

January 13, 1997

Mr. Barney Chan Alameda County Health Care Agency Environmental Protection Division 1131 Harbor Bay Pkwy., Suite #250 Alameda, CA 94502-6577

SUBJECT:

SUBSURFACE INVESTIGATION REPORTS FOR KEEP ON TRUCKING AT 370 8TH AVENUE, OAKLAND, CALIFORNIA - FORMER ABOVEGROUND STORAGE TANK FACILITY (ADJACENT TO FORMER BUILDING H-213) AND FORMER UNDERGROUND STORAGE TANK FACILITY (ADJACENT TO BUILDING H-107)

Dear Mr. Chan:

Enclosed please find the Quarterly Groundwater Sampling Reports for the fourth quarter of 1996 at the former aboveground tank site adjacent to former Building H-213 and former underground storage tank adjacent to Building H-107 located at Keep on Trucking facilities.

If you have any questions or need additional information, please call me at (510) 272-1118.

Sincerely,

Jeffrey L. Rubin, CPSS, REA

Associate Environmental Scientist

Environmental Health and Safety Compliance

Enclosures

cc with encl.:

Richard Padovani, Keep on Trucking Richard Hiett, Regional Water Quality Control Board, San Francisco Bay Region DECEMBER 1996
QUARTERLY GROUNDWATER
SAMPLING REPORT FOR
FORMER UNDERGROUND STORAGE TANK
KEEP ON TRUCKING FACILITY (H-107)
370 8TH AVENUE
OAKLAND, CALIFORNIA

JANUARY 9, 1997

SCI 133.005

CONTENTS

Sectio	<u>n</u> <u>Page</u>
1.0	Introduction1
2.0	Background1
3.0	Field Activities1
4.0	Analytical Results2
5.0	Findings3
Table	Summary of Groundwater Analytical Results
<u>Plates</u>	
1 2	Site Location Map Monitoring Well Location
Apper	ndices
A B	Water Sampling Field Survey Form Groundwater Sampling Analytical Report for Samples Collected in December 1996

1.0 INTRODUCTION

Subsurface Consultants, Inc. (SCI) was retained to perform quarterly groundwater sampling and analyses at the Keep on Trucking Facility located at 370-8th Avenue in Oakland, California (Plate 1). On December 4, 1996, SCI collected groundwater samples from monitoring well MW-7 located near Building H-107. The monitoring well location is shown on Plate 2.

2.0 BACKGROUND

A 1,000-gallon capacity underground storage tank (UST) was removed in October 1994 by Environmental Investigations and Actions of Hayward, California. ERM-West, Inc. collected soil and groundwater samples from the excavation. Concentrations of total petroleum hydrocarbons quantitated as diesel (TPH-D) were detected in the soil samples collected from the excavation. Concentrations of total petroleum hydrocarbons as gasoline (TPH-G) were detected in the groundwater sample collected from the excavation.

In April 1995, Clayton Environmental Consultants (Clayton) drilled three boreholes at the subject facility. As requested by the Alameda County Health Care Services Agency (ACHCSA), in their letter dated March 9, 1995, two of the boreholes were converted into temporary wells for collection of grab groundwater samples. The third borehole was completed as monitoring well MW-7.

TPH-D concentrations in groundwater samples collected to date from monitoring well MW-7 range from 260 ug/L to 6,100 ug/L. Concentrations of TPH-G and benzene, toluene, ethylbenzene and total xylenes (BTEX) have not been detected in any groundwater samples collected during quarterly groundwater monitoring sampling events.

3.0 FIELD ACTIVITIES

On December 2, 1996, monitoring well MW-7 was purged using a new disposable bailer. Approximately three times the well volume was purged from the well to ensure that water representative of the aquifer was present prior to sampling. The well volume was calculated using depth to groundwater and total well depth measurements which were recorded to the nearest 0.01 foot upon arrival at the site. Purging of monitoring well MW-7 continued until pH, temperature, and electrical conductivity stabilized.

The following parameters were noted during sampling activities:

- Monitoring well identification
- Static water level
- Well depth
- Condition of water before purging (e.g., amount of free product)
- Purge rate and volume
- pH, temperature, and conductivity during purging
- Time purged
- Time of sample collection
- Sampling method
- Name of field technician
- Climatic conditions

The groundwater samples were collected using a new disposable bailer. All other sampling equipment was thoroughly cleaned and decontaminated before coming into contact with the groundwater. Details of the groundwater sampling event are provided in the water sampling field survey form (Appendix A).

Groundwater samples were collected in such a manner as to minimize volatilization due to agitation and/or transfer from bailer to sample container. The samples were transferred into clean, laboratory-supplied sample containers that were closed, labeled, placed immediately into an ice chest, and transported to Curtis & Tompkins, Ltd., a state-certified laboratory, for analysis. To document and trace samples from the time of collection to final analysis, a signed chain-of-custody record was completed by SCI personnel. The chain-of-custody form accompanied the groundwater samples to the laboratory. The completed chain-of-custody form is included with the analytical report from Curtis & Tompkins (Appendix B).

4.0 ANALYTICAL RESULTS

The groundwater sample from well MW-7 was analyzed using the following Environmental Protection Agency Analytical Methods:

- Method 8015 (modified) for TPH-D and TPH-Motor Oil
- Method 8015 (modified) for TPH-G
- Method 8020 for BTEX

The analytical results for all quarterly monitoring events are summarized in Table 1. The laboratory analytical report for the current groundwater sampling event is included in Appendix B.

5.0 <u>FINDINGS</u>

Based on the laboratory analytical report and SCI's field observations, our findings for this sampling event are as follows:

- TPH-D was detected at a concentration similar to past events. TPH-D concentrations have ranged from 260 to 6,100 ug/L during the monitoring program.
- TPH-Motor Oil was not detected at a concentration above the reporting limit. TPH-Motor Oil concentrations have ranged from 310 to 750 ug/L for the previous two sampling events.
- TPH-G and BTEX concentrations have not been detected in any groundwater samples collected from monitoring well MW-7 during the monitoring program.

The next quarterly groundwater sampling event is scheduled for March 1997.

This report prepared by:

Jerome de Verrier Staff Engineer

This report reviewed by:

Jeriann N. Alexander, PE, REA

Project Manager

January 9, 1997

TABLE 1
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Keep on Trucking Facility (H-107)
Oakland, California
(SCI 133.005)

Monitoring <u>Well</u>	Sample <u>Date</u>	Depth to <u>Water</u>	Top of Casing <u>Elevation (a)</u>	Groundwater <u>Elevation (a)</u>	TPH as Diesel (ug/L)	TPH as Motor Oil (ug/L)	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl- benzene <u>(ug/L)</u>	Total Xylenes (ug/L)
MW-7	4/10/95	4.41	10.13	5.72	370		<50	<0.4	<0.3	<0.3	< 0.4
	7/24/95	3.72	10.13	6.41	260		<50	< 0.4	< 0.3	< 0.3	<0.4
	11/10/95	4.78	10.13	5.35	270		<50	< 0.4	< 0.3	< 0.3	<0.4
	2/20/96	4.13	10.13	6.00	6,100		<50	<0.5	< 0.5	< 0.5	<1
	5/24/96	4.69	10.13	5.44	750yh	750y	<50	< 0.5	<0.5	<0.5	< 0.5
	9/5/96	4.65	10.13	5.48	480yh	310yl	<50	<5.0	<5.0	<5.0	<5.0
	12/4/96	4.88	10.13	5.25	340y	<240	<50	< 0.5	< 0.5	< 0.5	<0.5

TPH = Total petroleum hydrocarbons

ug/l = Micrograms per liter

-- = Not tested

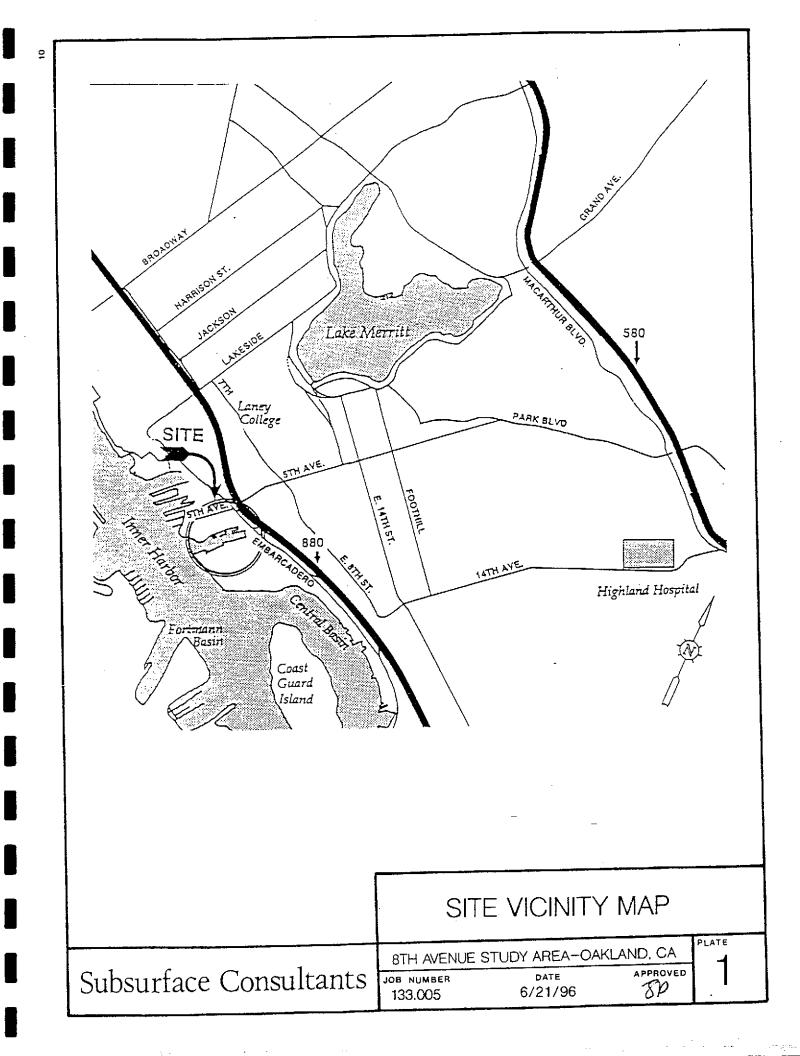
y = Sample exhibits fuel pattern which does not resemble standard

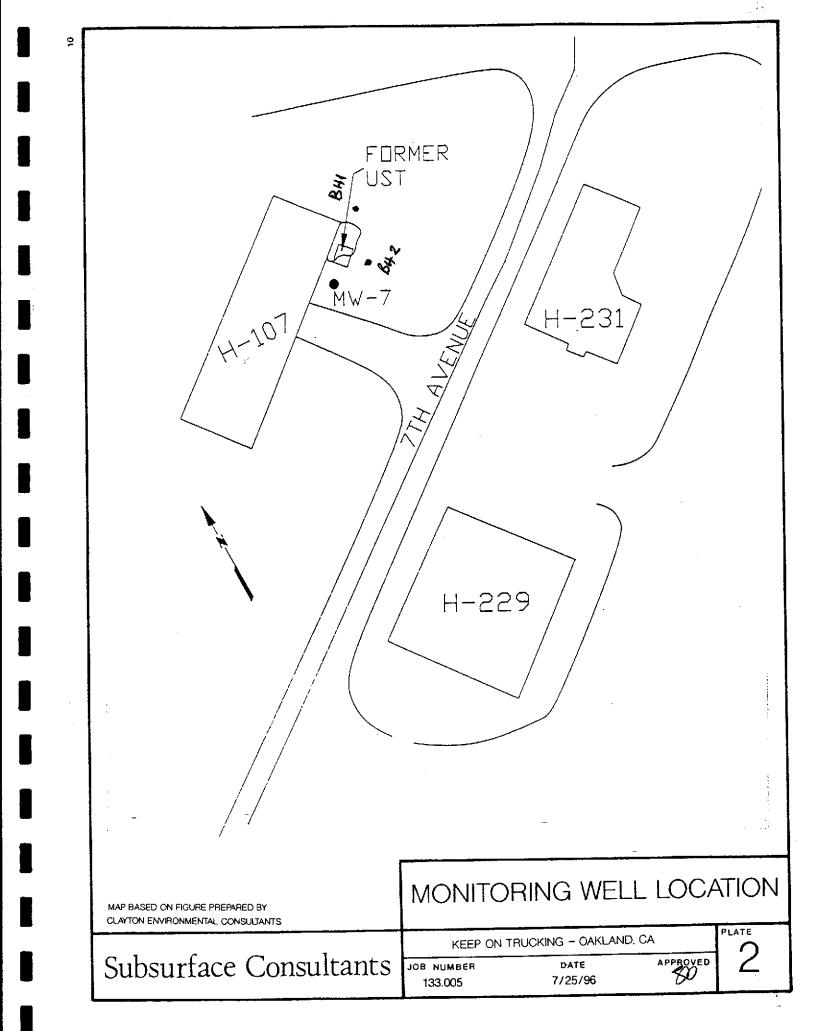
I = lighter hydrocarbons than indicated standard

h = Heavier hydrocarbons than indicated standard

Notes:

a. Elevations are based on the Port of Oakland Datum. Elevations based on this special datum may be converted to the mean sea level datum by subtracting 3.20 feet.





APPENDIX A WATER SAMPLING FIELD SURVEY FORM

WELL SAMPLING FORM

oject Name:	KOT		Well Num	nber: Mi	N-7	<u> </u>
b No.: 132			Well Cas	ing Diameter:		
ampled By:	DWA		Date: _	12/3/96		
OC Elevation:			Westpor	: _clean	sunny	
			20.50			feet
epth to Casing Botton epth to Groundwater	m (below TO	C)	4.88			feet
						feet
eet of Water in Well			<i>እ</i> ዮ ውር			feet
epth to Groundwater	When 80%	Recovered .			•	_ gallons
Casing Volume (feet o	of water x Cas	sing DIA ² x 0).0408)	onic Sounder		
Depth Measurement N	Method					
Free Product	none		_			
	none dispos		_		slow eech	large
Free Product	nore dispos	sable bo	_		slow eech (overnigh	large t)
Free Product	dispos	FIELD M	EASUREMENTS Conductivity		(overnight	
Free Product Purge Method Salions Removed	<u>dispos</u> pH	FIELD M Formp (°2)	EASUREMENTS Conductivity (micromhos/cm)	Salinity S%	(overnight	omments
Free Product Purge Method Sallons Removed 2	ph 7.85	FIELD M FIELD M F Temp (°°)	EASUREMENTS Conductivity (micromhos/cm) 2160	Salinity S%	(overnight	omments
Free Product Purge Method Sallons Removed	pH 7.85 6.06	FIELD M FIELD M F Temp (°¢) 57.3	Conductivity (micromhos/cm) 2160	Salinity S%	(overnight	omments ITH LT.D. S S ORGAN
Free Product Purge Method Ballons Removed	pH 7.85 6.06	FIELD M FIELD M F Temp (°°)	Conductivity (micromhos/cm) 2160	Salinity S%	(overnight	omments
Free Product Purge Method Sallons Removed	pH 7.85 6.06 6.00	FIELD M. Fremp (°2) 57.3 61.1 60.0	Conductivity (micromhos/cm) 2160 2140	Salinity S%	(overnight	omments ITH CT. DAS A ORGANI
Free Product Purge Method Gallons Removed	pH 7.85 6.06 6.00	FIELD M. Fremp (°2) 57.3 61.1 60.0	Conductivity (micromhos/cm) 2160 2160 2160 2160	Salinity S%	Covernight Co	gallon
Free Product Purge Method Gallons Removed L Total Gallons Purged Depth to Groundwate	pH 7.85 6.06 6.00 610	FIELD M Fremp (**) 57.3 61.1 60.0 59.6 Inpling (below	Conductivity (micromhos/cm) 2160 2160 2160 2110	Salinity S%	Covernight Co	gallon
Free Product Purge Method Gallons Removed L Total Gallons Purged Depth to Groundwate	pH 7.85 6.06 6.00 610	FIELD M Fremp (**) 57.3 61.1 60.0 59.6 Inpling (below	Conductivity (micromhos/cm) 2160 2160 2160 2110	Salinity S%	Covernight Co	gallon
Free Product Purge Method Sallons Removed Total Gallons Purged	pH 7.85 6.06 6.00 610	FIELD MI Temp (%) 57.3 61.1 60.0 59.6 Inpling (below	Conductivity (micromhos/cm) 2160 2160 2160 2110	Salinity S%	Covernight Co	omments ITH LT.D49

GROUNDWATER DEPTHS

Project Name: KOT

Job No.: 133.005

Measured by: DWA

			Groundwater	
Well	Date	Time	Depth	Comments
	·		(feet)	
			1.00	
MW-1	12/2/96	(2:40	4.80	
MUJ-Z		12:35	4.30	
MW-3		12:50 .	4.84	all distinct - no measurable product in well
MW-4.		12:25	3.22	2" product in skimmer - no measurable product in well 2 yours
MW-5		(2:30	4.64	Top of Product = Product thickness = Yet rain
MW-6		12:15	3.96	Top of Product = Product thickness = 144 min 1" " in skimmer " Gated = 1 YOA Collected
MW-7		1300	4.88	
SCIMW-1		10:55	5.52'	
SCIMW-2		1310	6.60	
SCIMW3		11:35	5.18	
SCIMWY		12:55	2.09	
SCIMW-5		1330	4.95	
SelMW-6		1320	7.04	
SEIMW-7		1345	4.95	
501MW8		11:15	5.39	
SCI MW-9		14:30	4.11	
SCIMWHO		11:50	5:15	· .
Sel MW-11		£ 1400	6.03	
SIMW-12		1410	. 7.31 .	
SCIMW-13		11:20	5.91	
SCIMW-14		14:20	3.56	
SCI MW-15		1415	8.91	
SCIMW-16		1105	3.44	
SCIMW-17		1100	2.86	
SCIMW-18		1155	4.06	
SUMW49		=1355	3.54	
SUMW-Z		1340	1.45	

APPENDIX B

GROUNDWATER SAMPLING ANALYTICAL REPORT FOR SAMPLES COLLECTED IN DECEMBER 1996



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 9471O, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants 3736 Mt. Diablo Blvd. Ste. 200 Layfayette, CA 94549

Date: 18-DEC-96

Lab Job Number: 127644 Project ID: 133.005

Location: KOT

Reviewed by: Juna K Morris

This package may be reproduced only in its entirety.

