

Prepared for Tomorrow Development

Alameda County  
OCT 03 2002  
Environmental Health

**Report Of Limited Soil and  
Groundwater Assessment  
Tomorrow Development Site  
2547 East 27<sup>th</sup> Street  
Oakland, California**

August 22, 2002  
File No.: 17500/001

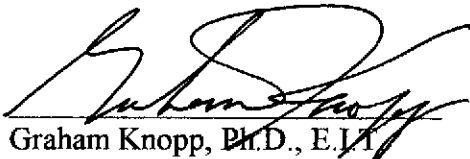
A Report Prepared for:

Tomorrow Development  
1305 Franklin Street  
Oakland, California 94612

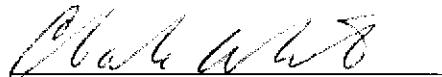
**REPORT OF LIMITED SOIL AND GROUNDWATER ASSESSMENT  
TOMORROW DEVELOPMENT SITE  
2547 E. 27<sup>TH</sup> STREET  
OAKLAND, CALIFORNIA**

Kleinfelder Job No.: 17500/001

Prepared by:



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August 22, 2002

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TOMORROW DEVELOPMENT SITE  
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OAKLAND, CALIFORNIA**

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## 1.0 INTRODUCTION

Kleinfelder Inc. (Kleinfelder) was retained by Tomorrow Development to assess soil and ground water conditions at 2547 East 27<sup>th</sup> Street (site) in Oakland, California (Plate 1).

Kleinfelder's assessment of soil and groundwater conditions at the site included the following:

- Obtaining necessary permits and utility location clearance for drilling;
- Advancing 3 bore holes on-site to below ground water;
- Collecting representative soil and ground water samples from each bore hole;
- Analyzing the soil and ground water sample for petroleum hydrocarbons as gasoline, diesel and motor oil, aromatic hydrocarbons and total lead;
- Comparing the results of the soil and ground water samples to regulatory guidelines or action levels.

This report documents the fieldwork performed at the site, discusses the results of the laboratory analysis, and compares these results against regulatory standards, remediation guidelines, and risk-based screening levels.

## 2.0 BACKGROUND

### 2.1 Site History

The property at 2547 East 27<sup>th</sup> Street in Oakland (hereafter referred to as the site) is the location of a gas station and automotive repair shop possibly since as early as 1927. In 1994 one 100-gallon steel waste oil underground storage tank (UST) and four 500-gallon steel gasoline USTs were removed from the site. At that time, eight soil samples were taken from below the tanks and two were taken from the stockpile of excavated soils. The soil samples were analyzed for petroleum hydrocarbons as both gasoline (TPH-g) and diesel (TPH-d, EPA method 8015M) and for benzene, toluene, ethylbenzene, and total xylenes (BTEX, EPA method 5520). TPH-g was reported in concentrations as high as 930 ppm from the soil samples obtained from beneath the USTs and benzene, toluene, ethylbenzene, and total xylenes were reported in concentrations as high as 2.2 ppm, 2.2 ppm, 2.7 ppm, and 3.3 ppm, respectively. The presence of the analyte MTBE (methyl tert butyl ether) was not tested. After tank removal the excavations were lined with visqueen plastic and backfilled with the excavated material.

The former owner of the site was issued a Notice of Violation letter from Alameda County Environmental Health in 1996. Since that time a Phase I Environmental Site Assessment was performed by the M.L. River Group, who recommended that soil and ground water contamination be assessed for possible petroleum hydrocarbons, including semi-volatiles.

## 2.2 Site Geology

Geologic maps indicate that the site is underlain by Pleistocene alluvial fan deposits (Helley & Graymer, 1997). Site elevation is approximately 115 feet above mean sea level, and the area topography tends towards the south to east-southeast. Sausal Creek passes approximately 400 feet east of the site.

## 3.0 FIELD INVESTIGATION

On June 19 and July 10, 2002, Kleinfelder conducted a field investigation at the site. The following sections describe field investigation methods and observations. Analytical results and their interpretation are summarized in Sections 4 and 5 of this report.

### 3.1 Utility Clearance

CU Surveying, Inc., an underground utility location service, cleared the drilling locations using geophysical equipment. In addition, Kleinfelder contacted Underground Service Alert (USA) prior to drilling to mark member utility lines in the drilling area.

### 3.2 Health and Safety Procedures

A site-specific health and safety plan was prepared and followed during site investigation activities. During drilling Kleinfelder used an organic vapor meter equipped with a photoionization detector (PID) to monitor for the possible presence of organic vapor concentrations in the breathing zone of the workers.

### 3.3 Drilling and Sampling of Soil Borings

Under the direction of Kleinfelder, Precision Sampling of Richmond, California advanced three borings at the site on June 19, 2002. The three borings were advanced in the area of the former USTs (Plate 2) by direct push technology using a 2-inch inside diameter split spoon type sampler lined with a transparent plastic sleeve (the Macro-Core EC-5 Sampling System).

Under the supervision of Kleinfelder's Registered Geologist the soil samples were logged using the Unified Soil Classification System (USCS). Borings EB-1, EB-2 and EB-3 were advanced to a minimum of two feet below ground water to a total depth of 19 feet, 16 feet, and 11 feet, respectively. Immediately after each soil boring was completed a pre-packed well screen with 0.01 inch annuli was inserted. The screened intervals were from the bottom of the borings to approximately two feet above ground water. The wells were topped with one foot of sand and two feet of bentonite chips and locking well caps were installed. The wells were constructed under provisions of a drilling permit issued to Kleinfelder for this site by the Alameda County Public Works Agency.

Kleinfelder used a PID to monitor the presence and concentration of organic vapors in workers' breathing zones and to gauge if soil contamination may be present. The organic vapor

concentration within the sampling sleeve was measured at approximately 6-inch intervals, and these values were logged. Soil samples were collected from the 6-inch interval where the peak organic vapor concentrations were observed in each boring. Boring logs for each bore hole have been provided in Appendix A.

