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Alameda County Environmental Health



27 March 2006 4135.01



Mr. Greg Lunkes A.F. Evans Development, Inc. 1000 Broadway, Suite 300 Oakland, CA 94607

Subject:

Subsurface Investigation

Eighth Street and Broadway

Oakland, California

Dear Mr. Lunkes:

This letter report presents the results of the Subsurface Investigation performed by Treadwell & Rollo, Inc. (Treadwell & Rollo) for the property located at 721-724 Broadway and 455-471 Eighth Street in Oakland, California (the Site) as shown on Figure 1 (APN 001-0201-015). The investigation was conducted in accordance with our proposal dated 9 May 2005, which was approved by A.F. Evans Development, Inc. (Client). It is our understanding that A.F. Evans Development is proposing to construct a mixed-use development at the Site.

SITE DESCRIPTION

The Site is bound to the north by Eighth Street, to the east by Broadway, to the south by a vacant office building, and to the west by commercial and mixed use buildings. An asphalt paved parking lot occupies most of the Site, with a ticket dispenser located in the northeast corner (Figure 2). A Bay Area Rapid Transit (BART) tunnel is located adjacent to the east of Site beneath Broadway.

BACKGROUND

Treadwell & Rollo prepared a *Phase I Environmental Site Assessment, 455-471 Eighth Street and 721-724 Broadway, Oakland, California*, dated 17 May 2005 for A.F. Evans, which identified one recognized environmental condition (REC) and one potential REC. The REC was known petroleum hydrocarbons contamination in soil and groundwater at the Site from a former service station located at the Site. The potential REC was the presence of fill material at the Site, which may include residual chemicals.

At the request of A.F. Evans, Treadwell & Rollo developed a scope of work to collect soil, groundwater, and soil vapor samples at the Site. The soil samples were proposed to develop additional soil characterization data for potential off-site soil disposal, if construction excavations are required to address the redevelopment project's mass loading requirements due to the presence of the adjacent BART tunnel. The scope of work also included collection of soil



vapor samples and groundwater samples to evaluate the presence of volatile organic compounds (VOCs).

FIELD INVESTIGATION PROGRAM

On 20 May 2005, four soil borings (TR-1 through TR-4) and four soil vapor probes (TR-V1 through TR-V4) were advanced with Stratoprobe direct-push drilling equipment by Transglobal Environmental Geochemistry (TEG), a subcontractor drilling company based in Ranch Cordova, California. An approved Alameda County Public Works Agency Drilling Permit was obtained before the start of the drilling activities. All proposed boring and probe locations were cleared for utilities by notifying Underground Services Alert (USA) and by having an on-site clearance performed by Precision Locating, a subcontractor private utility locator. Approximate soil boring and soil vapor probe locations are indicated on Figure 2.

Soil Sample Collection

Six soil samples were collected in TR-1 and TR-2 (at 0.5, 5, and 8 feet below ground surface [bgs]). Because shallow groundwater has historically been reported been as shallow as 12 feet bgs, TR-1 and TR-2 were advanced to 16 feet bgs to attempt shallow groundwater sampling. Four soil samples were collected from borings TR-3 and TR-4 (at 0.5 and 5 feet bgs), which were both terminated at 5.5 feet bgs. Boring logs for TR-1 through TR-4 are included with this letter (Attachment A).

While advancing TR-1 through TR-4, continuous soil cores were examined and soil was screened using a portable Multi-Rae Photo Ionization Detector (PID). Soil samples were retrieved from the Stratoprobe direct-push borings in two-inch-diameter acetate tubes. Six-inchlong sections of the tubes were collected from the desired sampling interval by cutting the tubes and covering the sections with TeflonTM sheeting and plastic caps. The soil sampling equipment was decontaminated by steam cleaning before and between each boring. Soil samples were labeled, placed in an iced-filled cooler, and transported under Chain-of-Custody documentation to Curtis & Tompkins, Ltd., a California-certified analytical laboratory.

All soil samples were analyzed for total petroleum hydrocarbons quantified as gasoline (TPH-g) by EPA Method 8015m, VOCs by EPA Method 8260B, and total lead by EPA Test Method 6010B. Soil samples collected from 5 feet bgs were also analyzed for the Leaking Underground Fuel Tank (LUFT) 5 Metals (cadmium, chromium, lead, nickel, and zinc) by EPA Test Method 6010B. All soil borings were backfilled with cement grout

Cambria Environmental, 2005, *Groundwater Monitoring Report – First Quarter 2005, Former Shell Service Station, 461 8th Street, Oakland, California.*



Groundwater Sample Collection

At TR-1 and TR-2, temporary one-inch slotted well casings were placed into the borings for grab groundwater sampling. Although the temporary casings were left in the borings for several hours, an insufficient volume of groundwater was observed in the casings to allow sample collection and laboratory analysis. The temporary well casings were removed and were backfilled with cement grout.

Soil Vapor Sample Collection

Four soil vapor borings (TR-V1 through TR-V4) were advanced at locations around the proposed parking garage area of the development and near the former underground storage tanks and dispensing equipment of the former on-site service station. Soil gas samples were collected in accordance with TEG's California Department of Toxic Substances Control (DTSC) protocol, which is intended to be in compliance with the DTSC *Advisory – Active Soil Gas Investigations*, dated 28 January 2003. Soil vapor samples were analyzed by TEG's on-site laboratory. A description of the soil vapor sampling and soil vapor laboratory analysis protocol is included with this letter (Attachment B). In accordance with the 2003 DTSC Advisory, three soil vapor samples were collected from TR-V1 at 4.5 feet bgs to identify optimal probe purge volumes for the other soil vapor samples. Soil vapor samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260B. Because BTEX was not detected in any of the probe purge volume samples, the default of 3 times the probe purge volume was used for the remaining three samples, which were all collected at 5 feet bgs. Following collection of the soil vapor samples, the probes were removed and were backfilled with cement grout.

SUBSURFACE CONDITIONS

The subsurface consisted of two inches of asphalt blanketed on four inches of gravel fill. The gravel fill was underlain by silty sand and sandy silt. Borings TR-1 and TR-3 were homogeneous from 0.5 feet to 8.5 feet bgs with borings that contained silty sand and sandy silt, respectively. Boring TR-2 contained sandy silt from 0.5 to 8 feet bgs inter-bedded with silty sand layer from 3 to 5.5 feet bgs. Boring TR-4 consisted of sandy silt to 3 feet bgs and was underlain by silty fine sand from 3 to 5.5 feet bgs. No odors or discoloration was detected in any of the soil observed. Boring logs for TR-1 through TR-4 are included with this letter (Attachment A).

ANALYTICAL RESULTS - SOIL SAMPLES

The analytical results for the soil samples are summarized on Table 1 and provided in the laboratory reports (Attachment C). All soil samples at the Site were reported as not detected for TPH-g and VOCs above the laboratory detection limits.



Lead was detected in all soil samples analyzed, with concentrations that ranged from 1.9 to 170 milligrams per kilogram (mg/kg). Lead concentrations in each boring location were highest in the samples collected near the surface at 0.5 feet bgs with TR-1-0.5 at 24 mg/kg, TR-2-0.5 at 80 mg/kg, TR-3-0.5 at 41 mg/kg, and TR-4-0.5 at 170 mg/kg, which exceeds the Environmental Screening Levels (ESLs) of 150 mg/kg. Soil samples collected at depths beneath 0.5 bgs had significantly lower concentrations of lead (up to 4.9 mg/kg). Lead in soil was well below the Total Threshold Limit Concentration (TTLC) of 1,000 mg/kg for lead. The TTLC, as noted in the California Code of Regulations Title 22, is one of the criteria used to characterize a waste as hazardous in California.

Although lead in soil at TR-2-0.5 (80 mg/kg) and TR-4-0.5 (170 mg/kg) did not exceed the TTLC, the lead concentration in each sample is greater than 10 times the Soluble Limit Threshold Concentration (STLC) for lead (5 milligrams per liter (mg/L)). Although the exceedance of 10 times the STLC does not indicate soil would be characterized as hazardous waste, the "10 times STLC" rule of thumb is generally used to decide if soluble lead should be evaluated by extracting soil samples using the California Waste Extraction Test (WET) on a soil. Therefore, if soil at these locations will be excavated as part of the future development of the Site, it should be sampled at the time of excavation and be analyzed for soluble lead by the California WET.

Soil samples collected at 5.0 feet bgs were additionally analyzed for cadmium, chromium, nickel, and zinc. Cadmium in soil was reported as not detected above laboratory detection limits. Chromium concentrations in soil ranged between 28 and 39 mg/kg, nickel concentrations between 12 and 17 mg/kg, and zinc concentrations between 12 and 35 mg/kg. These concentrations were all below their respective residential ESLs and TTLCs.

Analytical Results - Soil Vapor

The analytical results for the soil vapor samples are summarized on Table 2 and provided in the laboratory reports included in Attachment C. All soil vapor samples were reported as not detected for BTEX compounds above the laboratory reporting limits of 1.0 microgram per liter (μ g/L). The reporting limit of 1 ug/L is below the toluene, ethylbenzene, and xylenes ESLs for residential land use, based on indoor air vapor intrusion. Although the laboratory reporting limit of 1 μ g/L for benzene is above the ESL (0.085 μ g/L), toluene, ethylbenzene, and xylenes were not detected, indicating that benzene was not likely present in soil gas at lower concentrations. Additionally, samples collected in January 2005 from the three on-site groundwater monitoring

San Francisco Bay Regional Water Quality Control Board (RWQCB), 2005, Screening For Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, February. Levels for Shallow Soils (less than 3 meters) Where Groundwater is Not a Current or Potential Source of Drinking Water under Residential Land Use.



wells (Cambria Environmental, 2005) indicated that benzene was detected up to 85 μ g/L in water, which is less than the RWQCB ESL based on indoor air vapor intrusion (540 μ g/L). Therefore, it is likely that benzene in soil gas do not represent a significant risk for indoor air vapor intrusion.