Irvine



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants

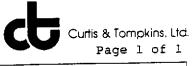
Project#: 133.005 Location: KOT Analysis Method: CA LUFT (EPA 8015M)

Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127644-001	MW-7	31271	12/04/96	12/05/96	12/05/96	

Matrix: Water

Analyte Diln Fac:	Units	127644-001	
Gasoline	ug/L	<50	
Surrogate			
Trifluorotoluene Bromobenzene	%REC %REC	97 117	



BATCH QC REPORT

_ab #: 1276	044		DITION ES CONTRACTOR DE LA CONTRACTOR DE	100 000
		TVH-To	al Volatile Hydrocarbons	
Client: Project#: Location:	Subsurface Cor 133.005 KOT	sultants	Analysis Method: CA LU Prep Method: EPA	JFT (EPA 8015M) 5030
			METHOD BLANK	
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1		Prep Date: 12/09 Analysis Date: 12/09	

MB Lab ID: QC35897

IB Lab ib. Qc33037		
Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene Bromobenzene	94 108	69-120 70-122



BATCH QC REPORT

Lab #: 12/0		TVH-Total V	olatile Hydrocarbons	
Client: Project#: Location:	133.005	Consultants	Analysis Method: Prep Method:	
		LABORATO	RY CONTROL SAMPLE	
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1		Prep Date: Analysis Date:	12/05/96 12/05/96

LCS Lab ID: QC35895

DOO LON E						
Analyte	Result	Spike Added	%Rec #	Limits		
Gasoline	2163	2000	108	80-120		
Surrogate	%Rec	Limits				
Trifluorotoluene Bromobenzene	118 119	69-120 70-122				

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 1 outside limits



BATCH QC REPORT

Lab #: 12/6	044	_	D &		
		TVH-Tota	al Volatile H	lydrocarbons	
Client: Project#: Location:			··	Prep Method:	CA LUFT (EPA 8015M) EPA 5030
		MATRIX SP	KE/MATRIX SP	IKE DUPLICATE	
Field ID: Lab ID: Matrix: Batch#: Units: Diln Fac:	ZZZZZZ 127615-001 Water 31271 ug/L			Sample Date: Received Date: Prep Date: Analysis Date:	12/02/96 12/02/96 12/05/96 12/05/96

MS Lab ID: QC35937

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline	2000	<50	2169	109	75-125
Surrogate	%Rec	Limits			
Trifluorotoluene Bromobenzene	113 122	69 - 120 70-122			

MSD Lab ID: QC35938

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline	2000	2137	107	75-125	2	20
Surrogate	*Rec	Limi	ts		<u> </u>	
Trifluorotoluene Bromobenzene	112 122	69-1 70 - 1				

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits Spike Recovery: 0 out of 2 outside limits



TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: CA LUFT (EPA 8015M)

Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127644-001		31258	12/04/96	12/04/96	12/07/96	!

Matrix: Water

Analyte Diln Fac:	Units	127644- 1	-001	· · · · · · · · · · · · · · · · · · ·	, <u></u> ,	 	
Diesel C12-C22 Motor Oil C22-C50	ug/L ug/L	340 <240	Y			 	
Surrogate						 	
Hexacosane	%REC	99			<u> </u>		<u></u>

Y: Sample exhibits fuel pattern which does not resemble standard

TEH Chromatogram

Sample Name : 127644-001,31258

: G:\GC13\CHA\341A042.raw FileName

: DUAL

Start Time : 0.00 min 0.0

End Time

Plot Offset: 25 mV

: 31.90 min

Sample #: 31258 Date: 12/7/96 11:07 PM

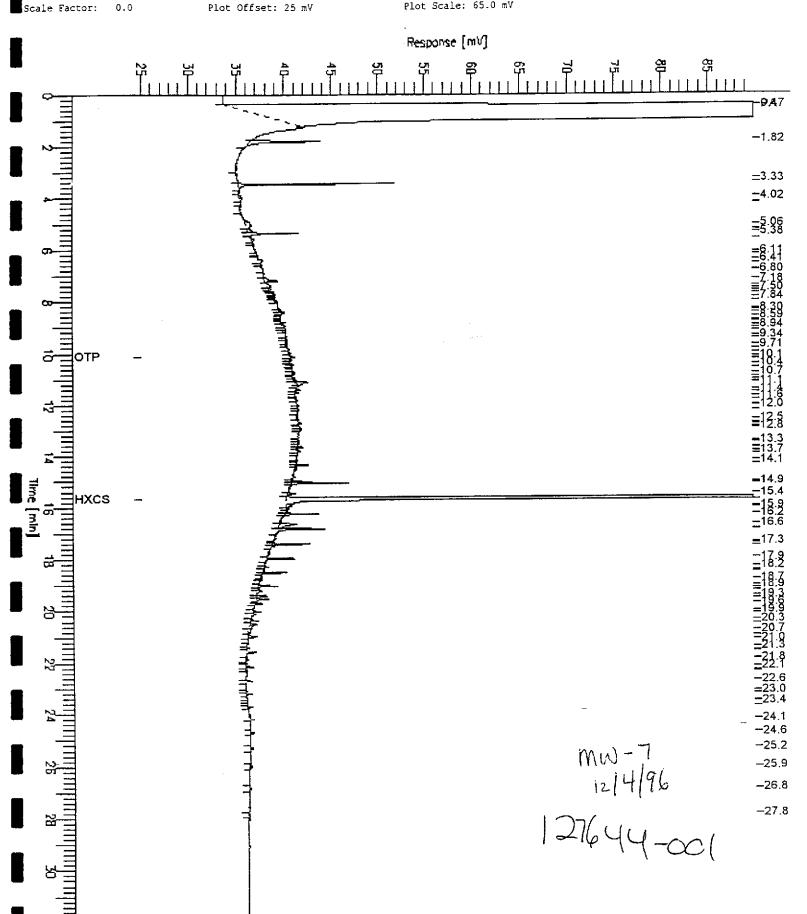
Time of Injection: 12/7/96 10:35 PM

Low Point : 25.00 mV

High Point : 90.00 mV

Page 1 of 1

Plot Scale: 65.0 mV



Curtis & Tompkins, Ltd.
Page 1 of 1

Lab #: 127644 BATCH QC REPORT

TEH-Tot Ext Hydrocarbons Analysis Method: CA LUFT (EPA 8015M) Subsurface Consultants Prep Method: EPA 3520 Client: Project#: 133.005 Location: KOT METHOD BLANK Prep Date: 12/04/96 Analysis Date: 12/07/96 Matrix: Water Batch#: 31258 Units: ug/L Diln Fac: 1

MB Lab ID: QC35850

	Result	
Analyte	Result .	
Diesel C12-C22 Motor Oil C22-C50	<50 <250	
Surrogate	%Rec	Recovery Limits
	94	60-140
Hexacosane	34	



BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Analysis Method: CA LUFT (EPA 8015M) Subsurface Consultants

Client: Project#: 133.005

Location: KOT

Prep Method:

EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water

31258 Batch#: Units: ug/L Diln Fac: 1

12/04/96 Prep Date: 12/07/96 Analysis Date:

BS Lab ID: QC35851

Analyte	Spike Added	Spike Added BS			
Diesel C12-C22	2475 21	.59	87	60-140	
Surrogate	%Rec	Limits		<u>.</u>	
Hexacosane	93	60-140			

BSD Lab ID: QC35852

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C12-C22	2475	2220	90	60-140	3	35
Surrogate	%Rec	Limi	ts			
Hexacosane	98	60-1	40			

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits Spike Recovery: 0 out of 2 outside limits



BTXE

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: EPA 8020

Prep Method: EPA 5030

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127644-001 MW-7	31271	12/04/96	12/05/96	12/05/96	

Matrix: Water

Analyte Diln Fac:	Units	127644-001	
Benzene	ug/L	<0.5	
Toluene	ug/L	<0.5	
Ethylbenzene	ug/L	<0.5	
m,p-Xylenes	ug/L	<0.5	
o-Xylene	ug/L	<0.5	
Surrogate		·	
Trifluorotoluene	%REC	92	
Bromobenzene	%REC	95	

Curtis & Tompkins, Ltd.
Page 1 of 1

BATCH QC REPORT

Lab #: 1278	544	BHTG 20
		BTXE
Client: Project#: Location:	Subsurface Consultants 133.005 KOT	Analysis Method: EPA 8020 Prep Method: EPA 5030
		METHOD BLANK
Matrix: Batch#: Units:	Water 31271 ug/L	Prep Date: 12/05/96 Analysis Date: 12/05/96

MB Lab ID: QC35897

Result	
<0.5 <0.5 <0.5 <0.5 <0.5	
%Rec	Recovery Limits
91 88	43-114 47-112
	<0.5 <0.5 <0.5 <0.5 <0.5 *Rec

BATCH QC REPORT

Lab #: 127644

BTXE Analysis Method: EPA 8020 Subsurface Consultants Client: EPA 5030 Prep Method: Project#: 133.005 Location: KOT LABORATORY CONTROL SAMPLE Prep Date: 12/05/96 Water Matrix: 12/05/96 Analysis Date: Batch#: 31271 Units: ug/L Diln Fac: 1

LCS Lab ID: QC35896

C2 Pap in Access										
Analyte	Result	Spike Added	%Rec #	Limits						
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	18.7 18.6 22.4 41.8 21.3	20 20 20 40 20	94 93 112 105 107	80-120 80-120 80-120 80-120 80-120						
Surrogate	8Rec	Limits								
Trifluorotoluene Bromobenzene	93 94	43-114 47-112								
			. , -1-							

[#] Column to be used to flag recovery and RPD values with an asterisk

^{*} Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

						12	71	امرا	N,												P/	۱G۱	:			OF	<u>:</u>		-1
CHAIN OF CU	STODY FORI	M				١.				•													10	IALYS	SIS R	EQUE	ESTEC	-	-{
PROJECT NAME: JOB NUMBER: PROJECT CONTAC SAMPLED BY:	KOT 133.00	5	lcei Ale		des.	LAB: TUR REC	INAR					y I	to Not me	mpt mal De	ive Ve	s Leù	·L						CIESS + RO +4 001						
		MAT	HIX	c	ATAO	INERS			MET RESI			_		S	AMF	LING	DAT	ſΕ		١		BTXE	췽			1			l
LABORATORY I.D. NUMBER	SCI SAMPLE NUMBÉR	WATER SOIL WASTE	AIR	VOA	DINT	TUBE		HCL	H2SQ*	ONI	30	NON W	MONTI	H DA	Y	YEA	1	— ті	ME		•	3/#/F	17.60			\ \ \-\	_		
	Mw-7	K		3				X			X	1	1 2	20	4	9	0 1	C	0	0		X	X	- 					
						<u> </u> -		-											 		- -							-	
						-		 							-			-	-	-									+-
										-					-														
		N OF CUS							DAT	TE /	TIM		co	MMEN	TS	& NO	TES:												
RELEASED BY: (SI	<u> </u>	TE / TIME	Dan RECEIVE	m	1.	No	re		/4			·		/															
RELEASED BY: (S	ignatora)	ATE / TIME	RECEIV						DA	TE.	/ TIM	IE		Sı	_ ıt	 SI	1r:	fa	 C€	- -		O1	ıs	ul	ta:	nt:	S,	Inc	 C.

DATE / TIME

RECEIVED BY; (Signature)

DATE / TIME

RELEASED BY: (Signature)

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 • FAX: 510-268-0137

DECEMBER 1996
QUARTERLY GROUNDWATER
SAMPLING REPORT AT
FORMER ABOVEGROUND STORAGE TANK
KEEP ON TRUCKING FACILITY (FORMER H-213)
370 8TH AVENUE
OAKLAND, CALIFORNIA

JANUARY 9, 1997

SCI 133.005

CONTENTS

Section	<u>n</u>	<u>Page</u>
1.0	Introduction	1
2.0	Background	1
3.0	Field Activities	2
4.0	Analytical Results	3
5.0	Findings	3
<u>Table</u>		
1	Summary of Groundwater and Free Product Measurements and Groundwater Analytical Results	
<u>Plates</u>		
1 2	Site Vicinity Map Monitoring Well Location	
Apper	<u>ndices</u>	
A B C	Free Product Removal and Skimmer Operations Water Sampling Field Survey Forms Groundwater Sampling Analytical Reports for Samples Collected in Dec	ember 1996

1.0 <u>INTRODUCTION</u>

Subsurface Consultants, Inc. (SCI) was retained to perform quarterly groundwater sampling and analyses at the Keep on Trucking Facility located at 370-8th Avenue in Oakland, California (Plate 1). On December 3, 4, 5, and 13, 1996, SCI collected groundwater samples from monitoring wells MW-1 through MW-6 located near the former location of Building H-213. The monitoring well locations are shown on Plate 2.

2.0 BACKGROUND

In October 1992, the United States Coast Guard (USCG) noted diesel fuel in Clinton Basin. A subsequent investigation by the Port of Oakland (Port) identified diesel fuel in storm drains at the Ninth Avenue Terminal. Further investigations by the Port indicated that the source of diesel was a leaking underground pipe connected to a diesel above ground storage tank (AST) at the subject site. The diesel AST was operated by the Keep on Trucking Company.

The diesel fuel system was disconnected in December 1992, and was removed by February 1993. In September 1993, Uribe and Associates conducted a subsurface investigation at the former location of the diesel fuel AST which consisted of installing and sampling four monitoring wells (MW-1 through MW-4).

While developing the four monitoring wells in September 1993, four to twelve inches of separate phase petroleum hydrocarbons (free product) was observed floating on the groundwater surface in monitoring well MW-4. Monitoring well MW-4 was purged once a week from September to November 1993. According to the Uribe and Associates report dated December 2, 1993, bailing activities ceased on November 1, 1993, after all the diesel had apparently been removed. However, during the quarterly groundwater monitoring and sampling event in June and September 1994, six to ten inches of free product were noted again in monitoring well MW-4. No bailing of the floating product was performed; however, a passive skimmer was installed in monitoring well MW-4 on April 10, 1995.

During a subsequent subsurface investigation performed by Clayton Environmental Consultants (Clayton) in March 1995, two additional monitoring wells (MW-5 and MW-6) were installed at the site (Plate 2). In April 1995, free product was identified in monitoring well MW-6 and dissolved petroleum hydrocarbons were present in monitoring well MW-5. A passive skimmer was installed by Clayton in well MW-6 on July 24, 1995. Free product has been skimmed or bailed from both wells MW-4 and MW-6 on a periodic basis. SCI is currently removing accumulate free product on a monthly basis. Free product thickness and measured groundwater levels are summarized in Table 1. A summary of skimmer operations and free product removal at monitoring wells MW-4 and MW-6 is presented in Appendix A.

