



**Subsurface Consultants, Inc.**

ENVIRONMENTAL  
PROTECTION

93 FEB 18 PM 3:57

R. William Rudolph, P.E.  
President

February 6, 1998  
SCI 946.003

*Former Aerojet Pacific  
STED # 266*

Ms. Shirley Howkins  
c/o Mr. Gerald C. Smith  
Fitzgerald, Abbott & Beardsley LLP  
1221 Broadway, 21st Floor  
Oakland, California 94612-1837

**Groundwater Monitoring  
January 1998 Event  
2528 Adeline Street  
Oakland, California**

Dear Ms. Howkins:

This letter presents the results of the January 1998 semi-annual groundwater monitoring event for the referenced site. Groundwater monitoring has been performed as required by the Alameda County Health Care Services Agency (ACHCSA) due to the presence of petroleum hydrocarbons, heavy metals, and volatile organic compounds (VOCs) detected in groundwater beneath the site. ACHCSA has approved a reduction in the monitoring plan as documented in their letter dated December 31, 1997. The location of the site is shown on the attached Site Plan, Plate 1.

#### **GROUNDWATER SAMPLING**

On January 13, 1998, monitoring wells MW-1 and MW-2 were sampled. Prior to sampling, groundwater levels were measured in all site wells (MW-1, MW-2, and MW-3) with an electric well sounder. Monitoring wells MW-1 and MW-2 were first checked for the presence of free product. Groundwater was then purged from these two wells until pH, conductivity, and temperature had stabilized (a minimum of three well volumes). The wells were sampled with new disposable bailers after they had recovered to at least 80 percent of their initial water level. Purge water generated during sampling activities was stored onsite in 55-gallon drums for later disposal by others. The samples were retained in glass containers pre-cleaned by the supplier in accordance with EPA protocol. The containers were placed in an ice-filled cooler and remained iced until delivery to the analytical laboratory. The samples were accompanied by appropriate chain-of-custody documentation.

Ms. Shirley Howkins  
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## **ANALYTICAL TESTING**

Analytical testing was performed by Curtis & Tompkins, Ltd., a laboratory certified by the State of California Department of Health Services for hazardous waste and water testing. Samples were analyzed for the following:

1. Total volatile hydrocarbons (TVH) as gasoline and stoddard solvent by EPA 5030/8015,
2. Benzene, toluene, ethylbenzene, total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA 5030/8020A,
3. Total extractable hydrocarbons (TEH) as diesel and kerosene by EPA 3520/8015M, and
4. VOCs by EPA 5030/8260.

A summary of the current and previous analytical test results are presented in the attached Tables 1 through 3. Analytical test reports, chain-of-custody documents, and well sampling forms for this event are also attached.

## **SUMMARY OF TEST RESULTS**

The groundwater level data indicate the local groundwater flow direction is toward the northwest at a gradient of approximately 3 percent. Previous groundwater monitoring events have indicated groundwater flow directions are variable; however, the gradient remains relatively flat. A summary of groundwater level data is presented in the attached Table 4.

TVH and TEH were detected in monitoring well MW-1 during this event at concentrations similar to previous events that exhibited a similar groundwater flow direction (April 1996 and January 1997); TVH and TEH were not detected in MW-2. Benzene was detected in monitoring wells MW-1 and MW-2 at concentrations of 1.2 micrograms per liter ( $\mu\text{g/L}$ ) and 0.55  $\mu\text{g/L}$ , respectively. Toluene, ethylbenzene, and total xylenes were detected in monitoring well MW-1 at concentrations of 4.3  $\mu\text{g/L}$ , 16  $\mu\text{g/L}$ , and 0.95  $\mu\text{g/L}$ , respectively. Neither toluene, ethylbenzene nor total xylenes were detected in MW-2. MTBE was detected in both monitoring wells MW-1 and MW-2 at 13 and 15  $\mu\text{g/L}$ , respectively.

Concentrations of 1,1-dichloroethane, 1,1-dichloroethene, and 1,1,1-trichloroethane were detected in monitoring well MW-2 at values similar to previous events (70  $\mu\text{g/L}$ , 270  $\mu\text{g/L}$ , and 110  $\mu\text{g/L}$ , respectively).

## **CONCLUSIONS**

The analytical data indicate concentrations of TVH, TEH, BTEX, and VOCs detected at the site are relatively stable. With the exception of BTEX and MTBE compounds, VOCs have not been

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detected in monitoring well MW-1. Concentrations of MTBE in the groundwater samples collected from monitoring wells MW-1 and MW-2 are below current guidelines of 20 to 200 µg/L for drinking water as presented in the MTBE Briefing Paper, prepared by the California Environmental Protection Agency, dated June 2, 1997.

In accordance with the monitoring schedule, the next sampling event is scheduled for July 1998. Groundwater samples from MW-1 and MW-2 will be analyzed for TVH, TEH, BTEX, and MTBE. The sample collected from monitoring well MW-2 will also be analyzed for VOCs.

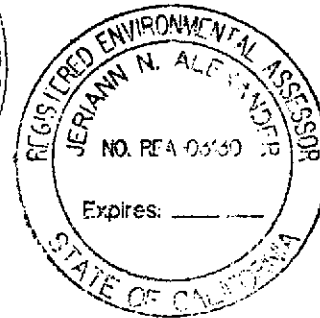
If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Meg Mendoza  
Project Engineer

