FOURTH QUARTER 1996 MONITORING REPORT

UNION PACIFIC MOTOR FREIGHT FACILITY OAKLAND, CALIFORNIA

USPCI/LAIDLAW PROJECT No. 792919-844

PREPARED FOR:

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January 29, 1997

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1.0 Introduction

USPCI, a Laidlaw Company (Laidlaw) prepared this document on behalf of Union Pacific Railroad (UPRR) as part of the groundwater monitoring and reporting program at the Union Pacific Motor Freight (UPMF) facility at 1750 Ferro Street in Oakland, California (Figure 1). The report was prepared in response to an April 29, 1993 Alameda County Department of Environmental Health, Hazardous Materials Division (ACDEH) request for UPRR to begin a quarterly monitoring program at the UPMF facility.

The quarterly monitoring program consists of the collection of fluid-level measurements in the groundwater monitoring wells and an analysis of dissolved contaminants in groundwater. The monitoring program is directed towards an understanding of the groundwater gradient and the changes in the concentration of dissolved petroleum hydrocarbons at the site. Field and analytical data from this program are compiled in this report. This report includes a discussion of the background information about the site, field and analytical results, and conclusions and recommendations.

2.0 BACKGROUND INFORMATION

The following subsections present information about the site history and investigative procedures.

2.1 SITE HISTORY

The site is located on the southeastern portion of the UPRR Oakland trailer-on-flat-car (TOFC) Yard, which is adjacent to the Oakland Inner Harbor or Oakland Estuary (Figures 1 and 2). The area surrounding the site is used for heavy to light commerce. Residential areas are located approximately one-half mile north of the site and across the Oakland Estuary one-half mile south of the site.

Five underground storage tanks (USTs) were removed from the UPMF site between 1987 and 1990. As a result of the tank removal activities, a site assessment was performed in two phases to define the extent of petroleum hydrocarbons in the soil and groundwater (Laidlaw, 1993). All petroleum hydrocarbons found at the site have been identified as either used motor oil or "bunker C." For brevity, the light non-aqueous phase of these hydrocarbons are referred to as "product."

The refueling portion of the TOFC yard, approximately 700 feet northwest and upgradient of the UPMF site, is currently undergoing groundwater remediation for recovery of non-aqueous phase liquid as diesel. (The refueling area is a separate project and is not the subject of this report.) The extent of contamination at the refueling area was defined during previous investigations (Laidlaw, 1993). On the basis of these investigations and subsequent monitoring, petroleum hydrocarbons from the refueling area do not extend to the UPMF facility.

2.2 INVESTIGATIVE PROCEDURES

UPRR has subcontracted Burns and McDonnell Waste Consultants, Inc. to perform a portion of the fieldwork associated with the project. Laidlaw and the UPRR subcontractor followed the standard operating procedures previously supplied to and approved by the ACDEH (Laidlaw, 1994). The quarterly monitoring activities consist of the following:

- Measuring-fluid levels in all of the motor freight facility groundwater monitoring wells;
- Purging and sampling groundwater monitoring wells where product is not observed;
- Analyzing groundwater samples for petroleum hydrocarbons and constituents;
- Removing product from the recovery well (RW) and monitoring the performance of the product skimmer; and
- Determining the local hydraulic gradient based on the groundwater level measurements.

All samples were analyzed for: total petroleum hydrocarbons as diesel (TPH-D) by EPA Method 8015 Modified; total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 8015 Modified; and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020.

Fluid-level measurements are collected from the recovery well RW and monitoring wells OKUS-W5 and OKUS-W6 on a monthly basis. These measurements are collected to assess the temporal variations in the thickness of product. Fluid-level measurements are collected from the remaining monitoring wells on a quarterly basis.

3.0 FIELD INVESTIGATION RESULTS

The following subsections present the findings from activities completed during the monitoring event.

3.1 FLUID-LEVEL MEASUREMENTS

Fluid-levels were measured on November 12, 1996 and are compiled into Table 1. The data were used to produce the groundwater elevation map presented as Figure 3. A decrease in groundwater elevations relative to the previous monitoring events (first, second, and third quarters 1996) was noted in all of the monitoring wells gauged at the site. Since 1995, groundwater elevations have been highest during the first quarter of each year. These elevations typically decrease during the second, third, and fourth quarters.

Monitoring well APL/UP-W1 was not gauged or sampled during the event because stacked container trailers were placed directly upon the well head. Laidlaw personnel did not observe any visible damage to the well. Monitoring well OKUS-W4 was not gauged or sampled because of visible damage to the well head. Abandonment of well OKUS-W4 is pending approval by the ACDEH.

3.2 GROUNDWATER GRADIENT

The groundwater gradient at the site averaged approximately the first per first 45 feet per mile) and the observed groundwater flow direction. The groundwater gradient and flow direction were consistent with gradients and flow directions observed during previous monitoring events. The lack of product observed during the collection of fluid-level measurements in groundwater monitoring wells indicates that product has not migrated downgradient.

