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2:01 pm, Nov 13, 2007

Alameda County
Environmental Health

Perjury Statement

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.


Ted Dang, President

7/12/06
Date



424 First Street
Benicia, California 94510
707 748-3170

November 5, 2007
Project: CA1264-7

Global ID: SL0609503209

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

Quarterly Groundwater Monitoring Report
Third Quarter 2007
Former Gas Station
2547 East 27th Street
Oakland, California

Dear Mr. Wickham:

Ceres Associates is pleased to present this Third Quarter 2007, Quarterly Groundwater Monitoring Report, on behalf of Tomorrow Development for the former gas station at 2547 East 27th Street, Oakland, California ("Property"; *refer to Figure 1 - Property Location Map*). This report is being provided to the Alameda County Health Care Services Agency (ACHCSA) as required by your letter, dated October 4, 2007.

Background

The Property is currently undeveloped with a chain-link fence along the perimeter. Some concrete pieces, remnants of the former foundation, were observed on the Property. The Property is located amongst single and multiple family residences.

The Property was formerly developed with a fuel and service station between 1927 and 1994. In 1994, one 100-gallon waste oil underground storage tank (UST) and four 500-gallon gasoline USTs were removed from the Property. After the tanks were removed, the excavation pits were lined with visqueen plastic and backfilled with the excavated material.

Assessment of the Property began in 2002 by Kleinfelder, followed by additional sampling events both on and off-site by Ceres Associates in 2005 and 2006. Contaminated backfill material was identified as a potential source of subsurface contamination. A total of approximately 200 cubic yards of contaminated soil was excavated and removed from the Property and the site was backfilled with imported materials in late 2006 and early 2007. Copies of previous assessments can be found by contacting the ACHCSA.

The regulatory risk criteria utilized in this report are Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board (RWQCB) for residential sites where groundwater IS a potential or current drinking water source. The Property is slated for redeveloped with two residential structures.

Geology and Hydrogeology

The soils on the Property consist of generally sandy gravel fill from the surface to four (4) feet below ground surface (bgs). From four (4) to twelve (12) feet bgs the soil appears to be fat and lean silty clays. Below twelve (12) feet the soil is generally gravel and sand with some clay. Off-site soils are generally consistent with on-site soils.

Groundwater has been encountered on the Property between approximately three and fourteen (14) feet bgs. Once encountered, groundwater appears to rise to within approximately three to five feet of the ground surface. The variable groundwater elevations across the Property suggest the possibility of a perched groundwater lense. Groundwater flow gradients have historically been to the east-southeast.

Scope of Sampling

Ceres Associates conducted quarterly groundwater sampling activities of six monitoring wells on July 24, 2007: MW-1, MW-2, MW-3, MW-4, MW-5, and EX-1. Due to the lack of sufficient water, Ceres Associates was not able to collect a sample from MW-2 (*refer to Figure 2 – Third Quarter 2007 Quarterly Monitoring Results*).

Sampling Process

Ceres Associates measured the depth to water from the top of each well casing (*refer to Appendix for a copy of the Monitoring Well Data Forms*).

As per the approved work plan, Ceres Associates employed a “low flow technique” to monitor the groundwater at the site. Polyethylene tubing was extended from the surface to the approximate mid-point of the screened interval of the well. The tubing was connected to a peristaltic pump, which pumped the groundwater to a flow-through multi-parameter cell devise. The water then flowed into additional tubing into a collection bucket to be transferred to the above mentioned 55-gallon drum for future disposal.

The wells were purged for at least five minutes at a rate of less than 1 liter per minute until the readings on the flow-through devise showed less than a 10% change for three consecutive minutes, for the following parameters: pH, conductivity, dissolved oxygen, and temperature. A sounding probe was used during the collection so that the pumping rate could be adjusted to assure that the well water depth remained stable. However, MW-2 was not able to supply enough water to allow for pumping for more than approximately six minutes. Thus, for this well only, the 10% change for three consecutive minutes parameter was not followed. For MW-2 the 40-milliliter glass vial

samples were collected during the first attempt after a five minute purge, then the one-liter amber bottle sample was collected approximately 90 minutes later, after a three minute purge.

All of the water samples were then collected in laboratory-cleaned 40-milliliter glass vials and one-liter amber bottles with Teflon-lined caps, and preserved with HCl. The samples were then placed into an ice-cooled chest for delivery to a State of California-certified analytical laboratory.

Decontamination was accomplished by discarding all the tubing and then washing the flow-through cell and sounding probe using a non-phosphate detergent followed by two freshwater rinses.

Groundwater generated during the sampling and decontamination processes was placed into an on-site 55-gallon drum, pending laboratory analysis for proper disposal.

Ceres Associates requested that the laboratory analyze the sample for total petroleum hydrocarbons (TPH) as gasoline (TPHg), as diesel (TPHd), and as motor oil (TPHmo) using US EPA method 8015C; for benzene, toluene, ethylbenzene, and xylenes (BTEX) using US EPA Method 8021B; and for volatile organic compounds (VOCs) using US EPA Method 8260B [with special focus on 1,2-dibromoethane (EDB), ethylene dichloride (EDC), methyl t-butyl ether (MTBE), tert-Amyl methyl ether (TAME), ethyl tert-butyl ether (ETBE), diisopropyl ether (DIPE), t-butyl alcohol (TBA), tetrachloride, ethylene dichloride, methylene chloride, tetrachloroethane, and trichloroethylene]. The sampling schematic changed since the previous quarterly monitoring event in compliance with a request made by the EHD in a letter dated April 26, 2007 (refer to Appendix – Regulatory Correspondence). Where analytes overlapped in methods, the higher result was reported herein.

Results

During July 2007, the groundwater gradient ranged from east to south-southeast, with an overall trend toward the southeast (*refer to Figure 3 - Groundwater Contour Map*).

Concentrations of toluene were reported in MW-1 at 0.5 micrograms per Liter ($\mu\text{g/L}$); in MW-3 at 0.67 $\mu\text{g/L}$; and, in MW-4 at 0.66 $\mu\text{g/L}$. Concentrations of TPHg were reported in EX-1 at 210 $\mu\text{g/L}$. Concentrations of TPHd were reported in MW-1 at 170 $\mu\text{g/L}$. Other target analytes were not reported above their respective laboratory reporting limits. The following table details the concentrations reported by the laboratory for samples submitted from this sampling event as well as historic values (no isoconcentration maps were generated for this data because there are insufficient data points for contouring).

Discussion

Petroleum Hydrocarbons

TPHg, TPHd, and TPHmo were not detected in samples collected from MW-1, MW-3, MW-4, or MW-5. This is consistent with the prior quarterly monitoring event at the Property.

Concentrations of TPHd in MW-2 have been sporadic, being reported above the method detection limit in half of the quarterly monitoring events. During the Third Quarter 2006 monitoring event TPHd was detected at 78 µg/L and during the Second Quarter 2007 monitoring event TPHd was detected at 60 µg/L. Both of these reported concentrations are below the Residential ESL for these compounds of 100 µg/L. However, due to insufficient water, Ceres Associates was not able to take samples from this well during this quarterly monitoring event.

In groundwater monitoring well EX-1 concentrations of TPHg and TPHd have fluctuated over time. Further, concentrations of TPHmo have been reported above the method detection limit during only one quarter monitoring event, First Quarter 2007. The concentrations of TPHg and TPHd in groundwater monitoring well EX-1 have exceeded the Residential ESL of 100 µg/L for these compounds since August 2006. The concentrations of these analytes peaked during First Quarter 2007 Monitoring, reporting 2,200 µg/L of TPHg and 800 µg/L of TPHd and have declined during the Second and Third Quarter 2007 monitoring events. The Third Quarter 2007 results for TPHg and TPHd were reported at 210 µg/L and 170 µg/L, respectively. Given the recent remedial efforts on-site, and given the proximity of this well to the remediation area, it is likely that the decreased concentrations are due to effective remedial efforts. Further, it is likely that future groundwater monitoring events will continue to show a decrease in constituents in the groundwater in this area.

Volatile Organic Compounds (VOCs)

At the request of the ACHCSA, Ceres Associates requested VOC analysis using US EPA method 8260b. VOC analytes were not detected in those samples collected from MW-1, MW-3, MW-4, MW-5, or EX-1. This is consistent with historical monitoring events. Further, EDB, EDC, MTBE, TAME, ETBE, DIPE, and TBA were not detected above the method detection levels in all wells sampled. Chlorinated hydrocarbons carbon tetrachloride, ethylene dichloride, methylene chloride, tetrachloroethane, and trichloroethylene were also not detected above method detection levels in all wells sampled.

Benzene has only been reported in one well (EX-1) and in only one quarter (First Quarter 2007). However, concentrations of benzene were not reported during the current Third Quarter 2007 event above the method reporting limit of 0.5 µg/L. During the current sampling, sec-butyl benzene (refer to full laboratory reports in the appendix) was reported at 1.6 µg/L, isopropylbenzene at 2.1 µg/L, and n-propyl benzene at 1.4 µg/L. The reported levels of these compounds are all below the reported levels for the Second Quarter 2007. According to the laboratory these compounds are benzene rings with additional organic constituents, and are all common components of gasoline fuel.

The laboratory further noted that these constituents are not usually significant components of diesel or kerosene.

