ANALYTICAL DATA REPORT
FOR
THE NEW JERSEY DEPARTMENT
OF ENVIRONMENTAL PROTECTION
GEOENGINEERING, INC.

Project Name: L.E. Carpenter
Project No.: 5500
Samples received on August 29, 1987

205 Alewife Brook Parkway
Cambridge, Massachusetts 02138
617/661-3111

Facsimile: 617/354-5258

345990

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The New Jersey Department of Environmental Protection
Contractor: Enseco - Erco Laboratory
Project Name: L.E. Carpenter

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One

Project Inventory

GeoEngineering, Inc.
Project Name: L.E. Carpenter
Date Sampled: 08/28/87
Erco Booking Log No.: 5174
Date Samples Received: 08/29/87

Client ID	Erco ID	Description
Well #1	5174-01	Water/Volatiles plus 15 peaks
Well #2	5174-02	Water/Volatiles plus 15 peaks
Well #3	5174-03	Water/Volatiles plus 15 peaks
Well #4	5174-04	Water/Volatiles plus 15 peaks
Well #5	5174-05	Water/Volatiles plus 15 peaks

ENSECO - Erco Laboratory

Sample Analysis Instrumentation Key for Organics

ID	Manufacturer	Model	Data System
GC/MS #S-1	Finnigan	4530	INCOS
GC/MS #S-2	Finnigan	4615B	INCOS
GC/MS #S-3	Finnigan	4530	INCOS
GC/MS #V1*	Hewlett Packard	5996	RTE-6
GC/MS #V2*	Hewlett Packard	5996	RTE-6
GC/MS #V3*	Hewlett Packard	5996	RTE-6
GC/MS #V4*	Hewlett Packard	5985	RTE-6
GC/HECD #1	Perkin-Elmer/Tracor	3920/700	HP-1000
GC/HECD #2	Tracor/Tracor	560/700A	HP-1000
GC/HECD #3	Varian/Tracor	3700/700A	HP-1000
GC/PID #1	Perkin-Elmer/HNU	3920/52-02	HP-1000
GC/PID #3	Varian/HNU	3700/52-02	HP-1000
GC/ECD #2	Hewlett Packard	5840	--
GC/ECD #7	Hewlett Packard	5880	--
GC/ECC #9	Hewlett Packard	5880	--

*Purge-and-trap units manufactured by Tekmar - Model #LSC2/ALS

Two

NONCONFORMANCE SUMMARY

The volatile fraction for Sample Well #2 was initially run within the holding time. Since the values of the xylenes were outside linear range, the sample was reanalyzed on September 6, 1987. The instrument logbook pages are included in the data package.

Enseco

VOLATILE ORGANICS

Surrogate Recovery Summary

Client Name: GeoEngineering, Inc.

Matrix: Water

Authorized: 08/29/87 Received: 08/29/87

Erco ID	Client ID	Surrogate Compound		
		d_4-1,2,-Dichloro-ethane	d_8-Toluene	p-Bromofluoro-benzene
5174-01	Well #1	97	104	115
5174-02	Well #2	105	99	107
5174-03	Well #3	103	110	107
5174-04	Well #4	105	96	111
5174-05	Well #5	109	97	115
6940	Erco Procedural Blank - Water	97	98	108
K842	Erco Procedural Blank - Water	96	100	102
6973	Erco Procedural Blank - Water	97	100	100
QC Advisory Limits:		76-114%	61-110%	74-115%

Reported by CB Approved by

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624 + 624/HSL List

QUALITY CONTROL

Client Name: GeoEngineering, Inc.

Client ID: Laboratory Control Spike

Laboratory ID: 6869LCS

Matrix: Water Prepared: 08/31/87 Analyzed: 08/31/87

Parameter	% Recovery	QC Advisory Limits
1,1-Dichloroethe	104	61 - 145%
Trichloroethene	99	71 - 120%
Benzene	94	76 - 127%
Toluene	79	76 - 125%
Chlorobenzene	96	75 - 130%

Reported by VB Approved by AL

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624 + 624/HSL List

QUALITY CONTROL

Client Name: GeoEngineering, Inc.

Client ID: Laboratory Control Spike Dup.

Laboratory ID: 6897LCSD

Matrix: Water Prepared: 09/02/87 Analyzed: 09/02/87

Parameter	% Recovery	QC Advisory Limits
1,1-Dichloroethe	84	61 - 145%
Trichloroethene	108	71 - 120%
Benzene	98	76 - 127%
Toluene	97	76 - 125%
Chlorobenzene	101	75 - 130%

Reported by CB Approved by

METHOD BLANK SUMMARY

Case No. GeoEngineering Region — Contractor Enseco-Erco Laboratory Contract No. —

FILE ID	DATE OF ANALYSIS	FRACTION	MATRIX	CONC. LEVEL	INST. ID	CAS NUMBER	COMPOUND (HSL, TIC OR UNKNOWN)	CONC.	UNITS	Reporting Limit ~~CRQL~~
Erco Blank 6940	9-3-87	VOA	water	low	GCMS V2	75-09-2	Methylene Chloride	0.84	ug/l	5
Erco Blank 6973	9-4-87	VOA	water	low	GCMS V2	75-09-2	Methylene Chloride	4.3	ug/l	5
↓	↓	↓	↓	↓	↓	108-88-3	Toluene	1.3	ug/l	2
Erco Blank K842	9-6-87	VOA	water	low	GCMS V-3	—	none detected	—	—	—

Comments:

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

Case No. GeoEngineering Contractor Enseco Inc.- Erco Lab Contract No. —

Instrument ID V2 Date 9.3.87 Time 9:18

Lab ID 6938 Data Release Authorized By: Ar

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	28.3
75	30.0 - 60.0% of the base peak	59.5
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of the base peak	7.57
173	Less than 1.0% of the base peak	0.00
174	Greater than 50.0% of the base peak	60.3
175	5.0 - 9.0% of mass 174	4.65 (7.71)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	59.7 (99.1)[1]
177	5.0 - 9.0% of mass 176	4.02 (6.72)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 174.
[2]Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
	BFB tune 6938	9.3.87	09:18
	DDA 50ppb Std 6939	9.3.87	10:13
	Method Blank 6940	9.3.87	11:16
Well #1	5174-01 6943	9.3.87	14:14

FORM V

7/85

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

Case No. Geo Engineering Contractor Enseco Inc.- Erco Lab Contract No. —

Instrument ID V2 Date 9.4.87 Time 12:09

Lab ID 6971 Data Release Authorized By: [illegible]

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	25.9
75	30.0 - 60.0% of the base peak	52.6
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of the base peak	6.43
173	Less than 1.0% of the base peak	0.00
174	Greater than 50.0% of the base peak	86.7
175	5.0 - 9.0% of mass 174	6.87 (7.93)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	85.7 (98.9)[1]
177	5.0 - 9.0% of mass 176	6.25 (7.29)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 174.
[2]Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
	BFB tune 6971	9.4.87	12:09
	120A 50ppbstd 6972	9.4.87	12:29
	Method Blank 6973	9.4.87	14:35
Well #3	5174-03 6974	9.4.87	15:41
Well #4	5174-04 6975	9.4.87	16:34
Well #5	5174-05 6976	9.4.87	17:22

FORM V

7/85

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

Case No. GeoEngineering Contractor Enseco Inc.- Erco Lab Contract No. —

Instrument ID V3 Date 9.6.87 Time 15:50

Lab ID K839 Data Release Authorized By: Aw

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	23.3
75	30.0 - 60.0% of the base peak	52.9
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of the base peak	6.57
173	Less than 1.0% of the base peak	0.00
174	Greater than 50.0% of the base peak	84.3
175	5.0 - 9.0% of mass 174	6.26 (7.42)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	83.8 (99.4)[1]
177	5.0 - 9.0% of mass 176	5.81 (6.94)[2]

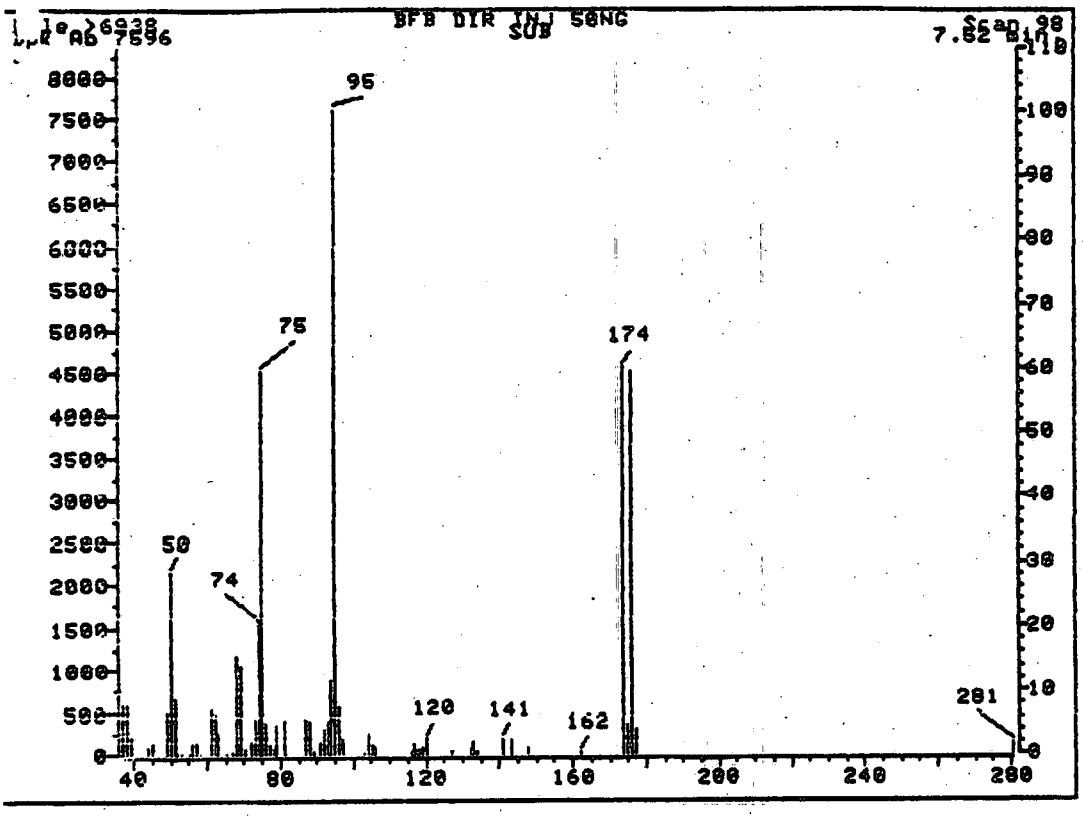
THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1] Value in parenthesis is % mass 174.
[2] Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
	BFB tune K839	9.6.87	15:50
	100A50PPBSTD K841	9.6.87	17:32
	Method Blank K842	9.6.87	18:33
Well #2	5174-02 K843	9.6.87	19:55

FORM V

7/85



S data file header from : >6938

Sample: BFB DIR INJ 50NG Operator: STEVE MS 9/03/87 9:18
isc :
ys. #: 2 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB2 Tuning file: MT7402 No. of extra records: 1
Source temp.: 200 Analyzer temp.: 200 Transfer line temp. : 220

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	1.0	7.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	0.0	0.0

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

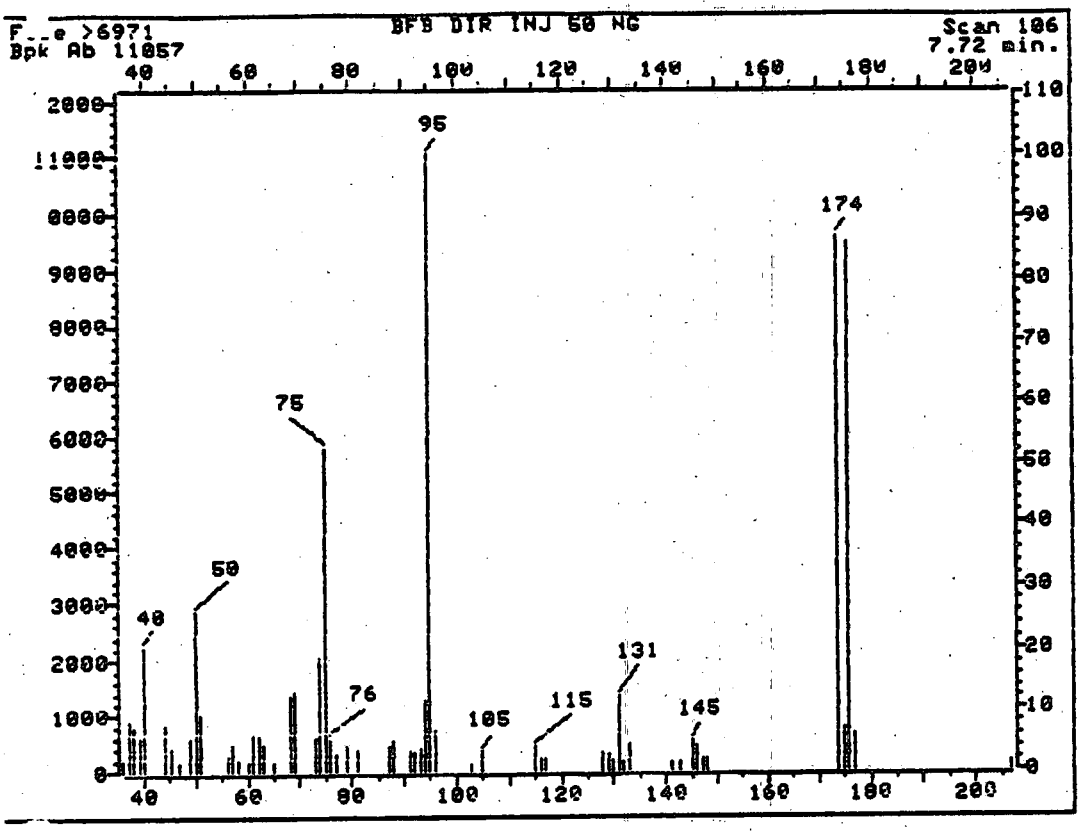
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	28.29	28.29	Ok
75	30-60% of mass 95	59.51	59.51	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.57	7.57	Ok
173	Less then 1% of mass 95	0.00	0.00	Ok
174	Greater then 50% of mass 95	60.27	60.27	Ok
175	5-9% of mass 174	4.65	7.71	Ok
176	95-101% of mass 174	59.74	99.13	Ok
177	5-9% of mass 176	4.02	6.72	Ok

Injection Date: 09/03/87
Injection Time: 09:18
Data File: >6938
Scan: 98

6938 BFB DIR INJ 50NG
98 SUB NRM

ile: >6938 Scan #: 98 Retn. time: 7.52

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.10	7.85	58.10	.24	76.10	4.87	96.10	7.57	132.10	.58
38.10	7.79	61.10	7.15	77.10	1.30	97.10	2.37	133.10	2.15
39.10	2.67	62.10	6.27	78.10	.63	103.10	.04	134.10	.55
44.10	1.01	63.10	3.40	79.10	4.59	104.00	3.15	141.00	2.47
45.10	1.74	65.10	.12	81.00	5.29	105.10	1.34	143.00	2.19
49.10	6.44	67.10	.54	87.00	5.37	106.10	1.04	148.10	.90
50.10	28.29	68.10	15.52	88.00	5.29	116.10	.29	162.10	.37
51.10	8.58	69.10	13.74	89.10	.47	117.10	1.55	173.90	60.27
52.10	.03	70.10	.76	91.10	1.91	118.10	.75	174.90	4.65
53.10	.12	72.10	2.15	92.10	3.95	119.10	.95	175.90	59.74
55.10	.14	73.10	5.49	93.10	5.21	120.10	2.54	176.90	4.02
56.10	1.69	74.10	20.16	94.10	11.66	127.10	.45	280.80	1.55
57.20	2.03	75.10	59.51	95.10	100.00				



MS data file header from : >6971

Sample: BFB DIR INJ 50 NG Operator: STEVE MS 9/04/87 12:09
Disc :
Sys. #: 2 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB2 Tuning file: MT7402 No. of extra records: 1
Source temp.: 200 Analyzer temp.: 200 Transfer line temp. : 220

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	1.0	7.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	0.0	0.0

