Subsurface Consultants, Inc.

High OVM readings in borings SG2 & ~~SG3~~ from 10-30' bgs and in SB-3 from 5'-30' bgs suggesting SVE may be more effective than excavation - however, sediments appear to be low permeability. If excav is proposed, must be to depths >15' bgs around SG2 & SG3

Check certain conc. in P2, P3

P-2 w/ 4,800 ppb benzene, 58,000 ppb TPHg

P-3 w/ 650 ppb benzene, 2,000 ppb TPHg

MW2 w/ 1,300 ppb benz. 10,000 ppb TPHg

February 1, 1999
SCI 838.005

A.P.A. Fund
c/o Ms. Aniko Molnar
Environmental Consultant
7 Morning Sun Avenue
Mill Valley, California 94941

Additional Investigation
StID 23
Soil and Soil Vapor Sampling
2801 MacArthur Boulevard
Oakland, California

Dear Ms. Molnar:

This letter transmits the results of additional investigation conducted at the above referenced site by Subsurface Consultants, Inc. (SCI). The subsurface field investigation was conducted on December 1, 1998 and included sampling soil and soil vapor from three selected locations. The location of the property and the site configuration is shown on the Site Plan, Plate 1.

PROJECT BACKGROUND

The property has been commercially developed since the early 1930s, and records indicate that the site has a long history of use as a gasoline service station. Currently, the station building is being used by an auto repair business.

In May 1989, three underground storage tanks and associated fuel dispensing equipment were removed from the site. Approximately 435 cubic yards of fuel impacted soil were subsequently excavated, removed from the site and clean fill was replaced into the resulting excavation. Groundwater monitoring performed at the site between 1990 and 1996 showed that the dissolved gasoline impacted plume had migrated about 150 feet down gradient from the source area.

SCI performed a Tier 2 risk analysis (letter report dated October 28, 1997) which indicated the onsite impacted material appears to pose no significant risk to human health nor the environment for current site conditions. However, the Alameda County Health Care Services

3736 Mt Diablo Boulevard ▪ Suite 200 ▪ Lafayette, California 94549-3659 ▪ 925.299.7960 ▪ FAX 925 299.7970

171 – 12th Street ▪ Suite 202 ▪ Oakland, California 94607-4911 ▪ 510 268 0461 ▪ FAX 510 268 0137

Agency (ACHCSA) expressed concern regarding potential human health risks associated with future uses of the commercially-zoned property. When historic soil data from Boring B-9 (situated near a former waste oil tank and pipelines) was modeled using the ASTM Risk-Based Corrective Action (RBCA) volatilization model, average benzene concentrations measured previously in samples from this boring appeared to represent a potential concern to indoor air quality if a new structure was built over this area without a proper building vapor mitigation system. The ACHCSA further raised a concern with respect to the lack of data in the area of the former pump islands.

Following discussion with the ACHCSA, SCI prepared a Work Plan dated April 7, 1998, to perform additional subsurface investigation. The purpose of the investigation was to evaluate soil and soil vapor concentrations in the area of former Boring B-9 and the pump islands. The scope of work was approved in a letter from the ACHCSA dated June 1, 1998.

FIELD INVESTIGATION

Following California Water Resources Control Board UST Cleanup Fund Program (Fund) approval of the estimate for this investigation, SCI obtained a drilling permit from the Alameda County Public Works Agency to conduct the field sampling. The approved permit is presented in Appendix A.

On December 1, 1998, California Utility Surveys, an underground utility locator screened and cleared proposed soil boring locations for drilling. Vironex, a licensed drilling contractor, then proceeded to drill and sample soil and soil vapor from three borings (SG-1, SG-2 and SG-3). A Geoprobe truck mounted rig advanced the borings to depths ranging from 27 to 30 feet below the ground surface (bgs). The test boring locations are shown on Plate 1. Logs of the test borings are presented in Appendix B.

Vironex utilized soil-vapor probe equipment and sampling pumps to obtain two soil-vapor samples from the upper 6 feet of the borings. The soil-vapor probes were purged and then siphoned to withdraw air samples at depths of 3 and 6 feet to represent potential vapor readings within the anticipated depth of future construction. Vapor samples withdrawn from the probes were evacuated into Summa Canisters. Upon sealing and labeling, the canisters were delivered to Air Toxics, Ltd., a state certified laboratory, using appropriate chain-of-custody documentation. The samples were submitted on a rapid turn-around basis.

Following collection of the soil vapor samples, and upon measuring elevated organic vapor readings in the field, the probes were advanced to obtain representative soil samples for confirmation testing. Three soil samples were obtained from each proble location. SCI's field staff observed drilling operations, prepared detailed logs of the conditions encountered and field screened soil samples using an organic vapor meter. Soil samples were retained in plastic

liners. Teflon sheeting was placed on the ends of the sample liners prior to capping. Upon sealing and labeling, the samples were placed in an ice filled cooler and transported to SCI's in house laboratory where they were refrigerated.

All drilling and sampling equipment placed in the test borings were cleaned prior to their initial use, and prior to each subsequent use to reduce the likelihood of cross contamination between borings and samples.

Groundwater was not with the depth drilled, 15 feet bgs. The borings were subsequently backfilled with cement bentonite grout. The depth to groundwater was measured in accessible existing groundwater monitoring wells during the field investigation. The depth ranged from about 23.5 to 34.5 feet bgs. Groundwater elevation data is summarized in Table 1.

CHEMICAL ANALYSES

Chemical analyses of vapor samples were performed by Air Toxics, Ltd., a state-certified chemical testing laboratory. The samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene and total xylenes (BTEX) by EPA Method TO-3.

Soil vapor test results and Risk Based Screening Levels (RBSLs) provided by Ms. Eva Chu of ACHCSA are summarized in Table 2. These draft RBSLs were provided as suggested guidelines and do not represent adopted regulatory policy nor site specific cleanup levels. Average values of the soil vapor sample test results exceeded the RBSL for benzene. Upon our review of the soil vapor data and in accordance with the approved work plan, selected soil samples were submitted to Curtis & Tompkins, Ltd. for Total Volatile Hydrocarbons (TVH) by EPA method 5030/8015M, and BTEX and methyl tertiary butyl ether (MTBE) by EPA 5030/8021B

Soil test results are summarized in Table 3. Analytical test reports and chain-of-custody documents are presented in Appendix C.

DISCUSSION OF RESULTS

Two soil vapor samples were obtained from each of the three test borings at depths of 3 and 6 feet bgs, respectively. All the vapor samples detected the presence of gasoline and its volatile constituents, BTEX. Vapor samples collected from locations SG-2 and SG-3 situated near the pump islands detected concentrations of benzene which exceeded the RBSL. The RBSL for toluene was also exceeded in the vapor from sample SG-3 from a depth of 6 feet.

Three soil samples were analyzed from each of the three test borings. The samples were collected from discrete depth ranges of 6 to 7, 10 and 15 feet bgs. The samples from location SG-1 did not detect the presence of gasoline and its volatile constituents BTEX and MTBE. Samples collected from locations SG-2 and SG-3, however, detected elevated concentrations of gasoline and BTEX. The highest overall concentrations were measured in sample SG-3 at a depth of 15 feet. MTBE was detected in one of the nine samples submitted (SG-3@10') at a concentration of 4.5 parts per million.

CONCLUSIONS

The data from the study shows the following:

- Soil impacts in the area of the former waste oil tank and pipelines near Boring B-9 appear to have decreased as a positive result of source removal and on-going biodegradation.

- Soil containing elevated concentrations of gasoline and its volatile constituents BTEX and MTBE still remain in place below the former pump islands. Representative concentrations of in-place vapor currently exceed RBSL's indoor air quality. Source removal will likely be required in this area to reduce benzene levels to allow a safe environment for construction and utility workers and for the future construction of a commercial structure.

SCI recommends that the A.P.A. Fund forward a copy of this report to the ACHCSA. If you have any questions, please call either of the undersigned at (925) 299-7960.

Very truly yours,

Subsurface Consultants, Inc.

Meg Mendoza
Project Engineer

Jeriann Alexander, PE, REA
Civil Engineer 40469 (expires 3/31/99)
Registered Environmental Assessor 03130 (expires 6/30/99)

MM:JNA:838.005\report.doc

Enclosures:
Table 1 - Summary of Groundwater Elevation Data
Table 2 - Petroleum Hydrocarbon Concentrations in Soil Vapor Samples
Table 3 - Petroleum Hydrocarbon Concentrations in Soil Samples
Plate 1 - Site Plan
Appendix A - Drilling Permit
Appendix B - Logs of Test Borings
Appendix C - Analytical Test Reports and Chain-of-Custody Documents

Distribution:
A.P.A. Fund
c/o Ms. Aniko Molnar
Environmental Consultant
7 Morning Sun Avenue
Mill Valley, California 94941
(2 copies)

A.P.A. Fund Ltd.
c/o Mr. Nicolas Molnar
1904 Franklin Street, Suite 501
Oakland, California 94612
(1 copy)

Table 1
Summary of Groundwater Elevation Data

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
M1	1000	10/24/90	36.1	963.9
		10/25/90	36.1	963.9
		11/2/90	36.4	963.6
		11/6/90	36.8	963.2
		11/16/90	36.8	963.2
		11/23/90	36.9	963.1
		11/28/90	37.0	963.0
		12/5/90	37.2	962.8
		3/18/91	35.8	964.2
		3/29/91	32.4	967.6
		4/3/91	31.9	968.1
		4/9/91	31.6	968.4
		4/16/91	31.2	968.8
		1/23/92	35.5	964.5
		3/9/93	29.1	970.9
		6/1/93	27.5	972.5
		12/13/93	33.9	966.1
		3/7/94	32.3	967.7
		8/23/94	32.3	967.7
		10/11/94	34.1	965.9
		4/26/95	24.4	975.6
		10/27/95	31.3	968.7
		1/22/96	31.1	968.9
		4/15/96	25.6	974.4
		7/10/96	27.7	972.3
		12/1/98	--	paved over
M2	999.6	4/30/91	31.1	968.5
		5/7/91	31.3	968.3
		1/16/92	35.1	964.5
		3/9/93	33.6	966.0
		5/17/93	27.2	972.4
		6/1/93	27.6	972.0
		8/17/93	30.4	969.2
		12/13/93	34.0	965.6
		3/7/94	30.1	969.5