Concentrations of toluene above the method reporting limits in three wells, MW-1, MW-3, and MW-4, during the current Third Quarter 2007 event may be attributable to cross-contamination by on-site personnel or laboratory personnel. Toluene has not before been reported above the method reporting limits for groundwater sampling at the Property. Ceres Associates has taken additional precautions for the next quarterly groundwater monitoring event. It is not anticipated that these minor concentrations will adversely impact future residential occupants of the Property.

Groundwater Contours around MW-4

Prior groundwater elevation contour maps indicated a depression around MW-4; however, this was not accurate. It does not appear that a depression has formed around MW-4, and without additional data points either south or east of MW-4, an actual depression can not be characterized. Unfortunately, the software used to create the contour around MW-4 made incorrect assumptions without valid data points. This has been corrected in the current groundwater elevation map, and we will continue to work with the program and valid data points to analyze the groundwater flow directions.

Conclusions and Recommendations

Concentrations of TPHg and TPHd were detected in groundwater monitoring well EX-1 at concentrations above the residential ESL. Concentrations of these analytes were not reported in the other monitoring wells. These results indicated that the affected groundwater is localized in the area of well EX-1. Minor concentrations of VOCs (primarily ethylbenzene and toluene) have been associated with higher concentrations of TPH compounds detected in well EX-1. These gasoline constituent-component concentrations have continued to decrease over time, and are below the Residential ESLs. It appears that on-site remedial efforts have beneficially impacted the Property by reducing source material. We would anticipate continued downward trends of target analytes in EX-1.

Ceres Associates recommends conducting additional quarterly groundwater monitoring at the Property to assess the effectiveness of on-site remediation as well as general natural attenuation processes. The next quarterly groundwater monitoring event is scheduled for October 2007.

Limitations

This report was prepared according to accepted industry standards and guidelines for similar activities conducted in this geographic region at this time. Any data supplied by others is not the responsibility of Ceres Associates.

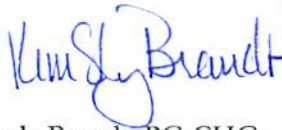
If you have questions regarding this project please contact Ryan Meyer at (707) 748-3170 or via email at ryanmeyer@ceresassociates.com.

Prepared by:

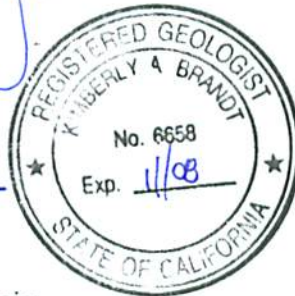


Ryan Meyer, REA
Project Geologist, Project Manager

Reviewed by:

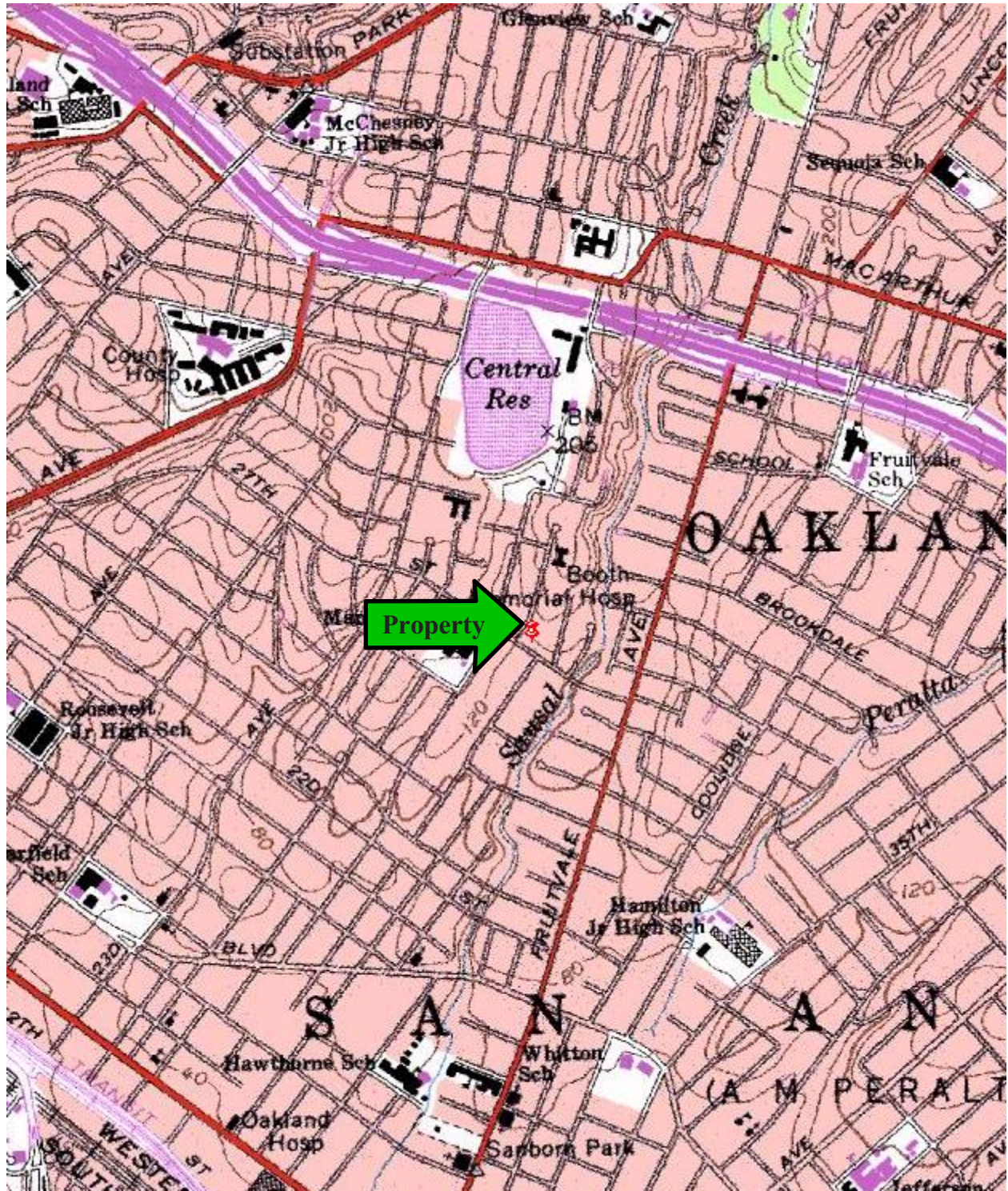


Kimberly Brandt, PG CHG
Senior Associate Hydrogeologist



Appendix

Figures



1 inch equals 2000 feet

Map Taken From:
 United States Geological Survey
 7.5 Minute Topographic Series
 Oakland East, California Quadrangle