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

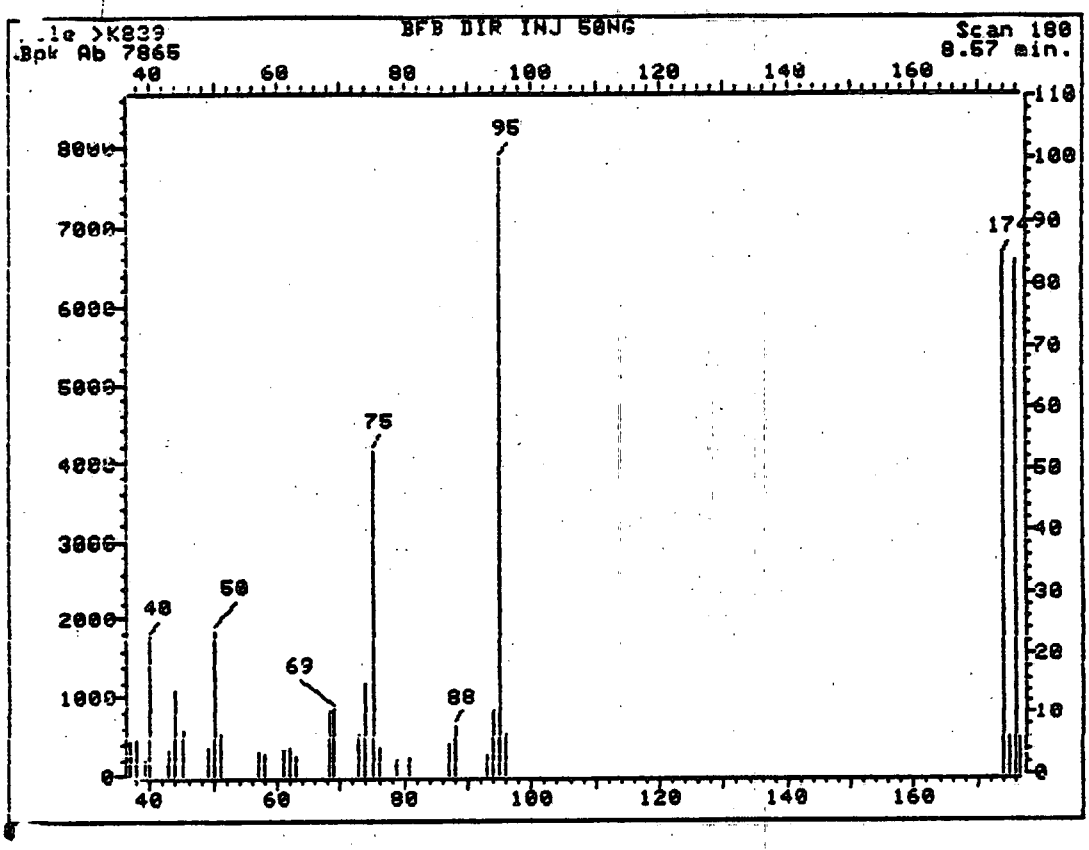
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	25.89	25.89	Ok
75	30-60% of mass 95	52.56	52.56	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	6.43	6.43	Ok
173	Less then 1% of mass 95	0.00	0.00	Ok
174	Greater then 50% of mass 95	86.65	86.65	Ok
175	5-9% of mass 174	6.87	7.93	Ok
176	95-101% of mass 174	85.68	98.88	Ok
177	5-9% of mass 176	6.25	7.29	Ok

Injection Date: 09/04/87
Injection Time: 12:09
Data File: >6971
Scan: 106

6971 BFB DIR INJ 50 NG
106 NRM

File: >6971 Scan #: 106 Retn. time: 7.72

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
36.10	1.84	57.10	4.31	76.00	5.28	103.00	1.12	141.00	1.38
37.10	8.19	58.10	1.60	77.00	2.82	105.00	3.31	142.90	1.57
38.10	7.05	60.10	1.59	79.00	4.24	115.00	4.07	145.10	5.00
39.10	5.47	61.10	6.24	81.00	3.28	116.00	1.96	146.00	4.12
40.10	20.29	62.10	5.64	87.00	4.16	117.00	2.22	147.00	2.08
44.10	7.33	63.10	4.61	88.00	5.14	128.00	3.13	147.90	2.18
45.10	3.79	64.90	1.41	91.10	3.48	129.00	2.66	173.80	86.65
47.00	1.39	68.10	12.29	92.00	3.01	129.90	1.63	174.90	6.87
49.10	5.53	69.10	12.72	93.00	3.90	131.00	12.15	175.80	85.68
50.10	25.89	73.00	5.52	94.00	11.57	131.90	1.32	176.80	6.25
51.10	9.02	74.00	18.50	95.00	100.00	133.10	4.57	206.90	1.45
56.10	2.41	75.10	52.56	96.10	6.43				



IS data file header from : >K839

Sample: BFB DIR INJ 50NG Operator: STEVE MS 9/06/87 15:50
Misc :
Sys. #: 1 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB3 Tuning file: MT7403 No. of extra records: 1
Source temp.: 200 Analyzer temp.: 200 Transfer line temp. : 220

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	.1	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	.1	0.0	0.0	0.0	0.0

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	23.31	23.31	Ok
75	30-60% of mass 95	52.85	52.85	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	6.57	6.57	Ok
173	Less then 1% of mass 95	0.00	0.00	Ok
174	Greater then 50% of mass 95	84.26	84.26	Ok
175	5-9% of mass 174	6.26	7.42	Ok
176	95-101% of mass 174	83.75	99.40	Ok
177	5-9% of mass 176	5.81	6.94	Ok

Injection Date: 09/06/87
Injection Time: 15:50
Data File: >K839
Scan: 180

K839 BFB DIR INJ 50NG
180 NRM

File: >K839 Scan #: 180 Retn. time: 8.57

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.00	5.52	49.10	4.56	63.00	3.15	78.85	2.49	95.05	100.00
38.00	5.65	50.00	23.31	68.10	10.36	80.85	2.70	96.05	6.57
39.10	2.58	51.00	6.29	69.00	10.77	86.95	5.05	173.90	84.26
40.00	22.48	57.00	3.85	73.00	6.48	87.95	7.91	174.90	6.26
43.00	4.14	58.00	3.53	74.00	15.19	92.95	3.46	175.90	83.75
44.00	13.91	61.00	4.12	75.00	52.85	93.95	10.35	176.80	5.81
45.10	7.12	62.10	4.44	76.00	4.42				

Three

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.
Client ID: Well #1
Laboratory ID: 5174-01
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/03/87 Analyzed: 09/03/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	1,000
Bromomethane	ND	µg/L	1,000
Vinyl chloride	ND	µg/L	1,000
Chloroethane	ND	µg/L	1,000
Methylene chloride ----------	1,100B	µg/L	1,000
1,1-Dichloroethene	ND	µg/L	400
1,1-Dichloroethane	ND	µg/L	400
trans-1,2-Dichloroethene	ND	µg/L	400
Chloroform	ND	µg/L	400
1,2-Dichloroethane	ND	µg/L	400
1,1,1-Trichloroethane	ND	µg/L	400
Carbon tetrachloride	ND	µg/L	400
Bromodichloromethane	ND	µg/L	400
1,2-Dichloropropane	ND	µg/L	400
trans-1,3-Dichloropropene	ND	µg/L	400
Trichloroethene	ND	µg/L	400
Dibromochloromethane	ND	µg/L	400
1,1,2-Trichloroethane	ND	µg/L	400
Benzene	ND	µg/L	400
cis-1,3-Dichloropropene	ND	µg/L	400
2-Chloroethyl vinyl ether	ND	µg/L	2,000
Bromoform	ND	µg/L	400
1,1,2,2-Tetrachloroethane	ND	µg/L	400
Tetrachloroethene	ND	µg/L	400
Toluene	ND	µg/L	400
Chlorobenzene	ND	µg/L	400
Ethyl benzene ----------	7,000	µg/L	400

ND = Not detected.

B = Analyte also detected in blank.

Reported by CB Approved by AL

Enseco

VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

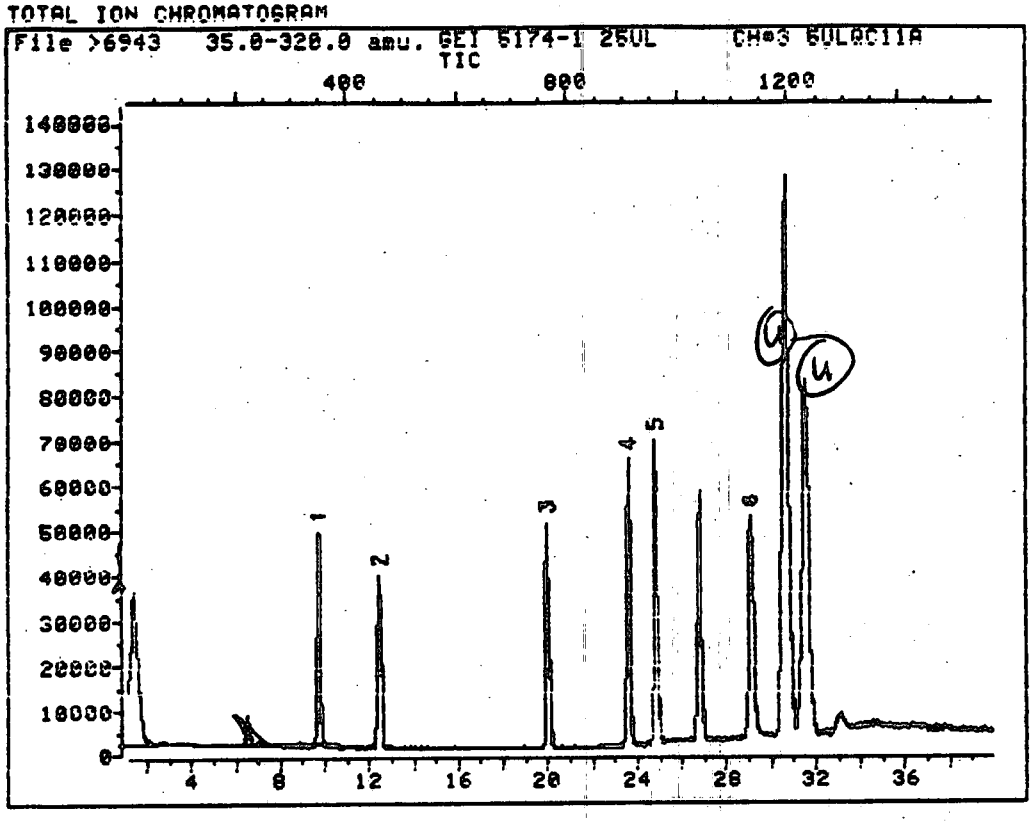
EPA Method 624/8240

Client Name: GeoEngineering, Inc.
Client ID: Well #1
Laboratory ID: 5174-01
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/03/87 Analyzed: 09/03/87

Parameter	Scan No.	Units	Estimated concentration
m-Xylene	1196	µg/L	27,000
o,p-Xylenes	1232	µg/L	20,000

Reported by OB Approved by

TOTAL ION CHROMATOGRAM



well #1

Data File: >6943::D6
Name: GEI 5174-1 25UL
Misc: CH#3 5ULQC11A

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870903 11:18

Operator ID: STEVE
Quant Time: 870903 14:55
Injected at: 870903 14:14

Previous Sample 6942 ERCO ID 5155-7
Major Contaminants none
Sample in Chamber Previously 6928
ERCO ID 5022-2
Major Contaminants none
Carryover? Yes No ✓ If yes, what?
Dilution Factor
Spectra Checked
Areas Checked
Calculations Checked
Manually check for 1,2 - dichloroethane
1,1,2,2 - tetrachloroethane
styrene
All peaks accounted for? Yes No
If no, Number of unknowns

QUANT REPORT

perator ID: STEVE
utput File: ^6943::20
Data File: >6943::D6
Name: GEI 5174-1 25UL
isc: CH#3 5ULQC11A

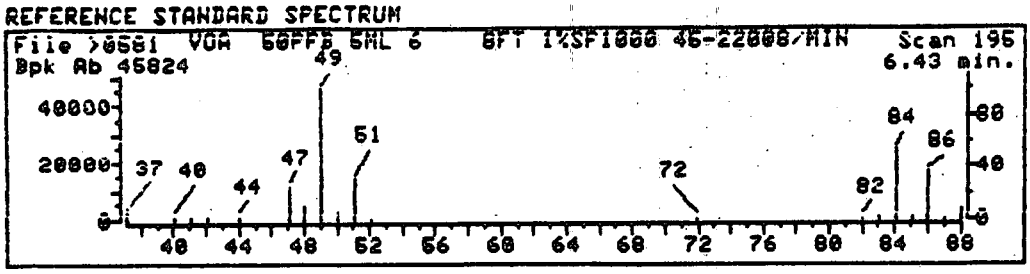
Quant Rev: 4
Quant Time: 870903 14:55
Injected at: 870903 14:14
Dilution Factor: 1.000

ID File: VOAID2::$$
itle: HSL VOLATILES:BFT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
ast Calibration: 870903 11:18

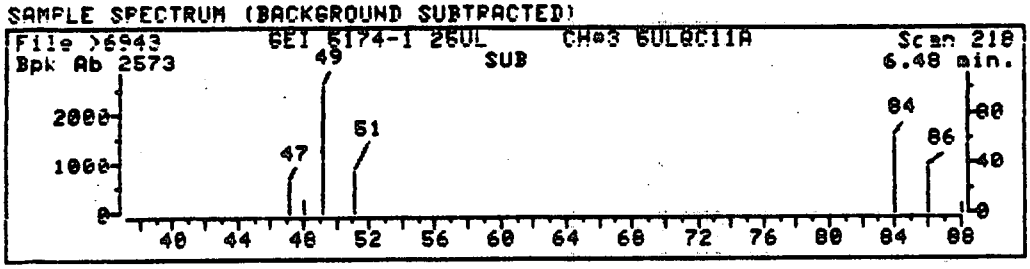
	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	9.69	348	124400	50.00	UG/L	100
6)	Methylene Chloride	6.48	218	13804	5.66	UG/L	52
7)	Acetone non HSL	7.05	241	7963	14.66	UG/L	89
14)	D4-1,2-Dichloroethane	12.43	459	152248	48.60	UG/L 97	58
15)	*1,4-Difluorobenzene	19.96	764	150444	50.00	UG/L	100
30)	*D5-Chlorobenzene	24.80	960	152604	50.00	UG/L	54
36)	D8-Toluene	23.59	911	122254	51.98	UG/L 104	99
38)	Ethylbenzene	26.75	1039	62205	35.19	UG/L	59
39)	Xylene (m) >non HSL	30.63	1196	279285	137.05	UG/L	93
41)	Xylenes (o , p)	31.52	1232	201071	101.92	UG/L	53
42)	Bromofluorobenzene (BFB)	29.07	1133	145034M	57.59	UG/L 115	61

* Compound is ISTD

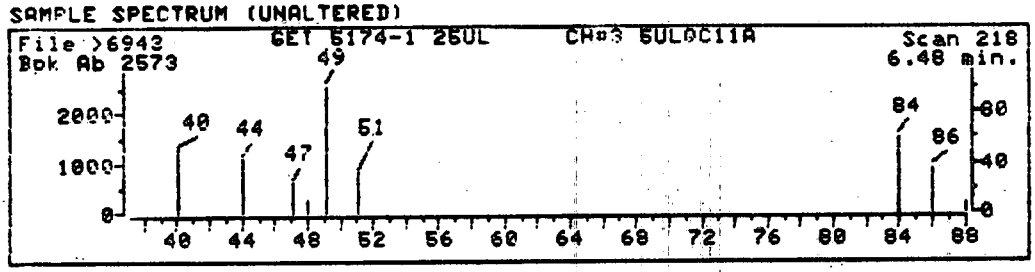
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



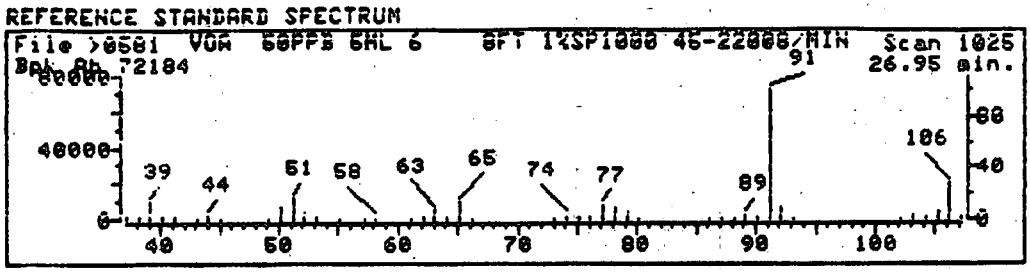
SAMPLE SPECTRUM (UNALTERED)



