmental Health (ACEH), a forensic analysis of the composition of the TPH in soil and groundwater was conducted in May 2010. The results indicated that there were groundwater and soil samples exhibiting a predominantly diesel signature in the area of the former UST area. There were also groundwater and soil samples exhibiting a predominantly heavier than diesel hydrocarbon signature in the peripheral areas of the former UST area. This TPH component being heavier than diesel hydrocarbons in the peripheral areas of the former UST area is not believed to be associated with petroleum hydrocarbons from the former UST and its origin is unknown and is not assumed to be associated with historical UPS activities.

Analytical results for soil and groundwater collected during the most recent phase of investigation were also presented in the "Summary of Soil and Groundwater Investigation Activities" dated February 15, 2011 prepared by ARCADIS and submitted to the ACEH.

Regional and Site Specific Geology and Hydrogeology

Geology

The site is located in the East Bay Plain, which is characterized by Quaternary Age Bay mud composed of unconsolidated plastic clay and silty clay rich in organic material with some lenses of silt and sand. The area in which the site is located is underlain by artificial fill over San Francisco Bay mud. Soils encountered during the 2010 and previous investigations were artificial fill composed of gravel, sand and silty sand to depths of 5 feet to approximately 10 feet underlain by native bay muds (clay) to maximum depths of investigation.

Hydrogeology

Regional groundwater flow is indicated from east to west generally correlating to topography, localized groundwater flow can be influenced by east-west oriented buried stream channels as well as the tidal from the nearby bay, San Leandro Bay. There is a very low, if any, gradient at the site and the groundwater flow appears to alternate to the northwest and southeast. During the most recent groundwater sampling event conducted at the site depths-to-water (DTW) measurements were recorded in monitoring wells MW-2, MW-3, MW-4, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14 and OW-1 prior to groundwater sampling. The top of well casing elevations, DTW, and groundwater elevation data are summarized in **Table 3**. The apparent groundwater flow direction was to the southeast. A groundwater contour map is included as **Figure 4.**

Sensitive Receptor Survey

Figure 2 is an aerial photograph of the site and its vicinity, showing the location of adjacent and nearby properties. San Leandro Channel is located about 150 feet from the eastern property boundary and flows in a northwesterly direction toward San Leandro Bay.

On-site utilities are shown on **Figure 3**. The below-ground on-site utilities are sanitary sewer lines, a water line, electrical lines and storm drains. The electrical and sewer lines are in the immediate vicinity of the former UST area. Notification of the work plan will be sent via certified mail to the owners of the properties that are contiguous to the UPS property.

Groundwater Well Search

The well search was performed for the area within approximately one-mile of the site and identified 25 wells within the search parameters. ARCADIS determined that the well search included 24 shallow monitoring wells and one possible water supply well. The possible groundwater supply well is located approximately 2,500 feet southeast of the site former UST area. Due to the distance and low permeability of the natural sediments and extremely low hydraulic gradient, this possible water supply well is not considered at risk. A new updated well search is currently in progress and will be completed shortly and submitted under separate cover.

Section 3 – Previous Remediation Efforts

UST Removal and Excavation

Between March 31 and April 3, 2009, three 10,000 gallon diesel USTs, dispensers, and associated product piping were removed from the former UST area. Approximately 626 tons of petroleum impacted soil and pea gravel was removed from the site. Excavation of impacted soils was halted as it became evident that the impacts were wide spread and further assessment was necessary.

Enhanced Fluid Recovery

On April 14, 2010, ARCADIS performed an enhanced fluid recovery (EFR) event to recover PSH. Negative pressure was applied to monitoring wells OW-1 and MW-2 using a drop tube and a vacuum truck for the extraction of product, groundwater, and soil vapor. Subsurface pressure and depth to water was monitored at monitoring well MW-3 and at temporary test wells VT-1A, VT-1B, VT-2A, and VT-2B.

Separate EFR events were conducted at monitoring wells MW-3 and OW-1 for a total of 4 hours each well. The drop tube was set to 1-2 feet below the initial depth to water level and a negative pressure of approximately 21 inches of mercury (in Hg) was applied to the well. Approximately 1,700 gallons of groundwater and PSH were recovered during the combined 8-hour EFR event.

On May 5, 2010, the depth to water and product thickness was gauged at the site. PSH was detected in monitoring wells MW-2, MW-3, and OW-1. The EFR event possibly mobilized product to the extraction points. This would suggest that creating a consistent product gradient towards extraction points would aid in timely product recovery versus the EFR intermittent recovery that was currently being conducted at the site. Passive product recovery skimmers which remain in the wells were recommended as an alternative to the EFR events for product recovery and believed to be a more effective remediation strategy as they will continuously collect free product.

Passive Skimmers

Down-well passive PSH recovery skimmers were installed in monitoring wells OW-1, MW-2, and MW-3 in April 2011. PSH is collected in the integral skimmer sump and collected monthly for disposal. The skimmers are equipped with hydrophobic or water-rejecting screen which prevents water from entering the sump and allowing collection of PSH only. PSH recovery has been conducted monthly since June 2011 and is on-going to date.

During the February 2012 product gauging and recovery event, the PSH thickness of 0.02 feet was observed in OW-1 and MW-3 and a PSH thickness of 0.03 feet was observed in MW-2. During this event, product was recovered at full integral holding capacity (20 oz). PSH was observed to be translucent with unpleasant odor and was non-measureable. The PSH passive recovery skimmer data collected from June 2011 onwards is presented in **Table 4**.

Section 4 – Enhanced Bioremediation

Anaerobic Biological Oxidation

In general, aquifers impacted by petroleum hydrocarbons are typically anaerobic because dissolved oxygen (DO) is energetically favorable and is preferentially consumed by indigenous microbes during aerobic biological oxidation of the petroleum hydrocarbons. In these processes, the hydrocarbon materials serve as an electron donor for microbial respiration and work to deplete available oxygen within the system

Once oxygen has been depleted, alternative electron acceptors (i.e., nitrate, iron, manganese, sulfate, and carbon dioxide) are utilized in the continued anaerobic oxidation of petroleum hydrocarbons. As this is an old release, the oxygen is believed to have been depleted in shallow groundwater in the area impacted by this release. As a result of these processes, geochemical conditions at many hydrocarbon-impacted sites are mildly anaerobic (e.g., iron-, nitrate-, or sulfate-reducing). The anaerobic oxidation of petroleum hydrocarbons under these dominant electron accepting processes (e.g., sulfate-reduction, iron-reducing, methanogenesis, etc.) is well-founded in the literature (Anderson, et al., 2000; Aronson and Howard, 1997; Beller et al., 1992; Bordon et al, 1997; Coyne and Smith, 1995; Cunningham et al, 2001; Davis et al, 1999; Schreiber et al., 2004; Wiedemeier, et al., 1999; Suthersan and Payne, 2005; and Foght, 2008). Similar to enhanced aerobic systems, engineered anaerobic approaches rely on redox couples such as nitrate reduction, ferric iron reduction, sulfate reduction, and methanogenesis to facilitate cellular respiration using the petroleum hydrocarbon as an electron donor.

Anaerobic processes generally occur at slower kinetic rates than that observed with oxygen, but non-oxygen electron acceptors (i.e. sulfate) can be advantageous to oxygen injection approaches as they are significantly more soluble (sulfate solubility can be greater than 100 grams per liter [g/L]) and as a result can be supplied at elevated dissolved concentrations. In addition, these alternative electron acceptors have minimal abiotic or non-target reactions that typically limit the persistence of oxygen and thereby the effectiveness of aerobic treatment processes within the subsurface. The anaerobic biological oxidation approaches – particularly those utilizing dissolved sulfate – offer distinct advantages when compared to oxygen delivery strategies. The higher concentrations of sulfate that can be delivered and sustained allow for more effective means of achieving hydrocarbon degradation. Thus, while the kinetic rates of anaerobic hydrocarbon bio-oxidation may be moderately slower than those under aerobic conditions, the ability to deliver elevated concentrations of non-oxygen electron acceptors over a relatively long time period during several injection events is more cost-effective compared to long-term operation of continuous oxygen sparging or other engineered aerobic treatment alternatives.

Bio-geochemical parameters should be monitored prior to injections and changes in plume bio-geochemical parameters should be tracked through a series of monitoring events following the initial pilot test injection. Short-term effects of sulfate injection on groundwater chemistry may include the following:

- Increase of sulfate concentrations to a calculated concentration of 2.2 grams per liter (g/L) prior to consumption by sulfate reducing bacteria (initially localized to the injected radius of influence)
- Increase in the population of sulfate reducing bacteria, and the reduced form of sulfate – hydrogen sulfide
- Precipitation of iron sulfides from sulfide ions in solution and a decrease in sulfide and iron in the groundwater
- Localized increases in groundwater total dissolved solids (TDS), before the effects of advection and dilution disseminate the delivered sulfate

Long-term effects on groundwater chemistry are expected to be localized to the injection area due to diffusion and consumption of the sulfate and the reaction's byproducts. The radius of influence is expected to be 15 feet.

Decreasing long term historical COC concentration trends indicate that biological degradation may already be occurring at the site. Additional data shall be collected as part of this pilot test to confirm plume biogeochemical conditions and extent of ongoing natural attenuation.

Section 5 – Pilot Testing

Historical site investigation data suggests that residual hydrocarbon impacts remain within the shallow, saturated soil materials across the Site. To address soil and groundwater impacts at the Site, a network of injection wells will be used to support delivery of an electron acceptor solution (i.e., sulfate) within the target treatment interval. Given the distribution of these materials across the Site, an initial pilot test will be applied to include a preliminary injection in a known area of petroleum hydrocarbon related impacts to allow for collection of hydraulic information (groundwater velocity, volume-radial distribution relationship, injection flow rates) and performance data prior to expansion of the full-scale injection network. A layout of the pilot test area is presented on **Figure 5**.

The pilot test injection network consists of six installed injection wells in the area of the former diesel UST area. Pilot test monitoring will be supported by an existing series of monitoring wells to be used to confirm sulfate arrival and track changes in dissolved TPH-DRO plume biogeochemical conditions. The proposed injection wells will be used for the delivery of a magnesium sulfate solution to support further development of sulfate-reducing conditions and promote the biological oxidation process. Distribution of delivered electron acceptors via direct injection and subsequent ambient groundwater flow will establish an anaerobic oxidation reactive zone, the extent of which will be characterized via the monitoring network.

Injection monitoring results will be used to characterize hydraulic parameters during the injection event (subsurface inject-ability, volume-radial distribution relationship). Only estimates can be provided before the actual pilot test is completed. Post-injection sampling will be used to characterize the groundwater velocity and potential remedial effectiveness. Following the pilot test, these results will be evaluated and incorporated in a CAP Addendum. These results will also be used to determine the required injection network, the sulfate substrate dosing concentrations, and the injection methodology to optimize treatment performance.

The anticipated schedule for the pilot test is detailed below:

- Setup and completion of the pilot test injection event(one to two weeks);
- Pilot test post-injection monitoring period (two quarters);

Pilot Test Injection Setup and Completion

During the pilot test, six of the injection well locations will be injected into simultaneously. Individual wellheads will be connected via above-grade hose and a distribution manifold to allow for continuous flow from batch mixing tanks mounted in an injection trailer to each well location. Flow meters and inline pressure gauges will be used to monitor both the injection rate and wellhead pressure applied. Well head adaptors will be fitted with pressure relief valves to ensure air pressure can be released during the injection events. Based on the shallow DTW, the injection pressure will be limited to the extent possible and injections will be initiated under gravity feed. In the event that slow (< 0.5 gallons per minute (GPM)) injection rates are observed under gravity feed conditions, a minimal amount of pressure may be applied with an injection pump to enhance fluid delivery. Based on the Site lithology (natural and fill), it is estimated that injection flow rates will vary between one and two GPM.

Each injection well will be connected above ground with 1-inch poly hosing to a distribution manifold staged within the mobile injection trailer. The manifold will include flow control valves and flow meters to adjust the application rate and quantify injection volumes. The manifold will be connected to an air actuated pump within the injection trailer at the base of the batch mixing tanks powered by a portable air compressor. ARCADIS personnel will be on-site to execute the injection process and record injection parameters throughout the event. It is estimated that the injection portion of the pilot test will take approximately five to 10 days to complete.

As presented on **Figure 5**, the conservative target radius of influence from each individual injection well is approximately 15 feet. An onsite potable water source will be used to supply water to the four 275 gallon batch mixing tanks housed within the portable injection trailer. If no onsite water source is available a polyethylene holding tank with approximately 3,000 gallon capacity of potable water will be temporarily stored on-site. Granulated magnesium sulfate will be mixed in 5 gallon buckets and mixed with potable water added to the 275 gallon batch mixing tank to the target injection concentration.