Table 1
Summary of Groundwater Elevation Data

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
M2		8/23/94	32.3	967.3
		10/11/94	34.2	965.4
		4/26/95	24.4	975.2
		10/27/95	31.4	968.2
		1/22/96	31.2	968.4
		4/15/96	25.6	974.0
		7/10/96	27.8	971.8
		12/1/98	30.9	968.7
M3	992.8	5/17/93	22.2	970.6
		6/1/93	23.3	969.5
		8/17/93	25.0	967.8
		12/13/93	25.8	967.0
		3/7/94	23.1	969.7
		8/23/94	25.8	967.0
		10/11/94	27.4	965.4
		4/26/95	19.6	973.2
		10/27/95	25.4	967.4
		1/22/96	24.2	968.6
		4/15/96	20.9	971.9
		7/10/96	22.9	969.9
		12/1/98	23.5	969.3
M4	999.6	5/17/93	33.8	965.8
		6/1/93	32.5	967.1
		12/13/93	36.8	962.8
		3/7/94	33.0	966.6
		8/23/94	35.4	964.2
		10/11/94	37.1	962.5
		4/26/95	29.8	969.8
		10/27/95	34.2	965.4
		1/22/96	30.1	969.5
		4/15/96	30.1	969.5
		7/10/96	32.0	967.6
		12/1/98	34.5	965.1

Table 1
Summary of Groundwater Elevation Data

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
M5	992.9	8/23/94	31.8	961.1
		10/11/94	33.6	959.3
		4/26/95	20.5	972.4
		10/27/95	31.5	961.4
		1/22/96	25.6	967.3
		4/15/96	21.7	971.2
		7/10/96	26.8	966.1
		12/1/98	28.8	964.1
M6	997.7	8/23/94	41.2	956.5
		10/11/94	38.2	959.5
		4/26/95	27.8	969.9
		10/27/95	34.9	962.8
		1/22/96	22.0	975.7
		4/15/96	28.5	969.2
		7/10/96	32.6	965.1
		12/1/98	--	inaccessible
P1	999.6	10/24/90	37.9	961.7
		10/25/90	38.0	961.6
		11/2/90	38.4	961.2
		11/6/90	38.7	960.9
		11/16/90	38.3	961.3
		11/23/90	38.1	961.5
		11/28/90	38.3	961.3
		12/5/90	38.2	961.4
		3/18/91	37.8	961.8
		3/29/91	36.9	962.7
		4/3/91	36.8	962.8
		4/9/91	36.9	962.7
		4/16/91	36.7	962.9
		4/18/91	36.8	962.8
		4/30/91	36.3	963.3
		5/7/91	36.2	963.4
		1/16/92	36.6	963.0
		3/9/93	32.8	966.8

Table 1
Summary of Groundwater Elevation Data

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
		6/1/93	30.0	969.6
P1		12/13/93	33.7	965.9
		3/7/94	32.6	967.0
		8/23/94	32.7	966.9
		10/11/94	33.5	966.1
		4/26/95	27.6	972.0
		10/27/95	31.8	967.8
		1/22/96	33.3	966.3
		4/15/96	28.2	971.4
		7/10/96	29.3	970.3
		12/1/98	31.9	967.7
P2	997.8	10/24/90	41.1	956.7
		10/25/90	40.6	957.2
		11/2/90	38.4	959.4
		11/6/90	37.0	960.8
		11/16/90	37.4	960.4
		11/23/90	35.9	961.9
		11/28/90	35.4	962.4
		2/5/90	35.0	962.8
		3/18/91	31.4	966.4
		3/29/91	28.2	969.6
		4/3/91	26.8	971.0
		4/9/91	26.5	971.3
		4/16/91	26.5	971.3
		4/18/91	26.5	971.3
		4/30/91	26.7	971.1
		5/7/91	27.0	970.8
		1/16/92	33.7	964.1
		3/9/93	23.6	974.2
		5/17/93	23.7	974.1
		6/1/93	24.4	973.4
		8/17/93	28.3	969.5
		12/13/93	31.0	966.8
		3/7/94	25.4	972.4
		8/23/94	30.3	967.5

Table 1
Summary of Groundwater Elevation Data

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
		10/11/94	32.3	965.5
P2		4/26/95	19.9	977.9
		10/27/95	29.6	968.2
		1/22/96	27.4	970.4
		4/15/96	21.3	976.5
		7/10/96	25.0	972.8
		12/1/98	28.2	969.6
P3	999.1	3/29/91	24.7	974.4
		4/3/91	25.1	974.0
		4/9/91	25.9	973.2
		4/16/91	26.2	972.9
		4/18/91	26.2	972.9
		4/30/91	26.8	972.3
		5/7/91	27.4	971.7
		1/23/92	32.5	966.6
		3/9/93	24.8	974.3
		6/4/93	23.9	975.2
		8/17/93	28.5	970.6
		12/13/93	29.3	969.8
		3/7/94	25.0	974.1
		8/23/94	30.1	969.0
		10/11/94	32.0	967.1
		4/26/95	20.5	978.6
		10/27/95	27.8	971.3
		1/22/96	26.7	972.4
		4/15/96	21.4	977.7
		7/10/96	25.1	974.0
		12/1/98	27.2	971.9

Note 1 - Elevations relative to site-specific datum. Temporary Bench Mark No. 1, top of concrete at west corner of northernmost pump island. Assumed elevation = 1,000.0 feet.

Table 2
Petroleum Hydrocarbon Concentrations in Soil Vapor Samples
2801 MacArthur Boulevard
Oakland, California

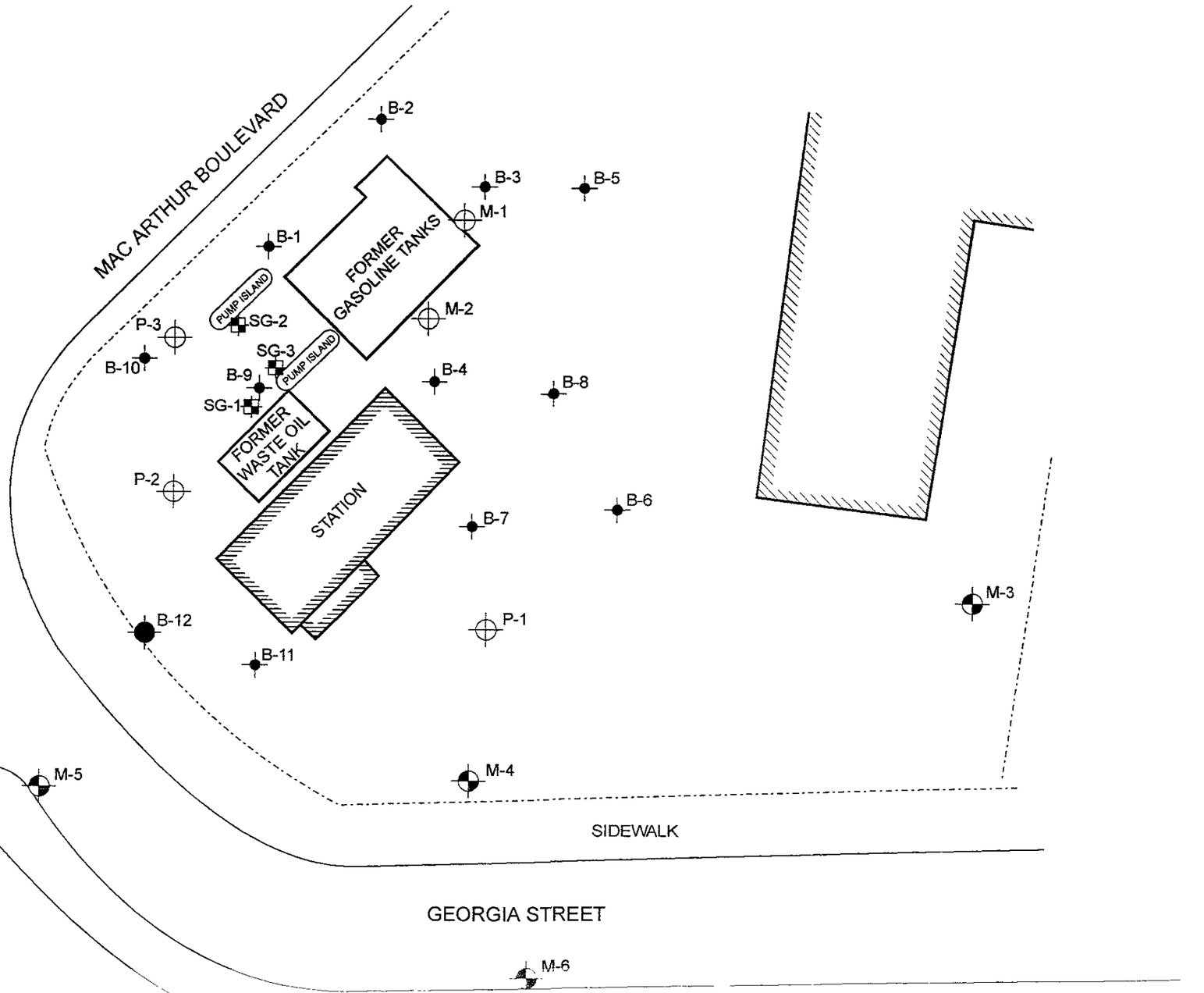
Sample ID @ Depth (feet)	TVHg (ppmv)	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Total Xylenes (ppmv)
SG-1 @ 3'	0.49 B	0.010 J	0.023	0.0049 J	0.022 J
SG-1 @ 6'	0.26 B	0.0025 J	0.014	<0.0024	0.013 J
SG-2 @ 3'	280 B	24	0.58 J	6.9	22
SG-2 @ 6'	490 B	63	2.2	18	64
SG-3 @ 3'	7.9 B	0.42	0.43	0.066	0.24
SG-3 @ 6'	3600 B	310	320	64	260
Average SG Concentrations at 3'		8.14	0.34	2.32	7.42
Average SG Concentrations at 6'		124	107	27	108
RBSLs @ 3'	**--**	**0.384**	**140**	**358**	**2,604**

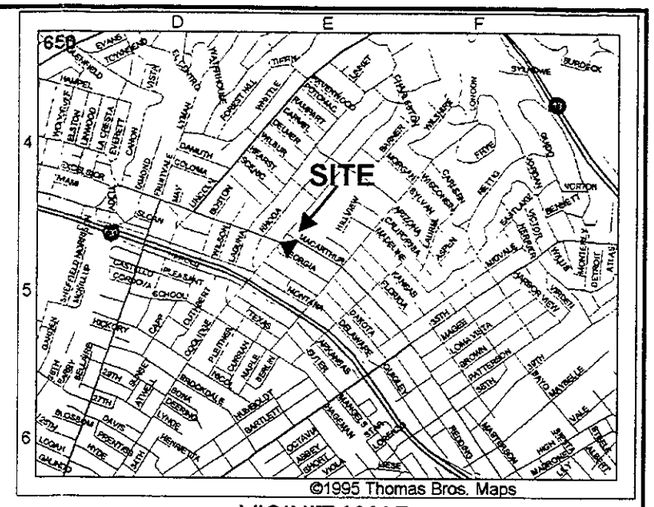
Notes:
ppmv = parts per billion by volume
RBSLs = Risk Based Screening Levels for commercial receptors assuming no building slab and a carcinogenic risk of 1 in 100,000, as calculated by Weiss Associates in conjunction with the RWQCB-SFB
J = Estimated value
B = Compound present in laboratory blank, background subtraction not performed.
<0.0024 = compound not detected above laboratory detection limit