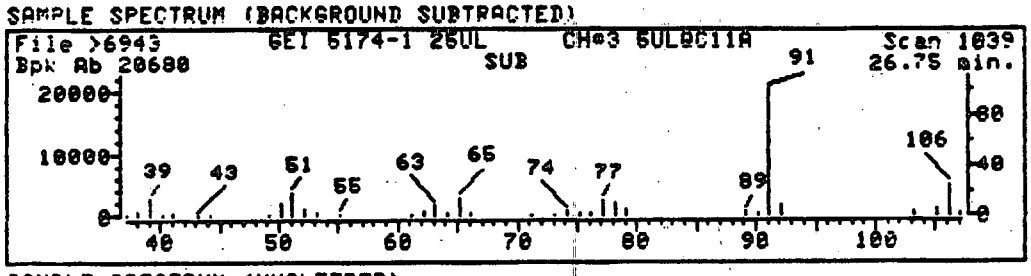
Data File: >6943::D6
Name: GEI 5174-1 25UL
Misc: CH#3 5ULQC11A
Quant Time: 870903 14:55
Injected at: 870903 14:14

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 218
Retention Time: 6.48 min.
Area: 13804
Concentration: 5.66 UG/L
q-value: 57

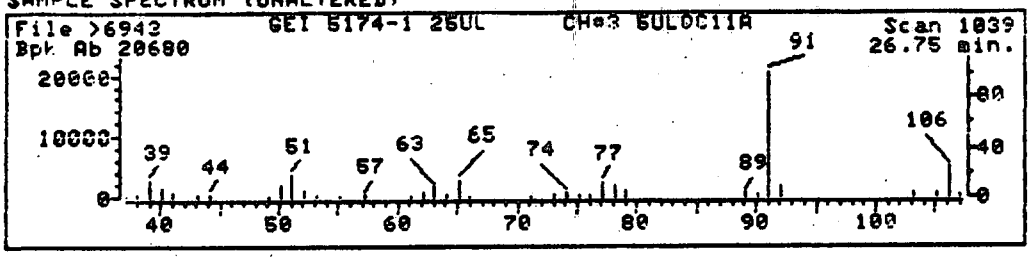
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



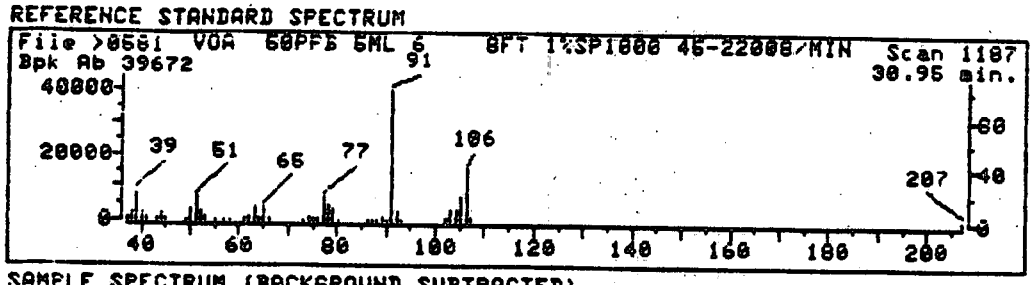
SAMPLE SPECTRUM (UNALTERED)



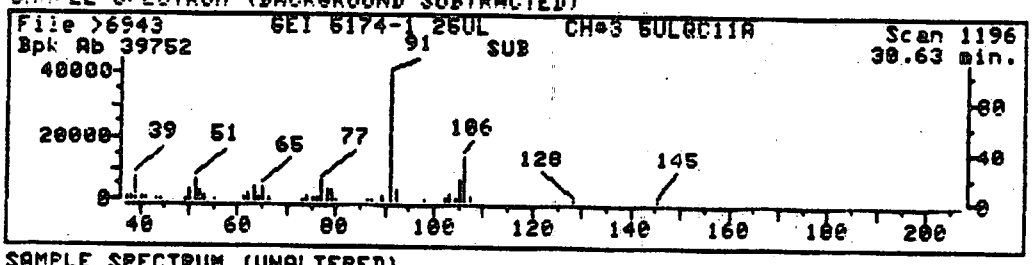
Data File: >6943::D6
Name: GEI 5174-1 25UL
Misc: CH#3 5ULQC11A
Quant Time: 870903 14:55
Injected at: 870903 14:14

Compound No: 38
Compound Name: Ethylbenzene
Scan Number: 1039
Retention Time: 26.75 min.
Area: 62205
Concentration: 35.19 UG/L
q-value: 89

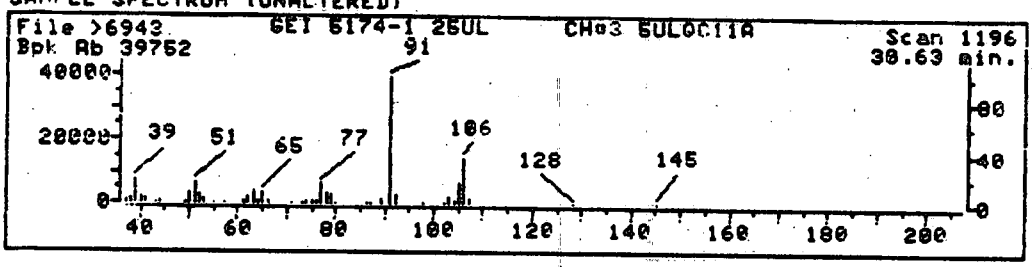
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



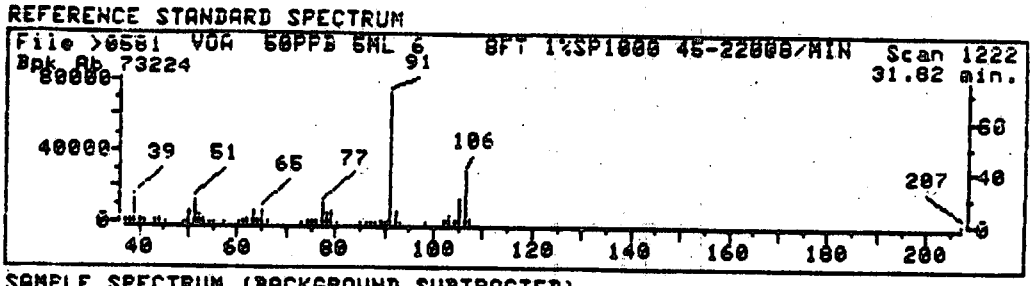
SAMPLE SPECTRUM (UNALTERED)



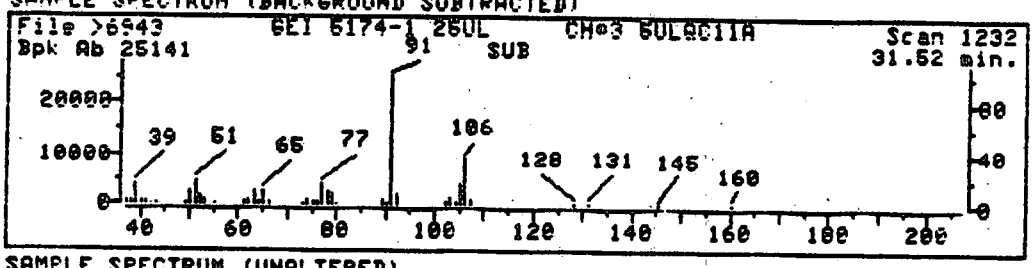
Data File: >6943::D6
Name: GEI 5174-1 25UL
Misc: CH#3 5ULQC11A
Quant Time: 870903 14:55
Injected at: 870903 14:14

Compound No: 39
Compound Name: Xylene (m)
Scan Number: 1196
Retention Time: 30.63 min.
Area: 279285
Concentration: 137.05 UG/L
q-value: 93

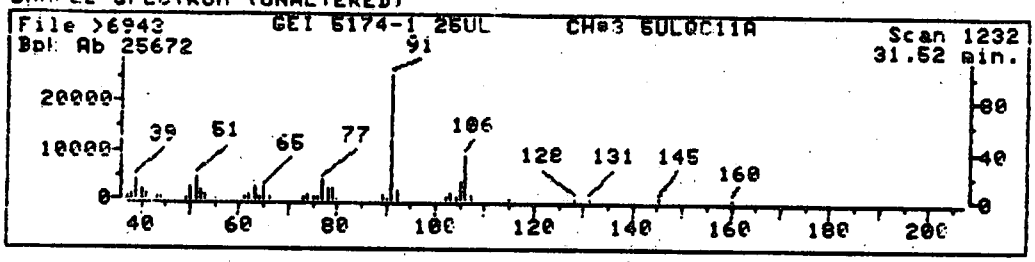
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >6943::D6
Name: GEI 5174-1 25UL
Misc: CH#3 5ULQC11A
Quant Time: 870903 14:55
Injected at: 870903 14:14

Compound No: 41
Compound Name: Xylenes (o , p)
Scan Number: 1232
Retention Time: 31.52 min.
Area: 201071
Concentration: 101.92 UG/L
q-value: 93

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.
Client ID: Well #2
Laboratory ID: 5174-02
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/06/87 Analyzed: 09/06/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	500
Bromomethane	ND	µg/L	500
Vinyl chloride	ND	µg/L	500
Chloroethane	ND	µg/L	500
Methylene chloride ----------	140*	µg/L	500
1,1-Dichloroethene	ND	µg/L	200
1,1-Dichloroethane	ND	µg/L	200
trans-1,2-Dichloroethene	ND	µg/L	200
Chloroform	ND	µg/L	200
1,2-Dichloroethane	ND	µg/L	200
1,1,1-Trichloroethane	ND	µg/L	200
Carbon tetrachloride	ND	µg/L	200
Bromodichloromethane	ND	µg/L	200
1,2-Dichloropropane	ND	µg/L	200
trans-1,3-Dichloropropene	ND	µg/L	200
Trichloroethene	ND	µg/L	200
Dibromochloromethane	ND	µg/L	200
1,1,2-Trichloroethane	ND	µg/L	200
Benzene	ND	µg/L	200
cis-1,3-Dichloropropene	ND	µg/L	200
2-Chloroethyl vinyl ether	ND	µg/L	1,000
Bromoform	ND	µg/L	200
1,1,2,2-Tetrachloroethane	ND	µg/L	200
Tetrachloroethene	ND	µg/L	200
Toluene	ND	µg/L	200
Chlorobenzene	ND	µg/L	200
Ethyl benzene	ND	µg/L	200

*Trace concentrations detected below the reporting limit.

ND = Not detected.

Reported by CB Approved by Am

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VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

EPA Method 624/8240

Client Name: GeoEngineering, Inc.
Client ID: Well #2
Laboratory ID: 5174-02
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/06/87 Analyzed: 09/06/87

Parameter	Scan No.	Units	Estimated concentration
m-Xylene	1204	µg/L	5,200
o,p-Xylenes	1247	µg/L	1,100

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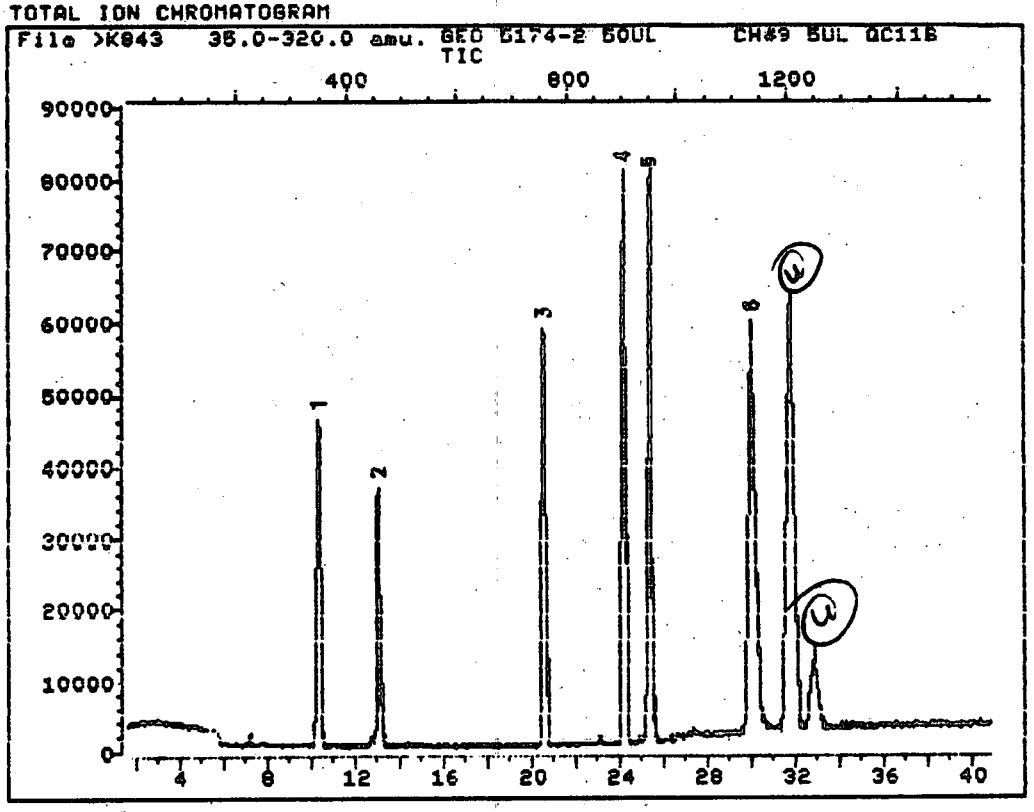
TOTAL ION CHROMATOGRAM



Well #2

Data File: >K843::D2
Name: GEO 5174-2 50UL
Misc: CH#9 5UL QC11B

Id File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@4/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 870906 19:06

Operator ID: STEVE
Quant Time: 870906 20:36
Injected at: 870906 19:55

BLK #47
Previous Sample K843 ERCO ID
Major Contaminants BLK
Sample in Chamber Previously K836
ERCO ID
Major Contaminants
Carryover? Yes No If yes, what?
Dilution Factor
Spectra Checked
Areas Checked
Calculations Checked
Manually check for 1,2 - dichloroethane
1,1,2,2 - tetrachloroethane
styrene
All peaks accounted for? Yes No
If no, Number of unknowns

QUANT REPORT

Operator ID: STEVE
Output File: ^K843::Q0
Data File: >K843::D2
Name: GFO 5174-2 50UL
Misc: CH#9 5UL QC11B

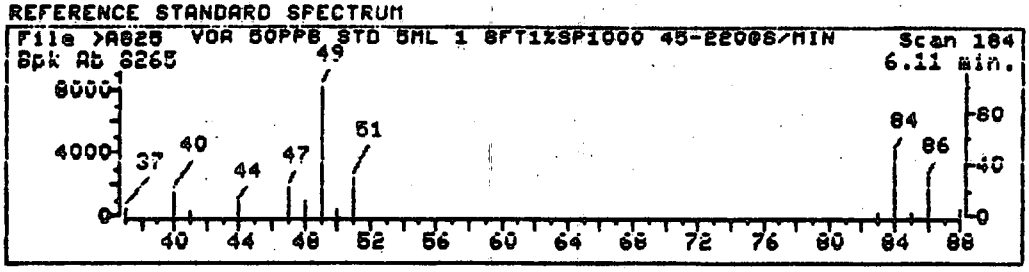
Quant Rev: 4
Quant Time: 870906 20:36
Injected at: 870906 19:55
Dilution Factor: 1.00