CONCLUSIONS

The subsurface investigation for the Site located at 721-724 Broadway and 455-471 Eighth Street in Oakland, California indicated that TPH-g and VOCs were not detected in the shallow subsurface soil samples collected (to a maximum depth of 8.5 feet bgs). All metals were below the total threshold limit concentrations used to characterize hazardous waste. However, shallow soil in borings TR-2 and TR-4 contained lead at concentrations indicating that additional sampling for soluble lead should be performed at the time of excavation, if soil in these areas is to be excavated and disposed. With the exception of lead in the northeast part of the Site (TR-4 at 0.5 feet bgs), none of the metals in soil were greater than the residential ESLs. Because no groundwater was encountered during the field activities, groundwater samples were not collected during this field investigation.

No BTEX compounds were detected in the soil vapor samples analyzed. Although the detection limit for benzene in soil gas was above the residential ESL for potential vapor intrusion, benzene in recent groundwater samples collected from monitoring wells at the Site was below the groundwater residential ESL for potential vapor intrusion. Therefore, it is likely that BTEX in soil gas do not represent a significant risk for indoor air vapor intrusion

LIMITATIONS

Treadwell & Rollo performed this Subsurface Investigation in accordance with our proposal to A.F. Evans Development, dated 5 May 2005. The screening level approach to site evaluation utilized in this investigation has inherent limitations. For example, the distribution of chemical concentrations in the soil can vary spatially and over time. The chemical analysis results, valid as of the time of collection, are based on data collected at the sample locations only.

All conclusions and recommendations in this report concerning the subject property are the professional opinions of the Treadwell & Rollo, Inc., personnel involved with the project, and this report should not be considered a legal interpretation of existing environmental regulations. Opinions presented herein apply to site conditions existing at the time of our assessment, and cannot necessarily be taken to apply to site changes or conditions of which we are not aware and have not had the opportunity to evaluate.



We appreciate the opportunity to work with you on this project. If you have any questions or need additional information, please contact me.

Sincerely,

TREADWELL & ROLLO, INC.

Grover Buhr, R.G. Senior Geologist Glenn M. Leong, R.E.A. Senior Associate Scientist

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Attachments: Table 1 – Soil Analytical Results

Table 2 – Soil Vapor Analytical Results

Figure 1 – Site Location Map

Figure 2 – Site Plan

Attachment A - Boring Logs

Attachment B - TEG Soil Vapor Methodology and DTSC Protocol

Attachment C - Laboratory Reports

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TABLES



Table 1 SOIL ANALYTICAL RESULTS

Eighth Street and Broadway Oakland, California

Sample ID	Depth (ft)	TPH-g	VOCs	Cadmium	Chromium	Lead	Nickel	Zinc
TR-1-0.5	0.5	< 0.98	ND			24		
TR-1-5.0	5.0	< 1.1	ND	< 0.22	33	3.8	15	35
TR-1-8.0	8.0	< 1.1	ND			1.9		
TR-2-0.5	0.5	< 1.0	ND			80		
TR-2-5.0	5.0	< 0.97	ND	< 0.22	28	1.9	12	22
TR-2-8.0	8.0	< 1.1	ND			4.9		
TR-3-0.5	0.5	< 0.93	ND			41		
TR-3-5.0	5.0	< 1.0	ND	< 0.26	36	2.0	16	12
TR-4-0.5	0.5	< 1.0	ND			170		
TR-4-5.0	5.0	< 1.0	ND	< 0.24	39	2.0	17	12
TTLC				100	2,500	1,000	2,000	5,000
ESLs		100.0	w.m.	1.7	58	150	150	600

Footnotes

Results are in milligrams per kilogram.

< 0.22 = Compound not detected above laboratory reporting limit.

ND = Not Detected. Detection limits vary.

TPH-g = Total petroleum hydrocarbons quantified as gasoline.

VOCs = Volatile organic compounds.

"--" = Not Analyzed.

TTLC = Total Threshold Limit Concentration.

ESLs = Environmental Screening Levels established by the San Francisco Regional Water Quality Control Board (February 2005). Values determined for shallow soils (< 3 meters) where groundwater is not a current or potential source of drinking water, residential land use.



Table 2 SOIL VAPOR ANALYTICAL RESULTS Eighth Street and Broadway Oakland, California

Sample ID	Depth (ft)	Purge Volume	Benzene	Toluene	Ethylbenzene	Total Xylenes
TR-V1	4.5	1	<1.0	<1.0	<1.0	<1.0
TR-V1	4.5	3	<1.0	<1.0	<1.0	<1.0
TR-V1	4.5	7	<1.0	<1.0	<1.0	<1.0
TR-V2	5.0	3	<1.0	<1.0	<1.0	<1.0
TR-V3	5.0	3	<1.0	<1.0	<1.0	<1.0
TR-V4	5.0	3	<1.0	<1.0	<1.0	<1.0
ESLs			0.085	63	420	150

Footnotes

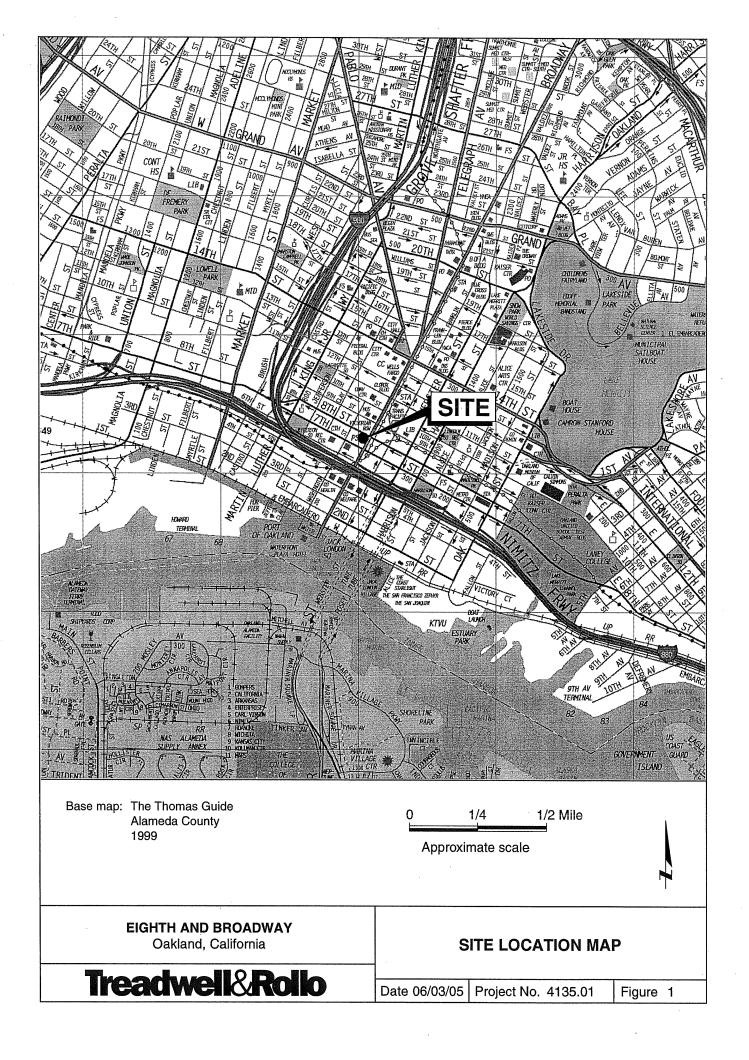
Results are in micrograms per liter (ug/L).

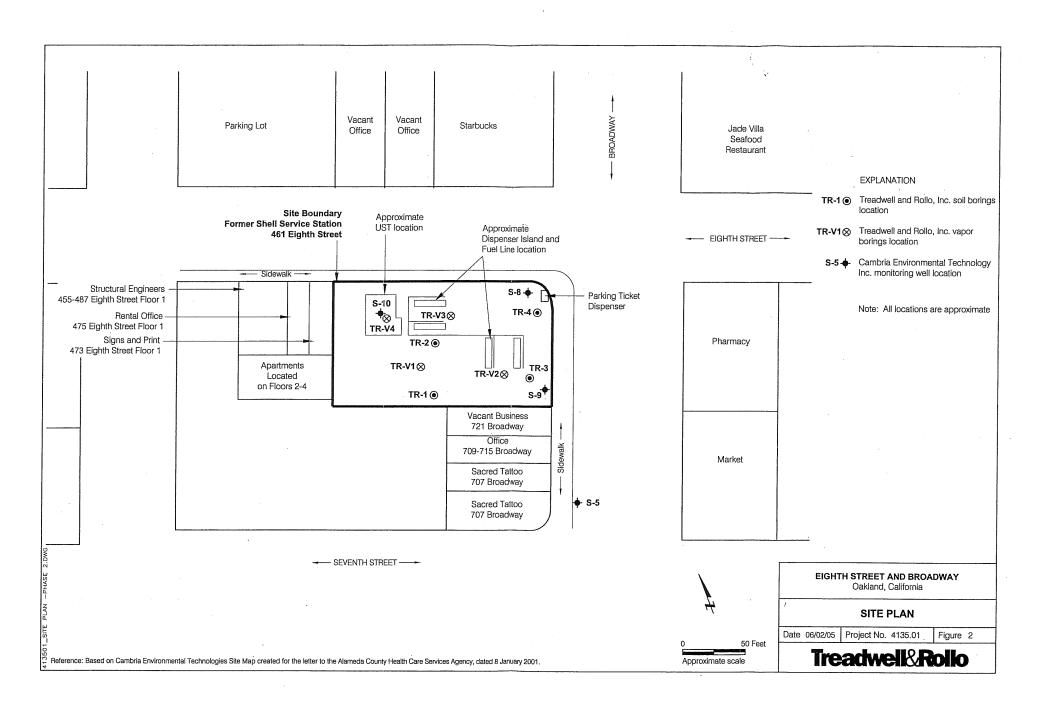
<1 = Compound not detected above laboratory reporting limit.

