

February 12, 1997 Project 311-058.5A

Ms. Tina Berry
76 Products Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Re: Remedial Action Performance Summary - October through December 1996
76 Products Company Service Station 5760
376 Lewelling Boulevard at Usher Street
San Lorenzo, California

Dear Ms. Berry:

This letter presents a remedial action performance summary for the site referenced above. A process flow diagram and equipment layout are included as Figures 1 and 2. Attachment A presents the remedial performance summary which includes key operating parameters. Certified analytical reports and chain-of-custody documentation are presented as Attachment B, and field data sheets are included as Attachment C. The status of recent remedial activities is presented below.

Remedial System Performance Evaluation

- The soil vapor extraction (SVE) and dewatering system was approximately 97% operational during the current reporting period. The system was restarted on October 15, 1996 following a carbon changeout and experienced minor system operational problems throughout the remainder of the period.
- The mass removal versus time trend for the SVE system indicates a diminishing incremental benefit from continued operation of the system. The SVE system removed approximately 50 pounds TPPH-g during the first 2,000 hours of operation; only about 13 pounds of TPPH-g were removed over the subsequent 1,600 hours. Pacific Environmental Group, Inc. (PACIFIC) recommends discontinuing operation of the SVE and dewatering system, since further significant bulk mass removal does not appear feasible.

- To enhance intrinsic bioremediation occurring at the site, PACIFIC recommends
 installing ORC modules in wells U-1 and U-3 after disconnecting them from the
 SVE/dewatering system. Attachment D contains an assessment of Bioreclamation at the
 site, which finds the deployment of ORC at U-6 and U-9 to be effectively enhancing
 biodegradation and attenuation of the dissolved hydrocarbon plume.
- PACIFIC recommends that groundwater monitoring continue on the current semiannual schedule.

If you have any questions regarding the contents of this remedial action performance summary, please do not hesitate to call.

Sincerely,

Pacific Environmental Group, Inc.

Jessica Nelligan Staff Engineer

Andrew D. Lehane Project Engineer

RCE 55798

Attachments: Figure 1 - Process Flow Diagram - GWE/SVE System

Figure 2 - Equipment Layout - Plan View

Attachment A - Remedial Action Performance Summary

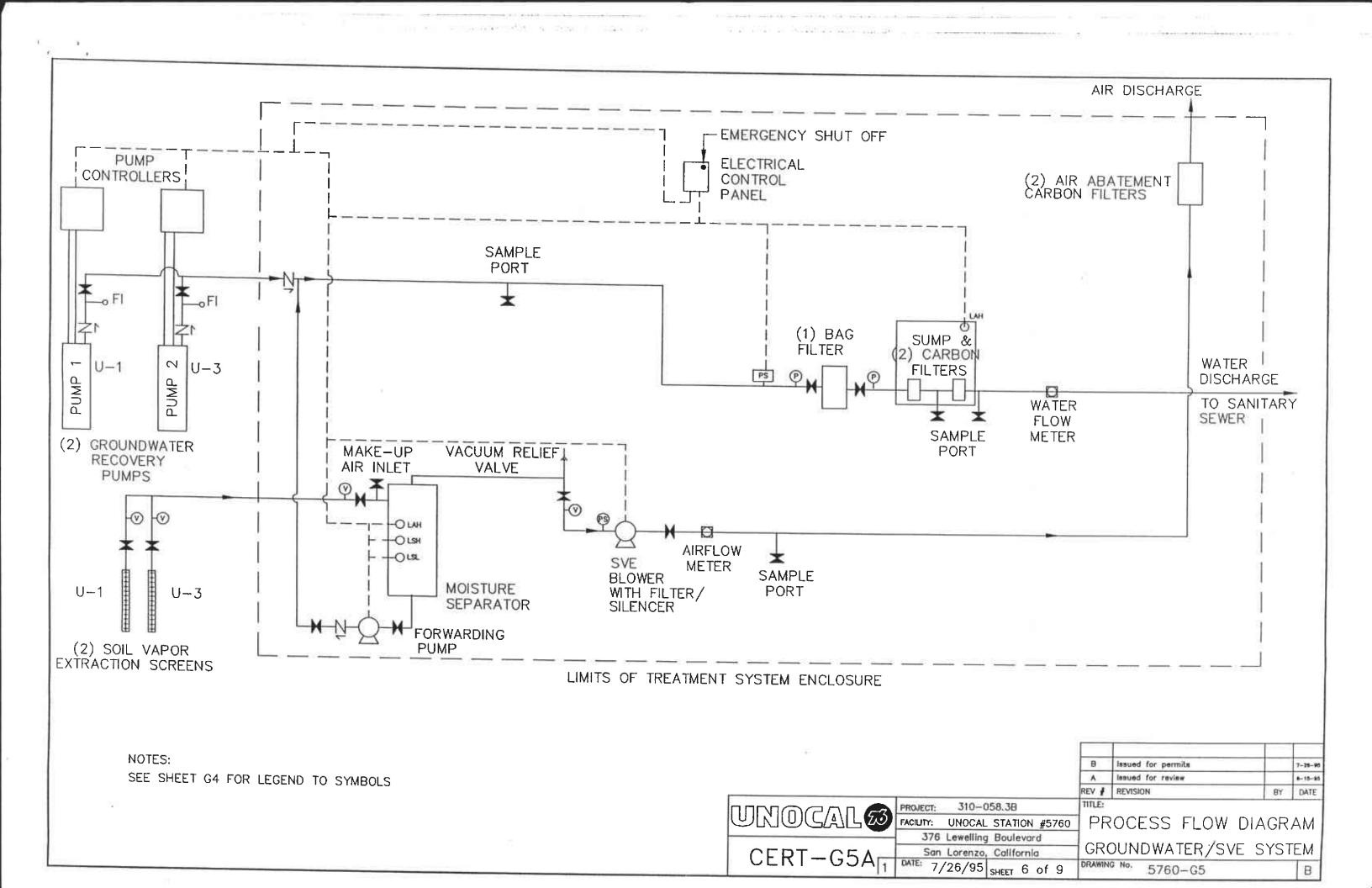
Attachment B - Certified Analytical Reports and Chain-of-Custody

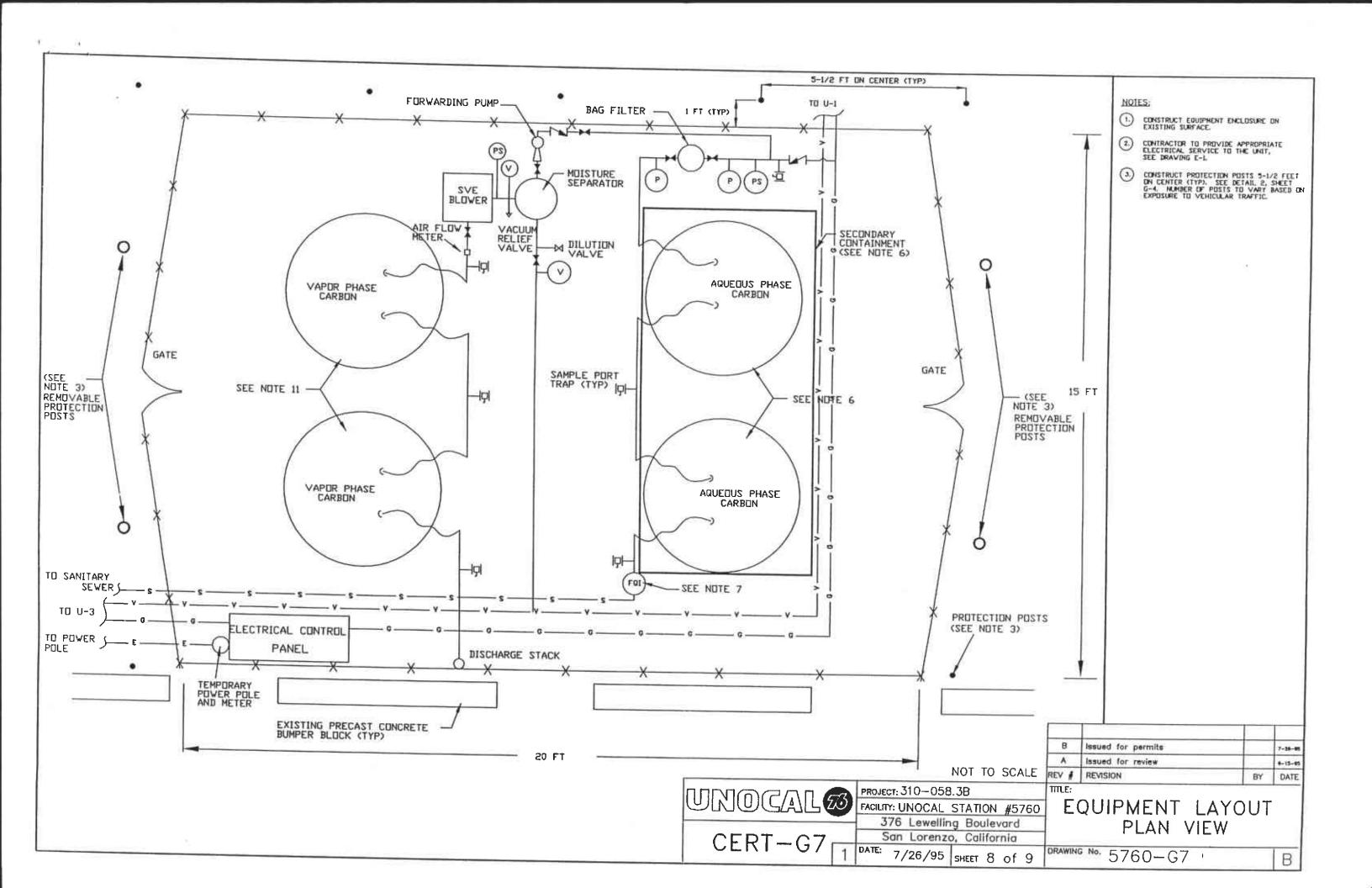
Documentation

Attachment C - Field Data Sheets

Attachment D - Bioreclamation Assessment

cc: Mr. Richard Hiett, Regional Water Quality Control Board - S.F. Bay Region Ms. Arny Leech, Alameda County Health Care Services





ATTACHMENT A REMEDIAL ACTION PERFORMANCE SUMMARY

ATTACHMENT A

REMEDIAL ACTION PERFORMANCE SUMMARY: FOURTH QUARTER 1996 GROUNDWATER DEWATERING SYSTEM

Site Name: 76 Products Service Station 5760

Site Address: 376 Lewelling Boulevard, San Lorenzo, CA Abatement Equipment: Granular-Activated Carbon Vessels

Start-Up Date: 10/18/95

Permitting Agency: Oro Loma Sanitary District

Permit No.: 024

Permit Expiration Date: 6/30/96

Estimated Shutdown Date: Unknown

REMEDIAL OBJECTIVES

o Dewatering to enhance soil vapor extraction

Regulatory Compliance

OPERATIONAL DATA

Treatment System Data	October	November	December
Operational Status	Re-Start†	Operational	Operational
Groundwater Volume Pumped (gals)	49,053	54,488	47, 4 66

Table 1 Page A-3

Treatment System Analytical Data Summary

EPA Method 8020 Analyses

INFLUENT	EFFLUENT
Detected	Detected

Table 2 Page A-4

Table 1 Page A-3

Table 1 Page A-3

Table 2 Page A-4

Table 2 Page A-4

Table 1 Page A-3

Page A-3

Table 1

TPH and Benzene Summary

Influent TPPH-gasoline (μg/L) Influent Benzene (μg/L) Effluent TPPH-gasoline (μg/L) Effluent Benzene (μg/L)

Mass TPPH-gasoline Removed (lbs)
Mass Benzene Removed (lbs)

October	November	December	_
4,900	15,000	3,800	
94	130	14	
ND	ND	ND	
ND	ND	ND	Cumulative
5.5	4.5	3.8	46.1
0.07	0.05	0.02	0.53

PERFORMANCE EVALUATION

Dewatering

The groundwater extraction (GWE) system provided sufficient dewatering to enhance soil vapor extraction.

Regulatory Compliance

The GWE system ran in compliance with all Oro Loma Sanitary District discharge permit limitations throughout the current reporting period.

ACTIONS/RECOMMENDATIONS

Discontinue operation of dewatering system during the first quarter of 1997.

NOTES:

TPPH = Total purgeable petroleum hydrocarbons

ND = Not detected above detection limit

gals = Gallons

μg/L = Micrograms per liter

lbs = Pounds

† = System re-started following carbon replacement.

Note: When appropriate, tabulated data is followed by associated graphical presentation.

ATTACHMENT A (continued)

REMEDIAL ACTION PERFORMANCE SUMMARY: FOURTH QUARTER 1996 SOIL-BASED REMEDIAL SYSTEM

Site Name: 76 Products Service Station 5760

Site Address: 376 Lewelling Boulevard, San Lorenzo, CA

Abatement Equipment: 2-1,000 lb vapor-phase carbon cannisters

Start-Up Date: 10/18/95

Permitting Agency: BAAQMD

ATC No.: 14994

ATC Expiration Date: 10/11/97

Estimated Shutdown Date: Unknown

REMEDIAL OBJECTIVES

Mass Removal

Regulatory Compliance

OPERATIONAL DATA

Treatment System Data

Operational Status

Instantaneous Flow Rate (scfm)

October	November	December
Re-Start†	Operational	Operational
72	28	44

Table 3 Page A-5

TPPH and Benzene Summary

Influent TPPH-gasoline (ppmv)
Influent Benzene (ppmv)
Effluent TPPH-gasoline (ppmv)
Effluent Benzene (ppmv)
Mass TPPH Removed (lbs)

Mass Benzene Removed (lbs)

October	November	December	_
14	ND	13	
ND	ND	0.035	
1‡	2‡	4‡	
NS	NS	NS	Cumulative
4.2	5.6	3.3	63.3
0.01	0.02	0.01	0.46

Table 3 Page A-5
Table 3 Page A-6
Table 4 Page A-6
Table 4 Page A-6
Table 3 Page A-5
Table 3 Page A-5

REMEDIAL ACTION PERFORMANCE EVALUATION

Mass Removal

Approximately 13 pounds of TPPH as Gasoline and 0.05 pound of benzene were removed by the SVE treatment system during the current reporting period.

Regulatory Compliance

The SVE system operated in full compliance with all BAAQMD permit conditions throughout

the current reporting period.

ACTIONS/RECOMMENDATIONS

Discontinue operation of the SVE system during the first quarter of 1997.

NOTES:

ND = Not detected above detection limit

NS = Not sampled

= SVE system re-started following carbon replacement to GWE system.

‡ = Concentration measured using field instruments.

scfm = Standard cubic feet per minute

ppmv = Parts per million by volume

lbs = Pounds

Note: When appropriate, tabulated data is followed by associated graphical presentation.

