



Chevron U.S.A. Inc.

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Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

Marketing Department

September 17, 1991

Mr. Richard Hyatt
California Regional Water Quality
Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612

Re: Quarterly Monitoring Report
Former Chevron Asphalt Plant & Terminal
1520 Powell Street
Emeryville, CA

Dear Mr. Hyatt:

As a follow up to our 9-11-91 meeting, I have enclosed a copy of the most recent groundwater sampling report dated 8-27-91 by Sierra Environmental Services for your review.

If you should have any questions regarding this report, please feel free to call me at (415) 842-9655.

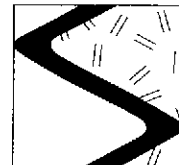
Sincerely,

Lucia R. Chou
Engineer

✓ Enclosure

cc: Mr. Dennis Byrn, Alameda County Environmental Health

01-0111 01-023 16



August 27, 1991

Lucia Chou
Chevron USA
P.O. Box 5004
San Ramon, CA 94583

Re: Former Chevron Asphalt Plant
and Terminal #1001067
1520 Powell Street
Emeryville, California
SES Project #1-191-04

Dear Ms. Chou:

This report presents the results of the quarterly water sampling at former Chevron Asphalt Plant and Terminal #1001067, located at 1520 Powell Street in Emeryville, California (Figure 1, Appendix A). Ground water samples from 15 wells, MW-1, MW-2, MW-3, MW-7, MW-8, and MW-10 through MW-19, were collected (Figure 2, Appendix A).

On August 8, 1991, SES personnel visited the site. Free-phase hydrocarbons were not present in any of the site wells. Water level data is shown in Table 1 (Appendix B) and a ground water elevation contour map is included as Figure 2 (Appendix A).

The water samples were collected on August 8, 1991 in accordance with SES Standard Operating Procedure - Ground Water Sampling (Appendix C). All analyses were performed by Superior Analytical Laboratory of San Francisco, California. Analytic results for ground water are presented in Tables 2 and 3 (Appendix B). Chain of custody documents and laboratory analytic reports are included in Appendix D. SES is not responsible for laboratory omissions or errors.

Thank you for allowing us to provide services to Chevron. Please call if you have any questions.

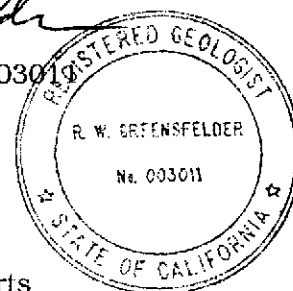
Sincerely,
Sierra Environmental Services

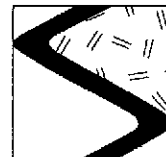
Sharon Halper
Senior Project Geologist

Dr. Roger Greensfelder
Registered Geologist #003019

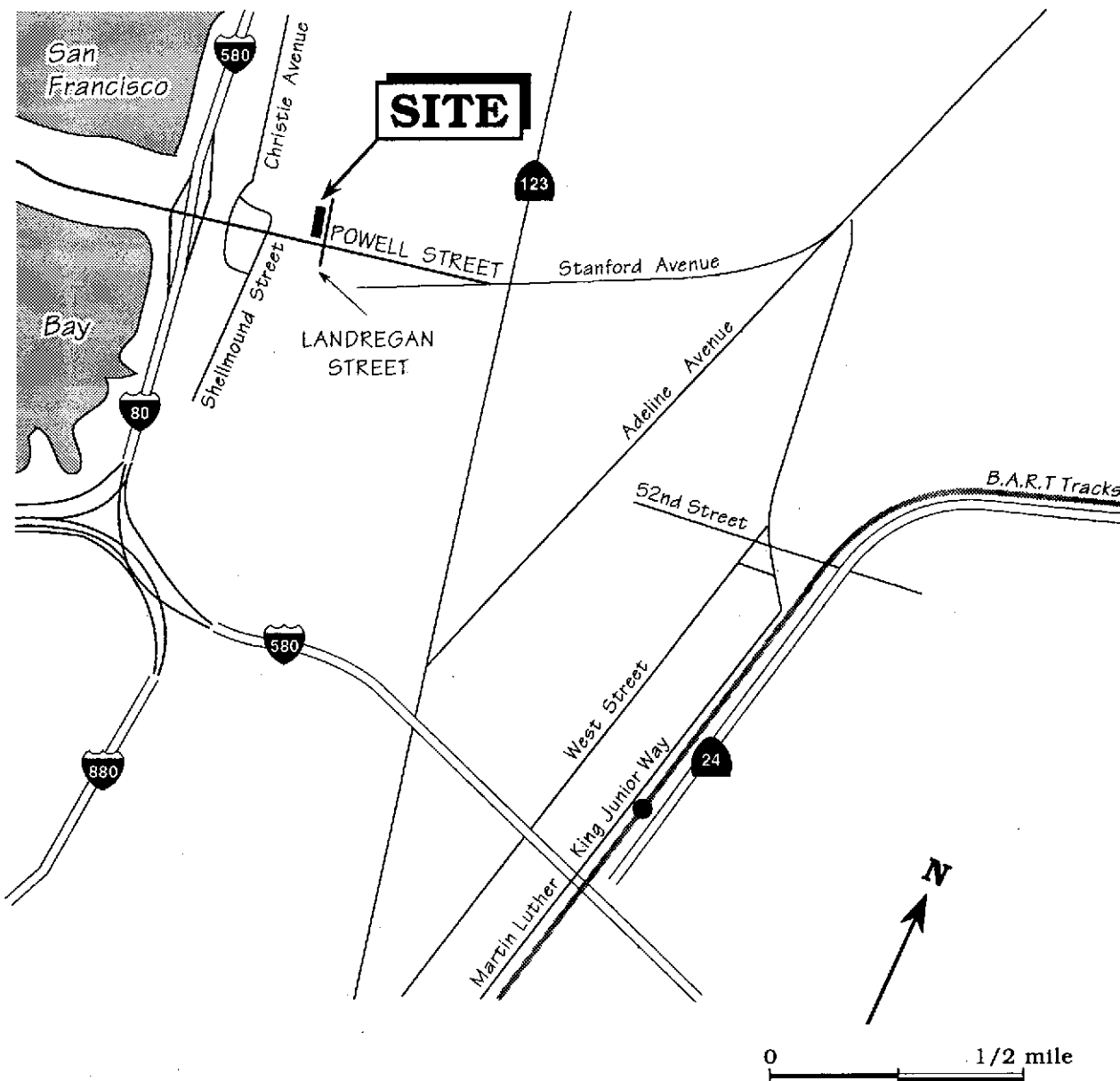
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Appendices A - Figures
B - Tables
C - SES Standard Operating Procedure
D - Chain of Custody Documents and Laboratory Analytic Reports