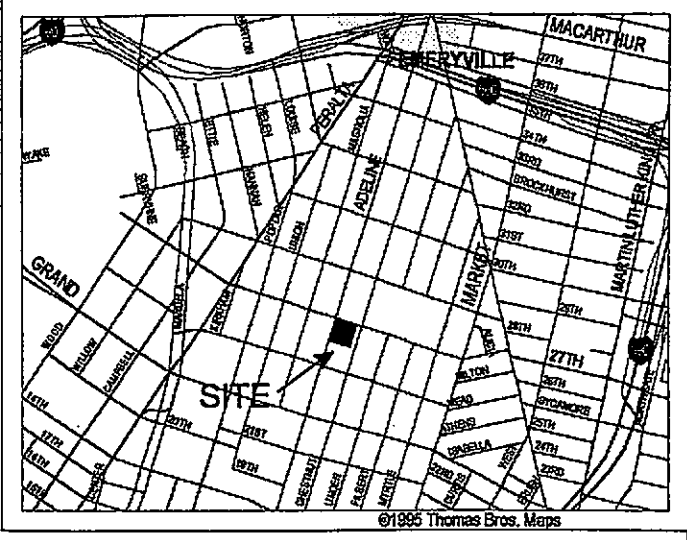
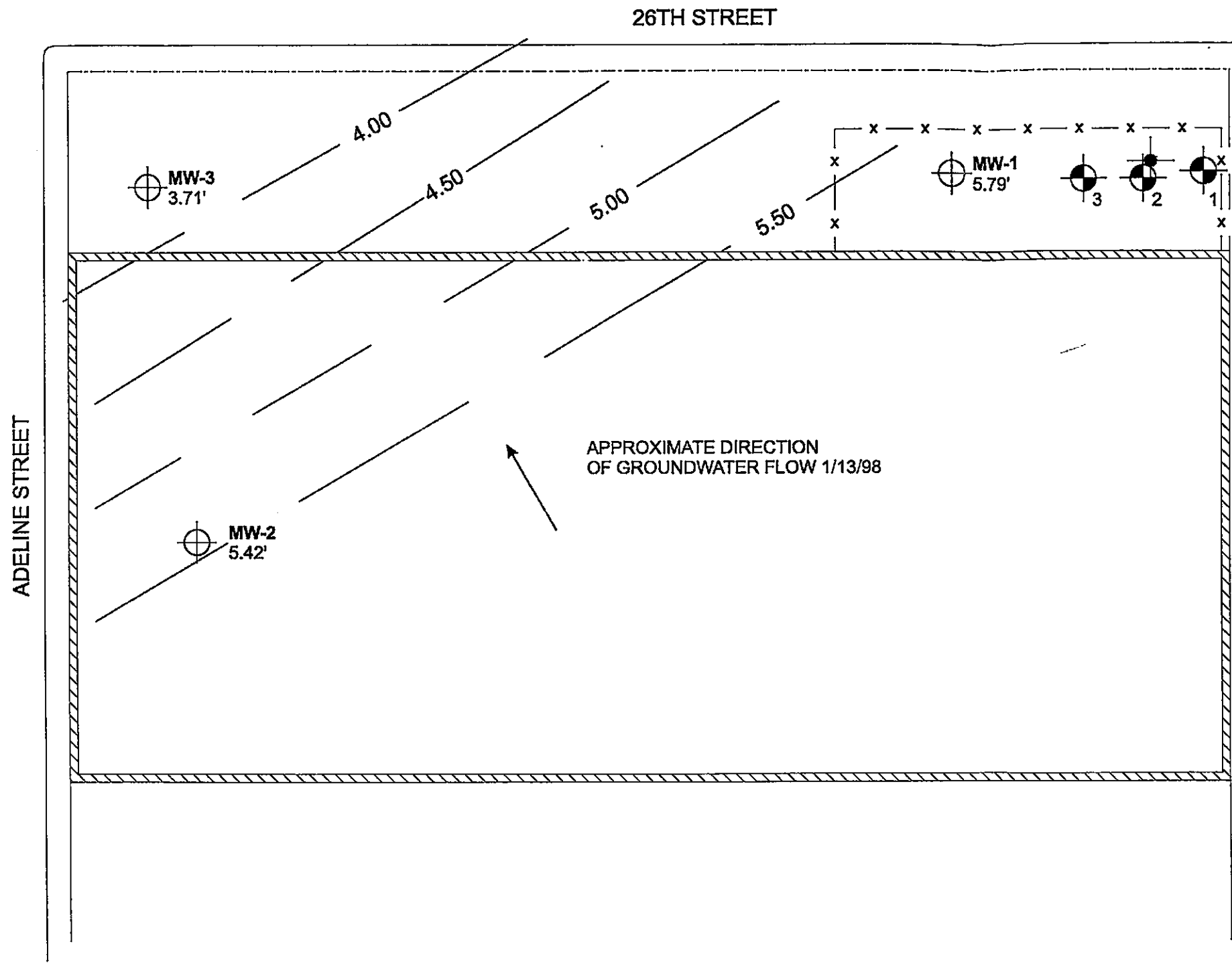
Jeriann N. Alexander, P.E., REA  
Civil Engineer 40469 (expires 3/31/99)  
Registered Environmental Assessor 03130 (exp. 6/30/98)



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- Attachments:
- Plate 1 - Site Plan
  - Table 1 - Petroleum Hydrocarbon Concentrations in Groundwater
  - Table 2 - Volatile Organic Compound Concentrations in Groundwater
  - Table 3 - Barium and Selenium Concentrations in Groundwater
  - Table 4 - Groundwater Elevation Data
  - Analytical Test Reports
  - Chain-of-Custody Documents
  - Well Sampling Forms

cc: Mr. Larry Seto  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577



VICINITY MAP

EXPLANATION	
	PROPERTY BOUNDARY
	FENCE
	EXISTING STRUCTURE
	BORING LOCATION
	MONITORING WELL LOCATION
	FORMER WELL LOCATION
	GROUNDWATER ELEVATION CONTOUR

ADELINE STREET

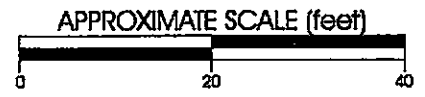
26TH STREET

APPROXIMATE DIRECTION OF GROUNDWATER FLOW 1/13/98

MW-3  
3.71'

MW-1  
5.79'

MW-2  
5.42'



**SCI** Subsurface Consultants, Inc.  
Geotechnical & Environmental Engineers

<b>SITE PLAN</b>		
2528 ADELINE STREET - OAKLAND, California		
JOB NUMBER 946.003	DATE 1/14/98	APPROVED <i>[Signature]</i>
		PLATE <b>1</b>

TABLE 1  
 PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER  
 2528 ADELINE STREET  
 OAKLAND, CALIFORNIA

Sample ID	Date	TVH <sup>1</sup>		TEH <sup>2</sup>		O&G (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
		as Gasoline (µg/L)	as Stoddard Solvent (µg/L)	as Diesel C12-C22 (µg/L)	as Kerosene C10-C16 (µg/L)						
Former Well (abandoned)	3/31/95	2800	**	1600*	**	37	--	--	--	--	--
MW-1	4/3/95	730	**	**	310*	5.8	--	--	--	--	--
	4/29/96	2000*	2000*	240*	220*	<5	<0.5	<0.5	65	16	--
	7/25/96	730*	750*	190*	180*	<5	<0.5	<0.5	26	<0.5	--
	10/31/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	1/9/97	1800	**	470*	550*	--	<0.5	<0.5	57	26	--
	7/31/97	700	610	290	360	--	<0.5	<0.5	2.7	<0.5	--
	1/13/98	1400*	2800	320*	330*	--	1.2C	4.3C	16	0.95	13C
MW-2	8/15/95	83*	**	<50	<50	<5	--	--	--	--	--
	4/29/96	75*	74*	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	7/25/96	110*	92*	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	10/31/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	1/9/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--
	7/31/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--
	1/13/98	<50	<50	<50	<50	--	0.55	<0.5	<0.5	<0.5	15
MW-3	8/15/95	<50	<50	<50	<50	<5	--	--	--	--	--
	4/29/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	7/25/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	10/31/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	1/9/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--
	7/31/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--

<sup>1</sup>Gasoline and stoddard solvent hydrocarbon ranges overlap

<sup>2</sup>Diesel and kerosene hydrocarbon ranges overlap

\* = Sample chromatogram does not resemble standard pattern

\*\* = Range not reported due to overlap of hydrocarbons

µg/L = micrograms per liter or parts per billion

mg/L = milligrams per liter or parts per million

C = Presence of this compound confirmed by a second column; however, the confirmation concentration differed from the reported result by more than a factor of two.