Table 1 Groundwater Extraction System Performance Data

Average Date Effluent Totalizer Flow Concented Removal Removal Removal Concented Removal Transport Removal R						TP	PH as Gaso	line		Benzene		
Sample Date Temp Reading Rate (Jug/L) (Jug					Average				Influent			
Sample			Effluent	Totalizer	Flow	Concen-	Removal	Removed	Concen-	Removal	Rer	nove
ID Sampled (deg F) (gallons) (gpm) (µg/L) (lbs/day) (lbs) (µg/L) (lbs/day) (lbs) (µg/L) (lbs/day) (lbs) (µg/L) (lbs/day) (lbs) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/day) (lbs/da		Date	Temp	Reading	Rate	tration	Rate	To Date	tration	Rate		
INFL 10/16/95 a NM 76 N/A NS N/A 0.0 NS N/A 0.0 NFL 10/30/95 NM 4,040 0.2 33,000 0.09 1.1 480 0.00132 0.0 NFL 11/30/95 NM 7,751 0.1 15,000 0.02 1.8 190 0.00033 0.0 NFL 12/27/95 64.2 15,031 0.2 1,100 0.02 2.3 16 0.00023 0.0 NFL 12/27/95 64.2 15,031 0.2 1,100 0.02 2.3 16 0.00023 0.0 NFL 0.27/13/96 d 70.9 28,980 0.3 32,000 0.06 3.7 460 0.000087 0.0 NFL 0.06/96 70.7 92,890 0.3 32,000 0.06 3.7 460 0.000087 0.0 NFL 0.06/96 70.7 82,660 0.01 25,000 0.003 11.1 280 0.00004 0.0 NFL 0.070/96 h 74.9 142,690 N/A 22,000 0.245 20.9 240 0.00271 0.0 NFL 0.070/96 h 74.9 142,690 N/A 22,000 0.03 22.8 230 0.00041 0.0 NFL 0.070/96 h 74.9 142,690 N/A 22,000 0.063 32.3 NS 0.00680 0.3 NFL 10/15/96 f 1.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.0 NFL 10/15/96 f 1.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.0 NFL 10/15/96 f 1.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.0 NFL 10/15/96 f 1.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.0 NFL 10/15/96 f 1.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.0 NFL 10/15/96 f 1.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.0 NFL 10/15/96 f 1.2 20/15/96		Sampled	(deg F)	(gallons)	(gpm)	(µg/L)	(lbs/day)	(lbs)	(µg/L)	(lbs/dav)		
INFL 10/30/95 NM 4,040 0.2 33,000 0.09 1.1 480 0.00132 0.0181 1/30/95 NM 7,751 0.1 15,000 0.02 1.8 1.90 0.00033 0.0181 1.100 0.02 2.3 1.6 0.00023 0.0181 1.100 0.02 2.3 1.6 0.00023 0.0181 1.100 0.02 2.3 1.6 0.00023 0.0181 1.100 0.02 2.3 1.6 0.00023 0.0181 1.100 0.02 2.3 1.6 0.00023 0.0181 1.100 0.02 2.3 1.6 0.00023 0.0181 1.100 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.0		10/18/95 a	NM	76	N/A	NS	N/A	0.0				0.0
INFL 11/30/95 NM 7,751 0.1 15,000 0.02 1.8 190 0.00033 0.1 INFL 12/27/95 6 42 15,031 0.2 1,100 0.02 2.3 16 0.00023 0.1 INFL 01/22/96 b 58.4 19,350 0.1 NS 0.002 c 2.4 NS 0.00002 c 0.1 INFL 02/13/96 d 70.9 26,980 0.3 32,000 0.06 3.7 460 0.00087 0.1 INFL 03/196 e N/A 82,320 1.4 NS 0.27 11.0 NS 0.00392 0.1 INFL 04/05/96 f 70.7 82,560 0.01 25,000 0.003 11.1 280 0.00004 0.1 INFL 05/15/96 g 70.6 132,510 0.87 22,000 0.03 11.1 280 0.00004 0.1 INFL 05/15/96 g 70.6 132,510 0.87 22,000 0.039 22.8 230 0.00004 0.1 INFL 07/17/96 j.k 72.5 194,730 2.4 NS 0.636 32.3 NS 0.00680 0.1 INFL 07/17/96 in 61.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.1 INFL 10/15/96 m 61.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.1 INFL 11/11/96 71.6 298,271 1.4 15,000 0.167 42.3 130 0.00188 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 F 0.7 INFL 0.00103 ENZENE REMOVED: 0.5 INFL 0.00103			NM	4,040	0.2	33,000	0.09	1.1	480			0.0
INFL 12/27/95 64.2 15,031 0.2 1,100 0.02 2.3 16 0.00023 0.0 INFL 01/22/96 b 58.4 19,350 0.1 NS 0.000 c 2.4 NS 0.00002 c 0.0 INFL 02/13/96 d 70.9 28,980 0.3 32,000 0.06 3.7 460 0.00087 0.0 INFL 03/11/96 0 N/A 82,320 1.4 NS 0.27 11.0 NS 0.00392 0.0 INFL 04/05/96 f 70.7 82,560 0.01 25,000 0.003 11.1 280 0.00004 0.0 INFL 05/15/96 g 70.6 132,510 0.87 22,000 0.245 20.9 240 0.00271 0.0 INFL 07/02/96 h 74.9 142,690 N/A 22,000 0.039 22.8 230 0.00041 0.0 INFL 07/17/96 j, k 72.5 194,730 2.4 NS 0.636 32.3 NS 0.00680 0.1 INFL 107/15/96 m 61.2 243,783 N/A 4900 0.061 37.8 94 0.00074 0.0 INFL 11/11/96 71.6 298,271 1.4 15,000 0.167 42.3 130 0.0188 0.0 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 EPORTINS PERIOD:			NM	7,751	0.1	15,000	0.02	1,8	190	0.00033		0.0
INFL 01/22/96 b 58.4 19.350 0.1 NS 0.002 c 2.4 NS 0.00002 c 0.000037			64.2	15,031	0.2	1,100	0.02	2.3	16	_		0.0
INFL 02/13/96 d 70.9 28,980 0.3 32,000 0.6 3.7 460 0.00087 0.1	_	01/22/96 ь	58.4	19,350	0.1	NS	0.002	c 2.4	. NS		c	0.0
INFL 03/11/96 e N/A 82,320 1.4 NS 0.27 11.0 NS 0.00392 0.003 11.1 280 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.00004 0.0004 0.00004 0.00004 0.00004 0.00004 0.00004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004		02/13/96 d	70.9	28,980	0.3	32,000	0.06	3.7	460		_	0.0
INFL 04/05/96 70.7 82,660 0.01 25,000 0.003 11.1 280 0.00004 0.00004 0.00000000000000		03/11/96 e	N/A	82,320	1.4	NS	0.27	11.0	NS			0.1
INFL 05/15/96 g 70.6 132,610 0.87 22,000 0.245 20.9 240 0.00271 0.25 1.00 0.25 0.25 0.00041 0.25 0.25 0.25 0.00041 0.25 0.25 0.00041 0.25 0.25 0.00041 0.25 0.25 0.00041 0.25 0.25 0.00041 0.25 0.25 0.00041 0.25 0.25 0.00041 0.25 0.25 0.00041 0.25 0.25 0.25 0.00041 0.25 0.25 0.25 0.00041 0.25 0.25 0.25 0.00041 0.25 0.25 0.25 0.25 0.00041 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.2	. –	04/05/96 f	70.7	82,660	0.01	25,000	0.003	11.1	280			0.10
INFL 07/02/96 74.9 142,690 N/A 22,000 0.039 22.8 230 0.00041 0.0007 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.		•	70.6	132,610	0.87	22,000	0.245	20.9	240	0.00271		0.2
INFL 07/17/96 j,k 72.5 194,730 2.4 NS 0.636 32.3 NS 0.00680 0.3 INFL 10/15/96 m 61.2 243,783 N/A 4,900 0.061 37.8 94 0.00074 0.4 INFL 11/11/96 71.6 298,271 1.4 15,000 0.167 42.3 130 0.00188 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/11/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/11/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/11/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/11/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 10/15/96 64.7 345,737 1.2 3,800 0.133 46.1 1.4 0.00102 1.5 INFL 10/15/96 64.7 1.4 1.5			74.9	142,690	N/A	22,000	0.039	22.8	230			0.29
INFL 10/15/96 m 61.2 243,783 N/A 1,900 0.061 37.8 94 0.00074 0.4 INFL 11/11/96 71.6 298,271 1.4 15,000 0.167 42.3 130 0.00188 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.8 INFL 12/09/96 64.7 346,661 46.1 346,661 46.1 346,661 46.1 346,661 46.1 346,661 46.1 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,661 346,		07/17/96 j _i k	72.5	194,730	2.4	NS	0.636	32.3	l NS	0.00680		0.39
INFL 11/11/96 71.6 298,271 1.4 15,000 0.167 42.3 130 0.00188 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 INFL 12/09/96 (m) REPORTING PERIOD: OTAL GALLONS EXTRACTED: OTAL POUNDS TPPH-GASOLINE REMOVED: OTAL GALLONS BENZENE REMOVED: OTAL GALLONS TPPH-GASOLINE REMOVED: OTAL GALLONS BENZENE REMOVED: OTAL GALLONS TPPH-GASOLINE REMOVED: OTAL GALLONS EXTRACTED: 151,007 OTAL GALLONS TPPH-GASOLINE REMOVED: O.53 OTAL GALLONS BENZENE REMOVED: O.67 ERROD POUNDS TPPH-GASOLINE REMOVED: O.75 O.15 OTAL POUNDS TPPH-GASOLINE REMOVED: O.63 O.75 ERROD POUNDS TPPH-GASOLINE REMOVED: O.87 OTAL GALLONS EXTRACTED: 346,661 OTAL POUNDS TPPH-GASOLINE REMOVED: O.53 O.15 OTAL GALLONS BENZENE REMOVED: O.53 O.15 OTAL GALLONS BENZENE REMOVED: O.67 OTAL GALLONS BENZENE REMOVED: O.67 OTAL GALLONS BENZENE REMOVED: O.67 ERROD POUNDS TPPH-GASOLINE REMOVED: O.67 OTAL GALLONS BENZENE REMOVED: O.68 O.67 ERROD POUNDS TPPH-GASOLINE REMOVED: O.75 O.07 ERROD POUNDS TPPH-GASOLINE REMOVED: O.67 OTAL POUNDS TPH-GASOLINE REMOVED: O.67 OTAL POUNDS TPPH-GASOLINE REMOVED: O.			61.2	243,783	N/A	4,900	0.061	37.8	94	0.00074		0.46
INFL 12/09/96 64.7 345,737 1.2 3,800 0.133 46.1 14 0.00102 0.5 IEPORTING PERIOD: OTAL GALLONS EXTRACTED: OTAL GALLONS EXTRACTED: OTAL POUNDS TPPH-GASOLINE REMOVED: OTAL GALLONS BENZENE REMOVED: OUTAL GALLONS EXTRACTED: OUTAL GALLONS BENZENE REMOVED: OUTAL GAL	–		71.6	298,271	1.4	15,000	0.167	42.3	130	0.00188		0.5
REPORTING PERIOD: OTAL GALLONS EXTRACTED: OTAL GALLONS EXTRACTED: OTAL POUNDS TPPH-GASOLINE REMOVED: OTAL GALLONS TPPH-GASOLINE REMOVED: OTAL POUNDS BENZENE REMOVED: OTAL GALLONS BENZENE REMOVED: OTAL FOUNDS BENZENE REMOVED: OTAL GALLONS TYPH-GASOLINE TYPH-CASOLINE OTAL GALLONS TYPH-GASOLINE TYPH-CASOLINE OTAL GALLONS TYPH-GASOLINE TYPH-CASOLINE OTAL GALLONS TYPH-CASOLINE OTAL GALLONS TYPH-CASOLINE OTAL GALLONS OTAL GALLON	INFL	12/09/96	64.7	345,737	1.2	3,800	0.133	46.1	14			
PPH = Total purgeable petroleum hydrocarbons emp = Temperature eg F = Degrees Fahrenheit pm = Gallons per minute g/L = Parts per billion s = Pounds M = Not measured A = Not available or not applicable S = Not sampled (assume prior concentrations) a. GWE system startup on October 18, 1995. b. GWE system found down 1/17/96; pumps pulled for repair. c. Samples not taken; prior concentrations assumed. d. GWE Pumps U-1 and U-3 re-installed 2/13/96. e. Systems down; carbon changeout performed 3/25/96; further repair required to bag filter housing closure assembly. f. Carbon replacement to secondary 3/25/96; switched to primary. g. System shut down for carbon replacement to current secondary. h. System restarted July 2, 1996. j. System temporarily shut down to address operational problems. k. Carbon changeout to primary on 10/13/96; switched to secondary. m. System re-started 10/15/96	OTAL G ERIOD P ERIOD P	ALLONS BENZE POUNDS TPPH-G POUNDS BENZE	NE REMOV ASOLINE F NE REMOV	/ED: REMOVED:				0.07 13.7				
emp = Temperature eg F = Degrees Fahrenheit pm = Gallons per minute g/L = Parts per billion s = Pounds M = Not measured A = Not available or not applicable S = Not sampled (assume prior concentrations) b. GWE system found down 1/17/96; pumps pulled for repair. c. Samples not taken; prior concentrations assumed. d. GWE Pumps U-1 and U-3 re-installed 2/13/96. e. Systems down; carbon changeout performed 3/25/96; further repair required to bag filter housing closure assembly. f. Carbon replacement to secondary 3/25/96; switched to primary. g. System shut down for carbon replacement to current secondary. h. System restarted July 2, 1996. j. System temporarily shut down to address operational problems. k. Carbon changeout to primary on 10/13/96; switched to secondary. m. System re-started 10/15/96								11111111111111111111111111111111111111				
eg F = Degrees Fahrenheit pm = Gallons per minute g/L = Parts per billion s = Pounds M = Not measured A = Not available or not applicable S = Not sampled (assume prior concentrations) B GWE Pumps U-1 and U-3 re-installed 2/13/96. c Systems down; carbon changeout performed 3/25/96; further repair required to bag filter housing closure assembly. f. Carbon replacement to secondary 3/25/96; switched to primary. g. System shut down for carbon replacement to current secondary. h. System restarted July 2, 1996. j. System temporarily shut down to address operational problems. k. Carbon changeout to primary on 10/13/96; switched to secondary. m. System re-started 10/15/96			petroleum n	ydrocarbons								
### ### ##############################	'	•	. L ta							repair.		
e. Systems down; carbon changeout performed 3/25/96; further repair required to bag filter housing closure assembly. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to current secondary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; further repair required to bag filter housing closure assembly. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon replacement to secondary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; switched to primary. In Carbon changeout to primary 3/25/96; switched to primary 4/25/96; switched to	_	•			1							
Founds Frequired to bag filter housing closure assembly. Carbon replacement to secondary 3/25/96; switched to primary. System shut down for carbon replacement to current secondary. System restarted July 2, 1996. System temporarily shut down to address operational problems. Carbon changeout to primary on 10/13/96; switched to secondary. System re-started 10/15/96			ute									
Tepair required to bag filter nousing closure assembly. f. Carbon replacement to secondary 3/25/96; switched to primary. g. System shut down for carbon replacement to current secondary. h. System restarted July 2, 1996. j. System temporarily shut down to address operational problems. k. Carbon changeout to primary on 10/13/96; switched to secondary. m. System re-started 10/15/96					e							
A = Not available or not applicable S = Not sampled (assume prior concentrations) B. Carbon replacement to secondary 3/25/96; switched to primary. G. System shut down for carbon replacement to current secondary. B. System restarted July 2, 1996. G. System temporarily shut down to address operational problems. C. Carbon changeout to primary on 10/13/96; switched to secondary. M. System restarted 10/15/96												
S = Not sampled (assume prior concentrations) h. System restarted July 2, 1996. j. System temporarily shut down to address operational problems. k. Carbon changeout to primary on 10/13/96; switched to secondary. m. System re-started 10/15/96			4		1							
j. System restarted July 2, 1996. j. System temporarily shut down to address operational problems. k. Carbon changeout to primary on 10/13/96; switched to secondary. m. System re-started 10/15/96	M =								nent to current	secondary.		
k. Carbon changeout to primary on 10/13/96; switched to secondary. m. System re-started 10/15/96	M = /A =				. 16	C		1006				
m. System re-started 10/15/96	M = /A =		ssume prior o	concentrations	, lu	- /						
m. System re-started 10/15/96.	M = /A =		ssume prior (concentrations	j.	System tem	porarily shut	down to addre				
	M = /A =		ssume prior o	concentrations	j. k	System tem Carbon chai	porarily shut ngeout to pri	down to addre mary on 10/13				

Table 2 Groundwater Treatment System Analytical Data

76 Products Service Station 5760 376 Lewelling Boulevard at Usher Street San Lorenzo, California

						Permit C	ompliance Par	arneters
Date Sampled	TPPH (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Xylenes (μg/L)	COD (mg/L)	TSS (mg/L)	pH (units)
nfluent Sample	es							
10/30/95	33,000	480	1,400	900	7,100	N/A	N/A	N/A
11/30/95	15,000	190	310	210	3,700	N/A	N/A	N/A
12/27/95	1,100	16	23	<2.0	300	N/A	N/A	N/A
02/13/96 b	32,000	460	1,100	1,500	7,700	N/A	N/A	N/A
04/05/96	25,000	280	1,400	900	6,400	N/A	N/A	N/A
05/15/96	22,000	240	1,200	850	4,700	N/A	N/A	N/A
07/02/96	22,000	230	1,300	950	4,700	N/A	N/A	N/A
10/15/96 e	4,900	94	14	210	1,600	N/A	N/A	N/A
11/11/96	15,000	130	560	550	4,500	N/A	N/A	N/A
12/09/96	3,800	14	<5.0	10	800	N/A	N/A	N/A
ffluent Sampl	es							
10/04/95	<50	<0.50	<0.50	<0.50	<0.50	<20	<1.0	8.89
10/30/95	<50	<0.50	<0.50	<0.50	<0.50	NS	NS	NS
11/30/95	<50	<0,50	<0.50	<0.50	<0.50	NS	NS	NS
12/27/95	<50	<0.50	<0.50	<0.50	<0.50	NS	NS	7.05
02/13/96 b	<50	<0.50	<0.50	<0.50	<0.50	<20	9.0	6.83
04/05/96 с	83	<0,50	0.80	<0.50	2.0	<20	11	6.83
05/15/96 c	<50	1.8	1.6	<0.50	5.8	<20	12	6.86
07/02/96 d	<50	<0.50	<0.50	<0.50	<0.50	15	2.0	7.09
10/15/96 e	<50	<0.50	<0.50	<0.50	0.54	NS	NS	8.74
11/11/96	<50	<0.50	<0.50	<0.50	<0.50	NS	NS	7.55
11/27/96	<50	<0.50	<0.50	< 0.50	<0.50	<20	<1.0	7.2
12/09/96	<50	<0.50	<0.50	<0.50	<0.50	NS	NS	6.92

TPPH = Total purgeable petroleum hydrocarbons

COD = Chemical oxygen demand

TSS = Total suspended solids

µg/L = Micrograms per liter

mg/L = Milligrams per liter

N/A = Not applicable

NS = Not sampled

- = Denotes any potential concentrations fell below the shown detection limit for the analysis.
- a. The pH reading was measured by field instruments, not by laboratory analysis.
- b. GWE system was found down 1/17/96 and two pumps were pulled for repair and replaced 2/13/96.
- c. Carbon replacement of primary on 3/25/96 (switched to secondary); new primary replaced in May.
- d. System restarted July 2, 1996; de-activated July 17 to schedule carbon replacement to current primary.
- e. System restarted 10/15/96 following carbon changeout.