SIERRA



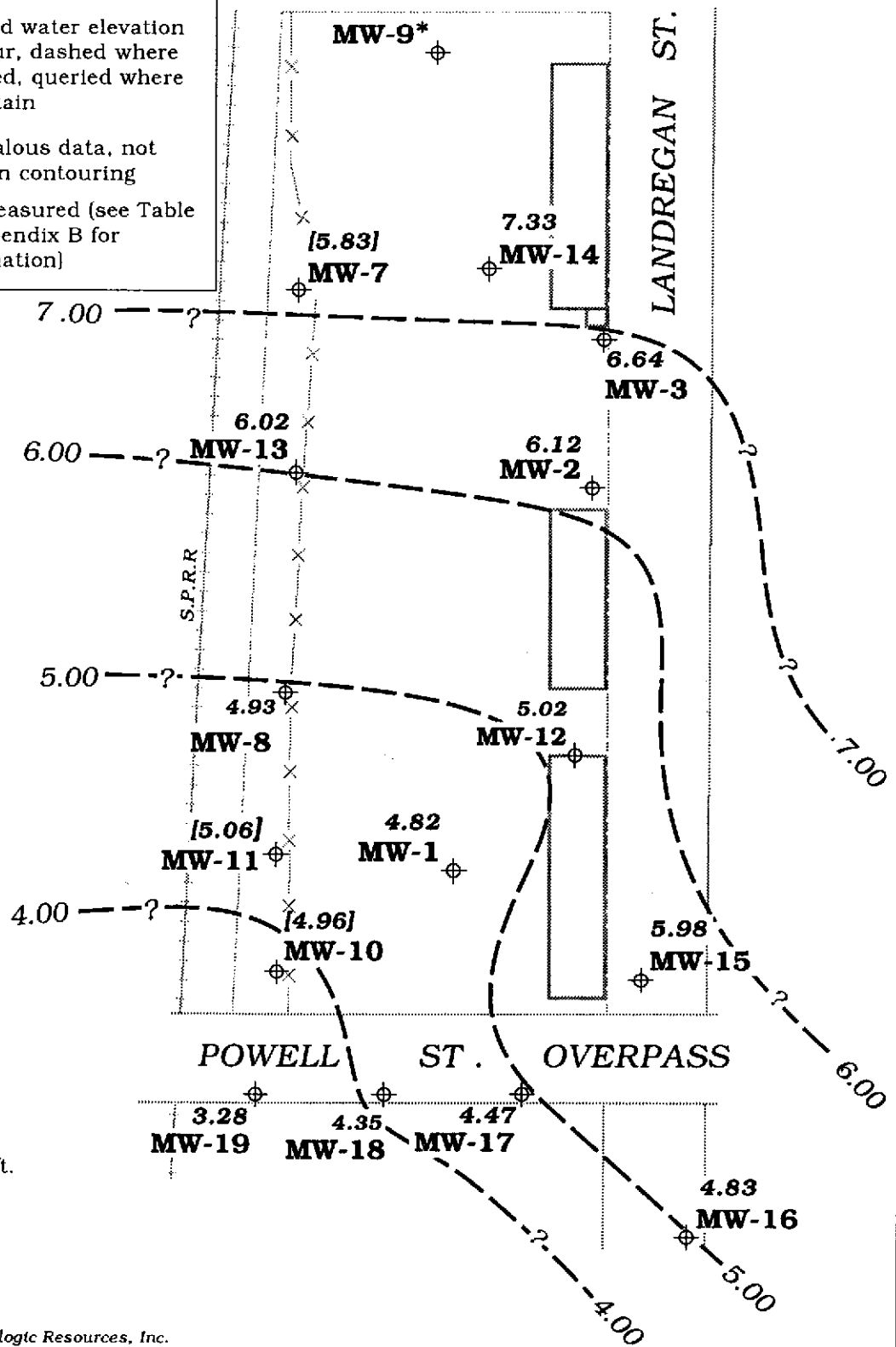
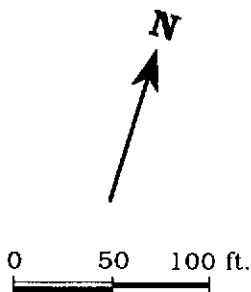
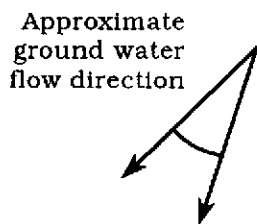
Base map ref: California State Automobile Association (AAA)

Figure 1. Site Location Map - Former Chevron Asphalt Plant and Terminal #1001067 - Emeryville, California



EXPLANATION

- ⊕ **MW-1** Monitoring well
- 4.82** Ground water elevation
- 4.00 Ground water elevation contour, dashed where inferred, queried where uncertain
- [5.83]** Anomalous data, not used in contouring
- MW-9*** Not measured (see Table 1, Appendix B for explanation)



Base map after Western Geologic Resources, Inc.

Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - August 8, 1991 - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California



Table 1. Water Level Data and Well Construction Details - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California

Well ID	Date Measured	DTW (ft)	TOC ¹ (ft)	GWE (msl)	Product Thickness ² (ft)	Screen Interval ³	Sand Pack Interval ³	Bentonite/Grout Interval ³
						<-----feet below grade----->		
MW-1	4/13/89	3.72	10.67	6.95	---	1.5 - 11.5	1 - 12	0 - 1
	7/31/89	5.72		4.95				
	12/8/89	4.80		5.87				
	3/21/90	4.74		5.93				
	6/19/90	4.75		5.92				
	9/20/90	5.07		5.60				
	12/28/90	4.91		5.76				
	5/10/91	5.30		5.37				
	8/8/91	5.85	4.82	0				
MW-2	4/13/89	2.62	13.78	11.16	---	2 - 12	1 - 12	0 - 1
	7/31/89	4.63		9.15				
	12/8/89	5.98		7.80				
	3/21/90	5.85		7.93				
	6/19/90	5.95		7.83				
	9/20/90	6.86		6.92				
	12/28/90	6.34		7.44				
	5/10/91	5.96		7.82				
	8/8/91	7.66	6.12	0				
MW-3	4/13/89	2.34	11.73	9.39	---	2 - 12	1 - 12	0 - 1
	7/31/89	4.79	99.50 ¹	---				
	12/8/89	3.03	---	---				
	3/21/90	2.55	11.73	9.18				
	6/19/90	2.76	---	8.97				
	9/20/90	4.43	---	7.30				
	12/28/90	3.67	---	8.06				
	5/10/91	2.83	---	8.90				
	8/8/91	5.09	6.64	0				
MW-4 ⁴	4/13/89	2.12	99.86	---	---	2 - 12	1 - 12	0 - 1