ID File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 870906 19:06

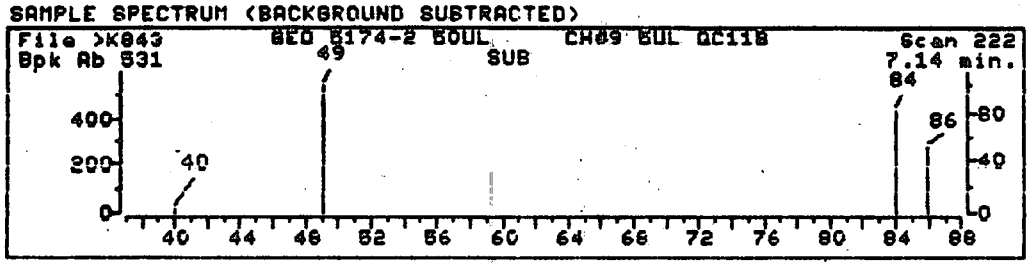
	Compound		R.T.	Scan#	Area	Conc	Units	
1)	*Bromochloromethane		10.30	348	106283	50.00	ug/L	8
6)	Methylene Chloride		7.14	222	3430	1.36	ug/L	7
7)	Acetone	non HSL	7.74	246	2913	~~4.49~~	ug/L	10
14)	D4-1,2-Dichloroethane		13.03	457	149104	52.71	ug/L 105	9
15)	*1,4-Difluorobenzene		20.53	756	236312	50.00	ug/L	10
30)	*D5-Chlorobenzene		25.34	948	257405	50.00	ug/L	7
36)	D8-Toluene		24.16	901	196907	49.46	ug/L 99	9
39)	Xylene (m)	non HSL	31.76	1204	208713	~~52.17~~	ug/L	9
40)	Styrene	no 104	31.79	1205	10034	~~1.29~~	ug/L	10
41)	Xylenes (o , p)	non HSL	32.84	1247	42262	~~10.18~~	ug/L	9
42)	Bromofluorobenzene (BFB)		30.03	1135	212268	53.53	ug/L 107	8

* Compound is ISTD

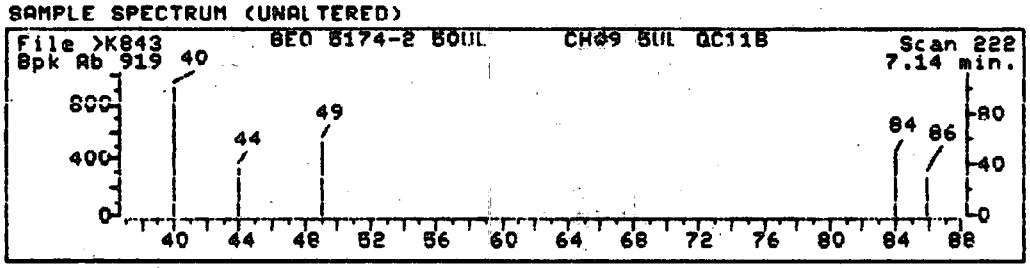
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



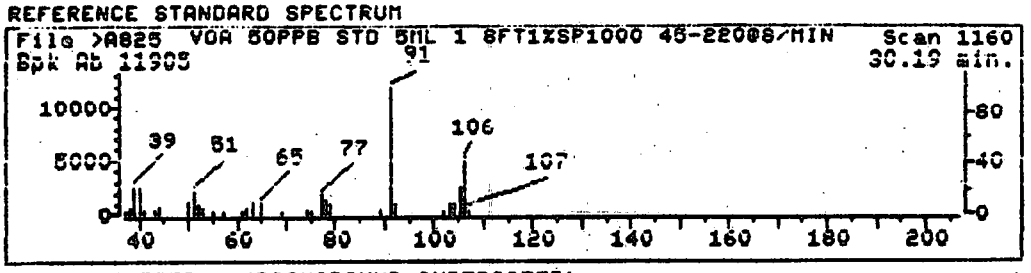
SAMPLE SPECTRUM (UNALTERED)



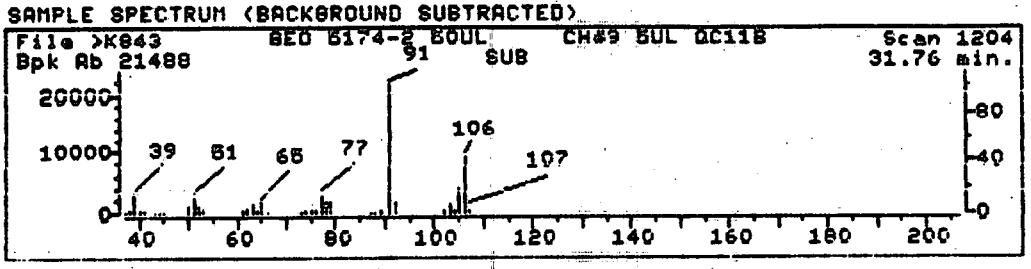
Data File: >KA43::D2
Name: GEO 5174-2 50UL
Misc: CH#9 5UL QC11B
Quant Time: 870906 20:36
Injected at: 870906 19:55

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 222
Retention Time: 7.14 min.
Area: 3430
Concentration: 1.36 ug/L
q-value: 78

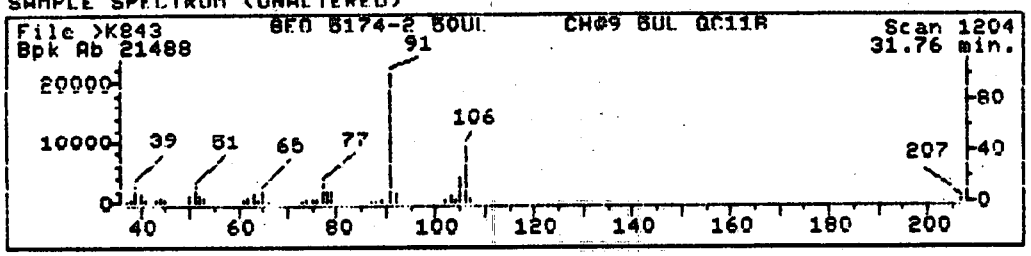
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



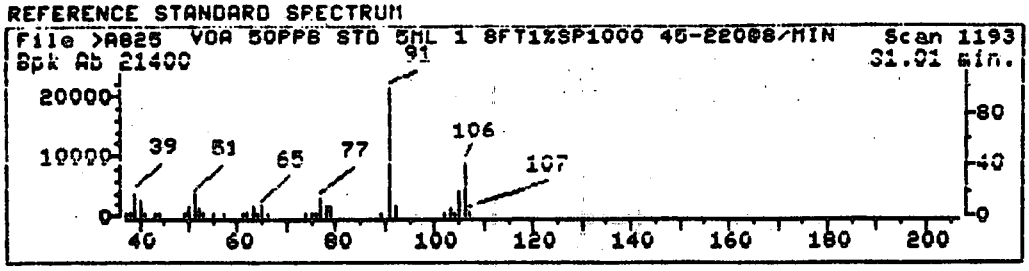
SAMPLE SPECTRUM (UNALTERED)



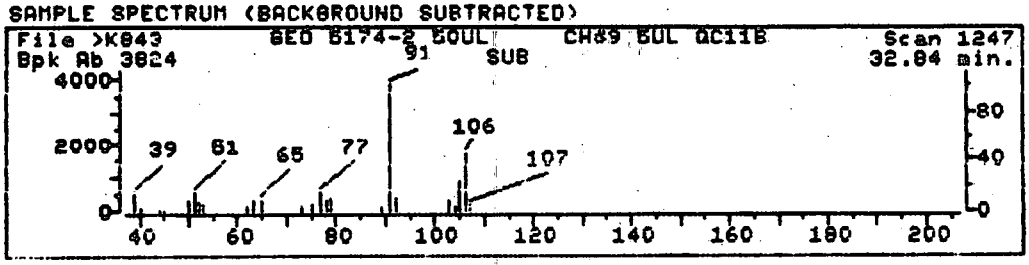
Data File: >K843::D2
Name: GEO 5174-2 50UL
Misc: CH#9 5UL QC11B
Quant Time: 870906 20:36
Injected at: 870906 19:55

Compound No: 39
Compound Name: Xylene (m)
Scan Number: 1204
Retention Time: 31.76 min.
Area: 208713
Concentration: 52.17 ug/L
q-value: 97

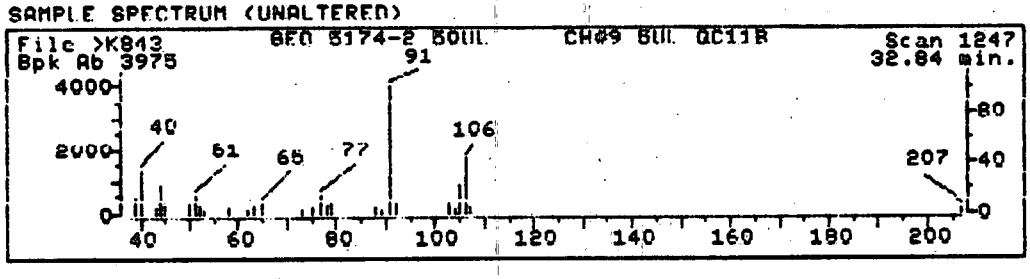
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >K843::D2
Name: GEO 5174-2 50UL
Misc: CH#9 5UL QC11B
Quant Time: 870906 20:36
Injected at: 870906 19:55

Compound No: 41
Compound Name: Xylenes (o , p)
Scan Number: 1247
Retention Time: 32.84 min.
Area: 42762
Concentration: 10.88 ug/L
q-value: 96

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.
Client ID: Well #3
Laboratory ID: 5174-03
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	1,300
Bromomethane	ND	µg/L	1,300
Vinyl chloride	ND	µg/L	1,300
Chloroethane	ND	µg/L	1,300
Methylene chloride	2,300B	µg/L	1,300
1,1-Dichloroethene	ND	µg/L	500
1,1-Dichloroethane	ND	µg/L	500
trans-1,2-Dichloroethene	ND	µg/L	500
Chloroform	ND	µg/L	500
1,2-Dichloroethane	ND	µg/L	500
1,1,1-Trichloroethane	ND	µg/L	500
Carbon tetrachloride	ND	µg/L	500
Bromodichloromethane	ND	µg/L	500
1,2-Dichloropropane	ND	µg/L	500
trans-1,3-Dichloropropene	ND	µg/L	500
Trichloroethene	ND	µg/L	500
Dibromochloromethane	ND	µg/L	500
1,1,2-Trichloroethane	ND	µg/L	500
Benzene	ND	µg/L	500
cis-1,3-Dichloropropene	ND	µg/L	500
2-Chloroethyl vinyl ether	ND	µg/L	2,500
Bromoform	ND	µg/L	500
1,1,2,2-Tetrachloroethane	ND	µg/L	500
Tetrachloroethene	ND	µg/L	500
Toluene	ND	µg/L	500
Chlorobenzene	ND	µg/L	500
Ethyl benzene	6,700	µg/L	500

ND = Not detected.
B = Analyte also detected in blank.

Reported by CB Approved by

Enseco

VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

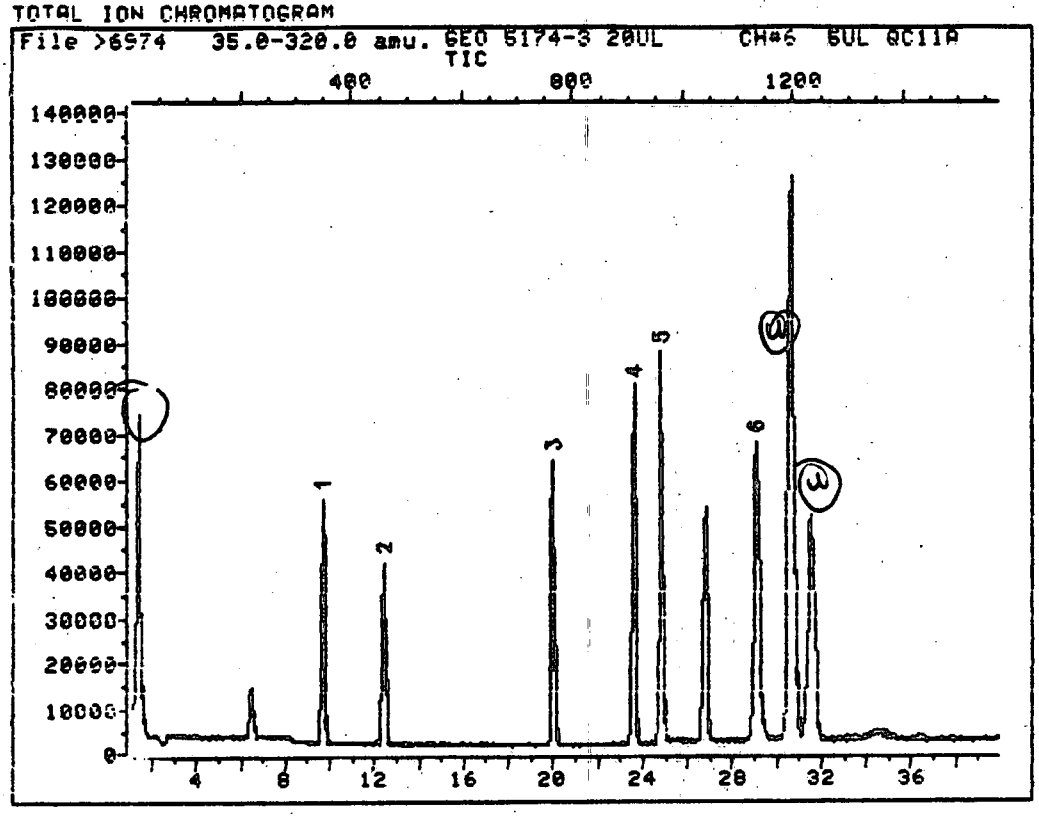
EPA Method 624/8240

Client Name: GeoEngineering, Inc.
Client ID: Well #3
Laboratory ID: 5174-03
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Scan No.	Units	Estimated concentration
m-Xylene	1195	µg/L	29,000
o,p-Xylenes	1232	µg/L	14,000

Reported by CB Approved by

TOTAL ION CHROMATOGRAM



Well #3

Data File: >6974::D6
Name: GEO 5174-3 20UL
Misc: CH#6 5UL QC11A

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

Operator ID: STEVE
Quant Time: 870904 16:21
Injected at: 870904 15:41

Bt 6973
Previous Sample 6973 ERCO ID 120
Major Contaminants none
Sample in Chamber Previously 6956
ERCO ID 5182-4
Major Contaminants none
Carryover? Yes No If yes, what?
Dilution Factor
Spectra Checked
Areas Checked
Calculations Checked
Manually check for 1,2 - dichloroethane
1,1,2,2 - tetrachloroethane
styrene
All peaks accounted for? Yes No
if no, Number of unknowns

QUANT REPORT

Operator ID: STEVE
Output File: ^6974::20
Data File: >6974::D6
Name: GFD 5174-3 20UL
Misc: CH#6 5UL QC11A

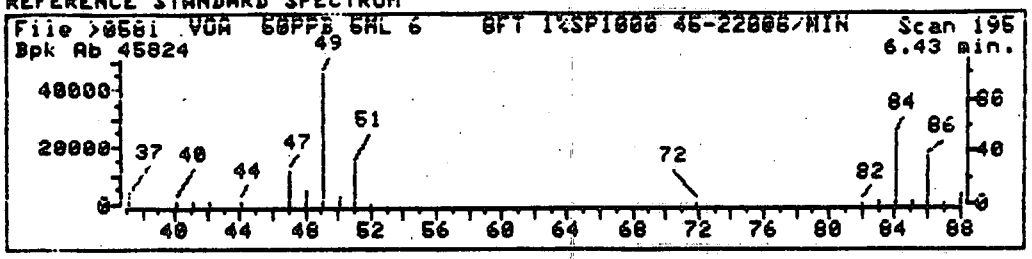
Quant Rev: 4
Quant Time: 870904 16:21
Injected at: 870904 15:41
Dilution Factor: 1.00