Table 3 Soil Vapor Extraction System Performance Data

					TPP	H as Gasol	ine		Benzene	
		Days			Influent			Influent		
		Opera-	Hourmeter	Flow	Concen-	Removal	Removed	Concen-	Removal	Remove
Sample	Date	tional	Reading	Rate	tration	Rate	To Date	tration	Rate	To Date
ID	Sampled	(t)	(hours)	(scfm)	(ppmv)	(lbs/day)	(lbs)	(ppmv)	(lbs/day)	(lbs)
INFL	10/18/95 a	0.0	0.00	40	87	1.33	0.0	0.95	0.012	0.00
INFL	10/19/95	0.2	5.50	40	149	2.26	0.4	2.4	0.030	0.00
INFL	10/20/95	1.2	33.95	55	45	0.94	2.3	0.49	0.008	0.0
INFL	11/30/95	37.2	927.30	40	38	0.58	30.5	0.24	0.003	0.24
INFL	12/27/95	27.1	1,576.71	34	ND	0.00	38.3	0.04	0.000	0.20
INFL	01/22/96	3.4	1,659.50	29	31	0.34	38.9	0.40	0.004	0.29
INFL	02/13/96 b	6.7	1,820.86	54	52	1.07	43.6	0.69	0.012	0.34
INFL	04/05/96	3.8	1,912.90	71	26	0.70	47.0	0.40	0.009	0.38
INFL	05/15/96 c	5.3	2,039.58	52	26	0.51	50.2	0.21	0.003	0.41
INFL	07/02/96 d	0.1	2,042.00	72	13	0.34	50.2	0.06	0.001	0.42
INFL	10/15/96 e	11.4	2,316.00	72	14	0.39	54.4	ND	0.001	0.4
INFL	11/11/96	27.2	2,969.00	28	ND	0.03	60.0	ND	0,0003	0.4
INFL	12/09/96	25.9	3,590.26	44	13	0.23	63.3	0.035	0.0005	0.4
Maki fili i ibalikaci,	AYS OF OPERA AYS OF OPERA	დიიიშიი მიმწმანი მმს					149,6 64,5			
PERIOD D FOTAL PO FOTAL PO FOTAL GO PERIOD P PERIOD P	IAYS OF OPERADUNDS TPPH-G, ALLONS TPPH-G PUNDS BENZEN ALLONS BENZE OUNDS TPPH-G OUNDS BENZE OUNDS BENZE	ATION ASOLINE SASOLINE SE REMOVINE REMOVINE SASOLINE NE REMOVINE NE REMOVINE	E REMOVED: VED: DVED: REMOVED: VED:				64.5 63.3 10.4 0.46 0.06 13.0 0.05			
PERIOD D FOTAL PO FOTAL PO FOTAL PO FOTAL G PERIOD P PERIOD P PERIOD A	AYS OF OPERADUNDS TPPH-G. ALLONS TPPH-C PUNDS BENZEN ALLONS BENZEN OUNDS TPPH-G OUNDS BENZEN OUNDS BENZEN VERAGE FLOW	ATION ASOLINE GASOLINI IE REMOV INE REMOV ASOLINE NE REMOV ASOLINE NE REMOV (RATE (S	E REMOVED: VED: DVED: EREMOVED: DVED: cfm):				64.5 63.3 10.4 0.46 0.06 13.0 0.05 48			
PERIOD DE FOTAL POTAL POTAL POTAL GOTAL GOTAL GOPERIOD PERIOD PERIOD APERIOD P	AYS OF OPERA DUNDS TPPH-G ALLONS TPPH-C DUNDS BENZEN ALLONS BENZEN OUNDS TPPH-G OUNDS BENZEN VERAGE FLOW ERCENT OPER	ATION ASOLINE SASOLINI E REMOV NE REMOV ASOLINE ASOLINE NE REMOV I RATE (SATIONAL	E REMOVED: /ED: OVED: REMOVED: VED: cfm):		SVE system of		64.5 63.3 10.4 0.46 0.06 13.0 0.05 48	OF (control)		
PERIOD DE FOTAL POTAL POTAL POTAL GOTAL GO	AYS OF OPERADUNDS TPPH-GALLONS TPPH-CAUNDS BENZEN ALLONS BENZEN ALLONS BENZEN OUNDS TPPH-GOUNDS BENZEN VERAGE FLOW ERGENT OPERA	ATION ASOLINE BASOLINI E REMOV NE REMOV ASOLINE NE REMOV I RATE (S ATIONAL petroleum	E REMOVED: //ED: //ED: //ED: //ED: //ED: //ED: //ED: //ED: //Indianales	a	,		64.5 63.3 10.4 0.46 0.06 13.0 0.05 48 97%	95 (carbon)		
PERIOD DE FOTAL POTAL POTAL GOTAL GO	AYS OF OPERADUNDS TPPH-GALLONS TPPH-COUNDS BENZER ALLONS BENZER OUNDS TPPH-COUNDS BENZER OUNDS BENZER VERAGE FLOW ERCENT OPER Total purgeable Time of period services	ATION ASOLINE BASOLINI IE REMOV NE REMOV ASOLINE NE REMOV (RATE (se ATIONAL: petroleum since last s	EREMOVED: VED: REMOVED: VED: cfm): hydrocarbons sampling	b.	SVE system de	own during N	64.5 63.3 10.4 0.46 0.06 13.0 0.05 48 97% ctober 18, 19	, ,		
PERIOD D FOTAL PO FOTAL PO FOTAL PO FOTAL G PERIOD P PERIOD P PERIOD P PERIOD P FOTAL G PERIOD P FOTAL G FOTAL	AYS OF OPERADUNDS TPPH-GALLONS TPPH-COUNDS BENZER OUNDS TPPH-COUNDS BENZER OUNDS BENZER OUNDS BENZER VERAGE FLOW ERCENT OPERA Total purgeable Time of period s Standard cubic	ATION ASOLINE BASOLINI IE REMOVINE REMOVINE REMOVINE NE REMOVINE NE REMOVINE ATIONAL petroleum since last s feet per m	E REMOVED: VED: DVED: REMOVED: VED: cfm): hydrocarbons sampling inute	b. c.	SVE system de System left dov	own during N wn for repair	64.5 63.3 10.4 0.46 0.06 13.0 0.05 48 97% ctober 18, 19 March 1996. s/adjustment	s.		
PERIOD E FOTAL PO FOTAL PO FOTAL GO FOTAL GO PERIOD P PERIOD P PERIOD A PER	AYS OF OPERADUNDS TPPH-GALLONS TPPH-COUNDS BENZER ALLONS BENZER OUNDS TPPH-COUNDS BENZER OUNDS BENZER VERAGE FLOW ERCENT OPER Total purgeable Time of period services	ATION ASOLINE BASOLINI IE REMOVINE REMOVINE REMOVINE NE REMOVINE NE REMOVINE ATIONAL petroleum since last s feet per m	E REMOVED: VED: DVED: REMOVED: VED: cfm): hydrocarbons sampling inute	b. c. d.	SVE system de System left down System re-star	own during N wn for repair ted on July 2	64.5 63.3 10.4 0.46 0.06 13.0 0.05 48 97% ctober 18, 19 March 1996. s/adjustment	s. Iown 7/17/96.		
PERIOD DE POTAL POTAL POTAL POTAL GO PERIOD	AYS OF OPERADUNDS TPPH-GALLONS TPPH-COUNDS BENZER ALLONS BENZER OUNDS TPPH-COUNDS BENZER VERAGE FLOW ERCENT OPERATE Total purgeable Time of period s Standard cubic Parts per million	ATION ASOLINE SASOLINI IE REMOVINE REMOVINE NE REMOVIN	E REMOVED: VED: DVED: REMOVED: VED: cfm): hydrocarbons sampling inute	b. c. d. e.	SVE system de System left down System re-star System re-star	own during N wn for repairs ted on July 2 ted 10/15/96	64.5 63.3 10.4 0.46 0.06 13.0 0.05 48 97% ctober 18, 19 March 1996. s/adjustment	s. Iown 7/17/96.	out to GWE sy	/s te m
ERIOD E OTAL PO OTAL PO OTAL GO PERIOD P ERIOD P ERIOD P PPH = cfm = pmv = ssume de	AYS OF OPERADUNDS TPPH-GALLONS TPPH-COUNDS BENZEN ALLONS BENZEN ALLONS BENZEN OUNDS BENZEN OUNDS BENZEN VERAGE FLOW ERCENT OPERA Total purgeable Time of period s Standard cubic Parts per millior	ATION ASOLINE BASOLINI IE REMOVENE REMOVENE REMOVENE ASOLINE NE REMOVENE VRATE (se ATIONAL petroleum since last se feet per m to by volume = 6.1 lbs/g	E REMOVED: VED: REMOVED: WED: cfm): hydrocarbons sampling inute e	b. c. d. e. ity of benze	SVE system de System left down System re-star System re-star ne = 7.34 lbs/ga	own during N wn for repairs ted on July 2 ted 10/15/96 allon.	64.5 63.3 10.4 0.46 0.06 13.0 0.05 48 97% ctober 18, 19 Aarch 1996. s/adjustment 2, 1996; left of	s. lown 7/17/96. rbon changeo	ut to GWE s	/stem

Table 4
Soil Vapor Extraction System FID Data

	Flow	System	FID Data System	System	Destruction	Emission
Date	Rate	Influent	MidPoint	Effluent	Efficiency	Rate
Sampled	(scfm)	(ppmv)	(ppmv)	(ppmv)	(percent)	(lbs/day)
11/30/95	40	125	30	30	76	0.37
12/08/95	45	9	N/A	16	N/A	0.22
12/27/95	34	6	8	10	N/A	0.11
01/11/96	83	50	N/A	75	N/A	1,95
01/22/96	29	18	7	7	61	0.06
02/13/96	54	140	106	40	71	0.67
02/27/96	83	175	80	100	43	2.59
04/05/96	71	110	62	90	18	2.00
05/15/96	52	150	85	105	30	2.08
07/02/96	72	50	ND	ND	100	N/A
07/17/96	72	11	N/A	N/A	N/A	N/A
10/15/96	72	ND	ND	1	N/A	0.02
11/11/96	28	4	2	2	50	0.02
12/09/96	44	13 a	4	4	69	0.05

FID

= Flame-ionization detector; used to measure hydrocarbon concentrations

scfm

= Standard cubic feet per minute

ppmv

= Parts per million by volume, converted from micrograms per liter

lbs = Pounds

ND

= Not detected above detection limit

N/A

= Not available or not applicable

a. Laboratory analytical result used in place of FID reading.

Destruction efficiency [%] = [(1 - (effluent concentration/influent concentration) * 100)]

Figure 1
Groundwater Extraction System Mass Removal Trend

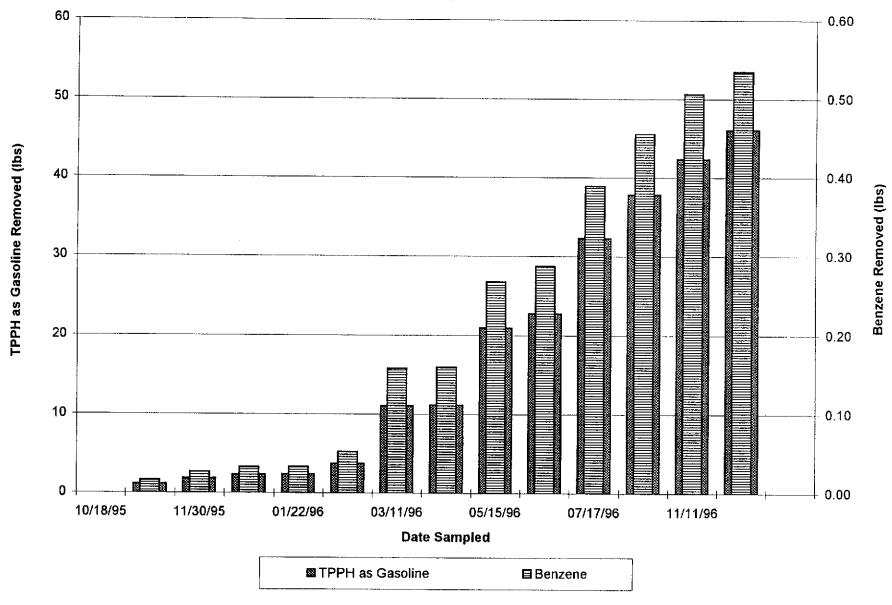


Figure 2
Groundwater Extraction System Hydrocarbon Concentrations

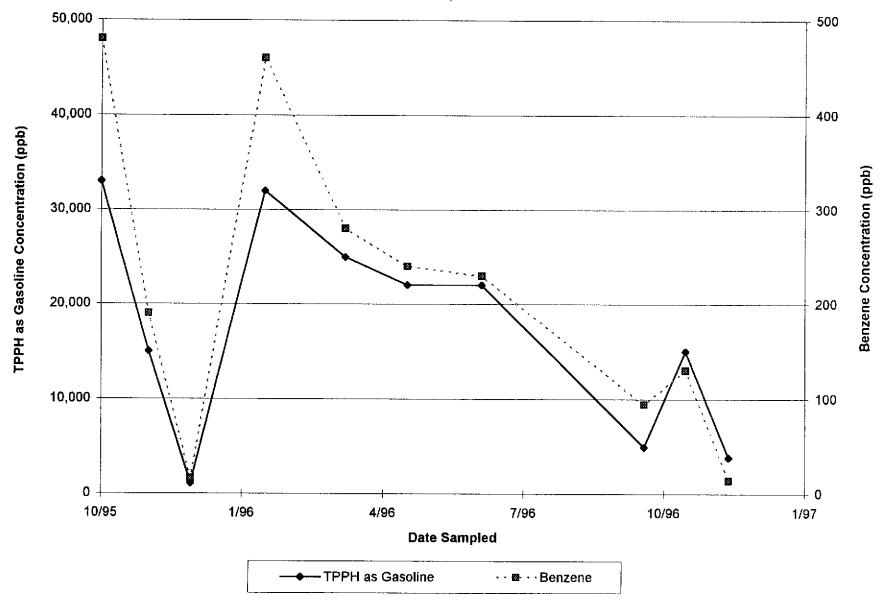


Figure 3
Soil Vapor Extraction System Mass Removal Trend

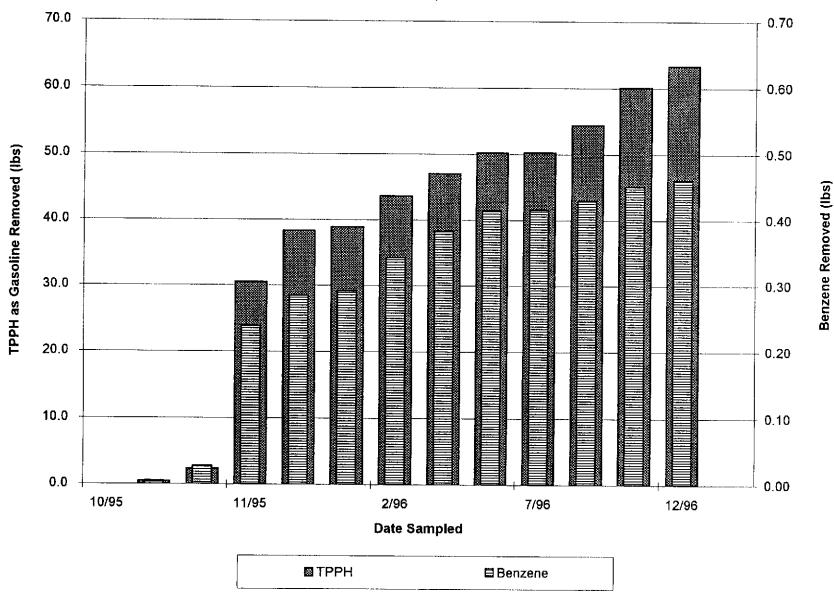


Figure 4
Soil Vapor Extraction System Hydrocarbon Concentrations

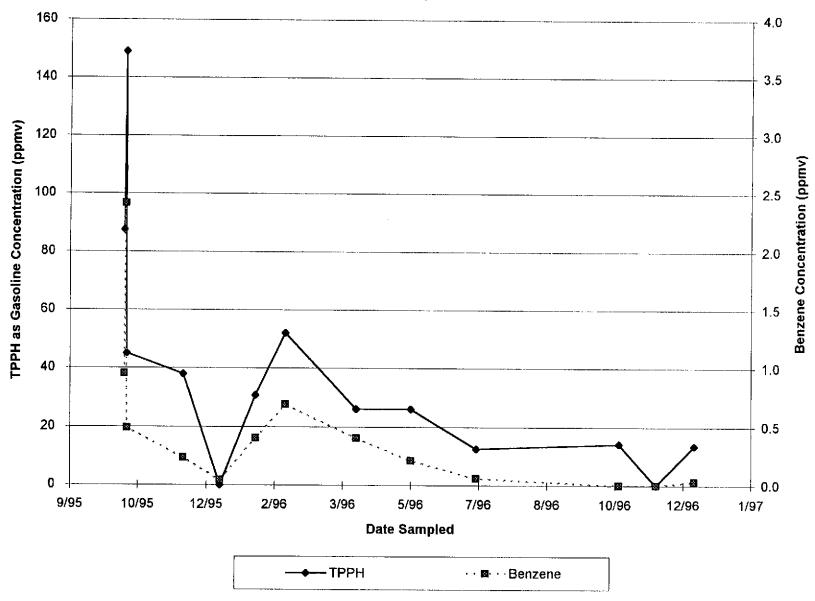
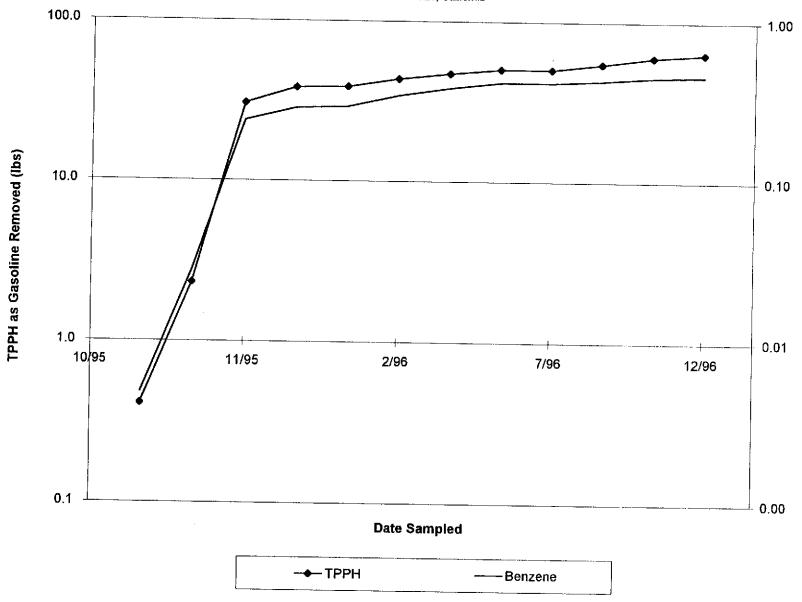


Figure 3
Soil Vapor Extraction System Mass Removal Trend



ATTACHMENT B

CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION



Redwood City, CA 94063 Walnut Creek, CA 94598

(415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Sampled: 19/15/95

Received: 10/16/96

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110

Client Proj. ID: 310-058.5A/5760, San Lorenzo

Sample Descript: INFL

Matrix: LIQUID

Analysis Method: 8015Mod/8020

Analyzed: 10/18/96 Lab Number: 9610A47-01 Reported: 10/24/96

QC Batch Number: GC101896BTEX01A

Instrument ID: GCHP01

Attention: Andrew Lahane

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Det	tection Limit ug/L	Sar	nple Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:		5.0 5.0 5.0		4900 94 14 210 1600 Gas
Surrogates Trifluorotoluene	Con 70	trol Limits %	% Re	ecovery 74

ÇÇ,

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager



Redwood City, CA 94063 Walnut Creek, CA 94598

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110

Client Proj. ID: 310-058.5A/5760, San Lorenzo Sample Descript: EFFL

Sampled: 10/15/96 Received: 10/16/96

Matrix: LIQUID

Attention: Andrew Lahane

Analysis Method: 8015Mod/8020 Lab Number: 9610A47-02

Analyzed: 10/21/96 Reported: 10/24/96

QC Batch Number: GC102196BTEX18A

Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:	50 0.50 0.50 0.50 	N.D. N.D. N.D. N.D. 0.54
Surrogates Trifluorotoluene	Control Limits % 70 130	% Recovery 108

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager



Redwood City, CA 94063 Walnut Creek, CA 94598

(415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 Client Project ID:

310-058.5A / 5760, San Lorenzo

Matrix:

LIQUID

San Jose, CA 95110

Attention: Jessica Nelligan

Work Order #:

9610A47

01, 02

Reported:

Oct 28, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
			Benzene		
	GC101896BTEX01A	GC101896BTEX01A	GC101896BTEX01A	GC101896BTEX01A	
Analy. Method:		EPA 8020	EPA 8020	EPA 8020	
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	
			•		
Analyst:		R. Geckler	R. Geckler	R. Geckler	
MS/MSD #:		961081109	961081109	961081109	
Sample Conc.:		N.D.	N.D.	N.D.	
Prepared Date:		10/18/96	10/18/96	10/18/96	
Analyzed Date:	, ,	10/18/96	10/18/96	10/18/96	
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	
Conc. Spiked:	10 <i>µ</i> g/L	10 µg/L	10 μg/L	30 μg/L	
Result:	10	10	9.9	30	
MS % Recovery:	100	100	99	100	
Dup. Result:	10	9.8	9.7	29	
MSD % Recov.:	100	98	97	97	
RPD:	0.0	2.0	2.0	3.4	
RPD Limit:	0-25	0-25	0-25	0-25	
LCS #:	BLK101896	BLK101896	BLK101896	BLK101896	
Prepared Date:	10/18/96	10/18/96	10/18/96	10/18/96	
Analyzed Date:	10/18/96	10/18/96	10/18/96	10/18/96	
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
· · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	10 µg/ L	ου μ <u>υ</u> Ε	
LCS Result:	9.1	8.8	8.7	26	
LCS % Recov.:	91	88	87	87	
					·
MS/MSD	60-140	60-140	60-140	60-140	-
LCS	70-130	70-130	70-130	70-130	

SEQUOIA ANALYTICAL

Control Limits

Tod Granicher Project Manager Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.