ESLs = Environmental Screening Levels established by the San Francisco Regional Water Quality Control Board (February 2005). Values determined for indoor air and soil gas, residential land use.

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FIGURES





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ATTACHMENT A
Boring Logs

			UNIFIED SOIL CLASSIFICATION SYSTEM
M	ajor Divisions	Symbols	Typical Names
200	0	GW	Well-graded gravels or gravel-sand mixtures, little or no fines
no.	Gravels (More than half of	GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
	coarse fraction > no. 4 sieve size)	GM	Silty gravels, gravel-sand-silt mixtures
ained of soi size	110. 4 Sieve Size)	GC	Clayey gravels, gravel-sand-clay mixtures
Coarse-Grained (more than half of soil sieve size	Sands	sw	Well-graded sands or gravelly sands, little or no fines
arso han	(More than half of coarse fraction < no. 4 sieve size)	SP	Poorly-graded sands or gravelly sands, little or no fines
S e t		SM	Silty sands, sand-silt mixtures
Ĕ		sc	Clayey sands, sand-clay mixtures
e) ii (e)		ML	Inorganic silts and clayey silts of low plasticity, sandy silts, gravelly silts
Soils f of soil e size)	Silts and Clays LL = < 50	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
-Grained S than half o 200 sieve		OL	Organic silts and organic silt-clays of low plasticity
Gra than 200	•	МН	Inorganic silts of high plasticity
Fine -Grained Soils (more than half of soil < no. 200 sieve size)	Silts and Clays LL = > 50	СН	Inorganic clays of high plasticity, fat clays
LE V		ОН	Organic silts and clays of high plasticity
Highl	y Organic Soils	PT	Peat and other highly organic soils

	GRAIN SIZE CHART								
	Range of Grain Sizes								
Classification	U.S. Standard Sieve Size	Grain Size in Millimeters							
Boulders	Above 12"	Above 305							
Cobbles	12" to 3"	305 to 76.2							
Gravel coarse fine	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76							
Sand coarse medium fine	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074							
Silt and Clay	Below No. 200	Below 0.074							

Unstabilized groundwater level

Stabilized groundwater level

SAMPLE DESIGNATIONS/SYMBOLS

Sample taken with split-barrel sampler other than Standard Penetration Test sampler. Darkened area indicates soil recovered

Classification sample taken with Standard Penetration Test sampler

Undisturbed sample taken with thin-walled tube

Disturbed sample

Sampling attempted with no recovery

Core sample

Analytical laboratory sample

Sample taken with Direct Push sampler

SAMPLER TYPE

C Core barrel

CA California split-barrel sampler with 2.5-inch outside diameter and a 1.93-inch inside diameter

D&M Dames & Moore piston sampler using 2.5-inch outside diameter, thin-walled tube

O Osterberg piston sampler using 3.0-inch outside diameter, thin-walled Shelby tube

- Pitcher tube sampler using 3.0-inch outside diameter, thin-walled Shelby tube
- S&H Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter
- SPT Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside diameter and a 1.5-inch inside diameter
- ST Shelby Tube (3.0-inch outside diameter, thin-walled tube) advanced with hydraulic pressure

461 EIGHTH STREET Oakland, California

Treadwell&Rollo

CLASSIFICATION CHART

Date 05/12/05 | Project No. 4135.01

Figure A-5

PR	OJECT:			EIGI			EET AND BROADWAY and, California	Log of B	oring TR-1
Bori	ng locatio	n:	See	Site	Plan	, Figu	re 2		Logged by: E. Morita
Date	e started:	5/20	0/05				Date finished: 5/20/05		Drilled By: TEG
Drill	ing metho	d: S	Strato	prob	е				
	nmer weig						Hammer type:		
San	pler: Sp					·			
DEPTH (feet)	Sample Number	Sample	Blow	Recovery (inches)	OVM (ppm)	LITHOLOGY	MATE	ERIAL DESCRIP	TION
1-	TR-1-0.5			E -			2-inches Asphalt on 4-inchedark brown/black asphalt, the SILTY SAND (SM) light brown, loose, dry, subpercent fine to medium san	prown gravel fill	tic, poorly graded, no odor, 40
3-						SM			- -
4-									· -
5-	TR-1-5.0	•					SILTY SAND (SM) light brown, loose, dry, sub- percent fine sand, 55 perce	-rounded, non-plast nt fines	ic, poorly graded, no odor, 45
7-						ѕм			• •
8-	TR-1-8.0		_				SILTY SAND (SM)	-rounded, non-plast	ic, poorly graded, no odor, 45
9-							percent fine sand, 55 perce Not logged Drilled to 16.0 feet for poter		
11-									_
12-	-								·
13-									_
15-									
s 16 -									
78R.GDT 6/									<u> </u>
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PRO	DJECT:			EIG			EET AND BROADWAY and, California								
Borin	g location	า: ร	See :	Site F	Plan	, Figu	ıre 2		Logged by: E. Morita						
Date	started:	5/20	/05				Date finished: 5/20/05		Drilled By: TEG						
Drillin	ng method	d: S	trato	probe	9										
	mer weigl		·				Hammer type:								
Sam	pler: Sp					Ι. Ι									
DEPTH (feet)	Sample Number	Sample NA		Recovery (inches)	ОУМ (ррт)	LITHOLOGY	MATERIA	AL DESCRIP	TION						
Ľ	Number	Š	ш О	Ë. Re	0	5	Surfa 2-inches Asphalt on 4-inches of	ce Condition	s:						
1-	TR-2-0.5		-				dark brown/black asphalt, brow SANDY SILT (ML) with GRAVE light brown, medium stiff, moist	n gravel fill L . sub-rounded.	slightly plastic, moderately graded,						
2-						ML	from concrete cutter fluids	no odor, 5 percent gravel, 35 percent fine to medium sand, 60 percent fines, moist							
3-						SM	SILTY SAND (SM) light brown, loose, dry, sub-rounded, non-plastic, poorly graded, no odor, fine sand								
5—	TR-2-5.0	•	-												
6							SANDY SILT (ML) dark brown, medium stiff, dry, slightly plastic, poorly graded, no odor, 35 percent fine sand, 65 percent fines								
7-						ML									
9-	TR-2-8.0	•	••				Not logged Drilled to 16 feet for potential gr	oundwater							
10				,											
11-															
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14															
15-															
16-					_										
17— 2 18—															
19—							_								
<u> </u>								•							
≚ surfa	ng terminate ace. undwater no		-			_	round		Treadwell&Rollo						
2									Project No.: Figure: A-2						

PRO	DJECT:			EIGI			EET AND BROADWAY and, California	Log of Bo	oring TR-3	1 OF 1			
Borin	ng location	n:	See	Site I	Plan	, Figu	ure 2		Logged by: E. Morita				
Date	started:	5/20	0/05				Date finished: 5/20/05		Drilled By: TEG				
	ng method			prob	е								
 	mer weigl						Hammer type:						
	pler: Sp	MPL				\							
DEPTH (feet)	Sample Number	Sample	Blow	Recovery (inches)	OVM (ppm)	- ПТНОСОБҮ	MAT	ERIAL DESCRIP	TION				
	TR-3-0:5		_	u			2-inches Asphalt on 4-inc SANDY SILT (ML)	hes of Gravel Fill					
1	11(-3-0.3		-				light brown, loose, dry, su	light brown, loose, dry, sub-rounded, non-plastic, moderately graded, no odor, 25 percent medium sand, 75 percent fines					
2-						ML	brick fragments noted at a	approximately 2.0 fee	t bgs	<u>-</u>			
3-										-			
4					-			f ,		-			
5—	TR-3-5.0					ML	SANDY SILT (ML) light brown, soft, dry, sub-	rounded, non-plastic	, poorly graded, no odor, 20 p	ercent /			
6-							fine to medium sand, 80 p	percent fines	, , , , , , , , , , , , , , , , , , , ,				
7—										• -			
8-										-			
9-		-								-			
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surfa	ng terminate ace. undwater not						round		Treadwell&Ro	ollo			
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PRO	OJECT:			EIGI			EET AND BROADWAY and, California	Log of Bo	oring TR-4	PAGE 1 OF 1				
	ng location			Site I	Plan	, Figu	re 2		Logged by: E. Mo	orita				
	started:						Date finished: 5/20/05		Drilled By: TEG					
	ng metho			prob	e 			· · · · · · · · · · · · · · · · · · ·						
	mer weig pler: Sp						Hammer type:							
		AMPL			ē	<u>}</u>								
DEPTH (feet)	Sample Number	Sample	Blow	Recovery (inches)	OVM (ppm)	гітногосу	MATE	MATERIAL DESCRIPTION						
				E 0			2-inches Asphalt Concrete	and Gravel Fill						
1-	TR-4-0.5	•				ML	SANDY SILT (ML) light brown, loose, dry, sub percent fine to medium sar brick fragments noted at ap	SANDY SILT (ML) light brown, loose, dry, sub-rounded, semi-plastic, poorly graded, no odor, 30 percent fine to medium sand, 70 percent fines						
							and magnitude freed at ap	proximatory 2.0 100	595					
3						SM	SILTY SAND (SM) light brown, loose, dry, sub-rounded, non-plastic, poorly graded, no odor, 40 percent fine sand, 60 percent fines							
5-	TR-4-5.0		_							_				
6-	11(40.0									_				
7-							•		*	_				
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9-														
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12-										_				
13-										_				
14-														
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g 16-										_				
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18—										_				
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≦ 20-			<u> </u>							-				
Bori Surf	ng terminate ace. undwater no						ound			ell&Rollo				
TEST E									Project No.: 4135.01	Figure: A-4				

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ATTACHMENT B
TEG Soil Vapor Methodology And DTSC Protocol

TEG SOIL VAPOR SURVEY METHODOLOGY and DTSC Protocol

Active Soil Vapor Sampling System

Transglobal Environmental Technologies (TEG's) low-dead volume soil vapor sampling system has been inspected, endorsed, and is favored by all regulatory agencies who have seen it, including the EPA and CA DTSC. The design eliminates the risk of air leakage down the soil vapor probe, ensures sample collection from the tip, and greatly facilitates decontamination procedures.