Injection Volumes and Target Concentrations

During the pilot test, approximately 16,000 gallons of potable water from an on-site municipal water source will be used to dissolve approximately 2,032 pounds (lbs) of granulated magnesium sulfate in heptahydrate form. The quantities result in a target injection concentration of up to 6 grams per liter (g/L) as sulfate. Magnesium sulfate does not pose a health risk and sulfate has no MCL. The target in-situ sulfate concentration is approximately one to 2 g/L, assuming a groundwater dilution factor of approximately three along the flow path from injection well to dose response monitoring wells. Based on relevant experience at other sites the sulfate consumption half life is on the order of 10 to 20 days, which results in an anticipated sulfate longevity of three to four months.

Injection volumes are based on a target 15-foot radius of influence, a five-foot vertical interval, and an estimated mobile porosity of 10%, up to 2,644 gallons will be injected per well during the pilot test.

$$V_{ing} = \pi * ROI^2 * h * \theta_m * 7.48\,\frac{gallons}{ft^3} * wells$$

Where:

V_{ing} = injection volume in gallons

ROI = 15-foot target radius of influence

h = well screen length - 5 ft

θ_m = 10%

Wells = 6

Injection volumes will be adjusted as necessary in the field to achieve positive confirmation of injected solution at dose response monitoring wells MW-3, MW-4, and MW-12. An increase in specific conductivity, detected in dose response wells, coupled with laboratory analytical sulfate concentration data from dose response sampling will confirm that the target ROI is achieved over the target pilot test treatment area. A Conceptual design and magnesium sulfate loading calculations are included in **Table 5**.

Pilot Test Monitoring and Sampling Plan

This section describes the pilot test monitoring and sampling procedures required to track the changes in biogeochemical conditions following injection of the magnesium sulfate solution. The monitoring and sampling plan includes injection monitoring and sampling and post injection monitoring.

Injection Monitoring

Prior to injection, a baseline specific conductivity and pH reading will be obtained from the injection tank, injection wells, dose response wells MW-3, MW-4 and MW-12 and downgradient wells MW-13 and OW-1. During injection, conductivity and pH measurements will be monitored from dose response wells MW-3, MW-4, MW-12 and downgradient wells MW-13 and OW-1 and compared to baseline values. The wells will be periodically monitored following injection of the first 250 gallons of water and every 250 to 500 gallons of water injected per well after. A downhole multi-parameter meter will be placed in the well and measurements will be recorded. Once measurements show an increase or spike in conductivity along with sustained elevated specific conductivity, injection will cease. A spike and sustained elevated conductivity readings indicates that the magnesium sulfate solution has effectively reached the target ROI.

Post-Injection Sampling

Immediately following the end of injections, downhole specific conductivity measurements, pH and grab samples (3-volume purge methodology) for laboratory sulfate and sulfide analysis, as well as, sulfide analysis by chemetrix field kit, will be collected from monitoring wells MW-3, MW-4, MW-12, MW-13 and OW-1.

Additional groundwater sampling of these wells will occur approximately one and three months following injection and will include the analytes proposed during baseline sampling. Concentration trends of sulfate, biogeochemical parameters and COCs will be analyzed to determine the rate of sulfate reduction within the plume. Based on the rate of sulfate utilization by the subsurface microbial communities, sulfate concentrations may be adjusted for subsequent injection events.

A sampling matrix summarizing injection and performance monitoring is included in **Table 6**.

Section 6 – Schedule

Field activities are expected to begin within 30 to 60 days following approval of this pilot test work plan and necessary supporting permits. Sampling results and details pertaining to the field activities will be included as part of the CAP addendum. The CAP addendum will include a summary of the field activities, specific field measurements collected during the injection and monitoring events, laboratory analytical data and performance monitoring data, and any recommendations for potential full scale site implementation of this or remedial strategy.

Any modifications to this current program will be submitted to ACEH for approval prior to field implementation.

ARCADIS

References

In June 1990, a limited Site Assessment was performed on the southern diesel fuel dispensing facility (citation)

Analytical results for soil and groundwater collected during the most recent phase of investigation were presented in a Summary of Soil and Groundwater Investigation Activities Report dated February 15, 2011 and previously submitted to the Alameda County Department of Environmental Health (ACEH) (Citation)

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Tables

TABLE 1A

HISTORICAL SOIL ANALYTICAL SUMMARY (TPH, BTEX & MTBE)

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA
STATE ID # 583

Sample ID	Sample Date	Sample Depth (feet bgs)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)
		ESL - drinking water	83	83	0.044	2.9	2.3	2.3	0.023
		ESL - non-drinking water	100	100	0.12	9.3	2.3	11	8.4
SB-01 4.5-5.0	4/8/2010	4.5 - 5.0	**5,000**	82	<0.0039	<0.0039	<0.0039	<0.0077	<0.0039
SB-01 12-13	4/8/2010	12.0 - 13.0	8.7	<0.25	<0.0050	<0.0050	<0.0050	<0.010	<0.0050
SB-02 7.0-7.5	4/8/2010	7.0 - 7.5	**1,400**	1.8	<0.0041	<0.0041	0.0043	<0.0083	<0.0041
SB-02 9.5-10	4/8/2010	9.5 - 10.0	4.2	<0.32	<0.0064	<0.0064	<0.0064	<0.013	<0.0064
SB-03 4.0-4.5	4/8/2010	4.0 - 4.5	<1.0	<0.19	<0.0039	<0.0039	<0.0039	<0.0078	<0.0039
SB-03 7.5-8.0	4/8/2010	7.5 - 8.0	25	NA	NA	NA	NA	NA	NA
SB-05 4.5-5.0	4/9/2010	4.5 - 5.0	**5,000**	53	<0.0037	<0.0037	<0.0037	<0.0075	<0.0037
SB-05 10.0-10.5	4/9/2010	10.0 - 10.5	<0.99	<0.33	<0.0066	<0.0066	<0.0066	<0.013	<0.0066
SB-06 7.0-7.5	4/9/2010	7.0 - 7.5	**990**	NA	NA	NA	NA	NA	NA
SB-07 4.5-5.0	4/9/2010	4.5 - 5.0	**340**	NA	NA	NA	NA	NA	NA
SB-07D [a]	4/9/2010	4.5 - 5.0	**670**	NA	NA	NA	NA	NA	NA
SB-08 4.5-5.0	4/9/2010	4.5 - 5.0	66	NA	NA	NA	NA	NA	NA
SB-09 5.0-5.5	4/12/2010	5.0 - 5.5	5.3	<0.20	<0.0041	<0.0041	<0.0041	<0.0081	<0.0041
SB-09 9.5-10.0	4/12/2010	9.5 - 10.0	<1.0	<0.26	<0.0053	<0.0053	<0.0053	<0.011	<0.0053
SB-10 7.0-7.5	4/12/2010	7.0 - 7.5	31	<0.20	<0.0040	<0.0040	<0.0040	<0.0081	<0.0040
SB-10 9.5-10.0	4/12/2010	9.5 - 10.0	1.0	<0.24	<0.0047	<0.0047	<0.0047	<0.0095	<0.0047
SB-11 3.0-3.5	4/12/2010	3.0 - 3.5	<0.99	NA	NA	NA	NA	NA	NA
SB-12 6.0-6.5	4/13/2010	6.0 - 6.5	<1.0	<0.19	<0.0038	<0.0038	<0.0038	<0.0076	<0.0038

Abbreviations:

bgs = below ground surface

mg/kg = milligrams per kilogram

TPH-DRO = total petroleum hydrocarbons as diesel range organics

TPH-GRO = total petroleum hydrocarbons as gasoline range organics

MTBE = methyl tertiary-butyl ether

< = analyte not detected at or above the noted laboratory method detection limit

ESL = San Francisco Bay Regional Water Quality Control Board. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).

Table A, for Shallow Soils, Commercial/industrial Land Use, Groundwater is current of potentail source of drinking water.

Table B, for Shallow Soils, Commercial/industrial Land Use, Groundwater is not current of potentail source of drinking water.

Notes:

Bold = concentration is above one or more of the respective screening levels.

a = duplicate sample

TABLE 1B

HISTORICAL SOIL ANALYTICAL SUMMARY (PAHs)

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA
STATE ID # 583

Sample ID		Date Collected	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo[a]anthracene (mg/kg)	Benzo[a]pyrene (mg/kg)	Benzo[b]fluoranthene (mg/kg)	Benzo[g,h,i]perylene (mg/kg)	Benzo[k]fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno[1,2,3-cd]pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
RWQCB Environmental Screening Levels (ESLs)	**Shallow Soil (≤3 m-bgs)**	**Residential**	**16**	**13**	**2.8**	**0.38**	**0.038**	**0.38**	**27**	**0.38**	**23**	**0.062**	**40**	**8.9**	**0.62**	**1.3**	**11**	**85**
		Com./Ind.	**16**	**13**	**2.8**	**1.3**	**0.13**	**1.3**	**27**	**1.3**	**23**	**0.21**	**40**	**8.9**	**2.1**	**2.8**	**11**	**85**
	Deep Soil (>3 m-bgs)	**Residential**	**16**	**13**	**2.8**	**12**	**1.5**	**15**	**27**	**2.7**	**23**	**2.4**	**60**	**8.9**	**13**	**3.4**	**11**	**85**
		Com./Ind.	**16**	**13**	**2.8**	**12**	**1.5**	**15**	**27**	**2.7**	**23**	**2.4**	**60**	**8.9**	**13**	**3.4**	**11**	**85**
Low-Threat Standards	**0-5'**	**--**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**13**	**NE**	**NE**
	5-10'	**--**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1500**	**NE**	**NE**
SB-01-02-AUG1111	8	8/11/2011	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.032	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
SB-01-08--AUG1111	8	8/11/2011	0.023	0.047	< 0.01	< 0.01	< 0.01	0.015	< 0.01	< 0.01	< 0.01	< 0.01	0.015	0.16	< 0.01	0.012	0.24	0.019
SB-01-08-DUP-AUG1111	8	8/11/2011	0.02	0.016	0.014	0.011	0.011	0.026	0.0067	0.0078	0.016	< 0.005	0.022	0.057	0.0052	0.035	0.098	0.03
SB-02-02-AUG1111	2	8/11/2011	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SB-02-08-AUG1111	8	8/11/2011	0.061	0.15	0.11	< 0.025	**0.04**	0.089	0.025	0.026	0.04	< 0.025	< 0.025	0.5	< 0.025	0.68	0.89	0.029
SB-03-02-AUG1111	2	8/11/2011	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	0.014	0.013	< 0.01	0.012	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099
SB-03-08-AUG1111	8	8/11/2011	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.073	0.052	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.056	0.05
SB-04-02-AUG1111	2	8/11/2011	< 0.0099	< 0.0099	< 0.0099	< 0.0099	0.012	0.016	0.011	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099
SB-04-08-AUG1111	8	8/11/2011	< 0.005	0.064	0.21	**0.51**	**0.4**	**0.53**	0.21	0.16	0.49	**0.087**	1.1	< 0.05	0.18	< 0.05	0.74	1.1
SB-05-02-AUG1111	2	8/11/2011	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.059	< 0.05	< 0.05	0.081	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
SB-05-08-AUG1111	8	8/11/2011	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.052	< 0.025	< 0.025	0.027	< 0.025	0.034	< 0.025	< 0.025	< 0.025	0.037	0.045
SB-06-02-AUG1111	2	8/11/2011	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.029	< 0.01	< 0.01	0.032	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.022	0.021
SB-06-08-AUG1111	8	8/11/2011	< 0.0099	0.014	0.013	0.044	**0.043**	0.074	0.035	0.022	0.051	0.011	0.079	0.019	0.029	0.21	0.047	0.12
SB-07-02-AUG1111	2	8/11/2011	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	0.2	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	0.14	< 0.12
SB-07-08-AUG1111	8	8/11/2011	< 0.025	< 0.025	< 0.025	0.049	**0.047**	0.085	0.041	< 0.025	0.085	< 0.025	0.11	< 0.025	0.029	0.25	0.11	0.11
SB-12-02-AUG1111	2	8/11/2011	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	0.059	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049
SB-12-08-AUG1111	8	8/11/2011	< 0.05	< 0.05	< 0.05	0.066	0.08	0.099	0.062	< 0.05	0.065	< 0.05	0.12	< 0.05	< 0.05	< 0.05	0.093	0.16
SB-13-02-AUG1111	2	8/11/2011	0.44	< 0.099	0.27	**0.85**	**0.75**	**1.3**	0.3	**0.48**	0.97	**0.11**	2.2	0.2	0.28	< 0.099	1.7	2
SB-13-08-AUG1111	8	8/11/2011	< 0.005	0.01	0.0053	0.043	**0.061**	0.097	0.037	0.036	0.055	0.013	0.096	0.02	0.034	< 0.005	0.029	0.099
SB-13A-02-AUG1111	2	8/11/2011	0.55	< 0.049	0.17	**0.51**	**0.45**	**0.87**	0.16	0.26	0.62	**0.063**	1.1	0.28	0.14	< 0.049	0.97	1.2