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

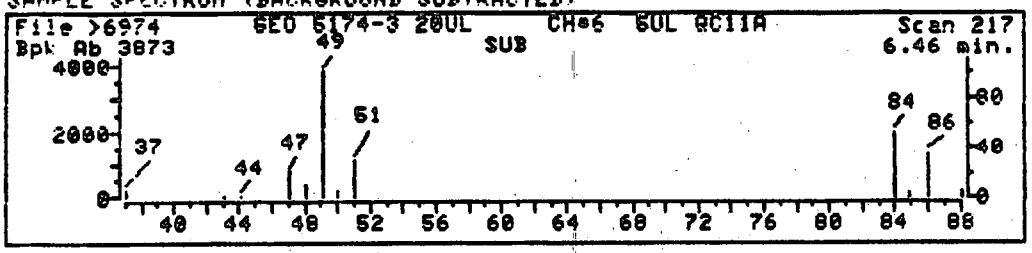
	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	9.67	347	125028	50.00	UG/L	100
)	Methylene Chloride	6.46	217	19728	9.22	UG/L	69
1)	D4-1,2-Dichloroethane	12.41	458	151809	51.60	UG/L 103	99
15)	*1,4-Difluorobenzene	19.97	764	229635	50.00	UG/L	100
3)	*D5-Chlorobenzene	24.78	959	231195	50.00	UG/L	78
3)	D8-Toluene	23.57	910	171140	48.87	UG/L	99
38)	Ethylbenzene	26.76	1039	65961	26.66	UG/L	96
39)	Xylene (m)	30.61	1195	311275	115.35	UG/L	99
4)	Xylenes (o , p) non HSL	31.52	1232	142924	55.12	UG/L 110	99
42)	Bromofluorobenzene (BFB)	29.05	1132	181689	53.26	UG/L 107	84

Compound is ISTD

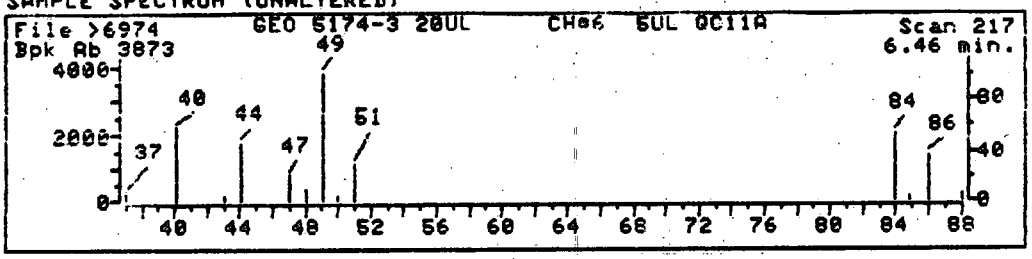
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



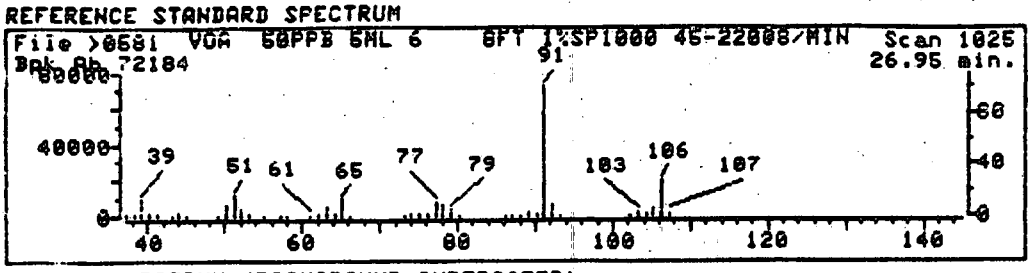
SAMPLE SPECTRUM (UNALTERED)



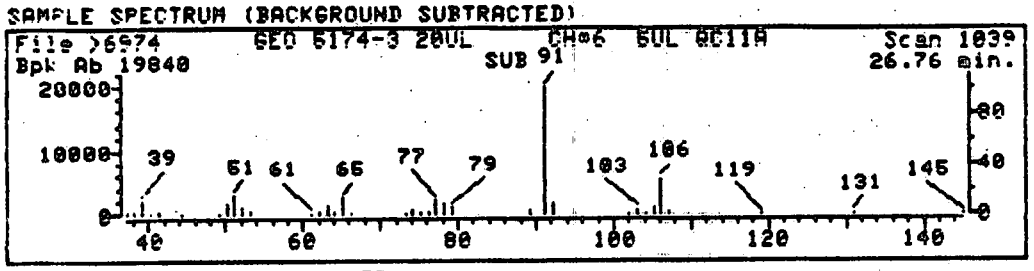
Data File: >6974::D6
Name: GEO 5174-3 20UL
Misc: CH#6 5UL QC11A
Quant Time: 870904 16:21
Injected at: 870904 15:41

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 217
Retention Time: 6.46 min.
Area: 19728
Concentration: 9.22 UG/L
q-value: 69

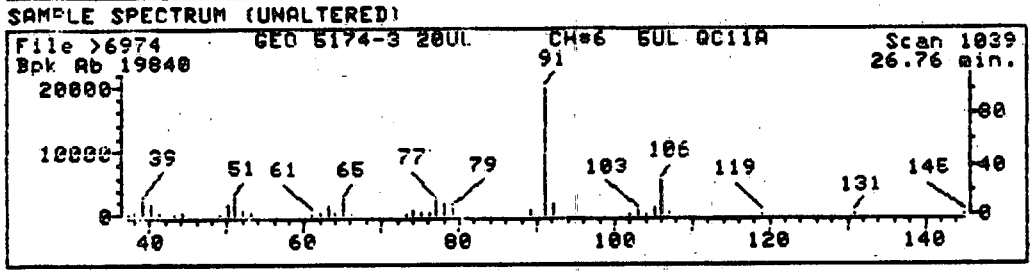
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



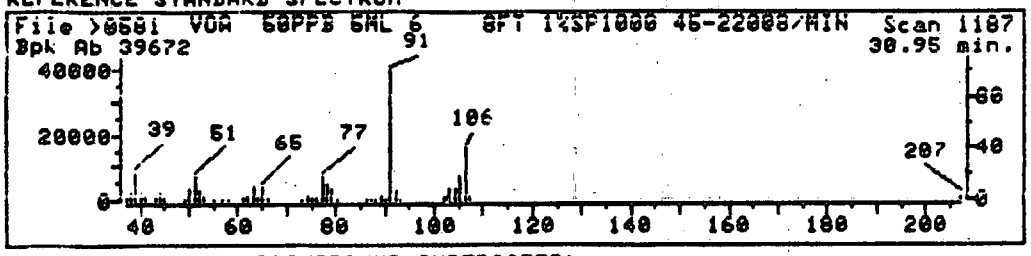
SAMPLE SPECTRUM (UNALTERED)



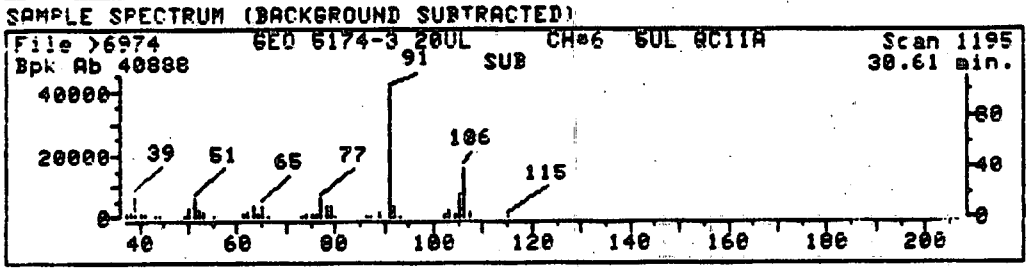
Data File: >6974::D6
Name: GEO 5174-3 20UL
Misc: CH#6 5UL QC11A
Quant Time: 870904 16:21
Injected at: 870904 15:41

Compound No: 38
Compound Name: Ethylbenzene
Scan Number: 1039
Retention Time: 26.76 min.
Area: 65961
Concentration: 26.66 UG/L
q-value: 96

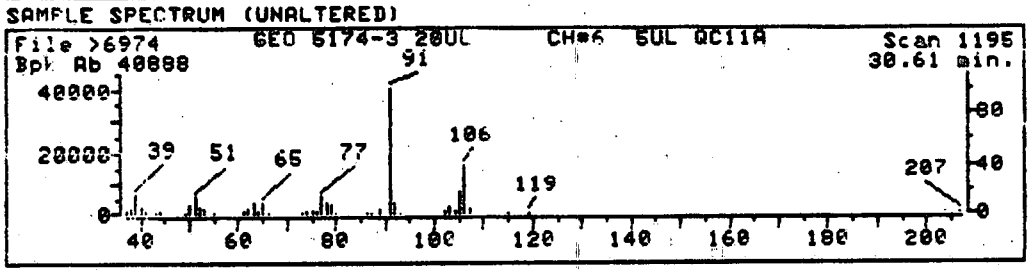
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



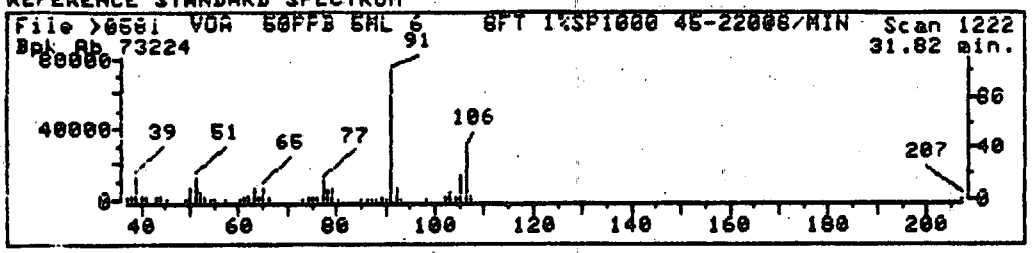
SAMPLE SPECTRUM (UNALTERED)



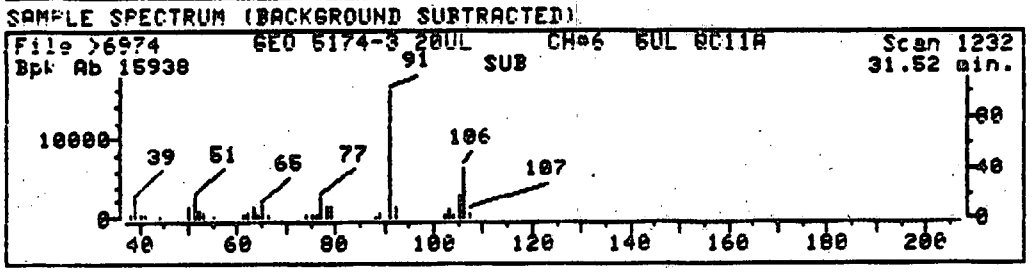
Data File: >6974::D6
Name: GEO 5174-3 20UL
Misc: CH#6 5UL QC11A
Quant Time: 870904 16:21
Injected at: 870904 15:41

Compound No: 39
Compound Name: Xylene (m)
Scan Number: 1195
Retention Time: 30.61 min.
Area: 311275
Concentration: 115.35 UG/L
q-value: 99

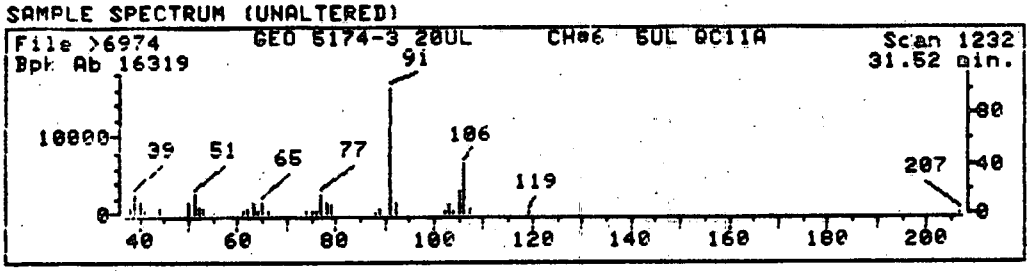
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Date File: >6974::D6
Name: GEO 5174-3 20UL
Misc: CH#6 5UL QC11A
Quant Time: 870904 16:21
Injected at: 870904 15:41

Compound No: 41
Compound Name: Xylenes (o , p)
Scan Number: 1232
Retention Time: 31.52 min.
Area: 142924
Concentration: 55.12 UG/L
q-value: 99

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.
Client ID: Well #4
Laboratory ID: 5174-04
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride ----------	13B	µg/L	5
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2

ND = Not detected.

B = Analyte also detected in blank.

Reported by CB Approved by

Enseco

VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

EPA Method 624/8240

Client Name: GeoEngineering, Inc.

Client ID: Well #4

Laboratory ID: 5174-04

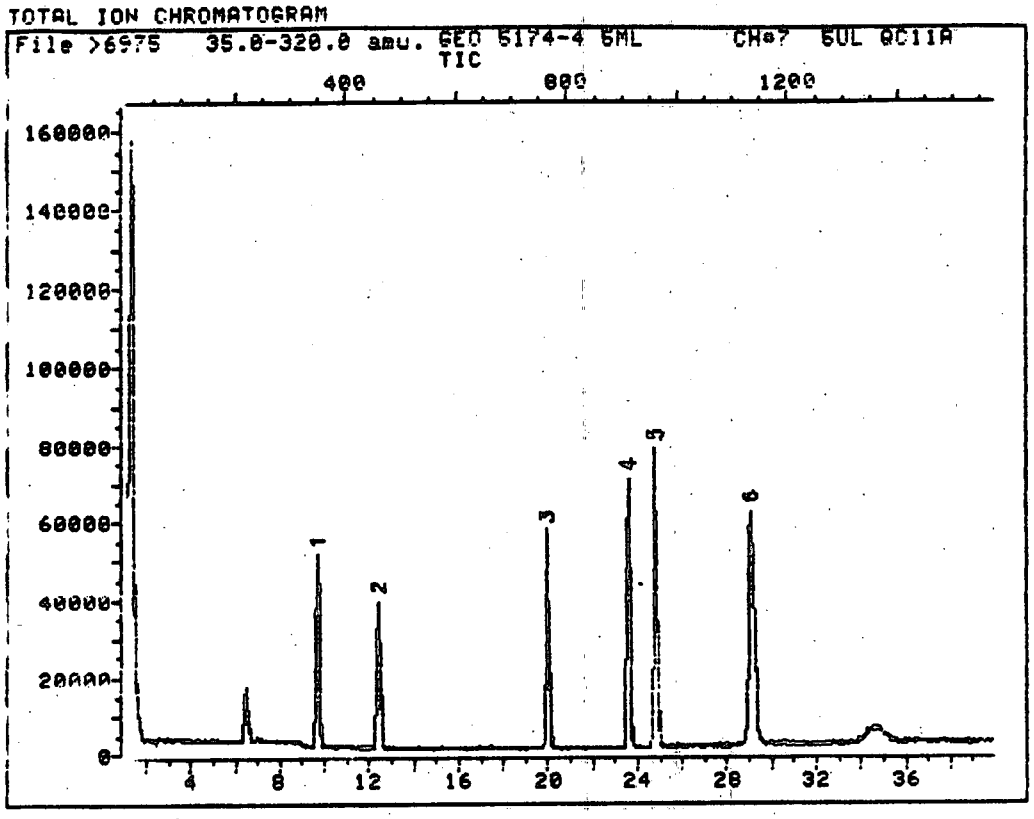
Matrix: Water Sampled: 08/28/87 Received: 08/29/87

Authorized: 08/29/87 Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Scan No.	Units	Estimated concentration
None detected			

Reported by CB Approved by A

TOTAL ION CHROMATOGRAM



Well #4

Data File: >6975::D6
Name: GEO 5174-4 5ML
Misc: CH#7 5UL QC11A

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

Operator ID: STEVE
Quant Time: 870904 17:15
Injected at: 870904 16:34

6973
Previous Sample _____ ERCO ID _____
Major Contaminants _____
Sample in Chemical Prep _____
ERCO ID _____
Major Contaminants _____
Carryover? _____
GA Dilution Factor _____
Spectra Checked _____
Area Checked _____
Calculations Checked _____
Manually check for 1,1 _____
1,1,2 _____
All peaks accounted _____
If no, number of _____

QUANT REPORT

Operator ID: STEVE
Output File: ^6975::20
Data File: >6975::D6
Name: GEO 5174-4 5ML
Misc: CH#7 5UL QC11A

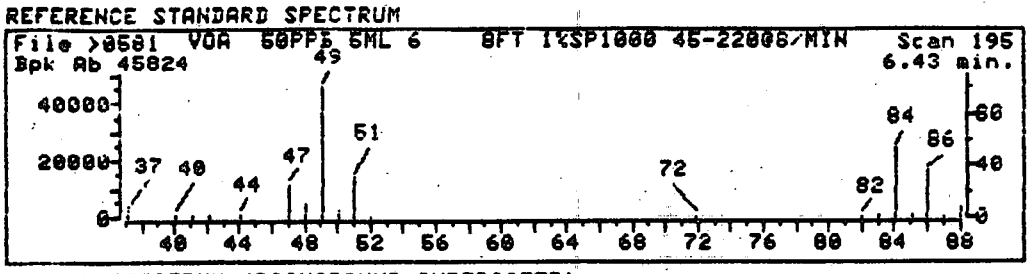
Quant Rev: 4 Quant Time: 870904 17:35
Injected at: 870904 16:34
Dilution Factor: 1.00