TVH = Total volatile hydrocarbons

TEH = Total extractable hydrocarbons

MTBE = Methyl tertiary butyl ether

O&G = Oil and grease

-- = Test not requested

<50 = None detected above the laboratory reporting limit stated.

TABLE 2  
VOLATILE ORGANIC COMPOUND  
CONCENTRATIONS IN GROUNDWATER  
2528 ADELIN STREET  
OAKLAND, CALIFORNIA

SAMPLE ID	Date Sampled	Acetone (ug/L)	Carbon disulfide (ug/L)	1,1-DCA (ug/L)	1,1-DCE (ug/L)	2-Butanone (ug/L)	4-Methyl-2-pentanone (ug/L)	1,1,1-TCA (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl benzene (ug/L)	Total xylenes (ug/L)	cis-1,2-DCE (ug/L)	Other EPA 8240 Compounds
Former Well (Abandoned)	3/31/95	24	4.1*	<5.0	<5.0	7.7*	57	<5.0	4.5*	49	34	270	<5.0	ND
MW-1	4/3/95	<20	<5.0	<5.0	4.2	<10	<10	<5.0	3.1	39	13	75	<5.0	ND
	4/29/96	<20	<5.0	<5.0	6.2	<10	<10	<5.0	<5.0	<5.0	62	12	<5.0	ND
	7/25/96	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	6.4	<5.0	<5.0	ND
	10/31/96	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	1/9/97	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	51	22	<5.0	ND
	7/31/97	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
MW-2	8/15/95	<50	<13	62	260	<25	<25	170	<13	<13	<13	<13	<13	ND
	4/29/96	<20	<5.0	91	400	<10	<10	260	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	7/25/96	<40	<10	70	270	<20	<20	230	<10	<10	<10	<10	<10	ND
	10/31/96	<33	<8.3	67	210	<17	<17	160	<8.3	<8.3	<8.3	<8.3	<8.3	ND
	1/9/97	<50	<13	79	340	<25	<25	230	<13	<13	<13	<13	<13	ND
	7/31/97	<33	<8.3	66	210	<17	<17	120	<8.3	<8.3	<8.3	<8.3	<8.3	ND
	1/13/98	<40	<10	70	270	<20	<20	110	<10	<10	<10	<10	<10	ND
MW-3	8/15/95	<20	<5.0	3.3	4.1	<10	<10	8.8	<5.0	<5.0	<5.0	<5.0	2.9	ND
	4/29/96	<20	<5.0	<5.0	14	<10	<10	12	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	7/25/96	<20	<5.0	<5.0	7.2	<10	<10	8	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	10/31/96	<20	<5.0	<5.0	<5.0	<10	<10	5.1	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	1/9/97	<20	<5.0	<5.0	<5.0	<10	<10	5.6	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	7/31/97	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND

1,1-DCA = 1,1-Dichloroethane

1,1-DCE = 1,1-Dichloroethene

1,1,1-TCA = 1,1,1-Trichloroethane

cis-1,2-DCE = cis-1,2-Dichloroethene

&lt;20 = None detected at or above the stated detection limit

ND = Not detected at or above analytical detection limits. See analytical test reports for individual detection limits.

ug/L = micrograms per liter or parts per billion

\* = Estimated value detected below the laboratory reporting limit.

**TABLE 3**  
**BARIUM AND SELENIUM CONCENTRATIONS IN GROUNDWATER**  
**2528 ADELIN STREET**  
**OAKLAND, CALIFORNIA**

<u>Sample ID</u>	<u>Date</u>	<u>Dissolved Barium (µg/L)</u>	<u>Dissolved Selenium (µg/L)</u>
Former Well (abandoned)	3/31/95	<del>28,000</del> 2,800 <i>pr lab request from Curtiss Tompkins</i>	7.4
MW-1	4/3/95	160	11
	4/29/96	130	<5.0
	7/25/96	110	11
	10/31/96	130	8.5
	1/9/97	270	19
	7/31/97	220	6.5
MW-2	8/15/95	180*	--
	4/29/96	120	18
	7/25/96	130	12
	10/31/96	130	10
	1/9/97	150	19
	7/31/97	150	<5.0
MW-3	8/15/95	62*	--
	4/29/96	82	9.5
	7/25/96	33	5.4
	10/31/96	100	5.2
	1/9/97	130	7.3
	7/31/97	65	<5.0

\* = Sample not filtered prior to analysis. All other samples filtered by laboratory using a 0.45 micron filter.

-- = Test not requested

µg/L = micrograms per liter

<5 = None detected at or above the laboratory stated detection limit.

**TABLE 4**  
**GROUNDWATER ELEVATION DATA**  
**2528 ADELINE STREET**  
**OAKLAND, CALIFORNIA**

<u>Well Number</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (feet)</u>	<u>Groundwater Depths<sup>2</sup> (feet)</u>	<u>Groundwater Elevation<sup>3</sup> (feet)</u>
MW-1	4/3/95	10.99	5.78	5.21
	8/14/95		8.04	2.95
	4/29/96		8.16	2.83
	7/25/96		8.80	2.19
	10/31/96		8.69	2.30
	1/9/97		5.65	5.34
	7/31/97		7.58	3.41
	1/13/98		5.20	5.79
MW-2	8/14/95	9.12	6.42	2.70
	4/29/96		5.43	3.69
	7/25/96		6.68	2.44
	10/31/96		6.74	2.38
	1/9/97		3.99	5.13
	7/31/97		6.78	2.34
	1/13/98		3.70	5.42
	MW-3		8/14/95	9.93
4/29/96		7.16	2.77	
7/25/96		7.55	2.38	
10/31/96		7.17	2.76	
1/9/97		6.66	3.27	
7/31/97		7.57	2.36	
1/13/98		6.22	3.71	

## Notes:

1. TOC - Top of Casing
2. Measured below TOC
3. Reference Mean Sea Level





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

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

A N A L Y T I C A L   R E P O R T

Prepared for:

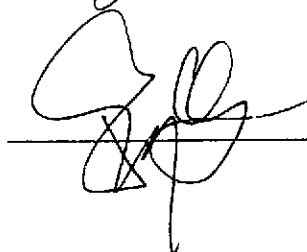
Subsurface Consultants  
3736 Mt. Diablo Blvd.  
Suite 200  
Lafayette, CA 94549

Date: 20-JAN-98  
Lab Job Number: 131954  
Project ID: 946.003  
Location: 2528 Adeline St.