Grab ground water samples were taken from each well after purging. Approximately two well volumes were purged from wells EB-2 and EB-3. About three gallons of water was added to EB-1 before insertion of the well screen in order to prevent caving of material from the sidewalls into the boring. Therefore, more than three well gallons were purged from boring EB-1. The soil and ground water samples were logged with unique identification numbers, stored in a cooler on ice, and transported to McCampbell Analytical Laboratory in Pacheco, California using chain-of-custody protocols.

The samples were analyzed by McCampbell Analytical for TPH-g, TPH-d, total petroleum hydrocarbons as motor oil (TPH-mo), BTEX compounds, MTBE (EPA method 8015C), as well as total lead (EPA method 6010 and 6010C). McCampbell Analytical is certified by the State of California to perform these tests.

### *3.3.1 Equipment Decontamination*

Sampling equipment used during the advancement of each borehole was cleaned prior to drilling and between sampling events with Alconox and water. Soil and decontamination water were retained in drums on site for proper disposal.

### *3.3.2 Site Restoration*

Following completion of each boring, Christy boxes were installed in a neat cement cap. The wells were closed with locking well caps.

## 3.4 Well Survey

On July 10, 2002, Kleinfelder surveyed the well heights in order to assess the ground water surface elevation relative to an assumed reference of 100 feet (i.e., the top of casing EB-1). Kleinfelder also measured the depth to water in each monitoring well using a conductivity based water level indicator and measured the relative horizontal positions of the wells. ~~Measured depth to water in monitoring wells EB-1, EB-2, and EB-3 was 4.55 feet, 8.10 feet, and 3.09 feet, respectively.~~ Based on the assumed reference point elevation, the ground water surface elevations determined for borings EB-1, EB-2 and EB-3 are 95.45 feet, 91.47 feet, and 96.88 feet, respectively.

## 4.0 RESULTS OF FIELD INVESTIGATION

### 4.1 Lithology and Hydrogeology

Kleinfelder ~~generally observed sandy gravel fill from 0 to 4 feet below ground surface (bgs)~~. This material appeared to be free of hydrocarbon contamination, based on PID readings in the airspace near cuttings from these depths and also readings taken in the borehole. From about 4 feet to 12 feet (bgs) in borings EB-1 and EB-2, but only to 6 feet in boring EB-3, fat and lean silty clays were observed. ~~In borings EB-1 and EB-2 free hydrocarbon product was observed in this interval.~~ Below about 12 feet, but below 6 feet in boring EB-3, the gravel and sand content gradually increased until the soils were gravelly sands with some clay near the final depths of all three borings. This transition was most rapid in boring EB-3, and least rapid in boring EB-2. Based upon the visibility of free water on the sampler, ground water was encountered during drilling at approximately 14 feet, 13 feet, and 9 feet in borings EB-1, EB-2 and EB-3, respectively.

Visqueen plastic was not observed in any of the borings, although any such material may have been pushed aside by the sampler. The tank closure report stated that visqueen plastic was placed in the excavations after tank removal and before backfill.

### 4.2 Soil and Ground Water Sampling Analytical Results

The results of the ground water and soil chemical analyses are included in Appendix B and are summarized in Tables 1 and 2. A copy of the analytical report is provided in Appendix B.

#### Soil Sampling Analytical Results

Kleinfelder collected and submitted for chemical analysis one soil sample from each of the three borings. TPH-g was detected in the soil samples extracted from borings EB-1 and EB-2 at concentrations of 1200 mg/kg and 1800 mg/kg, respectively. TPH-d was detected in these samples, from borings EB-1 and EB-2, at concentrations of 650 mg/kg and 1500 mg/kg, respectively. The laboratory described the detected TPH-g as strongly aged gasoline, and the TPH-d was described as resembling Stoddard solvent. TPH-mo was detected in concentrations above laboratory reporting limits only in the sample from boring EB-1 at 14 mg/kg.

Some BTEX compounds were reported above laboratory reporting limits. The soil sample from boring EB-1 had reported concentrations of ethylbenzene of 1.6 mg/kg, toluene of 0.62 mg/kg, and xylenes of 3.3 mg/kg. The soil sample from boring EB-2 had reported concentrations of ethylbenzene of 3.1 mg/kg and xylenes of 4.9 mg/kg. Toluene was the only BTEX compound reported in the sample from boring EB-3 at a concentration of 0.0054 mg/kg.

MTBE was not detected in any of the soil samples submitted for analysis.

Total lead was reported at concentrations of 24 mg/kg, 4.4 mg/kg, and 3.8 mg/kg in the soil samples from borings EB-1, EB-2, and EB-3, respectively.



## Ground Water Sampling Analytical Results

Total petroleum hydrocarbons were reported in each of the three ground water samples collected. TPH-d was reported in monitoring well EB-1 at a concentration of 56 ug/L. TPH-g, TPH-d, and TPH-mo were reported in monitoring well EB-2 at concentrations of 82 ug/L, 360 ug/L, and 310 ug/L, respectively. And TPH-d and TPH-mo were reported in monitoring well EB-3 at concentrations of 270 ug/L and 540 ug/L, respectively.

Only the ground water sample from monitoring well EB-2 had reported concentrations of aromatic (BTEX) hydrocarbons. In this well benzene, toluene, and xylenes were reported at concentrations of 0.97 ug/L, 1.3 ug/L and 1.3 ug/L, respectively.

MTBE was not detected in any of the ground water samples submitted for analysis.

Total lead was not detected above laboratory reporting limits in any of the ground water samples collected.