TABLE 2

HISTORICAL GROUNDWATER MONITORING RESULTS AND BASELINE SAMPLING SUMMARY

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Date	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	TPH as gasoline µg/L	TPH as diesel µg/L	D.O. (mg/L)	Conductivity µS	EDB µg/L	1,2-DCA µg/L	Magnesium µg/L	Sulfate µg/L	Iron µg/L	Naphthalene µg/L	TDS (mg/L)
Field Analysis	--	--	--	--	--	--	--	--	--	5,000	--	--				--	3,000
ESL - Drinking Water	--	1	40	30	20	5	100	100	--	--	0.05	6				17	--
ESL - Non-Drinking Water	--	46	100	43	100	1800	210	210	--	--	150	200				24	--
MW-1	8/28/1990	3.00	1.40	4.00	2.40	NA	NA	21,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/19/1991	1.70	0.70	0.50	0.90	NA	NA	7,100	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/23/1991	1.60	1.10	0.50	1.50	NA	220	8,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/26/1991	180.00	120.00	31.00	160.00	NA	NA	2,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/18/1991	1.10	0.40	0.50	< 0.3	NA	NA	6,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/3/1992	0.90	< 0.3	0.80	0.70	NA	NA	2,200	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/29/1992	0.80	0.40	0.40	0.90	NA	NA	2,100	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/23/1993	0.66	< 0.5	0.50	< 0.5	NA	NA	3,200	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/11/1993	1.30	< 0.5	< 0.5	< 0.5	NA	NA	9,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/4/1994	2.10	0.65	1.30	2.10	NA	NA	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/10/1994	0.54	0.53	< 0.5	1.10	NA	NA	6,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/1/1995	< 1.0	< 1.0	1.00	< 1.0	NA	510	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/2/1995	< 0.5	< 0.5	< 0.5	< 0.5	NA	510	8,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/1995	2.80	< 0.5	< 0.5	< 0.5	NA	830	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/28/1995	2.10	< 0.5	< 0.5	< 0.5	NA	560	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/4/1997	NA	NA	NA	NA	NA	NA	28,000	0.76	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/1999	< 0.5	0.60	< 0.5	1.80	<3.0	1,600	28,000	9.90	NA	NA	NA	NA	NA	NA	NA	NA
	10/11/2000	< 0.5	< 0.5	< 0.5	< 1.0	< 5	260	21,000	0.39	NA	NA	NA	NA	NA	NA	NA	NA
	9/3/2002	<0.5	<0.5	<0.5	0.50	<0.5	1,00	38,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2003	<5	<5	<5	<10	<5.0	250	35,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/9/2003	<0.5	<0.5	<0.5	<1.0	0.60	440	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/19/2004	3.20	<2.5	<2.5	<5.0	<2.5	280	24,000 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/2004	<1.0	<1.0	<1.0	<2.0	2.10	1,400 g	150,000 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/23/2005	<1.0	<1.0	<1.0	<2.0	<1.0	550 Q1	15,000 Q2	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/29/2005	< 0.50	< 0.50	< 0.50	<1.0	0.94	310	7,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/27/2006	< 0.50	< 0.50	< 0.50	<1.0	0.62	420	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/28/2006	< 0.50	< 0.50	< 0.50	<1.0	0.87	220	28,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/19/2007	< 0.50	< 0.50	< 0.50	<1.0	<1.0	940	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/25/2007	<0.50	<0.50	<0.50	1.1	<0.50	240	9,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2008	<0.50	<0.50	<0.50	<1.0	<0.50	55	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/2008	<0.50	<0.50	<0.50	<1.0	<0.50	280	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/3/2009	ABANDONED															
MW-2	8/28/1990	0.60	0.40	0.60	0.70	NA	NA	3,500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/19/1991	0.50	< 0.3	< 0.3	< 0.3	NA	NA	<500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/23/1991	0.70	< 0.3	< 0.3	< 0.3	NA	<500	660	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/26/1991	0.70	< 0.3	< 0.3	< 0.3	NA	NA	<500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/18/1991	0.80	< 0.3	< 0.3	< 0.3	NA	NA	3,200	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/3/1992	0.70	< 0.3	< 0.3	0.50	NA	NA	400	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/29/1992	0.60	< 0.3	< 0.3	< 0.3	NA	NA	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/23/1993	0.55	< 0.5	< 0.5	< 0.5	NA	NA	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/11/1993	1.20	< 0.5	< 0.5	1.30	NA	NA	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/4/1994	0.72	< 0.5	< 0.5	1.10	NA	NA	3,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/10/1994	0.74	< 0.5	< 0.5	0.70	NA	NA	2,300	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/1/1995	2.10	< 1.0	< 1.0	< 1.0	NA	<100	2,100	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/2/1995	< 0.5	< 0.5	< 0.5	< 0.5	NA	210	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/1995	0.73	< 0.5	< 0.5	< 0.5	NA	130	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/28/1995	< 0.5	< 0.5	< 0.5	< 0.5	NA	210	2,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/12/1996	NS	NS	NS	NS	NS	NS	--	NS	NA	NA	NA	NA	NA	NA	NA	NA
	6/4/1997	NA	NA	NA	NA	NA	NA	3,300	0.52	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/1999	< 0.5	< 0.5	< 0.5	< 1.0	< 3.0	220	6,300	9.50	NA	NA	NA	NA	NA	NA	NA	NA
	10/11/2000	< 0.5	< 0.5	< 0.5	< 1.0	< 5.0	170	4,400	0.43	NA	NA	NA	NA	NA	NA	NA	NA
	9/27/2002	0.7J	<2.5	<2.5	<2.5	<2.5	17000	67,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2003	<25	<25	<25	<50	<25	1600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/25/2003	0.52	<0.50	<0.50	<1.0	<0.50	150	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/29/2004	0.51	<0.50	<0.50	<1.0	<0.50	84 g	7,800 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/2004	<0.50	<0.50	<0.50	<1.0	<0.50	630 g	10,000 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/24/2005	<0.50	<0.50	<0.50	<1.0	<0.50	2,300 Q1	15,000 Q2	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/29/2005	<1.0	<1.0	<1.0	<2.0	<1.0	1,900	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/27/2006	<1.0	<1.0	<1.0	<2.0	<1.0	710	8,900	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/28/2006	<0.50	<0.50	<0.50	<1.0	<0.50	62	7,500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/19/2007	<0.50	<0.50	<0.50	<1.0	<0.50	<50	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA

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UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Date	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	TPH as gasoline µg/L	TPH as diesel µg/L	D.O. (mg/L)	Conductivity µS	EDB µg/L	1,2-DCA µg/L	Magnesium µg/L	Sulfate µg/L	Iron µg/L	Naphthalene µg/L	TDS (mg/L)
	9/25/2007	<0.50	<0.50	<0.50	<1.0	<0.50	55	8,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2008	<0.50	<0.50	<0.50	<1.0	<0.50	210	6,200	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/2008	<0.50	<0.50	<0.50	<1.0	<0.50	220	23,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/5/2010	NA	NA	NA	NA	NA	<50	3,700	NA	NA	<0.5	<0.6	NA	NA	NA	<1.0	2,800
	2/25/2011	<0.50	<0.50	<0.50	<1.0	<0.50	360	37,000	NA	3,236	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	0.59	4.90	0.98	10.0	<0.50	140	4,600	NA	4,240	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	<0.50	0.52	<0.50	1.7	<0.50	**510**	**13,000**	NA	NA	NA	NA	NA	NA	NA	2.0	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	110,000	3,300	9,500	NA	2,400
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Monitoring Well	Date	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	TPH as gasoline µg/L	TPH as diesel µg/L	D.O. (mg/L)	Conductivity µS	EDB µg/L	1,2-DCA µg/L	Magnesium µg/L	Sulfate µg/L	Iron µg/L	Naphthalene µg/L	TDS (mg/L)
MW-3	8/28/1990	0.50	0.80	4.30	2.30	NA	NA	18,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/19/1991	0.40	0.40	1.70	1.40	NA	NA	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/23/1991	0.30	< 0.3	1.50	0.50	NA	330	6,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/26/1991	13.00	13.00	5.80	26.00	NA	NA	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/18/1991	0.60	< 0.3	< 0.3	< 0.3	NA	NA	2,500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/3/1992	0.40	< 0.3	1.30	0.60	NA	NA	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/29/1992	< 0.3	< 0.3	1.30	0.30	NA	NA	3,200	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/23/1993	< 0.5	< 0.5	< 0.5	< 0.5	NA	NA	8,100	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/11/1993	1.00	< 0.5	1.50	2.40	NA	NA	7,100	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/4/1994	< 0.5	< 0.5	1.60	< 0.5	NA	NA	7,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/10/1994	< 0.5	< 0.5	< 0.5	< 0.5	NA	NA	5,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/1/1995	< 1.0	< 1.0	2.70	4.10	NA	810	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/2/1995	< 0.5	< 0.5	< 0.5	< 0.5	NA	1200	6,500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/1995	< 0.5	< 0.5	< 0.5	< 0.5	NA	930	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/28/1995	< 0.5	< 0.5	< 0.5	< 0.5	NA	690	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/4/1997	NA	NA	NA	NA	NA	NA	34,000	0.84	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/1999	< 0.5	0.60	0.70	1.20	< 3.0	1300	8,700	8.60	NA	NA	NA	NA	NA	NA	NA	NA
	10/11/2000	< 0.5	< 0.5	< 0.5	< 1.0	< 5.0	430	20,000	0.51	NA	NA	NA	NA	NA	NA	NA	NA
	9/3/2002	<0.5	<0.5	<0.5	<0.5	<0.5	2,300	14,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2003	<25	<25	<25	<50	<25	2,500	19,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/9/2003	<0.5	<0.5	<0.5	<1.0	<0.5	700	73,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/19/2004	<0.50	<0.50	<0.50	<1.0	<0.50	99	14,000 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/2004	<2.5	<2.5	<2.5	<5.0	<2.5	390 g	10,000 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/24/2005	<2.5	<2.5	<2.5	<5.0	<2.5	330 Q1	14,000 Q2	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/29/2005	< 1.0	< 1.0	<1.0	< 2.0	< 1.0	1,200	8,300	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/27/2006	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	430	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/28/2006	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	370	17,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/19/2007	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	510	26,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/25/2007	<1.0	<1.0	<1.0	<2.0	<1.0	390	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2008	<0.50	<0.50	<0.50	<1.0	<0.50	280	21,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/2008	<0.50	<0.50	<0.50	<1.0	<0.50	270	9,500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/5/2010	NA	NA	NA	NA	NA	<150	24,000	NA	NA	<0.50	<0.50	NA	NA	NA	2.2	910
	2/25/2011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	<0.50	1.70	<0.50	2.1	<0.50	450	24,000	NA	1,378	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	<0.50	<0.50	<0.50	1.3	<0.50	**520**	**13,000**	NA	NA	NA	NA	NA	NA	NA	2.1	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47,000	7,900	5,800	NA	770
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	5/5/2010	NA	NA	NA	NA	NA	<50	5,200	NA	NA	<5.0	<5.0	NA	NA	NA	<1.0	1,100
	10/29/2010	<0.5	<0.5	<0.5	<1.0	<0.5	150	2,000	NA	1,940	NA	NA	NA	NA	NA	<1.0	NA
	2/25/2011	<0.50	<0.50	<0.50	<1.0	<0.50	250	24,000	NA	2,006	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	<0.50	<0.50	<0.50	<1.0	<0.50	430	7,700	NA	1,470	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	<0.50	<0.50	<0.50	<1.0	<0.50	**150**	**12,000**	NA	NA	NA	NA	NA	NA	NA	<1.0	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	51,000	4,400	22,000	NA	1,200
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.56	1,952	NA	NA	NA	NA	NA	NA	NA
MW-8	5/5/2010	NA	NA	NA	NA	NA	<50	70	NA	NA	<0.50	<0.50	NA	NA	NA	<1.0	2,900
	10/29/2010	<0.5	<0.5	<0.5	<1.0	<0.5	<50	1,100	NA	9,599	NA	NA	NA	NA	NA	<1.0	NA
	2/25/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<50	280	NA	9,379	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<50	200	NA	9,900	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<50	**120**	NA	NA	NA	NA	NA	NA	NA	<1.0	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	170,000	1,600	1,900	NA	**5,800**
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.85	3,634	NA	NA	NA	NA	NA	NA	NA
MW-9	5/5/2010	NA	NA	NA	NA	NA	<50	110	NA	NA	<0.50	<0.50	NA	NA	NA	<1.0	6,200
	2/25/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<50	580	NA	6,065	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	<0.50	0.55	<0.50	<1.0	<0.50	<50	240	NA	2,358	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<50	**160**	NA	NA	NA	NA	NA	NA	NA	<1.0	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	170,000	4,000	9,600	NA	**10,000**
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.87	**5,322**	NA	NA	NA	NA	NA	NA	NA
MW-10	5/5/2010	NA	NA	NA	NA	NA	<50	110	NA	NA	<0.50	<0.50	NA	NA	NA	<1.0	2,100
	10/29/2010	<0.5	<0.5	<0.5	<1.0	<0.5	<50	650	NA	9,550	NA	NA	NA	NA	NA	<1.0	NA
	2/25/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<50	5,600	NA	3,508	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<50	250	NA	9,334	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<50	**170**	NA	NA	NA	NA	NA	NA	NA	<1.0	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.61	3,540	NA	NA	NA	NA	NA	NA	NA
	5/5/2010	NA	NA	NA	NA	NA	<50	430	NA	NA	<0.50	<0.50	NA	NA	NA	<1.0	10,000
	10/29/2010	<0.5	<0.5	<0.5	<1.0	<0.5	<50	7,200	NA	17,500	NA	NA	NA	NA	NA	<1.0	NA