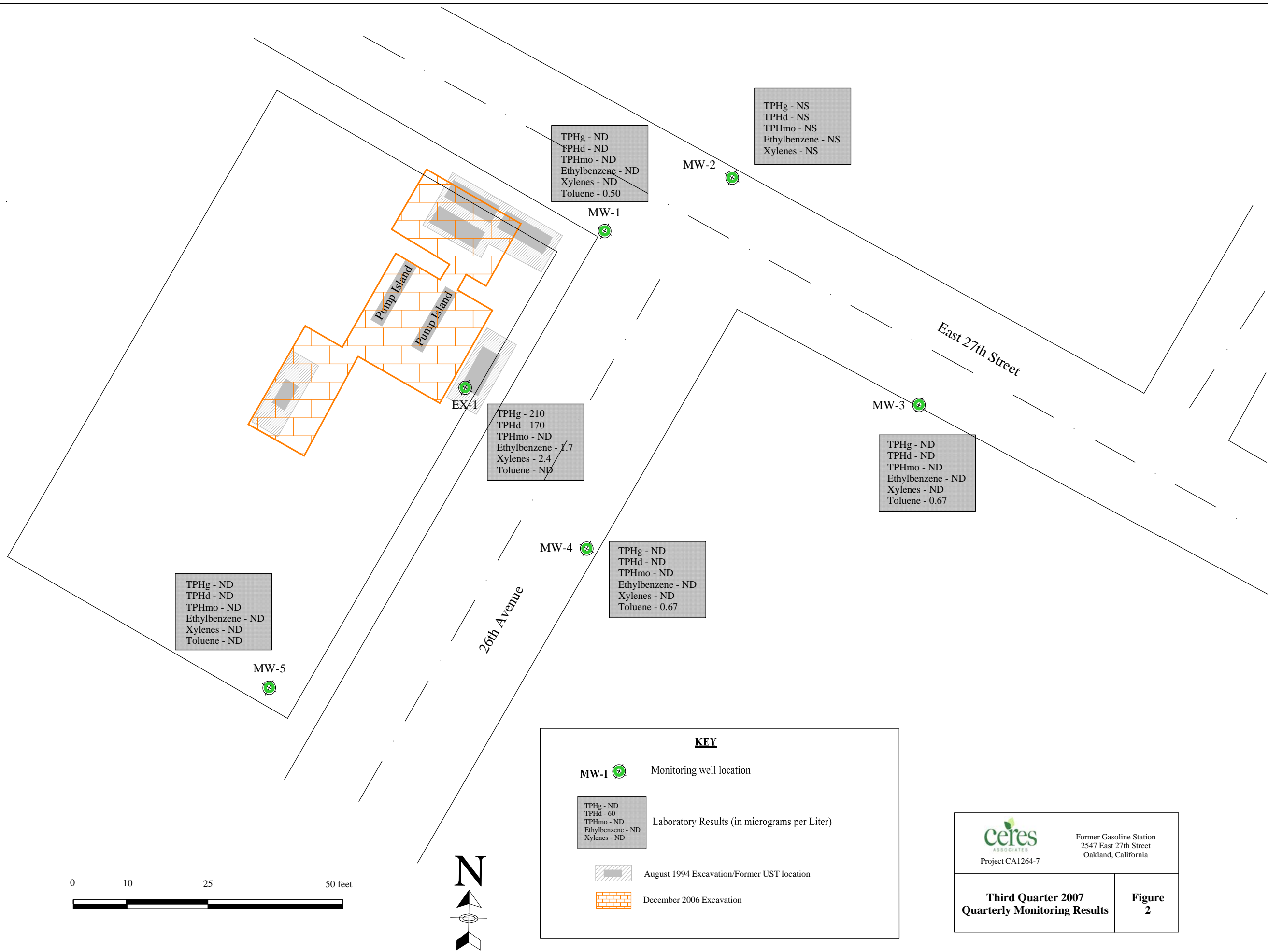


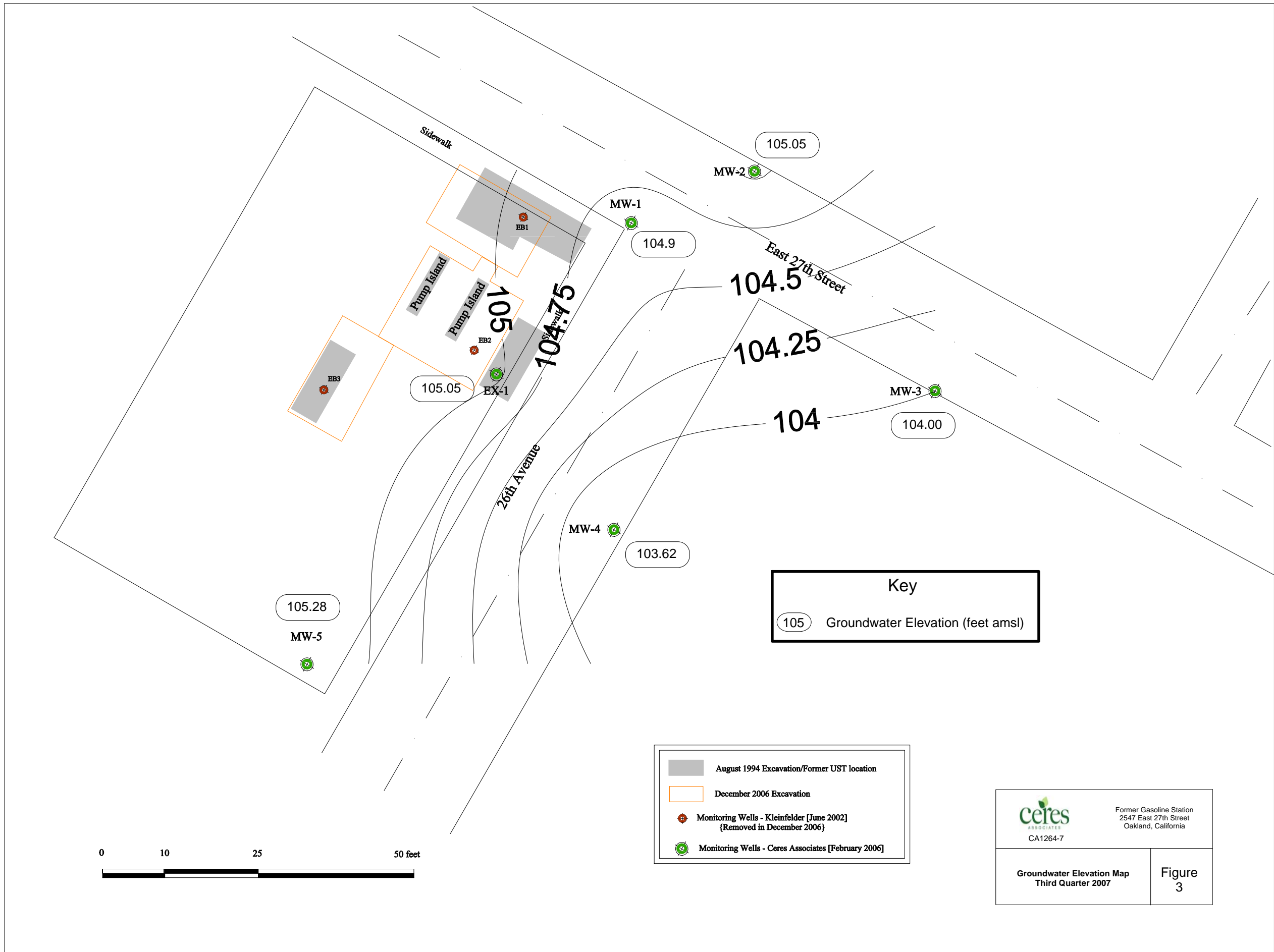
Project CA1264-7

Former Gasoline Station
 2547 East 27th Street
 Oakland, California

TOPOGRAPHIC MAP


**FIGURE
 1**





Key
 105 Groundwater Elevation (feet amsl)

■ August 1994 Excavation/Former UST location
 □ December 2006 Excavation
 ⊕ Monitoring Wells - Kleinfelder [June 2002] (Removed in December 2006)
 ⊗ Monitoring Wells - Ceres Associates [February 2006]

 Former Gasoline Station
 2547 East 27th Street
 Oakland, California
 CA1264-7

Groundwater Elevation Map
 Third Quarter 2007

Figure 3

Laboratory Data Sheets

**McC Campbell Analytical, Inc.**

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Ceres Associates 424 First Street Benicia, CA 94510	Client Project ID: #CA1364-6	Date Sampled: 07/24/07
		Date Received: 07/24/07
	Client Contact: Ryan Meyer	Date Reported: 07/31/07
	Client P.O.:	Date Completed: 07/31/07

WorkOrder: 0707543

July 31, 2007

Dear Ryan:

Enclosed are:

- 1). the results of 5 analyzed samples from your #CA1364-6 project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions please contact me. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydclius, Lab Manager

McC Campbell Analytical, Inc.



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0707543

ClientID: CAB

EDF Excel Fax Email HardCopy ThirdParty

Report to:

Ryan Meyer
Ceres Associates
424 First Street
Benicia, CA 94510

Email: ryanmeyer@ceresassociates.com
TEL: (707) 748-317 FAX: (707) 748-317
ProjectNo: #CA1364-6
PO:

Bill to

Chwania Mejia
Ceres Associates
424 First Street
Benicia, CA 94510
cmejia@ceresassociates.com

Requested TAT: 5 days

Date Received 07/24/2007

Date Printed: 07/24/2007

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0707543-001	EX-1	Water	7/24/2007	<input type="checkbox"/>	C	A	A	B								
0707543-002	MW-01	Water	7/24/2007	<input type="checkbox"/>	C	A		B								
0707543-003	MW-03	Water	7/24/2007	<input type="checkbox"/>	C	A		B								
0707543-004	MW-04	Water	7/24/2007	<input type="checkbox"/>	C	A		B								
0707543-005	MW-05	Water	7/24/2007	<input type="checkbox"/>	C	A		B								

Test Legend:

1	8260B W	2	G-MBTEX W	3	PREF REPORT	4	TPH(DMO) W	5	
6		7		8		9		10	
11		12							

Prepared by: Chloe Lam

Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

Sample Receipt Checklist

Client Name: **Ceres Associates** Date and Time Received: **7/24/2007 5:02:47 PM**
 Project Name: **#CA1364-6** Checklist completed and reviewed by: **Chloe Lam**
 WorkOrder N°: **0707543** Carrier: **Denk Cartan (MAL Courier)**
 Matrix: **Water**

Chain of Custody (COC) Information

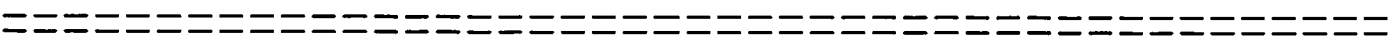
Chain of custody present? Yes No
 Chain of custody signed when relinquished and received? Yes No
 Chain of custody agrees with sample labels? Yes No
 Sample IDs noted by Client on COC? Yes No
 Date and Time of collection noted by Client on COC? Yes No
 Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No **NA**
 Shipping container/cooler in good condition? Yes No
 Samples in proper containers/bottles? Yes No
 Sample containers intact? Yes No
 Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No
 Container/Temp Blank temperature Yes No
 Water - VOA vials have zero headspace / no bubbles? Yes No
 Sample labels checked for correct preservation? Yes No
 TLC Metal - pH acceptable upon receipt (pH<2)? Yes No **NA**



Client contacted: _____ Date contacted: _____
 Comments: _____
 Contacted by: _____



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Ceres Associates
424 First Street
Benicia, CA 94510

Client Project ID: #CA1364-6

Date Sampled: 07/24/07

Date Received: 07/24/07

Client Contact: Ryan Meyer

Date Extracted: 07/28/07

Client P.O.:

Date Analyzed 07/28/07

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0707543

Lab ID	0707543-001C						
Client ID	EX-1						
Matrix	Water						
Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND	1.0	1.0	Acrolein (Propenal)	ND	1.0	5.0
Acrylonitrile	ND	1.0	2.0	tert-Amyl methyl ether (TAME)	ND	1.0	0.5
Benzene	ND	1.0	0.5	Bromobenzene	ND	1.0	0.5
Bromochloromethane	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
2-Butanone (MEK)	ND	1.0	2.0	t-Butyl alcohol (TBA)	ND	1.0	5.0
n-Butyl benzene	ND	1.0	0.5	sec-Butyl benzene	1.6	1.0	0.5
tert-Butyl benzene	ND	1.0	0.5	Carbon Disulfide	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	2-Chloroethyl Vinyl Ether	ND	1.0	1.0
Chloroform	ND	1.0	0.5	Chloromethane	ND	1.0	0.5
2-Chlorotoluene	ND	1.0	0.5	4-Chlorotoluene	ND	1.0	0.5
Dibromochloromethane	ND	1.0	0.5	1,2-Dibromo-3-chloropropane	ND	1.0	0.5
1,2-Dibromoethane (EDB)	ND	1.0	0.5	Dibromomethane	ND	1.0	0.5
1,2-Dichlorobenzene	ND	1.0	0.5	1,3-Dichlorobenzene	ND	1.0	0.5
1,4-Dichlorobenzene	ND	1.0	0.5	Dichlorodifluoromethane	ND	1.0	0.5
1,1-Dichloroethane	ND	1.0	0.5	1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5
1,1-Dichloroethene	ND	1.0	0.5	cis-1,2-Dichloroethene	ND	1.0	0.5
trans-1,2-Dichloroethene	ND	1.0	0.5	1,2-Dichloropropane	ND	1.0	0.5
1,3-Dichloropropane	ND	1.0	0.5	2,2-Dichloropropane	ND	1.0	0.5
1,1-Dichloropropene	ND	1.0	0.5	cis-1,3-Dichloropropene	ND	1.0	0.5
trans-1,3-Dichloropropene	ND	1.0	0.5	Diisopropyl ether (DIPE)	ND	1.0	0.5
Ethylbenzene	ND	1.0	0.5	Ethyl tert-butyl ether (ETBE)	ND	1.0	0.5
Freon 113	ND	1.0	1.0	Hexachlorobutadiene	ND	1.0	0.5
Hexachloroethane	ND	1.0	0.5	2-Hexanone	ND	1.0	0.5
Isopropylbenzene	2.1	1.0	0.5	4-Isopropyl toluene	ND	1.0	0.5
Methyl-t-butyl ether (MTBE)	ND	1.0	0.5	Methylene chloride	ND	1.0	0.5
4-Methyl-2-pentanone (MIBK)	ND	1.0	0.5	Naphthalene	ND	1.0	0.5
Nitrobenzene	ND	1.0	1.0	n-Propyl benzene	1.4	1.0	0.5
Styrene	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,2,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	ND	1.0	0.5	1,2,3-Trichlorobenzene	ND	1.0	0.5
1,2,4-Trichlorobenzene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	1,2,3-Trichloropropane	ND	1.0	0.5
1,2,4-Trimethylbenzene	ND	1.0	0.5	1,3,5-Trimethylbenzene	ND	1.0	0.5
Vinyl Chloride	ND	1.0	0.5	Xylenes	ND	1.0	0.5

Surrogate Recoveries (%)

%SS1:	116	%SS2:	95
%SS3:	101		

Comments:

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; J) analyte detected below quantitation limits; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative; q) reported in ppm.



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Ceres Associates 424 First Street Benicia, CA 94510	Client Project ID: #CA1364-6	Date Sampled: 07/24/07
		Date Received: 07/24/07
	Client Contact: Ryan Meyer	Date Extracted: 07/28/07
	Client P.O.:	Date Analyzed: 07/28/07

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0707543

Lab ID	0707543-002C						
Client ID	MW-01						
Matrix	Water						
Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND	1.0	10	Acrolein (Propenal)	ND	1.0	5.0
Acrylonitrile	ND	1.0	2.0	tert-Amyl methyl ether (TAME)	ND	1.0	0.5
Benzene	ND	1.0	0.5	Bromobenzene	ND	1.0	0.5
Bromochloromethane	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
2-Butanone (MEK)	ND	1.0	2.0	1-Butyl alcohol (TBA)	ND	1.0	5.0
n-Butyl benzene	ND	1.0	0.5	sec-Butyl benzene	ND	1.0	0.5
tert-Butyl benzene	ND	1.0	0.5	Carbon Disulfide	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	2-Chloroethyl Vinyl Ether	ND	1.0	1.0
Chloroform	ND	1.0	0.5	Chloromethane	ND	1.0	0.5
2-Chlorotoluene	ND	1.0	0.5	4-Chlorotoluene	ND	1.0	0.5
Dibromochloromethane	ND	1.0	0.5	1,2-Dibromo-3-chloropropane	ND	1.0	0.5
1,2-Dibromoethane (EDB)	ND	1.0	0.5	Dibromomethane	ND	1.0	0.5
1,2-Dichlorobenzene	ND	1.0	0.5	1,3-Dichlorobenzene	ND	1.0	0.5
1,4-Dichlorobenzene	ND	1.0	0.5	Dichlorodifluoromethane	ND	1.0	0.5
1,1-Dichloroethane	ND	1.0	0.5	1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5
1,1-Dichloroethene	ND	1.0	0.5	cis-1,2-Dichloroethene	ND	1.0	0.5
trans-1,2-Dichloroethene	ND	1.0	0.5	1,2-Dichloropropane	ND	1.0	0.5
1,3-Dichloropropane	ND	1.0	0.5	2,2-Dichloropropane	ND	1.0	0.5
1,1-Dichloropropene	ND	1.0	0.5	cis-1,3-Dichloropropene	ND	1.0	0.5
trans-1,3-Dichloropropene	ND	1.0	0.5	Diisopropyl ether (DIPE)	ND	1.0	0.5
Ethylbenzene	ND	1.0	0.5	Ethyl tert-butyl ether (ETBE)	ND	1.0	0.5
Freon 113	ND	1.0	10	Hexachlorobutadiene	ND	1.0	0.5
Hexachloroethane	ND	1.0	0.5	2-Hexanone	ND	1.0	0.5
Isopropylbenzene	ND	1.0	0.5	4-Isopropyl toluene	ND	1.0	0.5
Methyl-t-butyl ether (MTBE)	ND	1.0	0.5	Methylene chloride	ND	1.0	0.5
4-Methyl-2-pentanone (MIBK)	ND	1.0	0.5	Naphthalene	ND	1.0	0.5
Nitrobenzene	ND	1.0	10	n-Propyl benzene	ND	1.0	0.5
Styrene	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,2,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	0.50	1.0	0.5	1,2,3-Trichlorobenzene	ND	1.0	0.5
1,2,4-Trichlorobenzene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	1,2,3-Trichloropropane	ND	1.0	0.5
1,2,4-Trimethylbenzene	ND	1.0	0.5	1,3,5-Trimethylbenzene	ND	1.0	0.5
Vinyl Chloride	ND	1.0	0.5	Xylenes	ND	1.0	0.5

Surrogate Recoveries (%)

%SS1:	117	%SS2:	99
%SS3:	96		

Comments:

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; J) analyte detected below quantitation limits; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative; q) reported in ppm.



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Ceres Associates
424 First Street
Benicia, CA 94510

Client Project ID: #CA1364-6

Date Sampled: 07/24/07

Date Received: 07/24/07

Client Contact: Ryan Meyer

Date Extracted: 07/28/07

Client P.O.:

Date Analyzed 07/28/07

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0707543

Lab ID	0707543-003C
Client ID	MW-03
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND	1.0	10	Acrolein (Propenal)	ND	1.0	5.0
Acrylonitrile	ND	1.0	2.0	tert-Amyl methyl ether (TAME)	ND	1.0	0.5
Benzene	ND	1.0	0.5	Bromobenzene	ND	1.0	0.5
Bromochloromethane	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
2-Butanone (MEK)	ND	1.0	2.0	t-Butyl alcohol (TBA)	ND	1.0	5.0
n-Butyl benzene	ND	1.0	0.5	sec-Butyl benzene	ND	1.0	0.5
tert-Butyl benzene	ND	1.0	0.5	Carbon Disulfide	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	2-Chloroethyl Vinyl Ether	ND	1.0	1.0
Chloroform	ND	1.0	0.5	Chloromethane	ND	1.0	0.5
2-Chlorotoluene	ND	1.0	0.5	4-Chlorotoluene	ND	1.0	0.5
Dibromochloromethane	ND	1.0	0.5	1,2-Dibromo-3-chloropropane	ND	1.0	0.5
1,2-Dibromoethane (EDB)	ND	1.0	0.5	Dibromomethane	ND	1.0	0.5
1,2-Dichlorobenzene	ND	1.0	0.5	1,3-Dichlorobenzene	ND	1.0	0.5
1,4-Dichlorobenzene	ND	1.0	0.5	Dichlorodifluoromethane	ND	1.0	0.5
1,1-Dichloroethane	ND	1.0	0.5	1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5
1,1-Dichloroethene	ND	1.0	0.5	cis-1,2-Dichloroethene	ND	1.0	0.5
trans-1,2-Dichloroethene	ND	1.0	0.5	1,2-Dichloropropane	ND	1.0	0.5
1,3-Dichloropropane	ND	1.0	0.5	2,2-Dichloropropane	ND	1.0	0.5
1,1-Dichloropropene	ND	1.0	0.5	cis-1,3-Dichloropropene	ND	1.0	0.5
trans-1,3-Dichloropropene	ND	1.0	0.5	Diisopropyl ether (DIPE)	ND	1.0	0.5
Ethylbenzene	ND	1.0	0.5	Ethyl tert-butyl ether (ETBE)	ND	1.0	0.5
Freon 113	ND	1.0	10	Hexachlorobutadiene	ND	1.0	0.5
Hexachloroethane	ND	1.0	0.5	2-Hexanone	ND	1.0	0.5
Isopropylbenzene	ND	1.0	0.5	4-Isopropyl toluene	ND	1.0	0.5
Methyl-t-butyl ether (MTBE)	ND	1.0	0.5	Methylene chloride	ND	1.0	0.5
4-Methyl-2-pentanone (MIBK)	ND	1.0	0.5	Naphthalene	ND	1.0	0.5
Nitrobenzene	ND	1.0	10	n-Propyl benzene	ND	1.0	0.5
Styrene	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,2,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	0.60	1.0	0.5	1,2,3-Trichlorobenzene	ND	1.0	0.5
1,2,4-Trichlorobenzene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	1,2,3-Trichloropropane	ND	1.0	0.5
1,2,4-Trimethylbenzene	ND	1.0	0.5	1,3,5-Trimethylbenzene	ND	1.0	0.5
Vinyl Chloride	ND	1.0	0.5	Xylenes	ND	1.0	0.5