Reviewed by:

  
\_\_\_\_\_

Reviewed by:

  
\_\_\_\_\_

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## Volatile Organics by GC/MS

Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

Analysis Method: EPA 8260  
 Prep Method: EPA 5030

Field ID: MW-2  
 Lab ID: 131954-002  
 Matrix: Water  
 Batch#: 38608  
 Units: ug/L  
 Diln Fac: 2

Sampled: 01/13/98  
 Received: 01/13/98  
 Extracted: 01/15/98  
 Analyzed: 01/15/98

Analyte	Result	Reporting Limit
---------	--------	-----------------

Chloromethane	ND	20
Vinyl Chloride	ND	20
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	10
Acetone	ND	40
Freon 113	ND	10
1,1-Dichloroethene	270	10
Methylene Chloride	ND	40
Carbon Disulfide	ND	10
trans-1,2-Dichloroethene	ND	10
Vinyl Acetate	ND	100
1,1-Dichloroethane	70	10
2-Butanone	ND	20
cis-1,2-Dichloroethene	ND	10
Chloroform	ND	10
1,1,1-Trichloroethane	110	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Benzene	ND	10
Trichloroethene	ND	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
4-Methyl-2-Pentanone	ND	20
cis-1,3-Dichloropropene	ND	10
Toluene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
2-Hexanone	ND	20
Tetrachloroethene	ND	10
Dibromochloromethane	ND	10
Chlorobenzene	ND	10
Ethylbenzene	ND	10
m,p-Xylenes	ND	10
o-Xylene	ND	10
Styrene	ND	10
Bromoform	ND	10
1,1,2,2-Tetrachloroethane	ND	10

Surrogate	%Recovery	Recovery Limits
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1,2-Dichloroethane-d4	102	87-121
Toluene-d8	100	92-107
Bromofluorobenzene	100	80-121



## EPA 8240 Volatile Organics

Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

Analysis Method: EPA 8260  
 Prep Method: EPA 5030

## METHOD BLANK

Matrix: Water  
 Batch#: 38608  
 Units: ug/L  
 Diln Fac: 1

Prep Date: 01/15/98  
 Analysis Date: 01/15/98

MB Lab ID: QC62425

Analyte	Result	Reporting Limit
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
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
Chloroform	ND	5.0
1,1,1-Trichloroethane	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
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
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0
Chlorobenzene	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
1,1,2,2-Tetrachloroethane	ND	5.0
Surrogate	%Rec	Recovery Limits
1,2-Dichloroethane-d4	102	87-121
Toluene-d8	100	92-107
Bromofluorobenzene	101	80-121

EPA 8240 Volatile Organics

Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

Analysis Method: EPA 8260  
 Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
 Batch#: 38608  
 Units: ug/L  
 Diln Fac: 1

Prep Date: 01/15/98  
 Analysis Date: 01/15/98

LCS Lab ID: QC62424

Analyte	Result	Spike Added	%Rec #	Limits
1,1-Dichloroethene	55.9	50	112	73-141
Benzene	49.74	50	99	86-116
Trichloroethene	51.11	50	102	84-113
Toluene	49.34	50	99	83-118
Chlorobenzene	51.22	50	102	87-117
Surrogate	%Rec	Limits		
1,2-Dichloroethane-d4	100	87-121		
Toluene-d8	99	92-107		
Bromofluorobenzene	100	80-121		

# 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



## EPA 8240 Volatile Organics

Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

Analysis Method: EPA 8260  
 Prep Method: EPA 5030

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ  
 Lab ID: 131978-007  
 Matrix: Water  
 Batch#: 38608  
 Units: ug/L  
 Diln Fac: 1

Sample Date: 01/08/98  
 Received Date: 01/14/98  
 Prep Date: 01/16/98  
 Analysis Date: 01/16/98

MS Lab ID: QC62426

Analyte	Spike Added	Sample	MS	%Rec #	Limits
1,1-Dichloroethene	50	0	58.66	117	65-135
Benzene	50	0	51.49	103	81-114
Trichloroethene	50	0.5969	54.32	107	77-109
Toluene	50	0	52.2	104	78-114
Chlorobenzene	50	0	53.3	107	82-115
Surrogate	%Rec	Limits			
1,2-Dichloroethane-d4	100	87-121			
Toluene-d8	100	92-107			
Bromofluorobenzene	98	80-121			

MSD Lab ID: QC62427

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
1,1-Dichloroethene	50	59.7	119	65-135	2	14
Benzene	50	51.88	104	81-114	1	11
Trichloroethene	50	54.16	107	77-109	0	14
Toluene	50	52.32	105	78-114	0	13
Chlorobenzene	50	54.82	110	82-115	3	13
Surrogate	%Rec	Limits				
1,2-Dichloroethane-d4	98	87-121				
Toluene-d8	99	92-107				
Bromofluorobenzene	99	80-121				

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

\* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

## TEH-Tot Ext Hydrocarbons

 Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

 Analysis Method: EPA 8015M  
 Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
131954-001	MW-1	38604	01/13/98	01/15/98	01/17/98	
131954-002	MW-2	38604	01/13/98	01/15/98	01/17/98	

Matrix: Water

Analyte	Units	131954-001	131954-002
Diln Fac:		1	1
Kerosene C10-C16	ug/L	330 Y	<50
Diesel C12-C22	ug/L	320 YL	<50
Surrogate			
Hexacosane	%REC	73	65

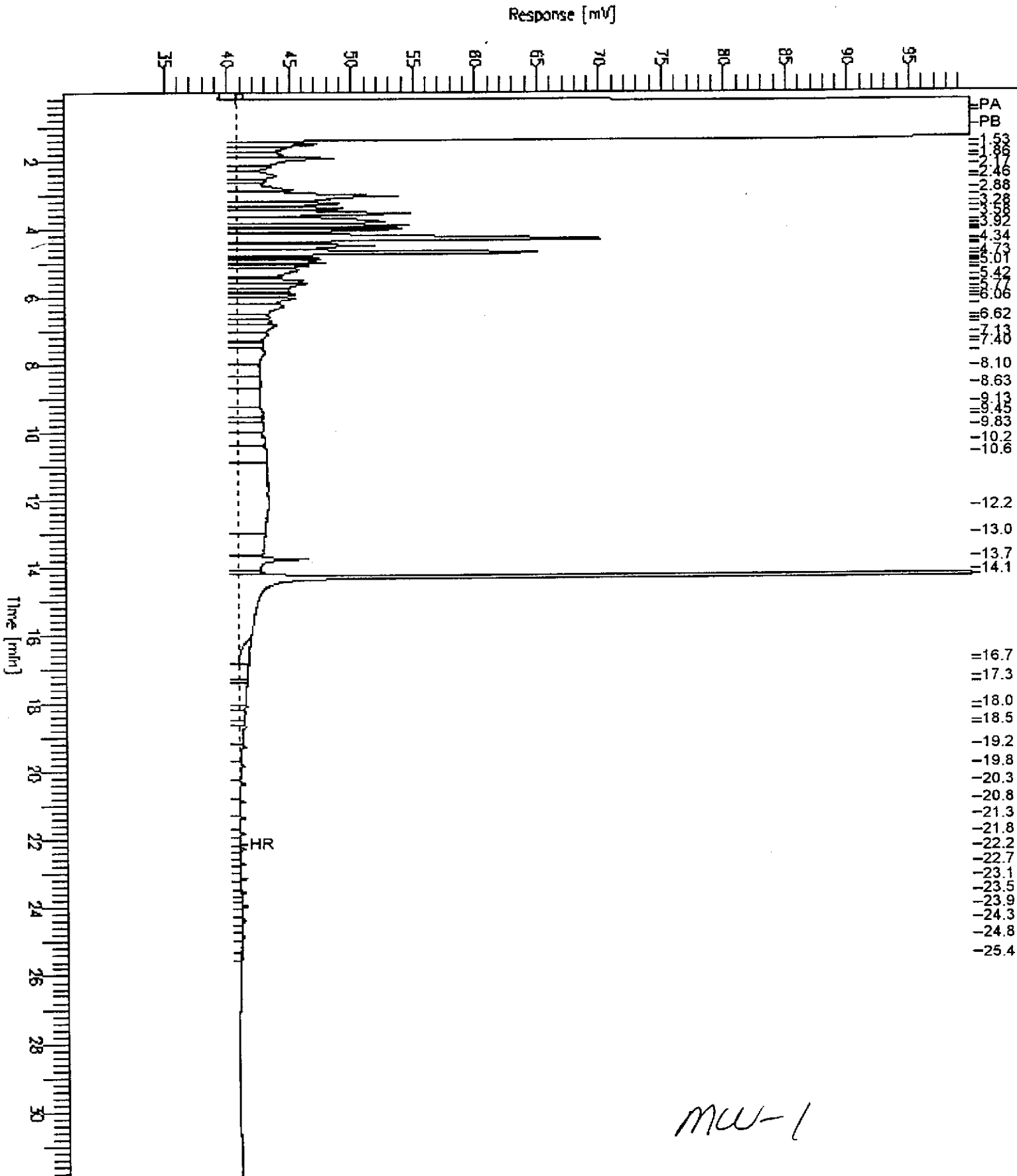
 Y: Sample exhibits fuel pattern which does not resemble standard  
 L: Lighter hydrocarbons than indicated standard