Table 1. Water Level Data and Well Construction Details - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Measured	DTW (ft)	TOC (ft)	GWE (msl)	Product Thickness ² (ft)	Screen Interval ³	Sand Pack Interval ³	Bentonite/Grout Interval ³
						<-----feet below grade----->		
MW-5 ⁴	4/13/89	2.79	98.53	---	---	2 - 12	1 - 12	0 - 1
MW-6 ⁴	4/13/89	1.90	99.03	---	---	2 - 12	1 - 12	0 - 1
MW-7 ⁵	4/13/89	1.90	10.47	8.57	---	2 - 12	1 - 12	0 - 1
	7/31/89	4.24		6.23	---			
	12/8/89	2.65		7.82	---			
	3/21/90	2.76		7.71	---			
	6/19/90	3.24		7.23	---			
	9/20/90	4.57		5.90	---			
	12/28/90	3.12		7.35	---			
	5/10/91	3.53		6.94	0			
	8/8/91	4.64		5.83	0			
MW-8	4/13/89	2.80	10.46	7.66	---	2 - 12	1 - 12	0 - 1
	7/31/89	5.70		4.76	---			
	12/8/89	4.13		6.33	---			
	3/21/90	4.07		6.39	---			
	6/19/90	4.25		6.21	---			
	9/20/90	4.99		5.47	---			
	12/28/90	4.39		6.07	---			
	5/10/91	4.13		6.33	0			
	8/8/91	5.53		4.93	0			
MW-9 ⁶	5/10/91	---	---	---	---	2 - 12	1 - 12	0 - 1
MW-10 ⁷	3/21/90	4.60	10.82	6.22	---	---	---	---
	6/19/90	4.89		5.93	---			
	9/20/90	5.77		5.05	---			
	12/28/90	4.99		5.83	---			
	5/10/91	5.80		5.02	0			
		8/8/91	5.86		4.96	0		



Table 1. Water Level Data and Well Construction Details - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Measured	DTW (ft)	TOC (ft)	GWE (msl)	Product Thickness ² (ft)	Screen Interval ³	Sand Pack Interval ³	Bentonite/Grout Interval ³
MW-11 ⁷	3/21/90	4.82	11.38	6.56	---	---	---	---
	6/19/90	5.14		6.24	---	---	---	---
	9/20/90	6.11		5.27	---	---	---	---
	12/28/90	5.16		6.22	---	---	---	---
	5/10/91	7.83		3.55	0	---	---	---
	8/8/91	6.32		5.06	0	---	---	---
MW-12	3/21/90	6.76	13.03	6.27	---	---	---	---
	6/19/90	6.62		6.41	---	---	---	---
	9/20/90	5.00		8.03	---	---	---	---
	12/28/90	6.62		6.41	---	---	---	---
	5/10/91	6.48		6.55	0	---	---	---
	8/8/91	8.01		5.02	0	---	---	---
MW-13	3/21/90	4.08	11.15	7.07	---	7.5 - 12	7 - 12	0 - 7
	6/19/90	4.34		6.81	---	---	---	---
	9/20/90	5.31		5.84	---	---	---	---
	12/28/90	4.79		6.36	---	---	---	---
	5/10/91	4.20		6.95	0	---	---	---
	8/8/91	5.13		6.02	0	---	---	---
MW-14	3/21/90	0.91	9.78	8.87	---	5 - 10	6.5 - 10	0 - 6.5
	6/19/90	1.03		8.75	---	---	---	---
	9/20/90	2.53		7.25	---	---	---	---
	12/28/90	1.61		8.17	---	---	---	---
	5/10/91	1.22		8.56	0	---	---	---
	8/8/91	2.45		7.33	0	---	---	---
MW-15	3/21/90	4.72	11.01	6.29	---	5.5 - 10.5	5 - 10.5	0 - 5
	6/19/90	4.78		6.23	---	---	---	---
	9/20/90	4.98		6.03	---	---	---	---
	12/28/90	4.84		6.17	---	---	---	---
	5/10/91	4.58		6.43	0	---	---	---
	8/8/91	5.03		5.98	0	---	---	---



Table 1. Water Level Data and Well Construction Details - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Measured	DTW (ft)	TOC (ft)	GWE (msl)	Product Thickness ² (ft)	Screen Interval ³ <-----feet below grade----->	Sand Pack Interval ³	Bentonite/Grout Interval ³
MW-16	3/21/90	5.84	11.11	5.27	---	7 - 13.5	7 - 13.5	0 - 7
	6/19/90	5.90		5.21	---			
	9/20/90	6.36		4.75	---			
	12/28/90	5.98		5.13	---			
	5/10/91	5.89		5.22	0			
	8/8/91	6.28		4.83	0			
MW-17	3/21/90	5.61	10.41	4.80	---	4 - 12	3.5 - 12	0 - 3.5
	6/19/90	---		---	---			
	9/20/90	6.02		4.39	---			
	12/28/90	5.73		4.68	---			
	5/10/91	5.65		4.76	0			
	8/8/91	5.94		4.47	0			
MW-18	3/21/90	5.15	9.80	4.65	---	4 - 11	3.5 - 11	0 - 3.5
	6/19/90	5.19		4.61	---			
	9/20/90	5.54		4.26	---			
	12/28/90	5.26		4.54	---			
	5/10/91	5.18		4.62	0			
	8/8/91	5.45		4.35	0			
MW-19	3/21/90	5.00	8.45	3.45	---	5 - 9	4.5 - 9	0 - 4.5
	6/19/90	5.06		3.39	---			
	9/20/90	5.25		3.20	---			
	12/28/90	5.07		3.38	---			
	5/10/91	5.02		3.43	0			
	8/8/91	5.17		3.28	0			



Table 1. Water Level Data and Well Construction Details - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

EXPLANATION:

DTW = Depth to water
TOC = Top of casing elevation
GWE = Ground water elevation
msl = Measurements referenced relative to mean sea level
--- = Not measured

NOTES:

- ¹ Top of casing elevations shown prior to 3/21/90 were surveyed to an arbitrary datum point set at 100 ft. The TOCs shown for dates prior to 3/21/90 were corrected using new TOC elevations which were surveyed to a USGS benchmark (relative to mean sea level) in April 1990.
- ² Product thickness measurements were made using an MMC flex-dip interface probe. Product thickness information prior to May 10, 1991 was not available for inclusion in this report.
- ³ MW-1 through MW-9 well construction details are from March 12 and 13, 1985 boring logs by Gettler-Ryan Inc. of Hayward, California. Construction information for MW-10, MW-11 and MW-12 were not available for inclusion in this report. MW-13 through MW-19 well construction details are from the February 1 and 2, 1990 and March 21-23, 1990 boring logs by Western Geologic Resources, Inc., San Rafael, California.
- ⁴ Monitoring wells destroyed during soil excavation.
- ⁵ The water level in this well was anomalously low; it was not used for contouring.
- ⁶ MW-9 was not measured because it could not be located. Previous water level data were not available for this well.
- ⁷ The water level in this well was anomalously high; it was not used for contouring.