3.3 ANALYTICAL RESULTS

Analytical results for all monitoring wells sampled during the fourth quarter 1996 monitoring event were compiled into Table 2. Samples were collected from monitoring wells OKUS-W1, OKUS-W2, OKUS-W3, OKUS-W7, OKUS-W8, and APL/UP-W2.

Monitoring well OKUS-W1 did not contain dissolved BTEX concentrations above the method detection limit (MDL) of 0.50 micrograms per liter ($\mu g/l$). The sample collected from monitoring well OKUS-W2 contained dissolved BTEX. Benzene and toluene were detected in the sample collected from monitoring well OKUS-W3. The sample collected from monitoring wells OKUS-W7 contained only dissolved benzene and the sample from OKUS-W8 contained only dissolved xylenes. The downgradient well APL/UP-W2 contained detectable concentrations of BEX.

Benzene concentrations ranged from below the MDL in OKUS-W1 and OKUS-W8 to 220 μ g/l in OKUS-W3. Toluene ranged from below the MDL in OKUS-W1, OKUS-W7, OKUS-W8, and APL/UP-W2 to 60 μ g/l in OKUS-W3. Ethylbenzene ranged from below the MDL in OKUS-W1, OKUS-W3, OKUS-W7, and OKUS-W8 to 130 μ g/l in OKUS-W2. Xylenes ranged from below the MDL in OKUS-W1, OKUS-W3, and OKUS-W7 to 64 μ g/l in OKUS-W2. Total BTEX concentrations ranged from below the MDL of 0.50 μ g/l (OKUS-W1) to 390 μ g/l (OKUS-W2).

Dissolved TPH-G, indicative of gasoline, was detected in the samples collected from monitoring wells OKUS-W2, OKUS-W3, OKUS-W7, OKUS-W8, and APL/UP-W2. Monitoring well OKUS-W1 did not contain detectable levels of TPH-G contamination. The TPH-G concentrations ranged from below the MDL of 50 μ g/l (OKUS-W1) to 7,400 μ g/l (OKUS-W3).

Dissolved TPH-D concentrations indicating diesel fuel, were detected in the samples collected from all monitoring wells sampled during the during the fourth quarter 1996 monitoring event. TPH-D concentrations ranged from 180 μ g/l (OKUS-W1) to 4,700 μ g/l (OKUS-W3).

Groundwater analytical results for the wells at the site are presented in Table 2. The dissolved BTEX plume in the groundwater is presented in Figure 4. Analytical reports and chain of custody forms are included in Appendix B.

3.4 Non-Aqueous Phase Liquid

Fluid-level measurement data indicated that monitoring wells OKUS-W5 and OKUS-W6 continued to contain "bunker C" type product. An accurate determination of product thicknesses in OKUS-W5 and OKUS-W6 was not possible due to the high viscosity of the product and difficulty in measuring product thickness.

Although no product/water interface was detected in recovery well RW during the fourth quarter sampling event, Laidlaw personnel detected product on the gauging probe indicating the presence of product in the well. Burns and McDonnell field personnel reported an observable product thickness for the month of December. During the fourth quarter of 1996, the product skimmer system recovered approximately 1.5 gallons of product.

Burns and McDonnell personnel were not able to measure the depth to product in monitoring wells OKUS-W5 and OKUS-W6 during September and December 1996 because of the viscosity of the product in the wells.

4.0 CONCLUSIONS

On the basis of the information in the previous sections, Laidlaw concludes that:

- The groundwater flow to the east with an average gradient of 0.0086 foot per foot (45 feet per mile) is consistent with previous monitoring events.
- The dissolved BTEX and TPH concentrations are consistent with historical concentrations in groundwater.
- The product observed in wells OKUS-W5, OKUS-W6, and RW, does not appear to have migrated downgradient.

5.0 REFERENCES

Laidlaw, 1993. "Phase II Site Assessment Report," Union Pacific Railroad, October, 1993.

Laidlaw, 1994. "Fourth Quarter 1993, Monitoring Event," Union Pacific Railroad, May 1994.