TABLE 2

HISTORICAL GROUNDWATER MONITORING RESULTS AND BASELINE SAMPLING SUMMARY

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Date	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	TPH as gasoline µg/L	TPH as diesel µg/L	D.O. (mg/L)	Conductivity µS	EDB µg/L	1,2-DCA µg/L	Magnesium µg/L	Sulfate µg/L	Iron µg/L	Naphthalene µg/L	TDS (mg/L)
MW-11	2/25/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<50	1,900	NA	525	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<50	1,100	NA	7,444	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	**0.53**	<0.50	<0.50	<1.0	<0.50	<50	**1,200**	NA	NA	NA	NA	NA	NA	NA	<1.0	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.91	3,097	NA	NA	NA	NA	NA	NA	NA
MW-12	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-13	3/19/2012	NA	NA	NA	NA	NA	NA	690	NA	NA	NA	NA	160,000	100,000	390,000	NA	2,000
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.52	2,972	NA	NA	NA	NA	NA	NA	NA
MW-14	3/19/2012	NA	NA	NA	NA	NA	NA	260	NA	NA	NA	NA	180,000	94,000	9,100	NA	**8,400**
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.96	4,872	NA	NA	NA	NA	NA	NA	NA

TABLE 2

HISTORICAL GROUNDWATER MONITORING RESULTS AND BASELINE SAMPLING SUMMARY

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Date	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	TPH as gasoline µg/L	TPH as diesel µg/L	D.O. (mg/L)	Conductivity µS	EDB µg/L	1,2-DCA µg/L	Magnesium µg/L	Sulfate µg/L	Iron µg/L	Naphthalene µg/L	TDS (mg/L)
OW-1	6/23/1993	< 0.5	< 0.5	< 0.5	31.00	NA	NA	34,000,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/4/1997	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/1999	< 2.0	< 2.0	< 2.0	4.20	< 12.0	8,300	28,000,000	9.70	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/1999	< 1.0	< 1.0	1.90	8.90	< 6.0	2,900	340,000	--	NA	NA	NA	NA	NA	NA	NA	NA
	10/11/2000	< 0.5	< 0.5	< 0.5	< 1.0	< 5.0	2,100	58,000	0.74	NA	NA	NA	NA	NA	NA	NA	NA
	9/27/2002	0.6J	<2.5	<2.5	<2.5	<2.5	17,000	23,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2003	<50	<50	<50	<100	<50	820	81,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/25/2003	<50	530.00	500.00	6200.00	<50	220	91,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/29/2004	<0.50	<0.50	<0.50	<1.0	<0.50	510	280,000 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/2004	<2.5	<2.5	<2.5	<5.0	<2.5	2,800 g	440,000 ndp	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/24/2005	<0.50	<0.50	<0.50	<1.0	<0.50	220 Q1	16,000 Q2	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/29/2005	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	650	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/27/2006	<13	<13	<13	<25	<13	<1,300	58,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/28/2006	<2.5	<2.5	<2.5	<5.0	<2.5	820	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/19/2007	<2.5	<2.5	<2.5	<5.0	<2.5	460	76,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/25/2007	<2.0	<2.0	<2.0	<4.0	<2.0	<200	42,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/28/2008	<0.50	<0.50	<0.50	<1.0	<0.50	1,700	120,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/30/2008	<0.50	<0.50	<0.50	<1.0	<0.50	340	180,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/5/2010	NA	NA	NA	NA	NA	74	7,000	NA	NA	<0.50	<0.50	NA	NA	NA	<1.0	1,800
	2/25/2011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/1/2011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/29/2012	<5.0	<5.0	<5.0	<10.0	<5.0	**1200**	**27,000**	NA	NA	NA	NA	NA	NA	NA	<10.0	NA
	3/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	78,000	34,000	19,000	NA	2,400
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IW-1	3/19/2012	NA	NA	NA	NA	NA	NA	16,000	NA	NA	NA	NA	97,000	4,500	210,000	NA	1,500
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.48	2,639	NA	NA	NA	NA	NA	NA	NA
IW-2	3/19/2012	NA	NA	NA	NA	NA	NA	2,500	NA	NA	NA	NA	95,000	99,000	8,200	NA	3,000
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.51	1,443	NA	NA	NA	NA	NA	NA	NA
IW-3	3/19/2012	NA	NA	NA	NA	NA	NA	2,400	NA	NA	NA	NA	110,000	43,000	30,000	NA	**3,100**
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.61	2,471	NA	NA	NA	NA	NA	NA	NA
IW-4	3/19/2012	NA	NA	NA	NA	NA	NA	110,000	NA	NA	NA	NA	190,000	17,000	350,000	NA	1,400
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.45	1,809	NA	NA	NA	NA	NA	NA	NA
IW-5	3/19/2012	NA	NA	NA	NA	NA	NA	220,000	NA	NA	NA	NA	150,000	25,000	270,000	NA	910
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.70	1,253	NA	NA	NA	NA	NA	NA	NA
IW-6	3/19/2012	NA	NA	NA	NA	NA	NA	6,100	NA	NA	NA	NA	270,000	48,000	270,000	NA	**6,200**
	4/19/2012	NA	NA	NA	NA	NA	NA	NA	0.77	**7,377**	NA	NA	NA	NA	NA	NA	NA

Notes:
(µg/L) = are micrograms per liter and mg/L are milligrams per liter.
NA = Not Analyzed; NS = Not Sampled; NM = Not Measured
TPH = Total petroleum hydrocarbons; MTBE = Methyl tertiary butyl ether.
Title 22 of the California Code of Regulations, California Maximum Contaminant Levels (MCLs) for drinking water.
D.O. = Dissolved Oxygen measured in the field.
Results collected between the dates of 8/28/90 and 12/28/95 are based on prior reporting by Geraghty & Miller, Inc. (1996).
Bold values indicate analytical detections above MCL.
The 9/96, 10/96 BBL reports revealed concentrations reported as TPH as diesel did not resemble the diesel chromatogram standard, containing > C-26.
J - Estimated value between MDL and PQL.
ndp - Hydrocarbon reported does not match the pattern of laboratory Diesel standard.
* = Not an MCL; Odor and taste threshold per the California Regional Water Quality Control Board regulations
Q2 = Quantity of unknown hydrocarbon(s) in sample based on diesel.
Q1 = Quantity of unknown hydrocarbon(s) in sample based on gasoline.
RWQCB ESLs = Regional Water Quality Control Board ESLs for Environmental Concerns at Sites with Contaminated Soil and Groundwater INTERIM FINAL - November 2007 (Revised May 2008) San Francisco Bay Region, CA

TABLE 3
HISTORICAL GROUNDWATER ELEVATION SUMMARY

UPS-OAKLAND HUB
8400 PARDEE DRIVE
OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Reference Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Measurement (ft)	Product Thickness (ft)	Volume Product Recovered (mL)
MW-1	7.43	8/28/1990	3.80	3.63	--	0.00	NR
		9/20/1990	3.99	3.44	-0.19	0.00	NR
		6/19/1991	3.47	3.96	0.52	NM	NR
		7/23/1991	3.70	3.73	-0.23	NM	NR
		8/26/1991	3.92	3.51	-0.22	NM	NR
		11/18/1991	4.21	3.22	-0.29	NM	NR
		2/3/1992	3.99	3.44	0.22	NM	NR
		6/29/1992	3.38	4.05	0.61	NM	NR
		6/23/1993	2.72	4.71	0.66	NM	NR
		10/11/1993	3.87	3.56	-1.15	NM	NR
		1/4/1994	3.34	4.09	0.53	NM	NR
		5/10/1994	2.14	5.29	1.20	NM	NR
		2/1/1995	1.84	5.59	0.30	NM	NR
		8/2/1995	3.10	4.33	-1.26	NM	NR
		10/16/1995	3.75	3.68	-0.65	NM	NR
		12/28/1995	3.56	3.87	0.19	NM	NR
		6/4/1997	3.16	4.27	0.40	0.00	NR
		9/30/1999	3.75	3.68	-0.59	0.00	NR
		10/11/2000	3.88	3.55	-0.13	0.00	NR
		9/3/2002	3.73	3.70	0.15	0.00	NR
		10/22/2002	5.11	2.32	-1.38	0.05	NR
		12/23/2002	3.51	3.92	1.60	0.00	NR
		3/28/2003	3.52	3.91	-0.01	0.00	NR
		5/30/2003	3.37	4.06	0.15	0.00	NR
		6/20/2003	3.50	3.93	-0.13	0.00	NR
		7/14/2003	3.65	3.78	-0.15	0.00	NR
		8/25/2003	3.87	3.56	-0.22	0.00	NR
		9/9/2003	4.02	3.41	-0.15	0.00	NR
		9/25/2003	4.10	3.33	-0.08	0.00	NR
		10/28/2003	4.29	3.14	-0.19	0.00	NR
		11/18/2003	4.32	3.11	-0.03	0.00	NR
		12/2/2003	4.34	3.09	-0.02	0.00	NR
		1/27/2004	3.88	3.55	0.46	0.00	NR
		2/24/2004	2.75	4.68	1.13	0.00	NR
		3/29/2004	3.45	3.98	-0.70	0.00	NR
		4/19/2004	3.55	3.88	-0.10	0.00	NR
		5/20/2004	3.69	3.74	-0.14	0.00	NR
		6/22/2004	3.81	3.62	-0.12	0.00	NR
		7/27/2004	3.99	3.44	-0.18	0.00	NR
		8/24/2004	4.14	3.29	-0.15	0.00	NR
		9/29/2004	4.32	3.11	-0.18	0.00	NR
		10/25/2004	3.89	3.54	0.43	0.00	NR
		12/15/2004	3.18	4.25	0.71	0.00	NR
		1/24/2005	2.69	4.74	0.49	0.00	NR
		2/23/2005	2.48	4.95	0.21	0.00	NR
		3/23/2005	2.21	5.22	0.27	0.00	NR
		4/29/2005	2.57	4.86	-0.36	0.00	NR
		5/27/2005	2.68	4.75	-0.11	0.00	NR
		6/29/2005	2.97	4.46	-0.29	0.00	NR
		7/20/2005	3.13	4.30	-0.16	0.00	NR
		8/24/2005	3.48	3.95	-0.35	0.00	NR
		9/27/2005	3.69	3.74	-0.21	0.00	NR
		10/19/2005	3.87	3.56	-0.18	0.00	NR
		11/29/2005	3.79	3.64	0.08	0.00	NR
		12/29/2005	3.08	4.35	0.71	0.00	NR
		1/31/2006	2.91	4.52	0.17	0.00	NR
		2/28/2006	2.84	4.59	0.07	0.00	NR
		3/27/2006	2.26	5.17	0.58	0.00	NR
		4/28/2006	2.40	5.03	-0.14	0.00	NR
		6/27/2006	3.09	4.34	-0.69	0.00	NR
		7/31/2006	3.35	4.08	-0.26	0.00	NR
		8/29/2006	3.60	3.83	-0.25	0.00	NR
		9/28/2006	3.90	3.53	-0.30	0.00	NR
		10/27/2006	3.97	3.46	-0.07	0.00	NR
		11/22/2006	3.64	3.79	0.33	0.00	NR
		12/26/2006	3.04	4.39	0.60	0.00	NR
		1/25/2007	3.26	4.17	-0.22	0.00	NR