3.0 FIELD ACTIVITIES

On December 2, 1996, monitoring wells MW-1 through MW-6 were purged using new disposable bailers. Well volumes were calculated using depth to groundwater and total well depth measurements which were recorded to the nearest 0.01 foot upon arrival at the site. Approximately three to four times the volume of each well was purged to ensure that water representative of the aquifer was present prior to sampling. Only twice the volume of water in well MW-3 was purged due to very slow recharge. As a general guide, a minimum of three well volumes should be purged prior to sampling unless well recovery rates prohibit it. Standard operating procedure does allow for fewer than three purged well volumes if the well does not recover within 24 hours and as long as groundwater samples are not collected until field indicator parameters such as pH, temperature, and electrical conductivity stabilize indicating that fresh groundwater from the aquifer has replaced the initial stagnant water. All monitoring wells were purged until pH, temperature, and electrical conductivity stabilized.

The following parameters were noted during the sampling activities:

- Monitoring well identification
- Static water level
- Well depth
- Condition of water before purging (e.g., amount of free product)
- Purge rate and volume
- pH, temperature, and conductivity during purging
- Time purged
- Time of sample collection
- Sampling method
- Name of sampler
- Climatic conditions

The groundwater samples were collected using new disposable bailers. All other sampling equipment was thoroughly cleaned and decontaminated before coming into contact with the groundwater at each well. Details of the groundwater sampling event are provided in the water sampling field survey forms (Appendix B).

Groundwater samples were collected in such a manner as to minimize volatilization due to agitation and/or transfer from bailer to sample container. The samples were transferred into clean laboratory-supplied containers that were closed, labeled, placed immediately into an ice chest, and transported to Curtis & Tompkins, Ltd., a state-certified laboratory, for analysis. To document and trace samples from time of collection to final analysis, signed chain-of-custody records were completed by SCI personnel. The chain-of-custody records accompanied the groundwater samples to the laboratory. The completed chain-of-custody records are included with the analytical report from the laboratory (Appendix C).

4.0 ANALYTICAL RESULTS

The groundwater samples from wells MW-1 through MW-6 were analyzed using the following Environmental Protection Agency Analytical Methods:

- Method 8015 (modified) for TPH-D and TPH-motor oil
- Method 8015 (modified) for TPH-G
- Method 8020 for BTEX

The analytical results are summarized in Table 1. The laboratory analytical reports for the current groundwater sampling event are included in Appendix C.

5.0 <u>FINDINGS</u>

Based on the laboratory analytical reports and SCI's field observations, our findings for this sampling event are as follows:

- Free product was observed in monitoring well MW-6 before purging.
- A sheen was observed in monitoring wells MW-4 and MW-5 during purging.
- TPH-D was detected in groundwater samples collected from all monitoring wells.
- TPH-motor oil was detected in all monitoring wells except well MW-3.
- TPH-G was detected in groundwater samples collected from wells MW-4, MW-5 and MW-6. TPH-G has never been detected in wells MW-1 and MW3.
- Concentrations of benzene, toluene, ethylbenzene, and total xylenes were detected in groundwater samples collected from well MW-4. Benzene and total xylenes were detected in well MW-5 and benzene and toluene were detected in well MW-6.

The next quarterly sampling event is scheduled for March 1997.

This report prepared by:

Jerome de Verrier Staff Engineer

This report reviewed by:

Jeriann N. Alexander, PE, REA

Project Manager

January 9, 1997

Keep on Trucking Facility (H-213)
Oakland, California
(SCI 133.005)

Monitoring <u>Well</u>	Sample <u>Date</u>	Depth to Water (feet)	Top of Casing Elevation (a)	Ground- water <u>Elevation (a)</u>	Depth to FP (feet)	FP Thickness <u>(feet)</u>	TPH as Diesel (ug/L)	TPH as Motor Oil (ug/L)	TPH as Gasoline (b) (ug/L)	Benzene (b)	Toluene (b) (ug/L)	Ethyl- benzene (b) (ug/L)	Total Xylenes (b) (ug/L)
MW-1	9/21/93	5.20	10.28	5.08	NA	0.00	1,600		ND	<0.4	<0.3	<0.3	<0.4
2.0	1/12/94	5.15	10.28	5.13	NA	0.00	610		ND	<0.4	< 0.3	<0.3	<0.4
	4/4/94	4.09	10.28	6.19	NA	0.00	510		<50	< 0.5	<0.5	< 0.5	<0.5
	6/2/94	4.82	10.28	5.46	NA	0.00	540		ND	<0.5	<0.5	<0.5	<0.5
	10/3/94	5.63	10.28	4.65	NA	0.00	390		ND	< 0.4	< 0.3	< 0.3	< 0.4
	12/22/94	5,00	10.28	5.28	NA	0.00	210		ND	ND	ND	ND	ND
	4/10/95	4.94	10.28	5.34	NA	0.00	330		<50	< 0.4	< 0.3	< 0.3	<0.4
	7/24/95	5.02	10.28	5.26	NA	0.00	230		<50	< 0.4	< 0.3	< 0.3	< 0.4
	11/10/95	5.52	10.28	4.76	NA	0.00	430		<50	< 0.4	< 0.3	<0.3	< 0.4
	2/20/96	4.49	9,99	5,50	NA	0.00	590yh		<50	< 0.5	< 0.5	<0.5	<1
	5/24/96	5.04	9.99	4.95	NA	0.00	870yh	630y	<50	<0.5	<0.5	<0.5	<0.5
	9/6/96	5.37	9.99	4.62	NA	0.00	850yh	490yl	<50	<0.5	<0.5	<0.5	<0.5
	12/5/96	4.80	9.99	5.19	NA	0.00	4,500ylh	2,100yl	<50	<0.5	<0.5	<0.5	<0.5
MW-2	9/21/93	4.40	10.69	6.29	NA	0.00	1,900		ND	0.5	<0.3	<0.3	<0.4
	1/12/94	4.75	10.69	5.94	NA	0.00	1,800		ND	<0.4	< 0.3	< 0.3	<0.4
	4/4/94	5.01	10.69	5.68	NA	0.00	1,800		<50	<0.5	<0.5	<0.5	<0.5
	6/2/94	4.61	10.69	6.08	NA	0.00	870		ND	<0.5	<0.5	<0.5	<0.5
	10/5/94	4.93	10.69	5.76	NA	0.00	1,200		ND	<0.4	<0.3	<0.3	<0.4
	12/22/94	4.43	10.69	6.26	NA	0.00	610		ND	ND	ND	ND	ND
	4/10/95	4.03	10.69	6.66	NA	0.00	550		<50	<0.4	<0.3	<0.3	<0.4

Keep on Trucking Facility (H-213)
Oakland, California
(SCI 133.005)

Monitoring <u>Well</u>	Sample <u>Date</u>	Depth to Water (feet)	Top of Casing <u>Elevation (a)</u>	Ground- water <u>Elevation (a)</u>	Depth to FP (feet)	FP Thickness <u>(feet)</u>	TPH as Diesel (ug/L)	TPH as Motor Oil (ug/L)	TPH as Gasoline (b) (ug/L)	Benzene (b) (ug/L)	Toluene (b)	Ethyl- benzene (b) (ug/L)	Total Xylenes (b) (ug/L)
MW-2	7/24/95	4.41	10.69	6.28	NA	0.00	960		70	< 0.4	<0.3	<0.3	<0.4
W W 2	11/10/95	4.59	10.69	6.10	NA	0.00	920		<50	< 0.4	< 0.3	< 0.3	< 0.4
	2/20/96	3.81	10.32	6.51	NA	0.00	1,700h		<50	<0.5	< 0.5	< 0.5	<1
	5/24/96	4.41	10.32	5.91	NA	0.00	2,800yh	1,200y	<50	< 0.5	<0.5	<0.5	<0.5
	9/5/96	3.98	10.32	6.34	NA	0.00	2,900	760yl	58z	<0.5	<0.5	< 0.5	< 0.5
	12/4/96	4.30	10.32	6.02	NA	0.00	1,600y	1,000yl	<50	<0.5	<0.5	<0.5	<0.5
MW-3	9/21/93	15.20	10.54	-4.66	NA	0.00	680		ND	<0.4	0.3	<0.3	<0.4
	1/12/94	5.70	10.54	4.84	NA	0.00	430		ND	< 0.4	< 0.3	< 0.3	< 0.4
	4/4/94	4.23	10.54	6.31	NA	0.00	690		<50	<0.5	<0.5	<0.5	<0.5
	6/2/94	3.86	10.54	6.68	NA	0.00	280		ND	<0.5	<0.5	< 0.5	<0.5
	10/4/94	5.44	10.54	5.10	NA	0.00	480		ND	<0.4	<0.3	<0.3	< 0.4
	12/22/94	4.87	10.54	5.67	NA	0.00	630		ND	ND	ND	ND	ND
	4/10/95	7.64	10.54	2.90	NA	0.00	830		<50	<0.4	<0.3	<0.3	<0.4
	7/24/95	3.62	10.54	6.92	NA	0.00	460		<50	< 0.4	< 0.3	<0.3	<0.4
	11/10/95	5.11	10.54	5.43	NA	0.00	2,100		<50	< 0.4	0.7	< 0.3	<0.4
	2/20/96	4.14	10.18	6.04	NA	0.00	620h		<50	<0.5	< 0.5	< 0.5	<1
	5/24/96	4.49	10.18	5.69	NA	0.00	1,100yh	550y	<50	<0.5	<0.5	< 0.5	<0.5
	9/18/96	4.48	10.18	5.70	NA	0.00	1,500	890yl	<50	< 0.5	< 0.5	<0.5	<0.5
	12/13/96	4.84	10.18	5.34	NA	0.00	580	<250	<50	<0.5	< 0.5	< 0.5	< 0.5

Keep on Trucking Facility (H-213)
Oakland, California
(SCI 133.005)

Monitoring <u>Well</u>	Sample <u>Date</u>	Depth to Water (feet)	Top of Casing Elevation (a)	Ground- water <u>Elevation (a)</u>	Depth to FP (feet)	FP Thickness <u>(feet)</u>	TPH as Diesel (ug/L)	TPH as Motor Oil (ug/L)	TPH as Gasoline (b) (ug/L)	Benzene (b) (ug/L)	Toluene (b) (ug/L)	Ethyl- benzene (b) (ug/L)	Total Xylenes (b) (ug/L)
MW-4	9/21/93	5.80	12.33	6.53	5.13	0.67	1,300		ND	140	110	40	235
	1/12/94	4.10	12.33	8.23	sheen	sheen	32,000		ND	71	41	20	150
	4/4/94	4.20	12.33	8.13	3.62	0.58	410,000		6,200	140	20	47	310
	6/2/94	3.88	12.33	8.45	3.38	0.50	NS	NS	NS	NS	NS	NS	NS
	10/3/94	4.80	12.33	7.53	4.80	1.00	NS	NS	NS	NS	NS	NS	NS
	12/22/94	3.47	12.33	8.86	2.63	0.84	NS	NS	NS	NS	NS	NS	NS
	4/10/95	3.80	12.33	8.53	NA	0.00	NS	NS	NS	NS	NS	NS	NS
	5/16/95	3.07	12.33	9.26	NA	NA	NS	NS	NS	NS	NS	NS	NS
	7/24/95	3.65	12.33	8.68	NA	0.00	21,000		2,400	140	74	34	40
	11/10/95	· NM	12.33	NA	NA	0.00	NS	NS	NS	NS	NS	NS	NS
	2/20/96	NM	11.98	NA	NA	0.40	NS	NS	NS	NS	NS	NS	NS
	5/24/96	2.96	11.98	9.02	NA	0.02	37,000	2,800yl	690y	44	<2.5	18	7.7
	9/4/96	4.65	11.98	7.33	NA	0.00	240,000	26,000yl	1,000h	100	< 0.5	5.2	7.2
	12/3/96	3.22	11.98	8.76	NA	0.00	13,000	2,000yl	1,500yh	120	0.9	33	22
MW-5	4/10/95	4.64	11.84	7.20	NA	0.00	6,200		1,100	3.1	<0.3	2.9	11.3
	7/24/95	5.24	11.84	6.60	NA	0.00	4,800		720	3.1	0.7	0.6	0.7
	11/10/95	5.38	11.84	6.46	NA	0.00	3,700		260	0.8	0.5	0.6	1.9
	2/20/96	2.69	11.84	9.15	NA	0.00	440h		150y	<0.5	< 0.5	<0.5	<1
	5/24/96	2.67	11.84	9.17	NA	0.00	4,600yh	1,900y	82y	<0.5	<0.5	<0.5	<0.5
	9/4/96	5.44	11.84	6.40	NA	0.00	7,700yh	1,900yl	<50	<0.5	<0.5	<0.5	<0.5
	12/3/96	4.64	11.84	7.20	NA	0.00	13,000	1,900yl	140yh	1.5	<0.5	<0.5	2.6

H213TABL.D96 Page 3 of 4 12/27/96

Keep on Trucking Facility (H-213) Oakland, California (SCI 133.005)

Monitoring <u>Well</u>	Sample <u>Date</u>	Depth to Water (feet)	Top of Casing Elevation (a)	Ground- water <u>Elevation (a)</u>	Depth to FP (feet)	FP Thickness (feet)	TPH as Diesel (ug/L)	TPH as Motor Oil (ug/L)	TPH as Gasoline (b) (ug/L)	Benzene (b) (ug/L)	Toluene (b) (ug/L)	Ethyl- benzene (b) (ug/L)	Total Xylenes (b) (ug/L)
MW-6	4/10/95	4.12	11.86	7.74	4.12	0.00	10,000		1,300	4.4	<0.3	0.7	0.8
	7/24/95	5.19	11.86	6.67	4.09	1.10	NS	NS	NS	NS	NS	NS	NS
	11/10/95	NM	11.86	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS
	2/20/96	NM	11.86	NA	NA	0.50	NS	NS	NS	NS	NS	NS	NS
	5/24/96	4.15	11.86	7.71	4.15	0.42	240,000	5,500yl	280,000yh	<250	<250	<250	<250
	9/5/96	5.19	11.86	6.67	5.15	0.04	50,000	3,200yl	200h	5.3	<5.0	<5.0	<5.0
	12/4/96	3.96	11.86	7.90	3.95	0.01	140,000	7,300yl	4,700yh	19	11	<10	<10

FP = Free product

TPH = Total petroleum hydrocarbons

NA = Not applicable

NM = Not measured

NS = Not sampled

ug/L = Micrograms per liter

y = Sample exhibits fuel pattern which does not resemble standard

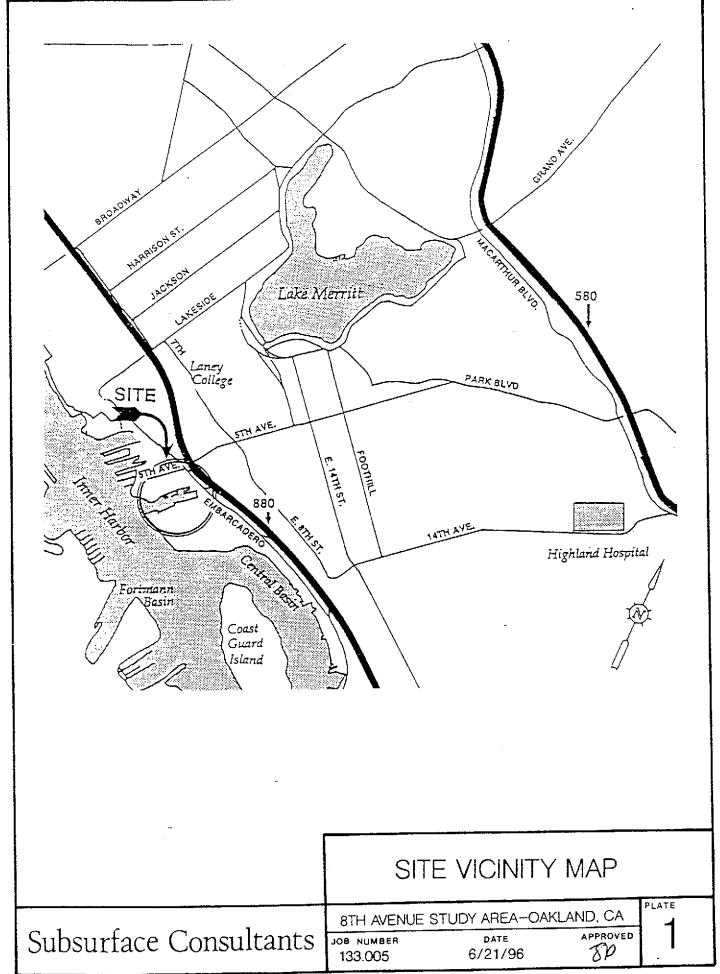
1 = lighter hydrocarbons than indicated standard