Redwood City, CA 94063 Walnut Creek, CA 94598

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 Client Project ID:

310-058.5A / 5760, San Lorenzo

Matrix:

LIQUID

San Jose, CA 95110 Attention: Jessica Nelligan

Work Order #:

9610A47

01,02

Reported:

Oct 28, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
			Benzene		
	GC102196BTEX18A	GC102196BTEX18A	GC102196BTEX18A	GC102196BTEX18A	
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	
Analyst:	R. Geckler	R. Geckler	R. Geckler	R. Geckler	
MS/MSD #:	961091602	961091602	961091602	961091602	
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	
Prepared Date:	10/21/96	10/21/96	10/21/96	10/21/96	
Analyzed Date:	10/21/96	10/21/96	10/21/96	10/21/96	
strument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
Result:	10	9.8	9.6	29	
IS % Recovery:	103	98	96	95	
Dup. Result:	10	9.5	9.4	29	
MSD % Recov.:	100	95	94	95	
RPD:	3.0	3.1	2.1	0.0	
RPD Limit:	0-25	0-25	0-25	0-25	

LCS #:	BLK102196	BLK102196	BLK102196	BLK102196	
Prepared Date:	10/21/96	10/21/96	10/21/96	10/21/96	
Analyzed Date:	10/21/96	10/21/96	10/21/96	10/21/96	
Instrument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18	
Conc. Spiked:	10 μg/L	10 µg/L	10 μg/L	30 μg/L	
LCS Result:	12	11	10	32	
LCS % Recov.:	120	109	104	108	
MS/MSD	50.140	60.140	00.440		
	60-140	60-140	60-140	60-140	
LCS Control Limits	70-130	70-130	70-130	70-130	

SEQUOIA ANALYTICAL

Tod Granicher Project Manager Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure, # the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

UNOCAL 76

À 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600

U 819.Striker Ave., Sulle 8 • Sacramento, CA 95834 • (916) 921-9600

LJ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

4.) 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200

☐ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200

☐ 15055 S.W. Sequola Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company:	77. ETT	12. 6	10		ļ	Project I	Name:	3/0	2 -6	255	7. 0	5H	,				•	
Address: 70	DELIA	ノン	17	444	_	JNOCA	L Proje	ect Ma	nager:	7/1	2	R	TYC	/.				
City: 27/17/765	State:	10	7	Zip Code:	95/10	\FE#:			· .									#
Telephone:	4 750	}	FAX #:2	1846	17139	Site #, C	ity, Sta	ate: 🎸	76	$\langle c \rangle$	2	22	60	EN	70		<u>ን.</u>	Client
Report To: 1/2/2/6	2 Joshan	Sample	111)	16611	(1/1/)	C Data	a:)[[]	evel D	:) (Stand	ard)	1 Leve	el C		.evel B	<u> </u>	Level /	Δ .	Pink -
Turnaround 10 W	'ork Days ☐ 5 V	Vork Days	s 🗀 3 V	Vork Days	_ jpri	nking V	? Valer		:		Analys	ses Re	queste	ed .	į ii			۵
Time: / 📙 2 Wo	rk Days 🗀 1 V	Vork Day	<u>L) 2-8</u>	3 Hours	/ Wa	iste Wa	ler /				/	10.1/	7 /		7	///	. 1 /	. —
CODE: U Misc. U (Detect. 🗀 Eval.	Reme	d. 🖳 De	emol. 🗀 Cle	osure Oth	nei///									/ ,	16	1045	t /
Client Sample I.D.	Date/Time ' Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #	1	0				<u>/</u> ;					Comme	nts	>
1 INFL	10/5/Ke	19	3	1100	01	X			:*				13/40	ŞHK.	11:			aboratory
2. [7-7-]	5/57Ke	199	3	103	02	X	: :					1.55		. V.C.	l is		<i>i</i> } .	abo(
3. /		, ,										124					· · ·	/ - L
4. INFL	15/36 (Tix		1305		IX.							!					/ellow
5. /					,						·		!					>
6.															i 			
7.							<u> </u>						!					i
8.	\$.\ 			ļ									;					
9.				<u> </u>			. (:					_,	2
10.							<u> </u>		<u> </u>									ato
	-//		- 12''	101100	17 47	<u>ی - ا</u>		 	71.5		*	<u> </u>	<u> </u>	. los	<u></u>	.سرمهردام	(1)	Labo
Relinquished By:		Joe fi	Date	<i>YYY</i>	Time: / 3	Rece	eived E	<u> </u>	1.660	rco	16	- D	ate/ <i>0//</i>	16/46	7 Time:	0100	≾	ē
Relinquished By:) (Claret	25/	Date	10/16/80	/Time://///	Rece	eived E	y: 12	tech.	1 h	(e. A	D	ate/p-	16-46	Time:	(1)	5	Whit
Relinguished By:	Machen	Ste	Date	, / ;	Time:	Rece	eived E	ly Lab	P	K	RU	<u> </u>	oate: U	0/14/90	[‡] Time:	1(57		
Were Samples Receive	ed in Good Condi	ition? 🔾 Y	es U No	Sa	mples on Ice?	⊔ Yes	IJ No	Mell	l Popor	Shipme	ent	ノ 		·	Pag	ge of		,
To be completed upon 1) Were the analy 2) Was the report	ses requested or issued within the	n the Chai e requeste	d turnar	ound time?	Yes II No	If no, w	hat wa	is the t	urnaro	und tir	ne?	d?			D	ath: /p/	30/96	



680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8

Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440

Client Proj. ID: 310-058.5A/5760, San Lorenzo Sample Descript: Infl.

MOROENSampled: GROVE 51/29

San Jose, CA 95110

Matrix: AIR

Received: 10/16/

Analysis Method: 8015Mod/8020

Analyzed: 10/17/96 Reported: 10/21/96

Attention: Andrew Lahane

Lab Number: 9610973-01

QC Batch Number: GC101796BTEX17A

Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte		ction Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:		20 0.20 0.20 0.20 0.20	N.D. N.D. 1.3 4.9
Surrogates Trifluorotoluene	Contr 70	rol Limits % 130	% Recovery 127

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager



680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8

Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 (415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group

Client Project ID: 310-058.5A / 5760, San Lorenzo

2025 Gateway Place, Suite 440

San Jose, CA 95110

Attention: Andrew Lahane Work Order #:

9610973

01

Reported:

Oct 22, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Xylenes		
			Benzene		
	GC101796BTEX17A	GC101796BTEX17A	GC101796BTEX17A	GC101796BTEX17A	
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	
	<u></u>			· · · · · · · · · · · · · · · · · · ·	
Analyst:	Y. Arteaga	Y. Arteaga	Y. Arteaga	Y. Arteaga	
MS/MSD #:	961057903	961057903	961057903	961057903	
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	
Prepared Date:	10/17/96	10/17/96	10/17/96	10/17/96	
Analyzed Date:	10/17/96	10/17/96	10/17/96	10/17/96	
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	•
			,	. 0,	
Result:	11	10	9.6	29	
MS % Recovery:	110	100	96	97	
Dup. Result:	11	11	9.5	29	
MSD % Recov.:	110	110	95	97	
RPD:	0.0	9.5	1.0	0.0	
RPD Limit:	0-25	0-25	0-25	0-25	

LCS #:	BLK101796	BLK101796	BLK101796	BLK101796	
_					
Prepared Date:	10/17/96	10/17/96	10/17/96	10/17/96	
Analyzed Date:	10/17/96	10/17/96	10/17/96	10/17/96	
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17	
Conc. Spiked:	10 μg/L	10 <i>µ</i> g/L	10 μg/L	30 μg/L	
1000-					
LCS Result:	11	10	9.2	28	
LCS % Recov.:	110	100	92	93	
MS/MSD					
	60-140	60-140	60-140	60-140	
LCS Control Limits	60-140 70-130	60-140 70-130	60-140 70-130	60-140 70-130	

SEQUOIA ANALYTICAL

Tod Granicher Project Manager Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

UNOCAL 76

680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600

- ☐ 819 Striker Ave., Suite 8 Sacramento, CA 95834 (916) 921-9600
- ☐ 404 N. Wiget Lane Walnut Creek, CA 94598 (510) 988-9600
- © 18939 120th Ave., N.E., Suite 101 Bothell, WA 98011 (206) 481-9200 •
- © East 11115 Montgomery, Suite B Spokane, WA 99206 (509) 924-9200
- ☐ 15055 S.W. Sequoia Pkwy, Suite 110 Portland, OR 97222 (503) 624-9800

Consultant Company:	C. FN11.	γ_D .	F	roject Name: -	3/0-05	8.54		
Address: 2025	TELIAN D	1440		JNOCAL Projec	t Manager:	on Re	-rv1 /	
City: 200 Tost	State:	Zip Code: 4	/ 	.FE #:		11.7.1	7	
Telephone:	7528	FAX #: 158/1/	75398	Site #, City, Stat	e: 67/2)	m	KOVEN	70 . O.
Report To: //B D/5/20	Sample	mitch	ノニンドル	C Data: Le		Level C	Level B	
Turnaround 10 Work				nking Water	VOI D (Standard)	Analyses Re		☐ Level A
Time: 2 Work Da	ays 🛭 1 Work Day	☐ 2-8 Hours	1 1 /	ste Water		Arialyses rie	questeu	
CODE: A Misc. Detec	ct. 🗅 Eval. 🗗 Reme	d. 🗘 Demol. 🗘 Clo		V A (X / /		$\nearrow \times$	
•	ate/Time Matrix Sampled Desc.	# of Cont. Cont. Type	Laboratory Sample #	100	///	(216/0	5973	Comments
1. INFL 10	5/K. 1/2	3 //0	<u> </u>					
2. EFFL Wie	11/19	3 1/10				- 		
3.		.						
4. INFL WA	THE DIV	Bas	题	X				=
5.			-					>
6.								
7.								
8.								
9.								
10.								
	7/2/1	1 1116	/ 1/2/	1	V 1 /1 /2	2,	. , ,	Time: 1715.2
Relinquished By:	John John	Date	ione: / 3	Received By:	O. Clares	On Da	ite/ <i>0/16/46</i>	
Relinquished By:/(//./	larión	Date: 10/16 PM	Time: 1045	Received By:	Huchas o	il ci Da	nte/0-16-46	Time: 70×75
Relinquished By:	chad les	Date:	l'ime:	Received By	11.	,	ate: 19/16/40	Time: //'57/
Were Samples Received in (Good Condition? 🗅 Ye	es D. No Sam	ples on ice?	□ Yes □ No N	Method of Shipm	ient	·	Page of
To be completed upon recei 1) Were the analyses re 2) Was the report issue	equested on the Chai	n of Custody reported turnaround time?	ed? 🗆 Yes 🗅 N 🗀 Yes 🖸 No I	No If no, what a	nalyses are still	needed?		
Approved by:					ompany:			Date:



Redwood City, CA 94063 Walnut Creek, CA 94598

(415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440

Client Proj. ID: 310-058.5A/ 5760, San Lorenzo Sample Descript: Infl

Sampled: 11/11/96 Received: 11/12/96

San Jose, CA 95110

Matrix: LIQUID

Attention: Andrew Lahane

Analysis Method: 8015Mod/8020

Analyzed: 11/18/96

Lab Number: 9611721-02

Reported: 11/20/96

QC Batch Number: GC111896BTEX02A

Instrument ID: GCHP2

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Det	tection Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:		20	15000 130 560 550 4500 Gas
Surrogates Trifluorotoluene	Con 70	itrol Limits % 130	% Recovery 77

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager



680 Chesapeake Drive 404 N. Wiget Lane

Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 FAX (415) 364-9233 (510)-988-9600 FAX (510) 988-9673 (bire) | 531-5600. 21-0100

PACIFIC ENVIRONME

Pacific Environmental Group 2025 Gateway Place, Suite 440 Client Proj. ID: Sample Descript: Effl

310-058.5A/ 5760, San Lorenzo

Sampled: 11/11/96

San Jose, CA 95110

Matrix: LIQUID

Received: 11/12/96

Attention: Andrew Lahane

Analysis Method: 8015Mod/8020

Analyzed: 11/15/96

Lab Number: 9611721-01

Reported: 11/20/96

QC Batch Number: GC111596BTEX21A

Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:	50 0.50 0.50 0.50 0.50	N.D. N.D. N.D. N.D. N.D.
Surrogates Trifluorotoluene	Control Limits % 130	% Recovery 92

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager



Redwood City, CA 94063 Walnut Creek, CA 94598

(415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110 Attention: Andrew Lahane

Client Proj. ID: 310-058.5A/ 5760, San Lorenzo

Received: 11/12/96

Lab Proj. ID: 9611721

Reported: 11/20/96

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. Thi report contains a total of _____ pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, This etc.).

SEQUOIA ANALYTICAL

Tod Granicher Project Manager



680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8

Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 (415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 Client Project ID:

310-058.5A / 5760, San Lorenzo

Matrix:

LIQUID

San Jose, CA 95110 Attention: Andrew Lahane

Work Order #:

9611721 01,02

Reported:

Nov 21, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
Allalyto	D01120110	, 5.451.5	Benzene	•	
OC Batab#i	GC111596BTEX21A	GC111596BTEX21A	GC111596BTEX21A	GC111596BTEX21A	
	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Analy, Method:		EPA 5030	EPA 5030	EPA 5030	
Prep. Method:	EPA 5030	EFA 3030	El A 3000		
Analyst:	G. Fish	G. Fish	G. Fish	G. Fish	
MS/MSĎ#:	961138812	961138812	961138812	961138812	
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	
Prepared Date:	11/15/96	11/15/96	11/15/96	11/15/96	
Analyzed Date:	11/15/96	11/15/96	11/15/96	11/15/96	
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
Result:	9.4	8.8	8.9	27	
MS % Recovery:	94	88	89	90	
Dup. Result:	9.2	8.7	8.9	27	
MSD % Recov.:	92	87	89	90	
RPD:	2.2	1.1	0.0	0.0	
RPD Limit:	0-25	0-25	0-25	0-25	
LCS #:	BLK111596	BLK111596	BLK111596	BLK111596	
Prepared Date:	11/15/96	11/15/96	11/15/96	11/15/96	
Analyzed Date:		11/15/96	11/15/96	11/15/96	
Instrument I.D.#:		GCHP21	GCHP21	GCHP21	
Conc. Spiked:		10 μg/L	10 μg/L	30 μg/L	
LCS Result:	9.4	8.7	8.9	27	
LCS % Recov.:		87	89	90	
MS/MSD	60-140	60-140	60-140	60-140	
l Ľcs	70-130	70-130	70-130	. 70-130	
Control Limits					

SEQUOIA ANALYTICAL

Tod Granicher Project Manager Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.



680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8 Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 (415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 Client Project ID:

310-058.5A / 5760, San Lorenzo

Matrix:

LIQUID

San Jose, CA 95110 Attention: Andrew Lahane

Work Order #:

9611721 01, 02

Reported:

Nov 21, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
•			Benzene		
QC Batch#:	GC111896BTEX02A	GC111896BTEX02A	GC111896BTEX02A	GC111896BTEX02A	
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	
Analyst:	Y. Arteaga	Y. Arteaga	Y. Arteaga	Y, Arteaga	
MS/MSD #:	961138818	961138818	961138818	961138818	
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	
Prepared Date:	11/18/96	11/18/96	11/18/96	11/18/96	
Analyzed Date:	11/18/96	11/18/96	11/18/96	11/18/96	
Instrument I.D.#:	GCHP2	GCHP2	GCHP2	GCHP2	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
Result:	10	9.3	9.0	25	
MS % Recovery:	100	93	90	83	
Dup. Result:	11	9.6	9.2	26	
MSD % Recov.:	110	96	92	87	
RPD:	9.5	3.2	2.2	3.9	
RPD Limit:	0-25	0-25	0-25	0-25	
LCS #:	BLK111896	BLK111896	BLK111896	BLK111896	
Prepared Date:	11/18/96	11/18/96	11/18/96	11/18/96	
Analyzed Date:	11/18/96	11/18/96	11/18/96	11/18/96	
Instrument I.D.#:	GCHP2	GCHP2	GCHP2	GCHP2	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
LCS Result:	11	9.8	9.4	26	
LCS % Recov.:	110	98	94	87	
				00.140	
MS/MSD	60-140	60-140	60-140	60-140	
LCS Control Limits	70-130	70-130	70-130	70-130	

SEQUOIA ANALYTICAL

Tod Oranishan

Tod Granicher Project Manager Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.



(415) 364-9600 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600

☐ 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600

© 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

☐ 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200

☐ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200

☐ 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company: 1/1,4	. F MV	(1, 1, 1	1.	ι,		Project	Name:	;	111-6	~ 5	5 4					1
Address:	<u> </u>	∮ ≯(.	· ,	eqqc		UNOCA	L Proje	ect Mar	nager:	17.2	A Cy	209				
City: SAN Nowe						AFE #:						,				<u> </u>
Telephone: (Telephone: 15 (Telephone	ું કર્યા ક	F.	AX #: 4	100 44	11559	Site #, 0	City, Sta	ate:	160	()	· 1/4:	1 1 00	BALES	1 1 1		Client
Report To: No. 1 - co. 1 .	Name S	Sampler:	ئانىچ 🕽	Charen	Pauly G	QC Dat	a: 🗓 L	evel D	(Standard	n) 🗀 L	evel C		evel B	🚨 Le	/el A	Pink -
Turnaround 10 Work Day	ıys 🗀 5 Wo	rk Days	ШзW	ork Days	□ D	rinking V Vaste Wa		<u> </u>	[] _[An	alyses Ro	equest	ed		7	
CODE: 🗆 Misc. 🗅 Detect.	. 🗖 Eval. 🖺	Remed.	☐ De	mol. 🖵 Clo	sure 🖵 C	Other			/ 🖳	4/		1/2	V.			
.		Matrix Desc.	# of Cont.	Cont. Type	Laborator Sample #	у # /				1				Com	ments	
1. E. F. F. 11 11/90	1);00	Class.		VOA	1											- Laboratory
	15 00 1	(1)	4,	المان الما	2		<u> </u>	<u> </u>	_			1				3bor
3.																17
4.											_					ellow
5.				:								<u> </u>				_ ×
6.							ļ									4
7.							ļ									11
8.										_		<u> </u>				-
9.												ļ			4 F : Kapi	
10.								<u> </u>							c p.or	Tato,
Relinquished By:	By Astronomy	, !	Date:	Malito	Time: 14:20	Rec	eived E	By: /()	May)ate: //	10/10	Time: /¿	jag)	e - Laboratory
Relinquished By: <u>/ (</u> /	19/11/11/11/11/11/11/11/11/11/11/11/11/1	,	Date:	ntiztas.	Time:つむル	Rec	eived E	3y: <i>H</i>	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Bei [)ate://	10.13	Time: 😘	20	White
Relinguished By:			Date:	, ,	Time:プイル Time:	Rec	eived E	By Lab:	(, ' - p		ر ح	Date!\(2/30	Time: 11	<u>, </u>	_ [
Were Samples Received in G	lood Conditio	on? 🗅 Ye	s 🗀 No	Sa	mples on Ice	? 🗀 Yes	i □ No	Meth	od of Sh	ipment		 		Page	of	
To be completed upon receip 1) Were the analyses re 2) Was the report issued Approved by:	quested on the re	equested	turnard	ound time?	U Yes U No	o Ifno, v	vhat wa	is the t	urnarou	nd time						



680 Chesapeake Drive 404 N. Wiget Lane

Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600...