Surrogate Recoveries (%)

%SS1:	114	%SS2:	100
%SS3:	96		

Comments:

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; J) analyte detected below quantitation limits; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative; q) reported in ppm.



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Telephone: 877-252-9262 Fax: 925-252-9269

Ceres Associates 424 First Street Benicia, CA 94510	Client Project ID: #CA1364-6	Date Sampled: 07/24/07
		Date Received: 07/24/07
	Client Contact: Ryan Meyer	Date Extracted: 07/28/07
	Client P.O.:	Date Analyzed 07/28/07

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0707543

Lab ID	0707543-004C						
Client ID	MW-04						
Matrix	Water						
Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND	1.0	10	Acrolein (Propenal)	ND	1.0	5.0
Acrylonitrile	ND	1.0	2.0	tert-Amyl methyl ether (TAME)	ND	1.0	0.5
Benzene	ND	1.0	0.5	Bromobenzene	ND	1.0	0.5
Bromochloromethane	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
2-Butanone (MEK)	ND	1.0	2.0	t-Butyl alcohol (TBA)	ND	1.0	5.0
n-Butyl benzene	ND	1.0	0.5	sec-Butyl benzene	ND	1.0	0.5
tert-Butyl benzene	ND	1.0	0.5	Carbon Disulfide	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	2-Chloroethyl Vinyl Ether	ND	1.0	1.0
Chloroform	ND	1.0	0.5	Chloromethane	ND	1.0	0.5
2-Chlorotoluene	ND	1.0	0.5	4-Chlorotoluene	ND	1.0	0.5
Dibromochloromethane	ND	1.0	0.5	1,2-Dibromo-3-chloropropane	ND	1.0	0.5
1,2-Dibromoethane (EDB)	ND	1.0	0.5	Dibromomethane	ND	1.0	0.5
1,2-Dichlorobenzene	ND	1.0	0.5	1,3-Dichlorobenzene	ND	1.0	0.5
1,4-Dichlorobenzene	ND	1.0	0.5	Dichlorodifluoromethane	ND	1.0	0.5
1,1-Dichloroethane	ND	1.0	0.5	1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5
1,1-Dichloroethene	ND	1.0	0.5	cis-1,2-Dichloroethene	ND	1.0	0.5
trans-1,2-Dichloroethene	ND	1.0	0.5	1,2-Dichloropropane	ND	1.0	0.5
1,3-Dichloropropane	ND	1.0	0.5	2,2-Dichloropropane	ND	1.0	0.5
1,1-Dichloropropene	ND	1.0	0.5	cis-1,3-Dichloropropene	ND	1.0	0.5
trans-1,3-Dichloropropene	ND	1.0	0.5	Diisopropyl ether (DIPE)	ND	1.0	0.5
Ethylbenzene	ND	1.0	0.5	Ethyl tert-butyl ether (ETBE)	ND	1.0	0.5
Freon 113	ND	1.0	10	Hexachlorobutadiene	ND	1.0	0.5
Hexachloroethane	ND	1.0	0.5	2-Hexanone	ND	1.0	0.5
Isopropylbenzene	ND	1.0	0.5	4-Isopropyl toluene	ND	1.0	0.5
Methyl-t-butyl ether (MTBE)	ND	1.0	0.5	Methylene chloride	ND	1.0	0.5
4-Methyl-2-pentanone (MIBK)	ND	1.0	0.5	Naphthalene	ND	1.0	0.5
Nitrobenzene	ND	1.0	10	n-Propyl benzene	ND	1.0	0.5
Styrene	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,2,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	0.66	1.0	0.5	1,2,3-Trichlorobenzene	ND	1.0	0.5
1,2,4-Trichlorobenzene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	1,2,3-Trichloropropane	ND	1.0	0.5
1,2,4-Trimethylbenzene	ND	1.0	0.5	1,3,5-Trimethylbenzene	ND	1.0	0.5
Vinyl Chloride	ND	1.0	0.5	Xylenes	ND	1.0	0.5

Surrogate Recoveries (%)

%SS1:	115	%SS2:	100
%SS3:	97		

Comments:

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; J) analyte detected below quantitation limits; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative; q) reported in ppm.



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Ceres Associates 424 First Street Benicia, CA 94510	Client Project ID: #CA1364-6	Date Sampled: 07/24/07
	Client Contact: Ryan Meyer	Date Received: 07/24/07
	Client P.O.:	Date Extracted: 07/28/07
		Date Analyzed: 07/28/07

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0707543

Lab ID	0707543-005C
Client ID	MW-05
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND	1.0	10	Acrolein (Propenal)	ND	1.0	5.0
Acrylonitrile	ND	1.0	2.0	tert-Amyl methyl ether (TAME)	ND	1.0	0.5
Benzene	ND	1.0	0.5	Bromobenzene	ND	1.0	0.5
Bromochloromethane	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
2-Butanone (MEK)	ND	1.0	2.0	t-Butyl alcohol (TBA)	ND	1.0	5.0
n-Butyl benzene	ND	1.0	0.5	sec-Butyl benzene	ND	1.0	0.5
tert-Butyl benzene	ND	1.0	0.5	Carbon Disulfide	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	2-Chloroethyl Vinyl Ether	ND	1.0	1.0
Chloroform	ND	1.0	0.5	Chloromethane	ND	1.0	0.5
2-Chlorotoluene	ND	1.0	0.5	4-Chlorotoluene	ND	1.0	0.5
Dibromochloromethane	ND	1.0	0.5	1,2-Dibromo-3-chloropropane	ND	1.0	0.5
1,2-Dibromoethane (EDB)	ND	1.0	0.5	Dibromomethane	ND	1.0	0.5
1,2-Dichlorobenzene	ND	1.0	0.5	1,3-Dichlorobenzene	ND	1.0	0.5
1,4-Dichlorobenzene	ND	1.0	0.5	Dichlorodifluoromethane	ND	1.0	0.5
1,1-Dichloroethane	ND	1.0	0.5	1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5
1,1-Dichloroethene	ND	1.0	0.5	cis-1,2-Dichloroethene	ND	1.0	0.5
trans-1,2-Dichloroethene	ND	1.0	0.5	1,2-Dichloropropane	ND	1.0	0.5
1,3-Dichloropropane	ND	1.0	0.5	2,2-Dichloropropane	ND	1.0	0.5
1,1-Dichloropropene	ND	1.0	0.5	cis-1,3-Dichloropropene	ND	1.0	0.5
trans-1,3-Dichloropropene	ND	1.0	0.5	Diisopropyl ether (DIPE)	ND	1.0	0.5
Ethylbenzene	ND	1.0	0.5	Ethyl tert-butyl ether (ETBE)	ND	1.0	0.5
Freon 113	ND	1.0	10	Hexachlorobutadiene	ND	1.0	0.5
Hexachloroethane	ND	1.0	0.5	2-Hexanone	ND	1.0	0.5
Isopropylbenzene	ND	1.0	0.5	4-Isopropyl toluene	ND	1.0	0.5
Methyl-t-butyl ether (MTBE)	ND	1.0	0.5	Methylene chloride	ND	1.0	0.5
4-Methyl-2-pentanone (MIBK)	ND	1.0	0.5	Naphthalene	ND	1.0	0.5
Nitrobenzene	ND	1.0	10	n-Propyl benzene	ND	1.0	0.5
Styrene	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,2,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	ND	1.0	0.5	1,2,3-Trichlorobenzene	ND	1.0	0.5
1,2,4-Trichlorobenzene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	1,2,3-Trichloropropane	ND	1.0	0.5
1,2,4-Trimethylbenzene	ND	1.0	0.5	1,3,5-Trimethylbenzene	ND	1.0	0.5
Vinyl Chloride	ND	1.0	0.5	Xylenes	ND	1.0	0.5

Surrogate Recoveries (%)

%SS1:	115	%SS2:	100
%SS3:	97		

Comments:

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; J) analyte detected below quantitation limits; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative; q) reported in ppm.