### 4.3 Comparison of Analytical Results to Regulatory Criteria

Kleinfelder compared analyte concentrations for each sample collected to City of Oakland risk-based screening levels (RBSLs), site-specific target levels (SSTLs), preliminary remediation goals (PRGs) and regulatory standards (i.e., MCLs). The RBSLs and SSTLs, provided by the City of Oakland Public Works Agency and the Regional Water Quality Control Board, are intended to be protective of surface and ground water quality, impacts to human health via inhalation and direct exposure, and nuisance concerns in the City of Oakland. RBSLs and SSTLs are not regulatory standards, but are screening or guidance levels intended to assist with further evaluation of sites using the risk-based corrective action approach. SSTLs have a higher degree of specificity than RBSLs, being listed by soil type, and represent target levels for use with sites that have undergone some degree of site characterization. PRGs, serve as guidelines to assess whether further site characterization and/or remediation is warranted. Maximum Contaminant Levels (MCLs), are regulatory standards determined for contaminant concentrations in drinking water. The applicability of MCLs to shallow ground water at the site is questionable as the shallow ground water is likely not a viable source of drinking water.

Reported concentrations of both TPH-g and TPH-d in soil samples from borings EB-1 and EB-2 exceed applicable RBSLs (see Table 1). All reported concentrations of aromatic hydrocarbons in soil are well below residential PRGs, RBSLs, and SSTLs. Reported concentrations of total lead in soil samples are also well below PRGs, RBSLs, and SSTLs.

Reported concentrations of TPH-d (reported as Stoddard solvent) and TPH-mo in monitoring wells EB-2 and EB-3 exceed RBSLs for ground water as a drinking water resource. The remainder of the ground water analyte concentrations, including aromatic hydrocarbons and lead, did not exceed potentially applicable standards (i.e., MCLs) and screening levels.

## 5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

On June 19, 2002, Kleinfelder advanced three borings at the site. Following advancement of the borings, the boreholes were completed as monitoring wells. Soil samples were collected during the advancement of the borings by screening 6-inch intervals with a PID. The interval with the highest screened level was selected for submission for laboratory analysis. At the completion of each boring, ground water samples were collected for analysis by the laboratory. Soil and ground water samples were submitted to the laboratory for analysis for petroleum hydrocarbons as diesel, gasoline, and motor oil, aromatic organics, and total lead. A summary of the analytical results for the soil and groundwater samples is provided on Tables 1 and 2, respectively.

Kleinfelder compared the soil and ground water results to City of Oakland RBSLs, PRGs, and MCLs.

Reported concentrations of both TPH-g and TPH-d in soil samples from borings EB-1 and EB-2 exceed applicable residential RBSLs (see Table 1). No reported concentrations of TPH-mo exceed residential RBSLs.

All reported concentrations of aromatic hydrocarbons in soil are well below both residential PRGs, RBSLs, and the Tier 2 site-specific target levels (SSTLs), using the City of Oakland RBSL and SSTL values for the lowest of the subsurface exposure pathway criteria. Reported concentrations of total lead in soil samples are also well below both PRGs and applicable RBSLs.

Reported concentrations of TPH-d (reported as Stoddard solvent) and TPH-mo exceed RBSLs for ground water as a drinking water resource in both monitoring wells EB-2 and EB-3. The remainder of the ground water analytical results reported show no values exceeding applicable standards (i.e., MCLs) and screening levels (RBSLs and SSTLS), using the lowest of the exposure pathway criteria.

Our survey of ground water surface elevations does not suggest any consistent trend that could be interpreted as a ground water surface gradient. **The measured ground water elevations measured may suggest a perched ground water condition, and therefore the direction of ground water movement at the depths of interest here is uncertain.**

Given these findings, Kleinfelder makes the following recommendations:

1. **Since the horizontal extent of petroleum impacted soil is unknown, we recommend that a limited soil boring program be completed to assess the horizontal extent of soil impacts.** Drilling and soil sampling should be performed in a grid pattern (e.g., 10-foot intervals) in the areas of reported impact (vicinity of EB-1 and EB-2). Based on the analytical results of this sampling program, a plan should be prepared to either remove or treat the soil, or leave it in place. If the soil impact appears to be limited to the immediate vicinity of current borings (EB-1 and EB-2) and away from planned structures on the site, then Tomorrow Development should consider, with Alameda County Environmental Health concurrence, leaving the soil in place to degrade naturally. This recommendation is made given that the impacted soil does

not appear to be at the ground surface. If the impacted soil extends toward the center of the property and toward planned structures, removal and / or treatment should be considered, again with Alameda County Environmental Health concurrence.

2. Shallow ground water appears impacted by petroleum hydrocarbons at the site, however aromatic hydrocarbons concentrations are significantly below applicable criteria or are not present above laboratory reporting limits. Ground water in one or more of the wells appears perched and therefore the shallow ground water is not necessarily in direct hydraulic connection. Kleinfelder recommends that additional ground water samples are collected from the wells for chemical analysis and water levels are measured to confirm the previous results. Also, Tomorrow Development should perform a "sensitive receptor" survey (i.e., locate any registered wells or surface water bodies within a half mile of the site). If the results of the retest confirm the previous results, and no potential receptor is identified in the immediate vicinity of the site, Tomorrow should consider requesting a finding of No Further Action at the site by the Alameda County Environmental health Department.