Probe Construction

TEG's soil vapor probes are constructed of 1 inch outer diameter chrom-moly steel, equipped with a steel drop off tip. The Strataprobe can use a larger diameter probe if needed. Nominal lengths are 4 feet and additional lengths may be added to one another to achieve the required sampling depth. An inert 1/8 inch tube runs through the center of the probe and is attached to the sampling port with a stainless steel post run fitting.

Probe Insertion

The probe is driven into the ground with an electric rotary hammer, or with the Strataprobe. After inserted to the desired depth, the probe is retracted slightly, which opens the tip and exposes the vapor sampling port. This design prevents clogging of the sampling port and cross-contamination from soils during insertion. Once the probe rod is placed, the sample can be collected after waiting twenty minutes for equilibration.

Soil Gas Sampling

Soil vapor is withdrawn from the inert tubing using a calibrated syringe connected via an on-off valve. A purge volume test is conducted by sampling at the first soil vapor location three times after sequentially collecting and discarding one, three, and seven dead volumes of soil vapor gas to flush the sample tubing and fill it with in-situ soil vapor. The purge volume used prior to the sample yielding the highest analytical value is used for all subsequent sampling. After purging, the next 20cc to 50cc of soil vapor are withdrawn in the syringe, plugged, and immediately transferred to the mobile lab for analysis within the required holding time. During sampling, a leak check gas is used to confirm that the sample train and probe rod is tight and leak free. Additional soil vapor may be collected and stored in gas-tight containers (e.g. Summa canisters) as desired.

Flushing & Decontamination Procedures

To minimize the potential for cross-contamination between sites, all external probe parts are cleaned of excess dirt and moisture prior to insertion. The internal inert tubing and sampling syringes are flushed with large volumes of ambient air between samples or discarded as required. If water, dirt, or any material is observed in the tubing, the tubing is discarded and replaced with fresh tubing.

DTSC Protocols

Analytical Methodology

Soil vapor samples collected from each probe will be transferred directly to the on-site mobile laboratory and analyzed immediately. There will be minimal lag time between sample collection and analysis, ensuring that the integrity of the sample is maintained.

Samples will be analyzed on a gas chromatograph equipped with capillary columns and a combination of mass spectrometer (GC/MS), TCD, and FID detectors as needed. This combination of columns and detectors ensures compound separation, recognition, and detection at the required levels.

These detectors enable on-site analysis for petroleum hydrocarbons, volatile aromatics (BTEX), and volatile organic compounds (e.g. DCE, TCE, PCE, vinyl chloride) using EPA approved analytical methodology outlined in methods 8260B and 8015m. Output signals from each detector are processed by computer chromatography software and the results entered into a laboratory computer for on-site processing.

Daily instrument Calibration

Daily continuing calibration is performed at the start of each day by injecting and analyzing a midrange calibration standard. Acceptable continuing calibration agreement: +/- 15% to 25% to the calibration curve, depending on the compound.

Blanks & Duplicates

Blanks are analyzed at the start of each day and more often as appropriate depending upon the measured concentrations. Typically, when high sample values are encountered, additional blanks may be analyzed. Duplicate samples are analyzed as needed or as requested by the client or regulatory agency.

Compound Confirmation

A MS (mass spectrometer) detector is used for absolute compound identification of VOCs. Also, a surrogate compound is added to each sample during analysis to confirm that the chromatographic retention times have not shifted during the course of the day and that surrogate recovery is adequate showing proper instrument operation and integrity.

Health and Safety - Training and Medical Monitoring Programs

In order to reduce potential employee exposure to hazardous materials and reduce the risk of injury incurred during the normal performance of work, TEG maintains active participation of personnel in a Injury and Illness Prevention Program (IIPP). Each TEG employee that performs work in a laboratory or in the field, is required to have completed a 40-hour training session in accordance with 29 CFR 1910.120. The Health and Safety Officer coordinates all aspects of training and maintaining the Injury and Illness Prevention program, including, but not limited to:

- -- annual physical examination of field personnel (including an initial baseline exam upon hiring)
- -- health, safety and hazardous material training
- -- first aid and Cardio-Pulmonary Resuscitation (CPR) training
- -- safety equipment inventory and purchasing
- -- review of health and safety procedures, exposure limits, and plans for each project.

Work procedures and required safety conditions are determined on the basis of anticipated work, environmental conditions and levels of toxic chemicals at a given site. Consultation with client safety personnel or representatives is undertaken to determine potential health hazards to workers at that site. Each TEG employee participates in all pre-job safety meetings at each job site.

Treadwell&Rollo

ATTACHMENT C Laboratory Reports



TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY

07 June 2005

Mr. Grover Buhr Treadwell & Rollo 501 14th Street Third Floor Oakland, CA 94612

SUBJECT: DATA REPORT -Treadwell & Rollo Project #4135.01 8th Street and Broadway - Oakland, California

TEG Project # 50520D

Mr. Buhr:

Please find enclosed a data report for the samples analyzed from the above referenced project for Treadwell & Rollo. The samples were analyzed on site in TEG's mobile laboratory. TEG conducted a total of 7 analyses on 7 soil vapor samples.

-- 7 analyses on soil vapors for BTEX by EPA method 8260B.

The results of the analyses are summarized in the enclosed tables. Applicable detection limits and calibration data are included in the tables.

1,1 difluoroethane was used as a leak check compound around the probe rods during the soil vapor sampling. No 1,1 difluoroethane was detected in any of the vapor samples reported at or above the DTSC recommended leak check compound reporting limit of 10 µg/L of vapor.

TEG appreciates the opportunity to have provided analytical services to Treadwell & Rollo on this project. If you have any further questions relating to these data or report, please do not hesitate to contact us.

Sincerely,

Leif Jonsson Principal Analyst.

TEG-Northern California

Phone: (916) 853-8010

Fax: (916) 853-8020



Treadwell & Rollo Project #4135.01 8th Street and Broadway - Oakland, California

TEG Project #50520D

BTEX (EPA method 8260B)	Analyses of SOIL VAPOR	in ug/L of Vapor
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SAMPLE NUM	IBER:	Blank	TR-V1	TR-V1	TR-V1	TR-V2	TR-V3	TR-V4	TR-V4
PURGE VOL	UME:		1	3	7	3	3	3	dup
DEPTH	(feet):		4.5	4.5	4.5	5.0	5.0	5.0	5.0
COLLECTION E	DATE:		5/20/05	5/20/05	5/20/05	5/20/05	5/20/05 09:40 1	5/20/05 10:10 1	5/20/05 10:30 1
COLLECTION	TIME:	07:27	07:55	08:15	08:35	09:15			
DILUTION FAC	CTOR:	1	1	1	1	1			
Benzene	1.0 ug/L	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	1.0 ug/L	nd	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	1.0 ug/L	nd	nd	nd	nd	nd	nd	nd	nd
Total Xylenes	1.0 ug/L	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate Recovery	/:							· · · · · · · · · · · · · · · · · · ·	
D	98%	97%	97%	98%	99%	97%	99%	102%	
Toluer	96%	99%	98%	96%	97%	98%	98%	97%	
1,4	87%	91%	89%	90%	91%	88%	90%	89%	

Phone: (916) 853-8010 Fax: (916) 853-8020

'nd' INDICATES NOT DETECTED AT LISTED REPORTING LIMITS

'RL' INDICATES REPORTING LIMITS

ANALYSES PERFORMED IN TEG-Northern California's LAB

ANALYSES PERFORMED BY: Ms. Christina Leonard

DATA REVIEWED BY: Mr. Leif Jonsson



Treadwell & Rollo Project #4135.01 8th Street and Broadway - Oakland, California

TEG Project #50520D

CALIBRATION DATA - Continuing Calibration

	Benzene	Toluene	Ethylbenzene	m, p Xylene	o Xylene
Midpoint	40.0	40.0	40.0	80.0	40.0
Continuing Calibration - N	Midpoint				
5/20/05 Open Midpoint	39.2	36.6	40.7	84.1	42.0
	98.0%	91.5%	101.8%	105.1%	105.0%

Phone: (916) 853-8010 Fax: (916) 853-8020

ANALYSES PERFORMED BY: Ms. Christina Leonard



	Total Volatil	e Hydrocarbons	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mq/Kg	Sampled:	05/20/05
Basis:	as received	Received:	05/20/05

Field ID:

TR-1@0.5'

SAMPLE 179573-001 Type: Lab ID:

Batch#: Analyzed:

102216 05/20/05

Analyte	Result	RL	
Gasoline C7-C12	ND	0.98	

Surrogate	%REC	Limits		
Trifluorotoluene (FID)	96	60-138	•	
Bromofluorobenzene (FID)	115	66-148		

Field ID:

TR-1@5.0'

Type: Lab ID: SAMPLE 179573-002 Batch#:

102216

Analyzed: 05/20/05

Analy	te Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits	
Trifluorotoluene (FID)	99	60-138	
Bromofluorobenzene (FID)	114	66-148	·

Field ID:

Type: Lab ID:

TR-1@8.0' SAMPLE 179573-003 Batch#:

102216 05/20/05

Analyzed:

Analy	rte Result	RL	
Gasoline C7-C12	ND	· 1.1	

Surrogate	%REC	2 Limits
	0.0	60-100
Trifluorotoluene (FID)	99	60-138
Bromofluorobenzene (FID)	115	66 140
Bromotluorobenzene (FID)	TT3	00-740

Field ID:

TR-2@0.5'

SAMPLE

Batch#:

Type: Lab ID:

179573-004

102256 05/22/05 Analyzed:

Analyte	Result	RL	
Gasoline C7-C12	ND	1.0	

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	60-138
Bromofluorobenzene (FID)	106	66-148



	Total Volatil	e Hydrocarbons	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Sampled:	05/20/05
Basis:	as received	Received:	05/20/05

Field ID:

TR-2@5.0'

SAMPLE

Type: Lab ID:

179573-005

Batch#: Analyzed:

102216 05/20/05

Analyte	Result	\mathtt{RL}	
Gasoline C7-C12	ND	0.97	

Surrogate	%REC	Limits		
Trifluorotoluene (FID)	101	60-120		
	101	00-136	· ·	*
Bromofluorobenzene (FID)	117	66-148		

Field ID:

TR-2@8.0'

SAMPLE 179573-006

Batch#: Analyzed: 102216 05/20/05

Type: Lab ID:

Analyte	Result	RL	
Gasoline C7-C12	ND	1.1	

Surrogate	%RE	Limits
Trifluorotoluene (FID)	97	60-138
Bromofluorobenzene (FID)	111	66-148

Field ID:

Type: Lab ID:

TR-3@0.5'

SAMPLE 179573-007

Batch#:

102216

Analyzed: 05/20/05

Analyte	Result	RL	
Cagalina C7 C10	ND	0.03	
I Gasoline C/-Cl2	ND	0.93	1

Surrogate	%RE	C Limits	
Trifluorotoluene (FID)	95	60-138	
Bromofluorobenzene (FID)	110	66-148	

Field ID:

TR-3@5.0'

102216 05/20/05

Batch#: Analyzed: Type: Lab ID: SAMPLE 179573-008

Analy	rte Result	\mathbf{RL}	
Gasoline C7-C12	ND	1.0	

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	60-138
Bromofluorobenzene (FID)	112	66-148

ND= Not Detected RL= Reporting Limit Page 2 of 3



	Total V	Volatile Hydrocarbons	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Sampled:	05/20/05
Basis:	as received	Received:	05/20/05

Field ID:

TR-4@0.5' SAMPLE

Type: Lab ID:

179573-009

Batch#: Analyzed:

102216 05/20/05

Analyte	Result	RL	
Gasoline C7-C12	ND	1.0	

Surrogate	%REC	! Limits	
Trifluorotoluene (FID)	97	60-138	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Bromofluorobenzene (FID)	112	66-148	

Field ID:

TR-4@5.0' SAMPLE

102216 05/20/05

Type: Lab ID:

179573-010

Batch#: Analyzed:

Analyte	Kesult	RL	
Gasoline C7-C12	ND	1.0	

Surrogate	%REC	2 Limits	
Trifluorotoluene (FID)	97	60-138	
Bromofluorobenzene (FID)	112	66-148	- 1

Type: Lab ID:

BLANK QC294498

Batch#: Analyzed:

102216 05/20/05

Analyte	Result	RL	
Gasoline C7-C12	ND	1.0	

Surrogate	%REC	Limits	
Trifluorotoluene (FID)	100	60-138	
Bromofluorobenzene (FID)	115	66-148	•

Type: Lab ID:

BLANK QC294651

Batch#: Analyzed: 102256 05/22/05

Analyte	Result	RL	
Gasoline C7-C12	ND	1.0	

Trifluorotoluene (FID) 101	60-138	
Bromofluorobenzene (FID) 107	66-148	



	Purgeable	organics by GC,	/ms
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID: .	TR-1@0.5'	Diln Fac:	0.9804
Lab ID:	179573-001	Batch#:	102278
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL
Freon 12	ND	9.8
Chloromethane	ND	9.8
Vinyl Chloride	ND	9.8
Bromomethane	ND	9.8
Chloroethane	ND	9.8
Trichlorofluoromethane	ND	4.9
Acetone	ND	20
Freon 113	ND	4.9
1,1-Dichloroethene	ND	4.9
Methylene Chloride	ND	20
Carbon Disulfide	ND	4.9
MTBE	ND	4.9
trans-1,2-Dichloroethene	ND	4.9
Vinyl Acetate	ND	49
1,1-Dichloroethane	. ND	4.9
2-Butanone	ND	9.8
cis-1,2-Dichloroethene	ND	4.9
2,2-Dichloropropane	ND	4.9
Chloroform	ND	4.9
Bromochloromethane	ND	4.9
1,1,1-Trichloroethane	ND	4.9
1,1-Dichloropropene	ND	4.9
Carbon Tetrachloride	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Trichloroethene	ND	4.9
1,2-Dichloropropane	ND	4.9
Bromodichloromethane	ND	4.9
Dibromomethane	ND	4.9
4-Methyl-2-Pentanone	ND	9.8
cis-1,3-Dichloropropene	ND	4.9
Toluene	ND	4.9
trans-1,3-Dichloropropene	ND	4.9
1,1,2-Trichloroethane	ND	4.9
2-Hexanone	ND	9.8
1,3-Dichloropropane	ND	4.9
Tetrachloroethene	ND	4.9

ND= Not Detected RL= Reporting Limit Page 1. of 2



	Purgeable Or	ganics by GC/MS	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-1@0.5'	Diln Fac:	0.9804
Lab ID:	179573-001	Batch#:	102278
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	106	78-120
1,2-Dichloroethane-d4	111	80-120
Toluene-d8	103	80-120
Bromofluorobenzene	110	80-120

ND= Not Detected RL= Reporting Limit Page 2 of 2



	Purgeable	e Organics by GC,	/MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-1@5.0'	Diln Fac:	0.9804
Lab ID:	179573-002	Batch#:	102278
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL.	
Freon 12	ND	9.8	TEXAS.
Chloromethane	ND	9.8	
Vinyl Chloride	ND	9.8	
Bromomethane	ND	9.8	
Chloroethane	ND	9.8	
Trichlorofluoromethane	ND	4.9	
Acetone	ND	20	
Freon 113	ND	4.9	
1,1-Dichloroethene	ND	4.9	
Methylene Chloride	ND	20	
Carbon Disulfide	ND	4.9	
MTBE	ND	4.9	
trans-1,2-Dichloroethene	ND	4.9	
Vinyl Acetate	ND .	49	
1,1-Dichloroethane	ND	4.9	
2-Butanone	ND	9.8	
cis-1,2-Dichloroethene	ND	4.9	
2,2-Dichloropropane	ND	4.9	
Chloroform	ND	4.9	
Bromochloromethane	ND	4.9	
1,1,1-Trichloroethane	ND	4.9	
1,1-Dichloropropene	ND	4.9	
Carbon Tetrachloride	ND	4.9	ı
1,2-Dichloroethane	ND	4.9	
Benzene	ND	4.9	
Trichloroethene	ND	4.9	
1,2-Dichloropropane	ND	4.9	
Bromodichloromethane	ND	4.9	
Dibromomethane	ND	4.9	
4-Methyl-2-Pentanone	ND	9.8	
cis-1,3-Dichloropropene	ND	4.9	
Toluene	ND	4.9	
trans-1,3-Dichloropropene	ND	4.9	ı
1,1,2-Trichloroethane	ND	4.9	J
2-Hexanone	ND	9.8	
1,3-Dichloropropane	ND	4.9	
Tetrachloroethene	ND	4.9	

ND= Not Detected RL= Reporting Limit Page 1 of 2



	Purgeable Org	anics by GC/MS	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-1@5.0'	Diln Fac:	0.9804
Lab ID:	179573-002	Batch#:	102278
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	$R\mathbf{L}$
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	109	78-120
1,2-Dichloroethane-d4	114	80-120
Toluene-d8	104	80-120
Bromofluorobenzene	108	80-120

ND= Not Detected RL= Reporting Limit Page 2 of 2



	Purgeable Org	anics by GC/MS	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-1@8.0'	Diln Fac:	0.9259
Lab ID:	179573-003	Batch#:	102278
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL	
Freon 12	ND	9.3	
Chloromethane	ND	9.3	
Vinyl Chloride	ND	9.3	
Bromomethane	ND	9.3	
Chloroethane	ND	9.3	
Trichlorofluoromethane	ND	4.6	
Acetone	ND	19	
Freon 113	ND	4.6	
1,1-Dichloroethene	ND	4.6	
Methylene Chloride	ND	19	
Carbon Disulfide	ND	4.6	
MTBE	ND	4.6	
trans-1,2-Dichloroethene	ND	4.6	
Vinyl Acetate	ND	46	
1,1-Dichloroethane	ND	4.6	
2-Butanone	ND	9.3	
cis-1,2-Dichloroethene	ND	4.6	
2,2-Dichloropropane	ND	4.6	
Chloroform	ND	4.6	
Bromochloromethane	ND	4.6	
1,1,1-Trichloroethane	ND	4.6	
1,1-Dichloropropene	ND	4.6	
Carbon Tetrachloride	ND	4.6	
1,2-Dichloroethane	ND	4.6	
Benzene	ND	4.6	
Trichloroethene	ND	4.6	
1,2-Dichloropropane	ND	4.6	
Bromodichloromethane	ND	4.6	
Dibromomethane	ND	4.6	
4-Methyl-2-Pentanone	ND	9.3	
cis-1,3-Dichloropropene	ND	4.6	
Toluene	ND	4.6	
trans-1,3-Dichloropropene	ND	4.6	
1,1,2-Trichloroethane	ND	4.6	
2-Hexanone	ND	9.3	
1,3-Dichloropropane	ND	4.6	
Tetrachloroethene	ND	4.6	