ID File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

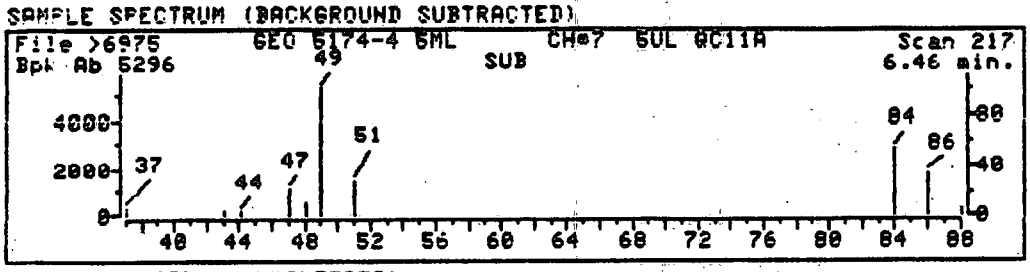
	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	9.69	348	115660	50.00	UG/L	100
3)	Methylene Chloride	6.46	217	26246	13.26	UG/L	[illegible]
11)	D4-1,2-Dichloroethane	12.41	458	143228	52.63	UG/L 105	99
15)	*1,4-Difluorobenzene	19.94	763	198343	50.00	UG/L	1[illegible]
24)	Benzene	17.40	660	2254	37	UG/L	100
31)	*D5-Chlorobenzene	24.78	959	204071	50.00	UG/L	[illegible]
33)	Toluene	23.76	918	1616	43	UG/L	92
36)	D8-Toluene	23.59	911	148429	48.02	UG/L 96	[illegible]
37)	Chlorobenzene	24.88	963	2237	49	UG/L	74
42)	Bromofluorobenzene (BFB)	29.05	1132	167311	55.56	UG/L 111	[illegible]

* Compound is ISTD

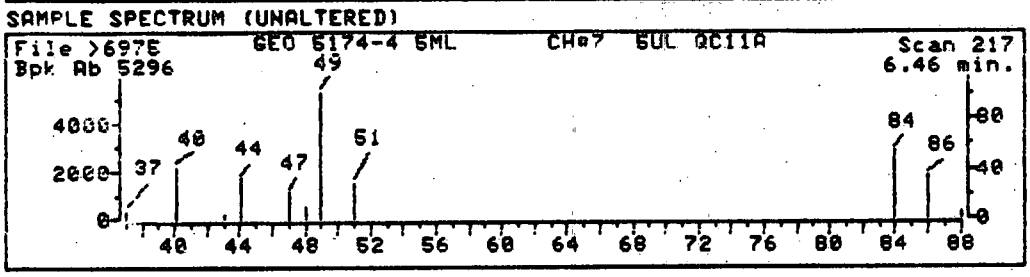
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >6975::D6
Name: GEO 5174-4 5ML
Misc: CH#7 5UL QC11A
Quant Time: 870904 17:15
Injected at: 870904 16:34

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 217
Retention Time: 6.46 min.
Area: 26246
Concentration: 13.26 UG/L
q-value: 68

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.
Client ID: Well #5
Laboratory ID: 5174-05
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	13B	µg/L	5
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	1.1*B	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2

*Trace concentrations detected below the reporting limit.

ND = Not detected.

B = Analyte also detected in blank.

Reported by CB Approved by [illegible]

Enseco

VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

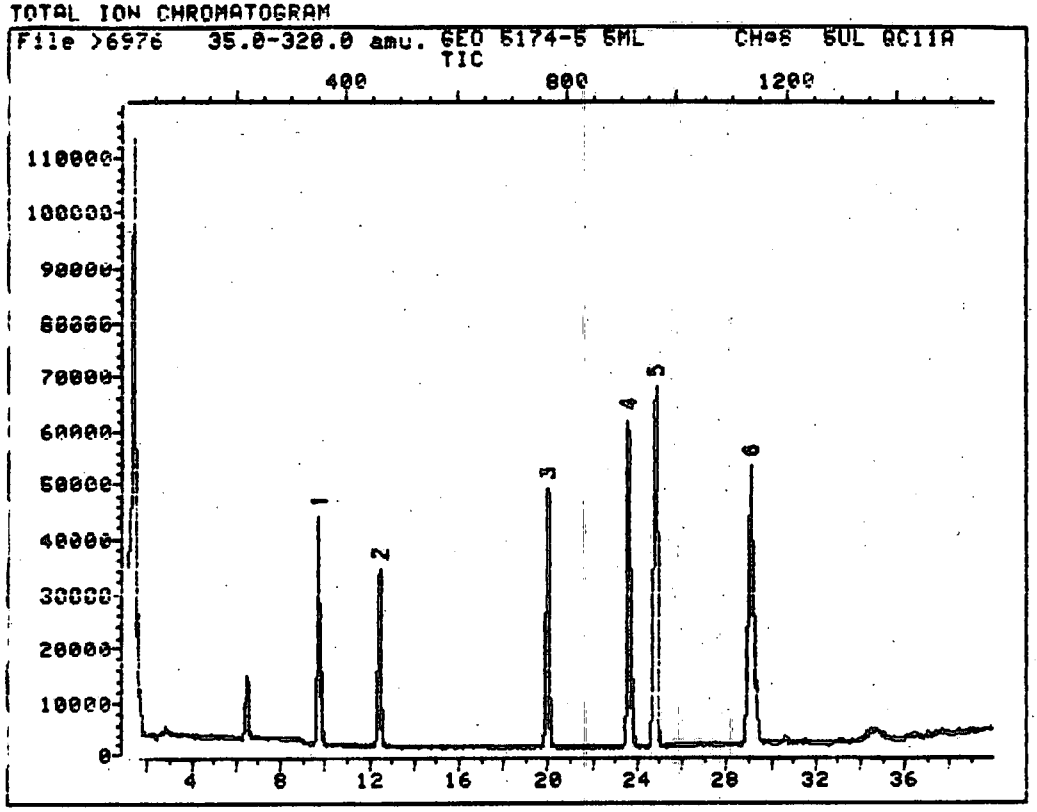
EPA Method 624/8240

Client Name: GeoEngineering, Inc.
Client ID: Well #5
Laboratory ID: 5174-05
Matrix: Water Sampled: 08/28/87 Received: 08/29/87
Authorized: 08/29/87 Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Scan No.	Units	Estimated concentration
None detected			

Reported by CB Approved by

TOTAL ION CHROMATOGRAM



Well #5

Data File: >6976::D6
Name: GEO 5174-5 5ML
Misc: CH#8 5UL QC11A

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

Operator ID: STEVE
Quant Time: 870904 18:03
Injected at: 870904 17:22

6973

Previous Sample _____ ERCO ID _____
Major Contaminants _____
Sampling Chemist _____
ERCO ID _____
Major Contaminants _____
GA Carryover? _____
Dilution _____
Spectra _____
Areas _____
Calibration _____
Manually check _____

QUANT REPORT

Operator ID: STEVE
Output File: ^6976::20
Data File: >6976::D6
Name: GEO 5174-5 5ML
Misc: CH#8 5UL QC11A

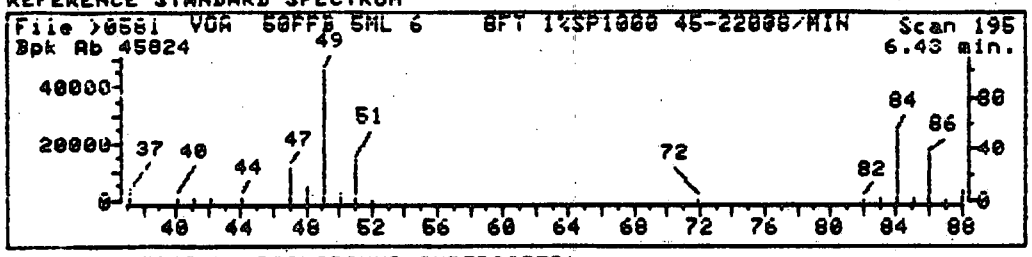
Quant Rev: 4 Quant Time: 870904 18:03
Injected at: 870904 17:22
Dilution Factor: 1.00

ID File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

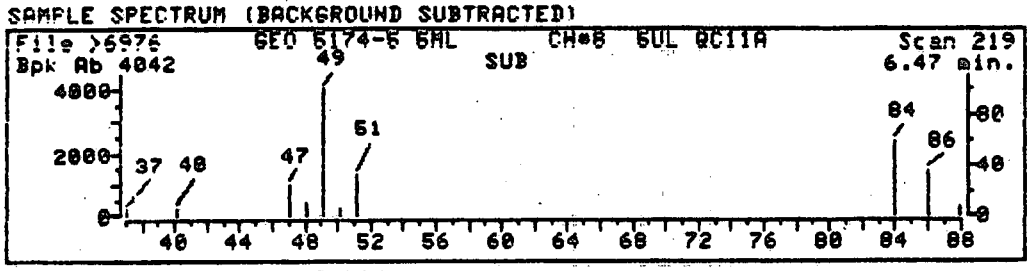
	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	9.70	350	99529	50.00	UG/L	100
4)	Methylene Chloride	6.47	219	21888	12.80	UG/L	98
1[illegible])	D4-1,2-Dichloroethane	12.42	460	127187	54.31	UG/L 109	98
1[illegible])	*1,4-Difluorobenzene	19.95	765	165569	50.00	UG/L	100
26)	Benzene	17.41	662	1869	.37	UG/L	100
3[illegible])	*D5-Chlorobenzene	24.79	961	171919	50.00	UG/L	[illegible]
3[illegible])	Toluene	23.78	920	3487	1.09	UG/L	90
36)	D8-Toluene	23.58	912	126023	48.39	UG/L 97	96
4[illegible])	Bromofluorobenzene (BFB)	29.06	1134	145759	57.46	UG/L 115	77

* Compound is ISTD

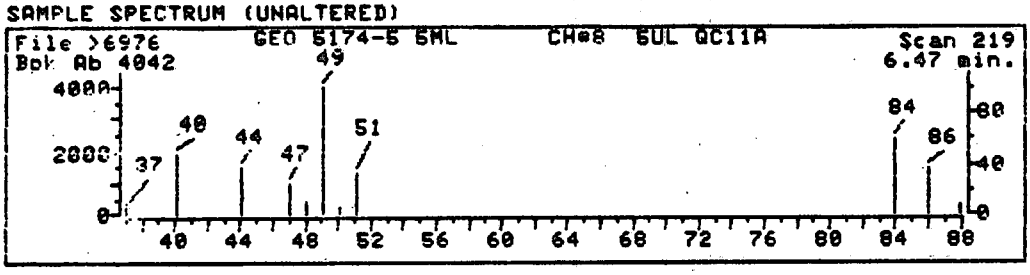
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



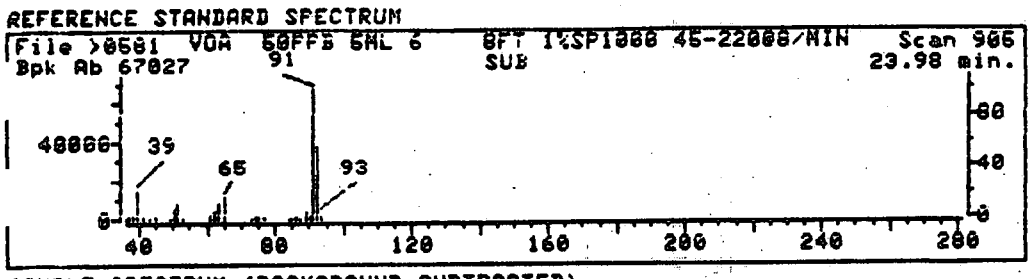
SAMPLE SPECTRUM (UNALTERED)



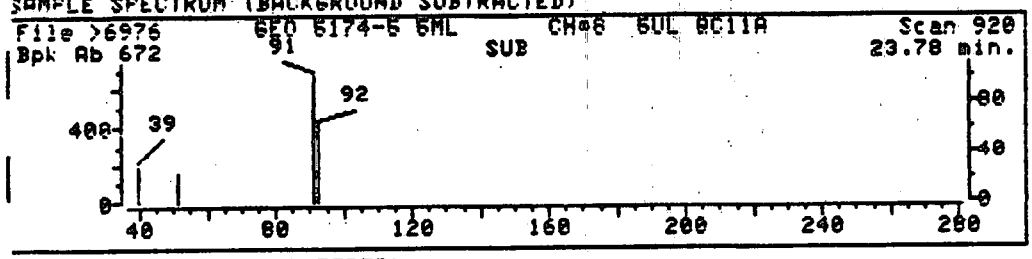
Data File: >6976::D6
Name: GEO 5174-5 5ML
Misc: CH#8 5UL QC11A
Quant Time: 870904 18:03
Injected at: 870904 17:22

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 219
Retention Time: 6.47 min.
Area: 21888
Concentration: 12.86 UG/L
q-value: 58

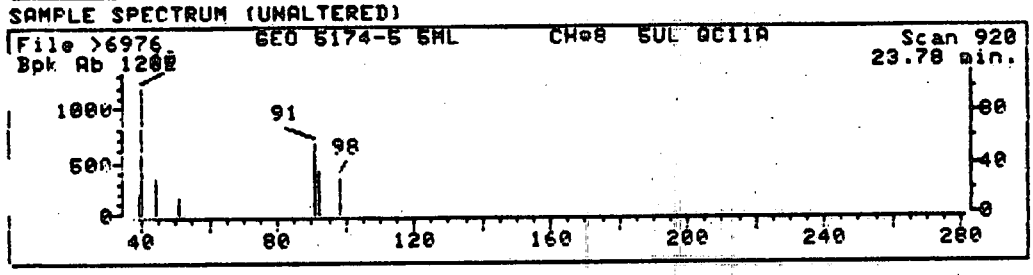
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >6976::D6
Name: GEO 5174-5 5ML
Misc: CH#8 5UL QC11A
Quant Time: 870904 18:03
Injected at: 870904 17:22

Compound No: 35
Compound Name: Toluene
Scan Number: 920
Retention Time: 23.78 min.
Area: 3487
Concentration: 1.09 UG/L
q-value: 90

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.

Client ID: Erco Procedural Blank - Water

Laboratory ID: 6940

Matrix: Water Sampled: NA Received: NA

Authorized: NA Prepared: 09/03/87 Analyzed: 09/03/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride ----------	0.84*	µg/L	5
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2

*Trace concentrations detected below the reporting limit.

NA = Not applicable.

ND = Not detected.

Reported by CB Approved by

Ensecc

VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

EPA Method 624/8240

Client Name: GeoEngineering, Inc.