## 6.0 REFERENCES

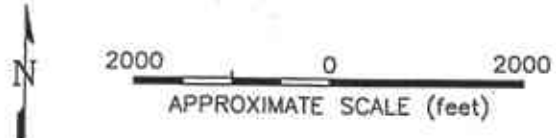
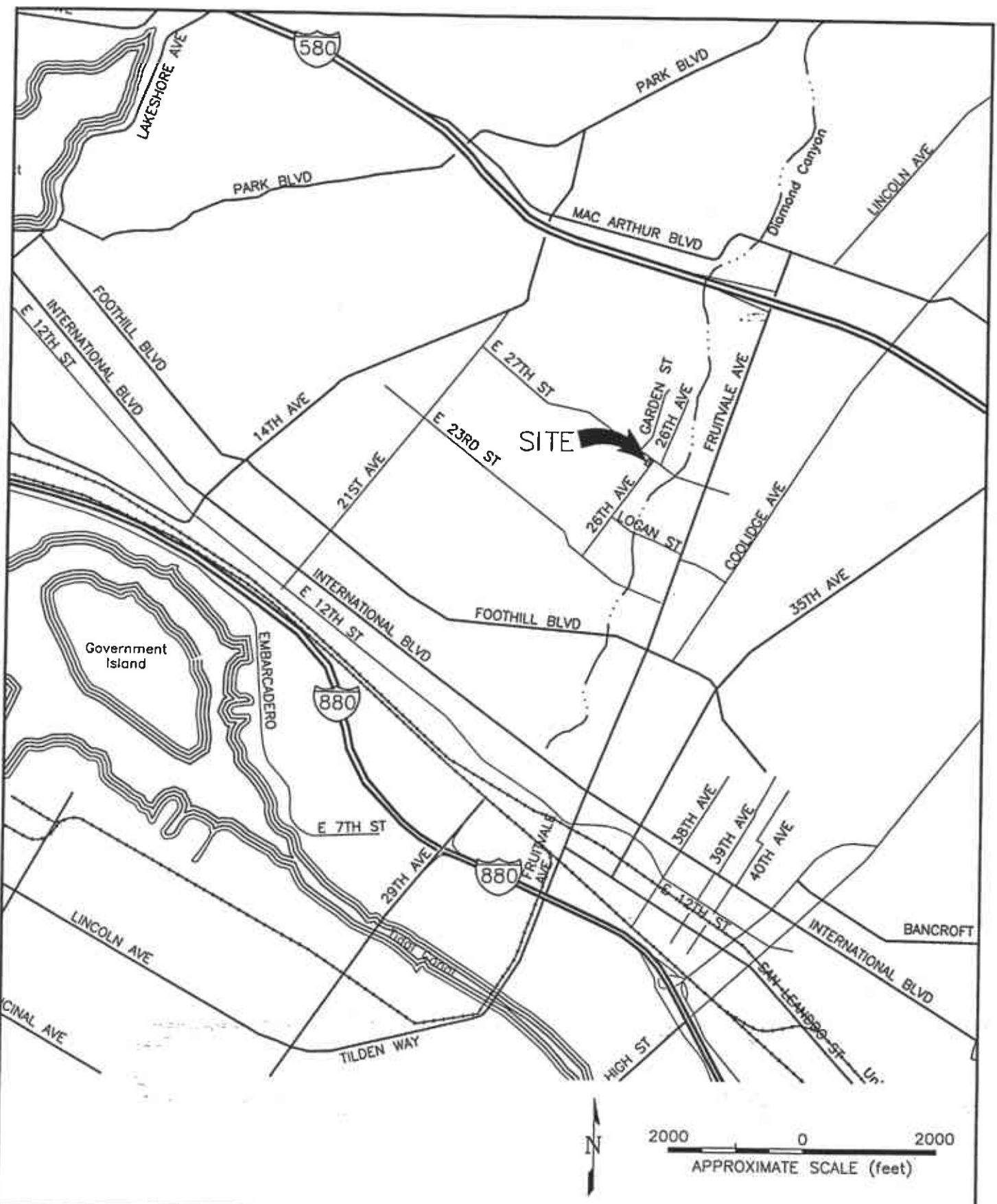
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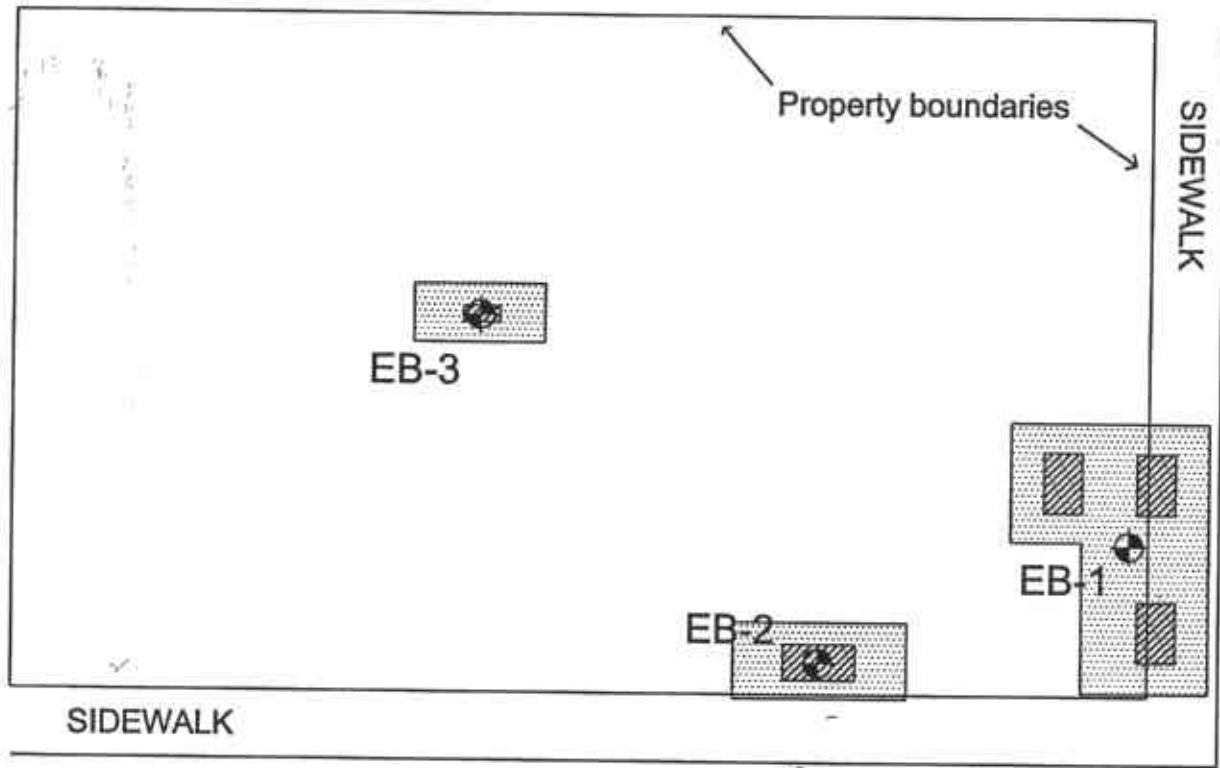
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 <b>KLEINFELDER</b> 1970 Broadway, Suite 710 Oakland, CA 94612 PH. (510) 628-9000 FAX. (510) 628-90009		<b>SITE VICINITY MAP</b>		PLATE
		TOMORROW DEVELOPMENT SITE 2547 EAST 27TH STREET OAKLAND, CALIFORNIA		1
DRAFTED BY: L. Sue	CHECKED BY: G. Knopp	PROJECT NUMBER 17500-001		
DATE: 07-11-02	REVISION DATE:			