TABLE 3
HISTORICAL GROUNDWATER ELEVATION SUMMARY

UPS-OAKLAND HUB
8400 PARDEE DRIVE
OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Reference Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Measurement (ft)	Product Thickness (ft)	Volume Product Recovered (mL)
MW-1	7.43	2/16/2007	3.12	4.31	0.14	0.00	NR
		3/19/2007	2.91	4.52	0.21	0.00	NR
		4/26/2007	2.93	4.50	-0.02	0.00	NR
		5/29/2007	3.15	4.28	-0.22	0.00	NR
		6/28/2007	3.42	4.01	-0.27	0.00	NR
		7/30/2007	3.60	3.83	-0.18	0.00	NR
		8/30/2007	3.85	3.58	-0.25	0.00	NR
		9/25/2007	4.00	3.43	-0.15	0.00	NR
		10/29/2007	4.05	3.38	-0.05	0.00	NR
		11/29/2007	4.10	3.33	-0.05	0.00	NR
		12/28/2007	3.80	3.63	0.30	0.00	NR
		1/24/2008	3.14	4.29	0.66	0.00	NR
		2/21/2008	2.44	4.99	0.70	0.00	NR
		3/28/2008	2.84	4.59	-0.40	0.00	NR
		4/30/2008	3.00	4.43	-0.16	0.00	NR
		5/29/2008	3.24	4.19	-0.24	0.00	NR
		6/25/2008	3.39	4.04	-0.15	0.00	NR
		7/29/2008	3.64	3.79	-0.25	0.00	NR
		8/27/2008	3.85	3.58	-0.21	0.00	NR
		9/30/2008	4.08	3.35	-0.23	0.00	NR
		10/31/2008	4.20	3.23	-0.12	0.00	NR
		11/26/2008	4.14	3.29	0.06	0.00	NR
		12/30/2008	3.94	3.49	0.20	0.00	NR
		1/22/2009	3.93	3.50	0.01	0.00	NR
		4/3/2009	ABANDONED				
MW-2	7.15	8/28/1990	4.98	2.17	--	0.00	NR
		9/20/1990	4.94	2.21	0.04	N/A	NR
		6/19/1991	4.66	2.49	0.28	N/A	NR
		7/23/1991	4.81	2.34	-0.15	N/A	NR
		8/26/1991	4.89	2.26	-0.08	N/A	NR
		11/18/1991	4.93	2.22	-0.04	N/A	NR
		2/3/1992	4.44	2.71	0.49	N/A	NR
		6/29/1992	4.80	2.35	-0.36	N/A	NR
		6/23/1993	4.38	2.77	0.42	N/A	NR
		10/11/1993	5.20	1.95	-0.82	N/A	NR
		1/4/1994	4.56	2.59	0.64	N/A	NR
		5/10/1994	4.20	2.95	0.36	N/A	NR
		2/1/1995	4.00	3.15	0.20	N/A	NR
		8/2/1995	4.71	2.44	-0.71	N/A	NR
		10/16/1995	5.02	2.13	-0.31	N/A	NR
		12/28/1995	4.56	2.59	0.46	N/A	NR
		6/12/1996	NM	--	--	0.25	NR
		6/4/1997	6.02	1.13	-1.46	Small globules	NR
		9/30/1999	4.95	2.20	1.07	0.00	NR
		10/11/2000	4.97	2.18	-0.02	0.08	NR
		2/12/2002	4.26	2.89	0.71	0.01	24.00
		9/3/2002	5.02	2.13	-0.76	0.07	NR
		9/27/2002	4.89	2.26	0.13	0.09	222.30
		10/22/2002	5.11	2.04	-0.22	0.05	125.00
		12/23/2002	4.25	2.90	0.86	0.04	99.00
		1/16/2003	4.28	2.87	-0.03	0.02	49.00
		2/12/2003	4.26	2.89	0.02	0.01	24.00
		3/28/2003	4.35	2.80	-0.09	0.01	25.00
		5/30/2003	3.60	3.55	0.75	0.02	49.00
		6/20/2003	4.55	2.60	-0.95	0.01	NR
		7/14/2003	4.56	2.59	-0.01	0.00	NR
		8/25/2003	4.79	2.36	-0.23	0.01	25.00
		9/9/2003	4.90	2.25	-0.11	0.01	NR
		9/25/2003	4.97	2.18	-0.07	0.01	25.00
		10/28/2003	4.98	2.17	-0.01	0.04	104.00
		11/18/2003	4.83	2.32	0.15	0.00	NR
		12/3/2003	4.87	2.28	-0.04	0.00	NR
		1/27/2004	7.39	-0.24	-2.52	0.00	NR
		2/24/2004	4.56	2.59	2.83	0.01	NR
		3/29/2004	4.24	2.91	0.32	0.01	NR
		4/19/2004	4.50	2.65	-0.26	0.01	25.00
		5/20/2004	4.53	2.62	-0.03	0.00	NR

TABLE 3
HISTORICAL GROUNDWATER ELEVATION SUMMARY

UPS-OAKLAND HUB
8400 PARDEE DRIVE
OAKLAND, CALIFORNIA
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Monitoring Well	Reference Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Measurement (ft)	Product Thickness (ft)	Volume Product Recovered (mL)
MW-2	7.15	6/22/2004	4.65	2.50	-0.12	0.00	NR
		7/27/2004	4.80	2.35	-0.15	0.00	NR
		8/24/2004	5.93	1.22	-1.13	0.00	NR
		9/29/2004	5.00	2.15	0.93	0.02	50.00
		10/25/2004	4.68	2.47	0.32	0.00	NR
		12/15/2004	4.34	2.81	0.34	0.02	50.00
		1/24/2005	4.15	3.00	0.19	0.00	NR
		2/23/2005	4.95	2.20	-0.80	0.03	74.00
		3/23/2005	4.96	2.19	-0.01	0.02	49.00
		4/29/2005	4.23	2.92	0.73	0.10	246.00
		5/27/2005	4.20	2.95	0.03	0.02	50.00
		6/29/2005	4.29	2.86	-0.09	0.00	NR
		7/20/2005	4.48	2.67	-0.19	0.04	98.00
		8/24/2005	4.71	2.44	-0.23	0.00	NR
		9/27/2005	4.98	2.17	-0.27	0.03	70.00
		10/19/2005	5.08	2.07	-0.10	0.00	NR
		11/29/2005	4.68	2.47	0.40	0.01	NR
		12/29/2005	4.19	2.96	0.49	0.01	NR
		1/31/2006	4.05	3.10	0.14	0.00	NR
		2/28/2006	4.16	2.99	-0.11	0.00	25.00
		3/27/2006	4.11	3.04	0.05	0.01	NR
		4/28/2006	4.03	3.12	0.08	0.00	NR
		6/27/2006	4.45	2.70	-0.42	0.01	NR
		7/31/2006	4.60	2.55	-0.15	0.02	NR
		8/29/2006	4.84	2.31	-0.24	0.01	NR
		9/28/2006	4.96	2.19	-0.12	0.03	NR
		10/27/2006	4.98	2.17	-0.02	0.00	NR
		11/22/2006	4.58	2.57	0.40	0.00	NR
		12/26/2006	4.22	2.93	0.36	0.02	NR
		1/25/2007	4.44	2.71	-0.22	0.00	NR
		2/16/2007	4.13	3.02	0.31	0.00	NR
		3/19/2007	4.30	2.85	-0.17	0.01	NR
		4/26/2007	4.17	2.98	0.13	0.03	NR
		5/29/2007	4.42	2.73	-0.25	0.01	25.00
		6/28/2007	5.16	1.99	-0.74	0.01	25.00
		7/30/2007	4.71	2.44	0.45	0.00	NR
		8/30/2007	4.94	2.21	-0.23	0.03	NR
		9/25/2007	5.06	2.09	-0.12	0.01	25.00
		10/29/2007	4.75	2.40	0.31	0.01	25.00
		11/29/2007	4.69	2.46	0.06	0.00	NR
		12/28/2007	4.35	2.80	0.34	0.00	NR
		1/24/2008	4.08	3.07	0.27	0.00	NR
		2/21/2008	3.97	3.18	0.11	0.01	25.00
		3/28/2008	4.18	2.97	-0.21	0.00	NR
		4/30/2008	4.40	2.75	-0.22	0.00	NR
		5/29/2008	4.58	2.57	-0.18	0.01	20.00
		6/25/2008	4.58	2.57	0.00	0.00	NR
		7/29/2008	4.85	2.30	-0.27	0.00	NR
		8/27/2008	4.89	2.26	-0.04	0.01	25.00
		9/30/2008	5.14	2.01	-0.25	0.04	98.00
		10/31/2008	5.23	1.92	-0.09	0.03	NR
		11/26/2008	4.74	2.41	0.49	0.04	NR
		12/30/2008	4.33	2.82	0.41	0.01	25.00
		1/22/2009	4.45	2.70	-0.12	0.01	25.00
	9.63	5/5/2010	4.03	5.60	2.90	0.13	NR
		10/29/2010	4.98	4.65	-0.95	0.08	NR
		2/25/2011	3.73	5.90	0.30	0.00	NR
		6/14/2011	4.23	5.40	-0.10	0.00	0.00
		7/19/2011	4.72	4.91	0.49	0.01	59.15
		8/18/2011	4.80	4.83	0.08	sheen	0.00
		9/1/2011	4.96	4.67	-0.16	sheen	0.00
		9/20/2011	5.08	4.56	-0.11	0.01	591.47
		10/19/2011	4.77	4.86	0.30	0.01	591.47
		11/22/2011	4.92	4.71	-0.15	0.01	532.32
		12/26/2011	4.92	4.71	0.00	0.01	532.32
		1/23/2012	5.20	4.43	-0.28	0.28	561.83
		2/15/2012	5.16	4.47	0.04	0.03	591.40
		2/29/2012	4.75	4.88	0.41	0.02	NR
		3/19/2012	4.42	5.21	0.33	0.00	NR

TABLE 3
HISTORICAL GROUNDWATER ELEVATION SUMMARY

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Monitoring Well	Reference Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Measurement (ft)	Product Thickness (ft)	Volume Product Recovered (mL)
MW-3	7.42	8/28/1990	3.88	3.54	--	0.00	NR
		9/20/1990	3.99	3.43	-0.11	0.00	NR
		6/19/1991	3.49	3.93	0.50	0.00	NR
		7/23/1991	3.71	3.71	-0.22	0.00	NR
		8/26/1991	3.94	3.48	-0.23	0.00	NR
		11/18/1991	4.23	3.19	-0.29	0.00	NR
		2/3/1992	4.01	3.41	0.22	0.00	NR
		6/29/1992	3.40	4.02	0.61	0.00	NR
		6/23/1993	2.75	4.67	0.65	0.00	NR
		10/11/1993	3.84	3.58	-1.09	0.00	NR
		1/4/1994	3.40	4.02	0.44	0.00	NR
		5/10/1994	2.25	5.17	1.15	0.00	NR
		2/1/1995	2.43	4.99	-0.18	0.00	NR
		8/2/1995	3.20	4.22	-0.77	0.00	NR
		10/16/1995	3.72	3.70	-0.52	0.00	NR
		12/28/1995	3.56	3.86	0.16	0.00	NR
		6/4/1997	3.20	4.22	0.36	0.00	NR
		6/3/1998	NM	--	--	0.00	
		9/30/1999	3.72	3.70	-0.52	0.00	NR
		10/11/2000	3.88	3.54	-0.16	0.00	NR
		9/3/2002	3.75	3.67	0.13	0.00	NR
		12/23/2002	3.50	3.92	0.25	0.00	NR
		3/28/2003	3.56	3.86	-0.06	0.00	NR
		5/30/2003	3.38	4.04	0.18	0.00	NR
		6/20/2003	3.52	3.90	-0.14	0.00	NR
		7/14/2003	3.65	3.77	-0.13	0.00	NR
		8/25/2003	3.99	3.43	-0.34	0.00	NR
		9/9/2003	3.99	3.43	0.00	0.00	NR
		9/25/2003	4.06	3.36	-0.07	0.00	NR
		10/28/2003	4.15	3.27	-0.09	0.00	NR
		11/18/2003	4.28	3.14	-0.13	0.00	NR
		12/2/2003	4.31	3.11	-0.03	0.00	NR
		1/27/2004	3.85	3.57	0.46	0.00	NR
		2/24/2004	3.70	3.72	0.15	0.00	NR
		3/29/2004	3.47	3.95	0.23	0.00	NR
		4/19/2004	3.55	3.87	-0.08	0.00	NR
		5/20/2004	3.65	3.77	-0.10	0.00	NR
		6/22/2004	3.83	3.59	-0.18	0.00	NR
		7/27/2004	3.98	3.44	-0.15	0.00	NR
		8/24/2004	4.14	3.28	-0.16	0.00	NR
		9/29/2004	4.30	3.12	-0.16	0.00	NR
		10/25/2004	3.85	3.57	0.45	0.00	NR
		12/15/2004	3.16	4.26	0.69	0.00	NR
		1/24/2005	2.65	4.77	0.51	0.00	NR
		2/23/2005	2.50	4.92	0.15	0.00	NR
		3/23/2005	2.48	4.94	0.02	0.00	NR
		4/29/2005	2.59	4.83	-0.11	0.00	NR
		5/27/2005	2.75	4.67	-0.16	0.00	NR
		6/29/2005	3.05	4.37	-0.30	0.00	NR
		7/20/2005	3.10	4.32	-0.05	0.00	NR
		8/24/2005	3.45	3.97	-0.35	0.00	NR
		9/27/2005	3.71	3.71	-0.26	0.00	NR
		10/19/2005	3.73	3.69	-0.02	0.00	NR
		11/29/2005	3.75	3.67	-0.02	0.00	NR
		12/29/2005	3.08	4.34	0.67	0.00	NR
		1/31/2006	2.99	4.43	0.09	0.00	NR
		2/28/2006	2.95	4.47	0.04	0.00	NR
		3/27/2006	2.60	4.82	0.35	0.00	NR
		4/28/2006	2.90	4.52	-0.30	0.00	NR
		6/27/2006	3.01	4.41	-0.11	0.00	NR
		7/31/2006	4.33	3.09	-1.32	0.00	NR
		8/29/2006	3.62	3.80	0.71	0.00	NR
		9/28/2006	3.80	3.62	-0.18	0.00	NR
		10/27/2006	3.90	3.52	-0.10	0.00	NR
		11/22/2006	3.60	3.82	0.30	0.00	NR
		12/26/2006	3.07	4.35	0.53	0.00	NR
		1/25/2007	3.25	4.17	-0.18	0.00	NR