TABLE 1 FLUID LEVEL MEASUREMENT DATA UNION PACIFIC RAILROAD OAKLAND MOTOR FREIGHT FACILITY

WELL NO.	ELEV.* TOC	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	WATER ELEV.	CORR'D ELEV.
OKUS-W1	9.17 9.17	08/09/95 11/29/95	N/A N/A	NP NP	8.18 8.78	0.99	0,99 0.39
	9.17	02/27/96	N/A	NP	7.58	1,59	1.59
	9.17 9.17		N/A N/A	NP NP NP	7.80 8.34 8.71	1.37 0.83 0.46	1.37 0.83 0.46
	9.17	11/12/96	N/A				
OKUS-W2	9.71 9.71	08/09/95 11/29/95	N/A N/A	NP NP	9.09 9.69	6.62 0.02	0. 62 0.02
	9.71 9.71	02/27 /96 05/29/96	N/A N/A	NP NP	8.49 8.72	1.22 0.99	1.22 0.99
	9.71 9.71	08/27/96 11/12/96	N/A N/A	NP NP	9.24 9,63	0.47 0.08	0.47 0.08
OKUS-W3	9.80		N/A	NP	9.41	0.89	0.39
	9.80	11/29/95	N/A	NP	9.97	-0.17	-0.17 1.07
	9.80 9.80	05/29/96	N/A N/A	NP NP	8.73 8.94	1,07 0.86	0.86
	08. G 08.G		N/A N/A	NP NP	9.52 9.90	0.28 -0.10	0.28 0.10
OKUS-W4	7.35	and a second of the contract o	N/A	NP	5.10	1.25	1.25
	7.35 N/A	11/29/95 02/27/96	N/A N/A	NP NP	6.70 WELL INACCE	0.65 SSABLE	0.65
	N/A N/A	05/29/96 08/27/96	N/A N/A		WELL DESTRO	and the second second second second	
	N/A	11/12/96	N/A	000000000000000000000000000000000000000	WELL DESTRO	YED	
OKUS-W5	9.25 9.25	08/ 09/ 95 09/07/95	N/A N/A	Trace Trace	9.75 9.56	-0.50 -0.31	-0.50 -0.31
	9.25	10/18/95	9.82	P		-0.01	_0.01
	9.25 9 .25	12/15/95	9.97 9.60	P			
	9.25 9.25		9.58 9.08	P P			
	9.25 9,25		8.99 9.22	P P	 		
	9.25 9 .25		9.06 9.11	P P		 	
	9.25 9,25		9.11 9.44	P P	 		
	9.25	09/16/96	N/A	 P			
	9,25 9.25		9.65 9.87	Р			
OKUS-We	7.02	entransport of the control of the co	5.65	P			
	7.02 7.02		5.98 6.38	P			
	7.02 7.02	arana kanana kanana makalaran ka	6.52 5.47	P P			
	7.02 7.02	01/10/96	5.58 4.70	P P	 	 	
	7.02 7.02	03/25/96	4.72 5.19	P P			
	7.02 7.02	05/29/96	5.02 4.99	P P			
	7.02	07/25/96	5.23	P		_ _	
	7,02 7.02	09/16/96	5.82 N/A	P 	——		
	7.02 7.02		6.50 6.27	P P	 		

TABLE 1 FLUID LEVEL MEASUREMENT DATA UNION PACIFIC RAILROAD OAKLAND MOTOR FREIGHT FACILITY

WELL NO.	ELEV.* TOC	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	WATER ELEV.	CORR'D ELEV.
		*****				1.38	1,38
OKUS-W7	6,91 6,91	06/09/95 11/29/95	N/A N/A	NP NP	5.53 6.09	0.82	0.82
9 68 6 6 6 7 8 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	6.91	02/27/96	N/A N/A	NP	4.98	1.93	1.93
	6.91	05/29/96	N/A	NP	5.08	1.83	1.83
23.23.25.25.25.25.25.25.25.25.25.25.25.25.25.	6.91	08/27/96	N/A	NP	5.68	1.23	1.23
	6.91	11/12/96	N/A	NP	5.99	0.92	0.92
OKUS-W8	6.75	08/09/95	N/A	NP	5.32	1,43	1.43
	6.75	11/29/95	N/A	NP	5.95	0.80	0.80
	6.75	02/27/96	N/A	NP	4.84	1.91	1.91
	6.75	05/29/96	N/A	NP	4.93	1.82	1.82
	6.75	08/27/96	N/A	NP	5.52	1.23	1.23
	6.75	11/12/96	N/A	NP	5.89	0.86	0.86
APL/UP-W1	8,12	08/09/95	N/A	NP	10.01	-1.89	1.89
AFLIUP-WI	9.1∠ 8.12	11/29/95	N/A	NP	10.29	-2.17	-1.05 -2.17
	8.12	02/27/96	N/A	NP	WELL INACCE		
	8.12	05/29/96	N/A	NP	WELL INACCE	Contractor and an expensive contractor of the co	(8,000,00000000000000000000000000000000
	8.12	08/27/96	N/A	NP	WELL INACCE	SSABLE	
	8.12	11/12/96	N/A	NP	WELL INACCE	SSABLE	
APL/UP-W2	7.31	08/09/95	N/A	NP	9,42	-2.11	-2.11
	7.31	11/29/95	N/A	NP	9.41	~2.10	-2.10
	7.31	02/27/96	N/A	NP	8.69	1.58	-1.58
Makananamakan (*)	7.31	05/29/96	N/A	NP	9.58	-2.37	-2.37
	7.81	08/27/96	N/A	NP	9.53	-2.22	-2.22
	7.31	11/12/96	N/A	NP	9.60	-2.29	-2.29
RW		08/09/95	9.07	0.03	9.10		
		09/07/95	9.18	0.01	9.19		
		10/18/95	9.41	0.02	9.43	******* <u>**</u>	
	eindreuseicher eusenschielte 	11/10/95	9.58		N/A		
		12/15/95	9.46	0.12	9.58		
		01/10/96	9.24	0.04	9.28		
		02/16/96	N/A		8.79		
waaaaaaaa waaaaaaaaa		03/25/96	N/A		8.50		
3 13 13 14 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15		04/18/96	N/A		8.70		
a wasaca wasasaka Mulibo		05/29/96	N/A		8.68		
		06/13/96	N/A		8.66 9.09	- -	
		07/25/96 08/27/98	N/A N/A	—— ***********************************	9.09		
		09/16/96	N/A N/A		9.33		
		10/17/96	N/A		9.50	. 1930 1830 1830 <u>1830 1</u>	
k. 1691/0000 4600 000 4 66		11/12/96	N/A		9.59		
		12/16/96	9.12	0.10	9.22		