# GC15 Channel B TEH

Sample Name : 131954-001,38604  
 FileName : G:\GC15\CHB\016B023.RAW  
 Method : B356TEH.MTH  
 Start Time : 0.01 min  
 Scale Factor: 0.0

End Time : 31.91 min  
 Plot Offset: 34 mV

Sample #: 38604  
 Date : 1/19/98 11:18 AM  
 Time of Injection: 1/17/98 10:07 AM  
 Low Point : 34.31 mV  
 Plot Scale: 65.6 mV  
 High Point : 99.95 mV



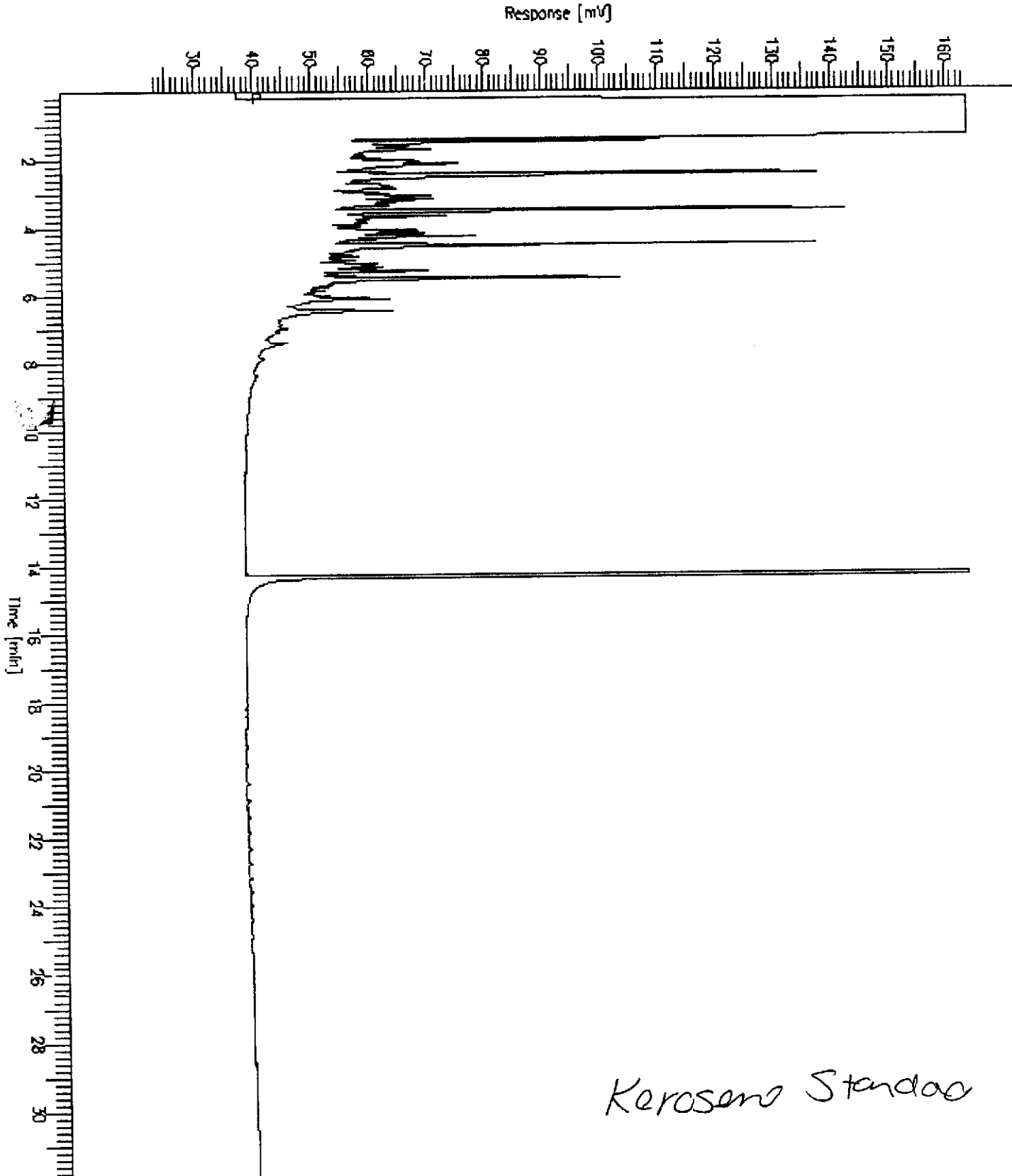
# GC15 Channel B TEH

Sample Name : CCV, 97WS3966, KERO  
FileName : G:\GC15\CHB\016B005.RAW  
Method : B356TEH.MTH  
Start Time : 0.01 min  
Scale Factor: 0.0

End Time : 31.91 min  
Plot Offset: 23 mV

Sample #: 250MG/L  
Date : 1/19/98 10:37 AM  
Time of Injection: 1/16/98 09:16 PM  
Low Point : 22.79 mV  
High Point : 163.84 mV  
Plot Scale: 141.0 mV