FAX (415) 364-9233 FAX (510) 988-9673 FAX 1916 911-0100

PACIFIC ENVIRONMENTAL GROUP, INC

Pacific Environmental Group 2025 Gateway Place, Suite 440 Client Proj. ID: Unocal 310-058.5A San Lorenzo Sample Descript: Infl.

Sampled: 11/11/96

San Jose, CA 95110

Received: 11/12/96

Matrix: AIR Analysis Method: 8015Mod/8020

Analyzed: 11/13/96 Reported: 11/15/96

Attention: Andrew Lahane

Lab Number: 9611620-01

QC Batch Number: GC111396BTEX17A

Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas- Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:	10 0.10 0.10 0.10 0.10	N.D. N.D. N.D. N.D. N.D.
Surrogates Trifluorotoluene	Control Limits % 70 130	% Recovery 108

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL -ELAP #1210

Tod Granicher Project Manager



Redwood City, CA 94063 Walnut Creek, CA 94598 (415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group

2025 Gateway Place, Suite 440

San Jose, CA 95110

Attention: Andrew Lahane

Client Project ID:

Unocal 310-058.5A, San Lorenzo

Work Order #: 9611620 01 Reported: Nov 19, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
Allanyton	201120110	70,000	Benzene	2,7,0,100	
QC Batch#:	GC111396BTEX17A	GC111396BTEX17A	GC111396BTEX17A	GC111396BTEX17A	
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	
Analyst:	J. Heider	J. Heider	J. Heider	J. Heider	
MS/MSD #:	961120804	961120804	961120804	961120804	
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	
Prepared Date:	11/13/96	11/13/96	11/13/96	11/13/96	
Analyzed Date:	11/13/96	11/13/96	11/13/96	11/13/96	
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
Result:	10	10	10	30	
MS % Recovery:	100	100	100	100	
Dup. Result:	11	11	11	32	
MSD % Recov.:	110	110	110	107	
RPD:	9.5	9.5	9.5	6.5	
RPD Limit:	0-25	0-25	0-25	0-25	
LCS #:	BLK113096	BLK113096	BLK113096	BLK113096	
Prepared Date:	11/13/96	11/13/96	11/13/96	11/13/96	
Analyzed Date:	11/13/96	11/13/96	11/13/96	11/13/96	
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
LCS Result:	10	10	9.8	29	
LCS % Recov.:	100	100	98	97	
MS/MSD	60-140	60-140	60-140	60-140	
LCS	70-130	70-130	70-130	70-130	
Control Limits	70 100	70 100	. 5 150	75.50	

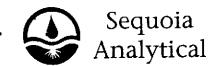
SEQUOIA ANALYTICAL

Tod Granicher Project Manager Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9611620.PPP <1>



680 Chesapeake Drive 404 N. Wiget Lane

Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440

Client Proj. ID: Unocal 310-058.5A San Lorenzo

Received: 11/12/96

San Jose, CA 95110 Attention: Andrew Lahane Lab Proj. ID: 9611620

Reported: 11/15/96

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. report contains a total of # pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data,

SEQUOIA ANALYTICAL

Tod Granicher Project Manager

UNOCAL 76

★ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600

- © 819 Striker Ave., Suite 8 Sacramento, CA 95834 (916) 921-9600
- Q 404 N. Wiget Lane Walnut Creek, CA 94598 (510) 988-9600
- □ 18939 120th Ave., N.E., Suite 101 Bothelf, WA 98011 (206) 481-9200
- © East 11115 Montgomery, Suite B Spokane, WA 99206 (509) 924-9200
- ☐ 15055 S.W. Sequoia Pkwy, Suite 110 Portland, OR 97222 (503) 624-9800

1:

Consultant Company: PAC. ENJ. GIVUP, INC.						Project Name: 310 - 058, 5A											
Address: 2025 GATEWAY PI A440						UNOCAL Project Manager: TINA Beny											
City: SAN Jose	State:	CA-		Zip Code:	वेड 110	AFE #:											
Telephone: (408) 441-7500 FAX #(408)441-7539						Site #, City, State: 5760 SAN Lorenzo, CA.											
Report To: Andrew Lal			•			QC Dat	a: 🔏 L	.evel [) (Stand	lard) [ם Lev∙	el C	ı ت	Level E	3 (Level A	<u>' </u>
Turnaround 10 Work □ Time: □ 2 Work □	ays 🗓 1 W	Vork Day	□ 2-8	Hours	D V	rinking V Vaste Wa	iter /	(et)			Analy	ses Re	equest	ed		7	<u>a</u>
CODE: Misc. Detec					osure 🖄 C)ther ∆(&		4		\bigcirc	$\mathscr{C}_{\mathcal{O}}$	H.	6	26			
	ate/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laborator Sample	y # /3	in (a)			\nearrow						Commer	L
1. INF(11/1/9	6 13:00	AIR		BAG	IA	\times											ratory
2.	•		-				<u> </u>					<u>.</u>	ļ	ļ			apol
3.							ļ		ļ .		ļ		ļ	ļ			×
4.							ļ		ļ	ļ	ļ	<u> </u>	<u> </u>	ļ.			Yellow
5.							ļ <u>-</u>	<u> </u>	<u> </u>		<u> </u>	ļ	<u> </u>	<u> </u>			
6.								<u> </u>	<u> </u>		<u> </u>		 	ļ	ļ		
7.							ļ	<u> </u>	 -	ļ	ļ	ļ		-	<u> </u>		
8.		<u> </u>					<u> </u>	 -		<u> </u>	 		<u> </u>	 	ļ <u>-</u>	Pan	
9.							 	ļ	 	ļ <u>.</u>				 	ļ		<u> </u>
10.				<u> </u>	<u> </u>		<u> </u>		<u> </u>	<u> </u>	<u> </u>		<u>.l</u>	<u>.l</u>	<u> </u>		
Relinquished By:ეხა	witer	3/	Date	: 11]1496	Time: (5:0)	() Rec	eived l	3y: <i>[[0</i>	·alc	rro	'n		Date: //	11/40	Time:	16:00	
Relinquished By: 10. (Uarcón	·	Date	11/14/96	Time: 592	? Rec	eived E	3y.47	lea	bus,	We.						
Relinquished By: Mu	draw W	ein	Date		Time:	Rec	eived I	By Lab	: lu				Date: li	112/2	Time:	1115	
Were Samples Received in	Good Condi	tion? 🗅 Y	es 🗅 No	Sa	imples on Ice	? 🗅 Yes	oN 🗅	Met	hod of	Shipm	ent				Pag	ge of _	_
To be completed upon received: 1) Were the analyses 2) Was the report issued Approved by: D. Flare	requested or ed within the	n the Cha requeste	ed turnar	ound time	? 🖭 Yes 🔾 N	o Ifno, v	vhat wa	as the	lyses a turnar	ound ti	ime? .	ed?				vate: 11/2	



Andrew Lehane

680 Chesapeake Drive 404 N. Wiger Lane 819 Striker Avenue, Suite 8 Sacramento, CA 95834

Redwood City, CA 94063 Walnut Creek, CA 94598,

(415) 364-9600 (510) 988-9600 置(

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110

Attention:

Client Proj. ID:

310-058.5A, 5760, San Lorenzo

Lab Proj. ID: 9612007

Sampled:-11/27/96

Received: 12/02/96 Analyzed: see below

Reported: 12/12/96

LABORATORY ANALYSIS

Analyte		Units	Date Analyzed	Detection Limit	Sample Results		
Lab No: Sample D	9612007-01 Pesc : LIQUID,EffI				<u> </u>		
	Chemical Oxygen Demand pH Total Suspended Solids	mg/L pH Units mg/L	12/11/96 12/02/96 12/07/96	20 N/A 1.0	N.D. 7 .2 N.D.		

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager



680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8 Sacramento, CA 95834

Redwood City, CA 94063 Walnut Creek, CA 94598

-415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 44 2025 Gateway Place, Suite 440 San Jose, CA 95110

Client Proj. ID: 310-058.5A, 5760, San Lorenzo

Sampled: 11/27/96

Sample Descript: Effl. Matrix: LIQUID

Received: 12/02/96

Analysis Method: 8015Mod/8020

Analyzed: 12/06/96

Attention: Andrew Lehane

Lab Number: 9612007-01

Reported: 12/12/96

QC Batch Number: GC120696BTEX20A

Instrument ID: GCHP20

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:	50 0.50 0.50 0.50 0.50	N.D. N.D. N.D. N.D. N.D.
Surrogates Trifluorotoluene	Control Limits % 130	% Recovery 82

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tòd Granicher Project Manager



Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110 Attention: Andrew Lehane

Client Proj. ID: 310-058.5A, 5760, San Lorenzo

Received: 12/02/96

Lab Proj. ID: 9612007

Reported: 12/12/96

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 8 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Tod Granicher Project Manager

Page: 1



680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8

Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 (415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110

Attention: Andrew Lehane

Client Proj. ID: 310-058.5A/5760, San Lorenzo

Sample Descript: Infl

Matrix: LIQUID

Analysis Method: 8015Mod/8020

Lab Number: 9612621-01

Sampled: 12/09/96 Received: 12/09/96

- Ameliane de de de de

Analyzed: 12/12/96 Reported: 12/16/96

QC Batch Number: GC121196BTEX03B

Instrument ID: GCHP3

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Det	ection Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:		5.0 5.0 5.0 5.0	
Surrogates Trifluorotoluene	Con 70	trol Limits % 130	% Recovery 92

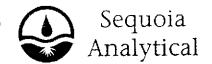
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager

Page:

1



Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110

Attention: Andrew Lehane

Client Proj. ID: 310-058.5A/5760, San Lorenzo

Sample Descript: Effl

Matrix: LIQUID

Analysis Method: 8015Mod/8020 Lab Number: 9612621-02

Sampled: 12/09/96 Received: 12/09/96

Analyzed: 12/12/96 Reported: 12/16/96

QC Batch Number: GC121196BTEX03B Instrument ID: GCHP3

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:	50 0.50 0.50 0.50 0.50	N.D. N.D. N.D. N.D. N.D.
Surrogates Trifluorotoluene	Control Limits % 70 130	% Recovery 99

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager

Page:



Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110 Attention: Andrew Lehane

Client Proj. ID: 310-058.5A/5760, San Lorenzo

Received: 12/09/96

Lab Proj. ID: 9612621

Reported: 12/16/96

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. report contains a total of pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL



Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 Client Project ID: 310-058.5A / 5760, San Lorenzo

Matrix:

Work Order #:

LIQUID

San Jose, CA 95110

Attention: Andrew Lehane

01, 02

Reported: Dec 18, 1996

QUALITY CONTROL DATA REPORT

9612621

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
Analyte.	Delizelle	loidelle	Benzene	Victor	
00 0-4-6/6	004044000757000	00101100000000		0040440007774000	
	GC121196BTEX03B	GC121196BTEX03B	GC121196BTEX03B	GC121196BTEX03B	
Analy. Method:		EPA 8020	EPA 8020	EPA 8020	- 1
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	
A mark ands	D "	B "	6. 0	D . I'	
Analyst:		D. Jirsa	D. Jirsa	D. Jirsa	
MS/MSD #:	961251801	961251801	961251801	961251801	
Sample Conc.:		N.D.	N.D.	N.D.	
Prepared Date:		12/11/96	12/11/96	12/11/96	
Analyzed Date:	. ,	12/11/96	12/11/96	12/11/96	
Instrument I.D.#:	GCHP3	GCHP3	GCHP3	GCHP3	
Conc. Spiked:	10 μg/L	10 µg/L	10 μg/L	30 μg/L	
Result:	8.2	8.5	8.8	29	
MS % Recovery:	82	85	88	97	
Dup. Result:	8.6	8.8	9.1	29	
MSD % Recov.:	86	88	91	97	
RPD:	4,8	3.5	3.4	0.0	
RPD Limit:	0-25	0-25	0-25	0-25	
LCS #:	BLK121196	BLK121196	BLK121196	BLK121196	
Prepared Date:	12/11/96	12/11/96	12/11/96	12/11/96	
Analyzed Date:	12/11/96	12/11/96	12/11/96	12/11/96	
Instrument I.D.#:	GCHP3	GCHP3	GCHP3	GCHP3	
Conc. Spiked:	10 μg/L	10 µg/L	10 μg/L	30 μg/L	
LCS Result:	8.5	9.0	9.5	31	
LCS % Recov.:	85	9.0	9.5 95		
LUG /6 NECUY	65	90	95	103	

Please Note:

60-140

70-130

60-140

70-130

Tod Granicher Project Manager

SEQUOIA ANALYTICAL

MS/MSD

LCS

Control Limits

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

60-140

70-130

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

60-140

70-130

CLIENT NAME: REC. BY (PRINT)	PEGI			WORKORDER: DATE OF LOG-IN:	9616	621	16	-
CIRCLE THE APPROPRIAT	TE RESPONSE	LAB SAMPLE	DASH		CONTAINER	SAMPLE	DATE	REMARKS:
1. Custody Seal(s)	Present Absent Intact / Broken	#	#	CLIENT IDENTIFICATION	DESCRIPTION WA (2)	MATRIX	SAMP.	CONDITION (ETC.)
2. Custody Seal #:	Put in Remarks Section	2	A-C	EffI	T	T	1	
3. Chain-of-Custody	Present / Absent*)	
Traffic Reports or Packing List:	Present (Absent						/	
5. Airbill:	Airbill / Sticker Present Absent	•			/			
6. Airbill #:								
7. Sample Tags:	Present / Absent			1	\			
Sample Tags #s:	isted / Not Listed on Chain-of-Cuslody			·		<u> </u>		
8. Sample Condition:	ntact / Broken* / Leaking*							
Does information on custody reports, traffic reports and sample tags agree?	Yes / No*		2					
10. Proper Preservatives used:	₹							
11. Date Rec. at Lab:	12-09-91							
12, Time Rec. at Lab:	17:17						-	
13. Temp Rec. at Lab:								

Page _____ of ____

^{*}if Circled, contact Project Manager and attach record of resolution.

1	UNOCAL	76
,	GINOCAL	·W

680 Chesapeake Drive • Redwood Cily, CA 94063 • (415) 364-9600

© 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600

☐ 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200

☐ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200

Consultant Company: (Pacific Ex	Ju. G	rdup	Inc	2 772 772	Project N	lame.	:	310 -	- 05	8.5	SA.				
Address: 2025	GATEWA	y PI		#440)	UNOCA	_ Proj	ect Ma	nager	: T	INA	Iζa	1000			
Cily: SAN JOSE	State:	CA		Zip Code: '	95110	AFE#:										
Геlephone: (40%) ЦЧ	11-7500		FAX #:4	108/441	- 7539	Site #, C	itv. St	tate:	57	60	<	SAN.	600	/212:		~ A
Report To: Andrea	Lehene				*****	QC Data								_evel B	,	
Turna rqund ∑ T10 W	/ork Days □ 5 V ork Days □ 1 V	ork Days	3 🗀 3 V	Vork Days	O D	rinking W /aste Wat	ater	/ (-\-)	/ Jolane				equeste		(01 Q	
CODE: 🗆 Misc. 🗔 I								\$\begin{align*} \(\frac{1}{2} \rightarrow \frac{1}{2}							/ ,	
Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laborator Sample #	· / /	¥;>\									Comments
1. In 12	19196 11:30	HZO	3	YDA	\	X										
EFFI 17	19/96 1/:30	Heo	3	VIA	2	X										
3.																
•			:	,												
			,													
•															·	
0.																
										1 7	` .			-,, -		
Relinquished By: 1	In waters	augh	Date:	12/9/96	Time: 14:3	/ Rece	ved E	3у: Д́_) <u>.</u> (1	lar	lon	_ Di	ate: /	2/1/16	Time:	14:30
Relinquished By:	2. alare	2n.	Date:	12/9/96	Time: 4./(Rece	ived E	∃y: ✓	{/k	7/1	colo	U D	ate: /く	4/16	Time:	4:10
Relinguished By:	1, 2	JUX-		12/4/20				By Lab:	7	nt		7	2	. ૯૧.૧૮	Time	7=07
/ere Samples Receive	111/1/	(C		·	mples on Ice						ent		ale.			e of
To be completed upon 1) Were the analy 2) Was the report	ses requested on	the Chai	n of Cus	lody report	ted? XYes C	No If no	o, wha	at analy	/ses at	re still	neede	d?			· · · · · · · · · · · · · · · · · · ·	
Approved by: D.	Alarcón	4 - 00 10			$\tilde{\lambda}0.\tilde{\alpha}$											le: 12/2/1/9/



680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8

Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

TT0 18688

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110

Attention: Andrew Lehane

Client Proj. ID: 310-058.5A/5760, San Lorenzo

Sample Descript: Infl

Matrix: AIR

Analysis Method: 8015Mod/8020

Lab Number: 9612433-01

-Sampled:-12/09/96 Received: 12/09/96

Analyzed: 12/10/96 Reported: 12/12/96

QC Batch Number: GC121096BTEX17A

Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	De	tection Limit ug/L	Sample Results ug/L
TPPH as Gas Benzene Toluene Ethyl Benzene Xylenes (Total) Chromatogram Pattern:		0.10 0.10 0.10 0.10	57 0.12 1.8 1.6 7.9 Gas
Surrogates Trifluorotoluene	Co n 70	trol Limits % 130	% Recovery 137 Q

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher Project Manager

Page:





680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8 Sacramento, CA 95834

Redwood City, CA 94063 Walnut Creek, CA 94598 (510) 988-9600

(415) 364-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110 Attention: Andrew Lehane

Client Proj. ID: 310-058.5A/5760, San Lorenzo

Received: 12/09/96

Lab Proj. ID: 9612433

Reported: 12/12/96

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. report contains a total of _____ pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Tod Granicher Project Manager

Page: 1

680 Chesapeake Drive 404 N. Wiget Lane 819 Striker Avenue, Suite 8

Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 (415) 364-9600 (510) 988-9600 (916) 921-9600

FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group

Client Project ID: 310-058.5A / 5760, San Lorenzo

2025 Gateway Place, Suite 440 San Jose, CA 95110

Attention: Andrew Lehane

Work Order #: 9612433

01

Reported:

Dec 17, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
Allalyte.	Delizelle	Toluetle	Benzene	7,9101100	
OC Batab#:	GC121096BTEX17A	GC121096BTEX17A	GC121096BTEX17A	GC121096BTEX17A	
Analy. Method:		EPA 8020	EPA 8020	EPA 8020	
Prep. Method:		EPA 5030	EPA 5030	EPA 5030	
Frep. Wethou:	EPA 5030	EFA 3030	EFA 3030	277 3030	
Analyst:	D. Jirsa	D. Jirsa	D. Jirsa	D. Jirsa	
MS/MSD #:	961234407	961234407	961234407	961234407	
Sample Conc.:	N.A.	N.A.	N.A.	N.A.	
Prepared Date:	12/10/96	12/10/96	12/10/96	12/10/ 96	
Analyzed Date:	12/10/96	12/10/96	12/10/96	12/10/96	
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
Result:	9.4	9.8	10	30	
MS % Recovery:	94	38	100	100	
Dup. Result:	10	11	11	32	
MSD % Recov.:		110	110	107	
RPD:	6.3	12	9.5	6.5	
RPD Limit:		0-25	0-25	0-25	
LCS#:	BLK121096	BLK121096	BLK121096	BLK121096	
Prepared Date:	12/10/96	12/10/96	12/10/96	12/10/96	
Analyzed Date:		12/10/96	12/10/96	12/10/96	
Instrument I.D.#:		GCHP17	GCHP17	GCHP17	
Conc. Spiked:		10 μg/L	10 μg/L	30 μg/L	
LCS Result:	9.5	10	10	31	
LCS % Recov.:		100	100	103	
MS/MSD	60-140	60-140	60-140	60-140	
LCS	70-130	70-130	70-130	70-130	
Control Limits					

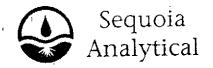
Please Note:

SEQUOIA ANALYTICAL

Tod Granicher Project Manager The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

9612433.PPP <1>



Redwood City, CA 94063 Walnut Creek, CA 94598 819 Striker Avenue, Suite 8 Sacramento, CA 95834

(415) 364-9600 (510) 988-9600 (916) 921-9600 FAX (415) 364-9233 FAX (510) 988-9673 FAX (916) 921-0100

Pacific Environmental Group 2025 Gateway Place, Suite 440

310-058.5A / 5760, San Lorenzo Client Project ID:

San Jose, CA 95110

Attention: Andrew Lehane

Work Order #:

9612433

01

Reported:

Dec 17, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	
- -			Benzene		
QC Batch#:	GC121096BTEX17A	GC121096BTEX17A	GC121096BTEX17A	GC121096BTEX17A	
Analy, Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	
A malanda		D	D !	D. Jirsa	
Analyst:	D. Jirsa	D. Jirsa	D. Jirsa	·	
MS/MSD #:	961234407	961234407	961234407	961234407	
Sample Conc.:	N.A.	N.A.	N.A.	· N.A.	
Prepared Date:	12/10/96	12/10/96	12/10/96	12/10/96	
Analyzed Date:	12/10/96	12/10/96	12/10/96	12/10/96	
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17	
Conc. Spiked:	10 μg/L	10 μg/L	10 µg/L	30 μg/L	
Result:	9.4	9.8	10	30	
MS % Recovery:	94	38	100	100	
Dup. Result:	10	11	- 11	32	
MSD % Recov.:	100	110	110	107	
MISD & RECOV	100	, io	110	107	
RPD:	6.3	12	9.5	6.5	
RPD Limit:	0-25	0-25	0-25	0-25	
LCS#:	BLK121096	BLK121096	BLK121096	BLK121096	
Prepared Date:	12/10/96	12/10/96	12/10/96	12/10/96	
Analyzed Date:	12/10/96	12/10/96	12/10/96	12/10/96	
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17	
Conc. Spiked:	10 μg/L	10 μg/L	10 μg/L	30 μg/L	
LCS Result:	9.5	10	10	31	
LCS % Recov.:	95	100	100	103	
MS/MSD	60-140	60-140	60-140	60-140	

SEQUOIA ANALYTICAL

Tod Granicher Project Manager

LCS

Control Limits

Please Note:

70-130

70-130

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

70-130

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

70-130

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: REC. BY (PRINT)	PEG Lil		-	WORKORDER: DATE OF LOG-IN:	96124	133 1-96		
CIRCLE THE APPROPRIAT	_	LAB SAMPLE	DASH		CONTAINER	SAMPLE	DATE	REMARKS:
1. Custody Seal(s)	Present /(Absen) Intact / Broken	#	#	CLIENT IDENTIFICATION	DESCRIPTION 7 II	MATRIX		CONDITION (ETC.)
2. Custody Seal #;	Put in Remarks Section		A	INFL	Tedlar	Div	15.01-010	
3. Chain-of-Custody	Present / Absent*							
Traffic Reports or Packing List:	Present Absent							
5. Airbill:	Airbill / Sticker Present / Absent							
6. Airbill #:					N			
7. Sample Tags:	Present / Absent			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				
Sample Tags #s:	Listed / Not Listed on Chain-of-Custody			0				
8. Sample Condition:	intast / Broken* / Leaking*							
Does information on custody reports, traffic reports and sample tags agree?	Yes / No*							
10. Proper Preservatives used:	∕ es∕ No*							
11. Date Rec. at Lab:	12-09-91			/				
12. Time Rec. at Lab:	17:07		/					
13. Temp Rec. at Lab:								

*if Circled, contact Project Manager and attach record of resolution.

Page _____ of ___



€ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600 U 819 Striker Ave., Sulte 8 • Sacramento, CA 95834 • (916) 921-9600 ☐ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

u	18939 120th Ave., N.E., Suite 101 • Bothell, WA	98011 • (206) 481-9200
u	East 11115 Montgomery, Sulto B • Spokane, W/	\ 99206 • (509) 924-9200

U 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant	0							_										1
Consultant Company: Address: 2025 City: SANT-	Pacific EN	u. Grsu	P. I	nc.			Project	Name): <u>3</u>	3/0-	05	8.5	54					
Address: 2025	GATEWA	7 11.	-	4440		. Jt	JNOCA	AL Pro	ject M	anage	r: —	1 100	3000					
City: SAN Jose	State:	CA	···	Zip Code:	95/10	, ,	AFE#:						<u> </u>]	- ,			
Telephone:(40%) #4	11-7500		-AX #:(488441	1539		Site #, 0	Tity S	talo	570	(D		5 44	10.	- 1			eu ti
Report To: Andre																		- 호
Turnaround 2 10 W	ork Days 🛛 5 V	Vork Days	□ 3 V	Vork Davs	,		QC Dat		Level	D (Stan	dard)	Lev	rel C		_evel E	3	1 Level A 2433 **	点蓋
Time: ☐ 2 Wo	ork Days 🗀 1 V	Vork Day	Q 2-8	3 Hours			nking V iste Wa		1			Analy	/ses Re	equeste	ed 💆	<u> 101c</u>	74.22	. ==
CODE: Misc.	Detect. 🖵 Eval.	Remed	. 🖸 De	mol. 🗆 Cl			ner A. a		66/									
Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont,	Cont. Type	Labora Samp	atory		8×0)		//	//		//	//	//		Comments	7
1. INC 12	9196 12:00	AIR	1	BAG	(Z.			$\overline{}$	$\overline{}$	$\overline{}$	/		\leftarrow	<u> </u>	Oomments	<u> </u>
2.		1111-3-		0710						 -	 	 -	-	-				oratc —
3.				· · · · · · · · · · · · · · · · · · ·					1	 	 	 -	 			<u> </u>		-da da d
4.			_			-	-	ļ	├		-	ļ		<u> </u>		<u> </u>	· · · · · · · · · · · · · · · · · · ·	_ ; _ ;
5.	•					- 3-4	 	 -	-			<u> </u>	 -	<u> </u>	<u> </u>	<u> </u>		
6.	-			-		77	<u> </u>		-		ļ	<u> </u>	ļ	-				- ^-
7.								<u> </u>	 	 	 	 	<u> </u>				··	_
8.			•				 	 	-			<u> </u>	ļ					_
9.									ļ <u>.</u>	 	ļ.							
10.					· · · · · · · · · · · · · · · · · · ·		-		ļ	<u> </u>	,	 	-	ļ				
					<u> </u>		<u></u>			<u> </u>	L	<u> </u>	L					
Relinquished By:	Ion Waterpa	ingl	Date:	12/9/96	Time: /4:	30	Rece	ived E	3v: 1) ()	Oas	con	Di	ate: 12	1010	/Jime	: 14:30	Lab(
Relinquished By: 🔣	O. alareo	, ا		12/9/96			l l		3y: ₅<	11. F	211	LA	0				:4:10	Mhite -
Relinguished By:	SLANIA	det	Date:	abb.	Time:			t -		J-	1)) 		15	. A . A (1	17:07	7 >
Vere Samples Receive	d in Good Condit	on? □ Yes	o No	7 // 79 Sar	noles on I	ce?	□ Yes I	D No	Meth	odbt!	Shinma	ent	10	ale. 17	<u> </u>			l
To be completed upon 1) Were the analys 2) Was the report in Approved by: 1. A	receipt of report: ses requested on ssued within the	the Chain	of Cust	tody report	ed? XYe	es 🗆 N	No If no	o, wha	it analy	/ses a	re still	neede	d?					

ATTACHMENT C FIELD DATA SHEETS

SITE INFORMATION FORM		
<u>Identification</u>	Project Type	,
Project # 310 058 5 A	1st Time Visit	Client P.O.C.: Tila Daily
Station #5760	Quarterly	Date of Request 10/10/16
Site Address:Blvd.	1st 2nd 3rd 4th	Ideal field date(s): 10 /12
Sinterenza 1	Monthly ATTIVED = 810	
County: Alamecla	Semi-Monthly TED=9	Check Appropriate Category
Project Manager: ADL	Monthly Semi-Monthly Weekly DEPAILED=9.	Budget Hrs.
Requestor: Jessica N.	One time event	Actual Hrs. (3)
Client: Unocal	Other:	Mob de Mob
Field Tasks: For General Desc	ription	
circle one: Priority: 1. (emergency, must be done	within 24 hrs); 2. (next visit); 3.	(when available)
Mark Gubina		
POST Attached: (1) Fermi	13 (3) 1150	sights Prop 65 & phone and act
- REPLACE CARPON	DRUM (DAVI	islanc o storage recens)
- LAPÉL ALL DIZ	UMS /CONTAINERS	
AUDIT (REW)	U WALLS TOA VAM	P. MMI PETHICIES
VROUND 10 am	just in cuse.	May woul to
replace carbon		
Comments, remarks, etc. from Field S	Staff (include problems encountere	ed and out-of-scope work)
Changes OUT Dring	ry Gron Drum	on Gus), more George
Man Hee pringery on New Divin with TOD U	ID IHE NEW DIGIT I DIET FOY DIE GODKI	THE DECONDARY, FILLED X LISTEMS OFF LIDINGYRIA
XXTEMS OFF ON DEDIVITY	TE UNTIL 1915, CONTO	ines of permits in long
DICKED UP All TOSH II	BiDE (OMPOUND) LOU	SELED ALL DIVING LOUDING
Samples taken Samples not re	quired 🔲 Soil Vapor 🔲 Ground	dwater X2 SPENT Carbon
☐ Weekly ☐ Semi-Monthly ☐	Monthly Quarterly Semi	-Annual Drums Inside amount
PACIIFIC ENVIRONMENTAL GROUP, I	Completed by:	Date: 10/13/96
TO ELTY INCHIVIENTAL GROUP, I	Checked by:	(

SITE INFORMATION FORM		
<u>Identification</u>	Project Type	
Project # 310-053.54/310-127.	SA 🔲 1st Time Visit	Client P.O.C .: Tima Berry
Station # $\frac{5760}{5367}$	Quarterly	Date of Request 926/96
Site Address:	1st 2nd 3rd 4th	Ideal field date(s): 10/15/96
5760-376 Lewelling Blad Santal		MARK GUBRUO
5167-500 Buncoff Augsele	Semi-Monthly	Check Appropriate Category
County:	Weekly	
Project Manager: Jac M	One time event	Budget Hrs.
Requestor: TocM		Actual Hrs.
Client: Wocal	Other:	Mob de Mob
Field Tasks: For General Des	cription	·
circle one: Priority: 1. (emergency, must be don	ne within 24 hrs); 2. (next visit); 3. (v	vhen available)
- Please Sched		for Tue 10/15/96
in A.M.	to de CAPPA VISTAS	10. 12. 10/15/10
Uscal will b	e pelforming site sal	et culit of our
work - ned to	make sure of following	<u> : </u>
· Toch has at	fached Handbook.	· Carry 40 hr OSHA CARD.
7 _	Plan B onsite	
- Necessary P	PE is being Woin (
. Prop 65 Sign		
· Emergency pl	une # posted.	
· Compound of	clean	
Andrew Lehane will foll	low up on the above pror	to site voite on 10/15/96.
Comments, remarks, etc. from Field	Staff (include problems encountered	and out-of-scope work)
Samples taken Samples not	required Soil Vapor Ground	water
Weekly Semi-Monthly	Monthly 🔲 Quarterly 🔲 Semi-	Annual
	Completed by:	Date: 10/15/10
PACIIFIC ENVIRONMENTAL GROUP	Checked by:	7

SITE INFORMATION FORM		
Identification	Project Type	
Project # 310-058, 5A	1st Time Visit	Client P.O.C.: TINA BEONY
Station # <u>5760</u>	Quarterly	Date of Request
Site Address: <u>UNOCAL</u> 376 LEWELLING BLVO.	1st 2nd 3rd 4th	Ideal field date(s):
SAN LORENZO	Monthly	
County: ALAMEDA	Semi-Monthly	Check Appropriate Category
Project Manager: Avonov L.	☐ Weekly	Budget Hrs.
Requestor: STEVE C.	One time event	Actual Hrs. 25
Client: UNOCAL	Other:	Mob de Mob
Field Tacker For Constal Descri	intia	
Field Tasks: For General Desci	<u>ription</u>	
Priority: 1. (emergency, must be done	·	
SEMI-MONTHLY: DATA C	OUECTION/SYSTEM OPTIMIE	GWE) ATTON: FILL OUT DATA SHEET
MONTHY! SUE;-FIO X	DEAMORS ERROW INITY NA	10-1, EFFL FOR BAARNED
COMP	LIANCE (MUST DO)	
- INFL	AIR BAG SAMPLE (TO SO	FOUDIA) FOR TPPH-G & BTEX
GWE - TAKE	INFL & EFFLY SAMPLES FOR	R TAPALL & BTEX (TO SERVE IA)
(GUARTERLY: GWE'- TA	RE EFFL WOTER SAMPLE PH, COD, TSS	S (TO SERVOIA) FOR
	IS NON-PRESERVED, PLAST	
QUARTERUH = FEB. MA	IS HUSO4 PRESERVED HY, AUGUST, NOVEMBER	, PLARTIC < COD>)
(REQUEST REVISED 7/2	4/96 by SMN)	
Comments, remarks, etc. from Field St		and out-of-scope work)
•		
	1/ 1/	
Samples taken Samples not req	uired Soil Vapor Groundw	rater
Weekly Semi-Monthly	/ 🔾	
	Completed by:	Date: 10/15/94
PACIIFIC ENVIRONMENTAL GROUP, IN	IC. Checked by:	7

Soil Vapor and Groundwater Extraction System Unocal Service Station 5760 376 Lewelling Boulevard San Lorenzo, California 310-058.5A

Name: M.C.	Date/Time: 10/15/96 8:45
TREATMENT SYSTEM READINGS	
SVE Operational	GWS Operational

TREATMENT SYSTE	M READINGS
SVE Operational	
Upon Arrival?	<i>NO</i>
SVE Blower Hour	المدا
Meter Reading	02316
Electric Meter	
(kw-hrs)	100 EQ
	07089
Total Vacuum from	1.
Wells (" of H20)	10
SVE Total Air Flow	
To Carbon (cfm)	14
` ′	017
Manual Air Dilution	
Valve Position?	
Post-Dilution SVE Air	<u> </u>
Flow To Carbon (cfm)	
Bag Filter Pressure	7
(psi). Filt Changed?	23/VES
Was the Oil Changed	
This Month on	カス
Blower?	110
SVE Influent	we / wac
FID Reading (ppm)	7
	40/ 840
SVE Mid	
FID Reading (ppm)	40/40
OVE EW.	, , , , ,
SVE Effluent	/
FID Reading (ppm)	55 / 5G

•	
GWS Operational Upon Arrival?	no
GWS Totalizer (gallons)	0243783
Liquid Carbon #1 Pressure (psi)	2.75
Liquid Carbon #2 Pressure (psi)	1.75
GWS Second Cont. Switch Operational?	YES
GWS Effluent Temperature (F)	61.2
GWS Effluent pH	8.74

* OVIVED @ 8:15 Connected all Hosing on Gws Carbons Change Bac, Filter, activated Both (Gw/SUE) @ 8:45,

* Have To USE 10-1 DITUTION KIT ON FID.