ND= Not Detected RL= Reporting Limit Page 1 of 2



Purgeable Organics by GC/MS			
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-1@8.0'	Diln Fac:	0.9259
Lab ID:	179573-003	Batch#:	102278
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL .
Dibromochloromethane	ND	4.6
1,2-Dibromoethane	ND	4.6
Chlorobenzene	ND	4.6
1,1,1,2-Tetrachloroethane	ND	4.6
Ethylbenzene	ND	4.6
m,p-Xylenes	ND	4.6
o-Xylene	ND	4.6
Styrene	ND	4.6
Bromoform	ND	4.6
Isopropylbenzene	ND	4.6
1,1,2,2-Tetrachloroethane	ND	4.6
1,2,3-Trichloropropane	ND	4.6
Propylbenzene	ND	4.6
Bromobenzene	ND	4.6
1,3,5-Trimethylbenzene	ND	4.6
2-Chlorotoluene	ND	4.6
4-Chlorotoluene	ND	4.6
tert-Butylbenzene	ND	4.6
1,2,4-Trimethylbenzene	ND	4.6
sec-Butylbenzene	ND	4.6
para-Isopropyl Toluene	ND	4.6
1,3-Dichlorobenzene	ND	4.6
1,4-Dichlorobenzene	ND	4.6
n-Butylbenzene	ND	4.6
1,2-Dichlorobenzene	ND	4.6
1,2-Dibromo-3-Chloropropane	ND	4.6
1,2,4-Trichlorobenzene	ND	4.6
Hexachlorobutadiene	ND	4.6
Naphthalene	ND	4.6
1,2,3-Trichlorobenzene	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	108	78-120
1,2-Dichloroethane-d4	113	80-120
Toluene-d8	105	80-120
Bromofluorobenzene	108	80-120



	Purgeable	Organics by GC/	′MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-2@0.5'	Diln Fac:	0.8621
Lab ID:	179573-004	Batch#:	102278
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL	
Freon 12	ND	8.6	
Chloromethane	ND	8.6	
Vinyl Chloride	ND	8.6	
Bromomethane	ND	8.6	
Chloroethane	ND	8.6	
Trichlorofluoromethane	ND	4.3	
Acetone	ND	17	
Freon 113	ND	4.3	
1,1-Dichloroethene	ND	4.3	
Methylene Chloride	33	17	
Carbon Disulfide	ND	4.3	
MTBE	ND	4.3	
trans-1,2-Dichloroethene	ND	4.3	
Vinyl Acetate	ND	43	
1,1-Dichloroethane	ND	4.3	
2-Butanone	ND	8.6	
cis-1,2-Dichloroethene	ND	4.3	
2,2-Dichloropropane	ND	4.3	
Chloroform	ND	4.3	
Bromochloromethane	ND	4.3	
1,1,1-Trichloroethane	ND	4.3	
1,1-Dichloropropene	ND	4.3	
Carbon Tetrachloride	ND	4.3	
1,2-Dichloroethane	ND	4.3	
Benzene	ND	4.3	
Trichloroethene	ND	4.3	
1,2-Dichloropropane	ND	4.3	
Bromodichloromethane	ND	4.3	
Dibromomethane	ND	4.3	
4-Methyl-2-Pentanone	ND	8.6	
cis-1,3-Dichloropropene	ND	4.3	
Toluene	ND	4.3	
trans-1,3-Dichloropropene	ND	4.3	
1,1,2-Trichloroethane	ND	4.3	
2-Hexanone	ND	8.6	
1,3-Dichloropropane	ND	4.3	
Tetrachloroethene	ND	4.3	



	Purgeable	e Organics by GC/	MS	
Lab #:	179573	Location:	8th & Broadway	
Client:	Treadwell & Rollo	Prep:	EPA 5030B	
Project#:	4135.01	Analysis:	EPA 8260B	
Field ID:	TR-2@0.5'	Diln Fac:	0.8621	
Lab ID:	179573-004	Batch#:	102278	
Matrix:	Soil	Sampled:	05/20/05	
Units:	ug/Kg	Received:	05/20/05	
Basis:	as received	Analyzed:	05/23/05	

Analyte	Result	RL
Dibromochloromethane	ND	4.3
1,2-Dibromoethane	ND	4.3
Chlorobenzene	ND	4.3
1,1,1,2-Tetrachloroethane	ND	4.3
Ethylbenzene	ND	4.3
m,p-Xylenes	ND	4.3
o-Xylene	ND	4.3
Styrene	, ND	4.3
Bromoform	ND	4.3
Isopropylbenzene	ND	4.3
1,1,2,2-Tetrachloroethane	ND	4.3
1,2,3-Trichloropropane	ND	4.3
Propylbenzene	ND	4.3
Bromobenzene	ND	4.3
1,3,5-Trimethylbenzene	ND	4.3
2-Chlorotoluene	ND	4.3
4-Chlorotoluene	ND	4.3
tert-Butylbenzene	ND	4.3
1,2,4-Trimethylbenzene	ND	4.3
sec-Butylbenzene	ND	4.3
para-Isopropyl Toluene	ND	.4.3
1,3-Dichlorobenzene	ND	4.3
1,4-Dichlorobenzene	ND	4.3
n-Butylbenzene	ND	4.3
1,2-Dichlorobenzene	ND	4.3
1,2-Dibromo-3-Chloropropane	ND .	4.3
1,2,4-Trichlorobenzene	ND	4.3
Hexachlorobutadiene	ND	4.3
Naphthalene	ND	4.3
1,2,3-Trichlorobenzene	ND	4.3

Surrogate	%REC	Limits
Dibromofluoromethane	108	78-120
1,2-Dichloroethane-d4	115	80-120
Toluene-d8	107	80-120
Bromofluorobenzene	111	80-120



	Purgeable	e Organics by GC,	/MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-2@5.0'	Diln Fac:	0.8475
Lab ID:	179573-005	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL	
Freon 12	ND	8.5	
Chloromethane	ND	8.5	
Vinyl Chloride	ND	8.5	
Bromomethane	ND	8.5	
Chloroethane	ND	8.5	
Trichlorofluoromethane	ND	4.2	
Acetone	ND	17	
Freon 113	ND	4.2	
1,1-Dichloroethene	ND	4.2	
Methylene Chloride	ND	17	•
Carbon Disulfide	ND	4.2	
MTBE	ND	4.2	
trans-1,2-Dichloroethene	ND	4.2	
Vinyl Acetate	ND	42	
1,1-Dichloroethane	ND	4.2	
2-Butanone	ND	8.5	
cis-1,2-Dichloroethene	ND	4.2	
2,2-Dichloropropane	ND	4.2	
Chloroform	ND	4.2	
Bromochloromethane	ND	4.2	
1,1,1-Trichloroethane	ND	4.2	
1,1-Dichloropropene	ND	4.2	
Carbon Tetrachloride	ND	4.2	
1,2-Dichloroethane	ND	4.2	
Benzene	ND	4.2	
Trichloroethene	ND	4.2	
1,2-Dichloropropane	ND	4.2	
Bromodichloromethane	ND	4.2	
Dibromomethane	ND	4.2	,
4-Methyl-2-Pentanone	ND	8.5	
cis-1,3-Dichloropropene	ND	4.2	
Toluene	ND	4.2	
trans-1,3-Dichloropropene	ND	4.2	
1,1,2-Trichloroethane	ND	4.2	
2-Hexanone	ND	8.5	
1,3-Dichloropropane	ND	4.2	
Tetrachloroethene	. ND	4.2	



	Purgeable	e Organics by GC/	/MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-2@5.0'	Diln Fac:	0.8475
Lab ID:	179573-005	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL	
Dibromochloromethane	ND	4.2	
1,2-Dibromoethane	ND	4.2	
Chlorobenzene	ND	4.2	
1,1,1,2-Tetrachloroethane	ND	4.2	
Ethylbenzene	ND	4.2	
m,p-Xylenes	ND	4.2	
o-Xylene	ND.	4.2	
Styrene	ND	4.2	
Bromoform	ND	4.2	
Isopropylbenzene	ND	4.2	
1,1,2,2-Tetrachloroethane	ND	4.2	
1,2,3-Trichloropropane	ND	4.2	
Propylbenzene	ND	4.2	
Bromobenzene	ND	4.2	
1,3,5-Trimethylbenzene	ND	4.2	
2-Chlorotoluene .	ND	4.2	1
4-Chlorotoluene	ND	4.2	
tert-Butylbenzene	ND .	4.2	
1,2,4-Trimethylbenzene	ND	4.2	
sec-Butylbenzene	ND	4.2	
para-Isopropyl Toluene	ND	4.2	
1,3-Dichlorobenzene	ND	4.2	
1,4-Dichlorobenzene	ND	4.2	
n-Butylbenzene	ND	4.2	l
1,2-Dichlorobenzene	ND	4.2	
1,2-Dibromo-3-Chloropropane	ND	4.2	
1,2,4-Trichlorobenzene	ND .	4.2	
Hexachlorobutadiene	ND	4.2	
Naphthalene	ND	4.2	
1,2,3-Trichlorobenzene	ND	4.2	