SCALE: 1" = Approx 20'

Legend:

- Soil boring and monitoring well location.
- Excavation boundaries
- Former UST location

		SOIL BORING LOCATION MAP	Plate  2
		TOMORROW DEVELOPMENT SITE 2547 EAST 27TH STREET OAKLAND, CALIFORNIA	
DRAFTED BY: GK	DATE: 7/17/02	PROJECT NO. 17500--001	
CHECKED BY: CA	DATE: 7/17/02		

**Table 1**  
**Soil Analytical Results**  
**Tomorrow Development Site**  
**2547 East 27th Street, Oakland, California**

Analyte	Reporting Limits <sup>a</sup> (mg/kg)	Soil Boring EB-1 at 4.5 feet (mg/kg)	Soil Boring EB-2 at 5.5 feet (mg/kg)	Soil Boring EB-3 at 4 feet (mg/kg)	PRG (Residential) (mg/kg)	RBSL Oakland (Residential) (mg/kg)	SSTL (Residential/ Clayey Silt) (mg/kg)
Total Petroleum Hydrocarbons							
as gasoline	1.0	1200 <sup>b</sup>	1800 <sup>c</sup>	ND		500 <sup>e</sup>	
as diesel	1.0	650 <sup>d</sup>	1500 <sup>d</sup>	ND		500 <sup>e</sup>	
as motor oil	5.0	14	ND(<500)	ND		500 <sup>e</sup>	
Aromatic Hydrocarbons							
Benzene	0.005	ND(<0.5)	ND(<1)	ND	0.65	0.0021	0.0045
Ethylbenzene	0.005	1.6	3.1	ND	230	8	16
Toluene	0.005	0.62	ND(<1)	0.0054	520	0.88	1.8
Xylenes	0.005	3.3	4.9	ND	210	13	27
MTBE	0.05	ND(<5.0)	ND(<10)	ND	17	0.0076	0.021
Inorganics							
Lead	3.0	24	4.4	3.8	400	200	

Notes:

- a Reporting limit unless otherwise noted
  - b Strongly aged gasoline, no recognizable pattern
  - c Heavier gasoline range compounds are significant (aged gasoline?), no recognizable pattern
  - d Stoddard solvent
  - ND - Not detected at or above laboratory reporting limit
  - MTBE - methyl tert butyl ether
  - RBSL - Risk based screening level, City of Oakland Public Works Agency, January 1, 2000, unless as noted
  - PRG (Residential) - Preliminary remediation goal, US EPA Region 9, November 2000.
  - SSTL - Site-Specific Target Levels, City of Oakland Public Works Agency, January 1, 2000.
  - \*Lowest of subsurface soil exposure pathway criteria
  - e California Regional Water Quality Control Board, San Francisco Bay Region, August 2000 (with March 2001 updates)
- Chemical Analyses performed by McCampbell Analytical

**Table 2**  
**Ground Water Analytical Results**  
**Tomorrow Development Site**  
**2547 East 27th Street, Oakland, California**

Analyte	Reporting Limits <sup>a</sup> (ug/l)	Monitoring Well EB-1 (ug/l)	Monitoring Well EB-2 (ug/l)	Monitoring Well EB-3 (ug/l)	MCL (ug/l)	RBSL* (ug/l)	SSTL* (Residential/ Clayey Silt) (ug/l)
Total Petroleum Hydrocarbons							
as gasoline	50	ND	82	ND		100 <sup>b</sup>	
as diesel	50	56	360	270		100 <sup>b</sup>	
as motor oil	250	ND	310	540		100 <sup>b</sup>	
Aromatic Hydrocarbons							
Benzene	0.5	ND	0.97	ND	1	10	1
Ethylbenzene	0.5	ND	ND	ND	700	700	700
Toluene	0.5	ND	1.3	ND	150	150	150
Xylenes	0.5	ND	1.3	ND	1750	1800	1800
MTBE	5	ND	ND	ND	13	13	13
Inorganics							
Lead	0.005	ND	ND	ND	15	3.2	

Notes:

a Reporting limit unless otherwise noted

ND - Not detected at or above laboratory reporting limit

MTBE - methyl tert butyl ether

MCL - Maximum contaminant level for drinking water, California Department of Health Services

RBSL - risk based screening level, City of Oakland, Public Works Agency January 1, 2000.  
 City of Oakland, Public Works Agency January 1, 2000.

SSTL - Site-Specific Target Level, City of Oakland, Public Works Agency, January 1, 2000.

\*Lowest of subsurface exposure pathway criteria.

b California Regional Water Quality Control Board, San Francisco Bay Region, August 2000 (with March 2001 updates).