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California

Well ID	Date Sampled	Analytic Lab	Analytic Method	TPPH(G)	-----ppb-----					O&G
					B	T	E	X		
MW-1	4/14/89	CCAS	8260	<5,000	34	<5	<5	<10	---	
	7/31/89	CCAS	8260	7,000	57	1.2	<0.2	1.6	---	
	12/8/89	GTEL	8015/8020	---	26	0.4	0.9	2	---	
	3/21/90	GTEL	8015/8020	3,500	120	9	3	3	---	
	6/19/90	GTEL	8015/8020	2,700	100	<0.3	<0.3	7	---	
	9/21/90	GTEL	8015/8020	2,200	120	2	2	0.79	---	
	12/28/90	SAL	8015/8020	720	44	2	<0.5	9	---	
	5/10/91	SAL	8015/8020	530	47	2	0.5	8	---	
	8/8/91	SAL	8015/8020	1,400	37	8.3	3.7	12	---	
MW-2	4/14/89	CCAS	8260	<100	<0.2	<0.2	<0.2	<0.4	<3,000	
	7/31/89	CCAS	8260	<100	<0.2	<1.0	<0.2	<0.4	---	
	12/8/89	GTEL	8015/8020	---	<0.3	<0.3	<0.3	<0.6	---	
	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	9/21/90	GTEL	8015/8020	<50	<1.5	<1.5	<1.5	4.5	---	
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
MW-3	4/14/89	CCAS	8260	<100	<0.2	<0.2	<0.2	<0.4	<3,000	
	7/31/89	CCAS	8260	<100	<0.2	<1.0	<0.2	<0.4	---	
	12/8/89	GTEL	8015/8020	---	<0.3	<0.3	<0.3	<0.6	---	
	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	9/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
MW-4 ^{1,2}	4/14/89	CCAS	8260	380	<0.5	<1	<1	<1	<3,000	

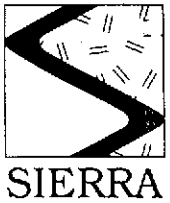


Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	TPPH(G)	B	T	E	X	O&G
				-----ppb-----					
MW-10	4/14/89	CCAS	8260	<50	<0.5	<1	<1	<1	<3,000
	7/31/89	CCAS	8260	<50	<0.1	<0.5	<0.1	<0.2	---
	12/8/89	GTEL	8015/8020	---	<0.3	<0.3	<0.3	<0.6	---
	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	9/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
MW-11	4/14/89	CCAS	8260	<50	<0.5	<1	<1	<1	<3,000
	7/31/89	CCAS	8260	<100	<0.2	<0.2	<0.2	<0.2	---
	12/8/89	GTEL	8015/8020	---	<0.3	<0.3	<0.3	<0.6	---
	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	9/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
MW-12	4/14/89	CCAS	8260	<50	<0.5	<1	<1	<1	<3,000
	7/31/89	CCAS	8260	<100	<0.1	<0.5	<0.1	<0.2	---
	12/8/89	GTEL	8015/8020	---	<0.3	<0.3	<0.3	<0.6	---
	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.3	---
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.3	---
	9/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.3	---
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	TPPH(G)	-----ppb-----					O&G
					B	T	E	X		
MW-13	3/21/90	GTEL	8015/8020	480	<0.3	<0.3	1.0	5.0	---	
	6/19/90	GTEL	8015/8020	180	<0.3	<0.3	0.8	3.0	---	
	9/20/90	GTEL	8015/8020	150	<0.3	<0.3	<0.3	0.54	---	
	12/28/90	SAL	8015/8020	160	<0.5	<0.5	<0.5	1	---	
	5/10/91	SAL	8015/8020	110	<0.5	<0.5	<0.5	2	---	
	8/8/91	SAL	8015/8020	220⁴	<0.5	<0.5	<0.5	1.8	---	
MW-14	3/21/90	GTEL	8015/8020	170	<0.3	<0.3	<0.4	2.0	---	
	6/19/90	GTEL	8015/8020	77	<0.3	<0.3	<0.3	<0.6	---	
	9/20/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
MW-15	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	9/20/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
MW-16	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	9/20/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---	
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---	



Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	TPPH(G)	B	T	E	X	O&G
				-----ppb-----					
MW-17	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	9/20/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	0.8	---
	8/8/91	SAL	8015/8020	82	1.9	2.5	0.9	5.4	---
MW-18	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	9/20/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	8/8/91	SAL	8015/8020	52	<0.5	<0.5	<0.5	<0.5	---
MW-19	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	9/20/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	12/28/90	SAL	8015/8020	66	<0.5	<0.5	<0.5	<0.5	---
	5/10/91	SAL	8015/8020	60 ⁴	<0.5	<0.5	<0.5	<0.5	---
	8/8/91	SAL	8015/8020	58	<0.5	<0.5	<0.5	<0.5	---
AA	4/14/89	CCAS	8260	<50	<0.5	<1	<1	<1	---
	7/31/89	CCAS	8260	<50	<0.1	<0.5	<0.5	<0.2	---
	12/8/89	GTEL	8015/8020	---	<0.3	<0.3	<0.3	<0.6	---
	3/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	3/26/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	6/19/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	9/21/90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6	---
	12/28/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.6	---
	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---

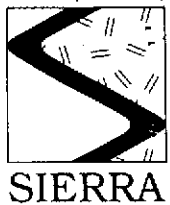


Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	TPPH(G)	B	T	E	X	O&G
				-----ppb-----					
BB	5/10/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	8/8/91	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---

EXPLANATION:

TPPH(G) = Total Purgeable Petroleum Hydrocarbons as Gasoline
 B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Xylenes
 O&G = Oil and Grease
 ppb = Parts per billion
 --- = Not analyzed/Not applicable
 AA = Travel Blank
 BB = Bailer Blank
 D = Duplicate Analysis

ANALYTIC METHODS:

8260 = Approved Variance for Method EPA 8240 using capillary column and GC/MS for TPH and BTEX
 8015 = EPA Method 8015 for TPH (G)
 8020 = EPA Method 8020 for BTEX

ANALYTIC LABORATORIES:

CCAS = Coast to Coast Analytical Services of San Luis Obispo, California
 GTEL = Groundwater Technology Environmental Laboratory of Concord, California
 SAL = Superior Analytical Laboratory of Martinez and San Francisco, California

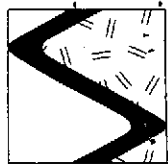
NOTES:

- ¹ TPPH as Diesel #2.
- ² Monitoring wells destroyed in 1989.
- ³ MW-9 was not sampled because it could not be located. Previous analytical data were not available for inclusion in this report.
- ⁴ Does not match a typical gasoline pattern.