TABLE 3
HISTORICAL GROUNDWATER ELEVATION SUMMARY

UPS-OAKLAND HUB
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OAKLAND, CALIFORNIA
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Monitoring Well	Reference Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Measurement (ft)	Product Thickness (ft)	Volume Product Recovered (mL)
MW-3	7.42	2/16/2007	3.09	4.33	0.16	0.00	NR
		3/19/2007	2.83	4.59	0.26	0.00	NR
		4/26/2007	2.94	4.48	-0.11	0.00	NR
		5/29/2007	3.18	4.24	-0.24	0.00	NR
		6/28/2007	3.41	4.01	-0.23	0.00	NR
		7/30/2007	3.62	3.80	-0.21	0.00	NR
		8/30/2007	3.84	3.58	-0.22	0.00	NR
		9/25/2007	4.03	3.39	-0.19	0.00	NR
		10/29/2007	4.06	3.36	-0.03	0.00	NR
		11/29/2007	4.10	3.32	-0.04	0.00	NR
		12/28/2007	3.78	3.64	0.32	0.00	NR
		1/24/2008	3.16	4.27	0.63	0.00	NR
		2/21/2008	2.41	5.02	0.75	0.00	NR
		3/28/2008	2.94	4.48	-0.54	0.00	NR
		4/30/2008	3.08	4.34	-0.14	0.00	NR
		5/29/2008	3.24	4.18	-0.16	0.00	NR
		6/25/2008	3.30	4.12	-0.06	0.00	NR
		7/29/2008	3.50	3.92	-0.20	0.00	NR
		8/27/2008	3.84	3.58	-0.34	0.00	NR
		9/30/2008	4.03	3.39	-0.19	0.00	NR
		10/31/2008	4.20	3.22	-0.17	0.00	NR
		11/26/2008	4.23	3.19	-0.03	0.00	NR
		12/30/2008	3.96	3.46	0.27	0.00	NR
		1/22/2009	3.96	3.46	0.00	0.00	NR
	9.89	5/5/2010	3.13	6.76	3.30	0.02	NR
		10/29/2010	4.70	5.19	-1.57	0.00	NR
		2/25/2011	1.54	8.35	3.16	0.02	NR
		6/14/2011	3.25	6.64	-1.71	0.05	0.00
		7/19/2011	3.53	6.36	-0.28	0.02	532.32
		8/18/2011	3.98	5.91	-0.45	sheen	591.47
		9/1/2011	4.12	5.77	-0.14	sheen	591.47
		9/20/2011	4.41	5.48	-0.29	sheen	591.47
		10/19/2011	4.34	5.55	0.07	sheen	561.90
		11/22/2011	4.75	5.14	-0.41	sheen	532.32
		12/26/2011	4.70	5.19	-0.29	sheen	532.32
		1/23/2012	4.11	5.78	0.64	0.01	532.26
		2/15/2012	4.90	4.99	-0.79	0.02	591.40
		2/29/2012	4.14	5.75	-0.03	0.03	NR
		3/19/2012	2.98	6.91	1.16	0.03	NR
MW-4	9.77	5/5/2010	2.96	6.81	--	0.00	
		10/29/2010	4.53	5.24	-1.57	0.00	NR
		2/25/2011	1.34	8.43	3.19	0.00	NR
		9/1/2011	3.99	5.78	0.54	0.00	NR
		2/29/2012	3.91	5.86	-2.57	0.00	NR
		3/19/2012	2.81	6.96	1.10	0.00	NR
MW-8	8.22	5/5/2010	2.56	5.66	--	0.00	
		10/29/2010	4.39	3.83	-1.83	0.00	NR
		2/25/2011	2.69	5.53	1.70	0.00	NR
		9/1/2011	3.67	4.55	0.72	0.00	NR
		2/29/2012	3.63	4.59	-0.94	0.00	NR
		3/19/2012	3.37	4.85	0.26	0.00	NR
MW-9	14.63	5/5/2010	6.28	8.35	--	0.00	
		10/29/2010	6.28	8.35	0.00	0.00	NR
		2/25/2011	5.55	9.08	0.73	0.00	NR
		9/1/2011	6.05	8.58	0.23	0.00	NR
		2/29/2012	5.98	8.65	-0.43	0.00	NR
		3/19/2012	5.68	8.95	0.30	0.00	NR
MW-10	9.68	5/5/2010	8.28	1.40	--	0.00	
		10/29/2010	8.27	1.41	0.01	0.00	NR
		2/25/2011	4.45	5.23	3.82	0.00	NR
		9/1/2011	8.35	1.33	-0.08	0.00	NR
		2/29/2012	8.32	1.36	-3.87	0.00	NR
		3/19/2012	7.11	2.57	1.21	0.00	NR
MW-11	9.49	5/5/2010	7.21	2.28	--	0.00	
		10/29/2010	6.83	2.66	0.38	0.00	NR
		2/25/2011	2.83	6.66	4.00	0.00	NR
		9/1/2011	6.05	3.44	0.78	0.00	NR
		2/29/2012	5.89	3.60	-3.06	0.00	NR
		3/19/2012	8.88	0.61	-2.99	0.00	NR
MW-12	9.43	3/19/2012	4.40	5.03	--	0.18	NR
MW-13	9.10	3/19/2012	3.56	5.54	--	--	NR
MW-14	9.29	3/19/2012	1.86	7.43	--	--	NR
OW-1	N/A	6/4/1997	7.22	NC	--	0.01	NR
		9/30/1999	8.35	NC	1.13	0.01	NR
		10/11/2000	6.90	NC	-1.45	0.09	NR
		2/12/2002	5.23	NC	-1.67	0.01	38.00
		9/27/2002	7.02	NC	1.79	0.14	345.78
		10/22/2002	7.34	NC	0.32	0.01	40.00
		12/23/2002	5.17	NC	-2.17	0.03	167.00
		1/16/2003	4.97	NC	-0.20	0.01	40.00
		2/12/2003	5.23	NC	0.26	0.01	38.00
		3/28/2003	5.16	NC	-0.07	0.01	25.00
		5/30/2003	4.41	NC	-0.75	0.02	77.00
		6/20/2003	4.93	NC	0.52	0.01	NR

TABLE 3
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OAKLAND, CALIFORNIA
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Monitoring Well	Reference Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Measurement (ft)	Product Thickness (ft)	Volume Product Recovered (mL)
OW-1	N/A	7/14/2003	5.33	NC	0.40	0.00	NR
		8/25/2003	5.85	NC	0.52	0.00	NR
		9/9/2003	6.33	NC	0.48	0.00	NR
		9/25/2003	6.52	NC	0.19	0.01	25.00
		10/28/2003	7.26	NC	0.74	0.03	176.00
		11/18/2003	7.29	NC	0.03	0.00	NR
		12/2/2003	7.23	NC	-0.06	0.03	NR
		1/27/2004	7.96	NC	0.73	0.01	NR
		2/24/2004	6.26	NC	-1.70	0.02	NR
		3/29/2004	6.08	NC	-0.18	0.02	NR
		4/19/2004	6.29	NC	0.21	0.03	116.00
		5/20/2004	6.16	NC	-0.13	0.00	NR
		6/22/2004	6.37	NC	0.21	0.00	NR
		7/27/2004	5.67	NC	-0.70	0.04	225.00
		8/24/2004	6.81	NC	1.14	0.00	NR
		9/29/2004	7.08	NC	0.27	0.04	153.00
		10/25/2004	6.74	NC	-0.34	0.04	NR
		12/15/2004	5.33	NC	-1.41	0.04	155.00
		1/24/2005	3.98	NC	-1.35	0.00	NR
		2/23/2005	3.44	NC	-0.54	0.01	NR[5]
		3/23/2005	3.34	NC	-0.10	0.02	77.00
		4/29/2005	6.89	NC	3.55	0.13	501.00
		5/27/2005	7.18	NC	0.29	0.11	425.00
		6/29/2005	7.12	NC	-0.06	0.10	450.00
		7/20/2005	7.20	NC	0.08	0.10	556.00
		8/24/2005	7.15	NC	-0.05	0.06	249.00
		9/27/2005	7.43	NC	0.28	0.12	450.00
		10/19/2005	7.48	NC	0.05	0.11	425.00
		11/29/2005	7.00	NC	-0.48	0.04	NR
		12/29/2005	5.22	NC	-1.78	0.00	NR
		1/31/2006	5.64	NC	0.42	0.00	NR
		2/28/2006	6.53	NC	0.89	0.01	39.00
		3/27/2006	5.80	NC	-0.73	0.01	NR
		4/28/2006	6.39	NC	0.59	0.00	NR
		6/27/2006	7.82	NC	1.43	0.06	NR
		7/31/2006	5.82	NC	-2.00	0.05	NR
		8/29/2006	7.05	NC	1.23	0.07	NR
		9/28/2006	7.10	NC	0.05	0.02	NR
		10/27/2006	7.27	NC	0.17	0.02	NR
		11/22/2006	7.05	NC	-0.22	0.02	NR
		12/26/2006	6.73	NC	-0.32	0.03	NR
		1/25/2007	7.15	NC	0.42	0.00	NR
		2/16/2007	7.71	NC	0.56	0.01	NR
		3/19/2007	6.77	NC	-0.94	0.02	NR
		4/26/2007	6.66	NC	-0.11	0.01	NR
		5/29/2007	6.86	NC	0.20	0.02	76.00
		6/28/2007	6.97	NC	0.11	0.20	75.00
		7/30/2007	7.06	NC	0.09	0.01	NR
		8/30/2007	7.25	NC	0.19	0.03	NR
		9/25/2007	7.25	NC	0.00	0.03	115.00
		10/29/2007	7.43	NC	0.18	0.02	78.00
		11/29/2007	7.37	NC	-0.06	0.00	NR
		12/28/2007	7.28	NC	-0.09	0.01	40.00
		1/24/2008	6.61	NC	-0.67	0.01	38.00
		2/21/2008	6.33	NC	-0.28	0.01	37.00
		3/28/2008	6.80	NC	0.47	0.01	NR
		4/30/2008	7.44	NC	0.64	0.03	166.90
		5/29/2008	7.09	NC	-0.35	0.01	38.00
		6/25/2008	7.07	NC	-0.02	0.02	112.00
		7/29/2008	7.34	NC	0.27	0.00	NR
		8/27/2008	7.28	NC	-0.06	0.02	78.00
		9/30/2008	7.82	NC	0.54	0.03	167.00
		10/31/2008	7.31	NC	-0.51	0.01	NR
		11/26/2008	6.93	NC	-0.38	0.01	NR
		12/30/2008	7.25	NC	0.32	0.02	112.00
		1/22/2009	7.05	NC	-0.20	0.01	56.00