Table 3
Petroleum Hydrocarbon Concentrations in Soil Samples
2801 MacArthur Boulevard
Oakland, California

Sample ID @ Depth (feet)	TVHg (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	MTBE (mg/Kg)
Area of Boring B-9						
SG-1 @ 6'	<1	<0.005	<0.005	<0.005	<0.005	<0.020
SG-1 @ 10'	<1	<0.005	<0.005	<0.005	<0.005	<0.020
SG-1 @ 15'	<1	<0.005	<0.005	<0.005	<0.005	<0.020
Northern Pump Island						
SG-2 @ 7'	400H	1.2	0.38C	5.2	23	<0.40
SG-2 @ 10'	480H	1.1	2.0	6.3	32	<0.40
SG-2 @ 15'	480H	0.17	2.0	4.2	22	<0.40
Southern Pump Island						
SG-3 @ 7'	1,300	4.5	18	16	81	<2.0
SG-3 @ 10'	4,200	33	100	63	31	4.5
SG-3 @ 15'	13,000	76	280	150	790	<10

Notes:
mg/Kg = milligrams per Kilogram
µg/Kg = micrograms per Kilogram
<1 = analyte not detected above reporting limit stated
H = heavier hydrocarbons than standard
C = presence of this compound confirmed by a second column, however the confirmation concentration differed from the reported results by more than a factor of two





VICINITY MAP

- TEST BORING BY SCI
- MONITORING WELL BY SCI
- TEST BORING BY OTHERS
- MONITORING WELL BY OTHERS
- FORMER EXCAVATION
- PROPERTY BOUNDARY
- EXISTING BUILDING
- SOIL VAPOR AND SOIL SAMPLING LOCATION

APPROXIMATE SCALE (feet)

SITE PLAN

Subsurface Consultants, Inc.

2801 MAC ARTHUR BLVD
OAKLAND, CALIFORNIA

838.005 | 1.18.99 | 1

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 2301 MacArthur Blvd
OAKLAND, CA

California Coordinates Source ____ Accuracy ± ____ ft.
CCN ____ ft. CCE ____ ft.
APN ____

CLIENT
Name APA Fund / Anita Mendez
Address 1904 Franklin St, 510 Phone 415 - 989 - 0910
City OAKLAND Zip 94612

APPLICANT
Name MEC MENDOZA
SUBSURFACE LOGS Fax 925 - 299 - 7970
Address 3736 Mt. Diablo Blvd. Phone 925 - 299 - 2960
City LAFAYETTE Zip 94549

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☒
Monitoring	☐	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other ____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☐
Cable	☐	Other	DR. GEOPROBE		

DRILLER'S LICENSE NO. 705927

WELL PROJECTS
Drill Hole Diameter ____ in. Maximum
Casing Diameter ____ in. Depth ____ ft.
Surface Seal Depth ____ ft. Number ____

GEOTECHNICAL PROJECTS
Number of Borings 3 Maximum
Hole Diameter 2 in. Depth 30 ft.

ESTIMATED STARTING DATE 12/1/98
ESTIMATED COMPLETION DATE 12/1/98

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Mec Mendoza DATE 11/5/98

FOR OFFICE USE

PERMIT NUMBER 98WR475
WELL NUMBER ____
APN ____

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
(2.) Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
(3.) Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(D.) GEOTECHNICAL
[Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.]

E. CATHODIC
Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
See attached.

G. SPECIAL CONDITIONS

APPROVED [signature] DATE 11/12/98

Fax Note 7671 | Date 11/5/98 | # of pages 1
To Al Kan
Fax 510-670-5262
From Mec Mendoza
Phone 925-299-7970

*** TOTAL PAGE 02 ***

LOG OF BORING NO. SG-1

Project Name & Location: 2801 MacArthur Boulevard, Oakland, CA	Ground Surface Elevation: --
	Elevation Datum: --
Drilling Coordinates: --	Start: Date 12/1/98 Time 0850 / Finish: Date 12/1/98 Time 1050
Drilling Company & Driller: Vironex - Mike	Drilling Fluid: N/A / Hole Diameter: 1.5 inches
Rig Type & Drilling Method: Geoprobe - Direct Push	
Sampler Type(s): A) Geoprobe B) C)	Logged By: DWA
Sampling Method(s): A) Hydraulic Push B) C)	Backfill Method: Cement Grout / Date: 12/1/98

Elevation (feet) / Depth (feet)	Sampler Type	OVM (ppm)	Blows per Foot	Sample Interval	Graphic Log	SOIL DESCRIPTIONS GROUP NAME (GROUP SYMBOL) color, consistency/density, moisture condition, other descriptions (Local Name or Material Type)	LABORATORY DATA Moisture Content (%)	Dry Density (pcf)	Other
0						**ASPHALTIC CONCRETE 1.5 INCHES THICK**			
		4.9				**SANDY LEAN CLAY (CL)** dark yellowish brown, stiff to very stiff, moist			
5		1.6							
	A					With SAND LENS mostly fine grained with scattered gravel			
		0							
10	A								
		3				color change to mottled light yellowish brown and dark yellowish brown			
						SANDY LEAN CLAY (CL-SC) grayish brown, medium stiff to stiff			
15	A	5							
						CLAYEY SAND WITH GRAVEL (SC-CL) dark yellowish brown, medium dense to dense, moist, slight hydrocarbon odor			
20	A	17							
						grades to interbedded SANDY LEAN CLAY (CL) and LEAN CLAY WITH SAND (CL) mottled yellowish brown and dark gray, stiff to very stiff, moist, slight hydrocarbon odor.			
25	A	78							
						Equipment refusal at 27 feet.			
						No groundwater encountered during drilling.			
30									

SCI Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

2801 MacARTHUR BOULEVARD
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED
838.005	1/25/99	

PLATE **B-1**

LOG OF BORING NO. SG-2

Project Name & Location: 2801 MacArthur Boulevard, Oakland, CA	Ground Surface Elevation: --
	Elevation Datum: --
Drilling Coordinates:	Start: Date 12/1/98 Time 1110 / Finish: Date 12/1/98 Time 1220
Drilling Company & Driller: Vironex - Mike	Drilling Fluid: N/A / Hole Diameter: 1.5 inches
Rig Type & Drilling Method: Geoprobe - Direct Push	
Sampler Type(s): A) Geoprobe B) C)	Logged By: DWA
Sampling Method(s): A) Hydraulic Push B) C)	Backfill Method: Cement Grout / Date: 12/1/98

Elevation (feet)	Depth (feet)	Sampler Type	OVM (ppm)	Blows per Foot	Sample Interval	Graphic Log	SOIL DESCRIPTIONS GROUP NAME (GROUP SYMBOL) color, consistency/density, moisture condition, other descriptions *(Local Name or Material Type)*	LABORATORY DATA Moisture Content (%)	Dry Density (pcf)	Other
	0						**CONCRETE SLAB 2 INCHES THICK** **AGGREGATE BASE 4 INCHES THICK**			
			0				**INTERBEDDED SANDY LEAN CLAY (CL) AND CLAYEY SAND (SC)** *mottled light orange brown and brown, stiff, moist, strong hydrocarbon odor @ 5 feet*			
	5	A	120							
			700							
	10	A								
			1850				strong hydrocarbon odor			
							alternating lenses of SANDY CLAY and CLAYEY SAND with interbedded lenses of gravel to 3 inches thick			
			1950							
	15	A								
							SANDY LEAN CLAY WITH GRAVEL (CL) yellowish brown, stiff to very stiff, moist			
	20	A								
							strong hydrocarbon odor			
							Occasional thin beds of lean clay to 6 inches thick, strong hydrocarbon odor, color changes to light yellowish brown.			
	25	A								
			2100							
							LEAN CLAY (CL) greenish gray, stiff to very stiff, moist, trong hydrocarbon odor			
	30	A								
			1500				No groundwater encountered during drilling			

SCI Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

2801 MacARTHUR BOULEVARD
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED
838.005	1/25/99	

PLATE **B-2**

LOG OF BORING NO. SG-3

Project Name & Location: 2801 MacArthur Boulevard, Oakland, CA	Ground Surface Elevation: --
	Elevation Datum: --
Drilling Coordinates:	Start: Date 12/1/98 Time 1245 / Finish: Date 12/1/98 Time 1400
Drilling Company & Driller: Vironex - Mike	Drilling Fluid: N/A / Hole Diameter: 1.5 inches
Rig Type & Drilling Method: Geoprobe - Direct Push	
Sampler Type(s): A) Geoprobe B) C)	Logged By: DWA
Sampling Method(s): A) Hydraulic Push B) C)	Backfill Method: Cement Grout / Date: 12/1/98

Elevation (feet) / Depth (feet)	Sampler Type	OVM (ppm)	Blows per Foot	Sample Interval	Graphic Log	SOIL DESCRIPTIONS GROUP NAME (GROUP SYMBOL) color, consistency/density, moisture condition, other descriptions (Local Name or Material Type)	LABORATORY DATA Moisture Content (%)	Dry Density (pcf)	Other
0						**CONCRETE SLAB 2 INCHES THICK** **AGGREGATE BASE 4 INCHES THICK**			
		1400				**INTERBEDDED SANDY LEAN CLAY (CL) AND CLAYEY SAND (SC)** yellowish brown, moderate hydrocarbon odor, with interbedded thin layers of gravel to 2 inches thick			
5		1400							
	A	1600							
	A								
10						**CLAYEY SAND WITH GRAVEL (SC)** dark brown, moist, moderate to strong hydrocarbon odor			
		1950							
						color changes to brown @ 14 feet thin lenses of sandy clay			
15	A	1650							
						GRADES TO SANDY LEAN CLAY (CL) brown, medium stiff to stiff			
20									
	A	2100							
25									
	A	1475							
						CLAYEY GRAVEL (GC-SC) dark yellowish brown, dense to very dense, moist, gravel angular to subangular to 1 inch diameter, strong hydrocarbon odor			
	A	1975							
30						No groundwater encountered during drilling.			