Table 3. Analytic Results for Ground Water - Halogenated Volatile Organic Compounds - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California

Well ID	Date Sampled	Analytic Lab	Analytic Method	1,1-	1,2-	t-1,2-	c-1,2-	1,1-	TCA	TCE	PCE	CF	VC	Other
				DCE	DCE	DCE	DCE	DCA	ppb					
MW-1	4/14/89	CCAS	8010	<5	19	---	720	<5	<5	11	<5	<20	340	ND ¹
	7/31/89	CCAS	8010	6.8	54	---	2,600	2.7	7.2	57	<0.2	<1	760	ND ²
	12/8/89	GTEL	8010	4.3	2,700	---	---	1.7	1.4	59	<0.5	<0.5	520	---
	3/21/90	GTEL	8010	7.1	7,000	---	---	2.1	1.1	130	<0.5	<0.5	1,100	---
	6/19/90	GTEL	8010	12	6,100	---	---	3.1	<0.5	81	<0.5	<0.5	1,200	---
	9/21/90	GTEL	8010	1.8	2,400	---	---	2.2	1.7	60	<0.5	<0.5	1,100	ND ³
	12/28/90	SAL	8010	2	---	28	1,500	1	0.6	15	<0.5	<0.5	510	ND ⁴
	5/10/91	SAL	8010	10	---	69	5,500	2	<0.5	280	<0.5	<0.5	1,800	ND ⁵
	8/8/91	SAL	8010	2.9	---	45	2,300	1.5	<0.5	110	<0.5	<0.5	<1	ND⁶
MW-2	4/14/89	CCAS	8010	<0.2	<0.2	---	---	<0.2	<0.2	<0.2	<0.2	<1	<0.2	---
	7/31/89	CCAS	8010	<0.2	<0.2	---	---	<0.4	0.5	<0.2	<0.2	<1	<0.2	---
	12/8/89	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	---
	3/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	6/19/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	9/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-3	4/14/89	CCAS	8010	<0.2	<0.2	---	---	<0.2	<0.2	<0.2	<0.2	<1	<0.2	---
	7/31/89	CCAS	8010	<0.2	<0.2	---	---	<0.4	0.5	<0.2	<0.2	<1	<0.2	---
	12/8/89	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	3/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	6/19/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	9/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-4 ⁷	4/14/89	CCAS	8010	<1	<1	---	---	2	<1	<1	<1	<2	<1	---
MW-5 ⁷	4/14/89	CCAS	8010	<1	<1	---	---	2	<1	<1	<1	<2	<1	---
MW-6 ⁷	4/14/89	CCAS	8010	<1	<1	---	---	2	<1	<1	<1	<2	<1	---



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Table 3. Analytic Results for Ground Water - Halogenated Volatile Organic Compounds - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	1,1-	1,2-	t-1,2-	c-1,2-	1,1-	TCA	TCE	PCE	CF	VC	Other HVOCs	
				DCE	DCE	DCE	DCE	DCA							
-----ppb----->															
MW-7	4/14/89	CCAS	8010	<1	<1	---	---	1	1	<1	<1	<2	<1	---	
MW-7	7/31/89	CCAS	8010	<0.1	0.3	---	---	0.3	4.5	<0.1	<0.1	<0.5	<0.1	ND ⁸	
MW-7D	7/31/89	GTEL	8010	<0.1	0.4	---	---	0.2	2.6	<0.1	<0.1	<0.5	<0.1	ND ⁸	
MW-7	12/8/89	GTEL	8010	<0.2	<0.5	---	---	<0.5	0.67	<0.5	<0.5	<0.5	<1.0	---	
	3/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	1.4	<0.5	<0.5	<0.5	<1	---	
	6/19/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	0.67	<0.5	<0.5	<0.5	<1	---	
	9/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---	
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	<1	---	
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND	
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND	
MW-8	4/14/89	CCAS	8010	<1	<1	---	---	<1	<1	<1	<1	<2	<1	---	
	7/31/89	CCAS	8010	<0.1	0.6	---	1.9	1.7	1.7	0.4	<0.1	<0.5	1.2	ND	
	12/8/89	GTEL	8010	<0.2	0.53	---	---	<0.5	0.84	<0.5	<0.5	<0.5	<1.0	---	
	3/21/90	GTEL	8010	<0.2	0.96	---	---	<0.5	0.72	<0.5	<0.5	<0.5	<1	---	
	6/19/90	GTEL	8010	<0.2	0.59	---	---	<0.5	0.67	<0.5	<0.5	<0.5	<1	---	
	9/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---	
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	<1	---	
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND	
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND	
MW-9 ⁹	5/10/91	---	---	---	---	---	---	---	---	---	---	---	---	---	
	8/8/91	---	---	---	---	---	---	---	---	---	---	---	---	---	
MW-10	4/14/89	CCAS	8010	<1	15	---	---	2	<1	5	<1	<2	<1	---	
	7/31/89	CCAS	8010	0.7	6.3	---	27	2.9	<0.1	5.3	<0.1	<0.5	<0.1	ND	
	12/8/89	GTEL	8010	<0.2	24	---	---	3.1	<0.5	4.9	<0.5	0.6	<1.0	---	
	3/21/90	GTEL	8010	0.7	30	---	---	2.5	<0.5	3.5	<0.5	<0.5	<1	---	
	6/19/90	GTEL	8010	0.3	33	---	---	2.6	<0.5	6.3	<0.5	<0.5	<1	---	
	9/21/90	GTEL	8010	<0.2	32	---	---	5.0	<0.5	5.9	<0.5	<0.5	<1	---	
	12/28/90	SAL	8010	<0.5	---	6	19	2	<0.5	5	<0.5	<0.5	<1	---	
	5/10/91	SAL	8010	0.6	---	7	24	2	<0.5	6	<0.5	<0.5	<1	ND	
	8/8/91	SAL	8010	<0.5	---	7	33	3.1	<0.5	6.2	<0.5	<0.5	<1	ND	



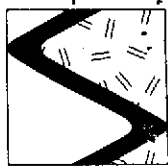
Table 3. Analytic Results for Ground Water - Halogenated Volatile Organic Compounds - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	1,1-	1,2-	t-1,2-	c-1,2-	1,1-	TCA	TCE	PCE	CF	VC	Other
				DCE	DCE	DCE	DCE	DCA	-----ppb-----					
MW-11	4/14/89	CCAS	8010	<1	120	---	---	<1	<1	4	<1	<2	10	---
	7/31/89	CCAS	8010	0.9	40	---	110	2.2	1.4	2.9	<0.2	<0.2	<0.2	ND
	12/8/89	GTEL	8010	0.5	120	---	---	2.1	1.2	4.1	<0.5	<0.5	2.4	---
	3/21/90	GTEL	8010	1.3	150	---	---	1.2	1.7	3.5	<0.5	<0.5	4.3	ND ¹⁰
	6/19/90	GTEL	8010	0.068	140	---	---	1.3	<0.5	5.0	<0.5	<0.5	1	---
	9/21/90	GTEL	8010	<0.2	100	---	---	1.1	<0.5	3.8	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	23	43	0.9	0.7	3	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	0.9	---	44	110	0.5	<0.5	5	<0.5	<0.5	<1	ND
8/8/91	SAL	8010	<0.5	---	29	77	0.9	<0.5	2.4	<0.5	<0.5	<0.5	<1	ND
MW-12	4/14/89	CCAS	8010	<1	1	---	---	<1	<1	<1	<1	<2	<1	---
	7/31/89	CCAS	8010	<0.1	1.7	---	---	<0.1	<0.1	0.8	<0.1	<0.5	<0.1	ND
	12/8/89	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	---
	3/21/90	GTEL	8010	<0.2	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	6/19/90	GTEL	8010	<0.2	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	9/21/90	GTEL	8010	<0.2	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<1	ND	
MW-13	3/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	6/19/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	9/20/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND ¹¹
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-14	3/21/90	GTEL	8010	<2.0	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	6/19/90	GTEL	8010	<2.0	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	9/20/90	GTEL	8010	<2.0	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND



Table 3. Analytic Results for Ground Water - Halogenated Volatile Organic Compounds - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	1,1-	1,2-	t-1,2-	c-1,2-	1,1-	TCA	TCE	PCE	CF	VC	Other HVOCs
				DCE	DCE	DCE	DCE	DCA						
←-----ppb-----→														
MW-15	3/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	6/19/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	9/20/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND ¹²
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
MW-16	3/21/90	GTEL	8010	<0.2	0.8	---	---	<0.5	<0.5	27	8	2	<1	---
	6/19/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	35	7	2	<1	---
	9/20/90	GTEL	8010	<0.2	0.9	---	---	<0.5	<0.5	49	15	4.1	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	29	18	4	<1	ND ¹³
	5/10/91	SAL	8010	<0.5	---	<0.5	0.5	<0.5	<0.5	32	10	4	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	35	13	1.9	<1	ND
MW-17	3/21/90	GTEL	8010	<0.2	5.2	---	---	0.7	1.3	32	11	1.1	<1	---
	6/19/90	GTEL	8010	<0.2	3.1	---	---	<0.5	1.0	38	13	1.2	<1	---
	9/20/90	GTEL	8010	<0.2	2.4	---	---	<0.5	1.4	44	16	2.8	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	2	<0.5	0.6	34	15	2	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	3	<0.5	0.6	37	14	1	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	2.5	<0.5	<0.5	69	15	0.9	<1	ND
MW-18	3/21/90	GTEL	8010	<0.2	1.7	---	---	<0.5	2.4	33	20	0.9	<1	---
	6/19/90	GTEL	8010	<0.2	2.7	---	---	<0.5	0.9	63	20	0.73	<1	---
	9/20/90	GTEL	8010	<0.2	3.3	---	---	<0.5	1.6	76	25	1.7	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	2	<0.5	0.8	44	21	1	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	2	<0.5	0.7	47	20	2	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	2	<0.5	0.7	32	25	1.0	<1	ND
MW-19	3/21/90	GTEL	8010	<0.2	10	---	---	<0.5	2.5	41	53	3.2	<1	---
	6/19/90	GTEL	8010	<0.2	13	---	---	<0.5	1.5	46	47	2.8	<1	---
	9/20/90	GTEL	8010	<0.2	5.8	---	---	<0.5	2.5	39	32	3.1	<1	---
	12/28/90	SAL	8010	<0.5	---	0.8	22	<0.5	1	40	44	3	<1	---
	5/10/91	SAL	8010	<0.5	---	2	12	<0.5	1	47	47	3	<1	ND
	8/8/91	SAL	8010	<0.5	---	1.1	4.8	<0.5	1.1	41	35	2.8	<1	ND



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Table 3. Analytic Results for Ground Water - Halogenated Volatile Organic Compounds - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

Well ID	Date Sampled	Analytic Lab	Analytic Method	1,1-DCE	1,2-DCE	t-1,2-DCE	c-1,2-DCE	1,1-DCA	TCA	TCE	PCE	CF	VC	Other HVOCs
				←-----ppb-----→										
AA	4/14/89	CCAS	8010	<1	<0.5	---	---	<1	<1	<1	<1	<2	<1	---
	7/31/89	CCAS	8010	<0.1	<0.5	---	---	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	---
	12/8/89	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	---
	3/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	3/26/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	6/19/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	9/21/90	GTEL	8010	<0.2	<0.5	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	12/28/90	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	---
	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND¹⁴
BB	5/10/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
	8/8/91	SAL	8010	<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND



Table 3. Analytic Results for Ground Water - Halogenated Volatile Organic Compounds - Former Chevron Asphalt Plant and Terminal #1001067, Emeryville, California (continued)

EXPLANATION:

1,1-DCE = 1,1-Dichloroethene
1,2-DCE = 1,2-Dichloroethene
t-1,2-DCE = trans-1,2-Dichloroethene
c-1,2-DCE = cis-1,2-Dichloroethene
1,1-DCA = 1,1-Dichloroethane
TCA = 1,1,1-Trichloroethane
TCE = Trichloroethylene
PCE = Tetrachloroethene
CF = Chloroform
VC = Vinyl Chloride
Other HVOCs = Other Halogenated Volatile Organic Compounds
ppb = Parts per billion
--- = Not analyzed/not applicable
AA = Travel Blank
BB = Bailor Blank
ND = Not detected at detection limits of 0.5 to 1 ppb
D = Duplicate analysis

ANALYTIC METHOD:

8010 = EPA Method 8010 for Volatile Organic Compounds

ANALYTIC LABORATORIES:

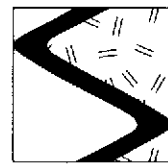
CCAS = Coast to Coast Analytical Services of San Luis Obispo, California
GTEL = Groundwater Technologies Environmental Laboratory of Concord, California
SAL = Superior Analytical Laboratory of Martinez and San Francisco, California

NOTES:

Historic analytic data was compiled from the Quarterly Groundwater Sampling report prepared for this service station by Western Geologic Resources, February 8, 1991.

Selected HVOCs were reported by WGR; it is unknown whether other HVOCs were detected in the samples.

- ¹ 6 ppb 1,2-dichloropropane detected; other HVOCs not detected.
- ² 0.6 ppb 1,2-dichloroethane detected; other HVOCs not detected.
- ³ 63 ppb chloromethane and 0.6 ppb methylene chloride detected; other HVOCs not detected; sample contained 1,250 ppb total dissolved solids.
- ⁴ 0.9 ppb trans-1,3-dichloropropane detected; other HVOCs not detected; sample contained 810 ppb total dissolved solids.
- ⁵ 0.9 ppb trichlorofluoromethane and 1 ppb trans-1,3-dichloropropane detected; other HVOCs not detected.
- ⁶ 11 ppb trans-1,3-dichloropropane detected; other HVOCs not detected.
- ⁷ Monitoring well destroyed during excavation.
- ⁸ 0.1 ppb 1,2-dichlorobenzene detected; other HVOCs not detected.
- ⁹ MW-9 was not sampled because it was buried. No previous analytic data was available for this well.
- ¹⁰ 1.8 ppb 1,2-dichloroethane detected; other HVOCs not detected.
- ¹¹ 3 ppb 1,1,2,2-tetrachloroethane detected; other HVOCs not detected.
- ¹² 0.9 ppb 1,2-dichlorobenzene detected; other HVOCs not detected.
- ¹³ 0.5 ppb 1,2-dichloroethane detected; other HVOCs not detected.
- ¹⁴ 3.1 ppb 1,2-dichlorobenzene detected; other HVOCs not detected.