Sample @ 9:15, Departed = 9:3

UNOCAL 76

680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600

□ 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600

© 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

Q 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200

© East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200

U 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800*

Consultant Company:	M. FM	711.6	m.			Project Na	ne: رکت	10 -1	55	. 6	A				_
Address: 2025	DELID	17/	1	440		UNOCAL F	roject M	anager:	Tini	2 %	BETTI	//			1
City: DIN TO	State:	10	, , , , , , , , , , , , , , , , , , ,	Zip Code:	95110	AFE #:				4_/-		<i>7.</i>			
Telephone:	44 7508	3 F	AX #:	4844	17539	Site #, City	State: ¿	576	/ 2) .	501	2/2	VEI	721	0	Client
Report To: 120/6	Makane	Sampler	m	(67)		QC Data:				Level C		Level E	- ~~~	Level A	1 1
Turnaround 10 W	/ork Days □ 5 \ ork Days □ 1 \				ار چا	rinking Wat		/			Request			7	Ę
CODE: 🔾 Misc. 🗘						aste Water	1164	//		/ /	//				
Client Sample I.D.	Date/Time Sampled	Matrix	# of Cont.	Cont. Type	Laboratory Sample #	10		//		//	//	//		Comments	
1. INFL	10/5/96	190	3	/ba	· · · · · · · · · · · · · · · · · · ·	TXI									مِ ا
2. EFFL (SIGPLI	19	3	Va											- Laboratory
3.	′ / /		 \ 												Lat
4. INFL	15/Ale (Dir.		BOS		X								-	Yellow
5.	/			/		1									≺e
6.							_								
7.		<u> </u>													
8.		 -													
9. 10.		-							_ -			<u> </u>	ļ	<u> </u>	_
10.	<i>l</i>			<u> </u>				<u> </u>					<u> </u>		Tato
Relinquished By:	11/1/	V/h	Date	4/14	Mene: 75	Receive	d By:				Date:		Time:		- Laboratory
Relinquished By: _			Date		Time:	Receive	d By:		·		Date:		Time:		White
Relinguished By:			Date:		Time:	Receive	d By Lat);			Date:		Time:		
Were Samples Receive	ed in Good Cond	ition? 🖵 Ye	s 🖸 No	Sa	imples on ice?	Yes 🗆 1	Vo Met	hod of S	hipment					ge of	
To be completed upon 1) Were the analy 2) Was the report	ses requested of	n the Chain	of Cus	tody repor	rted? 🖸 Yes 🗆	No If no, v	vhat ana	lyses are	still ne	eded?					
Was the report Approved by:	TOUGHT THE HIT THE	- Toquested	S	Signature:	162 (140	ii no, what	was ine Com	ıurnarol ıpanv:	una time	97				ate:	•

FIELD SERVICES / O&M REQUEST Work Order # 5653

SITE INFORMATION FORM		
Identification	Project Type	
Project # 310-058.5A	1st Time Visit	PACIFIC ENVIRONMENTAL GROUP, INC. Client P.O.C.: 1704 Belon4
Station # <u>5760</u>	Quarterly	Date of Request
Site Address: <u>UNOCAL</u> 376 LEWELLING BLVO.	1st 2nd 3rd 4th	Ideal field date(s):
SAN LORENZO	Monthly	
County: ALAMEDA	Semi-Monthly	Check Appropriate Category
Project Manager: ANDROW L.	Weekly	Budget Hrs.
Requestor: STEVE C.	One time event	Actual Hrs. 2
Client: UNOCAL	Other:	Mob de Mob 1,5
Field Tasks: For General Desc	ription	
circle one:	within 24 hrs); 2. (next visit); 3. (w	h
	1 (4v= et	SWE)
SEMI-MONTHY: DATA	COLLECTION/SUSTEM OPTIMIZE	ATTON: FILL OUT DATA SHEET
MONTANY: SUE;-FIO	REPONES FROM INFL, M.	D-1, EFFL FOR BAAGNED
COME	LIANCE (MUST DO)	
		BUDIA) FOR TPPH-G & BTE,
- PERF	ORM REGULAR SEMIMONTA	TPPH-6 & BTEX (TO SERVE in
BURRIERLY: GWE'- TH	HE EFFL WOTER SAMPLE	((TI SERVOIA) E.P.
	PH, COD, TSS	
(TOTAL SULPANDED SOLIM	IS NON-PRESERVED, PLAST	V /TCS)
(CHEM. OXYGEN DEMAND	15 H2504 PRESERVED, 44, AUGUST, NOVEMBER	PLASTIC (COD)
QUARTERUN = FEB, MI	44, AUGUST, NOVEMBER	
(REBUEST REVISED 7/		
Comments, remarks, etc. from Field S	Staff (include problems encountered a	and out-of-scope work)
Med waring light k	Silb-for puncl	
#5 ON DICK 126 P	- • - • • • • • • • • • • • • • • • • •	
120 PS	<i>US</i>	
	quired Soil Vapor Groundwa Monthly Quarterly Semi-Ai	
1	Completed by:	Date: 1!-11-9%
PACIIFIC ENVIRONMENTAL GROUP, IN	NC. Checked by:	

White Copy - Originator

Soil Vapor and Groundwater Extraction System Unocal Service Station 5760 376 Lewelling Boulevard San Lorenzo, California 310-058.5A

Name: Don Latenpage

Date/Time: 11/11/96 12:45

TREATMENT SYSTEM READINGS

	IN NEADINGS
SVE Operational	
Upon Arrival?	yes
SVE Blower Hour	
Meter Reading	02969
Electric Meter	
(kw-hrs)	08377
Total Vacuum from	
Wells (" of H20)	j2"
SVE Total Air Flow	
To Carbon (cfm)	, <i>10</i> "
Manual Air Dilution	
Valve Position?	J > 0
Post-Dilution SVE Air	
Flow To Carbon (cfm)	D
Bag Filter Pressure	
(psi). Filt Changed?	eypsi/ya
Was the Oil Changed	
This Month on	Ro
Blower?	
SVE Influent	woc / WC
FID Reading (ppm)	woc / wc / /2
SVE Mid	10
FID Reading (ppm)	10 / 12
SVE Effluent	. 0
FID Reading (ppm)	10 / 12

Blqd 3 / BK17

GWS Operational	
Upon Arrival?	Lyles .
GWS Totalizer	
(gallons)	c29827/
Liquid Carbon #1	,
Pressure (psi)	4 psi
Liquid Carbon #2	
Pressure (psi)	2 3psi
GWS Second Cont.	
Switch Operational?	Gis
GWS Effluent	
Temperature (F)	71.6° F
GWS Effluent	
pH 	7.5504

armed 12:45 left 2:30

UNOCAL 76

Approved by:

★ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600
 □ 819 Striker Ave., Sulte 8 • Sacramento, CA 95834 • (916) 921-9600
 □ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

Signature:

☐ 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200
 ☐ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200
 ☐ 15055 S.W. Sequpia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company	PAC, EN	v Gra	$\sim p$, \perp	ne.		ı	Project	Name	: 3	310	_ps	8.0	5 A		-		
Address: 2025	5 GATEW	34 Pl.		++440)	ļ	JNOCA	L Proj	ect M	anage	r: 7	ING	C	ert st			
City: SAN JD2	e State:	CA		Zip Code:	9511D	1	AFE#:							/		\.	
Telephone:(408)4に	11-7500		FAX #:	408 44	1-7539		Site #, C	ity. St	late:	57	60		SAL	Low	—. どさん! ツ	5 C F	<u> </u>
Report To: Andrea							QC Data								Level E	······	
Turnaround \$\frac{10}{10}\$\langle	Work Days 🚨 5 ₪ /ork Days 🗀 1 ₪	Vork Day: Vork Day	s 🗀 3\ 🗘 2-4	Work Days 8 Hours	<u></u>	Dri	nking W	/ater			ualu)			equest		, ,	_evel A
Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Labora Samp		188	ter	"/	//	//	//	//	//	//	Co	omments
	11196 17:00	420	3	VOA							ĺ					ſ 	
2. Infl	11196 13:00	H20	_3	UOD					<u> </u>	1	1	<u> </u>					
3.				ļ. <u>.</u>		_											
4.																	
5. 6.	<u> </u>										<u> </u>						
7.			·	<u> </u>	ļ <u> </u>		<u> </u>			ļ	ļ	ļ	<u> </u>				
8.					<u> </u>		-		 	ļ <u>.</u>					 		
9.	<u> </u>			<u> </u>						ļ <u>.</u>	ļ			_			
10.										ļ	<u> </u>	ļ					
		<u> </u>		<u> </u>					<u> </u>				<u> </u>	<u> </u>			
Relinquished By:	DonWaterpa	<u>س</u> ې2	Date	1/1/16	Time: / (ov	Rece	ved B	y:				D	ate:		Time:	
Relinquished By:			Date:	·	Time:		Recei	ived B	y:				D	ate:		Time:	
Relinguished By:			Date:		Time:		Recei	ved B	y Lab	:				ate:		Time:	
Vere Samples Receive	ed in Good Condit	lion? 🗀 Ye	s 🗀 No	Sa	mples on I	ce?	🗓 Yes 🕻) No	Met	nod of S	Shipme	ent				Page	of
To be completed upor 1) Were the analy 2) Was the report	ses requested on	the Chair	n of Cus	tody repor	led? (1) Ye	s⊡ No.l	No If no	, wha	t anal	yses a	re still	neede	d?				

Companie

UNOCAL 76

X 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600

☐ 819 Striker Ave., Sulte 8 • Sacramento, CA 95834 • (916) 921-9600

U 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

니 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200

U East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200 ° ...

☐ 15055 S.W. Sequoja Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800 ☐

Consultant Company:	PAC. ENJ	. Gro	·-0	17a.c		Project	Name	: 21	10-1	DS 8		<u>'</u>					Ť
Address: 2025	CATEL	AV F	?(.	AUUO		UNOC											-
City: SAN Jose	State:	CA	1	Zip Code:	95110	AFE #:			300	<u>'</u>	710.	۲ L	ser-	<u>/</u>		,	\dashv
Telephone:(408) 4								tate:	576	, D	5	AN	Lore	113.E)	,EA .		Client
Report To: Avidre	Lahane	Sample	$r: D_{\infty}$	لمامطم	youngh	QC Da	la: 🔯 l	Level I	D (Stand	lard)	□Lev	el C		l evel F	3 []	Level A	1 .
Time: 2 Wo	ork Days	Vork Day Vork Day	s □ 3 V □ 2-8	Vork Days 3 Hours	י ם ו	Orinking '	Water						equest				Ţ Ę
CODE: 🗓 Misc. 🗓 [Delect. 🗀 Eval.	🛭 Reme	d. 🚨 De	emol. 🗀 C	losure 🖄 (Other ∆ (KV Y									
Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laborato Sample	ry #	ater Rivia			//	//	//	//			Comments	
1. INF(II)	1196 13:00	AIR	1	BAG	<u> </u>		1	ĺ						$\overline{}$			- }
2				<u> </u>					1						-		Ocrat
3.														 			- Laboratory
4.													'''				ð
5.																	Yellow
6.								1									
7.																	7
8				-													1
9.								1									1
10.															-		atory
Relinquished By:	1. 1.	=1		11). (a)		<u> </u>	· · · · · · · · · · · · · · · · · · ·					1					- Laboratory
rrelinduished By:) to local commen		Date:	11111146	Time: (5:0)	Rec	eived E	3у:				<u> </u> D	ate:		Time:		- <u>`</u>
Relinquished By:	· · · · · · · · · · · · · · · · · · ·		Date:		Time:	Rec	eived E	Ву:				D	ale:		Time:		White
Relinquished By:			Date:		Time:	Rec	eived E	Bγ Lab	:				ate:		Time:		
Were Samples Receive	d in Good Condi	tion? 🗀 Y	es 🗆 No	Sa	mples on Ice	? 🗆 Yes	C) No	Meth	nod of S	Shipme	ent			····-		of	-
To be completed upon 1) Were the analys 2) Was the report i	ses requested on	the Chai	n of Cus d turnare	lody repor	ted? Li Yesi	□ No If r	io, wha	it anal	yses ar	e still	neede	d?					7
Approved hy		•	9	ianaturo		,		Com		GITO (II					Dal		ĺ

· -

∭ 020 93193i

FIELD SERVICES / O&M REQUEST

Nork Order # 5653

SITE INFORMATION FORM		
<u>Identification</u>	Project Type	
Project # 310-058, 5A	1st Time Visit	Client P.O.C.: TINA BERNY
Station # <u>5760</u>	Quarterly	Date of Request
Site Address: <u>UNOCAL</u> 376 LEWELLING BLVO.	1st 2nd 3rd 4th	Ideal field date(s):
SAN LORENZO	Monthly .	
County: ALAMEDA	Semi-Monthly	Check Appropriate Category
Project Manager: ANDROW L.	☐ Weekły	Budget Hrs.
Requestor: STEVE C.	One time event	Actual Hrs.
Client: UNOCAL	Other:	Mob de Mob
Field Tasks: For General Desc	ription	
MONTMY: SUE;-FIO A COMP - INFL	CERDINGS FROM INFL, M. LIANCE (MUST DO) AIR BELL SAMPLE (TO SE	
JOURNAL ONE - JA	PLI EFFL WOTER SAMPLE PHI, COD, TSS	S (TO SEQUELA) REIE
TOTAL SUSPENDED SOLIDS	IS NON-PRESERVED, PLAST	76 (TSS)
QUACTERLY = FEB, MA	44, AUGUST, NOVEMBER	PLAZITO CODS
(REQUEST REVISED 7/2	24/96 64 SMN)	
Comments, remarks, etc. from Field S Richample Nova 3-1045 P16 1 200 ml H250 y P16 1 500 ml NP	taff (include problems encountered a GW2 offline of for STEX)	35 [B0 - j:00
Samples taken Samples not rec	quired Soil Vapor Groundwa	ater
Weekly Semi-Monthly	Monthly Quarterly 🔲 Semi-Ar	nnual
PACIIFIC ENVIRONMENTAL GROUP, IN	Completed by: Jon W	Date: 1//27/91

Soil Vapor and Groundwater Extraction System Unocal Service Station 5760 376 Lewelling Boulevard San Lorenzo, California 310-058.5A

Name: Do Waterpary

Date/Time: 11/27/96 11:30

TREATMENT SYSTEM READINGS

TREATMENT SYSTE	M READINGS
SVE Operational Upon Arrival?	ND *
SVE Blower Hour Meter Reading	03303.15
	0 500 3.10
Electric Meter	50111
(kw-hrs)	09111
Total Vacuum from	/
Wells (" of H20)	26" 420
SVE Total Air Flow	2041
To Carbon (cfm)	,30"Hzo
Manual Air Dilution	
Valve Position?	Ciosel
Post-Dilution SVE Air	2 1 1 2
Flow To Carbon (cfm)	26" 420
Bag Filter Pressure	70/2 6/2
(psi). Filt Changed?	'Jes
Was the Oil Changed	
This Month on	NO
Blower? SVE Influent	
FID Reading (ppm)	
	16/5
SVE Mid	101 11
FID Reading (ppm)	18/6
SVE Effluent	0/0
FID Reading (ppm)	18/7

KD full of i	vota - pr	ussule in	
lille to his	gh-pring	Kintolinory	go on:
Prairie / KD	ReStorler	System	

5 Kgrit FID - 4 Pz~ 3100585A10&MFORM.XLS

GWS Operational Upon Arrival?	ges
GWS Totalizer (gallons)	0331768
Liquid Carbon #1 Pressure (psi)	3 8 151
Liquid Carbon #2 Pressure (psi)	3 4 \$ psi
GWS Second Cont. Switch Operational?	ye
GWS Effluent Temperature (F)	No meter
GWS Effluent pH	Nometer

Filter In on arrival 70 PSI

Out! " 2 PSI

Changel filter- Neelly plugged

in with some kind ob

Est Biological Gunk-Cleaned

Strainer.

Filter pressure on deporture

II 26 PSI

Out = 2 PSI

Effl. Somples taken. TopH-6 BTEX, (00, TSS, July 24, 1998

UNOCAL 76

Liy 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600
Li 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600
Li 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

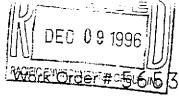
U 18939 120th Ave., N.E., Suite 101 • botten, WA 98011 • (200) 401-5200

© East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200

© 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company:	Par En	6001	4.	0.			Project	Name:	3/	0-1)(K.	CA						
Address: 7075	GATEUA	C1/04	10 =	defect	<u>, </u>		JNOCA							<u> </u>				
Address: 2025 City: Squidase	State:	(4		Zio Code:	45 10	10	AFE #:	•			1.7		2007					
Telephone: (408) 44	117500		FAX #9	08 44/	753		Site #, C	City St	ate: <	71.0		<u></u>	<u>E</u> n	مدمعہ ت				<u>i</u>
Report To: Andrew					· · ·	 -	DC Date							•	حصرا Level E	<u> </u>	Level A	1 .
Turnaround 🔉 10 W					Ĭ		nking V		ever	r (Siano				equest		·	Level A	<u>}</u>
	ork Days 🚨 1 W						icto Mic	tor 4	KY)		//	Allaly	7	squest	eu	/ ///		
CODE: 🗆 Misc. 🗅 I	Detect. 🗓 Eval.	A Reme	d. 🗀 De	emol. 🗖 Cl	osure	☐ O	ner	10	XX	13								
Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	1	oratory imple #	/\tag{\tag{\tag{\tag{\tag{\tag{\tag{	PH COL									Comment	s
1. EFF	11/27/11/11/00	420	3	VOIA			X	ĺ	<u> </u>	<u> </u>		ĺ						7
2. EFF1	1		1	2017,504			·	X										
3. ECH	V V	\downarrow		500,512					>									
4.																		
5.																		
6.							_											
7.							<u> </u>	ļ <u>.</u>										
8.							<u> </u>											
9.					ļ. 		-	ļ							ļ			
10.			· ·	<u> </u>			ļ											}
Relinquished By: _	Im walny		Date	11/27/16	Time:	17:30	Rec	eived E	Зу:					ate:		Time		
Relinquished By:			Date	•	Time:		Rec	eived E	Ву:		. ,			ate:		Time	:	
Relinguished By:			Date	<u>.</u>	Time:		Rec	eived E	By Lab:	·			_	Date:		Time	:	
Were Samples Receive	ed in Good Condi	tion? 🗆 Y	es 🔾 No	Sa	mples	on Ice?	☐ Yes	IJΝο	Meth	nod of s	Shipm	ent					ge of	
To be completed upor 1) Were the analy 2) Was the report	ses requested or	the Chai	n of Cus	stody repor	rted? 0 ? ⊔ Ye	J Yes ☐ s ∐ No	No lfr If no, w	no, wha	at analy	yses a lurnard	re still	neede	ed?					
Approved by:			9	Signature:		<u>-</u>			Com	pany:							Date:	

FIELD SERVICES / O&M REQUEST



SITE INFORMATION FORM		
Identification	<u>Project Type</u>	
Project # 310-058.5A	1st Time Visit	Client P.O.C.: TINA BEAULY
Station # <u>5760</u>	Quarterly	Date of Request
Site Address: <u>UNOCAL</u> 376 LEWELLING BLVO.	1st 2nd 3rd 4th	Ideal field date(s):
SAN LORENZO	Monthly	-
County: ALAMEDA	Semi-Monthly	Check Appropriate Category
Project Manager: ANDREW L	☐ Weekly	
Requestor: STEVE C.	One time event	Budget Hrs. 2.5 Actual Hrs. 2.5
Client UNGCAL	Other:	Mob de Mob 1.5
Field Tasks: For General Descr	intion	
MONTPLY: SUE ;-FIO RE COMP. - INFL GWE;-TAKE PERFORM FUNCTORY: GWE;-TAGE (TOTAL SUSPENDED SOLIDS) (CHEM. OXYGEN DEMAND RUMATITUM = FEE, MA (REBUEST PEVISED 7/2)	PERDINGS FROM INFL, MILLIANICE (MUST DO) AIR BAG SAMPLE (TO SE INFL & EFFLY SAMPLES FOR PRM REDULAR SEMIMONTH LE EFFL WOTER SAMPLES PHI, COD, TSS IS NON-PRESERVED, PLASTIC 15 H2504 PRESERVED, 4, AUGUST, NOVEMBER 4/96 by SMIN)	ATION: FILL OUT DATA SHEET D-1, EFFL FOR BAASMED BUOIA) FOR TPPH-G & BTEX TPPH-G & BTEX (TO SEGUCIA) ULL TASKLE (TO SEGUCIA) FOR LLTSS)) PLACTIC (COD)
Greated & tiphtohad ber Claryed by filter 2-55 gallon carbon	the interpolation of the land	e Clomps & Clarket fitting
PACIIFIC ENVIRONMENTAL GROUP, INC	Completed by: <u>lon Wat</u> Checked by:	inpuy 1 Date: 12/9/9/6

Soil Vapor and Groundwater Extraction System Unocal Service Station 5760 376 Lewelling Boulevard San Lorenzo, California 310-058.5A