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*Kerosene Standard*



# GC15 Channel B TEH

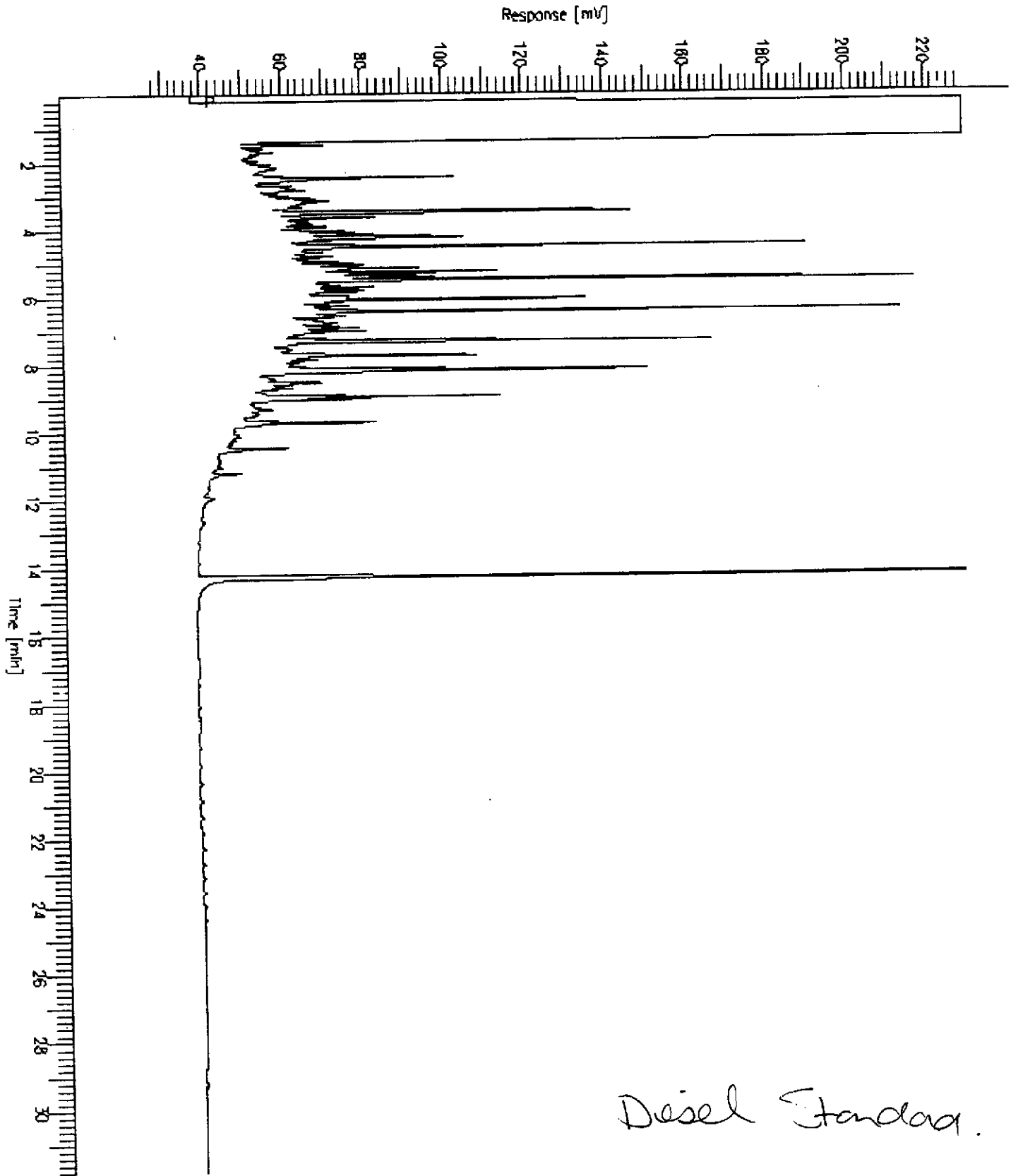
Sample Name : CCV,98WS5297,DS  
FileName : G:\GC15\CHB\016B002.RAW  
Method : B356TEH.MTH  
Start Time : 0.01 min  
Scale Factor: 0.0

End Time : 31.85 min  
Plot Offset: 28 mV

Sample #: 500MG/L  
Date : 1/19/98 10:37 AM  
Time of Injection: 1/16/98 07:07 PM  
Low Point : 27.93 mV  
Plot Scale: 202.0 mV

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High Point : 229.88 mV



Lab #: 131954

BATCH QC REPORT



Curtis & Pennings, Inc. 1

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants  
Project#: 946.003  
Location: 2528 Adeline St.

Analysis Method: EPA 8015M  
Prep Method: EPA 3520

METHOD BLANK

Matrix: Water  
Batch#: 38604  
Units: ug/L  
Diln Fac: 1

Prep Date: 01/15/98  
Analysis Date: 01/16/98

MB Lab ID: QC62407

Analyte	Result
Kerosene C10-C16	<50
Diesel C12-C22	<50

Surrogate	%Rec	Recovery Limits
Hexacosane	88	60-140

Lab #: 131954

BATCH QC REPORT



Curtis & Page, Inc. 1

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants  
Project#: 946.003  
Location: 2528 Adeline St.

Analysis Method: EPA 8015M  
Prep Method: EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water  
Batch#: 38604  
Units: ug/L  
Diln Fac: 1

Prep Date: 01/15/98  
Analysis Date: 01/17/98

BS Lab ID: QC62408

Analyte	Spike Added	BS	%Rec #	Limits
Diesel C12-C22	2475	1858	75	60-140
Surrogate	%Rec	Limits		
Hexacosane	86	60-140		

BSD Lab ID: QC62409

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C12-C22	2475	1637	66	60-140	13	35
Surrogate	%Rec	Limits				
Hexacosane	79	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

## TVH-Total Volatile Hydrocarbons

 Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

 Analysis Method: TVH  
 Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
131954-001	MW-1	38592	01/13/98	01/15/98	01/15/98	
131954-002	MW-2	38592	01/13/98	01/15/98	01/15/98	

Matrix: Water

Analyte	Units	131954-001	131954-002
Diln Fac:		1	1
Gasoline C7-C12	ug/L	1400 YL	<50
Stoddard Solvent	ug/L	2800 YL	<50
Surrogate			
Bromofluorobenzene	%REC	87	94

 Y: Sample exhibits fuel pattern which does not resemble standard  
 L: Lighter hydrocarbons than indicated standard

# GC04 TVH 'J' Data File Rtx1FID

Sample Name : S\_131954-001\_38592

FileName : G:\GC04\DATA\015J012.raw

Method : TVHBTXE

Start Time : 0.00 min

Scale Factor : 1.0

End Time : 20.00 min

Plot Offset : 39 mV

Sample # :