Chemical Analyses performed by McCampbell Analytical



# UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	DESCRIPTION	MAJOR DIVISIONS	LTR	DESCRIPTION		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GP	Well-graded gravels or gravel with sand mixture, little or no fines.	FINE GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.	
		GW	Poorly-graded gravels or gravel with sand mixture, little or no fines.			CL	Inorganic lean clays of low to medium plasticity, gravelly clays, sandy clays, lean silty clays.	
		GM	Silty gravels, gravel-sand-silt mixtures.			OL	Organic silts and organic silt-clays of low plasticity.	
		GC	Clayey gravels, gravel-sand-clay mixtures.			MH	Inorganic silts, micaceous or diatomaceous fine or silty soils, elastic silts.	
	SAND AND SANDY SOILS	SW	Well-graded sands or gravelly sands, little or no fines.		SILTS AND CLAYS LL>50	CH	Organic clays of medium high plasticity.	
		SP	Poorly-graded sands or gravelly sands, little or no fines.			OH	Inorganic clays of high plasticity, fat clays	
		SM	Silty sands, sand, and silt mixtures.			HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils.
		SC	Clayey sands, and clay mixtures.					



- Geoprobe, Direct Push Sample
- Large Bore Discrete Soil Sampler, 1.5 in. O.D., 1.12 in. I.D.
- Modified California Sampler, 2.5 in. O.D., 2 in. I.D.
- California Sampler, 3.0 in. dia.
- Shelby Tube 3.0 inch O.D.



- Blank casing
- Screened casing
- Cement grout
- Bentonite
- Sand pack or gravel pack

- OVA Organic Vapor Analyzer
- PID Total organic vapors (parts per million) measured by a photo-ionization device
- FID Total Organic vapors (parts per million) measured by a flame-ionization device
- NA Not Applicable

- Sharp Contact (observed)
- - - - - Inferred Contact (contact not observed)
- ||||| Gradational Contact (observed)
- ▽ Water level observed in boring
- ▽ Stabilized water level
- NFWE No free water encountered

**Notes:** Blow counts represent the number of blows a 140-pound hammer falling 30 inches required to drive a sampler through the last 12 inches of an 18 inch penetration.

The lines separating strata on the logs represent approximate boundaries only. The actual transition may be gradual. No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

References to plasticity of cohesive soils are based on qualitative field observations and not on quantitative field or laboratory tests. Qualitative soil plasticity is noted solely to aid in stratigraphic correlation and is not intended for geotechnical characterization of soils.



## BORING LOG LEGEND

Tomorrow Development Site  
2547 E. 27th Street  
Oakland, California

PLATE

A1

PROJECT NO. 17500

Date Completed: 6/19/02  
 Logged By: G. Knopp  
 Total Depth: 19.0 ft

Sampler: Macro-Core System EC-5  
 Method: 3" O.D. Sampler  
 Hammer Wt: Vibratory Push  
 Location: northeast corner of property  
 Elevation: approx. 110'

Depth (feet)	Sample Number	Sample Type	Blows/Foot	Recovery (%)	PID (ppm)	USCS	Description	Remarks
1							SANDY GRAVEL (GW), brown, slightly moist, fine to coarse grained gravel, fine grained sand	
2								
3								
4								
5					37		- hand dug to 4' until free hydrocarbon product observed in soil	▼
6					170		SILTY CLAY WITH SOME SAND (CL), dark gray-brown to black, moist, very fine grained sand, free hydrocarbon product in soil, highly plastic	
7					117			
8					75			
9					31			
10					157		- no sand, olive-gray to olive-brown	
11					19			
12					11			
13					5			
14					6		- olive-gray	
15					4			
16					4			
17					4			
18					2			
19					3			
20					1.2			
21					0.9			
22					0.3		- some fine grained sand present, very moist	
23					0.4		SANDY CLAY (SC), orange-brown, fine to coarse grained sand, wet at 14'	
24					3			
25					0			
26					0			
27					0			
28					0			
29					0			
30					0			
31					0			
32					0			
33					0			
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208		</						

Date Completed: 6/19/02  
 Logged By: G. Knopp  
 Total Depth: 16.0 ft

Sampler: Macro-Core System EC-5  
 Method: 3" O.D. Sampler  
 Hammer Wt: Vibratory Push  
 Location: 5' from south perimeter, 27' west of 27th St.  
 Elevation: approx. 110'

Depth (feet)	Sample Number	Sample Type	Blows/Foot	Recovery (%)	PID (ppm)	USCS	Description	Remarks
1							SANDY GRAVEL (SW), dark brown, slightly moist	
2								
3								
4								
5							- hand dug to 5'	
6					66		SILTY CLAY (CL/CH), very dark gray, moist	
7					162			
8					100			
9					85			
10					55			
11					25		- gray to orange-brown, trace fine to medium grained sand present	
12					29			
13					20		SILTY CLAY (CL), orange-brown, moist, increasing sand	
14					2.1			
15					0		SANDY CLAY WITH TRACE GRAVEL (SC), light olive-gray with orange-brown mottling, moist to very moist, fine grained sand	
16					0		GRAVELLY SAND WITH SOME CLAY (SW), orange-brown, wet	
17					0		END OF BORING	
18					0		- 5' of 1" diameter screen inserted.	
19					0		- Boring backfilled with grout.	
20					0		- Ground water encountered at 7.5' bgs.	
21					0			
22					0			
23					0			
24					0			
25					0			

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**LOG OF BORING NO. EB-2**

Tomorrow Development Site  
 2547 E. 27th Street  
 Oakland, California

PLATE

**A3**

PROJECT NO. 17500

Date Completed: 6/19/02  
 Logged By: G. Knopp  
 Total Depth: 11.0 ft

Sampler: Macro-Core System EC-5  
 Method: 3" O.D. Sampler  
 Hammer Wt: Vibratory Push  
 Location: near middle of site  
 Elevation: approx. 110'