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487-93)

MAJOR DIVISIONS				GROUP NAMES
COARSE-GRAINED SOILS More than 50% retained on the No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	Clean gravels less than 5% fines	GW	Well-graded gravel, Well-graded gravel with sand
			GP	Poorly graded gravel, Poorly graded gravel with sand
		Gravels with more than 12% fines	GM	Silty gravel, Silty gravel with sand
			GC	Clayey gravel, Clayey gravel with sand
	SANDS 50% or more of coarse fraction passes No. 4 sieve	Clean sand less than 5% fines	SW	Well-graded sand, Well-graded sand with gravel
			SP	Poorly graded sand, Poorly graded sand with gravel
		Sands with more than 12% fines	SM	Silty sand, Silty sand with gravel
			SC	Clayey sand, Clayey sand with gravel
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	SILTS AND CLAYS Liquid Limit Less than 50%		ML	Silt, Silt with sand or gravel, Sandy or gravelly silt, Sandy or gravelly silt with gravel or sand
			CL	Lean clay, Lean clay with sand or gravel, Sandy or gravelly lean clay, Sandy or gravelly lean clay with gravel or sand
			OL	Organic silt or clay, Organic silt or clay with sand or gravel, Sandy or gravelly organic silt or clay, Sandy or gravelly organic silt or clay with gravel or sand
	SILTS AND CLAYS Liquid Limit Greater than 50%		MH	Elastic silt, Elastic silt with sand or gravel, Sandy or gravelly elastic silt, Sandy or gravelly elastic silt with gravel or sand
			CH	Fat clay, Fat clay with sand or gravel, Sandy or gravelly fat clay, Sandy or gravelly fat clay with gravel or sand
			OH	Organic silt or clay, Organic silt or clay with sand or gravel, Sandy or gravelly organic silt or clay, Sandy or gravelly organic silt or clay with gravel or sand
HIGHLY ORGANIC SOILS			Pt	Peat

For definition of dual and borderline symbols, see ASTM D2487-93.

KEY TO TEST DATA AND SYMBOLS

Perm	-	Permeability
Consol	-	Consolidation
LL	-	Liquid Limit
PI	-	Plasticity Index
Gs	-	Specific Gravity
MA	-	Particle Size Analysis
-200	-	Percent Passing No. 200 Sieve
ND	-	Not Detected
■	-	Tube Sample
⊠	-	Bag or Bulk Sample
⊟	-	Lost Sample
▽	-	First Groundwater
▼	-	Stabilized Groundwater

	Shear Strength (psf)	Confining Pressure (psf)	
TxUU	3200	(2600)	Unconsolidated-Undrained Triaxial Shear
TxCU	3200	(2600)	Consolidated-Undrained Triaxial Shear
TxCD	3200	(2600)	Consolidated-Drained Triaxial Shear
SSCU	3200	(2600)	Consolidated-Undrained Simple Shear
SSCD	3200	(2600)	Consolidated-Drained Simple Shear
DSCD	2700	(2000)	Consolidated-Drained Direct Shear
UC	470		Unconfined Compression
LVS	700		Laboratory Vane Shear
FV	300		Field Vane Shear
RFV			
TV	800		Torvane Shear
PP	400		Pocket Penetrometer *(actual reading divided by 2)*

@AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9812022

Work Order Summary

CLIENT: Mr. Terry McMannis
SubSurface Consultants
3736 Mt. Diablo Blvd.
Lafayette, CA 94549

BILL TO: Same

PHONE: 925-299-7960
FAX: 925-299-7970
DATE RECEIVED: 12/2/98
DATE COMPLETED: 12/4/98

P.O. # NR
PROJECT # 838.005 APA Fund

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SG-1 @ 3'	TO-3	9.5 "Hg
02A	SG-1 @ 6'	TO-3	4.5 "Hg
03A	SG-2 @ 3'	TO-3	14.0 "Hg
04A	SG-2 @ 6'	TO-3	15.5 "Hg
05A	SG-3 @ 3'	TO-3	1.5 "Hg
06A	SG-3 @ 6'	TO-3	11.0 "Hg
07A	Lab Blank	TO-3	NA

LAB NARRATIVE:
Compounds detected between the detection limit and the low point on the curve are "J" flagged.

CERTIFIED BY: _____ For Laboratory Director

DATE: 12/3/98

Certification numbers: CA ELAP - 1149, NY ELAP - 11291, UT ELAP - E-217

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

AIR TOXICS LTD.

SAMPLE NAME : SG-1 @3'

ID#: 9812022-01A

EPA Method TO-3 GC/PID/FID

File Name:	6120307	Date of Collection:	12/ 1/98
Dil. Factor:	2.96	Date of Analysis:	12/ 3/98

Compound	Det. Limit (ppmv)	Amount (ppmv)
Benzene	0.0030	0.010 J
Toluene	0.0030	0.023
Ethyl Benzene	0.0030	0.0049 J
Total Xylenes	0.0030	0.022 J
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.030	0.49 B
C2-C4 Hydrocarbons ref. to Gasoline	0.030	0.080

B = Compound present in laboratory blank, background subtraction not performed.

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Fluorobenzene (PID)	114	50-150
Fluorobenzene (FID)	111	50-150

AIR TOXICS LTD.

SAMPLE NAME : SG-1 @6'

ID#: 9812022-02A

EPA Method TO-3 GC/PID/FID

File Name:	6120308	**Date of Collection:**	12/ 1/98
Dil. Factor:	2.38	**Date of Analysis:**	12/ 3/98

Compound	Det. Limit (ppmv)	Amount (ppmv)
Benzene	0.0024	0.0025 J
Toluene	0.0024	0.014
Ethyl Benzene	0.0024	Not Detected
Total Xylenes	0.0024	0.013 J
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.024	0.26 B
C2-C4 Hydrocarbons ref. to Gasoline	0.024	0.027

B = Compound present in laboratory blank, background subtraction not performed.

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Fluorobenzene (PID)	111	50-150
Fluorobenzene (FID)	109	50-150

AIR TOXICS LTD.

SAMPLE NAME : SG-2 @3'

ID#: 9812022-03A

EPA Method TO-3 GC/PID/FID

File Name:	6120311	Date of Collection:	12/ 1/98
Dil. Factor:	158	Date of Analysis:	12/ 3/98

Compound	Det. Limit (ppmv)	Amount (ppmv)
Benzene	0.16	24
Toluene	0.16	0.58 J
Ethyl Benzene	0.16	6.9
Total Xylenes	0.16	22
TPH (C5+ Hydrocarbons) ref. to Gasoline	1.6	280 B
C2-C4 Hydrocarbons ref. to Gasoline	1.6	Not Detected

B = Compound present in laboratory blank, background subtraction not performed.

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Fluorobenzene (PID)	138	50-150
Fluorobenzene (FID)	141	50-150

AIR TOXICS LTD.

SAMPLE NAME : SG-2@6'

ID#: 9812022-04A

EPA Method TO-3 GC/PID/FID

File Name:	6120315	Date of Collection:	12/ 1/98
Dil. Factor:	522	Date of Analysis:	12/ 3/98

Compound	Det. Limit (ppmv)	Amount (ppmv)
Benzene	0.52	63
Toluene	0.52	2.2
Ethyl Benzene	0.52	18
Total Xylenes	0.52	64
TPH (C5+ Hydrocarbons) ref. to Gasoline	5.2	490 B
C2-C4 Hydrocarbons ref. to Gasoline	5.2	Not Detected

B = Compound present in laboratory blank, background subtraction not performed.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Fluorobenzene (PID)	134	50-150
Fluorobenzene (FID)	122	50-150

AIR TOXICS LTD.

SAMPLE NAME : SG-3@3'

ID#: 9812022-05A

EPA Method TO-3 GC/PID/FID

File Name:	6120312	**Date of Collection:**	12/ 1/98
Dil. Factor:	2.66	**Date of Analysis:**	12/ 3/98

Compound	Det. Limit (ppmv)	Amount (ppmv)
Benzene	0.0027	0.42
Toluene	0.0027	0.43
Ethyl Benzene	0.0027	0.066
Total Xylenes	0.0027	0.24
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.027	7.9 B
C2-C4 Hydrocarbons ref. to Gasoline	0.027	0.054

B = Compound present in laboratory blank, background subtraction not performed.

Q = Exceeds Quality Control limits.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Fluorobenzene (PID)	138	50-150
Fluorobenzene (FID)	155 Q	50-150

AIR TOXICS LTD.

SAMPLE NAME : SG-3@6'

ID#: 9812022-06A

EPA Method TO-3 GC/PID/FID

File Name:	6120316	**Date of Collection:**	12/ 1/98
Dil. Factor:	1990	**Date of Analysis:**	12/ 3/98

Compound	Det. Limit (ppmv)	Amount (ppmv)
Benzene	2.0	310
Toluene	2.0	320
Ethyl Benzene	2.0	64
Total Xylenes	2.0	260
TPH (C5+ Hydrocarbons) ref. to Gasoline	20	3600 B
C2-C4 Hydrocarbons ref. to Gasoline	20	Not Detected

B = Compound present in laboratory blank, background subtraction not performed.

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Fluorobenzene (PID)	149	50-150
Fluorobenzene (FID)	137	50-150

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9812022-07A

EPA Method TO-3 GC/PID/FID

File Name:	6120306	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 12/ 3/98	

Compound	Det. Limit (ppmv)	Amount (ppmv)
Benzene	0.0010	Not Detected
Toluene	0.0010	Not Detected
Ethyl Benzene	0.0010	Not Detected
Total Xylenes	0.0010	Not Detected
TPH (C5+ Hydrocarbons) ref. to Gasoline	0.010	0.011
C2-C4 Hydrocarbons ref. to Gasoline	0.010	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Fluorobenzene (PID)	117	50-150
Fluorobenzene (FID)	112	50-150

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX: (916) 985-1020

Nº 019011

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Contact Person: Meg Mendoza
Company: Subsurface Consultants
Address: 3736 Mt. Diablo Blvd. Ste 200 City: Lafayette State: CA Zip: 945
Phone: (925) 299-7960 FAX: (925) 299-7970
Collected By: Signature: Dennis Alexander

Project info:
P.O. #:
Project #: 838.005
Project Name: APA Fund

Turn Around Time:
☐ Normal
☒ Rush 24 hr. Specify
12/2/98 NR

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
012	SG-1@3'	12/1/98 0910	TVHg/BTXE via method TO-3	-25+		9.5" Hg
022	SG-1@6'	0920				4.5" Hg
032	SG-2@3	1110				14" Hg
042	SG-2@6	1120				15.5" Hg
052	SG-3@3'	1255				1.5" Hg
062	SG-3@6'	1305				11" Hg