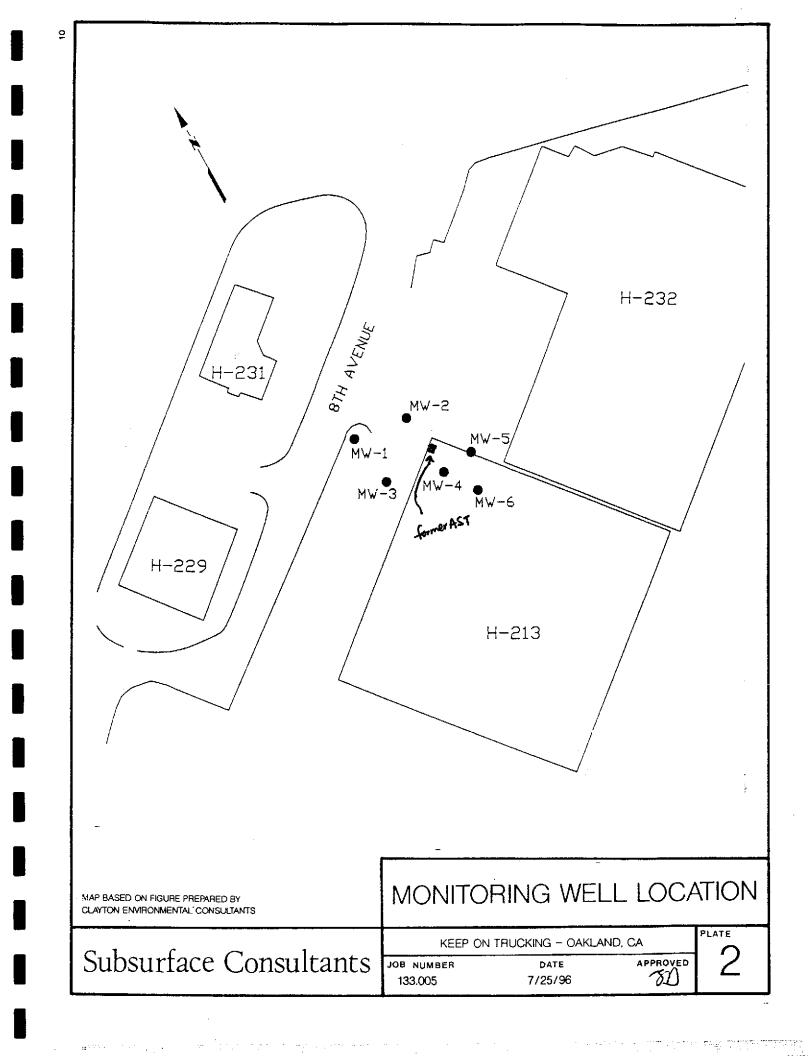
h = Heavier hydrocarbons than indicated standard

z = Sample exhibits unknown single peak or peaks

Notes:

- a. Elevations are based on the Port of Oakland Datum. Elevations based on this special datum may be converted to the mean sea level datum by subtracting 3.20 feet. The top of casing elevation was resurveyed in May 1996. Groundwater elevations recorded during 1996 are calculated using the new top of casing elevation.
- b. Laboratory analysis reporting limits are listed above if the reporting limits were previously reported in data provided to Subsurface Consultants, Inc.





APPENDIX A FREE PRODUCT REMOVAL AND SKIMMER OPERATIONS

APPENDIX A FREE PRODUCT REMOVAL AND SKIMMER OPERATIONS

Keep on Trucking Facility (H-213) Oakland, California SCI 133.005

		Free Product	Free Product	
	<u>Date</u>	Thickness (in)	Removed (gal)	Comments
Well MW-4	4/17/95		0.20	Skimmer in place
	4/18/95		0.10	Skimmer in place
	4/26/95		0.30	Skimmer in place
	5/12/95		0.01	Skimmer in place
	5/16/95	None	0.00	Skimmer in place
	6/12/95	None	0.00	Skimmer in place
	6/22/95	None	0.00	Skimmer in place
	7/14/95	None	0.00	Skimmer in place
	7/19/95	None	0.00	Passive skimmer removed
	7/28/95	0.48	0.01	Measured with Interface Probe
	8/17/95	1.0	0.00	Measured with Interface Probe
	8/23/95	0.84	0.00	Measured with Interface Probe
	9/6/95	1.0	0.00	Measured with Interface Probe
	9/28/95	0.84	0.00	Measured with Interface Probe
	11/10/95	2.8	0.03	Measured with Interface Probe
	12/18/95	1.8	0.02	Passive skimmer installed
	1/10/96		0.03	Skimmer in place
	2/20/96	3.3	0.07	Skimmer in place
	5/23/96	0.00	0.01	Skimmer in place;Up to 1/4" of FP measured after bailing
	6/28/96	0.00	0.02	Skimmer in place
	7/29/96	0.00	0.00	Skimmer in place
	9/3/96	Immeasurable amount	0.00	Skimmer in place
	9/9/96	0.25	0.01	Skimmer in place
	9/18/96	0.13	0.00	Skimmer in place
	9/23/96	0.38	0.01	Skimmer in place
	9/30/96	Immeasurable amount	0.00	Skimmer in place
	10/28/96	0.13	0.01	Skimmer in place
	12/2/96	Immeasurable amount	0.04	Skimmer in place
		Total Product Recovered:	0.87	
Well MW-6	7/24/95		0.00	
	7/28/95		0.10	Passive skimmer installed
	8/17/95	7.2	0.10	Skimmer in place
	8/23/95	10.0	0.10	Skimmer in place
	9/6/95	4.8	0.05	Skimmer in place
	9/28/95	4.8	0.07	Removed skimmer vol. only
	11/10/95	0.7	0.02	Skimmer in place
	12/18/95	4.0	0.10	Skimmer in place
	1/10/96	2.5	0.03	Skimmer in place
	2/20/96	4.0	0.08	Skimmer in place
	5/23/96	5.0	0.10	Skimmer in place
	6/28/96	0.5	0.03	Skimmer in place
	7/29/96	0.5	0.01	Skimmer in place
	9/3/96	0.5	0.01	Skimmer in place
_	9/9/96	Immeasurable amount	0.00	Skimmer in place
	9/18/96	Immeasurable amount	0.00	Skimmer in place
	9/23/96	0.13	0.00	Skimmer in place
	9/30/96	0.00	0.00	Skimmer in place
	10/28/96	0.13	0.00	Skimmer in place
	12/2/96	Immeasurable amount	0.02	Skimmer in place
		Total Product Recovered:	0.82	

APPENDIX B WATER SAMPLING FIELD SURVEY FORMS

APPENDIX C

GROUNDWATER SAMPLING ANALYTICAL REPORTS FOR SAMPLES COLLECTED IN DECEMBER 1996



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

REPORT ANALYTICAL

Prepared for:

Subsurface Consultants 3736 Mt. Diablo Blvd. Suite 200 Lafayette, CA 94549

Date: 13-DEC-96

Lab Job Number: 127648 Project ID: 133.005

Location: KOT

Reviewed by: Two E Morrison

Reviewed by: //an

This package may be reproduced only in its entirety.

Berkeley

Irvine



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: CA LUFT (EPA 8015M)

Prep Method: EPA 5030

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127648-001 MW-1	31259	12/05/96	12/05/96	12/05/96	

Matrix: Water

Analyte Diln Fac:	Units	127648-001 1		
Gasoline	ug/L	<50		
Surrogate	· · · · · · · · · · · · · · · · · · ·			
Trifluorotoluene	%REC	99		
Bromobenzene	*REC	77	 	



BATCH QC REPORT

TVH-Total Volatile Hydrocarbons Analysis Method: CA LUFT (EPA 8015M) Subsurface Consultants Client: Prep Method: EPA 5030 Project#: 133.005 Location: KOT METHOD BLANK 12/04/96 Prep Date: Water Matrix: 12/04/96 Analysis Date: Batch#: 31259 Units: ug/L Diln Fac: 1

MB Lab ID: QC35855

Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene Bromobenzene	104 80	69-120 70-122



BATCH QC REPORT

··································		TVF	H-Total Vola	tile Hydrocarbons		
Client: Project#: Location:	133.005	Consultants		Analysis Method: Prep Method:	CA LUFT (EPA EPA 5030	8015M
			LABORATORY	CONTROL SAMPLE		
Matrix: Batch#: Units: Diln Fac:	Water 31259 ug/L 1			Prep Date: Analysis Date:	12/04/96 12/04/96	

LCS Lab ID: QC35853

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline	2149	2000	107	80-120
Surrogate	%Rec	Limits		
Trifluorotoluene Bromobenzene	100 100	69-120 70-122		

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 1 outside limits



TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants

Analysis Method: CA LUFT (EPA 8015M)

Project#: 133.005

Prep Method: EPA 3520

Location: KOT

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127648-001	MW-1	31334	12/05/96	12/09/96	12/11/96	

Matrix: Water

Analyte Diln Fac:	Units	127648-	-001		 	
Diesel C12-C22 Motor Oil C22-C50	ug/L ug/L	4500 2100	YL YLH	 	 	-
Surrogate				 	 	
Hexacosane	%REC	83		 	 	

Y: Sample exhibits fuel pattern which does not resemble standard

H: Heavier hydrocarbons than indicated standard

L: Lighter hydrocarbons than indicated standard

Chromatogram

ample Name : 127648+001,31334

: G:\GC13\CHA\345A033.RAW Fil-Nam-

thod : ATEH353.MTH art Tim= : 0.01 min ale Factor:

End Time : 31.91 min

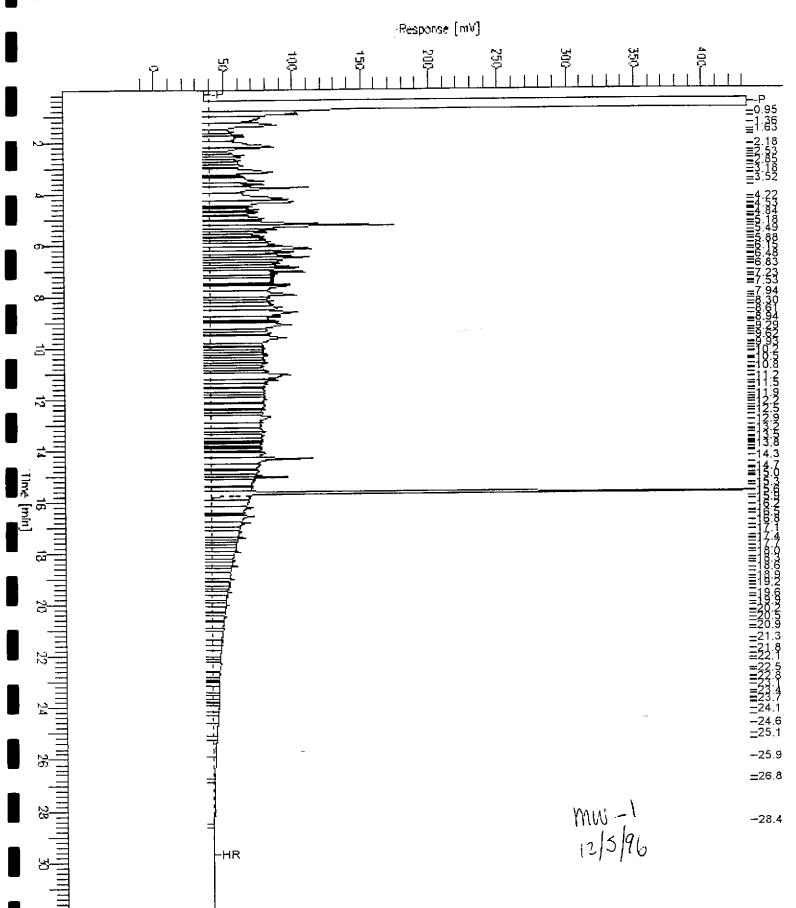
Plor Offset: -16 mV

| Gample #: 31334 | Par | Par

High Point : 433.35 mV

Page 1 of 1

Plot Scale: 448.9 mV



Curtis & Tompkins, Ltd.
Page 1 of 1

BATCH QC REPORT Lab #: 127648

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants

Project#: 133.005 Location: KOT

Analysis Method: CA LUFT (EPA 8015M) Prep Method: EPA 3520

METHOD BLANK

Matrix: Water

Batch#: 31334 Units: ug/L Diln Fac: 1

Prep Date:

12/09/96

Analysis Date: 12/18/96

MB Lab ID: QC36154

Analyte	Result	
Diesel C12-C22 Motor Oil C22-C50	<50 <250	•
Surrogate	%Rec	Recovery Limits
	106	60-140
Hexacosane	100	



BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Subsurface Consultants Client:

Project#: 133.005

Location: KOT

Analysis Method: CA LUFT (EPA 8015M)

Prep Method:

EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Water Matrix: Batch#: 31334

Units: ug/L Diln Fac: 1

Prep Date: Analysis Date: 12/09/96

12/18/96

BS Lab ID: QC36155

			
Analyte	Spike Added BS	%Rec #	Limits
Diesel C12-C22	2475 2362	95	60-140
Surrogate	%Rec Limits	5	
Hexacosane	119 60-140	0	

BSD Lab ID: QC36156

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C12-C22	2475 230		93	93 60-140		35
Surrogate	%Rec	Limits				
Hexacosane	120	60-	140			

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits Spike Recovery: 0 out of 2 outside limits



BTXE

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: EPA 8020 Prep Method: EPA 5030

 Sample # Client ID
 Batch # Sampled Extracted Analyzed Moisture

 127648-001 MW-1
 31259
 12/05/96
 12/05/96
 12/05/96

Matrix: Water

Analyte Diln Fac:	Units	127648-001 1	
Benzene	ug/L	<0.5	en e
Toluene	ug/L	<0.5	
Ethylbenzene	ug/L	<0.5	
m,p-Xylenes	ug/L	<0.5	
o-Xylene	ug/L	<0.5	
Surrogate			
Trifluorotoluene	%REC	103	•
Bromobenzene	%REC	103	

Client:

Matrix:

Batch#:

Diln Fac: 1

Units:

BATCH QC REPORT



BTXE Analysis Method: EPA 8020 Subsurface Consultants Prep Method: EPA 5030 METHOD BLANK 12/04/96 Prep Date: Analysis Date: 12/04/96

MB Lab ID: QC35855

Project#: 133.005 Location: KOT

Water

31259

ug/L

Analyte	Result	
Benzene	<0.5	
Toluene	<0.5	
Ethylbenzene	<0.5	
m,p-Xylenes	<0.5	
o-Xylene	<0.5	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	108	58-130
Bromobenzene	105	62-131

BATCH QC REPORT

ab #: 12/0	140		2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
:			BTXE		
Client: Project#: Location:	133.005	Consultants		Analysis Method: Prep Method:	EPA 8020 EPA 5030
			LABORATORY CONTRO	OL SAMPLE	
Matrix: Batch#: Units: Diln Fac:	Water 31259 ug/L 1			Prep Date: Analysis Date:	12/04/96 12/04/96

LCS Lab ID: QC35854

Analyte	Result	Spike Added	%Rec #	Limits
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	17.1 18.2 17.4 35.7 18.1	20 20 20 40 20	86 91 87 89 91	80-120 80-120 80-120 80-120 80-120
Surrogate	%Rec	Limits		
Trifluorotoluene Bromobenzene	114 116	58-130 62-131		

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 5 outside limits

													_	٦	i	١ ۽	0_										P	'nΘ					OF			
IAIN OF CUS	STODY FOR	M											10	FC	76	7	O						•				Ţ			ANA	LYS	IS RE	OUI	ESTE	:D	لے
OJECT NAME: B NUMBER: OJECT CONTACT MPLED BY:	KOT 133.005 Exporre De Dennis Ale	Ver	sie	is/eles	Jeri	Ale	2×a	nde	 	LA TL RI	.B: JRNA EQUE	ARC EST				lis Jea	o A loru	Tov lol ie	np.	kiu al Ve	5	lie	1				_		less a motor oil							
				MA	TRIX			со	NTA	INE	RS			ETH(_			s	AMP	LIN	g D	ATE	Ē				3TX	0)						
LABORATORY 1.D. NUMBER	SCI SAMPLE NUMBER	WATER	OIL	WASTE	Œ		VOA	птея	LNic	TUBE		į	H ² SO ⁴	HNO3	ICE	NONE	мом	тн	DA	Y	YEA	\B		TIM	1E		NOTES	TVH/BTXE	アドナロ イング	1					-	_
		- <u>*</u>	S	3	▼	-			L.	_									_		a	,		8	U	5	-	X	$\frac{1}{x}$	+	-		\dashv	-	+	\perp
-/	MW-1	X	-	1			13	1		-		1	4	╁	×		-	2	0	2	9	9		-					<u> </u>	1	 			_	1	_
		-	-	+-								1		1	_					_						_	╀	╁	+	+	-	 	\vdash	-	+	+
		_	-	-			-	+	-	-	\vdash	+	+	+-	-	-												<u> </u>	<u> </u>		1	1			$\overline{\perp}$	$\overline{+}$
		\dashv	-	-				<u> </u>				1	1												\vdash	-	-	╀	+	+	+	+		-	-	\dashv
		_	-	-	-			+	+	-	╂╌╁	-	╁	_	+-	+	╁╴		-		_	_					1	1	1	_	\perp	1	_			$\overline{-}$
		1			 		1	1			1	_		\bot	1	-			-	-	-	-	-	\vdash	-	+	╀	╁	+	+	+	+	-			
		-		-	-			-	-	+	+	\dashv	-	-	+		十	-	-	_	ļ	<u> </u>			<u> </u>		1		1	1	1					
		-		!_	لبل																												,			
	CHAI	N OF	: CI	UST	YOO	RE	COF	₹D									C	MC	VEN.	rs &	NO)TES	S:													
RELEASED BY: (Sign	alure) DA Janda 12/6/	TE/T	1ME	D	RECI	EIVE	D BY	باکار.	K	<u> </u>	1.	2/	5/9	ATE ATE	09	4) —																				
RELEASED BY: (Sign	rature) DA	TE/1	TIME	=	#EC	FIVE	אטעי	اد) .	gnau	ui ()				. ,		٠																				
RELEASED BY: (Sign	nature) D/	ATE/	TIM	E	REC	EIVE	D BY	/: (Si	ignat	ture)	<u></u>		D	ATE	/ TII 	VE	1	5	Su	b	Sl	ır	fa	ac	е	(C	ıc	18	su	lta	an	ıts	, ,	In	lC
RELEASED BY: (Sig	nature) D.	ATE /	TIM	E	REC	EIVE	ED B	Y; (S	lgna	lure)		C	ATE	/ TI	ME	-	1	71	12TI	H S	TRE	FT	SU	JITI	E 20	01.	OA	KL	AND), C/	\LIF()137	ORN	IIA 9	346 ()/



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants 3736 Mt. Diablo Blvd. Ste. 200 Layfayette, CA 94549

Date: 19-DEC-96

Lab Job Number: 127645 Project ID: 133.005

Location: KOT

Reviewed by: Tray Bb.?