Client ID: Erco Procedural Blank - Water

Laboratory ID: 6940

Matrix: Water Sampled: NA Received: NA

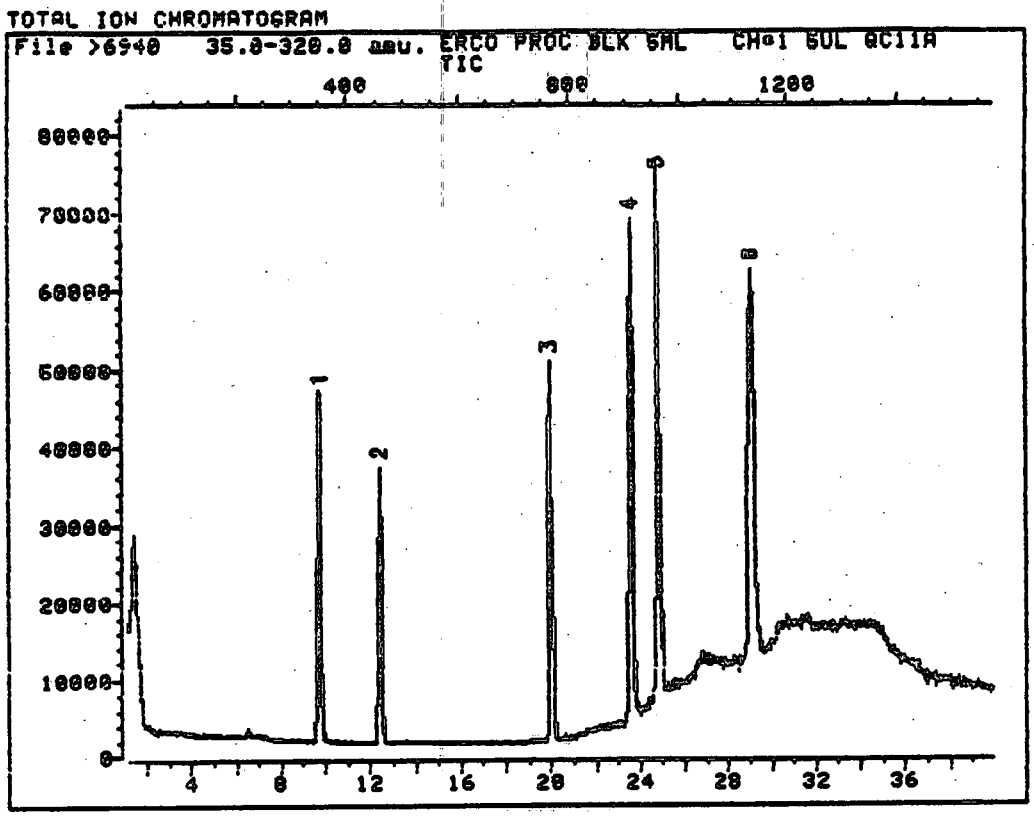
Authorized: NA Prepared: 09/03/87 Analyzed: 09/03/87

Parameter	Scan No.	Units	Estimated concentration
None detected			

NA = Not applicable.

Reported by _____ Approved by _____

TOTAL ION CHROMATOGRAM



Data File: >6940::D6
Name: ERCO PROC BLK 5ML
Misc: CH#1 5UL QC11A

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/EI
Last Calibration: 870903 11:18

Operator ID: STEVE
Quant Time: 870903 11:57
Injected at: 870903 11:16

QUANT REPORT

Operator ID: STEVE
Output File: ^6940::20
Data File: >6940::D6
Name: ERCO PROC BLK 5ML
Misc: CH#1 5UL QC11A

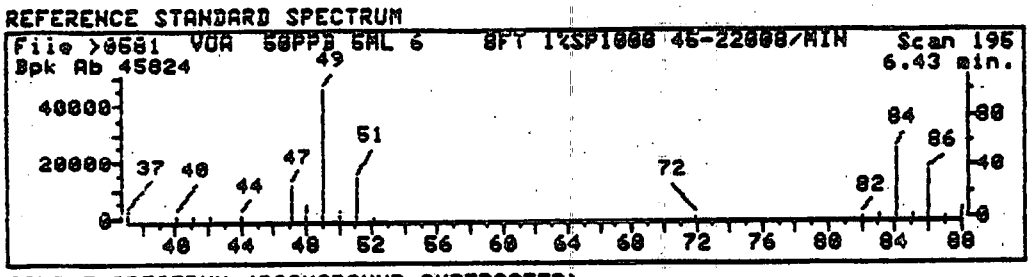
Quant Rev: 4 Quant Time: 870903 11:57
Injected at: 870903 11:16
Dilution Factor: 1.00

) File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870903 11:18

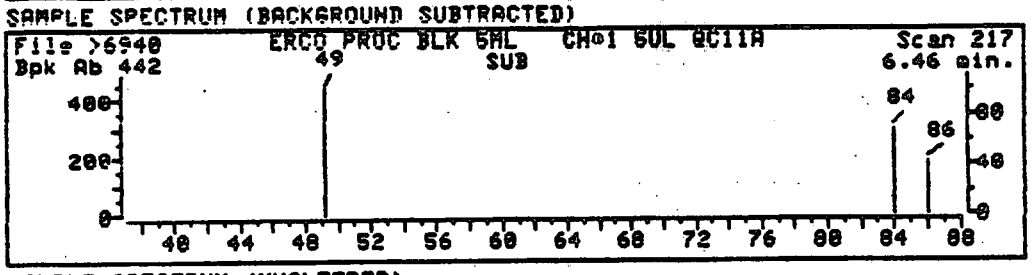
	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	9.72	349	112751	50.00	UG/L	100
3)	Methylene Chloride	6.46	217	1848	.84	UG/L	42
14)	D4-1,2-Dichloroethane	12.41	458	138077	48.63	UG/L 97	99
3)	*1,4-Difluorobenzene	19.94	763	157838	50.00	UG/L	100
1)	*D5-Chlorobenzene	24.78	959	168466	50.00	UG/L	90
35)	Toluene	23.77	918	1848	.55	UG/L	75
36)	D8-Toluene	23.59	911	126723	48.81	UG/L 98	99
3)	Xylene (m)	30.61	1195	1987	.88	UG/L	84
42)	Bromofluorobenzene (BFB)	29.08	1133	146064	52.53	UG/L 105	63

* Compound is ISTD

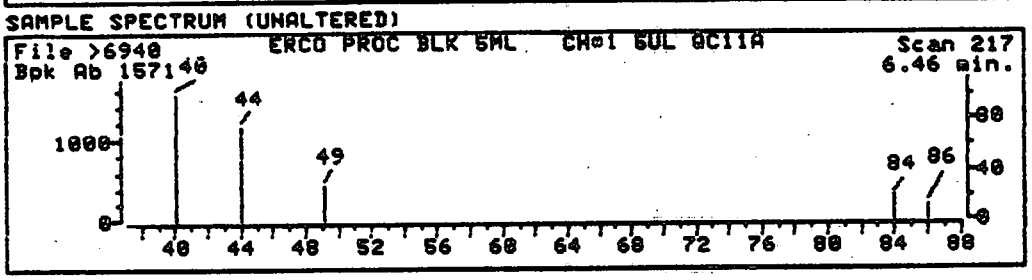
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >6940::D6
Name: ERCO PROC BLK 5ML
Misc: CH#1 5UL QC11A
Quant Time: 870903 11:57
Injected at: 870903 11:16

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 217
Retention Time: 6.46 min.
Area: 1848
Concentration: .84 UG/L
q-value: 42

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.
Client ID: Erco Procedural Blank - Water
Laboratory ID: 6973
Matrix: Water Sampled: NA Received: NA
Authorized: NA Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	4.3*	µg/L	5
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	10
Bromoform	ND	µg/L	2
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	1.3*	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2

*Trace concentrations detected below the reporting limit.

NA = Not applicable.

ND = Not detected.

Reported by CB Approved by

Enseco

VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

EPA Method 624/8240

Client Name: GeoEngineering, Inc.

Client ID: Erco Procedural Blank - Water

Laboratory ID: 6973

Matrix: Water Sampled: NA Received: NA

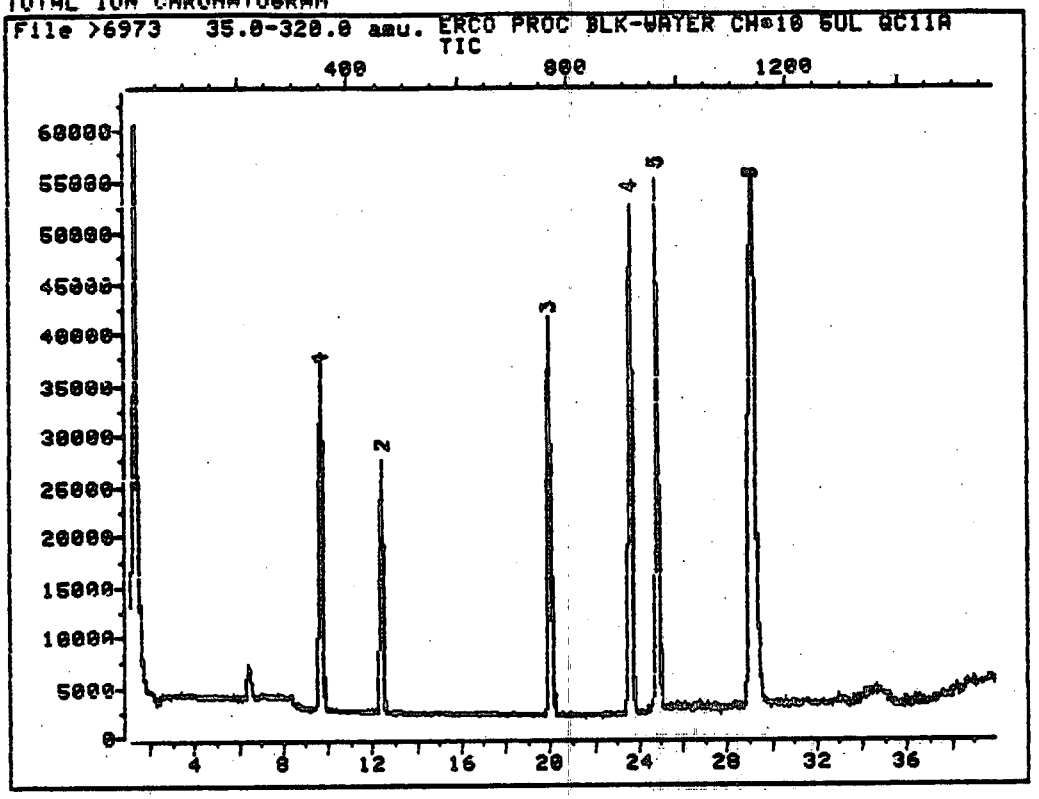
Authorized: NA Prepared: 09/04/87 Analyzed: 09/04/87

Parameter	Scan No.	Units	Estimated concentration
None detected			

NA = Not applicable.

Reported by C.B Approved by

TOTAL ION CHROMATOGRAM



Data File: >6973::D6
Name: ERCO PROC BLK-WATER
Misc: CH#10 5UL QC11A

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

Operator ID: STEVE
Quant Time: 870904 15:23
Injected at: 870904 14:35

QUANT REPORT

Operator ID: STEVE
Output File: ^6973::20
Data File: >6973::D6
Name: ERCO PROC BLK-WATER
Disc: CH#10 5UL QC11A

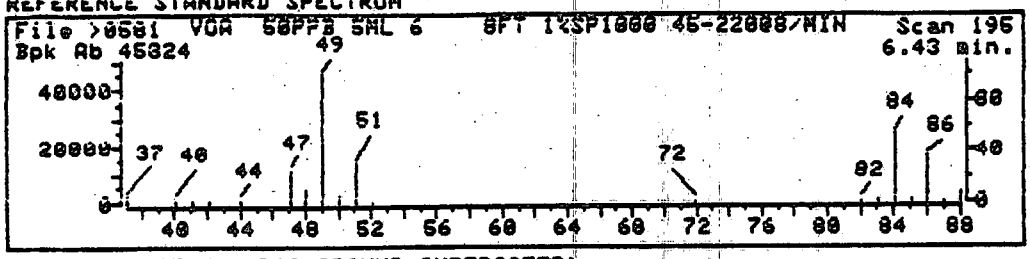
Quant Rev: 4 Quant Time: 870904 15:23
Injected at: 870904 14:35
Dilution Factor: 1.00

ID File: VOAID2::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 870904 15:18

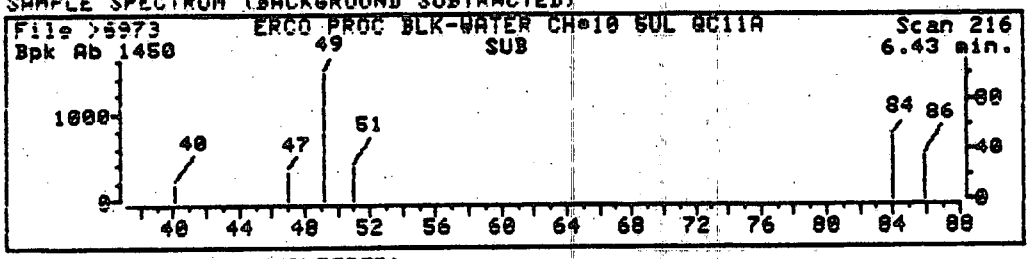
	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	9.69	348	84367	50.00	UG/L	100
6)	Methylene Chloride	6.43	216	6199	4.30	UG/L	73
4)	D4-1,2-Dichloroethane	12.41	458	96168	48.44	UG/L 97	99
15)	*1,4-Difluorobenzene	19.94	763	148687	50.00	UG/L	100
30)	*D5-Chlorobenzene	24.77	959	148212	50.00	UG/L	77
5)	Toluene	23.69	915	3634	1.32	UG/L	94
6)	D8-Toluene	23.59	911	112797	50.24	UG/L 100	96
42)	Bromofluorobenzene (BFB)	29.07	1133	109461	50.05	UG/L 100	83

* Compound is ISTD

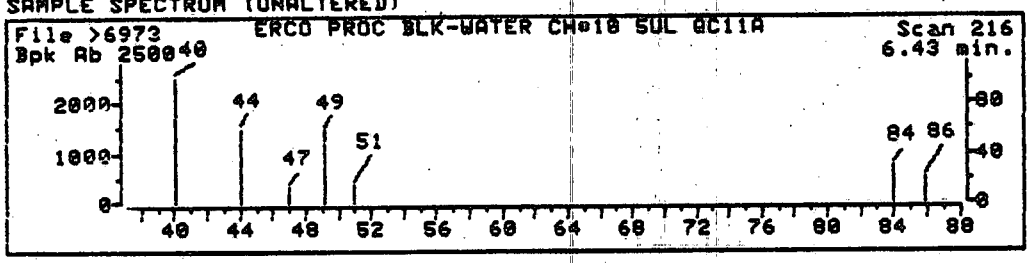
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



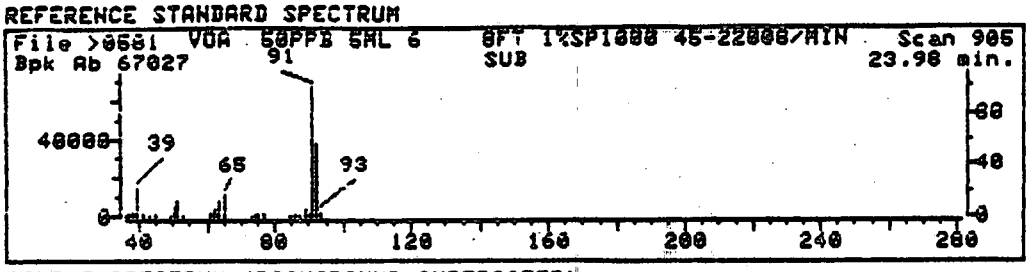
SAMPLE SPECTRUM (UNALTERED)



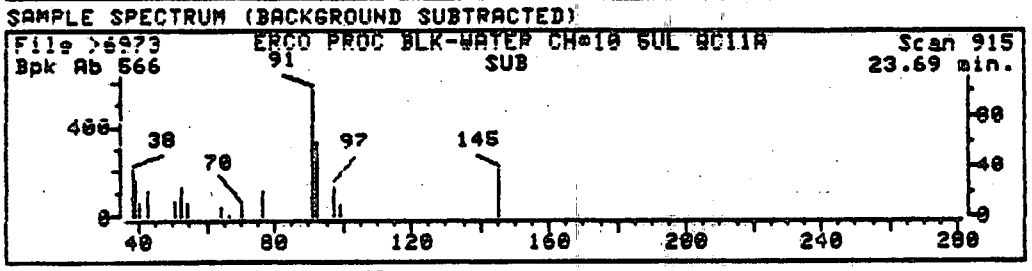
Data File: >6973::D6
Name: ERCO PROC BLK-WATER
Misc: CH#10 5UL QC11A
Quant Time: 870904 15:23
Injected at: 870904 14:35

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 216
Retention Time: 6.43 min.
Area: 6199
Concentration: 4.30 UG/L
q-value: 73