TABLE 3
HISTORICAL GROUNDWATER ELEVATION SUMMARY

UPS-OAKLAND HUB
8400 PARDEE DRIVE
OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Reference Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Measurement (ft)	Product Thickness (ft)	Volume Product Recovered (mL)
OW-1	9.55	5/5/2010	7.08	2.47	--	0.06	NR
		10/29/2010	7.37	2.18	-0.29	0.08	NR
		2/25/2011	6.17	3.38	1.20	0.05	NR
		6/14/2011	6.78	2.77	-0.61	0.08	0.00
		7/19/2011	7.30	2.25	-0.52	0.20	118.29
		8/18/2011	7.35	2.20	-0.05	0.03	147.87
		9/1/2011	7.35	2.20	0.00	0.03	147.87
		9/20/2011	7.41	2.14	-0.06	0.04	591.47
		10/19/2011	7.42	2.13	-0.01	0.03	532.32
		11/22/2011	7.09	2.46	0.33	0.03	29.57
		12/26/2011	7.32	2.23	0.09	0.02	147.87
		1/23/2012	6.90	2.65	0.19	0.30	532.26
		2/15/2012	7.32	2.23	-0.42	0.02	591.40
		2/29/2012	7.54	2.01	-0.64	0.08	NR
		3/19/2012	7.25	2.30	0.07	0.01	NR
IW-1	9.50	3/19/2012	4.38	5.12	--	0.00	NR
IW-2	9.02	3/19/2012	4.15	4.87	--	0.00	NR
IW-3	8.93	3/19/2012	4.23	4.70	--	0.00	NR
IW-4	9.96	3/19/2012	3.00	6.96	--	0.00	NR
IW-5	9.88	3/19/2012	2.92	6.96	--	0.00	NR
IW-6	9.67	3/19/2012	3.15	6.52	--	0.00	NR

Notes:
1. Reference elevation surveyed relative to mean sea level by Geraghty and Miller (Geraghty and Miller, Inc., 1990)
2. Depth to groundwater measured from notch/mark on north edge of well casing
3. Sources: Geraghty and Miller, 1996; BBL
4. NM = Not measured; NC = Not calculated; N/A= Not Available; NR = No Recovery
5. SPH detected but amount insufficient to bail
Volume of product recovered on 9/27/02 and 3/23/05 calculated based on measurements from field data sheets

TABLE 4
PSH Recovery Summary

UPS-OAKLAND HUB
8400 PARDEE DRIVE
OAKLAND, CALIFORNIA
STATE ID # 583

Monitoring Well	Date Collected	Time	Well Size	Depth to Water(foot)	Depth to Product (foot)	Product Thickness (inches)	Amount of product recovered from the Skimmer	Amount of water from the Skimmer	Notes
OW-1	3/6/2012	1:00	6"	-	7.4	-	0.5 OZ	-	Minimal product observed
	2/15/2012	12:00	6"	7.32	7.3	0.02	20 OZ	-	Yellow, strong odor, brown/black particles
	1/23/2012	2:00	6"	7.2	6.9	0.3	18 OZ	-	Yellow translucent, brown skim, strong odor
	12/20/2011	12:20	6"	7.32	7.30	0.02	5 OZ	-	0.75 yellow and 4.25 black
	11/22/2011	1:00	6"	7.09	7.06	0.03	1 OZ	-	Black liquid
	10/19/2011	12:20	6"	7.42	7.45	0.03	6 OZ Black 12 OZ Yellow	-	Black with strong odor, rainbow bubbles, yellow slightly translucent
	9/20/2011	12:20	6"	7.41	7.37	0.04	20 OZ	-	Yellow, strong odor, semi-translucent with layer of black liquid
	9/1/2011	9:06	6"	7.35	7.32	0.03	0	-	
	8/18/2011	2:20	6"	7.35	7.38	0.03	5 OZ	0	Black liquid with a strong odor
	7/19/2011	2:45	6"	7.3	7.1	0.2	4 OZ	16 OZ	16 OZ Yellow brown black substance on top 4 OZ Brownish-black both with strong odor
	6/14/2011	3:25	6"	6.78	6.7	0.08	-	20 OZ	No separation, strong odor, yellowish
MW-2	3/6/2012	1:10	4"	-	4.5	-	20 OZ	-	Yellow translucent
	2/15/2012	12:15	4"	5.16	5.13	0.03	20 OZ	-	Yellow, strong odor, rainbow sheen, brown particles
	1/23/2012	2:10	4"	5.2	4.92	0.28	19 OZ	-	Yellow translucent, strong odor, black/brown sheen
	12/20/2011	12:30	4"	4.92	4.91	0.01	18 OZ	-	Pretty Clear-Slightly Yellowish
	11/22/2011	1:20	4"	4.92	-	-	18 OZ	-	Yellowish liquid-odor
	10/19/2011	12:30	4"	4.77	4.78	0.01	20 OZ Yellow Translucent	-	Yellow translucent, strong odor. Clack sediments
	9/20/2011	12:30	4"	5.075	5.07	-	20 OZ	-	Yellow, strong odor with layer of black liquid translucent but more transparent, black sheen on top and black particulates floating
	9/1/2011	9:00	4"	4.96	-	-	0	-	
	8/18/2011	2:50	4"	4.8	-	sheen	0	0	Little black liquid strong odor
	7/19/2011	3:15	4"	4.72	4.71	0.1	2 OZ	0	Black yellowish liquid
	6/14/2011	3:15	4"	4.23	4.2	0.03	0	0	Nothing inside well, black sludge
MW-3	3/6/2012	1:20	4"	-	4.3	-	20 OZ	-	Yellow translucent, strong odor
	2/15/2012	12:30	4"	4.9	4.88	0.02	20 OZ	-	Yellow, strong odor
	1/23/2012	2:20	4"	4.11	4.1	0.01	18 OZ	-	Slightly yellow, strong odor, rainbow sheen
	12/20/2011	12:45	4"	4.7	-	-	18 OZ	-	Translucent & yellow with black particles, odor.
	11/22/2011	1:30	4"	4.75	-	-	18 OZ	-	Yellowish, odor
	10/19/2011	12;45	4"	4.34	-	-	19 OZ Yellow	-	Translucent & strong odor, Clearer than other wells
	9/20/2011	12;45	4"	4.41	4.41	0.05	20 OZ	-	Yellow, strong odor, with layer of black liquid translucent but more transparent
	9/1/2011	9:11	4"	4.12	-	sheen	0	-	
	8/18/2011	2:35	4"	3.98	-	sheen	20	-	Slightly translucent yellow strong odor
	7/19/2011	3:30	4"	3.53	3.51	0.2	18 OZ	0	Yellowish with little black liquid
	6/14/2011	3:00	4"	3.25	3.2	0.05	sheen	18 OZ	Top of the skimmers have buildups

Note: PSH = Phase Separated Hydrocarbons

3/6/2012: Interface prob broken, readings recorded by eye.

Table 5
Anaerobic Sulfate Oxidation Conceptual Design
United Parcel Service
8400 Pardee Drive, Oakland, California

Design Elements	Quantity	Units	Notes
Mobile Porosity	10%		Assumed
Total Porosity (θ_t)	30%		Assumed
Screened Interval (h)	5	ft	Assumed
No of Wells	6	wells	Assumed
Target Radius of Influence	15	ft	Assumed
Required injection volume per foot of screen (V_{inj}/ft)	529	gal	$V_{inj}/ft = (\pi * ROI^2 * h * \theta_m * 7.48)/h$
Total required injection volume per well (V_{inj})	2,644	gal	$V_{inj} = V_{inj}/ft*h$
Total required injection volume per event (V_{tot})	15,862	gal	$V_{tot} = V_{inj}*\#IW$
Mass Loading			
Target in situ concentration of SO_4	2.00	g/L	Target SO_4 Concentration = based on empirical data for adequate loading for sulfate reducing bacteria.
Sulfate Loading			
Target Sulfate Concentration in Aquifer (AC_{SO42-})	2,000	mg/L	
Target Sulfate Concentration in Aquifer (AC_{SO42-})	0.017	lb/gal	Conversion
Unit Weight of Water (γ_w)	8.3	lb/gal	Assumed
Target Sulfate Mass Percentage in Aquifer $AM\%_{SO42-}$	0.20%	%	$M\%_{SO42-} = AC_{SO42-}/\gamma_w$
Dilution in Aquifer (D)	3	X	Assumed aquifer dilution of 2X
Formula Weight of Magnesium Sulfate Heptahydrate ($FW_{MgSO4*7H2O}$)	246	g/mol	$FW_{MgSo4*7H20} = MW_{Mg}+MW_S+4*MW_O+7*MW_{H20}$
Formula Weight of Sulfate (FW_{SO42-})	96	g/mol	$FW_{SO42-} = MW_S+4*MW_O$
Formula Weight of Magnesium (FW_{Mg})	24	g/mol	$FW_{Mg} = MW_{Mg}$
Magnesium Sulfate Hepta Hydrate: Sulfate Mass Ratio ($FW_{MgSO4*7H2O}:FW_{SO42-}$)	2.6	--	$FW_{MgSO4*7H2O}:FW_{SO42-} = FWMg_{SO4}/FW_{SO42-}$
Magnesium:Magnesium Sulfate Hepta Hydrate Mass Ratio ($FW_{Na}:FW_{Na2S2O8}$)	0.098	--	$FW_{Mg}:FW_{MgSO4*7H2O} = FW_{Mg}/FW_{MgSO4}$
Mass Percentage of Injection Strength as Sulfate ($IM\%_{SO42-}$)	0.6%	%	$IM\%_{SO42-} = D*M\%_{SO42-}$
Injection Strength as Sulfate (IC_{SO42-})	0.050	lb/gal	$IC_{SO42-} = IM\%_{SO42-}*\gamma_w$
Injection Strength as Sulfate (IC_{SO42-})	6,000	mg/L	Conversion
Injection Strength of Magnesium Sulfate Hepta Hydrate ($C_{MgSO4*7H2O}$)	15,375	mg/L	$C_{MgSO4} = IC_{SO42-}*FW_{MgSO4*7H2O}:FW_{SO42-}$ (approximate solubility @ 20°C = 710 g/L)
Injection Strength of Magnesium Sulfate Hepta Hydrate (C_{MgSOe})	0.13	lb/gal	
Injection Strength of Magnesium Sulfate Hepta Hydrate (C_{MgSO4})	0.13	lb/gal	Check
Mass Percentage of Injection Strength as Magnesium Sulfate Hepta Hydrate ($IM\%_{MgSO4}$)	1.5%	%	
Sulfate requirement per well ($SO4^{2-}$/W)	132	lbs	$SO4^{2-}/W = (IC_{SO42-})*V_{inj}$
Sulfate requirement per event ($SO4^{2-}$/Event)	793	lbs	$SO_4^{2-}/Event = SO_4^{2-}/W*\#IW$
Magnesium Sulfate Hepta Hydrate requirement per event ($MgSO_4$/event)	**2,032**	lbs	$MgSO_4/Event = SO_4^{2-}/Event*FWMgSO_4:FWSO_4^{2-}$
Magnesium Sulfate Hepta Hydrate requirement per event ($MgSO_4$/event)	**2,032**	lbs	CHECK: $MgSO_{4*7H2O}/Event = CMgSO_{4*7H2O}*V_{tot}$
Injection Timeframe			
Assumed per well injection rate (Q_{inj})	2	gpm	Design Parameter
Number of Wells injected Simultaneaously	6		
Assumed hours worked per day	10	hr/d	Assumed
Injection hours per day (t_{labor})	7	hr/d	Assumed - continuous gravity feed not possible
Time to complete injection at one well (t_{inj})	23	hours	$t_{inj} = (V_{inj})/(Q_{inj}*60)$
Length of continuous injection	4	days	Not possible
Time required for travel, setup/teardown, mix batches each day (t_{setup})	3	hours	Change this with local site knowledge
Required Technician Oversight	100%		Assumed
Field Technician Oversight Time	40	hours	
Total time to complete injection (t_{tot})	4	days	$t_{tot} = (t_{inj}+t_{setup})/t_{labor}$