Reviewed by:

This package may be reproduced only in its entirety.

Irvine

Project Name:	KOT	Well Number:	MW-1	
Job No.:			iameter: 2	j
Sampled By:		Date:	2/3/96	
		Weather:	partly cloud	<u> </u>
	·			
Death to Casing Bott	om (below TOC)	15.50		feet
	er (below TOC)	4.80		feet
		10.70		feet
	er When 80% Recovered	1. 44		feet
Depth to Groundwate	of water x Casing DIA 2 x 0.04	(80)		gallons
Casing volume (leet	Nother & Casing Tane & Pas	te / Electronic	Sounder / O	ther
	Method Tape & Pas			
Free Product	disposable baile	A		
Purge Method	Misposable ball		slow recl	range
	FIELD MEA	SUREMENTS	(overring	q (ut)
	<u>.</u> F	Conductivity	alinity S%	Comments
Gailons Removed	pit 19F 3 3	(micromhos/cm) S 1714	م) م	Comments FLOWN
0	7.78 62.8		0	REANE (BAY MUD) odo
2	7.23 <u>66.4</u>	3010		
6		2330		Ry & Gals.
<u> </u>			×	
				gallons
Total Gallons Purge	ter Before Sampling (below TO	4.78 on 12/5	196 @ 0830	feet
Depth to Groundwa	ter Before Sampling (below TO	· ()		
Sampling Method	<u>disposable bai</u>	dei		
Containers Used	3		pint	
	40 1111			
				PLATE
Subsurfac	e Consultants	кээмин вог	DATE	APPROVED
C GODGILGO	-			

Designet Namo:	KOT		Well Num	ber: Mw	-2	
Project Name:				ng Diameter:		
Sampled By:	DWA		Date:	12/3/96		
TOC Elevation:			Weather:	partly d	oudy	·
Depth to Casing Bo	Ham (holow Ti	ac)	15.50			feet
Depth to Casing Bo		<u> </u>	4.30			feet
	_11					feet
Feet of Water in We	911 0.000	Recovered	6.54			feet
Depth to Groundwa	iter When 80%	DIA 2 v 0	1.8	<u>.</u>		_ gallons
Casing Volume (fe	et of water x C	asing DIA - X C	1.0408) / Flectro	nic Sounder	/ Other	
Depth Measureme	nt Method	Tape & F	Paste / Lieur			
Free Product				· · · · · · · · · · · · · · · · · · ·		
Purge Method	d1500	sable bai	ler		w Rechan	
	·		EASUREMENTS	510	(overnigh	()
		F	Conductivity (micromhos/cm)	Salinity S%	Co	omments a.
Gallons Removed	pH 7.14	Temp (%) 58-9			dean	omments /WITH J. 84 TINT
2	~ / ~		A 11 0			Dry@4.5
	4.52	63.9	2480		mucky	J ORGE !
	7-69	623	2210		clyan	
<u> </u>	(-0)					
						galions
Total Gallons Pur	ged <u>Ø</u>		5.78 0	12/4/96@10	:30 a.m.	feet
Depth to Groundy	vater Before Sa	ampling (below	TOC) _ 5.78 o:	_		
Sampling Method		disposable	bailer -			
Containers Used	3			pint		
	40	ml	urer	ı		
						PLATE
Subsurfa	og Con	cultant	S	DATE	AF	PLATE

roject Name: _	KOT			ell Number:			عام يا حام يا
ob No.:	133,005		We	ell Casing D	iameter: _		inch
sampled By:	DWA		Da	te:	12/3/76		
			We	eather:	clear, :	sunny_	
	D. w (holow To	1 01	26	0.00			feet
Depth to Casing	Bottom (below TC water (below TOC	O)	4	1.84			feet
			ニー・コン	.16			feet
	Well		7	.87			feet
Depth to Ground	water When 80%	Recovered .					gallons
Casing Volume ((feet of water x C	asing DIA 2 x 0).0408) ——		Coundar		•
Depth Measurer	nent Method	Tape & I	Paste /	Flectionic	300rider ;	, Other	
Free Product _	none						
Purge Method	dispos	sable boil	e1		Jane	(< ON R	echange
Purge Method	dispos	sable boil	€A EASUREME		Very	(overnght	echange)
Purge Method Gallons Remove	dispos d pH	FIELD M	EASUREME Conductivi	NTS ity (cm) S	Very		
	dispos d ph	FIELD M	EASUREME Conductivi (micromhos/	INTS ity (cm) S	VERY	clean)	OMMENTS WITH BROW TINT
Gallons Remove	dispos d pH	FIELD M Temp (*) 55.6	EASUREME Conductivi (micromhos/	ity (cm) S	VERY	clean)	OMMENTS WITH BROW TINT AU DK. GRA
Gallons Remove	disposed ph 6.39	FIELD M Temp (%) 55.6 58.8	EASUREME Conductivi (micromhos/ 2060 Z950	ity (cm) S	VERY	clean)	OMMENTS WITH BLOW TINT
Gallons Remove 1 3	disposed ph 6.39	FIELD M Temp (%) 55.6 58.8	EASUREME Conductivi (micromhos/ 2060 Z950	ity (cm) S	VERY	clean)	omments I WITH BROW TINT LY DK. Corr LY TINT S gals.
Gallons Remove 1 3 5	dispose	FIELD M Temp (%) 55.6 58.8	EASUREME Conductivi (micromhos/ 2060 2950 2920	ity Salara	alinity S%	Clean I musel Dry 6	omments WITH BROW TINT Ly/ DK. Corr Ly/ TINT J 5 gals.
Gallons Remove 1 3 5 7 Total Gallons P	d pH (69 6.44 urged 5	FIELD M Temp (%) 55.6 58.9	EASUREME Conductivi (micromhos/ 2060 2950 2920	ity Salara	VERY	Clean I musel Dry 6	omments INITH BROW TINT Y PK. GRA TINT J 5 gal = . gallons
Gallons Remove 1 3 5 7 Total Gallons P Depth to Groun	disposed pH 469 6.39 6.44 water Before Sa	FIELD M Temp (%) 55.6 58.8 57.7	EASUREME Conductivi (micromhos/ 2060 2950 2920	ity Salara	alinity S%	Clean I musel Dry 6	omments INITH BROW TINT Y PK. GRA TINT J 5 gal = . gallons
Gallons Remove 1 3 5 7 Total Gallons P Depth to Groun Sampling Meth	disposed pH (FIELD M Temp (%) 55.6 58.8 57.7	EASUREME Conductivi (micromhos/ 2060 2950 2920	ity Salara	alinity S%	Clean I musel Dry 6	OMMENTS WITH BROW TINT AU DK. GRA
Gallons Remove 1 3 5 7 Total Gallons P Depth to Groun	disposed pH (FIELD M Temp (*) 55.6 58.8 57.7 ampling (below)	EASUREME Conductivi (micromhos/ 2060 2950 2920	ity (cm) Si	alinity S%	Clean I musel Dry 6	omments INITH BROW TINT Y PK. GRA TINT J 5 gal = . gallons
Gallons Remove 1 3 5 7 Total Gallons P Depth to Groun Sampling Meth	dispose d pH 69 6.44 urged 5 dwater Before Sa od 150 dispose	FIELD M Temp (*) 55.6 58.8 57.7 ampling (below)	EASUREME Conductivi (micromhos/ 2060 2950 2920 TOC) 8.2	ity (cm) Si	alinity S%	Clean I musel Dry 6	omments INITH BROW TINT Y PK. CREATINT J 5 gals. gallons fee
Gallons Remove 1 3 5 7 Total Gallons P Depth to Groun Sampling Meth Containers Use	dispose d pH 69 6.44 urged 5 dwater Before Sa od 150 dispose	FIELD M Temp (%) 55.6 58.8 57.7 ampling (below) 256ble ba	EASUREME Conductivi (micromhos/ 2060 2950 2920 TOC) 8.2 liter	ity (cm) Si	alinity S%	Clean I musel Dry 6	omments INITH BROW TINT Y PK. Ger TINT S gals. gallons

Project Name:	KOT		Well Num	ber: M	Wig	
Job No.:				ng Diameter:		
Sampled By:		<u></u>	Date:	12/3/96		
TOC Elevation:			Weather:	- partly c	loudy	
Depth to Casing Bot	tom (below TC	OC)				
Depth to Groundwa	er (below TOC	S)	3.22			feet
Feet of Water in We			700			feet
			668			feet
Depth to Groundwa	ter When 80%	Hecovered .	2.0		·	. gallons
Casing Volume (fee	t of water x Ca	asing DIA 2 x 0	0.0408) 2.0	i. Caundos	/ Other	
Depth Measuremer	nt Method	Tabe & I	Paste / Electro	inic Sounder /	Other	
Free Product						
Purge Method	di 50050	she bai	ler			
				Λ.		
	'			fas	st pechi	nge
	·		EASUREMENTS	fas	st pechic	nge
		FIELD M	EASUREMENTS Conductivity	,	0	
Gallons Removed	pН	FIELD M	EASUREMENTS Conductivity	Fast	0	
Gallons Removed	рН 8-04_	FIELD M	Conductivity (micromhos/cm)	,	Cor	mments ada 4
Gallons Removed	рН 8-04 7.59	FIELD M F Temp (°c) 62-2 64-6	Conductivity (micromhos/cm) 878 784	,	Cor	mments ada 4
Gallons Removed O Z 4	pH 8-04 7-59 7-31	FIELD M F Temp (°°) 62-2 64-6 64-2	Conductivity (micromhos/cm)	,	Cor	mments ada 4
Gallons Removed O Z 4	pH 8.04 7.59 7.31 7.23	FIELD M F Temp (°2) 62-2 64-6 64-2	Conductivity (micromhos/cm) 278 784 767	,	Cor	mments ada 4
Gallons Removed O Z 4	pH 8-04 7-59 7-31	FIELD M F Temp (°°) 62-2 64-6 64-2	Conductivity (micromhos/cm) 878 784 767 895	,	Cor	mments strong oder s streng
Gallons Removed O Z 4	pH 8.04 7.59 7.31 7.23 7.06	FIELD M F Temp (°2) 62-2 64-6 64-2	Conductivity (micromhos/cm) \$78 784 767 895 917	Salinity S%	Cor	mments shows odor sheen y gallons
Gallons Removed O Z 4 6 Total Gallons Purg	pH 8.04 7.59 7.31 7.23 7.06 ed 8	FIELD M F Temp (°e) 62-2 64-2 65-1 64-4	Conductivity (micromhos/cm) 878 784 767 895 917 TOC) 5.30	Salinity S%	Cor	mments strong oder 9 streng
Gallons Removed O Z 4 6 Total Gallons Purg	pH 8.04 7.59 7.31 7.23 7.06 ed 8	FIELD M F Temp (°e) 62-2 64-2 65-1 64-4	Conductivity (micromhos/cm) 878 784 767 895 917 TOC) 5.30	Salinity S%	Cor	mments shows odor sheen y gallons
Gallons Removed D Z 4 6 Total Gallons Purg Depth to Groundw: Sampling Method	pH	FIELD M F Temp (°e) 62-2 64-2 65-1 64-4	Conductivity (micromhos/cm) 878 784 767 895 917 TOC) 5.30	Salinity S%	Cor	mments shows odn 4 sheen gallons
Gallons Removed O Z 4 6 Total Gallons Purg	pH 8.04 7.59 7.31 7.23 7.06 ed 8	FIELD M Framp (°°) 62-2 64-2 65-1 64-4 mpling (below sposable	Conductivity (micromhos/cm) 878 784 767 895 917 TOC) 5.30	Salinity S%	Cor	mments shows odn * sheen
Gallons Removed D Z 4 6 Total Gallons Purg Depth to Groundw: Sampling Method	pH	FIELD M Framp (°°) 62-2 64-2 65-1 64-4 mpling (below sposable	Conductivity (micromhos/cm) 878 784 767 895 911 TOC) 5.30	Salinity S%	Cor	mments shows odn 4 sheen gallons
Gallons Removed D Z 4 G Total Gallons Purg Depth to Groundw: Sampling Method	pH	FIELD M F Temp (°e) 62-2 64-2 64-2 64-4 mpling (below sposable	Conductivity (micromhos/cm) 878 784 767 895 917 TOC) 5.30 bailer	Salinity S%	Con Chan	mments shows odn * sheen gallons feet