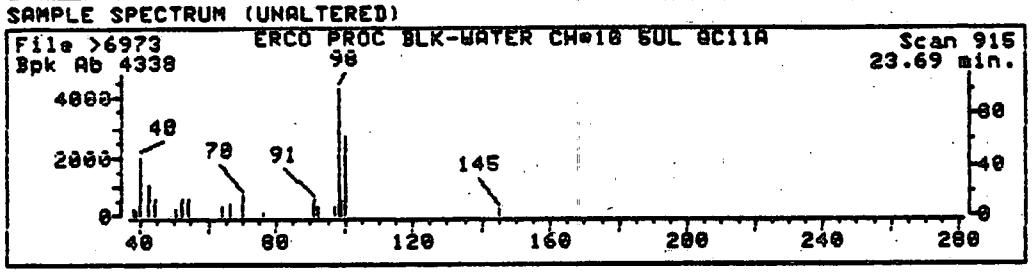
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >6973::D6
Name: ERCO PROC BLK-WATER
Misc: CH#10 5UL QC11A
Quant Time: 870904 15:23
Injected at: 870904 14:35

Compound No: 35
Compound Name: Toluene
Scan Number: 915
Retention Time: 23.69 min.
Area: 3634
Concentration: 1.32 UG/L
q-value: 94

Enseco

PRIORITY POLLUTANT VOLATILE ORGANICS

EPA Method 624

Client Name: GeoEngineering, Inc.
Client ID: Erco Procedural Blank - Water
Laboratory ID: K842
Matrix: Water Sampled: NA Received: NA
Authorized: NA Prepared: 09/06/87 Analyzed: 09/06/87

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	µg/L	5
Bromomethane	ND	µg/L	5
Vinyl chloride	ND	µg/L	5
Chloroethane	ND	µg/L	5
Methylene chloride	ND	µg/L	5
1,1-Dichloroethene	ND	µg/L	2
1,1-Dichloroethane	ND	µg/L	2
trans-1,2-Dichloroethene	ND	µg/L	2
Chloroform	ND	µg/L	2
1,2-Dichloroethane	ND	µg/L	2
1,1,1-Trichloroethane	ND	µg/L	2
Carbon tetrachloride	ND	µg/L	2
Bromodichloromethane	ND	µg/L	2
1,2-Dichloropropane	ND	µg/L	2
trans-1,3-Dichloropropene	ND	µg/L	2
Trichloroethene	ND	µg/L	2
Dibromochloromethane	ND	µg/L	2
1,1,2-Trichloroethane	ND	µg/L	2
Benzene	ND	µg/L	2
cis-1,3-Dichloropropene	ND	µg/L	2
2-Chloroethyl vinyl ether	ND	µg/L	2
Bromoform	ND	µg/L	10
1,1,2,2-Tetrachloroethane	ND	µg/L	2
Tetrachloroethene	ND	µg/L	2
Toluene	ND	µg/L	2
Chlorobenzene	ND	µg/L	2
Ethyl benzene	ND	µg/L	2

NA = Not applicable.
ND = Not detected.

Reported by CB Approved by

Enseco

VOLATILE ORGANICS

TENTATIVELY IDENTIFIED COMPOUNDS

EPA Method 624/8240

Client Name: GeoEngineering, Inc.

Client ID: Erco Procedural Blank - Water

Laboratory ID: K842

Matrix: Water Sampled: NA Received: NA

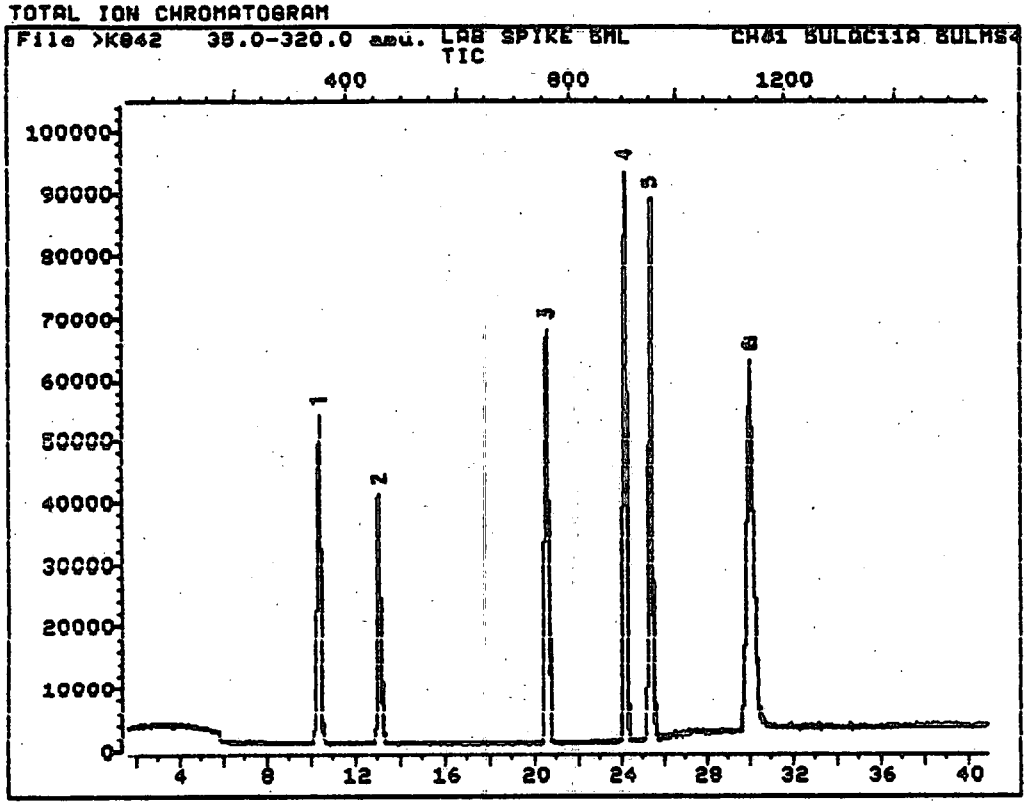
Authorized: NA Prepared: 09/06/87 Analyzed: 09/06/87

Parameter	Scan No.	Units	Estimated concentration
None detected			

NA = Not applicable.

Reported by CB Approved by Ac

TOTAL ION CHROMATOGRAM



Data File: >K842::D2
Name: ~~LAB SPIKE~~ 5ML Method Blank
Misc: CH#1 5ULQC11A 5ULMS4C

Id File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 870906 19:06

Operator ID: STEVE
Quant Time: 870906 19:20
Injected at: 870906 18:33

WRONG HEADER

QUANT REPORT

Operator ID: STEVE
Output File: ^K842::Q0
Data File: >K842::D2
Name: ~~LAB SPIKE 5ML~~ Prep Blk
Misc: CH#1 5ULQC11A ~~5ULM94C~~

Quant Rev: 4 Quant Time: 870906 19:20
Injected at: 870906 18:33
Dilution Factor: 1.00

ID File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 870906 19:06

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane	10.32	349	126538	50.00	ug/L	90
14)	D4-1,2-Dichloroethane	13.03	457	161145	47.85	ug/L 96	97
15)	*1,4-Difluorobenzene	20.55	757	272936	50.00	ug/L	100
30)	*D5-Chlorobenzene	25.34	948	289622	50.00	ug/L	72
36)	D8-Toluene	24.16	901	224260	50.07	ug/L 100	97
42)	Bromofluorobenzene (BFB)	30.03	1135	228388	51.19	ug/L 102	82

* Compound is ISTD

Four

Enseco

CHAIN-OF-CUSTODY RECORD

SAMPLER: *(Signature)*

Phone 201 625 0534

Date Shipped 8/28/87

Airbill No.

Carrier Federal

Cooler No.

SHIP TO:

Enseco-Gollob Analytical
47 Industrial Road
Berkeley Heights, NJ 07922
(201) 464-3331

ATTENTION:

SEND RESULTS TO:

Client Name GeoEngineering Inc.

Company 100 Foster Rd.

Address Denville, N.J. 07834

Phone 201 625 0700 Attn: William Dorrell

PROJECT NAME G.E. CARPENTER

PROJECT NO. 5500

P.O. NO. —

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
Relinquished by: *(Signature)* 8/28/87 15:00	Received by: *(Signature)* S.D. Chapnick 8/31/87	8/29/87	
Relinquished by: *(Signature)*	Received at lab by: *(Signature)*	Date	Time
Relinquished from lab by: *(Signature)*	Received by: *(Signature)*	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled		Analysis Requested	Sample Condition Upon Receipt
1	WATER	8/28/87	10:10	VOA	
2	"	"	10:30	VOA	
3	"	"	10:55	VOA	
4	"	"	11:04	VOA	
5	"	"	10:10	VOA	

Special Instructions/Comments:

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) _____ Standard

GAS ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

Booking Log No.: 5174

Enseco - Erco Laboratory

Client: GeoEngineering Inc.

Client Project: LE Carpenter

Date received: 8/29/87

Program Mgr.: Tom Copeland

Date Due: 9/19/87

Reporting Format

CLP — ECRA
Tier I A, B — RCRA
Tier II A, B

Comments:

Date Due To Document Control:

Erco ID	Client ID	Date Sampled	Matrix	Condition	Analyses
5174-01	Well # 1	8/28/87	A	OK	VOA 624 +15 UNKS
5174-02	" #2				
5174-03	" #3				
5174-04	" #4				
5174-05	" #5				
5174					
5174					

Received by: [illegible] Date: 8-31-87

Logged by: [illegible] Date: 8/31/87

Approved by: TRC Date: 8/31/87

Project Information

Client Contact:
Account No.:
Bill No.:
Project No.: 5500
P.O. No.:
Program:

VOA Sample receiving and tracking log

Geoengineering Inc.

Date rec'd.	Client (sample lot size) ERCO IDs	Client ID		Date deadline	Matrix	Analysis	Sample info.	Amount	Good run	rec'd.	Comments	Due date	Out	Custodian
8/29	[redacted]								✓					
	5174-01	Well #1		9/4	Aq	624	25ml		6943	2	9-3 [redacted]			
	5174-02	Well #2					5ML	25ml	6943		9/6 (Sat) Exceeded within holding time			
	5174-03	#3					20ml		6974		9/4			
	5174-04	#4					50ml	5ml	~~6975~~		~~9/4~~ 6975 9/4			
	5174-05	#5					5ML	5ml	6976		9/4			
8/														
8/28		~~W4-13B-0825-12~~			Aq	624				3				
	5171-01	W4-13B-0825-12		9/2			50ml	50ml				9/11		JC
	5171-02	W4-13B-0826-12		9/3			50ml		8005		9-7			
	-03	W4-13B-0827-13		9/4			50ml		8006		9-8			
	-04	W4-13B-0824-10		9/1			50ml		1001		9-8			
8/28	[redacted]								✓		[redacted]	9/4	9-4	JC
	5169-01	NOC-25R	8/28	9/4	Aq	624	5ML		6920	1	9/2			
	-02	NOC-21	8/28	9/4			5ml	5ml	6921		9/2			
	-03	NOC-23	8/28	9/1			50ml	5ml	9946		9/3			
	-04	NOC-26	8/28	9/2			5ML		9947		9/3			
	-05	BR5 NOC-31	8/28	9/4			50ml		9948		9/3			
	-06	GZ 103	8/26	9/2			50ml		9949		9/3			
	-07	B-12	8/26	9/2			5ML		9950		9/3			

EF~OI. ~isio ~ENSEC

FRN	ARCH TAPE	Chamber No.	Sample I.D.	Conc. or Vol.	Volt. or Gain	Thres-hold	Column Lgth	Column Type	Analyst	Date	If First Run	COMMENTS
					System		Baked					3009/657
K838			BFB di.	50ng	2645	100	8'	1% SP1000	JB	9/6/87		180
K839			BFB di	50ng					JB			1515D
K840		1	50 PP BSTD Sul QC11B	5ml					JB			
K841		1	50PPBSTD Sul QC11B	5ml					JB			
K842		1	Proc Blk Sul QC11B	5ml					JB			Header wrong Sample is proc blk
K843		9	Geo 5174-2 Sul QC11B	50ul					JB			good
K844		10	5156-2 Sul QC11B	5ml					JB			good
K845		1	5187-1 Sul QC11B	5ml					JB			RR5ML
K846		2	5187-2S Sul QC11B Sul MS4C	5ml					JB			good
K847		3	H2O Blk Sul QC11B	5ml					JB			Bad 3009/657

ANALYSIS LOG

ERCO | A Division of ENSECO

FRN	ARCH TAPE	Chamber No.	Sample I.D.	Conc. or Vol.	Volt. or Gain	Threshold	Column Lgth	Column Type	Analyst	Date	Check (✓) If First Run	COMMENTS
>6970		11	VOA 50 ppb 5µl QC11A	5ML	2000	100	8'	1% SP1000	[illegible]	9/4/92		
>6971	/	-	PFB DI	50ng					[illegible]			12:09
>6972	/	11	VOA 50 ppb 5µl QC11A	5ML					[illegible]			CLP!
>6973	/	10	ERCO PROC BLK H_2O	5ML					[illegible]			
>6974	/	6	GEO 5174-3	20µl					[illegible]			good
>6975		7	GEO 5174-4	5ML					[illegible]			good
>6976		8	GEO 5174-5	5ML					[illegible]			good
>6977		9	5156-2	5ML					[illegible]			PFB ↑
>6978		10	GEO 5174-2	25µl					[illegible]			bad
>6979		1	ERCO BLK MeOH	100µl					[illegible]			
>6980		2	AQ391 4968-11S 5µl MSSA	100µl					[illegible]			1.08g/20mls good 8/26

ERCO/JIA Division -- ENCECO

ANALYSIS LOG

FRN	ARCH TAPE	Chamber No.	Sample I.D.	Conc. or Vol.	Volt. or Gain	Thres-hold	Column Lgth	Column Type	Analyst	Date	Check (✓) if First Run	COMMENTS
6932		7	5089-1 5ml QC11A	200ml	1795	100	8'	1% SP2000	KH	9/2/87	✓	9.90g 8.25 good
6933		8	5097-1 5ml QC11A	50ml	↓	↓	↓	↓	KH	↓		RR ~~[illegible]~~ 100,000 ml/10ml
6934		9	4988-1 5ml QC11A	100ml Dil	↓	↓	↓	↓	KH	↓	✓	1.29g/20ml 8.26 ~~200ml~~ DT = ~~100ml/10ml~~
6935		10	4988-9 5ml QC11A	100ml	↓	↓	↓	↓	KH	↓		1.08g/10ml 8.26 good
6936		1	5175-3 5ml QC11A	200ml	↓	↓	↓	↓	KH	↓	✓	LRG NS good 9.96g 9.1
			Sylvan Beelbod								9/3/87	
6937			BFB di.	50ng	1795	100	8'	17. SP2000	JG	9/3/87		
6938	/		BFB di.	50ng	↓	↓	↓	↓	JG	↓		9:18 98
6939	/	1	50PPBSTD 5ml QC11A	5ml	↓	↓	↓	↓	JG	↓		
6940	/	1	Proc BLK 5ml QC11A	5ml	↓	↓	↓	↓	JG	↓		
6941	NOA .72	1	5155-4SD 5ml QC11A 5ml MS4C	3.23g	↓	↓	↓	↓	JG	↓		leak VV 3g

ANALYSIS LOG

ERCO | A Division of ENSECO

FRN	ARCH TAPE	Chamber No.	Sample I.D.	Conc. or Vol.	Volt. or Gain	Thres-hold	Column Lgth	Column Type	Analyst	Date	Check (✓) if First Run	COMMENTS
6942	(VOA 172 9/1/87)	2	Dunn 5155-7 5ml QC11A	5ml	1795	100	8'	1% SP1000	HR	9/3/87	✓	good
6943		3	[illegible] 5ml QC11A	25ul					HR		✓	good
6944		4	GEI 5174-2 5ml QC11A	5ml					HR			Xylenes 4400
6945		5	5156-2 5ml QC11A	5ml					HR			(Header wrong altogether) ABORTED
6946		5 6	~~GEI 5174-1~~ H2O BLK ~~5ml QC11A~~	5ml ~~500ml~~					HR			~~Header wrong~~ - BLANK
~~6947~~		7	~~H2O BLK~~ 5ml QC11A	5ml					Jb			DAICLY RESTART
~~6948~~		8	~~H2O BLK~~ ~~5ml QC11A~~	5ml					Jb			
6949		9	~~GEI 5174-5~~ 5ml QC11A	5ml					HR			
6950		10	~~H2O BLK~~ 5ml QC11A	5ml					Jb			
6947		6	GEI 5174-4 5ml QC11A	500ul					HR			rr 5ml is LOW
6948		9	GEI 5174-5 5ml QC11A	5ml					HR			rr 5ml