Surrogate	%REC	Limits	
Dibromofluoromethane	109	78-120	
1,2-Dichloroethane-d4	105	80-120	
Toluene-d8	101	80-120	
Bromofluorobenzene	92	80-120	



	Purgeable	e Organics by GC/	/MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-2@8.0'	Diln Fac:	1.000
Lab ID:	179573-006	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL	
Freon 12	ND	10	
Chloromethane	ND	10	
Vinyl Chloride	ND	10	•
Bromomethane	ND	10	
Chloroethane	ND	10	
Trichlorofluoromethane	ND	5.0	
Acetone	ND	20	
Freon 113	ND	5.0	*
1,1-Dichloroethene	ND	5.0	
Methylene Chloride	ND	20	
Carbon Disulfide	ND	-5.0	
MTBE	ND	5.0	
trans-1,2-Dichloroethene	ND	5.0	
Vinyl Acetate	ND	50	
1,1-Dichloroethane	ND	5.0	-
2-Butanone	ND	10	
cis-1,2-Dichloroethene	ND	5.0	
2,2-Dichloropropane	ND	5.0	•
Chloroform	ND	5.0	
Bromochloromethane	ND	5.0	
1,1,1-Trichloroethane	ND	5.0	·
1,1-Dichloropropene	ND	5.0	
Carbon Tetrachloride	ND	5.0	
1,2-Dichloroethane	ND	5.0	
Benzene	ND	5.0	
Trichloroethene	ND	5.0	
1,2-Dichloropropane	ND	5.0	•
Bromodichloromethane	ND	5.0	
Dibromomethane	ND	5.0	·
4-Methyl-2-Pentanone	ND	10	
cis-1,3-Dichloropropene	ND	5.0	,
Toluene	ND	5.0	
trans-1,3-Dichloropropene	ND	5.0	·
1,1,2-Trichloroethane	ND	5.0	
2-Hexanone	ND	10	
1,3-Dichloropropane	ND	5.0	
Tetrachloroethene	ND	5.0	



	Purgeable	e Organics by GC/	′MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-2@8.0'	Diln Fac:	1.000
Lab ID:	179573-006	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND ·	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits	
Dibromofluoromethane	104	78-120	
1,2-Dichloroethane-d4	104	80-120	
Toluene-d8	98	80-120	
Bromofluorobenzene	90	80-120	



	Purgeable	e Organics by GC/	′MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis: (EPA 8260B
Field ID:	TR-3@0.5'	Diln Fac:	0.8333
Lab ID:	179573-007	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL .	
Freon 12	ND	8.3	•
Chloromethane	ND	8.3	
Vinyl Chloride	ND	8.3	
Bromomethane	ND	8.3	
Chloroethane	ND	8.3	
Trichlorofluoromethane	ND	4.2	
Acetone	ND	17	•
Freon 113	ND	4.2	
1,1-Dichloroethene	ND	4.2	
Methylene Chloride	26	17	
Carbon Disulfide	ND	4.2	
MTBE	ND	4.2	
trans-1,2-Dichloroethene	ND	4.2	
Vinyl Acetate	ND	42	
1,1-Dichloroethane	ND	4.2	
2-Butanone	ND	8.3	
cis-1,2-Dichloroethene	ND	4.2	
2,2-Dichloropropane	ND	4.2	
Chloroform	ND	4.2	
Bromochloromethane	ND	4.2	
1,1,1-Trichloroethane	ND	4.2	
1,1-Dichloropropene	ND	4.2	
Carbon Tetrachloride	ND	4.2	
1,2-Dichloroethane	ND	4.2	
Benzene	ND	4.2	
Trichloroethene	ND	4.2	
1,2-Dichloropropane	ND	4.2	
Bromodichloromethane	ND	4.2	
Dibromomethane	ND	4.2	
4-Methyl-2-Pentanone	ND	8.3	
cis-1,3-Dichloropropene	ND	4.2	
Toluene	ND	4.2	
trans-1,3-Dichloropropene	ND	4.2	
1,1,2-Trichloroethane	ND	4.2	
2-Hexanone	ND	8.3	
1,3-Dichloropropane	ND	4.2	
Tetrachloroethene	ND	4.2	



	Purgeable	e Organics by GC/	′MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-3@0.5'	Diln Fac:	0.8333
Lab ID:	179573-007	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	$R\mathbf{L}$
Dibromochloromethane	ND	4.2
1,2-Dibromoethane	ND	4.2
Chlorobenzene	ND	4.2
1,1,1,2-Tetrachloroethane	ND	4.2
Ethylbenzene	ND	4.2
m,p-Xylenes	ND ·	4.2
o-Xylene	ND	4.2
Styrene	ND	4.2
Bromoform	ND	4.2
Isopropylbenzene	ND	4.2
1,1,2,2-Tetrachloroethane	ND	4.2
1,2,3-Trichloropropane	ND	4.2
Propylbenzene	ND	4.2
Bromobenzene	ND	4.2
1,3,5-Trimethylbenzene	ND	4.2
2-Chlorotoluene	ND.	4.2
4-Chlorotoluene	ND	4.2
tert-Butylbenzene	ND	4.2
1,2,4-Trimethylbenzene	ND	4.2
sec-Butylbenzene	ND	4.2
para-Isopropyl Toluene	ND	4.2
1,3-Dichlorobenzene	ND	4.2
1,4-Dichlorobenzene	ND	4.2
n-Butylbenzene	ND	4.2
1,2-Dichlorobenzene	ND	4.2
1,2-Dibromo-3-Chloropropane	ND	4.2
1,2,4-Trichlorobenzene	ND	4.2
Hexachlorobutadiene	ND	4.2
Naphthalene	ND	4.2
1,2,3-Trichlorobenzene	ND	4.2

Surrogate	%REC	Limits
Dibromofluoromethane	104	78-120
1,2-Dichloroethane-d4	101	80-120
Toluene-d8	97	80-120
Bromofluorobenzene	93	80-120



	Purgeable Org	anics by GC/MS	
Lab #:	179573 .	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-3@5.0'	Diln Fac:	1.000
Lab ID:	179573-008	Batch#:	102317
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/24/05

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0



	Purgeable	e Organics by GC/	′MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-3@5.0'	Diln Fac:	1.000
Lab ID:	179573-008	Batch#:	102317
Matrix:	Soil	Sampled:	. 05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/24/05

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	96	78-120
1,2-Dichloroethane-d4	103	80-120
Toluene-d8	100	80-120
Bromofluorobenzene	97	80-120



	Purgeable	e Organics by GC/	/MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-4@0.5'	Diln Fac:	0.9804
Lab ID:	179573-009	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL .	
Freon 12	ND	9.8	
Chloromethane	ND	9.8	
Vinyl Chloride	ND	9.8	
Bromomethane	ND	9.8	
Chloroethane	ND	9.8	
Trichlorofluoromethane	ND	4.9	
Acetone	ND	20	İ
Freon 113	ND	4.9	
1,1-Dichloroethene	ND	4.9	
Methylene Chloride	22	20	
Carbon Disulfide	ND	4.9	
MTBE	ND	4.9	
trans-1,2-Dichloroethene	ND	4.9	
Vinyl Acetate	ND	49	
1,1-Dichloroethane	ND	4.9	
2-Butanone	ND	9.8	
cis-1,2-Dichloroethene	ND	4.9	·
2,2-Dichloropropane	ND	4.9	
Chloroform	ND	4.9	
Bromochloromethane	ND	4.9	
1,1,1-Trichloroethane	ND	4.9	
1,1-Dichloropropene	ND	4.9	·
Carbon Tetrachloride	ND	4.9	
1,2-Dichloroethane	ND	4.9	
Benzene	ND	4.9	
Trichloroethene	ND	4.9	
1,2-Dichloropropane	ND	4.9	
Bromodichloromethane	ND	4.9	
Dibromomethane	ND	4.9	
4-Methyl-2-Pentanone	ND	9.8	
cis-1,3-Dichloropropene	ND	4.9	
Toluene	ND	4.9	
trans-1,3-Dichloropropene	ND	4.9	
1,1,2-Trichloroethane	ND	4.9	
2-Hexanone	ND	9.8	
1,3-Dichloropropane	ND	4.9	
Tetrachloroethene	ND	4.9	



	Purgeable Org	anics by GC/MS	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-4@0.5'	Diln Fac:	0.9804
Lab ID:	179573-009	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	106	78-120
1,2-Dichloroethane-d4	107	80-120
Toluene-d8	97	80-120
Bromofluorobenzene	95	80-120



	Purgeable	Organics by GC/	/ms
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-4@5.0'	Diln Fac:	0.9434
·Lab ID:	179573-010	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL RL	
Freon 12	ND	9.4	
Chloromethane	ND	9.4	
Vinyl Chloride	ND	9.4	
Bromomethane	ND	9.4	
Chloroethane	ND	9.4	
Trichlorofluoromethane	ND	4.7	
Acetone	ND	19	
Freon 113	ND	4.7	
1,1-Dichloroethene	ND	4.7	
Methylene Chloride	ND	19	
Carbon Disulfide	ND	4.7	
MTBE	ND	4.7	
trans-1,2-Dichloroethene	ND	4.7	
Vinyl Acetate	ND	47	
1,1-Dichloroethane	ND	4.7	
2-Butanone	ND	9.4	
cis-1,2-Dichloroethene	ND	4.7	
2,2-Dichloropropane	ND	4.7	
Chloroform	ND	4.7	
Bromochloromethane	ND	4.7	
1,1,1-Trichloroethane	ND	4.7	
1,1-Dichloropropene	ND	4.7	
Carbon Tetrachloride	ND	. 4.7	•
1,2-Dichloroethane	ND	4.7	
Benzene	ND	4.7	
Trichloroethene	ND	4.7	
1,2-Dichloropropane	ND	4.7	
Bromodichloromethane	ND	4.7	
Dibromomethane	ND	4.7	
4-Methyl-2-Pentanone	ND	9.4	•
cis-1,3-Dichloropropene	ND	4.7	
Toluene	ND	4.7	
trans-1,3-Dichloropropene	ND	4.7	,
1,1,2-Trichloroethane	ND	4.7	•
2-Hexanone	ND	9.4	•
1,3-Dichloropropane	ND	4.7	
Tetrachloroethene	ND	4.7	•