^{*} All well casings measured to mean sea level (MSL).

N/A Non Applicable

NP - No Product

⁻⁻ Information not available or inaccurate.

P - Product (bunker C) was encountered but the oil/water interface could not be found.

TABLE 2 ANALYTICAL RESULTS -- GROUNDWATER MONITORING WELLS UNION PACIFIC RAILROAD OAKLAND MOTOR FREIGHT FACILITY

SAMPLE	SAMPLE	DATE	TPH/D	TPH/G	В	Ť	E	x	BTEX	As
LOCATION	ID	SAMPLED	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)
OKUS-W1	OKUS-W1	01/14/93 05/12/93	ND 120	410 ND	20 ND	4 ND	220 ND	ND ND	240 ND	ND ND
er e		08/25/83	100	···· ND	ND	ND ND	ND	ND	ND	ND
# #	•	11/11/93 02/08/94	160 92	91 <50	1.1 <0.50	0.88 ≪ 0.50	21 <0.50	1.6 <0.50	24 ND	ND ≪0.10
	4	05/03/94 08/24/94	61 86	<50 <50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	ND ND	<0.10 <0.10
H	4 	11/16/94	51	<50	<0.50	<0.50	<0.50 <0.50	<0.50	ND	NA NA
H	H	02/22/95 06/22/95	120 <50	<50 <50	<0.50 <0.50	<0.50 <0.50	<0.50	<0.50 <0.50	ND ND	NA
H H	# H	08/09/95 11/29/95	<50 480	<50 <50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	ND ND	0.04 <0.0050
	*	02/27/96 05/30/96	330 320	<50 <50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	ND ND	NA NA
		08/27/96	440	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10
		11/13/96	180	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
OKUŞ-W2	OKUŞ-W2	01/14/93 05/12/93	5400 2800	14000 8800	480 220	92 47	8500 4600	ND 100	9100 5000	0.036 0.093
*		08/25/93 11/11/93	6500 7700	22000 24000	420 540	92 150	10000 13000	210 280	11000 14000	0.089 ND
		02/08/94	2300	4900	150	29	3000	78	3300	<0.10
,	• •	05/03/94 08/24/94	2600 8200	17000 11000	300 320	<0.50 67	5800 7500	220 250	6300 8100	<0.10 <0.10
# #		11/16/94 02/22/95	5500 2000	10000 3500	290 100	79 18	130 1600	160 66	660 1800	NA NA
•	•	06/22/95 08/09/95	3200 2900	13000 4800	260 160	62 28	<0.50 <0.50	110 200	430 390	NA 0.92
	H	11/29/95	5600	7100	240	34	<0.50	58	330	0.049
•	H	02/27/96 05/30/96	2400 1900	5300 7000	200 210	42 <0.50	3400 <0.50	160 180	3800 390	NA NA
*		08/27/96	3100	6700	240	65	170	180	660	0.17
•	H	11/12/96	2900	6000	160	34	130	64	390	NA
OKUS_W3	OKUS-Wa	11/12/96	2900	6000	160	34	130	64	390	NA
OKUS-W3	OKUS-W3	11/12/96 01/14/93 05/12/93	2900 4200 4400	6000 4900 4600	160 230 290	34 42 60	130 2600 3500	64 44 72	390 2900 3900	NA NA 0.14
okus-wa	OKUS-W3	01/14/93 05/12/93 08/25/93 11/11/93	2900 4200 4400 2700 5000	4900 4600 9400 9500	230 290 290 280 390	34 42 60 55 110	130 2600 3500 4300 5100	64 72 41 130	390 2900 3900 4700 5700	NA 0.14 0.08 0.14
OKUS-W3	Окия-wз :	01/14/93 05/12/93 08/25/93	2900 4200 4400 2700	4900 4600 9400	160 230 290 280	34 42 60 55 110 78 61	130 2600 3500 4300	64 44 72 41	390 2900 3900 4700	NA 0.14 0.08 0.14 0.12 0.14
OKUŞ-W3	OKUS-WS	11/12/96 01/14/93 05/12/93 08/25/93 11/11/93 02/08/94 05/03/94 08/24/94	2900 4200 4400 2700 5000 4400 3000 4500	4900 4600 9400 9500 17000 14000	230 290 280 390 420 310 350	34 42 60 55 110 78 61 78	2600 3500 4300 5100 9600 6400 7300	64 72 41 130 160 210	390 2900 3900 4700 5700 10000 7000 7900	NA 0.14 0.08 0.14 0.12 0.14 <0.10
OKUS-W3	OKUS-W3	11/12/96 01/14/93 05/12/93 08/25/93 11/11/93 02/08/94 05/03/94 08/24/94 11/16/94 02/22/95	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400	4900 4800 9400 9500 17000 14000 9100 7400	230 290 280 390 420 310 350 260 250	34 42 60 55 110 78 61 78 64 51	130 2600 3500 4300 5100 9800 6400 7300 95	64 44 72 41 130 160 210 170 <0.50 150	390 3900 4700 5700 10000 7000 7900 420	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA
OKUS-W3	OKUS-W3	11/12/96 01/14/93 05/12/93 08/25/93 11/11/93 02/08/94 05/03/94 08/24/94 11/16/94 02/22/95 06/09/95	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3300 3100	4900 4800 9400 9500 17000 14000 9100 7400 8100 5200	230 290 280 390 420 310 350 260 250 250	34 42 60 55 110 78 61 78 64 51 53	130 2600 3500 4300 5100 9800 6400 7300 95 4400 <0.50	64 44 72 41 130 180 210 170 <0.50 150 76 140	390 2900 3900 4700 5700 10000 7000 7900 420 4900 380 380	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA NA
OKUS-W3	OKUS-W3	11/12/96 01/14/93 05/12/93 08/25/93 11/11/93 02/08/94 05/03/94 08/24/94 11/16/94 02/22/95 06/22/95	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3300	4900 4800 9400 9500 17000 14000 9100 7400 8100	230 290 280 390 420 310 350 260 250 250	34 42 60 55 110 78 61 78 64 51	130 2600 3500 4300 5100 9800 6400 7300 95 4400 <0.50	64 44 72 41 130 160 210 170 <0.50 150 76	390 2900 3900 4700 5700 10000 7000 7900 420 4900 380	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA NA 1.6 0.18
OKUS-W3	OKUS-W3	11/12/96 01/14/93 05/12/93 08/25/93 11/11/93 02/08/94 05/03/94 08/24/94 11/16/94 02/22/95 06/09/95 11/29/95 05/30/96	2900 4200 4400 2700 5000 4400 3000 4700 2400 3300 3100 4500 4000 2300	4900 4800 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900 8900	230 290 280 390 420 310 350 260 250 250 220 330 200	34 42 60 55 110 78 61 78 64 51 53 39 42 75 <0.50	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 <0.50 6400 <0.50	64 44 72 41 130 160 210 170 <0.50 150 76 140 44 240 61	390 2900 3900 4700 5700 10000 7000 7900 420 4900 380 380 310 7000 260	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA NA 1.6 0.18
OKUS-W3	OKUS-W3	11/12/96 01/14/93 05/12/93 08/25/93 11/11/93 02/08/94 05/03/94 08/24/94 11/16/94 02/22/95 06/09/95 11/29/95 02/27/96	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3300 3100 4500 4500	4900 4800 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900	230 290 280 390 420 310 350 260 250 250 220 330	34 42 60 55 110 78 61 78 64 51 53 39 42 75	130 2600 3500 4300 5100 9800 6400 7300 95 4400 <0.50 <0.50 <0.50 6400	64 44 72 41 130 180 210 170 <0.50 150 76 140 44 240	390 2900 3900 4700 5700 10000 7000 7900 420 4900 380 380 310 7000	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA NA 1.6 0.18
OKUS-W3	OKUS-W3	11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/08/94 05/03/94 08/24/94 11/16/94 02/22/95 06/22/95 06/09/95 11/29/95 05/30/96 08/27/96 08/27/96 01/15/93	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3100 4500 4500 2700 4700 2700 4700	4900 4600 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900 8900 3100 7400	230 290 280 390 420 310 350 260 250 250 220 330 200 170 220	34 42 60 55 110 78 61 78 64 51 53 39 42 75 <0.50 37 60	130 2600 3500 4300 5100 9800 6400 7300 95 4400 <0.50 <0.50 6400 <0.50 4500	64 44 72 41 130 180 210 170 <0.50 150 76 140 44 240 61 36 <0.50	390 3900 4700 5700 10000 7000 420 4900 380 380 310 7000 260 310 280	NA NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA NA NA NA NA
•		11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/06/94 05/03/94 08/24/94 11/16/94 02/22/95 06/02/95 06/09/95 11/29/95 05/30/96 08/27/96 11/12/96 01/15/93 05/12/93 05/12/93	2900 4400 2700 5000 4400 3000 4500 4700 2400 3100 4500 4500 4500 4500 4700 2300 2700 4700	4900 4600 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900 8900 3100 7400	230 290 280 390 420 310 350 260 250 250 220 330 200 170 220	34 42 60 55 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 <0.50 6400 <0.50 64500 <0.50 4500 4600 4800	64 44 72 41 130 180 210 170 <0.50 150 76 140 44 240 61 36 <0.50 ND 230 130	390 3900 4700 5700 10000 7000 420 4900 380 380 310 7000 260 310 280 4800 5300 5400	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA NA NA NA NA NA NA NA NA NA