Date : 1/15/98 04:36 PM

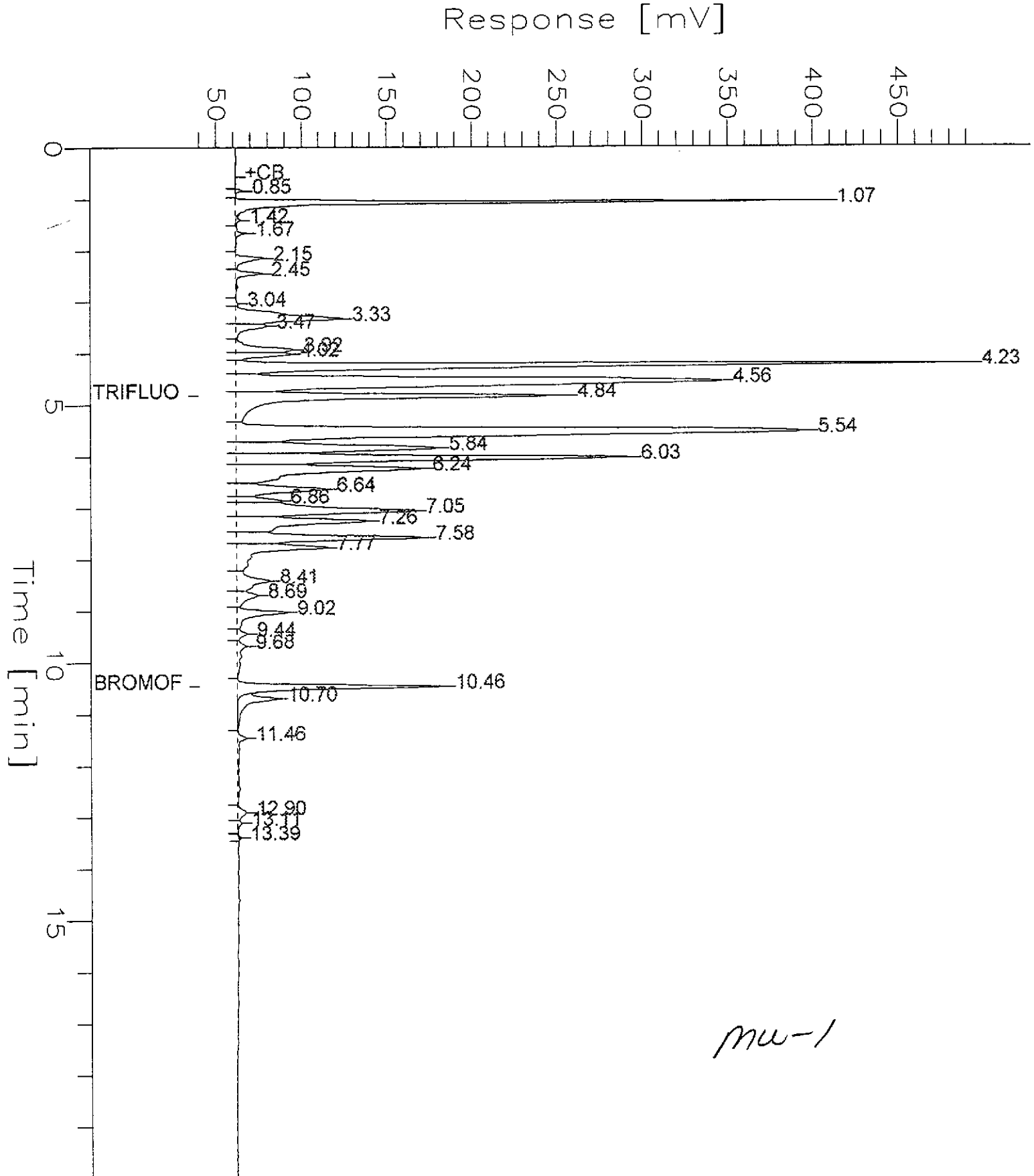
Time of Injection : 1/15/98 04:16 PM

Low Point : 39.43 mV

Plot Scale : 454.2 mV

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High Point : 493.60 mV





GC04 TVH 'J' Data File Rtx1FID

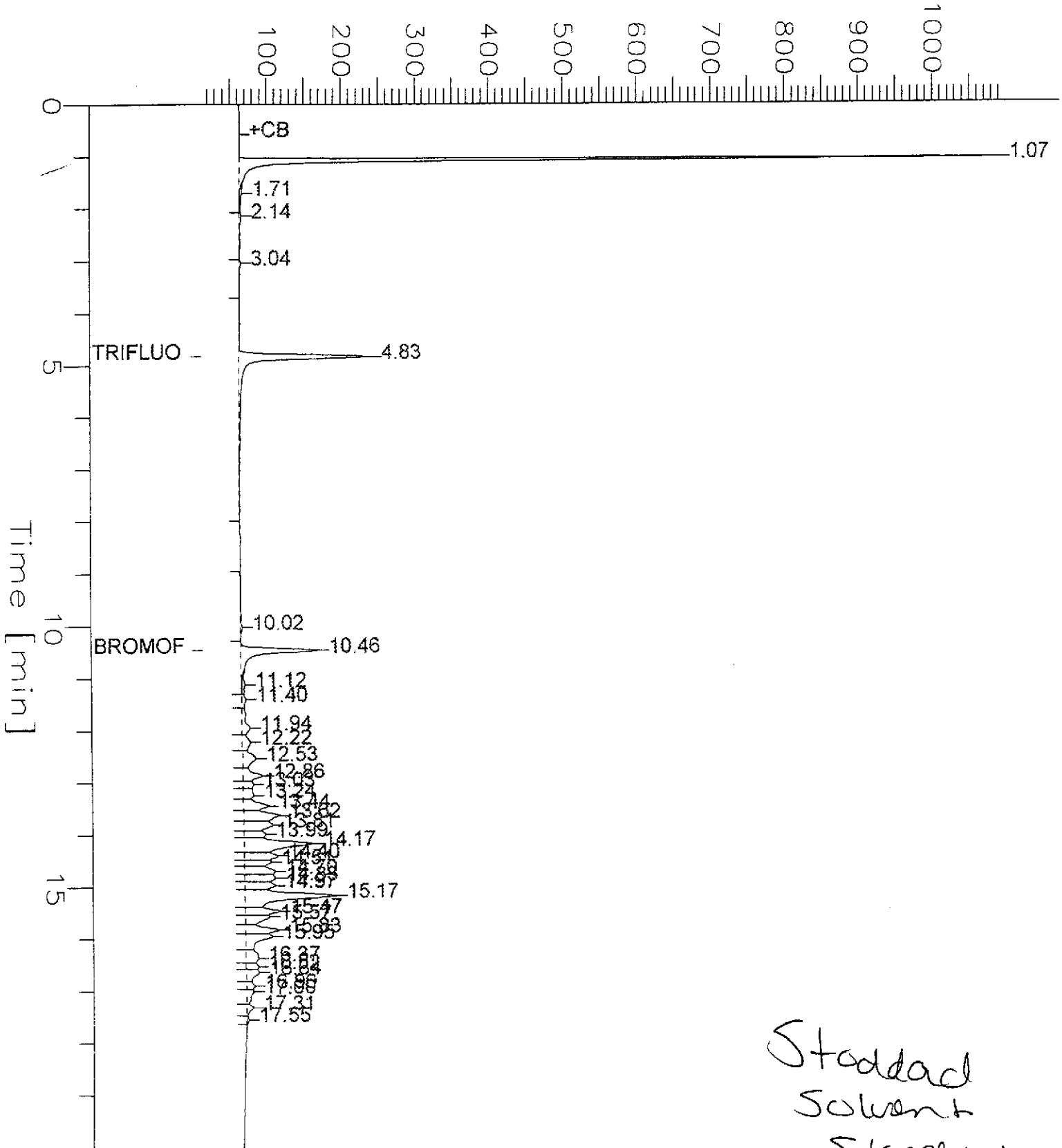
CCV, 97WS498D, 38592, JLN  
1-19-98

Sample Name : ~~665\_003\_96WS5200.77~~  
FileName : G:\GC04\DATA\015J003.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