QC SUMMARY REPORT FOR SW8015C

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0707543

EPA Method SW8015C	Extraction SW3510C			BatchID: 29494			Spiked Sample ID: N/A					
	Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)		
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(d)	N/A	1000	N/A	N/A	N/A	90.3	92.4	2.32	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	101	104	2.95	N/A	N/A	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 29494 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0707543-001B	07/24/07	07/24/07	07/27/07 3:05 AM	0707543-002B	07/24/07	07/24/07	07/30/07 8:28 AM
0707543-003B	07/24/07	07/24/07	07/31/07 6:56 AM	0707543-004B	07/24/07	07/24/07	07/28/07 2:48 PM
0707543-005B	07/24/07	07/24/07	07/28/07 1:40 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0707543

Analyte	Extraction SW5030B			BatchID: 29496					Spiked Sample ID: 0707543-002C			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	10	94.8	97.8	3.10	98.9	107	7.54	70 - 130	30	70 - 130	30
Benzene	ND	10	109	109	0	113	118	4.29	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	104	107	2.20	105	102	3.13	70 - 130	30	70 - 130	30
Chlorobenzene	ND	10	108	106	1.90	123	116	5.95	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	91.7	90.4	1.51	87.9	97	9.84	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	105	104	1.80	102	104	1.90	70 - 130	30	70 - 130	30
1,1-Dichloroethene	ND	10	107	107	0	110	111	0.968	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	104	103	0.916	107	115	7.31	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	95.9	94.1	1.86	99.4	108	8.47	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	10	93.9	94.6	0.690	93.1	103	9.77	70 - 130	30	70 - 130	30
Toluene	ND	10	106	105	1.21	106	105	1.17	70 - 130	30	70 - 130	30
Trichloroethene	ND	10	96.4	95.6	0.839	97.2	98.1	0.909	70 - 130	30	70 - 130	30
%SS1:	118	10	114	115	0.875	117	105	10.9	70 - 130	30	70 - 130	30
%SS2:	97	10	107	107	0	100	95	5.09	70 - 130	30	70 - 130	30
%SS3:	93	10	89	88	1.59	89	95	6.01	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 29496 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0707543-001C	07/24/07	07/28/07	07/28/07 10:03 PM	0707543-002C	07/24/07	07/28/07	07/28/07 4:44 PM
0707543-003C	07/24/07	07/28/07	07/28/07 5:28 PM	0707543-004C	07/24/07	07/28/07	07/28/07 6:13 PM
0707543-005C	07/24/07	07/28/07	07/28/07 6:57 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0707543

EPA Method SW8021B/8015Cm		Extraction SW5030B			BatchID: 29509			Spiked Sample ID: 0707527-001B				
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) ^f	ND	60	105	105	0	109	112	2.35	70 - 130	30	70 - 130	30
MTBE	ND	10	88.4	89.1	0.885	116	101	13.3	70 - 130	30	70 - 130	30
Benzene	ND	10	100	93.2	7.23	103	99.3	3.71	70 - 130	30	70 - 130	30
Toluene	ND	10	105	97	8.15	116	110	5.43	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	106	95.4	10.4	108	108	0	70 - 130	30	70 - 130	30
Xylenes	ND	30	100	90.7	9.79	120	120	0	70 - 130	30	70 - 130	30
%SS:	91	10	102	102	0	92	96	4.41	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 29509 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0707543-001A	07/24/07	07/29/07	07/29/07 4:08 AM	0707543-002A	07/24/07	07/27/07	07/27/07 12:19 AM
0707543-003A	07/24/07	07/27/07	07/27/07 1:25 AM	0707543-004A	07/24/07	07/29/07	07/29/07 1:55 AM
0707543-005A	07/24/07	07/27/07	07/27/07 2:31 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

f TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

Monitoring Well Data Sheets



ID#: MW-1

Quarter _____ Date 7/24/07 Sampler JW

Well Details	Sampling Details
Depth to Water (initial) <u>4.16'</u>	Start Time
Well Diameter <u>2"</u>	Stop Time
Well Depth <u>12.38'</u>	Pump Rate
Screened Interval	Notes
Pumping Point	Analysis

Water Quality Data							
Time	Depth	Temp	Cond	DO	pH	ORP	Turb
		(C)	(mS/cm)	(mg/L)	(units)		
<u>EM3</u>	<u>4.13</u>						
<u>0</u>	<u>4.57</u>	<u>22.87</u>	<u>6710</u>	<u>5.87</u>	<u>9.46</u>	<u>102</u>	<u>3.4</u>
<u>5</u>	<u>4.45</u>	<u>23.52</u>	<u>1663</u>	<u>2.45</u>	<u>9.65</u>	<u>83</u>	<u>2.6</u>
<u>6</u>	<u>4.48</u>	<u>23.61</u>	<u>1652</u>	<u>2.37</u>	<u>9.62</u>	<u>81</u>	<u>3.4</u>
<u>7</u>	<u>4.44</u>	<u>23.70</u>	<u>1646</u>	<u>2.35</u>	<u>9.59</u>	<u>80</u>	<u>2.6</u>

Notes:

- both screws missing



ID#: MW-3

Quarter _____ Date 7/24/07 Sampler _____

Well Details	Sampling Details
Depth to Water (initial) <u>4.40'</u> Well Diameter <u>2"</u> Well Depth <u>14.11'</u> Screened Interval _____ Pumping Point _____	Start Time _____ Stop Time _____ Pump Rate _____ Notes _____ Analysis _____

Water Quality Data							
Time	Depth	Temp	Cond	DO	pH	ORP	Turb
		(C)	(mS/cm)	(mg/L)	(units)		
4.41	<u>4.41</u>						
<u>0</u>	<u>4.41</u>	<u>22.87</u>	<u>1.20</u>	<u>5.92</u>	<u>7.15</u>	<u>143</u>	<u>29.1</u>
<u>5</u>	<u>4.42</u>	<u>23.57</u>	<u>1.22</u>	<u>3.19</u>	<u>6.38</u>	<u>185</u>	<u>39.2</u>
<u>6</u>	<u>4.42</u>	<u>22.46</u>	<u>1.22</u>	<u>2.98</u>	<u>6.35</u>	<u>184</u>	<u>44.4</u>
<u>7</u>	<u>4.42</u>	<u>22.36</u>	<u>1.22</u>	<u>2.82</u>	<u>6.32</u>	<u>183</u>	<u>42.0</u>
<u>8</u>	<u>4.43</u>	<u>22.30</u>	<u>1.22</u>	<u>2.79</u>	<u>6.31</u>	<u>182</u>	<u>42.7</u>

Notes:



ID#: MW-04

Quarter _____ Date 7/24/07 Sampler SW

Well Details	Sampling Details
Depth to Water (initial) <u>4.27'</u>	Start Time
Well Diameter <u>2"</u>	Stop Time
Well Depth <u>14.70'</u>	Pump Rate
Screened Interval	Notes
Pumping Point	Analysis

Water Quality Data							
Time	Depth	Temp	Cond	DO	pH	ORP	Turb
		(C)	(mS/cm)	(mg/L)	(units)		
<u>4</u>	<u>4.13</u>						
<u>0</u>	<u>4.29</u>	<u>21.98</u>	<u>780</u>	<u>4.93</u>	<u>6.10</u>	<u>207</u>	<u>5.0</u>
<u>5</u>	<u>4.34</u>	<u>21.74</u>	<u>785</u>	<u>2.55</u>	<u>5.45</u>	<u>145</u>	<u>4.6</u>
<u>6</u>	<u>4.39</u>	<u>21.71</u>	<u>786</u>	<u>2.46</u>	<u>5.45</u>	<u>144</u>	<u>4.7</u>
<u>7</u>	<u>4.39</u>	<u>21.66</u>	<u>788</u>	<u>2.34</u>	<u>5.94</u>	<u>143</u>	<u>5.4</u>
<u>8</u>							

Notes:

water ~ 1/2" above top of pipe



ID#: MW-5

Quarter _____ Date 7/24/07 Sampler SW

Well Details	Sampling Details
Depth to Water (initial) <u>3.37'</u>	Start Time
Well Diameter <u>2"</u>	Stop Time
Well Depth <u>14'7"</u>	Pump Rate
Screened Interval	Notes <u>overcast</u>
Pumping Point	Analysis

Time	Depth	Temp (C)	Water Quality Data				
			Cond (mS/cm)	DO (mg/L)	pH (units)	ORP	Turb
	<u>3.14</u>						
<u>0</u>	<u>3.51</u>	<u>21.16</u>	<u>754</u>	<u>4.26</u>	<u>5.88</u>	<u>209</u>	<u>14.0</u>
<u>5</u>	<u>3.90</u>	<u>21.09</u>	<u>755</u>	<u>2.27</u>	<u>5.83</u>	<u>197</u>	<u>3.8</u>
<u>6</u>	<u>3.88</u>	<u>21.24</u>	<u>754</u>	<u>2.20</u>	<u>5.83</u>	<u>195</u>	<u>5.2</u>
<u>7</u>	<u>3.83</u>	<u>21.31</u>	<u>754</u>	<u>2.14</u>	<u>5.84</u>	<u>195</u>	<u>7.2</u>
<u>8</u>							
<u>9</u>							

Notes:



Sunny

ID#: ~~AA~~ EX-1

Quarter _____ Date 7/21/07 Sampler 3W

Well Details	Sampling Details
Depth to Water (initial) <u>4.41'</u>	Start Time <u>11:15 A</u>
Well Diameter <u>4"</u>	Stop Time _____
Well Depth <u>14.8'</u>	Pump Rate _____
Screened Interval _____	Notes _____
Pumping Point _____	Analysis _____

Water Quality Data							
Time	Depth	Temp (C)	Cond (mS/cm)	DO (mg/L)	pH (units)	ORP	Turb
	<u>4.45</u>						
0	4.50	20.38	.154	7.28	7.30	141	34.3
5	4.54	22.44	.558	4.51	5.90	-58	6.4
6	4.73	22.21	.556	2.45	5.97	-80	9.6
7	4.74	22.22	.556	2.33	5.98	-82	5.9
8	4.75	22.23	.556	2.31	6.00	-83	8.5
	<u>4.78</u>	<u>22.20</u>	<u>.555</u>	<u>2.31</u>	<u>6.00</u>	<u>-84</u>	<u>7.4</u>

Notes:

~~SA~~ ~~data~~ ~~at~~ ~~total~~ ~~odor~~
 new

Other Documents

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

October 4, 2007

Mr. Ted Dang
Tomorrow Development Co., Inc.
1305 Franklin Street, #500
Oakland, CA 94612

Mr. John Thorpe
21790 Hesperian Blvd.
Hayward, CA 94541-7003

Subject: Fuel Leak Case No. RO0000396 and Geotracker Global ID T0600102124, Former Service Station, 2547 East 27th Street, Oakland, CA 94601

Dear Mr. Dang and Mr. Thorpe:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site, including the reports entitled, "Revised Soil Excavation Report," dated August 31, 2007 (received by ACEH on September 4, 2007) and "Quarterly Groundwater Monitoring, Second Quarter 2007," dated July 7, 2007. The Revised Soil Excavation Report presents the results from soil excavation, confirmation soil sampling, and soil disposal activities conducted between November 2006 and January 22, 2007. The report was revised from a previous February 13, 2007 version in order to address technical deficiencies, collect missing data, and correct omissions in reporting.

Approximately 396 tons of contaminated soil was excavated and removed from the property. The excavations were reported to extend to depths of 9.5 feet bgs. Residual soil contamination with concentrations of total petroleum hydrocarbons (TPH) as gasoline that exceeded the target cleanup goal of 100 milligrams per kilogram were left in place along the north and west walls of excavation area 1. The Revised Soil Excavation Report indicated that the excavation could not be extended laterally in these areas due to site constraints.

Due to the residual contamination left in place, ineffectiveness of screening during excavation and resulting uncertainties regarding confirmation soil samples as discussed in technical comment 6, detection of benzene at an elevated concentration in soil during tank removal, and the locations of planned residences, we request that you conduct soil vapor sampling to confirm the apparent results of soil and groundwater sampling at the site. We request that you **submit a Work Plan for soil vapor sampling as requested in technical comment 9 by November 9, 2007.**

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

- 1. Extent of Excavations on Figures 5 and 6.** Although we have previously commented on inconsistencies in the locations of the former August 1994 soil excavations on Ceres Associates maps, we note that the "Extent of Former Soil Excavation," shown on Figures 5 and 6 of the Revised Soil Excavation Report and Figure 2 of the Quarterly Groundwater Monitoring, Second Quarter 2007 (shows a green pattern on the figure with no label or note in the legend) are not consistent with the extent of excavation shown in the Kleinfelder investigation report dated August 22, 2002 and the Aqua Science Engineers report on the tank removal report dated September 15, 1994. However, Figure 2 of the Revised Soil Excavation Report by Ceres Associates shows the previous UST locations in the same locations as Kleinfelder investigation report dated August 22, 2002 and the Aqua Science Engineers report on the tank removal report dated September 15, 1994. The locations of the former USTs and former excavations must be shown accurately and consistently on site figures. In future reports, please show the extent of the recent excavation conducted between November 2006 and January 22, 2007, an accurate location of the previous USTs and dispensers, and an accurate extent of the 1994 soil excavation to be consistent with the Excavation Area shown in the Kleinfelder investigation report dated August 22, 2002 and the Aqua Science Engineers report on the tank removal report dated September 15, 1994.
- 2. Recommendations on Page 4.** The subsection that describes "Recommendations," from the Aqua Science Engineers 1994 report (3rd paragraph, page 4) requires some editing if this section is to be used in future reports.
- 3. Soil Excavation and Confirmation Sampling.** The second paragraph on page 11 of the Ceres Associates, "Revised Soil Excavation Report," which discusses ACEH requests regarding the excavations, does not accurately represent comments and directives in ACEH correspondence. The item shown in quotes is taken out of context and is actually not from ACEH correspondence dated May 18, 2006 as indicated but instead is from ACEH correspondence dated August 4, 2006. In previous correspondence, ACEH has requested that contaminated backfill and residual soil contamination in the surrounding areas be removed as the first remedial action for the site; our requests have not been limited to removal of contaminated backfill.
- 4. Depth of Excavation.** We note that the depth of excavation is reported as 9.5 feet bgs in each of the excavation areas on page 12 of the Revised Soil Excavation Report dated August 31, 2007. The depth of excavation was previously reported as 8.5 to 9 feet bgs in the Soil Excavation Report dated February 13, 2007. In the Soil Vapor Work Plan requested below, please confirm that the depth of excavation was 9.5 feet bgs.
- 5. Imported Fill.** The Revised Soil Excavation Report indicates that the lower three feet of backfill consisted of quarry fines supplied by Curtner Quarry. The use of the quarry fines as base rock is acceptable and no further documentation is required. The upper portion of fill is described as, "clean fill soil from undeveloped land." Please provide further information regarding the upper backfill to ensure that the material is appropriate for residential land use. Guidance from the California Department of Toxic Substances Control (DTSC) is provided as Attachment A.

- 6. Confirmation Soil Samples.** As shown on Table 7 of the Revised Soil Excavation Report, all confirmation soil samples were uniformly collected at a depth of 9 feet bgs. Soil screening during excavation does not appear to have been effective and was apparently not used to identify contaminated soil. Although the confirmation soil samples submitted for laboratory analyses contained up to 600 milligrams per kilogram of TPH as gasoline, the PID readings for all confirmation soil samples were zero. All PID readings appear to have been zero during excavation except two readings from the bottom of Excavation I. Due to the fact that screening was not effective and all confirmation soil samples were collected at a uniform depth, it is uncertain as to whether the confirmation soil samples were collected from optimal locations and depths to define the extent of contamination. The additional soil samples collected in borings CS-1 through CS-10 provide additional data outside the excavations at depths of 5 and 10 feet bgs. However, we note that screening of soil samples in these borings also did not appear to be effective and was not used to select soil samples for laboratory analyses. For borings CS-1, CS-4, and CS-5, the highest PID readings were from soil samples collected at 2.5 feet bgs. However, soil samples from depths of 5 and 10 feet bgs in these borings were submitted for laboratory analyses.
- 7. Tables.** Tables 8 and 10 are missing numerous data points. As an example, only one sample on Table 10 has a value for TPHg even though all 13 samples were analyzed for TPHg. Please correct these tables in future documents.
- 8. Soil Manifests.** The Non-Hazardous Waste Manifests in the Appendix labeled, "Other Documents" has a notation for "TPH and Metals Impacted Soils," in the Special Handling Instructions. The Revised Soil Excavation Report does not discuss elevated concentrations of metals in soils. In the Soil Vapor Sampling Work Plan requested below, please clarify the reason for the notation regarding metals impacts to soils on the soil manifests and present any metals data in addition to the composite stockpile sample data on page 13 that may indicate elevated concentrations of metals in the soil that was disposed off site.
- 9. Soil Vapor Sampling.** Based on the residual contamination left in place, uncertainties regarding the confirmation soil samples as discussed in technical comment 6, detection of benzene at an elevated concentration in soil during tank removal, and the outline of residential development, we request that you conduct soil vapor sampling to confirm the apparent results of soil and groundwater sampling at the site. Soil vapor samples are to be collected from two locations within the footprints of each of the two planned residences. Please refer to the January 28, 2003 DTSC/RWQCB-LAR *Advisory – Active Soil Gas Investigations* and the December 15, 2004 DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* to help plan the soil vapor investigation. Please present your plans for soil vapor sampling in the Soil Vapor Sampling Work Plan requested below.
- 10. Groundwater Monitoring.** We concur with the proposal to continue quarterly groundwater monitoring using each of the five existing monitoring wells. The groundwater samples are to be analyzed for TPH as gasoline, BTEX, and MTBE using EPA Method SW8021B/8015C and TPH as diesel using EPA Method 8015. Based on the results from groundwater sampling conducted in April 2007, continued analyses for chlorinated hydrocarbons, EDB and

EDC, and fuel oxygenates (TAME, ETBE, DIPE, and TBE) is not required. Please present results from quarterly groundwater sampling in the Quarterly Groundwater Monitoring Reports requested below.

11. **Groundwater Elevation Map.** Groundwater elevations must be posted for each well on Groundwater Elevation Maps. Showing only contours on Figure 3 of the Quarterly Groundwater Monitoring, Second Quarter 2007 without posting data is not acceptable. Figure 3 shows a closed depression surrounding well MW-4, which requires that groundwater is being extracted or leaking into utilities in this area. In the Quarterly Monitoring Report for Third Quarter 2007, please discuss your basis for concluding that there is a groundwater depression in the area of well MW-4.