	Purgeable	Organics by GC/	'MS
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 5030B
Project#:	4135.01	Analysis:	EPA 8260B
Field ID:	TR-4@5.0'	Diln Fac:	0.9434
Lab ID:	179573-010	Batch#:	102281
Matrix:	Soil	Sampled:	05/20/05
Units:	ug/Kg	Received:	05/20/05
Basis:	as received	Analyzed:	05/23/05

Analyte	Result	RL
Dibromochloromethane	ND	4.7
1,2-Dibromoethane	ND	4.7
Chlorobenzene	ND	4.7
1,1,1,2-Tetrachloroethane	ND	4.7
Ethylbenzene	ND	4.7
m,p-Xylenes	ND	4.7
o-Xylene	ND	4.7
Styrene	ND	4.7
Bromoform	ND	4.7
Isopropylbenzene	ND	4.7
1,1,2,2-Tetrachloroethane	ND	4.7
1,2,3-Trichloropropane	ND	4.7
Propylbenzene	ND	4.7
Bromobenzene	ИD	4.7
1,3,5-Trimethylbenzene	ND	4.7
2-Chlorotoluene	. ND	4.7
4-Chlorotoluene	ND	4.7
tert-Butylbenzene	ND	4.7
1,2,4-Trimethylbenzene	ND	4.7
sec-Butylbenzene	ND	4.7
para-Isopropyl Toluene	ND	4.7
1,3-Dichlorobenzene	ND	4.7
1,4-Dichlorobenzene	ND	4.7
n-Butylbenzene	ND	4.7
1,2-Dichlorobenzene	ND	4.7
1,2-Dibromo-3-Chloropropane	ND	4.7
1,2,4-Trichlorobenzene	ND	4.7
Hexachlorobutadiene	ND	4.7
Naphthalene	ND	4.7
1,2,3-Trichlorobenzene	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	102	78-120
1,2-Dichloroethane-d4	101	80-120
Toluene-d8	98	80-120
Bromofluorobenzene	94	80-120



	California	LUFT Metals	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 3050B
Project#:	4135.01	Analysis:	EPA 6010B
Matrix:	Soil	Sampled:	05/20/05
Units:	mg/Kg	Received:	05/20/05
Basis:	as received	Prepared:	05/23/05
Diln Fac:	1.000	Analyzed:	05/23/05
Batch#:	102262		

Field ID: Type:

TR-1@5.0'

SAMPLE

Lab ID:

179573-002

Analyte	Result	RL	
Cadmium	ND	0.22	
Chromium	33	0.45	
Lead Nickel	3.8	0.13	
Nickel	15	0.89	
Zinc	3'5	0.89	

Field ID:

TR-2@5.0'

Lab ID:

179573-005

Type:

SAMPLE

Analyte	Result	\mathbf{RL}	
Cadmium	ND	0.22	
Chromium	28	0.44	
Lead	1.9	0.13	
Lead Nickel Zinc	12	0.88	
Zinc	22	0.88	

Field ID: Type: TR-3@5.0'

SAMPLE

Lab ID:

179573-008

Analyte	Result	$R\mathbf{L}$	
Cadmium	ND	0.26	
Chromium	36	0.52	
Lead Nickel	2.0	0.15	
Nickel	16	1.0	
Zinc	12	1.0	



eelding salah Marijan Marijan	Califo	ornia LUFT Metals	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 3050B
Project#:	4135.01	Analysis:	EPA 6010B
Matrix:	Soil	Sampled:	05/20/05
Units:	mg/Kg	Received:	05/20/05
Basis:	as received	Prepared:	05/23/05
Diln Fac:	1.000	Analyzed:	05/23/05
Batch#:	102262		,,,

Field ID: Type:

TR-4@5.0'

SAMPLE

Lab ID:

179573-010

Analyte	Result	RL	
Cadmium	ND	0.24	
Chromium	39	0.48	
Lead Nickel	2.0	0.14	
Nickel	17	0.96	
Zinc	12	0.96	

Type:

BLANK

Lab ID:

QC294673

Analyte	Result	RL,	
Cadmium	. ND	0.25	
Chromium	ND	0.50	
Lead	ND	0.15	
Lead Nickel Zinc	ND	1.0	
Zinc	ND	1.0	



		Lead	
Lab #:	179573	Location:	8th & Broadway
Client:	Treadwell & Rollo	Prep:	EPA 3050B
Project#:	4135.01	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	102262
Matrix:	Soil	Sampled:	05/20/05
Units:	mg/Kg	Received:	05/20/05
Basis:	as received	Prepared:	05/23/05
Diln Fac:	1.000	Analyzed:	05/23/05

Field ID	Type Lab ID	Result	RL	
TR-1@0.5'	SAMPLE 179573-00	1 24	0.14	
TR-1@5.0'	SAMPLE 179573-00	2 3.8	0.13	
TR-1@8.0'	SAMPLE 179573-00	3 1.9	0.13	
TR-2@0.5'	SAMPLE 179573-00	4 80	0.16	
TR-2@5.0'	SAMPLE 179573-00	5 1.9	0.13	
TR-2@8.0'	SAMPLE 179573-00	6 4.9	0.14	
TR-3@0.5'	SAMPLE 179573-00	7 41	0.14	
TR-3@5.0'	SAMPLE 179573-00	8 2.0	0.15	
TR-4@0.5'	SAMPLE 179573-00	9 170	0.13	
TR-4@5.0'	SAMPLE 179573-01	0 2.0	0.14	
	BLANK QC294673	ND	0.15	

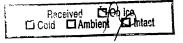
17:1573

COC Number: 000684

CHAIN OF CUSTODY RECORD Page | of | 555 Montgomery Street, Suite 1300, San Francisco, CA 94111 Ph: 415-955-9040 / Fax: 415-955-9041 2 Theatre Square, Suite 216, Orinda CA 94563 Ph: 925-253-4980 / Fax: 925-253-4985 501 14th Street, 3rd Floor, Oakland, CA 94612 Ph: 510-874-4500 / Fax: 510-874-4507 EIGHTH AND BROADWAY Site Name: Job Number: Analysis Requested Turnaround GROVER BUHR Project Manager\Contact: Samplers: J-DAY Recorder (Signature Required): No. Containers Matrix & Preservative Field Sample Identification No. Date Lab Sample No. Time Remarks 8:15 TR-119 5.0 8:30 R-1090 8:40 10:30 10:40 12:22 12:30 11:52 TR-4@ 5.0" 14:50 Time 2:50 Relinquished by: (Signature) Date Received by: (Signature) Time Relinquished by: (Signature) Date Time Received by Lab: (Signature) Date Time CURTIS AND TEMPKINS Sent to Laboratory (Name): Method of Shipment Lab courier Fed Ex Airborne UPS **Laboratory Comments/Notes:** Hand Carried Private Courier (Co. Name)

Yellow Copy - Laboratory

Pink Copy - Field



White Copy - Original

SOP Volume:

Client Services

Section:

1.1.2

Page:

1 of 1

Effective Date:

Revision:

10-May-99

Filename:

1 Number 1 of 3

 $F:\QC\Forms\QC\Cooler.wpd$



COOLER RECEIPT CHECKLIST

Chem.	t: 179573 Date Received: 5/20/05 Number of Coolers:		
A.	Preliminary Examination Phase	\geq	
	Date Opened: 5/20/05 By (print): (sign) (sign)	VEC	No
1.	Did cooler come with a shipping slip (airbill, etc.)?	YES	NO
	If YES, enter carrier name and airbill number:	YES	10
2.	Were custody seals on outside of cooler?		NO
	How many and where? Seal date: Seal name:	TATE O	NO 4//
3.	Were custody seals unbroken and intact at the date and time of arrival?	YES	NO (V/
4.	Were custody papers dry and intact when received?		NO
5.	Were custody papers filled out properly (ink, signed, etc.)?	YES	NO
6.	Did you sign the custody papers in the appropriate place?		NO
7.	Was project identifiable from custody papers?	(1128	NO
	If YES, enter project name at the top of this form.	VEC	NO
8.	If required, was sufficient ice used? Samples should be 2-6 degrees C	1E3	NO
•	Type of ice: WET Temperature: MICL		
B.	Login Phase		
D.	Date Logged In: 5/20/0 5 By (print): form to (sign)	the	-
1.	Describe type of packing in cooler: Cores in Zip Loc 1295	,	
2.	Did all bottles arrive unbroken?	(YEŚ)	
3.	Were labels in good condition and complete (ID, date, time, signature, etc.)	?	NO
4.	Did bottle labels agree with custody papers?	YES	NO
5.	Were appropriate containers used for the tests indicated?	YES	NO
6.	Were correct preservatives added to samples?	YES	NO $$
7.	Was sufficient amount of sample sent for tests indicated?	YES	NO
8.	Were bubbles absent in VOA samples? If NO, list sample Ids below	YES	NO/V/
9.	Was the client contacted concerning this sample delivery?	YES	NO
	If YES, give details below.		
	Who was called? By whom? D	ate:	
٠.٢	ional Comments:		**
Addii	ional Comments:		
	#		
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