Relinquished By: (Signature) Date/Time: Dennis Alexander 12/1/98
Print Name: Dennis Alexander 12/1/98 1:40
Relinquished By: (Signature) Date/Time: Meg Mendoza 12/1/98 1:40
Received By: (Signature) Date/Time: for Fed Ex bill #807314675852
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time: 12/2/98 9:26

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By:	Date/Time	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex	807314675852		12/2/98 9:26	—	Good	Yes No None N/A	9812022

Form 1293 rev 06

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.
Suite 200
Lafayette, CA 94549

Date: 11-DEC-98
Lab Job Number: 136966
Project ID: 838.005
Location: APA Fund

Reviewed by: _____

Reviewed by: _____

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
136966-001	SC-1 @ 6'	45056	12/02/98	12/08/98	12/08/98	
136966-002	SC-1 @ 10'	45056	12/02/98	12/08/98	12/08/98	
136966-003	SC-1 @ 15'	45056	12/02/98	12/08/98	12/08/98	
136966-004	SC-2 @ 7'	45056	12/02/98	12/08/98	12/08/98	

Matrix: Soil

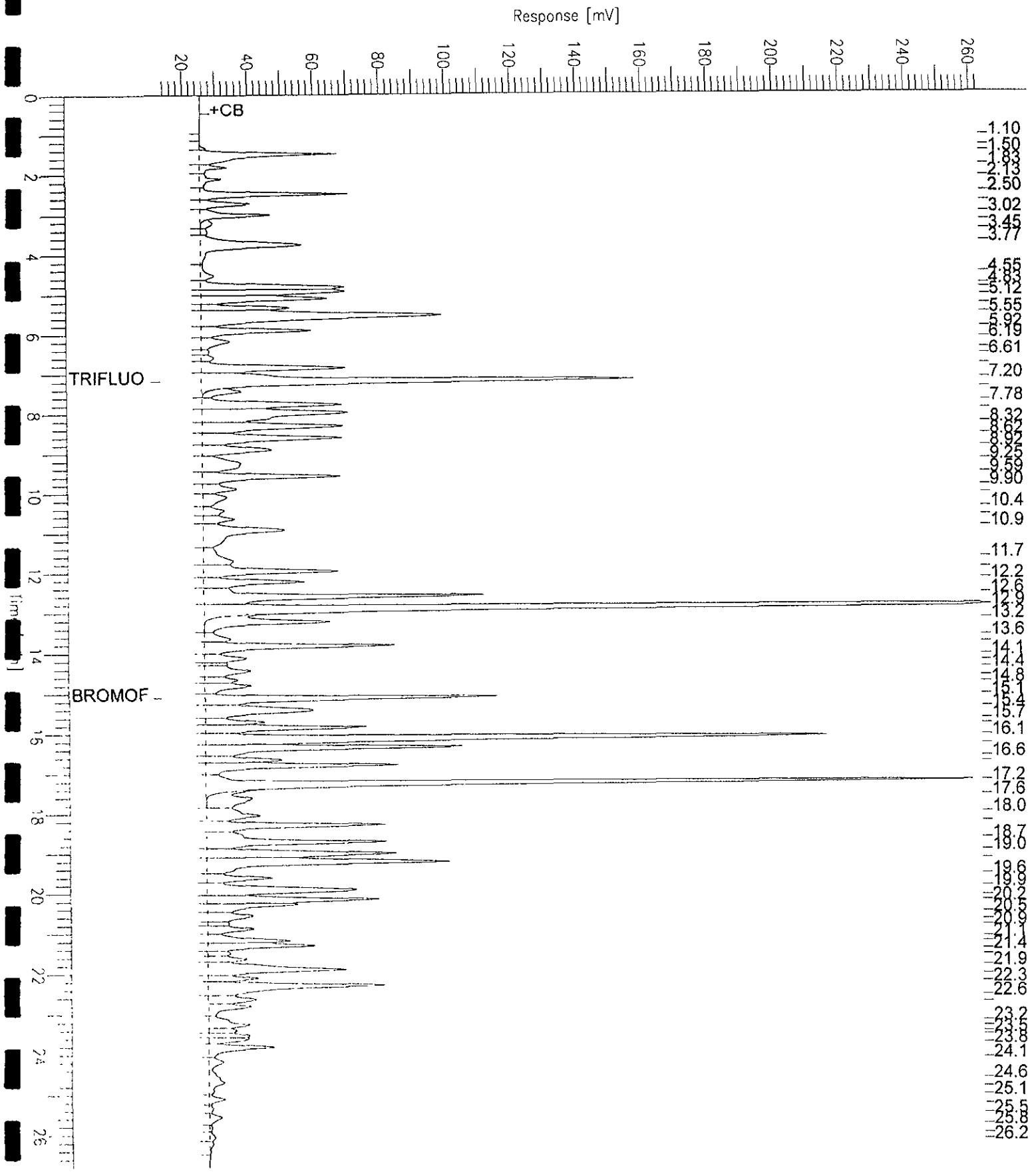
Analyte	Units	136966-001	136966-002	136966-003	136966-004
Diln Fac:		1	1	1	20
Gasoline C7-C12	mg/Kg	<1	<1	<1	400 H
Surrogate					
Trifluorotoluene	%REC	102	108	97	149
Bromofluorobenzene	%REC	137	128	114	150

H: Heavier hydrocarbons than indicated standard

GC05 'G' File TVH

Sample Name : D,136966-004,45056,
FileName : G:\GC05\DATA\341G029.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 13 mV

Sample #:
Date : 12/8/98 05:43 AM
Time of Injection: 12/8/98 05:15 AM
Low Point : 12.93 mV High Point : 262.93 mV
Plot Scale: 250.0 mV



Curtis & Tompkins Ltd.

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
136966-005	SC-2 @ 10'	45056	12/02/98	12/08/98	12/08/98	
136966-006	SC-2 @ 15'	45056	12/02/98	12/08/98	12/08/98	
136966-007	SC-3 @ 7'	45117	12/02/98	12/10/98	12/10/98	
136966-008	SC-3 @ 10'	45117	12/02/98	12/10/98	12/10/98	

Matrix: Soil

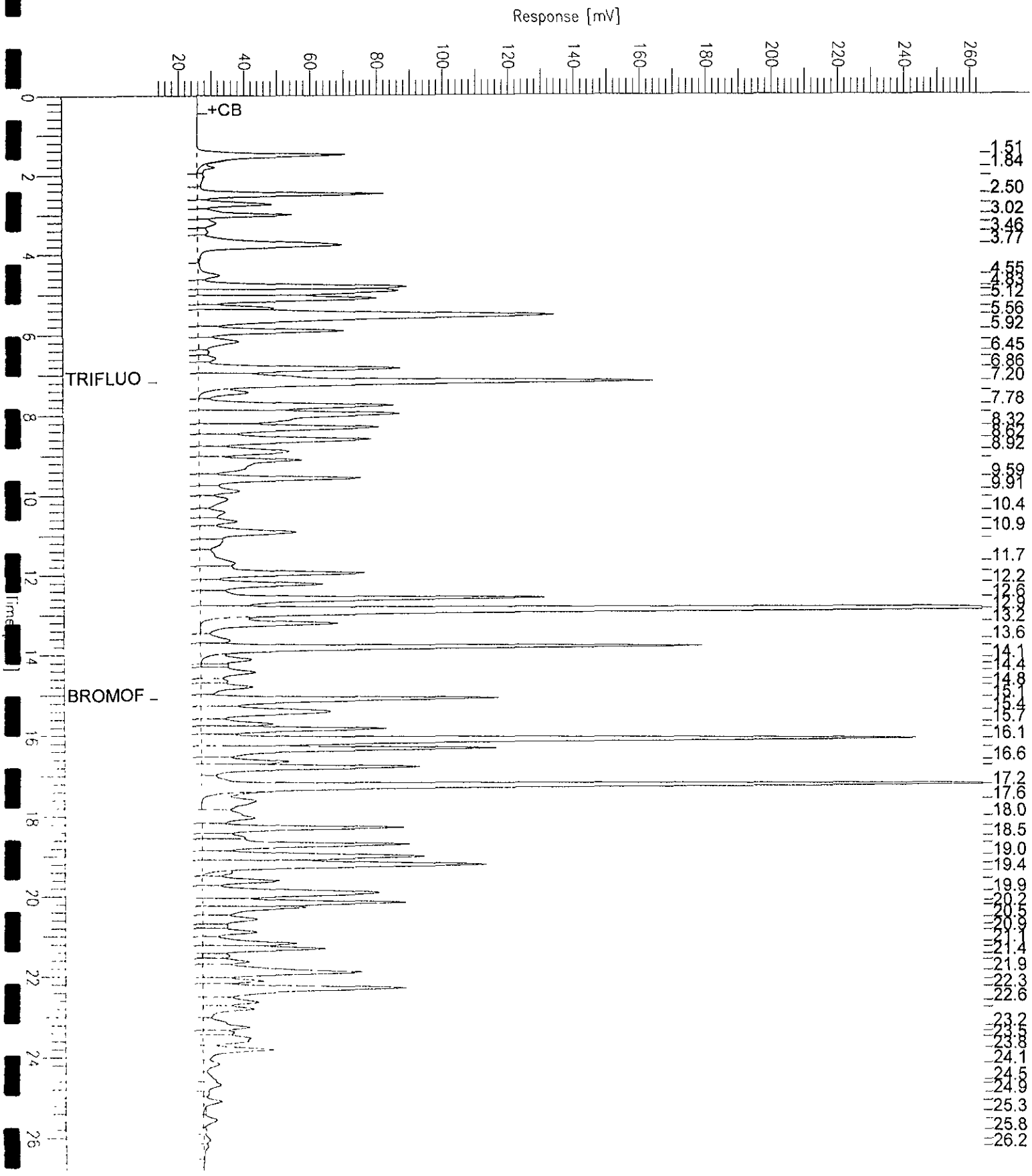
Analyte	Units	136966-005		136966-006		136966-007		136966-008	
Diln Fac:		20		20		100		200	
Gasoline C7-C12	mg/Kg	480	H	480	H	1300		4200	
Surrogate									
Trifluorotoluene	%REC	165	*	143		97		116	
Bromofluorobenzene	%REC	155		162	*	160	*	184	*

* Values outside of QC limits
H: Heavier hydrocarbons than indicated standard

GC05 'G' File TVH

Sample Name : D,136966-005,45056,
FileName : G:\GC05\DATA\341G030.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 13 mV