End Time : 20.00 min  
Plot Offset : 11 mV

Sample #: BTXE  
Date : 1/15/98 08:35 AM  
Time of Injection: 1/15/98 08:15 AM  
Low Point : 11.41 mV  
Plot Scale: 1080.2 mV  
High Point : 1091.65 mV

Response [mV]





## BTXE

Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

Analysis Method: EPA 8020A  
 Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
131954-001	MW-1	38592	01/13/98	01/15/98	01/15/98	
131954-002	MW-2	38592	01/13/98	01/15/98	01/15/98	

Matrix: Water

Analyte	Units	131954-001	131954-002
Diln Fac:		1	1
MTBE	ug/L	13 C	15
Benzene	ug/L	1.2C	0.55
Toluene	ug/L	4.3C	<0.5
Ethylbenzene	ug/L	16	<0.5
m,p-Xylenes	ug/L	<0.5	<0.5
o-Xylene	ug/L	0.95	<0.5
Surrogate			
Trifluorotoluene	%REC	102	96
Bromofluorobenzene	%REC	81	84

C: Presence of this compound confirmed by second column,  
 however, the confirmation concentration differed from the reported  
 result by more than a factor of two



Lab #: 131954

BATCH QC REPORT



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TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants  
Project#: 946.003  
Location: 2528 Adeline St.

Analysis Method: TVH  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 38592  
Units: ug/L  
Diln Fac: 1

Prep Date: 01/15/98  
Analysis Date: 01/15/98

MB Lab ID: QC62361

Analyte	Result
Gasoline C7-C12	<50
Stoddard Solvent	<50

Surrogate	%Rec	Recovery Limits
Bromofluorobenzene	72	70-122



Lab #: 131954

BATCH QC REPORT



Curtis & Page, Inc. 1

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants  
Project#: 946.003  
Location: 2528 Adeline St.

Analysis Method: TVH  
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
Batch#: 38592  
Units: ug/L  
Diln Fac: 1

Prep Date: 01/15/98  
Analysis Date: 01/15/98

LCS Lab ID: QC62359

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	2059	2000	103	80-120
Surrogate	%Rec	Limits		
Bromofluorobenzene	102	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

Lab #: 131954

BATCH QC REPORT



Curtis & Bergsma, Ltd. 1

BTXE

Client: Subsurface Consultants  
 Project#: 946.003  
 Location: 2528 Adeline St.

Analysis Method: EPA 8020A  
 Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
 Batch#: 38592  
 Units: ug/L  
 Diln Fac: 1

Prep Date: 01/15/98  
 Analysis Date: 01/15/98

LCS Lab ID: QC62360

Analyte	Result	Spike Added	%Rec #	Limits
MTBE	20	20	100	65-135
Benzene	20.79	20	104	80-120
Toluene	21.9	20	110	80-120
Ethylbenzene	22.23	20	111	80-120
m,p-Xylenes	45.56	40	114	80-120
o-Xylene	23.07	20	115	80-120
Surrogate	%Rec	Limits		
Trifluorotoluene	95	58-130		
Bromofluorobenzene	82	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 6 outside limits



**TVH-Total Volatile Hydrocarbons**

Client: Subsurface Consultants	Analysis Method: TVH
Project#: 946.003	Prep Method: EPA 5030
Location: 2528 Adeline St.	

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Field ID: MW-2	Sample Date: 01/13/98
Lab ID: 131954-002	Received Date: 01/13/98
Matrix: Water	Prep Date: 01/15/98
Batch#: 38592	Analysis Date: 01/15/98
Units: ug/L	
Diln Fac: 1	

MS Lab ID: QC62362

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline C7-C12	2000	<50	2070	103	75-125
Surrogate	%Rec	Limits			
Bromofluorobenzene	104	70-122			

MSD Lab ID: QC62363

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline C7-C12	2000	1986	99	75-125	4	35
Surrogate	%Rec	Limits				
Bromofluorobenzene	105	70-122				

# 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





## WELL SAMPLING FORM

Project Name: 2528 Adeline St. Well Number: MW-1  
 Job No.: 946-003 Well Casing Diameter: 2 inches  
 Sampled By: DWA Date: 11/3/98  
 TOC Elevation: \_\_\_\_\_ Weather: cloudy

Depth to Casing Bottom (below TOC) 20.00 feet  
 Depth to Groundwater Before Purging (below TOC) 5.20 feet  
 Feet of Water in Well 14.80 feet  
 Depth to Groundwater When 80% Recovered 8.16 feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) 25 gallons  
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other  
 Free Product none  
 Purge Method disposable bailer

### FIELD MEASUREMENTS

*fast recharge*

Gallons Removed	Time	pH	Temp (°C) (°F)	Conductivity (micromhos/cm)	Salinity S%	Comments
2		6.51	17.0	825		semi-clear / slight odor
4		6.59	17.0	800		↓
6		6.62	17.0	825		increasing turbidity
8		6.61	17.0	850		↓

Total Gallons Purged 8 gallons  
 Depth to Groundwater Before Sampling (below TOC) 7.42 feet  
 Sampling Method disposable bailer  
 Containers Used 4 40 ml 1 liter \_\_\_\_\_ pint \_\_\_\_\_

Subsurface Consultants

			PLATE
JOB NUMBER	DATE	APPROVED	



## WELL SAMPLING FORM

Project Name: 2528 Adeline St. Well Number: MW-2  
 Job No.: 946.003 Well Casing Diameter: 2 inches  
 Sampled By: DWA Date: 1/13/98  
 TOC Elevation: \_\_\_\_\_ Weather: cloudy

Depth to Casing Bottom (below TOC) 13.40 feet  
 Depth to Groundwater Before Purging (below TOC) 3.70 feet  
 Feet of Water in Well 9.70 feet  
 Depth to Groundwater When 80% Recovered 5.64 feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) 1.6 gallons  
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other  
 Free Product none  
 Purge Method disposable bailer

### FIELD MEASUREMENTS

*fast recharge*

Gallons Removed	Time	pH	Temp (°C) (°F)	Conductivity (micromhos/cm)	Salinity S%	Comments
1		6.89	17.5	1025		<i>semi-clear / slight odor</i>
2		6.63	18.0	1000		<i>decreasing turbidity</i>
3		6.52	18.5	1050		<i>clear</i>
4		6.49	18.5	1025		↓
5		6.48	18.5	1025		↓

Total Gallons Purged 5 gallons  
 Depth to Groundwater Before Sampling (below TOC) 3.75 feet  
 Sampling Method disposable bailer  
 Containers Used 6 40 ml 1 liter \_\_\_\_\_ pint \_\_\_\_\_

Subsurface Consultants

JOB NUMBER

DATE

APPROVED

PLATE