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APPENDIX C
SIERRA ENVIRONMENTAL SERVICES
STANDARD OPERATING PROCEDURE



SES STANDARD OPERATING PROCEDURE

GROUND WATER SAMPLING

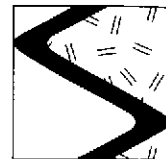
The following describes sampling procedures used by SES field personnel to collect and handle ground water samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis. Wells will be sampled no less than 24 hours after well development. Collection methods specific to ground water sampling are presented below.

Prior to sampling, each well is checked for the presence of free-phase hydrocarbons using an MMC flexi-dip interface probe. Product thickness (measured to the nearest 0.01 foot) is noted on the sampling form. Water level measurements are also made using either a water level meter or the interface probe. The water level measurements are also noted on the sampling form.

Prior to sampling, each well is purged of a minimum of four well casing volumes of water using a steam-cleaned PVC bailer, or a pre-cleaned pump. Temperature, pH and electrical conductivity are measured at least three times during purging. Purging is continued until these parameters have stabilized (i.e., changes in temperature, pH or conductivity do not exceed $\pm 0.5^{\circ}\text{F}$, 0.1 or 5%, respectively).

The purge water is stored temporarily on-site in 55-gallon Department of Transportation-approved drums pending analytic results. The drums are labeled with the date, contents, the SES field personnel initials and SES phone number.

Ground water samples are collected from the wells with steam-cleaned Teflon bailers. The water samples are decanted into the appropriate container for the analysis to be performed. Pre-preserved sample containers may be used or the analytic laboratory may add preservative to the sample upon arrival. Duplicate samples are collected from each well as a back-up sample and/or to provide quality control. The samples are labeled to include the project number, sample ID, date, preservative, and the field person's initials. The samples are placed in polyethylene bags and in an ice chest (maintained at 4°C with blue ice or ice) for transport under chain-of-custody to the laboratory.

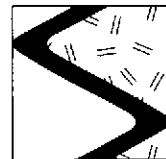


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The chain-of-custody form includes the project number, analysis requested, sample ID, date analysis and the SES field person's name. The form is signed and dated (with the transfer time) by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

A trip blank and bailer blank accompanies each sampling set, or 5% trip blanks and 5% bailer blanks are included for sets of greater than 20 samples. The bailer blank is prepared by pouring previously boiled water into a steam-cleaned Teflon bailer prior to sampling a well. The trip and bailer blanks are analyzed for some or all of the same compounds as the ground water samples.

GWTRSAMP.SOP



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APPENDIX D
CHAIN OF CUSTODY DOCUMENTS AND
LABORATORY ANALYTIC REPORTS

Chevron U.S.A. Inc.
 P.O. BOX 5004
 San Ramon, CA 94583
 FAX (415)842-9591

Chevron Facility Number 1001067
 Facility Address 1520 Powell St. Emeryville
 Consultant Project Number 1-191-04
 Consultant Name Sierra Environmental Services
 Address P.O. Box 2546 Martinez, CA 94553
 Project Contact (Name) Sharon Halper
 (Phone) 415 370-1280 (Fax Number) 415 370-7959

Chevron Contact (Name) Lucia Cho
 (Phone) 415 842-9655
 Laboratory Name Superior Analytical Laboratory
 Laboratory Release Number 5334610
 Samples Collected by (Name) Andrew Minkwitz
 Collection Date 8/8/91
 Signature Andrew Minkwitz

Sample Number	Lab Sample Number	Number of Containers	Matrix S - Soil W - Water A - Air C - Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Lead (Yea or No)	Analysis To Be Performed								Remarks																							
								BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd, Cr, Pb, Zn, Ni (ICAP or AA)																								
AA		<u>3/40m</u>	<u>W</u>	<u>G</u>		<u>HCL</u>	<u>Yes</u>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>																											
BB													<input checked="" type="checkbox"/>																										
MW-2												<input checked="" type="checkbox"/>																											
MW-3												<input checked="" type="checkbox"/>																											
MW-7												<input checked="" type="checkbox"/>																											
MW-8												<input checked="" type="checkbox"/>																											
MW-12												<input checked="" type="checkbox"/>																											
MW-14												<input checked="" type="checkbox"/>																											
MW-15												<input checked="" type="checkbox"/>																											
MW-18												<input checked="" type="checkbox"/>																											
MW-16												<input checked="" type="checkbox"/>																											
MW-17												<input checked="" type="checkbox"/>																											
MW-19												<input checked="" type="checkbox"/>																											
MW-13												<input checked="" type="checkbox"/>																											

Page 1 of 2
 In Listed Order

Please Initial
 Samples Stored In Ice
 Appropriate containers
 Samples preserved
 VOA's without hoodspace
 Comments:

Relinquished By (Signature) <u>Andrew Minkwitz</u>	Organization <u>SES</u>	Date/Time <u>12:45</u> <u>8/9/91</u>	Received By (Signature) <u>Sharon Halper</u>	Organization <u>SES</u>	Date/Time <u>8/9/91 12:50</u>
Relinquished By (Signature) <u>Sharon Halper</u>	Organization <u>SES</u>	Date/Time <u>8/9/91 12:50</u>	Received By (Signature) <u>Brandi O...</u>	Organization <u>SAC</u>	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)	Date/Time	Date/Time

Turn Around Time (Circle Choice)
 24 Hrs.
 48 Hrs.
5 Days
 10 Days
 As Contracted

COC-10/90/03.81/MSL

Copy of Lab Report and COC to Chevron Contact: Yes No

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 1001067
Facility Address: 1520 Powell St. Emeryville
Consultant Project Number: 1-191-04
Consultant Name: Sierra Environmental Services
Address: P.O. Box 2546 Martinez, CA 94553
Project Contact (Name): Sharon Halper
(Phone): 415 370-1280 (Fax Number): 415 370-7959

Chevron Contact (Name): Lucie Chau
(Phone): 415 842-9655
Laboratory Name: Superior Analytical Laboratory
Laboratory Release Number: 5334010
Samples Collected by (Name): Andrew Minkwitz
Collection Date: 8/8/91
Signature: [Signature]

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	Analytes To Be Performed										Remarks
								BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (8520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd, Cr, Pb, Zn, Ni (ICAP or AA)			
MW-10		3/40	W	G		HCL	Yes	✓										Analyze
MW-11		↓	↓	↓		↓	↓	✓										↓
MW-1		↓	↓	↓		↓	↓	✓										