Depth (feet)	Sample Number	Sample Type	Blows/Foot	Recovery (%)	PID (ppm)	USCS	Description	Remarks
1							GRAVELLY SAND (SW), brown, slightly moist	
2							SILTY CLAY (CL/CH), red-brown to black, moist	
3							- black, very moist	
4							- wet 4.5' to 6.5'	
5					0.9			
6					0		SANDY CLAY (SC), light orange-brown, moist	
7					0			
8					0		SILTY CLAY (CL), orange-brown, moist	
9					0			
10					0		CLAYEY SAND WITH SOME GRAVEL (SC), orange to orange-brown, moist	
11					0		CLAYEY GRAVEL WITH SAND (GW), orange-brown, wet, fine to coarse grained sand, fine to medium grained angular to subangular chert, sandstone, and claystone gravel	
12							END OF BORING	
13							- 2' of screen inserted.	
14							- Boring backfilled with grout.	
15							- Ground water encountered at 9' bgs.	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

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**LOG OF BORING NO. EB-3**

Tomorrow Development Site  
 2547 E. 27th Street  
 Oakland, California

PLATE

**A4**

PROJECT NO. 17500

McC Campbell Analytical Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560  
Telephone : 925-798-1620 Fax : 925-798-1622  
<http://www.mccampbell.com> E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)

Kleinfelder Inc. 1970 Broadway #710 Oakland, CA 94612	Client Project ID: #17500; E. 27th Environmental	Date Sampled: 06/19/02
		Date Received: 06/20/02
	Client Contact: Charlie Almestad	Date Reported: 06/26/02
	Client P.O.:	Date Completed: 06/26/02

June 26, 2002

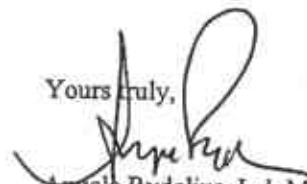
Dear Charlie:

Enclosed are:

- 1). the results of 7 samples from your #17500; E. 27th Environmental 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.

Yours truly,

  
Angela Rydelius, Lab Manager











McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560  
 Telephone : 925-798-1620 Fax : 925-798-1622  
<http://www.mccampbell.com> E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)

Kleinfelder, Inc. 1970 Broadway #710 Oakland, CA 94612	Client Project ID: #17500 E. 27 <sup>th</sup> St. Environmental	Date Sampled: 06/19/02
	Client Contact: Charles Almestad	Date Received: 06/20/02
	Client P.O:	Date Extracted: 06/20/02
		Date Analyzed: 06/21/02

**Lead\***

EPA analytical methods 6010/200.7, 200.9*					
Lab ID	Client ID	Matrix	Extraction °	Lead*	% Recovery Surrogate
0206340-002B	EB-1-W	W	Dissolved	ND	N/A
0206340-004B	EB-2-W	W	Dissolved	ND	N/A
0206340-006B	EB-3-W	W	Dissolved	ND	N/A
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	S	TTLC		3.0 mg/kg	
	W	TTLC		0.005 mg/L	
	—	STLC,TCLP		0.2 mg/L	

\* soil and sludge samples are reported in mg/kg, wipe samples in ug/wipe, and water samples and all STLC / SPLP / TCLP extracts in mg/L  
 °Lead is analysed using EPA method 6010 (ICP)for soils, sludges, STLC & TCLP extracts and method 200.9 (AA Furnace) for water samples  
 @ DISTLC extractions are performed using STLC methodology except that deionized water is substituted for citric acid buffer as the extraction fluid. DISTLC results are not applicable to STLC regulatory limits.  
 ° EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC); STLC - CA Title 22  
 \* surrogate diluted out of range; N/A means surrogate not applicable to this analysis  
 ^ reporting limit raised due matrix interference  
 i) liquid sample that contains greater than ~2 vol. % sediment; this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations.

Edward Hamilton, Lab Director



McC Campbell Analytical Inc.

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### QC SUMMARY REPORT FOR SW8021B/8015Cm

BatchID: 2526

Matrix: S

WorkOrder: 0206340

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		Ext. Date: 6/19/02		Spiked Sample ID: N/A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	N/A	0.60	N/A	N/A	N/A	104	107	2.7	80	120
MTBE	N/A	0.10	N/A	N/A	N/A	101	91.6	10	80	120
Benzene	N/A	0.10	N/A	N/A	N/A	99.3	106	6.9	80	120
Toluene	N/A	0.10	N/A	N/A	N/A	105	113	7.3	80	120
Ethylbenzene	N/A	0.10	N/A	N/A	N/A	107	114	6.7	80	120
Xylenes	N/A	0.30	N/A	N/A	N/A	103	113	9.2	80	120
%SS:	N/A	0.10	N/A	N/A	N/A	112	119	5.6	80	120

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

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

N/A = not enough sample to perform matrix spike, or analyte concentration in sample exceeds spike amount.

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

\* MS and / or MSD spike recoveries may not be near 100% or their RPDs near 0% if: a) the sample is inhomogeneous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



McC Campbell Analytical Inc.

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### QC SUMMARY REPORT FOR SW8021B/8015Cm

BatchID: 2552

Matrix: W

WorkOrder: 0206340

EPA Method: SW8021B/8015Cm    Extraction: SW5030B    Ext. Date: 6/20/02    Spiked Sample ID: N/A										
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	N/A	60	N/A	N/A	N/A	104	102	1.8	80	120
MTBE	N/A	10	N/A	N/A	N/A	92.3	89.8	2.8	80	120
Benzene	N/A	10	N/A	N/A	N/A	108	103	4.8	80	120
Toluene	N/A	10	N/A	N/A	N/A	111	106	4.9	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	112	107	4.4	80	120
Xylenes	N/A	30	N/A	N/A	N/A	110	103	6.2	80	120
%SS:	N/A	10	N/A	N/A	N/A	106	103	3.4	80	120

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

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

N/A = not enough sample to perform matrix spike, or analyte concentration in sample exceeds spike amount.