TECHNICAL REPORT REQUEST

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

- **November 9, 2007** – Soil Vapor Sampling Work Plan
- **November 10, 2007** – Quarterly Monitoring Report for Third Quarter 2007
- **February 10, 2008** – Quarterly Monitoring Report for Fourth Quarter 2007

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

Ted Dang
John Thorpe
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October 4, 2007
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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.

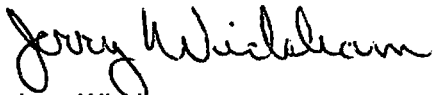
AGENCY OVERSIGHT

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.

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John Thorpe
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October 4, 2007
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If you have any questions, please call me at (510) 567-6791.

Sincerely,



Jerry Wickham
Hazardous Materials Specialist

Attachment: Information Advisory, Clean Imported Fill Material, DTSC

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Ryan Meyer
Ceres Associates
424 First Street
Benicia, CA 94510

Kimberly Brandt
Ceres Associates
424 First Street
Benicia, CA 94510

Pat Preslar
State Water Resources Control Board
Division of Financial Assistance
P.O. Box 944212
Sacramento, CA 94244-2120

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

Information Advisory Clean Imported Fill Material



October 2001

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

It is DTSC's mission to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality, by regulating hazardous waste, conducting and overseeing cleanups, and developing and promoting pollution prevention.

State of California



California
Environmental
Protection Agency



Executive Summary

This fact sheet has been prepared to ensure that inappropriate fill material is not introduced onto sensitive land use properties under the oversight of the DTSC or applicable regulatory authorities. Sensitive land use properties include those that contain facilities such as hospitals, homes, day care centers, and schools. This document only focuses on human health concerns and ecological issues are not addressed.

It identifies those types of land use activities that may be appropriate when determining whether a site may be used as a fill material source area. It also provides guidelines for the appropriate types of analyses that should be performed relative to the former land use, and for the number of samples that should be collected and analyzed based on the estimated volume of fill material that will need to be used. The information provided in this fact sheet is not regulatory in nature, rather is to be used as a guide, and in most situations the final decision as to the acceptability of fill material for a sensitive land use property is made on a case-by-case basis by the appropriate regulatory agency.

Introduction

The use of imported fill material has recently come under scrutiny because of the instances where contaminated soil has been brought onto an otherwise clean site. However, there are currently no established standards in the statutes or regulations that address environmental requirements for imported fill material. Therefore, the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this fact sheet to identify procedures that can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material. Such sites include those that are undergoing site remediation, corrective action, and closure activities overseen by DTSC or the appropriate regulatory agency. These procedures may also apply to construction projects that will result in sensitive land uses. The intent of this fact sheet is to protect people who live on or otherwise use a sensitive land use property. By using this fact sheet as a guide, the reader will minimize the chance of introducing fill material that may result in potential risk to human health or the environment at some future time.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.dtsc.ca.gov.

Overview

Both natural and manmade fill materials are used for a variety of purposes. Fill material properties are commonly controlled to meet the necessary site specific engineering specifications. Because most sites requiring fill material are located in or near urban areas, the fill materials are often obtained from construction projects that generate an excess of soil, and from demolition debris (asphalt, broken concrete, etc.). However, materials from those types of sites may or may not be appropriate, depending on the proposed use of the fill, and the quality of the assessment and/or mitigation measures, if necessary. Therefore, unless material from construction projects can be demonstrated to be free of contami-

nation and/or appropriate for the proposed use, the use of that material as fill should be avoided.

Selecting Fill Material

In general, the fill source area should be located in nonindustrial areas, and not from sites undergoing an environmental cleanup. Nonindustrial sites include those that were previously undeveloped, or used solely for residential or agricultural purposes. If the source is from an agricultural area, care should be taken to insure that the fill does not include former agricultural waste process byproducts such as manure or other decomposed organic material. Undesirable sources of fill material include industrial and/or commercial sites where hazardous ma-

Potential Contaminants Based on the Fill Source Area

Fill Source:

Land near to an existing freeway

Land near a mining area or rock quarry

Agricultural land

Residential/acceptable commercial land

Target Compounds

Lead (EPA methods 6010B or 7471A), PAHs (EPA method 8310)

Heavy Metals (EPA methods 6010B and 7471A), asbestos (polarized light microscopy), pH

Pesticides (Organochlorine Pesticides: EPA method 8081A or 8080A; Organophosphorus Pesticides: EPA method 8141A; Chlorinated Herbicides: EPA method 8151A), heavy metals (EPA methods 6010B and 7471A)

VOCs (EPA method 8021 or 8260B, as appropriate and combined with collection by EPA Method 5035), semi-VOCs (EPA method 8270C), TPH (modified EPA method 8015), PCBs (EPA method 8082 or 8080A), heavy metals including lead (EPA methods 6010B and 7471A), asbestos (OSHA Method ID-191)

**The recommended analyses should be performed in accordance with USEPA SW-846 methods (1996). Other possible analyses include Hexavalent Chromium: EPA method 7199*

Recommended Fill Material Sampling Schedule

Area of Individual Borrow Area	Sampling Requirements
2 acres or less	Minimum of 4 samples
2 to 4 acres	Minimum of 1 sample every 1/2 acre
4 to 10 acres	Minimum of 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 subsamples per location
Volume of Borrow Area Stockpile	Samples per Volume
Up to 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1000 cubic yards + 1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

materials were used, handled or stored as part of the business operations, or unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil. Undesirable commercial sites include former gasoline service stations, retail strip malls that contained dry cleaners or photographic processing facilities, paint stores, auto repair and/or painting facilities. Undesirable industrial facilities include metal processing shops, manufacturing facilities, aerospace facilities, oil refineries, waste treatment plants, etc. Alternatives to using fill from construction sites include the use of fill material obtained from a commercial supplier of fill material or from soil pits in rural or suburban areas. However, care should be taken to ensure that those materials are also uncontaminated.

Documentation and Analysis

In order to minimize the potential of introducing contaminated fill material onto a site, it is necessary

to verify through documentation that the fill source is appropriate and/or to have the fill material analyzed for potential contaminants based on the location and history of the source area. Fill documentation should include detailed information on the previous use of the land from where the fill is taken, whether an environmental site assessment was performed and its findings, and the results of any testing performed. It is recommended that any such documentation should be signed by an appropriately licensed (CA-registered) individual. If such documentation is not available or is inadequate, samples of the fill material should be chemically analyzed. Analysis of the fill material should be based on the source of the fill and knowledge of the prior land use.

Detectable amounts of compounds of concern within the fill material should be evaluated for risk in accordance with the DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual. If

metal analyses are performed, only those metals (CAM 17 / Title 22) to which risk levels have been assigned need to be evaluated. At present, the DTSC is working to establish California Screening Levels (CSL) to determine whether some compounds of concern pose a risk. Until such time as these CSL values are established, DTSC recommends that the DTSC PEA Guidance Manual or an equivalent process be referenced. This guidance may include the Regional Water Quality Control Board's (RWQCB) guidelines for reuse of non-hazardous petroleum hydrocarbon contaminated soil as applied to Total Petroleum Hydrocarbons (TPH) only. The RWQCB guidelines should not be used for volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCS). In addition, a standard laboratory data package, including a summary of the QA/QC (Quality Assurance/Quality Control) sample results should also accompany all analytical reports.

When possible, representative samples should be collected at the borrow area while the potential fill material is still in place, and analyzed prior to removal from the borrow area. In addition to performing the appropriate analyses of the fill material, an appropriate number of samples should also be determined based on the approximate volume or area of soil to be used as fill material. The table above can be used as a guide to determine the number of samples needed to adequately characterize the fill material when sampled at the borrow site.

Alternative Sampling

A Phase I or PEA may be conducted prior to sampling to determine whether the borrow area may have been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with DTSC or appropriate regulatory agency. However, if it is not possible to analyze the fill material at the borrow area or determine that it is appropriate for use via a Phase I or PEA, it is recommended that one (1) sample per truckload be collected and analyzed for all com-

pounds of concern to ensure that the imported soil is uncontaminated and acceptable. (See chart on Potential Contaminants Based on the Fill Source Area for appropriate analyses). This sampling frequency may be modified upon consultation with the DTSC or appropriate regulatory agency if all of the fill material is derived from a common borrow area. However, fill material that is not characterized at the borrow area will need to be stockpiled either on or off-site until the analyses have been completed. In addition, should contaminants exceeding acceptance criteria be identified in the stockpiled fill material, that material will be deemed unacceptable and new fill material will need to be obtained, sampled and analyzed. Therefore, the DTSC recommends that all sampling and analyses should be completed prior to delivery to the site to ensure the soil is free of contamination, and to eliminate unnecessary transportation charges for unacceptable fill material.

Composite sampling for fill material characterization may or may not be appropriate, depending on quality and homogeneity of source/borrow area, and compounds of concern. Compositing samples for volatile and semi-volatile constituents is not acceptable. Composite sampling for heavy metals, pesticides, herbicides or PAH's from unanalyzed stockpiled soil is also unacceptable, unless it is stockpiled at the borrow area and originates from the same source area. In addition, if samples are composited, they should be from the same soil layer, and not from different soil layers.

When very large volumes of fill material are anticipated, or when larger areas are being considered as borrow areas, the DTSC recommends that a Phase I or PEA be conducted on the area to ensure that the borrow area has not been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with the DTSC.

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