•		11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/06/94 05/03/94 08/24/94 11/16/94 02/22/95 06/02/95 06/09/95 11/2/96 05/30/96 08/27/96 11/12/96 01/15/93 05/12/93 08/26/93 11/11/93	2900 4200 4400 2700 5000 4400 3000 4500 2400 3100 4500 4500 4500 4700 2700 4700 2700 2700 2700 2700 2900 2200 2200 2400	4900 4600 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900 8900 3100 7400 8900 6000 6700 5500	230 290 280 390 420 310 350 260 250 250 200 220 330 200 170 220	34 42 60 55 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110 72 53	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 <0.50 6400 <0.50 6400 <0.50 4500 4600 4600 4800 4600	64 44 72 41 130 180 210 170 <0.50 150 76 140 240 61 36 <0.50 ND 230 130 140	390 3900 4700 5700 10000 7000 420 4900 380 380 380 310 7000 260 310 280 4800 5300 5300 5400	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA 0.18 NA 0.18 NA 0.18 NA
•		11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/06/94 05/03/94 08/24/94 11/16/94 02/22/95 06/22/95 08/09/95 11/2/96 05/30/96 08/27/96 11/12/96 01/15/93 05/12/93 05/12/93 08/26/93 11/11/93 05/03/94	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3300 4500 4500 4700 2700 2700 2400 2900 2200 2200 2200 2200 2300	4900 4800 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900 8900 7400 8900 6000 6700 5500 9100 6500	230 290 280 390 420 310 330 260 250 200 220 330 200 170 220 320 350 250 250 250 250 250 250 250 250 250 2	34 42 60 55 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110 72 53 <0.50	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 60.50 6400 <0.50 64 <0.50 4500 4600 4800 4800 4900 4200	64 44 72 41 130 180 210 170 <0.50 150 76 140 44 240 61 36 <0.50 ND 230 130 140 150 140 150 140	390 3900 4700 5700 10000 7000 420 4900 380 380 310 7000 260 310 280 4800 5300 5400 5000 5300 4600	NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA 0.20 NA NA 0.20 NA
•		11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/06/94 08/24/94 11/16/94 02/22/95 06/22/95 08/09/95 11/29/95 05/30/96 08/27/96 11/12/96 01/15/93 05/12/93 05/12/93 05/12/93 05/12/94 05/03/94 05/03/94 05/03/94	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3300 4500 4700 2700 2700 2900 2200 2200 2200 2200 2	4900 4800 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900 8900 7400 8900 6000 6700 5500 9100 6500 5200 5500	230 290 280 390 420 310 350 260 250 200 220 330 200 170 220 320 350 250 250 220	34 42 60 555 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110 72 53 <0.50 34 41 52	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 6400 <0.50 6400 <0.50 4600 4800 4600 4800 4600 4800 4200 3600 <0.50	64 44 72 41 130 180 210 170 <0.50 150 76 140 44 240 61 36 <0.50 ND 230 130 140 150 140 190 120	390 3900 4700 5700 10000 7000 7900 420 4900 380 310 7000 260 310 280 4800 5300 5400 5000 5000 4900	NA NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA NA 0.20 NA NA 0.20 NA NA 0.16 0.19 0.11 NA NA 0.16 0.18
•		11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/06/94 05/03/94 11/16/94 02/22/95 06/22/95 08/09/95 11/2/96 05/30/96 05/27/96 11/12/96 01/15/93 05/12/93 05/12/93 05/12/93 05/12/93 05/06/94 05/03/94 05/03/94	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3300 4500 4700 2700 2700 2200 2200 2200 2200 22	4900 4800 9400 9500 17000 14000 9100 7400 8100 5200 5300 7900 8900 7400 8900 6000 6700 5500 9100 6500 5200	230 290 280 390 420 310 350 260 250 200 220 330 200 170 220 320 350 250 250 220	34 42 60 555 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110 72 53 <0.50 34 41 52 47 38	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 6400 <0.50 6400 <0.50 4500 4600 4800 4600 4800 4600 4800 5200	64 44 72 41 130 160 210 170 <0.50 150 76 140 44 240 61 36 <0.50 ND 230 130 140 150 140 190 120 160 140	390 3900 4700 5700 10000 7000 7900 420 4900 380 310 7000 260 310 280 4800 5300 5400 5000 5300 4600 490 3400 5700	NA 0.14 0.08 0.14 0.12 0.14 0.12 0.14 0.10 NA NA NA 1.6 0.18 NA 0.20 NA NA 0.16 0.098 0.13 <0.10 0.12 0.11 NA NA NA