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

\* MS and / or MSD spike recoveries may not be near 100% or their RPDs near 0% if: a) the sample is inhomogeneous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



McC Campbell Analytical Inc.

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### QC SUMMARY REPORT FOR BATCH 2549

BatchID: 2549

Matrix: S

WorkOrder: 0206340

EPA Method: SW8015C		Extraction: SW3550C			Ext. Date: 6/20/02		Spiked Sample ID: 0206343-004A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(d)	ND	150	106	106	0.136	105	103	1.5	70	130
%SS:	98.5	50	98.5	98.6	0.0748	100	98.8	1.5	70	130

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

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

N/A = not enough sample to perform matrix spike, or analyte concentration in sample exceeds spike amount.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



McC Campbell Analytical Inc.

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### QC SUMMARY REPORT FOR SW8015C

BatchID: 2547

Matrix: W

WorkOrder: 0206340

EPA Method: SW8015C		Extraction: SW3510C			Ext. Date: 6/20/02		Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	Acceptance Criteria (%)		
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(d)	N/A	7500	N/A	N/A	N/A	102	105	2.5	70	130
%SS:	N/A	2500	N/A	N/A	N/A	103	107	3.2	70	130

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

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

N/A = not enough sample to perform matrix spike, or analyte concentration in sample exceeds spike amount.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



McC Campbell Analytical Inc.

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### QC SUMMARY REPORT FOR 6010C

BatchID: 2554

Matrix: S

WorkOrder: 0206340

Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
Lead	N/A	250	N/A	N/A	N/A	81.2	80	1.5	70	130
%SS:	N/A	5000	N/A	N/A	N/A	89.8	92.9	3.4	70	130

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

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

N/A = not enough sample to perform matrix spike, or analyte concentration in sample exceeds spike amount.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



McC Campbell Analytical Inc.

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### QC SUMMARY REPORT FOR E200.7/E200.9

BatchID: 2542

Matrix: W

WorkOrder: 0206340

EPA Method: E200.7/E200.9		Extraction: E200.7/E200.9			Ext. Date: 6/20/02		Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
Lead	N/A	0.010	N/A	N/A	N/A	102	101	0.82	70	130
All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions: NONE										

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

N/A = not enough sample to perform matrix spike, or analyte concentration in sample exceeds spike amount.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

**McCampbell Analytical Inc.**

110 Second Avenue South, #D7  
 Pacheco, CA 94553-5560  
 (925) 798-1620

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0206340

Client:

Kleinfelder Inc.  
 1970 Broadway #710  
 Oakland, CA 94612

TEL: (510) 628-9000  
 FAX: (510) 628-9009  
 ProjectNo: #17500; E. 27th  
 PO:

20-Jun-02

Sample ID	ClientSampID	Matrix	Collection Date	Bottle	Requested Tests			
					6010C	200_7/E200_	SW8015C	8021B/8015
0206340-001	EB-1-4.5	Soil	6/19/02 1:30:00 PM		A		A	A
0206340-002	EB-1-W	Water	6/19/02 1:30:00 PM			B	B	A
0206340-003	EB-2-5.5	Soil	6/19/02 3:00:00 PM		A		A	A
0206340-004	EB-2-W	Water	6/19/02 3:00:00 PM			B	B	A
0206340-005	EB-3-4	Soil	6/19/02 4:30:00 PM		A		A	A
0206340-006	EB-3-W	Water	6/19/02 4:30:00 PM			B	B	A
0206340-007	EB-2 6	Soil	6/19/02					A

Comments:

	Date/Time		Date/Time
Relinquished by: _____		Received by: _____	
Relinquished by: _____		Received by: _____	
Relinquished by: _____		Received by: _____	

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.

Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other



# KLEINFELDER

0206340

PROJECT NO. 17500		PROJECT NAME F. 27th St. Environmental		NO. OF CON- TAINERS	TYPE OF CON- TAINERS	ANALYSIS Pb Cu Zn Mn Cd Ni Cr Co Mg Fe Al K Na Ca Mg Pb Cu Zn Mn Cd Ni Cr Co Mg Fe Al K Na Ca	RECEIVING LAB: McCampbell Institute Other Parameters include													
LP. NO. (P.O. NO.)	SAMPLERS: (Signature/Number) <i>Michael Krupp</i>						DATE MM/DD/YY	SAMPLE I.D. TIME HH-MM-SS	SAMPLE I.D.	MATRIX	INSTRUCTIONS/REMARKS									
1	5/19/02	1330	EB-1-4-S	S	1	pl VOA														
2	+	1330	EB-1-W	W	1	pl VOA														
3		1500	EB-2-5-E	S	1	pl VOA														
4	+	1500	EB-2-W	W	1	pl VOA														
5		1630	EB-3-4	S	1	pl VOA														
6	*+20	1630	EB-3-W	W	1	pl VOA														
7			EB-2 6'	S																
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17	INFO																			
18	GOOD CONDITION																			
19	HEAD SPACE ABSENT																			
20																				

Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 5/20/02 06:30	Received by: (Signature) <i>WJ #280</i>	Instructions/Remarks: Results to: Michael Krupp or Charlie Alvestad	Send Results To: KLEINFELDER 1970 Broadway SUITE 710 Oakland, CA 94612 (510) 628-9000 Attn: <i>Michael Krupp</i>
Relinquished by: (Signature) <i>WJ #280</i>	Date/Time 6-20 14:40	Received by: (Signature)		
Relinquished by: (Signature)	Date/Time <i>6/20/02</i>	Received for Laboratory by: (Signature) <i>[Signature]</i>		

CHAIN OF CUSTODY

Pink - Lab Copy