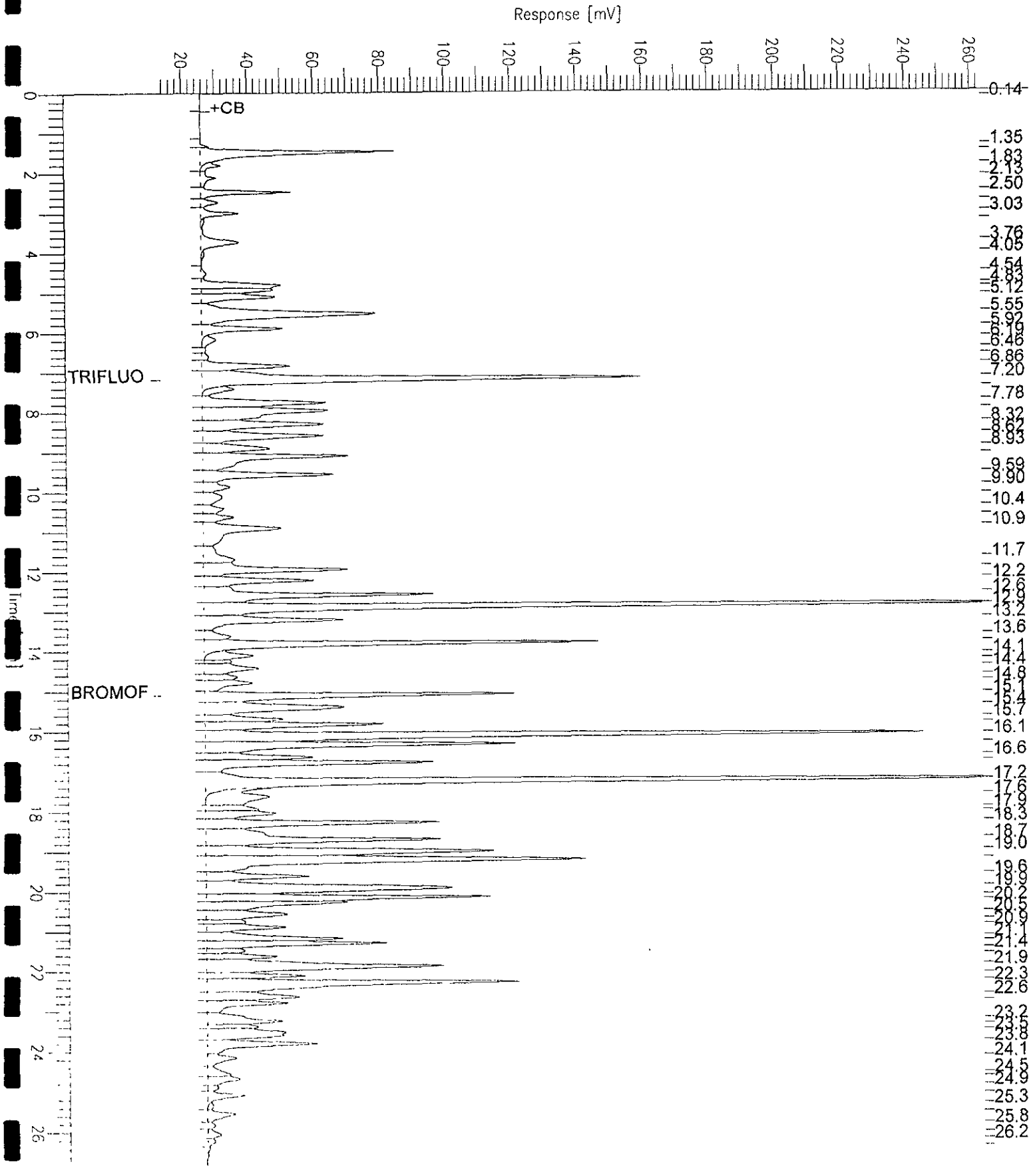
Sample #:
Date : 12/8/98 06:22 AM
Time of Injection: 12/8/98 05:54 AM
Low Point : 13.08 mV High Point : 263.08 mV
Plot Scale: 250.0 mV



GC05 'G' File TVH

Sample Name : D,136966-006,45056,
FileName : G:\GC05\DATA\341G031.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 13 mV

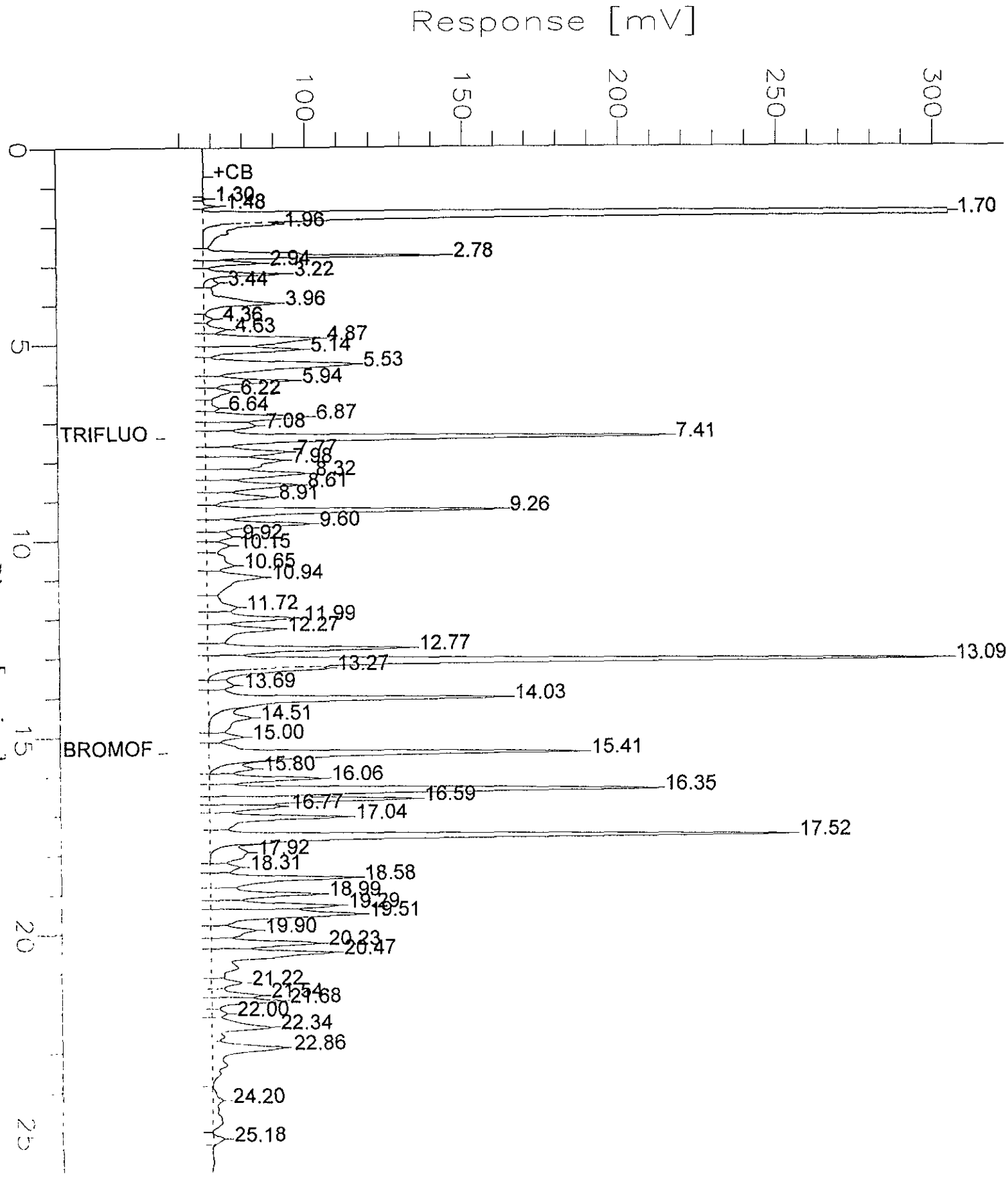
Sample #:
Date : 12/8/98 07:01 AM
Time of Injection: 12/8/98 06:33 AM
Low Point : 13.26 mV High Point : 263.26 mV
Plot Scale: 250.0 mV



GC04 TVH 'J' Data File Rtx1FID

Sample Name : r,d,136966-007,45117
FileName : G:\GC04\DATA\343J027.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 55 mV

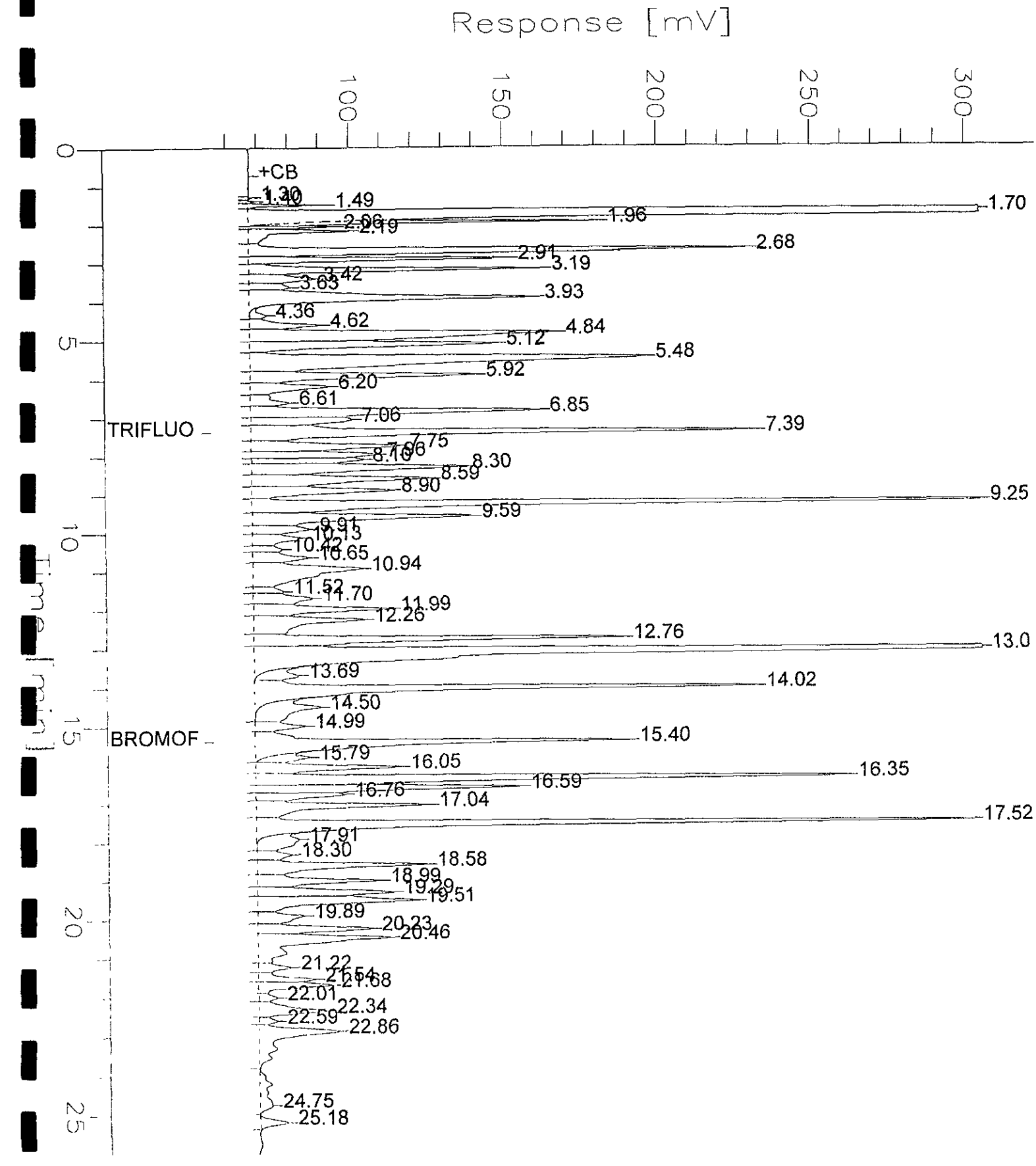
Sample #: 1:100
Date : 12/10/98 04:55 AM
Time of Injection: 12/10/98 04:28 AM
Low Point : 54.84 mV High Point : 304.84 mV
Plot Scale: 250.0 mV