Name: Donly alen Augh

Date/Time: 12/9/96 11:00

TREATMENT	SYSTEM	READINGS
11/541141541		UEWDII/103

TREATMENT STOLE	W READINGS
SVE Operational Upon Arrival?	ys
SVE Blower Hour Meter Reading	03590,26
Eiectric Meter (kw-hrs)	09670
Total Vacuum from Wells (* of H20)	28"420
SVE Total Air Flow To Carbon (cfm)	.25'420
Manual Air Dilution Valve Position?	closed
Post-Dilution SVE Air Flow To Carbon (cfm)	4" Hid
Bag Filter Pressure (psi). Filt Changed?	(:018) / Kg(5)
Was the Oil Changed This Month on Blower?	Jes .
SVE Influent FID Reading (ppm)	4/5
SVE Mid FID Reading (ppm)	4/8
SVE Effluent FID Reading (ppm)	4/8

Bkgrd	4/4
NE INFlore Orlation	4/4.5

GWS Operational	,
Upon Arrival?	ys .
GWS Totalizer	
(gallons)	0345737
Liquid Carbon #1	
Pressure (psi)	5 ps i
Liquid Carbon #2	
Pressure (psi)	2 psi
GWS Second Cont.	1461.0
Switch Operational?	yes
GWS Effluent	(1) 700
Temperature (F)	64.7°F
GWS Effluent	
p∺	6.92 pH

Filter present to 20 psil 8/5 out 8psil 6 ps

UNOCAL 76

□ 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200
 □ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200

☐ 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company:	Vacific E	vu. G	1-06-1	ILC.		F	roject N	lame:		310	- 05	8.5	SA			***		-
Address: 2025	GATENA	y Pl		# 441	0	L	INOCAL	- Proje	ect Ma	nager	: -7	INA	17	0 mc+a			·	
City: SAN JOSE	State:	CA		Zip Code:	95110	9 A	FE #:					<u> </u>	دے					
Address: 2025 City: SAN JOSE Telephone: (408) 44	11-7500		FAX	108/44/	-7539	? s	ite#, Ci	ty, Sta	ale:	57	60		SIN	101	· / (34 / 19		CA	
Report To: Andrea	v Lehme	Sampler	: Dow	Vater	acrish	į.	C Data								Level F	•	Level	
Turnaround 25/10 W	/ork Days 🗀 5 V	Vork Days	; Шз∨	Vork Days			nking W		070.2	· (Otalic				equest			- Level	Α
	ork Days 📮 1 V						ste Wat		11+	7	7 ,	/ /	7	guesi	<u>eu </u>		//	•
CODE: 🗆 Misc. 🗓 I	Detect. 🚨 Eval.	Reme	d. 🖵 De	emol. 🛄 Cl	losure	☐ Oth	er	/ 4										
Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type		oratory mple #	166	1,2						//			Commi	ents
1. INF/ 12	19196 11:30	HZD	3	YDA			X	ĺ							T			
2. EFF1 12	19/96 1/30	Heo	3	VIA			X								 	 		
3.												1		 	1			
4.														1	 			
5.														1	 			
6.											ļ		 	 	 	 		
7.															 		· »-	
8.																 		
9.													 	 	 	<u></u>	 -	
10.												 -		 		 		
													1	<u>.l.</u>	1	<u> </u>	<u></u>	
Relinquished By: $\underline{\mathfrak{l}}$	Ion Watera	rugh	Date:	12/4/46	Time:	14:30	Recei	ved By	Y:				D	ale:		Time	:	
Relinquished By:			Date:		Time:		Recei	ved By	y:				D	ate:		Time	•	
Relinguished By:			Date:		Time:		Recei	ved By	<u>/ La</u> b:					ate:		Time		
Were Samples Receive			s 🔾 No	Sa	imples c	on Ice?	⊔ Yes C	No	Meth	od of S	Shipmo	ent					ge of	
To be completed upon 1) Were the analy 2) Was the report	ses requested on	the Chair	n of Cus I turnard	tody repor	ted? 🗓 ? 🗓 Yes	Yes⊔ N c⊔ No⊓	lo If no. f no, wh	, what at was	analy	rses ar	re still	neede	d?					
Approved by:			S	ionaluro:			,		Come		M						lala:	

UNOCAL 76

№ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600
 № 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600
 № 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600

☐ 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200

☐ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200

☐ 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company: Pacific Env. Group, Inc. Address: 2025 GATEWAY Pl. H440						Project Name: 3/0 - 058.54					*			
Address: 2025 GATEWAY PI, 1440					UNOCAL Project Manager: TINA Borny									
city: SAN Jose	State:	CA		Zip Code:	95110	AFE#:		· · · ·		,, <u></u> <u></u>			 	
Telephone: (408) \$41-7500 FAX #: (408)441-7539					Site #, City, State: 5760 SAN Leansho, CA				Client					
Report To: Andrea	y Lehane	Sample	:Donl	Datera	ruch							Level B		F 1
Turnaround 10 Work Days 15 Work Days 3 Work Days					QC Data: Level D (Standard) Level C Level B Level A Drinking Water Analyses Requested Waste Water									
CODE: Di Mico Di Dotost Di Fuel Ar Domed Di Domed Di Olevania (1) Olevania														
Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laborato Sample	ry /s	140)		//		//		Comme	ents
1. INCL 12	9196 12:00	AIR	1	BAG		×			1					
3.									-		_			- Laboratory
4.								- - -						
5.									_		 		-	Yellow
6.								•				-		
7.														
8.														
9.														
10.														boratory
Relinquished By:	Don I better		Date	12 419 /.	Time: /4/3/	Bass	ived By				Data		T:	
i e	JUK (Jewa)	compt.									Date:		Time:	a
Relinquished By:			Date		Time:	Rece	ived By	•	-		Date:	 . ·	Time:	White
Relinguished By:			Date	<u>.</u>	Time:	Rece	ived By	Lab:			Date:		Time:	
Were Samples Received in Good Condition? Tyes No Samples on Ice? Tyes No Method of Shipment Page of						_								
To be completed upon 1) Were the analy 2) Was the report	ses requested or	n the Cha	in of Cus	stody repor	ted? UYes ? UYesUN	⊔Nolfno olfno,w	o, what	analyses the turna	are still	needed? me?				
Approved by:		•		Signature:		,		Company					Date	

FIELD SERVICES / O&M REQUEST Work Order # 5653

SITE INFORMATION FORM		
Identification	Project Type	
Project # 310-058, 5/4	1st Time Visit	Client B.O.S. TON IA REPORT
Station # 5760	Quarterly	Client P.O.C.: TINA BEEN
Site Address:	1st 2nd 3rd 4th	Date of Request
376 LEWELLING BLVO.	Monthly	Ideal field date(s):
SAN LORENZO		
County: ALANEDA	Semi-Monthly	Check Appropriate Category
Project Manager: ANDREW L.	Weekly	Budget Hrs.
Requestor: STEVE C.	One time event	Actual Hrs. 1.5 (3,5)
Client UNGCAL	Other:	Mob de Mob 2
MONTHY: SUE; FIO E CAMP. - INFL GWE; - TAKE PERFORM GUARTETOUY: GWE; - TAK CHEM. OXYGEN DEMAND QUARTETOUY = FEE, MA (REBUEST PEVISED 7/2)	CERDINGS FROM INFL, MI LIANCE (MUST DO) AIR BAG SAMPLE (TO SE INFL & ETPLY SAMPLES FOR PRIM REDULES SEMIMONTA PH, COD, TSS IS NON-PRESERVED, PLASTI 15 HZSOA PRESERVED, 4, AUGUST, NOWEMBER 4/96 GYSMN)	GWE) ATTON: FILL OUT DATA SHE D-1, EPPL FOR BAASMED BUOIA) FOR TPPH-G & BT C TPPH-G & BTEX (TO SERVE O THE STAND (TO SERVOIA) TOR
Jener our sollen au	ired Soil Vapor Groundwar	er
	Completed by Amb day	Date: 12/24/86
ACIIFIC ENVIRONMENTAL GROUP, INC	Checked by:	Dest: 10104110



Soil Vapor and Groundwater Extraction System Unocal Service Station 5760 376 Lewelling Boulevard San Lorenzo, California 310-058.5A

Name: Don Waterpargl

Date/Time: 12/24/96 10:30 -12:00

TREATMENT	SYSTEM	READINGS

CVE	LIN IXEADINGS	
SVE Operational	· · · · · · · · · · · · · · · · · · ·	GWS
Upon Arrival?	16	Upon
	1	Opon
SVE Blower Hour		
Meter Reading	A 20 1/6 0 /	GWS
	0394880	(gallor
Electric Meter		_
(kw-hrs)	1	Liquid
(****5)	10532	Pressi
Total Vacuum from	1	
Wells (" of H20)	5-11/0	Liquid
(01.120)	32"420	Pressu
SVE Total Air Flow		
To Carbon (cfm)	1	GWS (
To Carbon (Cim)	.25" H20	Switch
Manual Air Dilution		
		GWS E
Valve Position?	Closed	Tempe
Post-Dilution SVE Air		GWS E
Flow To Carbon (cfm)	2.25 4/20	pH
	* 123 1120	P''
Bag Filter Pressure		
(psi). Filt Changed?	55001/100	
	55 psi/yes-	10051
Was the Oil Changed		,
This Month on	. (0	
Blower?	ND	
SVE Influent	we woe	Brand-5
FID Reading (ppm)	/	Dry -
(ppin)	5/6	
SVE Mid	0 1 0	
	1/2/	
FID Reading (ppm)	6 / 7.5	
SVE Effluent		
	/ / ¬	
FID Reading (ppm)	6/7	

GWS Operational Upon Arrival?	* NO HIGH PIESSOIL
GWS Totalizer	1 72 EAB! 1188
(gallons)	0378260
Liquid Carbon #1	,
Pressure (psi)	10,051
Liquid Carbon #2	<u> </u>
Pressure (psi)	3.50si
GWS Second Cont.	
Switch Operational?	ys
GWS Effluent	
Temperature (F)	52.3° F
GWS Effluent	
p∺	7.08 p4

* Changed Filter System on again

Brg-d-515

Prefilter vacuum - 26" Hzo Post Gilter vacuum - 18" H20 Well vapor field value open 10090 Recivalation value open 2 25-30% 3100585A\O&MFORM.XLS

ATTACHMENT D BIORECLAMATION ASSESSMENT

BIORECLAMATION ASSESSMENT

The remedial approach for this site consists of three primary components: (1) groundwater monitoring, (2) bulk hydrocarbon mass removal using soil vapor extraction (SVE), and (3) insitu bioreclamation. This attachment discusses the role of bioreclamation in the remedial effort at this site.

Bioreclamation is based on the principal that indigenous bacteria and fungi within the saturated and vadose zones will adapt to the presence of hydrocarbons introduced into their environment, and then use the hydrocarbons as an energy source. In this process, the microorganisms degrade the hydrocarbons by transforming them to end products such as water, carbon dioxide, and biomass. Numerous studies over the past two decades have demonstrated that indicate nearly all petroleum hydrocarbons are biodegradable (Jamison et al., 1975; Atlas, 1981, and 1984; Young, 1984; Bartha, 1986; Barker et al 1987; Lee, 1988; Chiang et al., 1989; Cozzarellie et al., 1990; Leahy and Colewell, 1990; Wilson et al., 1990; Evans et al., 1991; Edwards and Grbic-Galic, 1992 and 1994; Thierrin et al., 1992; Malone et al., 1993; Davis et al., 1994; Borden et. al., 1994; Weidemeier et al., 1995).

The use of SVE and Bioreclamation was specified to address the entire aqueous-phase hydrocarbon plume, as well as impacted soil. SVE is being used primarily to remove the bulk of hydrocarbon mass beneath the site that would otherwise act as a secondary source. However, the use of SVE also enhances the biodegradation of hydrocarbons by increasing the availability of oxygen, the primary electron receptor in aerobic biodegradation. Studies have shown, via mass balance measurements, that approximately half of the biodegradable volatile hydrocarbons removed from soil during SVE is due to physical stripping, while half of the mass removed is attributed to subsurface biodegradation (Schweizer, 1995).

A preponderance of data show that petroleum hydrocarbons have a high tendency to biodegrade in the subsurface environment. Borden (Borden et al., 1993) states that almost all petroleum hydrocarbons are subject to biodegradation in shallow aerobic groundwater. Additionally, Borden points out that biodegradation of petroleum hydrocarbons also takes place under anaerobic conditions, where nitrate, sulfate, and ferric iron are utilized as electron acceptors. It has been PACIFIC's experience at similar sites that oxygen is generally the limiting factor of biodegradation of total purgeable petroleum hydrocarbons quantified as gasoline (TPPH-g), benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) in the

strated zone. The baseline data for this site also indicates that oxygen is the limiting factor for Bioreclamation.

Concentrations of oxygen and carbon dioxide in soil vapor collected from hydrocarbon-affected areas were typically low for oxygen and high for carbon dioxide, as compared to concentrations observed in ambient air and in soil vapor samples collected from areas not affected by a hydrocarbons. Based on preliminary data, it was stated that oxygen and carbon dioxide in soil vapor samples collected during the SVE test indicated biodegradation was occurring. This observation was based on the carbon dioxide and oxygen levels identified in a soil vapor sample (6.0 percent carbon dioxide, 15 oxygen). Since the time the Remedial Action Plan (RAP) was issued, it was discovered that soil vapor samples collected before the last test day were diluted with ambient air prior to sampling. It is probable that ambient air dilution decreased the true carbon dioxide levels and increased the true oxygen levels contained in extracted soil vapor. Given the circumstances, it is most likely the true concentrations would have strongly indicated biodegradation is occurring.

Baseline dissolved oxygen data indicated the areas of higher dissolved hydrocarbons generally coincided with the areas of lower oxygen concentrations, from which it can be inferred that aerobic microorganisms are utilizing oxygen as the electron acceptor, and degrading the TPPH-g and BTEX compounds present. The addition of the oxygen release compound (ORC) to wells U-6 and U-9 produced a 2 part per million (ppm) increase in dissolved oxygen concentrations in both those wells which has been sustained for nearly a year. The dissolved oxygen concentrations along the leading edge of the plume should be distributed throughout the impacted media via advection and diffusion.

With respect to dissolved petroleum hydrocarbon migration at this site, trends in existing groundwater monitoring data, with respect to time and space, suggest that the long-term rate of hydrocarbon dissolution is equal to the rate of biodegradation, and a quasi-steady state condition is established. In fact, the most recent monitoring data for wells U-6 and U-9 indicated there were no detectable concentrations TPPH-g or BTEX compounds, suggesting that the extent of the dissolved hydrocarbon plume is not only stable, but may be decreasing.

References

Atlas, R.M., "Microbial degradation of pertroleum hydrocarbons - an Environmental Perspective" in *Microbiological Reviews*, vol. 45, no. 1, 1981.

Atlas, R.M., Petroleum Microbiology, Macmillan Publishing Co., 1984.

Barker, J.F., G.C. Patrick, and D. Major, "Natural attenuation of aromatic hydrocarbons in a shallow sand aquifer" in *Ground Water Monitoring Review*, Winter 1987.

- Eartha, R., "Biotechnology of petroleum pollutant biodegradation" in *Microbial Ecology*, vol. 12, 1986.
- Borden, R.C., R.D. Norris, et. al., *In-situ Bioremediation of Groundwater and Geological Material: A Review of Technologies*, Robert S. Kerr Environmental Research Laboratory, July 1993.
- Borden, R.C., C.A. Gomez, and M.T. Becker, "Natural bioremediation of a gasoline spill" in *Hydrocarbon Remediation*, edited by R.E. Hinchee, B.C. Alleman, R.E. Hoeppel, and R.N. Miller, Lewis Publishers, 1994.
- Chiang, C.Y., J.P. Salanitro, E.Y. Chai, J.D. Colthart, and C.L. Klein, "Aerobic biodegradation of benzene, toluene, and xylene in a sandy aquifer data analysis and compouter modelling" in *Ground Water*, vol. 27, no. 6, 1989.
- Cozzarelli, I.M., R.P. Eganhouse, and M.J. Baedecker, "Transformation of monoaromatic hydrocarbons to organic acids in anoxic groundwater environment" in *Environmental Geological Water Science*, vol. 16, 1990.
- Davis, J.W., N.J. Klier, et. al., "Natural biological attenuation of benzene in groundwater beneath a manufacturing facility" in *Ground Water*, vol. 32, no. 2., 1994.
- Edwards, E.A., and D. Grbic-Galic, "Complete mineralization of benzene by aquifer microorganisms under strictly anaerobic conditions" in *Applied Environmental Microbiology*, vol. 58, 1992.
- Edwards, E.A., and D. Grbic-Galic, "Anaerobic degradation of toleune and o-xylene by a methanogenic consortium" in *Applied Environmental Microbiology*, vol. 60, 1994.
- Evans, P.J., D.T. Mang, and L.Y. Young, "Degradation of toluene by a denitrifying bacterium" in *Applied Environmental Microbiology*, vol. 57, 1991.
- Jamison, V.W., R.L. Raymond, and J.O. Hudson Jr., "Biodegradation of high-octane gasoline in groundwater" in *Developments in Industrial Microbiology*, vol. 16, 1975.
- Leahy, J.G., and R.R. Colewell, "Microbial degradation of hydrocarbons in the environment" in *Microbiological Reviews*, vol. 53, no. 3, 1990.
- Lee, M.D., "Biorestoration of aquifers contaminated with organic compounds" in

- Malone, D.R., C.M. Kao, and R.C. Borden, "Dissolution and biorestoration of nonaqueous phase hydrocabons model development and laboratory evaluation" in *Water Resources Research*, vol. 29, no. 7, 1993
- Schweizer, J.W., "The benefits of bioventing" in *Pollution Engineering*, vol. 28, no. 8, 1995.
- Thierrin, J., G.B. Davis, et. al. "Natural degradation rates of BTEX compounds and naphthalene in a sulfate reducing groundwater environment" in *In-Situ Bioremediation Symposium* "92", Niagara-on-the-Lake, Ontario, Canada, September 20-24, 1992.
- Wiedemeier, T.H., J.T. Wilson, and R.N. Miller, "Significance of Anaerobic Processes for the Intrinsic Bioremediation of Fuel Hydrocarbons" in Proceedings of the Petroleum Hydrocabons and Organic Chemicals in Ground Water: Prevention, Detection, and Restoration Conference (NWWA/API), 1995.
- Wilson, B.H., G.B. Smith, and J.F. Rees, "Biotransformation of selected alkylbenzenes and halogenated aliphatic hydrocarbons in methanogenic aquifer material a microcosm study" in *Environmental Science and Technology*, vol. 20, 1986.
- Wilson, B.H., J.T. Wilson, D.H. Kampbell, B.E. Bledsoe, and J.M. Armstrong, "Biotransformation of monoaromatic and chlorinated hydrocarbons at at aviation gasoline spill site" in *Geomicrobiology Journal*, vol. 8, 1990
- Young, L.Y., "Anaerobic degradation of aromatic compounds" in *Microbial Degradation of Aromatic Compounds*, edited by D.R. Gibson, Marcel-ekker, New York, 1984.