Project Name:	KOT	- 	Well Num	iber: Mu	<u>, </u>	
 Job No.:				ing Diameter:		
Sampled By:			Date:	12/3/96		
TOC Elevation:				putly c	loudy	-
Depth to Casing Botto	om (below TC)C)	19.50			feet
Depth to Groundwate	er (helow TOC	2)	4.64			feet
Feet of Water in Well			14.86			feet
Depth to Groundwate						feet
Casing Volume (feet	of water x Ca	asing DIA 2 x 0	1.0408)	onic Sounder	/ Other	_ gallons
Depth Measurement		Tape & F	aste / Licon			
Free Product	none					
			1 JD /A			
Purge Method	dispos	in ble bar	(0)		o educator	
Purge Method	<u> dispos</u>		EASUREMENTS	Slow	recharge	_
		FIELD MI	EASUREMENTS Conductivity	ട്ടിയ Salinity S%	Recovered	mments.
Purge Method	pН	FIELD MI	EASUREMENTS Conductivity	SIDW	Recovered	-
	рН <u>7.73</u>	FIELD MI	Conductivity (micromhos/cm) 853 830	SIDW	Recovered	mments.
Gallons Removed	pH 7.73 8.13	FIELD MI F Temp (%) 58-9	Conductivity (micromhos/cm)	SIDW	Recovered	mments.
Gallons Removed 1 3	pH 7.73 8.13	FIELD MI F Temp (%) 58.9 62.8	Conductivity (micromhos/cm) 853 830 1866	SIDW	Conchean	mments 1/sheen strong
Gallons Removed 1 3	pH 7.73 8.13 7.41	FIELD MI F Temp (%) 58.9 62.8 63.3	Conductivity (micromhos/cm) 853 830 1866	SIDW	Conchean	mments.
Gallons Removed 1 3 5 7	pH 7.73 8.13 7.41 7.29 7.18	FIELD MI F Temp (%) 58.9 62.8 63.3	Conductivity (micromhos/cm) 853 830 1866	SIDW	Conchean	mments 1/sheen strong
Gallons Removed 1 3 5 7 9 Total Gallons Purger	PH 7.73 8.13 7.41 7.29 7.18	FIELD MI F Temp (%) 58.9 62.8 63.3 63.2	Conductivity (micromhos/cm) 853 830 1868 2300 2550	SIDW	Conchean	mments // sheen strong of
Gallons Removed 1 3 5 7 7 Total Gallons Purge	pH 7.73 8.13 7.41 7.24 7.18 d 9	FIELD MI F Temp (%) 58.9 62.8 63.3 63.2 61.9	Conductivity (micromhos/cm) 853 830 1866 2300 2550	SIDW	Conchean	mments J/sheen strong Dechesing gallons
Gallons Removed 1 3 5 7 9 Total Gallons Purger	pH 7.73 8.13 7.41 7.49 7.18 d 9 ter Before Sar	FIELD MI From (%) 58.9 62.8 63.3 63.2 61.9 mpling (below) 50.5066	Conductivity (micromhos/cm) 853 830 1866 2300 2550	SIDW	Conchean	mments J/sheen strong Dechesing gallons
Gallons Removed 1 3 5 7 7 Total Gallons Purge	pH 7.73 8.13 7.41 7.24 7.18 d 9	FIELD MI From (%) 58.9 62.8 63.3 63.2 61.9 mpling (below) 50.5066	Conductivity (micromhos/cm) 853 830 1866 2300 2550	SIDW	Conchean	mments J/sheen strong Dechesing gallons
Gallons Removed 1 3 5 7 7 7 Total Gallons Purger Depth to Groundwat Sampling Method	pH 7.73 8.13 7.41 7.49 7.18 d 9 ter Before Sar	FIELD MI From (%) 58.9 62.8 63.3 63.2 61.9 mpling (below) 50.5066	Conductivity (micromhos/cm) 853 830 1866 2300 2550	Salinity S%	Conchean	mments J/sheen of strong
Gallons Removed 1 3 5 7 7 7 Total Gallons Purger Depth to Groundwat Sampling Method	pH 7:73 8:13 7:41 7:24 7:18 d	FIELD MI Fromp (%) 58.9 62.8 63.3 63.2 61.9 mpling (below) 500 sable 1	Conductivity (micromhos/cm) 853 830 1866 2300 2550 TOC) liter	Salinity S%	Conchean	mments J/sheen strong Dechesing gallons

Project Name:	KOT	<u></u>	Well Nu	mber: M	lw-6	
Job Na.:	133,0	05		sing Diameter:		
Sampled By:	DWA			12[3 96		ļ
TOC Elevation:	 		Weathe	r: partly (rloudy	
						6
Depth to Casing Botto	om (below TC)C)				1
Depth to Groundwate	r (below TOC	S)		, 		
Feet of Water in Well						
Depth to Groundwate	r When 80%	Recovered .	7-27			feet
Casing Volume (feet	of water x Ca	sing DIA 2 x 0	(.0408)		· · ·	_ gallons
Denth Measurement	Method	Tape & F	Paste Electr	onic Sounder	/ Other	 }
Free Product	1/64" thin ei	ng in bail	er before par	ging - 1" coll	ected in	skimmy
Purge Method	disposa	ble bank	<u> </u>			
	•			slow.	pechaig.	e t)
		-	EASUREMENTS	,	(845()	
Gallons Removed	Hq	—————————————————————————————————————	Conductivity (micromhos/cm)	Salinity S%	Co	mments a cross of product
	7.32	63.0	1646	,	<u>dead</u>	Hong Oda
3	6.58	63.2	<u>1719</u>			
5	631	641	1809		Decrea	sing globs
7	6.26	63.3	2110			+
9	6-39	63.2	2200		<u> </u>	
Total Gallons Purged	9					gallons
Total Gallons Purged Depth to Groundwate	er Before Sar	npling (below ⁻	roc) <u>4.96</u> °	n 12/4/96@ 11:6	10q.m.	feet
Sampling Method _	- d	isposable	e bailer			
Containers Used	3		<u> </u>			<u>-</u>
Comunicio Coo	40 m		liter	pint		
			<u> </u>			PLATE
Carbonefooo	Cons	ultante		DATE	APP	ROVED
Subsurface		unamis	NUMBER ROL	CALE	Al C	

GROUNDWATER DEPTHS

Proiec	t Name:	•	KOT

Job No.: 133.005

Measured by: DWA

		•	Groundwater	
Well	Date	Time	Depth (feet)	Comments
			(1001)	
MW-1	12/2/96	(2:40	4.80	
MW-2		12:35	4.30	
MW-3		(2:50 .	4.84	and such a natural in well
MW-4.		12:25	3.22	2" product in skimmer - no measurable product in well 2 yours
MW-5		(2:30	4.64	Top of Product = Product thickness = 164 Riv
MW-60		12:15	3.96	Top of Product = Product thickness = 164 rain 1" " in skimmer " Santed = 1 VOA Collected
MW-7		1300	4.88	Concession
SCIMW-1		10:55	5.52	
SCIMW-2		1310	6.60	
SCIMW-3		11:35	5.18	
SCIMWY		12:55	2.09	
SCIMW-5		1330	4.95	
SelMW6		1320	7.04	
SEIMW-7		1345	4.95	
501 MW 8		11:15	5.39	
SCI MW-9		14:30	4.71	
5CIMW-10		11:50	5:15	·
SEIMWII		B1400	6.03	
SCIMW-12		1410	7.31	
FCIMW-13		11:20	5.91	
\$1MW-14		14:20	8.56	
SCI MW-15		1415	8.91	
SCIMW-16		1105	3.24	
SCIMW-17		1100	2.86	
SCIMW-18		1155	4.06	
ScIMW-19		=1355	3.54	
STMW-Z) V	1340	1.45	



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants

Analysis Method: CA LUFT (EPA 8015M)

Project#: 133.005

Prep Method:

EPA 5030

Location: KOT

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127645-001 MW-2	31271	12/04/96	12/05/96	12/05/96	
127645-002 MW-6	31271	12/04/96	12/06/96	12/06/96	

Matrix: Water

Analyte Diln Fac:	Units	127645-001 1	127645-002 20	
Gasoline	ug/L	<50	4700 YH	
Surrogate				
Trifluorotoluene Bromobenzene	%REC %REC	97 118	96 113	

Y: Sample exhibits fuel pattern which does not resemble standard

H: Heavier hydrocarbons than indicated standard

TVH2 - GC-04 RTX-1 FID

Sample Name: DL, 127645-002, 31271, 1:20, W FileName: G: \GC09\340\025.raw

: TVHBTXE

Start Time : 0.00 min Scale Factor: -1.0

End Time : 17.00 min

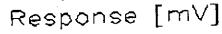
Plot Offset: 43 mV

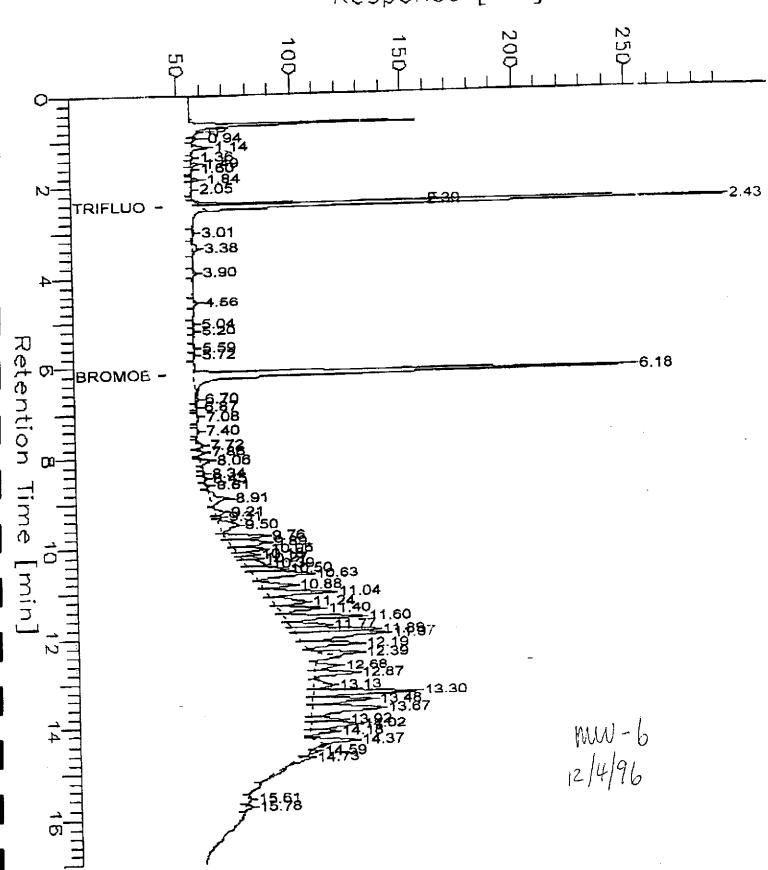
Sample #: 31271 Pa Pace : 12/6/96 03:46 AM Time of Injection: 12/6/96 03:27 AM

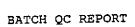
Low Point : 43.06 mV Plot Scale: 250.0 mV

High Point : 293.36 mV

Page 1 of 1







Curtis & Tompkins, Ltd.
Page 1 of 1

		TVH-Tota	al Volatile F	lydrocarbons	
Client: Project#: Location:		nsultants	.,	Analysis Method: Prep Method:	CA LUFT (EPA 8015M) EPA 5030
			METHOD BLA	NK	
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1			Prep Date: Analysis Date:	12/05/96 12/05/96

MB Lab ID: QC35897

Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene Bromobenzene	94 108	69-120 70-122



BATCH QC REPORT

rap #: 12/		Dividit &o imidia	
	T	VH-Total Volatile Hydrocarbons	
Client: Project#: Location:	Subsurface Consultant 133.005	Analysis Method: Prep Method:	CA LUFT (EPA 8015M) EPA 5030
		LABORATORY CONTROL SAMPLE	
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1	Prep Date: Analysis Date:	12/05/96 12/05/96

LCS Lab ID: QC35895

Analyte	Result Spike Added		%Rec #	Limits	
Gasoline	2163	2000	108	80-120	
Surrogate	%Rec	Limits			
Trifluorotoluene Bromobenzene	118 119				

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 1 outside limits

Lab #: 1276	545	BATCH QC REPORT	Page 1 of 1
	TVH-Tot	al Volatile Hydrocarbons	
		Analysis Method: Prep Method:	CA LUFT (EPA 8015M) EPA 5030
,, ,,	MATRIX SF	PIKE/MATRIX SPIKE DUPLICATE	
Field ID: Lab ID: Matrix: Batch#: Units: Diln Fac:	ZZZZZZ 127615-001 Water 31271 ug/L 1	Sample Date: Received Date: Prep Date: Analysis Date:	12/02/96 12/02/96 12/05/96 12/05/96

MS Lab ID: QC35937

MD Dab ib. Access.						
Analyte	Spike Added	Sample	MS	%Rec #	Limits	
Gasoline	2000	<50	2169	109	75-125	
Surrogate	%Rec	Limits				
Trifluorotoluene Bromobenzene	113 122	69-120 70-122				

MSD Lab ID: QC35938

Spike Added	MSD	%Rec #	Limits	RPD #	Limit
2000	2137	107	75-125	2	20
%Rec	Limits				
112 122					
	2000 %Rec 112	2000 2137 *Rec Limit 112 69-13	2000 2137 107 Rec Limits 112 69-120	\$\frac{2000}{2137} \frac{107}{107} \frac{75-125}{75-125} \\ \frac{112}{12} \frac{69-120}{120}	2000 2137 107 75-125 2 Rec Limits 112 69-120

Column to be used to flag recovery and RPD values with an asterisk * Values outside of QC limits

RPD: O out of 1 outside limits Spike Recovery: O out of 2 outside limits



TEH-Tot Ext Hydrocarbons

Subsurface Consultants Client:

Project#: 133.005

Location: KOT

Analysis Method: CA LUFT (EPA 8015M)

Prep Method:

EPA 3520

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127645-001 MW-2 127645-002 MW-6	31334 31334		,,	12/11/96 12/20/96	

Matrix: Water

Analyte Diln Fac:	Units	127645-0 1	001	1276 45 -	002	
Diesel C12-C22 Motor Oil C22-C50	ug/L ug/L	1600 1000		140000 7300	YL	
Surrogate						
Hexacosane	%REC	85			DO	

DO: Surrogate diluted out

Y: Sample exhibits fuel pattern which does not resemble standard

L: Lighter hydrocarbons than indicated standard

Chromatogram

Sample Name : 127645,001,31334

: G:\GC13\CHA\345A031.RAW

: ATEH341.MTH Method

Start Tim⊷ : 0.01 min Gdal⇔ Pactor:

End Time : 31.85 mln

Plot Offset: 23 mV

Sample #: 31334 Date : 12/20/96 04:25 PM

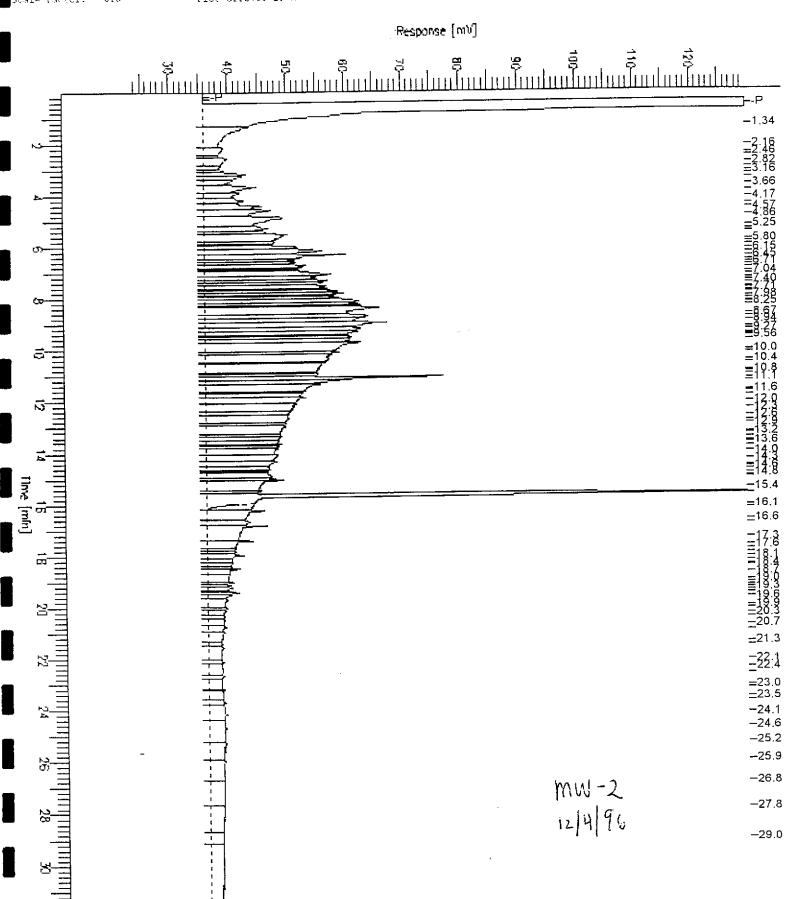
Time of Injection: 12/11/96 02:41 AM

Low Point : 23-45 mV

High Point : 129.85 mV

Page 1 of 1

Plot Scale: 106.4 mV



GC15 Channel B TEH

Sample Name : 127645-882,31334

; G:\GC15\CH8\3558007.RAW

: 8345TEH.MTH Method

Start Time : 0.01 min

Plot Offset: -7 mV

-HR

End Time : 31.91 mln

Sample #: 31334

Date : 12/20/96 03:24 PM

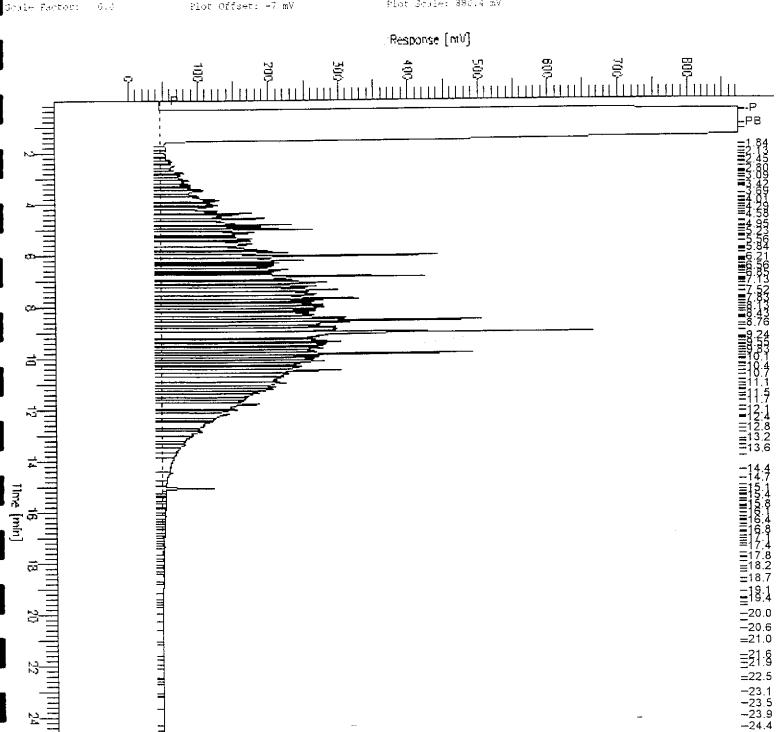
Time of Injection: 12/20/98 01:07 PM Low Point: -6.90 mV High Poi