GC04 TVH 'J' Data File Rtx1FID

Sample Name : r,d,136966-008,45117
FileName : G:\GC04\DATA\343J028.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 55 mV

Sample #: 1:200
Date : 12/10/98 05:31 AM
Time of Injection: 12/10/98 05:05 AM
Low Point : 54.83 mV High Point : 304.83 mV
Plot Scale: 250.0 mV



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
136966-009	SC-3 @ 15'	45117	12/02/98	12/10/98	12/10/98	

Matrix: Soil

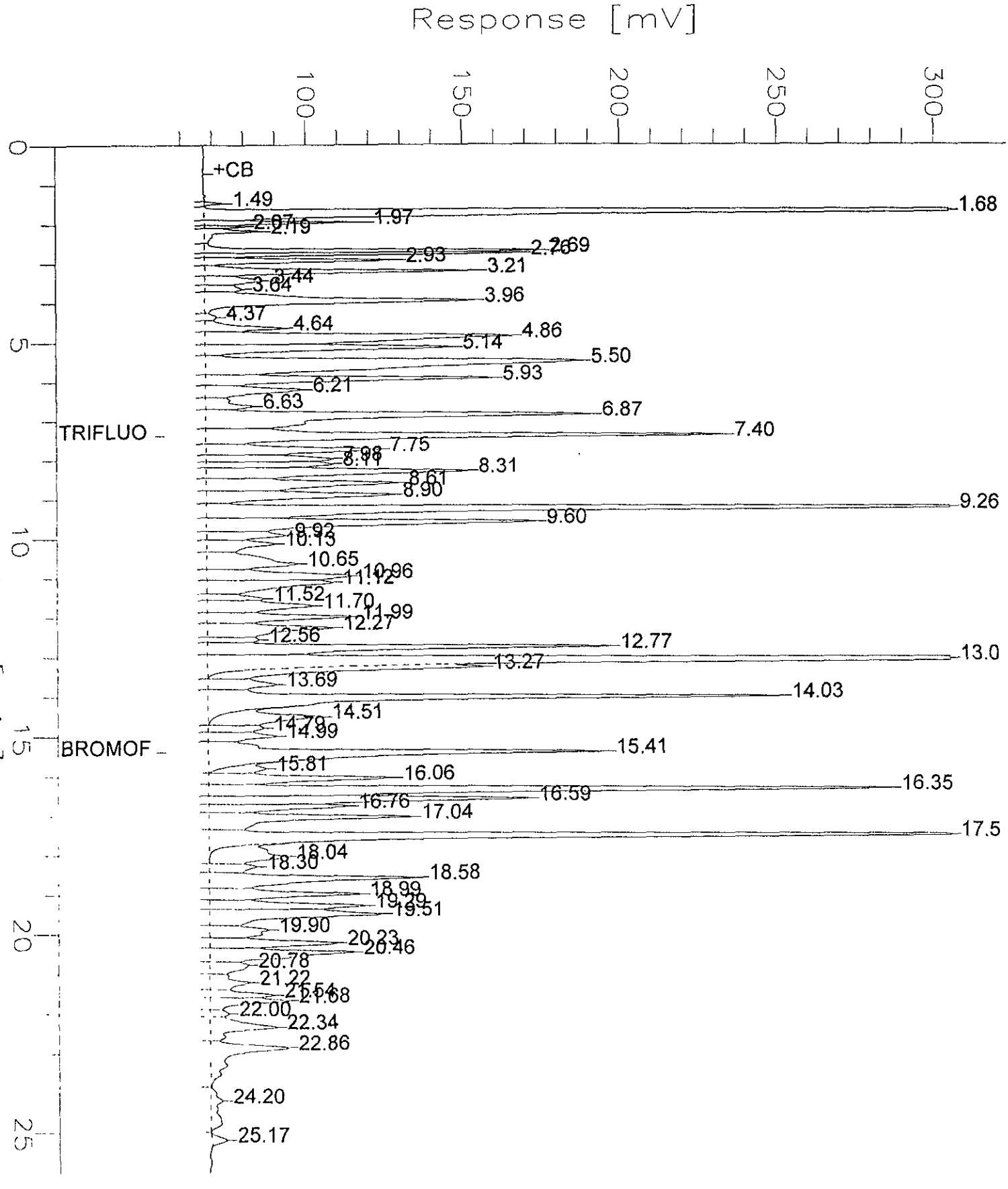
Analyte	Units	136966-009	
Diln Fac:		500	
Gasoline C7-C12	mg/Kg	13000	
Surrogate			
Trifluorotoluene	%REC	120	
Bromofluorobenzene	%REC	207	*

* Values outside of QC limits

GC04 TVH 'J' Data File Rtx1FID

Sample Name : r,d,136966-009,45117
FileName : G:\GC04\DATA\343J029.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 55 mV

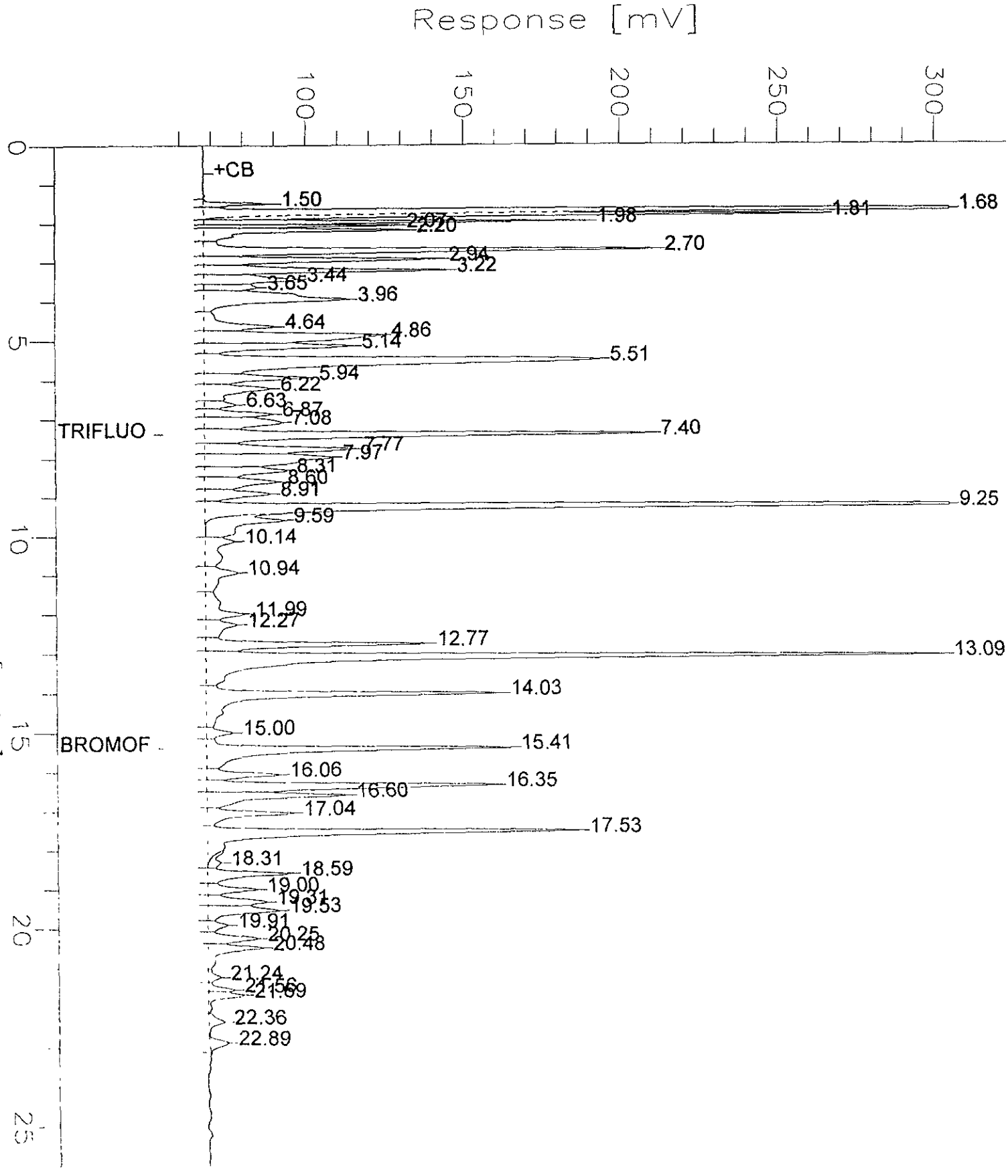
Sample #: 1:500 Page 1 of 1
Date : 12/10/98 06:08 AM
Time of Injection: 12/10/98 05:42 AM
Low Point : 54.79 mV High Point : 304.79 mV
Plot Scale: 250.0 mV



GC04 TVH 'J' Data File Rtx1FID

Sample Name : ccv/lcs,qc86422,98ws6788,45117
FileName : G:\GC04\DATA\343J002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 55 mV

Sample #: gas Page 1 of 1
Date : 12/9/98 01:01 PM
Time of Injection: 12/9/98 12:35 PM
Low Point : 54.80 mV High Point : 304.80 mV
Plot Scale: 250.0 mV



BTXE

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8021B
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
136966-001	SC-1 @ 6'	45056	12/02/98	12/08/98	12/08/98	
136966-002	SC-1 @ 10'	45056	12/02/98	12/08/98	12/08/98	
136966-003	SC-1 @ 15'	45056	12/02/98	12/08/98	12/08/98	
136966-004	SC-2 @ 7'	45056	12/02/98	12/08/98	12/08/98	