Page 2 of 2
In Listed Order

Please Initial:
 Samples stored in ice
 Appropriate containers
 Samples preserved
 COC without hardware
 Comments

BAO
 BAO
 BAO
 BAO

COC-31010/03.91/HCH

Relinquished By (Signature): <u>[Signature]</u>	Organization: <u>SES</u>	Date/Time: <u>045 8/9/91</u>	Received By (Signature): <u>[Signature]</u>	Organization: <u>SES</u>	Date/Time: <u>8/9/91 12:50</u>
Relinquished By (Signature): <u>[Signature]</u>	Organization: <u>SES</u>	Date/Time: <u>12:50 8/9/91</u>	Received By (Signature): <u>[Signature]</u>	Organization: <u>SAL</u>	Date/Time: .
Relinquished By (Signature):	Organization:	Date/Time:	Received For Laboratory By (Signature):		Date/Time:

Turn Around Time (Circle Choice)

24 Hrs.
 48 Hrs.
 5 Days
 10 Days
 As Contracted

Superior Precision Analytical, Inc.

825 Arnold Drive, Ste. 114 • Martinez, California 94553 • (415) 229-1512 / fax (415) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 83676
CLIENT: Sierra Environmental
CLIENT JOB NO.: 1-191-04

DATE RECEIVED: 08/09/91
DATE REPORTED: 08/16/91

Page 1 of 3

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
83676- 1	AA	08/08/91	08/13/91
83676- 2	BB	08/08/91	08/13/91
83676- 3	MW-2	08/08/91	08/13/91
83676- 4	MW-3	08/08/91	08/13/91
83676- 5	MW-7	08/08/91	08/14/91
83676- 6	MW-8	08/08/91	08/14/91
83676- 7	MW-12	08/08/91	08/14/91
83676- 8	MW-14	08/08/91	08/14/91
83676- 9	MW-15	08/08/91	08/14/91
83676-10	MW-18	08/08/91	08/14/91

Laboratory Number:	83676	83676	83676	83676	83676
	1	2	3	4	5

ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND <50	ND <50	ND <50	ND <50	ND <50
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5
TOLUENE:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5
ETHYL BENZENE:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5
XYLENES:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5

Laboratory Number:	83676	83676	83676	83676	83676
	6	7	8	9	10

ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND <50	ND <50	ND <50	ND <50	52
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5
TOLUENE:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5
ETHYL BENZENE:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5
XYLENES:	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5

Superior Precision Analytical, Inc.

825 Arnold Drive, Ste. 114 • Martinez, California 94553 • (415) 229-1512 / fax (415) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 83676
CLIENT: Sierra Environmental
CLIENT JOB NO.: 1-191-04

DATE RECEIVED: 08/09/91
DATE REPORTED: 08/16/91

Page 2 of 3

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
83676-11	MW-16	08/08/91	08/14/91
83676-12	MW-17	08/08/91	08/14/91
83676-13	MW-19	08/08/91	08/14/91
83676-14	MW-13	08/08/91	08/14/91
83676-15	MW-10	08/08/91	08/14/91
83676-16	MW-11	08/08/91	08/14/91
83676-17	MW-1	08/08/91	08/14/91

Laboratory Number:	83676	83676	83676	83676	83676
	11	12	13	14	15

ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND <50	82	58	* 220	ND <50
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND <0.5	1.9	ND <0.5	ND <0.5	ND <0.5
TOLUENE:	ND <0.5	2.5	ND <0.5	ND <0.5	ND <0.5
ETHYL BENZENE:	ND <0.5	0.9	ND <0.5	ND <0.5	ND <0.5
XYLENES:	ND <0.5	5.4	ND <0.5	1.8	ND <0.5

Laboratory Number:	83676	83676
	16	17

ANALYTE LIST	Amounts/Quantitation Limits (ug/L)	
OIL AND GREASE:	NA	NA
TPH/GASOLINE RANGE:	ND <50	1400
TPH/DIESEL RANGE:	NA	NA
BENZENE:	ND <0.5	37
TOLUENE:	ND <0.5	8.3
ETHYL BENZENE:	ND <0.5	3.7
XYLENES:	ND <0.5	12

Superior Precision Analytical, Inc.

825 Arnold Drive, Ste. 114 • Martinez, California 94553 • (415) 229-1512 / fax (415) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

Page 3 of 3
QA/QC INFORMATION
SET: 83676

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
ug/L = part per billion (ppb)
* = does not match typical gasoline pattern

OIL AND GREASE ANALYSIS By Standard Methods Method 503E:
Minimum Detection Limit in Water: 5000ug/L


Modified EPA-SW846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 50ug/L
Standard Reference: NA

EPA-SW846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L
Standard Reference: 06/26/91

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L
Standard Reference: 07/08/91

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	NA	NA	NA	NA	NA
Diesel	NA	NA	NA	NA	NA
Gasoline	06/26/91	200 ng	93/93	1	70-130
Benzene	07/08/91	200 ng	93/92	1	70-130
Toluene	07/08/91	200 ng	96/95	1	70-130
Ethyl Benzene	07/08/91	200 ng	100/99	1	70-130
Total Xylene	07/08/91	200 ng	96/95	1	70-130

Richard Srna, Ph.D.


Laboratory Director

Superior Precision Analytical, Inc.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-1
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
DATE RECEIVED: 08/09/91
DATE ANALYZED: 08/15/91

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE:AA

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	3.1
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

Richard Srna, Ph.D.

Cecilia G. Jorgensen (for)
Laboratory Director

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1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-2
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
DATE RECEIVED: 08/09/91
DATE ANALYZED: 08/15/91

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE:BB

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-17
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-1

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	2.9
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	45
1,1-Dichloroethane	0.5	1.5
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	110
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	11
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	2300

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % : MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-3
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-2

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % : MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-4
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-3

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-5
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-7

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % : MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-6
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-8

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-15
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-10

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	7.0
1,1-Dichloroethane	0.5	3.1
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	6.2
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	33

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-16
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-11

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	29
1,1-Dichloroethane	0.5	0.9
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	2.4
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	77

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-7
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-12

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	0.9
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % ; MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-14
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-13

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-8
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-14

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-9
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
DATE RECEIVED: 08/09/91
DATE ANALYZED: 08/15/91

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-15

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % : MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-11
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-16

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	1.9
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	35
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	13
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-12
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-17

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	0.9
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	69
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	15
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	2.5

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % : MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-10
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-18

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	1.0
1,1,1-Trichloroethane	0.5	0.7
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	32
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	25
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	2.0

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 12191-13
CLIENT: Sierra Environmental
Services
JOB NO.: 1-191-04

DATE SAMPLED: 08/08/91
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EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-19

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	1.1
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	2.8
1,1,1-Trichloroethane	0.5	1.1
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	41
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	35
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	4.8

MDL = Method Detection Limit

ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15

MS/MSD average recovery = 92 % :MS/MSD RPD = < 3 %

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