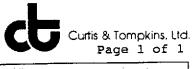
High Point : 973.49 mV

Pag⇔ 1 of 1

mw-6 12/4/96

Plot Scale: 880.4 mV



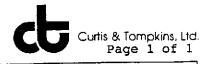


BATCH QC REPORT

.ap #: 14/5	343				
			TEH-Tot Ext	Hydrocarbons	
Client: Project#: Location:	Subsurface 133.005	Consultants	·	Analysis Method: Prep Method:	CA LUFT (EPA 8015M) EPA 3520
<u> </u>			METHOL	BLANK	
Matrix: Batch#: Units: Diln Fac:	Water 31334 ug/L 1			Prep Date: Analysis Date:	12/09/96 12/18/96

MB Lab ID: QC36154

···· · · ·				
Analyte	Result			
Diesel C12-C22 Motor Oil C22-C50	<50 <250			
Surrogate	%Rec	Recovery Limits		
	106	60-140		
Hexacosane				



BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Subsurface Consultants Client:

Project#: 133.005

Location: KOT

Analysis Method: CA LUFT (EPA 8015M)

Prep Method:

EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Water Matrix: Batch#: 31334

Diln Fac: 1

ug/L

Units:

Prep Date:

12/09/96

12/18/96 Analysis Date:

BS Lab ID: QC36155

Analyte	Spike Added	BS %Rec #	Limits
Diesel C12-C22	2475 2362	95	60-140
Surrogate	%Rec Li	mits	
Hexacosane	119 60)-140	

BSD Lab ID: QC36156

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C12-C22	2475	2308	93	60-140	2	35
Surrogate	%Rec	Limits				
Hexacosane	120	60-140				

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits Spike Recovery: 0 out of 2 outside limits



BTXE

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: EPA 8020

Prep Method: EPA 5030

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127645-001 MW-2 127645-002 MW-6	31271 31271		12/05/96 12/06/96		

Matrix: Water

Analyte Diln Fac:	Units	127645-001 1	127645 - 002	
Benzene	ug/L	<0.5	19	
Toluene	ug/L	<0.5	11	
Ethylbenzene	ug/L	<0.5	<10	
m,p-Xylenes	ug/L	<0.5	<10	
o-Xylene	ug/L	<0.5	<10	
Surrogate		-		
Trifluorotoluene	%REC	94	93	
Bromobenzene	%REC	100	101	



BATCH QC REPORT

e enfoye per ek jir Ne yayay Ashiri tu		BTXE	
Client: Project#: Location:		Analysis Prep Meth	Method: EPA 8020 od: EPA 5030
		METHOD BLANK	
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1	Prep Date Analysis	: 12/05/96 Date: 12/05/96

TO Dan in Kocoo.		
Analyte	Result	
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	<0.5 <0.5 <0.5 <0.5 <0.5	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene Bromobenzene	91 88	43-114 47-112

BATCH QC REPORT

BTXB								
Client: Project#: Location:		Analysis Metho Prep Method:	EPA 5030					
	L.	ABORATORY CONTROL SAMPLE						
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1	Prep Date: Analysis Date:	12/05/96 12/05/96					

LCS Lab ID: QC35896

Analyte	Result	Spike Added	%Rec #	Limits
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	18.7 18.6 22.4 41.8 21.3	20 20 20 40 20	94 93 112 105 107	80-120 80-120 80-120 80-120 80-120
Surrogate	%Rec	Limits		
Trifluorotoluene Bromobenzene	93 94	43-114 47-112		

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 5 outside limits

								\ d =	tb"	4)											PΛ	GE	=			C)F			
CHAIN OF CU	STODY FOR	M					/	0	`												Γ			VALY	sis i	REQL	JESTI	ED		1
PROJECT NAME: _ JOB NUMBER: PROJECT CONTAC SAMPLED BY:	Kot 133,005	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	/Sepi A	lexa	des	LAB: TURI REQ	NARC UEST	DUNI	 D: _ BY:	_dr	is: A	-t lori	omp mat) Ve	.5 244								e thota oil							
LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	WATER SOIL WASTE	TRIX		PINT	INERS		,	SER	VED	ONE	MONT	H DA	SAMI	PLIN YEA	-		TIM	E	- Sarca	NOTES 1000	1VH/151XE	七年の日本の							
	MW-Z	X	AIA	3		F	5	K = K	1	× X	Z	1 2	0	4	9		1		300			M	K					<u> </u>	-	-
	MW-6	X .		3				-																					<u>-</u>	
RELEASED BY: (Sig	inaluro) DA	TE / TIME	PECEIVE	D BY:	(Signa	Noo	ne	2/1	ATE /	4:15	pn	col	MMEN	NTS (& NC)TES	s: *	F - R	Thi Lel	5 } }	sa wi PE	.m/	ple P	iod	a5 ud	fal	kon	+-	Rou	
RELEASED BY: (SIGNED BY: (SIGN	gnalure) D/	ATE / TIME	RECEIVE	D BY:	(Signa	ature)			DATE				S1	1t)SI	TRE	FFT	SI	IITE	201	1. C)AK	LAI	111 ND, C	CALII	FOR	S,	<u>In</u>	.C.	
RELEASED BY: (S	9,,0,0,0,	1								1		1				(טוט,	, 20	J U-1	- '	٠, ٢									



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 9471O, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants 3736 Mt. Diablo Blvd. Ste. 200 Layfayette, CA 94549

Date: 27-DEC-96

Lab Job Number: 127750 Project ID: 133.005

Location: KOT

Reviewed by:

Reviewed by:

This package may be reproduced only in its entirety.



TVH-Total Volatile Hydrocarbons

Subsurface Consultants

Project#: 133.005 Location: KOT

Prep Method:

Analysis Method: CA LUFT (EPA 8015M)

EPA 5030

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127750-001 MW-3	31433	12/13/96	12/16/96	12/16/96	

Matrix: Water

Analyte Diln Fac:	Units	127750-001	
Gasoline	ug/L	<50	
Surrogate			
Trifluorotoluene	%REC	99	
Bromobenzene	%REC	72	

BATCH QC REPORT



	TVH	Total Volatile	Hydrocarbons	
Client: Project#: Location:			Analysis Method: Prep Method:	CA LUFT (EPA 8015M) EPA 5030
		METHOD E	BLANK	
Matrix: Batch#: Units: Diln Fac:	Water 31433 ug/L 1		Prep Date: Analysis Date:	12/16/96 12/16/96

Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene Bromobenzene	106 79	65-135 65-135



BATCH QC REPORT

ua miga gira sa wa TVH-Total Volatile Hydrocarbons Analysis Method: CA LUFT (EPA 8015M) Subsurface Consultants Client: EPA 5030 Prep Method: Project#: 133.005 Location: KOT LABORATORY CONTROL SAMPLE 12/16/96 Prep Date: Matrix: Water 12/16/96 Analysis Date: Batch#: 31433 ug/L Units: Diln Fac: 1

LCS Lab ID: QC36512

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline	1879	2000	94	75-125
Surrogate	%Rec	Limits		
Trifluorotoluene Bromobenzene	102 98	65 - 135 65-135		

[#] Column to be used to flag recovery and RPD values with an asterisk

^{*} Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits



TEH-Tot Ext Hydrocarbons

Subsurface Consultants Client:

Project#: 133.005 Location: KOT

Analysis Method: CA LUFT (EPA 8015M)

EPA 3520 Prep Method:

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127750-001 MW-3	31438	12/13/96	12/16/96	12/20/96	

Matrix: Water

Analyte Diln Fac:	Units	127750-001 1	
Diesel C12-C22 Motor Oil C22-C50	ug/L ug/L	580 <250	
Surrogate			
Hexacosane	%REC	87	

Chromatogram

Sampl= Name : 127750-001,31438

: G:\GC11\CHB\353B018A.RAW

BTEH342.MTH thod

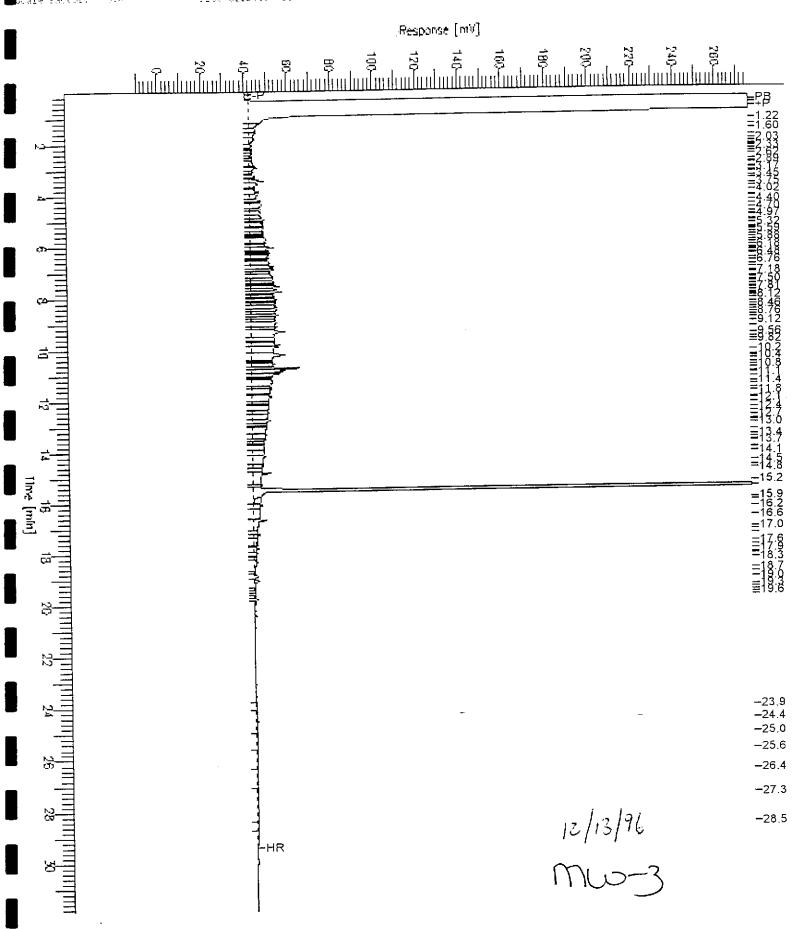
art Time : ale Factor: : 0.01 mln

: 31.91 min End Time 91ot Offset: -11 mV

Plon Grale: 287.0 mV

High Point : 277.77 mW

8ade 1 of 1





BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants Analysis Method: CA LUFT (EPA 8015M)
Project#: 133.005 Prep Method: EPA 3520

Location: KOT

METHOD BLANK

Matrix: Water Prep Date: 12/16/96
Batch#: 31438 Analysis Date: 12/20/96

Units: ug/L
Diln Fac: 1

Result	
<50 <250	
%Rec	Recovery Limits
90	60-140
	<50 <250 %Rec



BATCH QC REPORT

		TEH-T	ot Ext Hydrocarbo	ons	
Client: Project#: Location:	133.005	Consultants	Analy Prep	ysis Method: Method:	CA LUFT (EPA 8015M EPA 3520
		BLANK SPIK	E/BLANK SPIKE DUI	PLICATE	
Matrix: Batch#: Units: Diln Fac:	Water 31438 ug/L 1		Prep Analy	Date: ysis Date:	12/16/96 12/20/96

BS Lab ID: QC36535

BS Lab ID: QC30333				Limits
Analyte	Spike Adde	ed BS	%Rec #	- DIMITOS
Diesel C12-C22	2475	2295	93	60-140
Surrogate	%Rec	Limits		
Hexacosane	101	60-140		

BSD Lab ID: QC36536

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C12-C22	2475	1965	79	60-140	15	35
Surrogate	%Rec	Limi	ts			
Hexacosane	83	60-1	40		<u> </u>	

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits



BTXE

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: EPA 8020

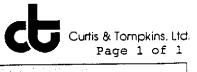
Prep Method: EPA 5030

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127750-001 MW-3	31433	12/13/96	12/16/96	12/16/96	

Matrix: Water

Analyte Diln Fac:	Units	127750-001 1	
Benzene	ug/L	<0.5	
Toluene	ug/L	<0.5	
Ethylbenzene	ug/L	<0.5	
m,p-Xylenes	ug/L	<0.5	
o-Xylene	ug/L	<0.5	
Surrogate			
Trifluorotoluene	%REC	98	
Bromobenzene	%REC	93	

BATCH QC REPORT



Lap #: 12/	/50		5	20				
				BTXE				
Client: Project#: Location:	Subsurface (133.005 KOT	Consultants			Analys Prep M	is Method: ethod:	EPA EPA	8020 5030
· · · · · · · · · · · · · · · · · · ·			MET	HOD BLAM	1K	·		
Matrix: Batch#: Units: Diln Fac:	Water 31433 ug/L 1				Prep D Analys	ate: is Date:		16/96 16/96

Analyte	Result	
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	<0.5 <0.5 <0.5 <0.5 <0.5	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene Bromobenzene	107 103	58-130 62-131



BATCH QC REPORT

		BTXE
Client: Project#: Location:	Subsurface Consultants 133.005 KOT	Analysis Method: EPA 8020 Prep Method: EPA 5030
The second	LABORATORY	CONTROL SAMPLE
Matrix: Batch#: Units: Diln Fac:	Water 31433 ug/L 1	Prep Date: 12/16/96 Analysis Date: 12/16/96

LCS Lab ID: QC36513

Analyte	Result	Spike Added	%Rec #	Limits
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	17.7 17.7 17.9 36.1 17.7	20 20 20 40 20	89 89 90 90 89	80-120 80-120 80-120 80-120 80-120
Surrogate	%Rec	Limits		
Trifluorotoluene Bromobenzene	105 101	58-130 62-131		

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 5 outside limits

CHAIN OF CU		RM											,	C	\ \	7	7	<u> </u>) (J							PΛ	GE		IALY	/SIS		OF	TED	 7
PROJECT NAME: OB NUMBER: PROJECT CONTAC SAMPLED BY:	133.000	s Vers udi	ies er	· / S	Sen.	ei us 1	4(ex	au	des	L. T	AB: _ URNA	RO ST	UN ED	Cur D: . BY:	zhi	s 4	-To	mp lok	iki ma De	nø (:15	e R	-			'			T Keta						
LADORATORY	SCI			MA	TRIX			cc	ONT/	AINE	ERS			ETHO SEF		,			Si	¥МР	LING	3 DA	TE				/ATLE		17# (A C C C C C C C C C C C C C C C C C C						
LABORATORY I.D. NUMBER	SAMPLE NUMBER	WATER	SOIL	WASTE	AIR	:	VOA	HELL	PINT	17.BE		를 로	H2SQ4	HNO3	ICE	NONE	MON	тн	DAY	<u>/</u>	YEAI	۹ -	1	IME	1	NOTES	10/02		7.	$\frac{1}{1}$	-				
	MW-3	X					3	1				X -			X		1	2		3 (76	2 1	, 3	3 0	0		\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\							
RELEASED BY: (Sign Dem Our RELEASED BY: (Sign	Janly 12/13/	[F / T	IME .30		REC	EIVEC) BY:	1819 Wh	/ مر	K	<u> </u>	,		TE/				MM	ENT	S &	тои	ES:													
RELEASED BY: (Sign		TE/T				EIVE								ATE /								REE	T, S	UIT	E 20	01,	OA	ΚL	AND), C		OR	S,		•



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants 3736 Mt. Diablo Blvd. Ste. 200 Layfayette, CA 94549

Date: 19-DEC-96

Lab Job Number: 127630

Project ID: 133.005

Location: KOT

Reviewed by:

Reviewed by:

This package may be reproduced only in its entirety.