Matrix: Soil

Analyte	Units	136966-001	136966-002	136966-003	136966-004	
Diln Fac:		1	1	1	20	
MTBE	ug/Kg	<20	<20	<20	<400	
Benzene	ug/Kg	<5	<5	<5	1200	
Toluene	ug/Kg	<5	<5	<5	380	C
Ethylbenzene	ug/Kg	<5	<5	<5	5200	
m,p-Xylenes	ug/Kg	<5	<5	<5	20000	
o-Xylene	ug/Kg	<5	<5	<5	3200	
Surrogate						
Trifluorotoluene	%REC	93	98	93	112	
Bromofluorobenzene	%REC	113	120	114	129	

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

BTXE

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8021B
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
136966-005	SC-2 @ 10'	45056	12/02/98	12/08/98	12/08/98	
136966-006	SC-2 @ 15'	45056	12/02/98	12/08/98	12/08/98	
136966-007	SC-3 @ 7'	45117	12/02/98	12/10/98	12/10/98	
136966-008	SC-3 @ 10'	45117	12/02/98	12/10/98	12/10/98	

Matrix: Soil

Analyte	Units	136966-005	136966-006	136966-007	136966-008
Diln Fac:		20	20	100	200
MTBE	ug/Kg	<400	<400	<2000	4500
Benzene	ug/Kg	1100	170	4500	33000
Toluene	ug/Kg	2000	2000	18000	100000
Ethylbenzene	ug/Kg	6300	4200	16000	63000
m,p-Xylenes	ug/Kg	23000	15000	57000	220000
o-Xylene	ug/Kg	8600	6700	24000	89000
Surrogate					
Trifluorotoluene	%REC	118	111	80	89
Bromofluorobenzene	%REC	130	136	103	114

BTXE

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8021B
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
136966-009	SC-3 @ 15'	45117	12/02/98	12/10/98	12/10/98	

Matrix: Soil

Analyte	Units	136966-009
Diln Fac:		500
MTBE	ug/Kg	<10000
Benzene	ug/Kg	76000
Toluene	ug/Kg	280000
Ethylbenzene	ug/Kg	150000
m,p-Xylenes	ug/Kg	570000
o-Xylene	ug/Kg	220000
Surrogate		
Trifluorotoluene	%REC	84
Bromofluorobenzene	%REC	103

Lab #: 136966

BATCH QC REPORT

Curtis & Tompkins Ltd.

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

METHOD BLANK

Matrix: Soil
Batch#: 45056
Units: mg/Kg
Diln Fac: 1

Prep Date: 12/08/98
Analysis Date: 12/08/98

MB Lab ID: QC86192

Analyte	Result
Gasoline C7-C12	<1.0

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	104	53-157
Bromofluorobenzene	123	53-157

Lab #: 136966

BATCH QC REPORT

Curtis & Tompkins, Ltd.

BTXE

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8021B
Prep Method: EPA 5030

METHOD BLANK

Matrix: Soil
Batch#: 45056
Units: ug/Kg
Diln Fac: 1

Prep Date: 12/08/98
Analysis Date: 12/08/98

MB Lab ID: QC86192

Analyte	Result
MTBE	<20
Benzene	<5.0
Toluene	<5.0
Ethylbenzene	<5.0
m,p-Xylenes	<5.0
o-Xylene	<5.0

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	99	53-126
Bromofluorobenzene	119	35-144

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Soil
Batch#: 45056
Units: mg/Kg
Diln Fac: 1

Prep Date: 12/07/98
Analysis Date: 12/07/98

LCS Lab ID: QC86190

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	11.31	10	113	78-120

Surrogate	%Rec	Limits
Trifluorotoluene	134	53-157
Bromofluorobenzene	126	53-157

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

BTXE

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8021B
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Soil
Batch#: 45056
Units: ug/Kg
Diln Fac: 1

Prep Date: 12/08/98
Analysis Date: 12/08/98

LCS Lab ID: QC86227

Analyte	Result	Spike Added	%Rec #	Limits
MTBE	90.29	100	90	65-135
Benzene	89.04	100	89	69-118
Toluene	95.29	100	95	73-118
Ethylbenzene	96.09	100	96	68-124
m,p-Xylenes	198.5	200	99	67-124
o-Xylene	103	100	103	73-127

Surrogate	%Rec	Limits
Trifluorotoluene	102	53-126
Bromofluorobenzene	126	35-144

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

Lab #: 136966

BATCH QC REPORT

Curtis & Tompkins Ltd.

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: SC-1 @ 15'
Lab ID: 136966-003
Matrix: Soil
Batch#: 45056
Units: mg/Kg
Diln Fac: 1

Sample Date: 12/02/98
Received Date: 12/04/98
Prep Date: 12/08/98
Analysis Date: 12/08/98

MS Lab ID: QC86193

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline C7-C12	10	<1	10.92	109	38-132

Surrogate	%Rec	Limits
Trifluorotoluene	132	53-157
Bromofluorobenzene	127	53-157

MSD Lab ID: QC86194

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline C7-C12	10	10.89	109	38-132	0	26

Surrogate	%Rec	Limits
Trifluorotoluene	138	53-157
Bromofluorobenzene	132	53-157

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

Lab #: 136966

BATCH QC REPORT

Curtis & Tompkins Ltd.

TVH-Total Volatile Hydrocarbons

Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	838.005	Prep Method:	EPA 5030
Location:	APA Fund		

METHOD BLANK

Matrix:	Soil	Prep Date:	12/09/98
Batch#:	45117	Analysis Date:	12/09/98
Units:	mg/Kg		
Diln Fac:	1		

MB Lab ID: QC86425

Analyte	Result	
Gasoline C7-C12	<1.0	
Surrogate	**%Rec**	**Recovery Limits**
Trifluorotoluene	89	53-157
Bromofluorobenzene	133	53-157

Lab #: 136966

BATCH QC REPORT

Curtis & Tompkins, Ltd.

BTXE

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8021B
Prep Method: EPA 5030

METHOD BLANK

Matrix: Soil
Batch#: 45117
Units: ug/Kg
Diln Fac: 1

Prep Date: 12/09/98
Analysis Date: 12/09/98

MB Lab ID: QC86425

Analyte	Result
MTBE	<20
Benzene	<5.0
Toluene	<5.0
Ethylbenzene	<5.0
m,p-Xylenes	<5.0
o-Xylene	<5.0

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	81	53-126
Bromofluorobenzene	79	35-144

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Soil
Batch#: 45117
Units: mg/Kg
Diln Fac: 1

Prep Date: 12/09/98
Analysis Date: 12/09/98

LCS Lab ID: QC86422

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	10.59	10	106	78-120

Surrogate	%Rec	Limits
Trifluorotoluene	95	53-157
Bromofluorobenzene	130	53-157

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 #: 136966

BATCH QC REPORT

Curtis & Tompkins, Ltd.

BTXE

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8021B
Prep Method: EPA 5030

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Soil
Batch#: 45117
Units: ug/Kg
Diln Fac: 1

Prep Date: 12/09/98
Analysis Date: 12/09/98

BS Lab ID: QC86423

Analyte	Spike Added	BS	%Rec	#	Limits
MTBE	100	71.01	71		65-135
Benzene	100	93.35	93		69-118
Toluene	100	92.44	92		73-118
Ethylbenzene	100	89.37	89		68-124
m,p-Xylenes	200	190.4	95		67-124
o-Xylene	100	92.11	92		73-127

Surrogate	%Rec	Limits
Trifluorotoluene	84	53-126
Bromofluorobenzene	82	35-144

BSD Lab ID: QC86424

Analyte	Spike Added	BSD	%Rec	#	Limits	RPD	#	Limit
MTBE	100	72.7	73		65-135	2		20
Benzene	100	92.94	93		69-118	0		14
Toluene	100	92.5	93		73-118	0		21
Ethylbenzene	100	93.09	93		68-124	4		22
m,p-Xylenes	200	196.6	98		67-124	3		22
o-Xylene	100	96.35	96		73-127	4		26

Surrogate	%Rec	Limits
Trifluorotoluene	84	53-126
Bromofluorobenzene	85	35-144

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

Lab #: 136966

BATCH QC REPORT

Curtis & Tompkins Ltd.

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.005
Location: APA Fund

Analysis Method: EPA 8015M
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ
Lab ID: 137018-001
Matrix: Soil
Batch#: 45117
Units: mg/Kg
Diln Fac: 1

Sample Date: 12/07/98
Received Date: 12/07/98
Prep Date: 12/09/98
Analysis Date: 12/09/98

MS Lab ID: QC86504

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline C7-C12	10	<1	10.36	104	38-132

Surrogate	%Rec	Limits
Trifluorotoluene	95	53-157
Bromofluorobenzene	121	53-157

MSD Lab ID: QC86505

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline C7-C12	10	10.52	105	38-132	2	26

Surrogate	%Rec	Limits
Trifluorotoluene	95	53-157
Bromofluorobenzene	121	53-157

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

CHAIN OF CUSTODY FORM

1 Sept 66

PAGE ____ OF ____

PROJECT NAME: APA FUND

JOB NUMBER: 538 005

PROJECT CONTACT: MEG MENDOZA / JNA

SAMPLED BY: DENNIS ALEXANDER

LAB: S.S.T

TURNAROUND: STANDARD

REQUESTED BY: MEG. MENDOZA

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	MATRIX: SOIL	MATRIX: WASTE	MATRIX: AIR	CONTAINERS: VOA	CONTAINERS: LITER	CONTAINERS: PINT	CONTAINERS: TUBE	METHOD PRESERVED: HCL	METHOD PRESERVED: H_2SO_4	METHOD PRESERVED: HNO_3	METHOD PRESERVED: ICE	METHOD PRESERVED: NONE	SAMPLING DATE: MONTH	SAMPLING DATE: DAY	SAMPLING DATE: YEAR	SAMPLING DATE: TIME	NOTES: TVH / BTEX / MTBE
1	SG-1 @ 6'		X						X						12	2	98		X
2	SG-1 @ 10'		X						X										X
3	SG-1 @ 15'		X						X										X
4	SG-2 @ 7'		X						X										X
5	SG-2 @ 10'		X						X										X
6	SG-2 @ 15'		X						X										X
7	SG-3 @ 7'		X						X										X
8	SG-3 @ 10'		X						X										X
9	SG-3 @ 15'		X						X										X

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
Dennis Alexander	12/4/98 1420	[signature]	12/4/98 1420
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

COMMENTS & NOTES:

Subsurface Consultants, Inc.

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