•		11/12/96 01/14/93 05/12/93 08/25/93 11/11/93 02/06/94 05/03/94 11/16/94 02/22/95 06/08/95 11/29/95 05/30/96 08/27/96 01/15/93 05/12/93 05/12/93 05/12/93 05/12/93 05/03/94 05/03/94 05/03/94 05/03/94 05/03/94 08/24/94 11/16/94 02/22/95 08/09/95	2900 4200 4400 2700 5000 4400 3000 4500 4700 2400 3300 4500 4700 2700 2700 2200 2200 2200 2200 22	4900 4500 9400 9500 17000 14000 9100 9100 5200 5300 7900 8900 3100 7400 5500 6000 5500 9100 5500 9100 5500 4300 4900 5300	230 290 280 390 420 310 350 260 250 200 220 330 200 170 220 320 350 250 250 220 320 320 350 250 250 250 250 250 270	34 42 60 555 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110 72 53 <0.50 34 41 52 47 38 54	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 6400 <0.50 6400 <0.50 4500 4600 4800 4600 4800 4600 4800 5200 <0.50	64 44 72 41 130 160 210 170 <0.50 150 76 140 44 240 61 36 <0.50 ND 230 130 140 150 140 190 120 160 140 210	390 3900 4700 5700 10000 7000 7900 420 4900 380 310 7000 260 310 280 4800 5300 5400 5000 5300 4600 490 3400 5700 5300	NA NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA 0.20 NA NA 0.20 NA NA 0.16 0.098 0.13 <0.10 0.12 0.11 NA NA
•		11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/06/94 05/03/94 08/24/94 11/16/95 06/22/95 06/09/95 11/29/95 05/12/93 05/12/93 05/12/93 05/12/93 05/12/93 05/12/93 05/12/93 05/03/94 08/24/94 11/16/94 02/02/95 08/09/95 11/29/95 08/09/95	2900 4200 4400 5000 4400 3000 4500 4700 2400 3100 4500 4700 2300 2700 2700 2200 2200 2200 2200 2	6000 4900 4500 9400 9500 17000 14000 9100 5200 5300 7400 8900 3100 7400 6500 6700 5500 9100 6500 5500 4300 4500 ACCESS	230 290 280 390 420 310 350 260 250 250 200 170 220 330 330 320 350 250 250 250 250 250 250 250 250 250 2	34 42 60 55 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110 72 53 <0.50 34 41 52 47 38 54 41 T SAMPLEI	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 <0.50 6400 <0.50 4600 4000 4800 4600 4800 4600 4900 4200 3600 <0.50 5200 <0.50 <0.50	64 44 72 41 130 160 210 170 <0.50 150 76 140 44 240 61 36 <0.50 ND 230 130 140 150 140 190 120 160 140	390 3900 4700 5700 10000 7000 7900 420 4900 380 310 7000 260 310 280 4800 5300 5400 5000 5300 4600 490 3400 5700	NA NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA 0.20 NA NA 0.16 0.098 0.13 <0.10 0.12 0.11 NA NA NA NA NA NA NA NA NA
•		11/12/96 01/14/93 05/12/93 06/25/93 11/11/93 02/06/94 05/03/94 08/24/94 11/16/95 06/22/95 06/09/95 11/29/96 05/30/96 08/27/96 05/30/94 08/24/94 11/16/94 02/22/95 06/09/95 11/29/95 06/22/95 06/09/96 11/29/95 08/09/96 08/27/96 05/30/96 08/27/96	2900 4200 4400 5000 4400 3000 4500 4700 2400 2300 2700 4700 2500 2700 2200 2200 2200 2300 2700 2300 2500 2500 2500 2500 2500 2500 25	4900 4600 9400 9500 17000 14000 9100 5200 5300 7900 8900 3100 7400 6000 6700 5500 9100 6500 9100 6500 4300 4300 4500 4500 ACCESS	230 290 280 390 420 310 350 260 250 250 200 170 220 330 200 170 220 350 250 250 250 250 250 250 250 250 250 2	34 42 60 55 110 78 61 78 64 51 53 39 42 75 <0.50 37 60 ND 110 72 53 <0.50 34 41 52 47 38 54 41 T SAMPLEI T SAMPLEI T SAMPLEI T SAMPLEI	130 2600 3500 4300 5100 9600 6400 7300 95 4400 <0.50 <0.50 6400 <0.50 4600 4800 4600 4800 4600 4900 4200 3600 <0.50 2900 <0.50 <0.50	64 44 72 41 130 160 210 170 <0.50 150 76 140 44 240 61 36 <0.50 ND 230 130 140 150 140 190 120 160 140 210	390 3900 4700 5700 10000 7000 7900 420 4900 380 310 7000 260 310 280 4800 5300 5400 5000 5300 4600 490 3400 5700 5300	NA NA 0.14 0.08 0.14 0.12 0.14 <0.10 NA NA 1.6 0.18 NA 0.20 NA NA 0.16 0.098 0.13 <0.10 0.12 0.11 NA NA NA NA NA NA NA NA NA