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: CA LUFT (EPA 8015M)

Prep Method: EPA 5030

Sample # Client	ID Batch #	Sampled	Extracted	Analyzed	Moisture
127630-001 MW-4 127630-002 MW-5	31271 31271		12/06/96 12/05/96		

Matrix: Water

Analyte Diln Fac:	Units	127630-001	127630-002 1	
Gasoline	ug/L	1500 YH	140 YH	
Surrogate				
Trifluorotoluene Bromobenzene	%REC %REC	98 119	97 117	

Y: Sample exhibits fuel pattern which does not resemble standard

H: Heavier hydrocarbons than indicated standard

TVH2 - GC-04 RTX-1 FID

410 Sample 1: 31271 Sampla Name : 5,127630-001,31271,1,W FileName : 5:\GC04\340J02Z.raw Dace : 12/6/96 02:22 AH Time of Injustion: 12/6/96 02:05 AM FileName High Point 1 292,49 -- 1 : TVHBTXE Low Point : 42.88 mV Method End Time : 17.00 min Start Time : 0.00 min Scale Factor: -1.0 Plot Scale: 250.0 mV Plot Offset: 43 mV Response [mV] -0.04 35 49.60 -1.84 TRIFLUO -3.02.84 3.33 3.57 3.79 -5.03 5.20 5.6D 6.18 BROMOB -7:998:89 -7.39 7.86 8.05 70 -8.33.44 8.61 8.90 9.22 **--**10.3 -10.83¹⁹ 11.60 11.85 12.39 133434 14.43 mw-4 12/3/96 16.46

TVH2 - GC-04 RTX-1 FID

Page 1 of 1 Sample #: 31271 Date : 12/5/96 08:18 PM Sample Name : 5,127630-002,31271,1,W Filt:Name : G:\GC04\340J009.raw Time of Injection: 12/5/96 38:01 PM High Point - 2012 11 11 Method : TVHSTXE scart Time : 0.00 min Low Point : 41.51 mV End Time : 17.00 min Plot Scale: 250.0 mV Plon Offset: 42 mV Scale Factor: -1.0 Response [mV] LΓ [U TRIFLUO -2.84 3.39 4.57 5.0421 Retention Time 5.60 -6.19 BROMOB -8.88 7.14 7.40 .787 8.06 8.91 12.41 12.72 -13.36 -13.67 NW-5 12/3/96

-16.46

BATCH QC REPORT



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants

Project#: 133.005

Location: KOT

Prep Method: EPA 5030

Analysis Method: CA LUFT (EPA 8015M)

METHOD BLANK

Matrix: Water

Batch#: 31271 Units: ug/L Diln Fac: 1

Prep Date:

12/05/96

Analysis Date: 12/05/96

· · · · · · · · · · · · · · · · · · ·	
Result	
<50	
%Rec	Recovery Limits
94 108	69-120 70-122
	<50 %Rec 94



Tab #: 127630

BATCH QC REPORT

		Total Volatile Hydrocarbons	GR THEM (PDA ONIEW
Client: Project#: Location:	Subsurface Consultants 133.005 KOT	Analysis Method: Prep Method:	CA LUFT (EPA 8015M EPA 5030
	LA	ABORATORY CONTROL SAMPLE	
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1	Prep Date: Analysis Date:	12/05/96 12/05/96

LCS Lab ID: QC35895

							
Analyte	Result	Spike Added	%Rec #	Limits			
Gasoline	2163	2000	108	80-120			
Surrogate	*Rec	Limits					
Trifluorotoluene Bromobenzene	118 119	69-120 70-122					

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 1 outside limits

BATCH QC REPORT Lab #: 127630

along the Market Control		an-legic Method:	CA LUFT (EPA 8015M
Client: Project#: Location:	Subsurface Consultants 133.005 KOT	Prep Method:	EPA 5030
	MATRIX S	PIKE/MATRIX SPIKE DUPLICATE	
Field ID: Lab ID: Matrix: Batch#: Units: Diln Fac:	127615-001 Water 31271 ug/L	Sample Date: Received Date: Prep Date: Analysis Date:	12/02/96 12/02/96 12/05/96 12/05/96

MS Lab ID: QC35937

MS Lab ID: QC35937	Spike Added	Sample	MS	%Rec #	Limits
Analyte Gasoline	2000	<50	2169	109	75-125
Surrogate	%Rec	Limits			
Trifluorotoluene Bromobenzene	113 122	69-120 70-122			··-

MSD Lab ID: QC35938

MSD Lab ID: QC35936			0.5 #	Limits	RPD #	Limit
Analyte	Spike Added	MSD	TREC #	TIME CO		
Gasoline	2000	2137	107	75-125	2	20
Surrogate	%Rec	Limit	s			
Trifluorotoluene Bromobenzene	112 122	69-12 70-12				

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits



TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants

Project#: 133.005 Location: KOT Analysis Method: CA LUFT (EPA 8015M)

Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
127630-001 127630-002		31334 31334		12/09/96 12/09/96	12/18/96 12/18/96	

Matrix: Water

Analyte Diln Fac:	Units	127630-001 3	127630-002 1	
Diesel C12-C22 Motor Oil C22-C50	ug/L ug/L	13000 2000 YL	13000 1900 YL	
Surrogate				
Hexacosane	%REC	107	107	·····

Y: Sample exhibits fuel pattern which does not resemble standard

L: Lighter hydrocarbons than indicated standard

Chromatogram

uncle Name : 127630-001,381334

: G:\GCII\CHB\3538016.RAW FilhNam⊷

: STEH342.MTH ethod

act Time : 0.00 min

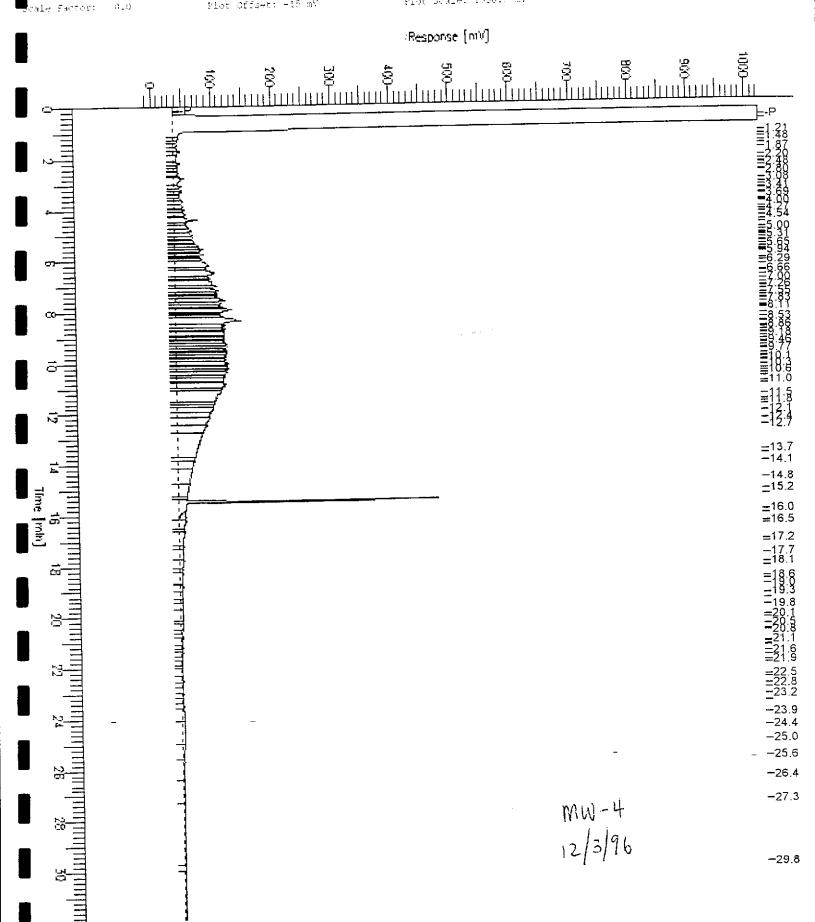
End Time : 31.90 a Plot Offset: -15 mV : 31.90 min

Sample #: 31x34 Date : 12/19/96 | 15:11 1M

Time of Injection: 12/19/98 Low Point : -14.31 mV Flot Scale: 1036.F mV 106:45 PM

High Point : 1014.03 mV

Page 1 of 1



Chromatogram

Sample Name : 127630-002,31334

: G:\GC11\CHB\353B009.RAW FileName

: BTEH342.MTH tart Time

: 31.90 min £nd Time -: 0.00 min Plot Offset: -16 mV 0.0

Gampl→ #: 31334 Date : 12/18/96 -03:22 PM

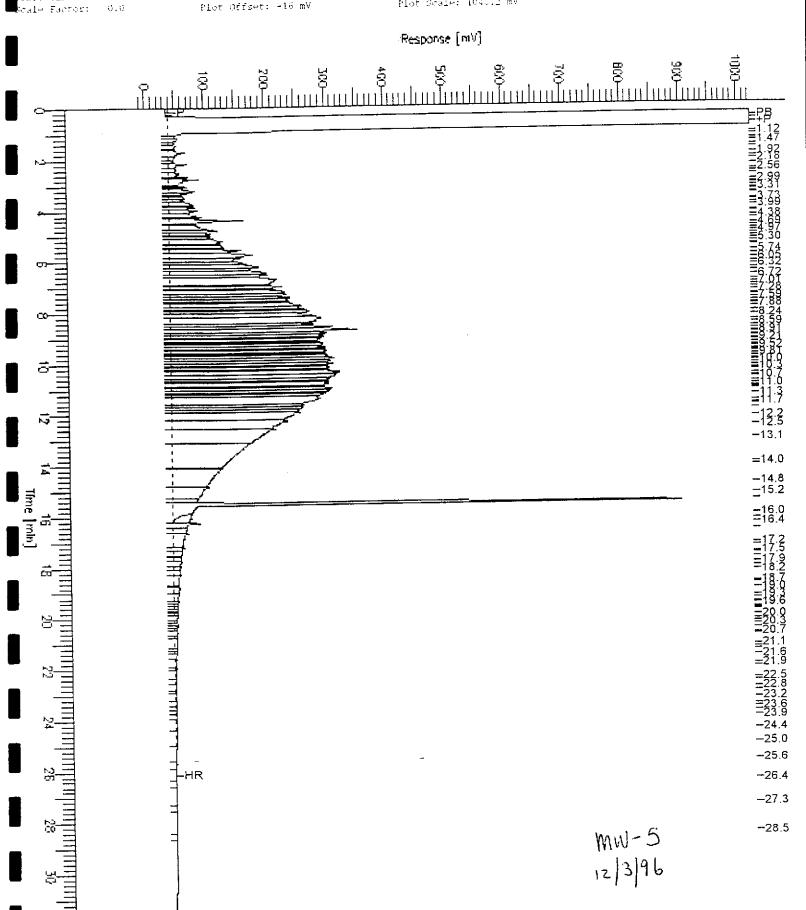
Time of Injection: 12/18/96 102:17 PM

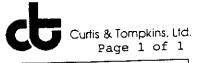
Low Point : -16.25 mV

Plot Scale: 1040.1 mV

High Point : 1024.55 mV

Page 1 of 1





BATCH QC REPORT

.ab #: 1276	530		BATCH QC F	REPORT	
		T	EH-Tot Ext Hy	drocarbons	
Client: Project#: Location:	133.005	Consultants		Analysis Method: Prep Method:	CA LUFT (EPA 8015M) EPA 3520
			METHOD 1	BLANK	
Matrix: Batch#: Units: Diln Fac:	Water 31334 ug/L 1			Prep Date: Analysis Date:	12/09/96 12/18/96

B Lab ID: QC36154		
Analyte	Result	
Diesel C12-C22 Motor Oil C22-C50	<50 <250	
	%Rec	Recovery Limits
Surrogate		60-140
Hexacosane	106	<u> </u>



BATCH QC REPORT

TEH-Tot Ext Hydrocarbons Analysis Method: CA LUFT (EPA 8015M) Subsurface Consultants Client: Prep Method: EPA 3520 Project#: 133.005 Location: KOT BLANK SPIKE/BLANK SPIKE DUPLICATE 12/09/96 Prep Date: Water Matrix: 12/18/96 Analysis Date: Batch#: 31334 Units: ug/L

BS Lab ID: QC36155

Diln Fac: 1

Spike Added	BS	%Rec	#	Limits
2475 236	2	95		60-140
%Rec L	imits			<u></u>
119 6	0-140			
	2475 236 %Rec L	2475 2362 %Rec Limits	2475 2362 95 %Rec Limits	2475 2362 95 Rec Limits

BSD Lab ID: QC36156

Analyte	Spike Added BSD	%Rec #	Limits	RPD #	Limit
Diesel C12-C22	2475 2308	93	60-140	2	35
Surrogate	%Rec L	imits			
Hexacosane	120 6	0-140			

Column to be used to flag recovery and RPD values with an asterisk * Values outside of QC limits
RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits



BTXE

Client: Subsurface Consultants

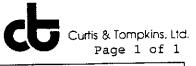
Project#: 133.005 Location: KOT Analysis Method: EPA 8020

Prep Method: EPA 5030

Sample # Client ID	Batch #	Sampled	Extracted	Analyzed Moisture
127630-001 MW-4	31271	12/03/96	12/06/96	12/06/96
127630-002 MW-5	31271	12/03/96	12/05/96	12/05/96

Matrix: Water

Analyte Diln Fac:	Units	127630-001 1	127630-002	
Benzene	ug/L	120	1.5	
Toluene	ug/L	0.9	<0.5	
Ethylbenzene	ug/L	33	<0.5	
m,p-Xylenes	ug/L	22	2.6	
o-Xylene	ug/L	<0.5	<0.5	
Surrogate				
Trifluorotoluene	%REC	96	93	
Bromobenzene	%REC	109	102	



BATCH QC REPORT

Jab #: 1276	530		DATON QU :===		
			BTXE		
Client: Project#: Location:	Subsurface Con 133.005 KOT	nsultants	. A	nalysis Method: rep Method:	EPA 8020 EPA 5030
			METHOD BLANK		:
Matrix: Batch#: Units: Diln Fac:	Water 31271 ug/L 1		F P	Prep Date: analysis Date:	12/05/96 12/05/96

Tap In: Öcasosi		
nalyte	Result	
Benzene Coluene Sthylbenzene n,p-Xylenes p-Xylene	<0.5 <0.5 <0.5 <0.5 <0.5	
Surrogate	%Rec	Recovery Limits
Crifluorotoluene	91 88	 43-114 47-112
Prifituorocoluene Bromobenzene	88	 <u>.</u>



BATCH QC REPORT

Lab #: 127630 BTXE Analysis Method: EPA 8020 Subsurface Consultants Client: EPA 5030 Prep Method: Project#: 133.005 Location: KOT LABORATORY CONTROL SAMPLE 12/05/96 Prep Date: Water 12/05/96 Matrix: Analysis Date: Batch#: 31271 ug/L Units: Diln Fac: 1

LCS Lab ID: QC35896

7C2 FBD ID: GC22G2					
Analyte	Result	Spike Added	%Rec #	Limits	
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	18.7 18.6 22.4 41.8 21.3	20 20 20 40 20	94 93 112 105 107	80-120 80-120 80-120 80-120 80-120	
Surrogate	%Rec	Limits			
Trifluorotoluene Bromobenzene	93 94	43-114 47-112			
			ما ساد د د د د		

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

			10	2130		PAGE OF
CHAIN OF CUS	STODY FOR	RM.	V2	7630		ANALYSIS REQUESTED
PROJECT NAME: JOB NUMBER: PROJECT CONTACT SAMPLED BY:	KOT 133.005		LAB: <u>exander</u> TURNAF REQUE:			Olice to mote of
SAMPLED BY:	sci	MATRIX	CONTAINERS	METHOD PRESERVED	SAMPLING DATE	8
LABORATORY I.D. NUMBER	SAMPLE NUMBER	WATER SOIL WASTE AIR	VOA LITER TUBE	HCL H2SO4 HNO3 ICE NONE	ONTH DAY YEAR TIME	NOTES 7 TVH
- 1	MW-4 MW-5	X	3 1	X	1203961230	
RELEASED BY: (SIGNATURE) RELEASED BY: (SIGNATURE)	nature) D 12/3	196 20m. Da		DATE/TIME 12/3 3pm DATE/TIME	COMMENTS & NOTES: * This well	sample came from a with product in it- BEWARE!!
		DATE / TIME RECEI	VED BY: (Signature)	DATE / TIME	a lamentage (Concultante Inc

DATE / TIME

DATE / TIME

DATE / TIME

RECEIVED BY: (Signature)

RELEASED BY: (Signature)

RELEASED BY: (Signature)

Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607 (510) 268-0461 • FAX: 510-268-0137