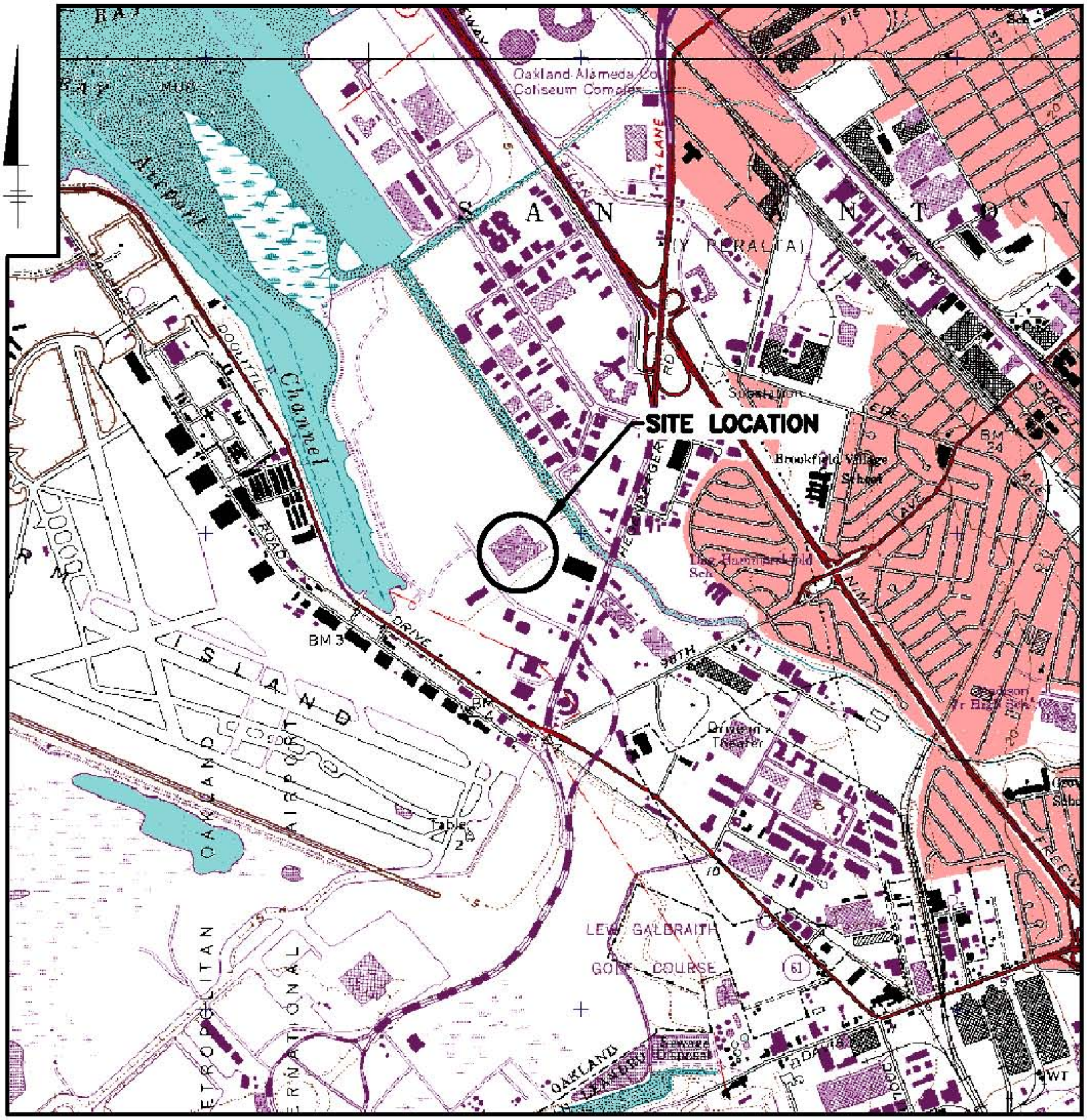
Table 6
Groundwater Sampling Matrix
United Parcel Service
8400 Pardee Drive, Oakland, California

Well ID	TPH- GRO by EPA XXX	TPH-DRO by EPA	Methane by RSK 175	Sulfide by EPA 300.0	Sulfate by EPA 300.0 and Chemetrix Field Kit	Nitrate as Nitrogen by EPA 300.0 and Hach Kit	Total/ Dissolved Iron by EPA 6020	Total/ Dissolved Manganeses by EPA 6020	Specific Conductivity by downhole meter	Temperature by downhole meter	pH by downhole meter
Injection Monitoring (Initally at 250 gallons injected and then every 500 gallons of injected solution per well)											
MW-3									x	x	x
MW-4									x	x	x
MW-12									x	x	x
MW-13									BC	BC	BC
OW-1									BC	BC	BC
Immediately Post Injection Sampling											
MW-3				x	x				x	x	x
MW-4				x	x				x	x	x
MW-12				x	x				x	x	x
MW-13				x	x				x	x	x
OW-1				x	x				x	x	x
Month 1 Sampling											
MW-3			x	x	x	x	x	x	x	x	x
MW-4			x	x	x	x	x	x	x	x	x
MW-12			x	x	x	x	x	x	x	x	x
MW-13			x	x	x	x	x	x	x	x	x
OW-1			x	x	x	x	x	x	x	x	x
Month 3 Sampling											
MW-3	x	x	x	x	x	x	x	x	x	x	x
MW-4	x	x	x	x	x	x	x	x	x	x	x
MW-12	x	x	x	x	x	x	x	x	x	x	x
MW-13	x	x	x	x	x	x	x	x	x	x	x
MW-1	x	x	x	x	x	x	x	x	x	x	x
Injection Wells				x	x					x	x

BC- Monitoring based on observed spike and sustained elevated conductivity meter response in dose response wells.

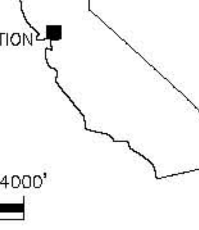
ARCADIS

Figures



NOTES:

1. Base Map Source: USGS 7.5 Min. Topo. Quad., San Leandro, Calif.(1993)
2. Property Location is Approximate Only.



0 2000' 4000'

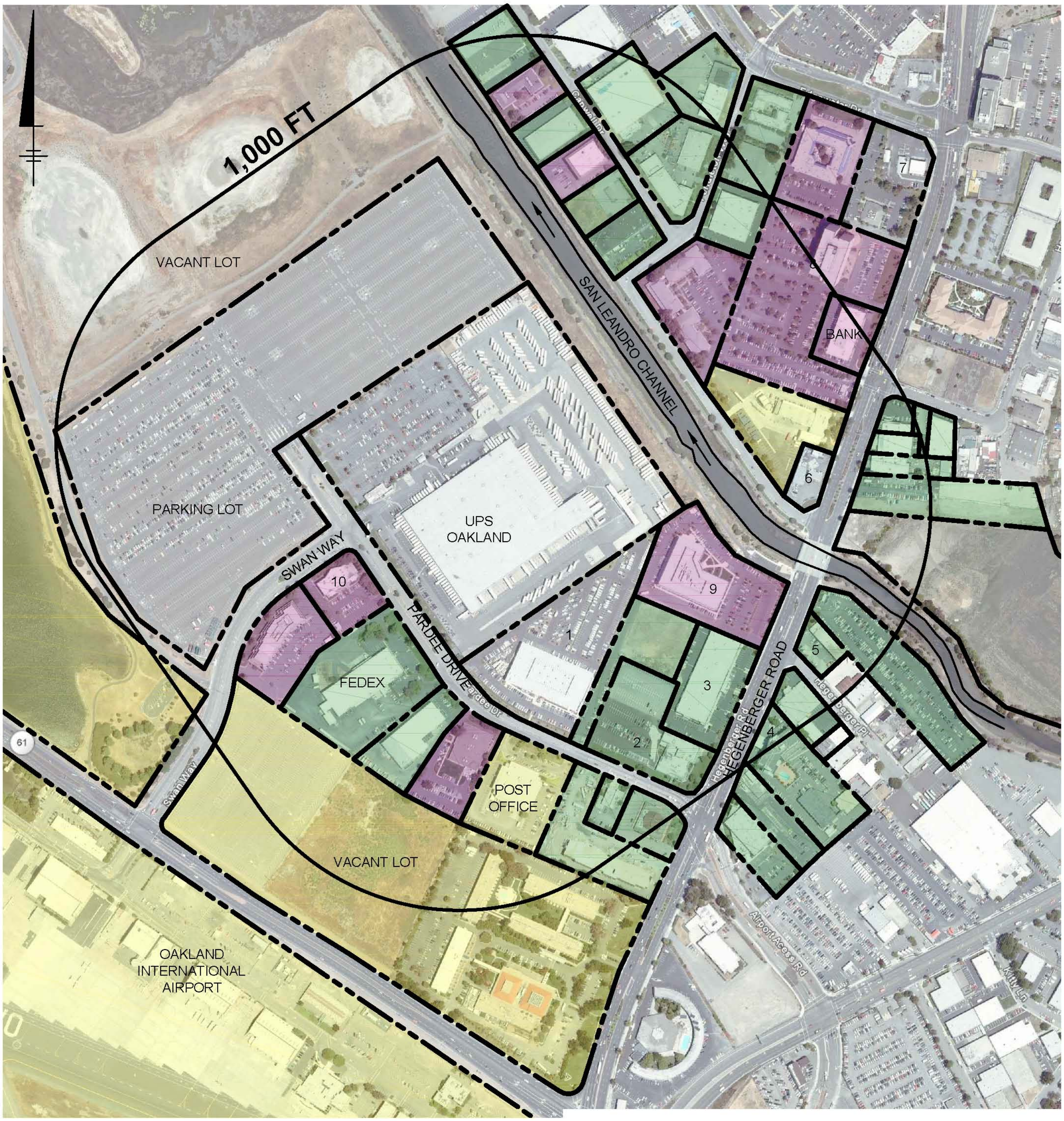
APPROXIMATE SCALE: 1"=2000'

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA

SITE LOCATION MAP

ARCADIS

FIGURE 1



LEGEND
1. COMCAST
2. FRANCESLO'S RESTAURANT
3. HARLEY DAVIDSON DEALERSHIP
4. PARK PLACE PLAZA HOTEL
5. BRUCE'S TIRE INC.
6. SHELL SERVICE STATION
7. 76 SERVICE STATION
8. ALAMEDA COUNTY VOCATIONAL
9. CARPENTER FUND ADMINISTRATION OFFICE
10. INDEPENDANT INSTITUTE

OFFICE BUILDING

PUBLIC AGENCY

INDUSTRIAL LIGHT/MANUFACTURING, COMMERCIAL, WAREHOUSE

0 500' 1000'
APPROXIMATE GRAPHIC SCALE

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA

SURROUNDING PROPERTIES MAP

ARCADIS

FIGURE
2

CITY:TAMPA DIV/GROUP::ENV-141 DB:JAR LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* G:\ENVCAD\TAMPA\ACT\B0038398 UPS Oakland\00007\0010\Pilot Test Work Plan\B0038398N02.dwg LAYOUT: 2 SAVED: 4/11/2012 12:22 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/11/2012 12:26 PM BY: RICHARDS, JIM
XREFS: IMAGES: AREA MAP.jpg PROJECTNAME: ----

LEGEND:

- MONITORING WELL
- TEMPORARY VACUUM TEST WELL
- PHASE I INJECTION WELL
- ABANDONED MONITORING WELL
- SOIL BORING LOCATION (2010)
- PROPERTY BOUNDARY
- UNDERGROUND ELECTRICAL LINE
- STORM WATER/SEWER LINE
- WATER/FIRE SERVICE/IRRIGATION
- ELECTRIC/WATER LINE
- CATCH BASIN/STORM DRAIN
- LIGHT POST/ POWER POLE

0 50' 100'
GRAPHIC SCALE

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA

SITE MAP

ARCADIS

FIGURE
3

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA

GROUNDWATER CONTOUR MAP
FEBRUARY 29, 2012

ARCADIS

FIGURE
4

LEGEND:

- MONITORING WELL LOCATION
- TEMPORARY VACUUM TEST WELL
- PHASE I INJECTION WELL
- SOIL BORING LOCATION (2010)
- PROPERTY BOUNDARY
- E — UNDERGROUND ELECTRICAL LINE
- S — STORM WATER/SEWER LINE
- W — WATER/FIRE SERVICE/IRRIGATION
- UG — ELECTRIC/WATER LINE
- CATCH BASIN/STORM DRAIN
- LIGHT POST/ POWER POLE
- RADIUS OF INFLUENCE 15'

0 50' 100'

GRAPHIC SCALE

UPS-OAKLAND HUB
8400 PARDEE DRIVE, OAKLAND, CALIFORNIA

PILOT TEST INJECTION AREA

ARCADIS

FIGURE
5

CITY:TAMPA DIV/GROUP:85 DB:JAR LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENV\CAD\TAMPA\ACT\B0038398 UPS Oakland\0007\00100\Pilot Test Work Plan\B0038398B02.dwg LAYOUT: 5 SAVED: 4/20/2012 2:15 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/20/2012 2:20 PM BY: RICHARDS, JIM
XREFS: IMAGES: PROJECTNAME: ----
UPSOakland.jpg