TABLE 2 ANALYTICAL RESULTS - GROUNDWATER MONITORING WELLS UNION PACIFIC RAILROAD OAKLAND MOTOR FREIGHT FACILITY

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/D (ug/l)	TPH/G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	BTEX (ug/l)	As (mg/l)
				550		<u> </u>				
OKUS-W5	OKUS-W5	01/15/93 05/12/93	2900 2100	550 550	53 81	11 14	180 250	20 37	260 380	NA 0.56
•		08/25/93	PRODUC*	T IN WEI	L - NOTS	AMPLED				
# #		11/11/93 02/07/94	1600 1900	590 760	14 54	3.1 9.4	54 220	6.2 24	77 310	0.53 0.55
*	H	05/03/94 08/24/94	2000 1700	820 910	57 55	9.5 14	240 8.5	27 18	330 95	0.38 0.45
	H H	05/30/96	PRODUCT PRODUCT					ISAMPLED ISAMPLED		
•	10		PRODUC					SAMPLED		
OKUS-W6	OKUŞ-W6	07/16/93	BRK	ND	2.5	ND	ND	ΝD	2.5	0.004
*		08/25/93 11/12/93	590 610	ND ON	2.6 3.6	DN DN	4.9 3.7	1.3 1.3	8.8 8 .6	0.013 ND
•	*	05/30/96 08/27/96	PRODUCT PRODUCT					I SAMPLED I SAMPLED		
M	*		PRODUC	T IN WEL	L - THE V	VELL HAS	NOT BEEN	SAMPLED	SINCE 19	93
OKUS-W7	OKUS-W7	07/16/93	ND 220	ND	21	ND ND	ND	ND	2.1 4.1	0:009 ND
•	•	08/25/93 11/12/93	930 1100	56 ND	2.9 ND	ND ND	1.2 ND	ND ND	ND	ND
	e H	02/07/94 05/03/94	1100 1300	ND <50	0.7 <0.50	<0.50 <0,50	<0.50 <0.50	<0.50 <0.50	0.7 ND	<0.10 <0.10
•	H	08/24/94 11/16/94	910 82 0	<50 <50	2.5 0.62	0.54 ≪0.50	<0.50 <0.50	<0.50 <0.50	3.0 0.8	<0.10 NA
# 1000000000000000000000000000000000000	.	02/22/95 06/22/95	830 850	<50 <50	0.54 2.4	<0.50 <0.50	<0.50 0.52	<0.50 <0.50	0.5 2.9	NA NA
#	#	08/09/95	640	71	4.2	<0.50	1.2	1.2	5.6	0.074
	•	11/29/95 02/27/96	1300 2600	64 <50	4.3 1.5	<0.50 <0.50	1,3 0.54	0.51 <0.50	6.1 2.0	0.0095 NA
	•	05/30/96 08/27/96	1900 1700	60 70	2 2.3	<0.50 <0.50	0,54 <0.50	<0.50 <0.50	2.0 2.3	NA <0.10
.		11/12/96	1400	86	4.1	<0.50	<0.50	<0.50	4.1	NA.
OKUS-W8	OKUS-W8	07/16/93	ND	ND	ND	ND	ND	ND	ND	0.012
-		08/27/93 11/11/93	1100 1300	120 190	1.3 9.5	ND 1.3	ND 46	0.85 4.9	2.2 55.7	ND ND
*	•	02/07/94 05/03/94	1000 780	120 79	0.9 0.99	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	0.9 1.0	<0.10 <0.10
# #		08/24/94 11/16/94	700 83 0	100 110	1.4 0.77	<0.50 <0.50	<0.50	<0.50 <0.50	1.4 0.8	<0.10 NA
	■ 	02/22/95	370	150	0.96	<0.50	<0.50	1.2	2.2	NA
	•	06/22/95 08/09/95	870 1100	76 90	0.92 1.1	<0.50 <0.50	<0.50 <0.50	<0.50 1.3	0.9 2.4	NA 0.078
H	# #	11/29/95 02/27/96	2400 1900	100 80	0.73 <0.50	<0.50 <0.50	<0.50 <0.50	0.91 1.3	1.6 1.3	<0.0050 NA
	•	05/30/96 08/27/96	2200 2100	210 150	<0.50 0.64	<0.50 <0.50		0.7 <0.50	0.7 0.64	NA <0.10
	•	11/12/98	1600	170	<0.50	<0.50		1.1	1,1	NA
APL/UP-W1	APL/UP-W1		700	300	25,4	1.7	ND	3.0	30	0.011
4	*	08/26/93 11/11/93	810 530	720 5 6 0	47 26	1.3 ND	360 220	14,0 11.0	420 26 0	0.013 ND
#	u W	02/07/94 05/03/94	660 59 0	620 68 0	25 48	<0.50 2.9	180	10 9:8	220 320	<0.10 <0.10
# ************************************	H H H (100 (100 (100 (100 (100 (100 (100 (10	08/24/94	420	830	48 36	4.8	12 9.6	3.2 12	68 61	<0.10 NA
N N	H	11/15/ 9 4 02/22/95	480 510	470 470	33	3.6 2.8	170	9	210	NA
•	# H	06/22/95 08/09/95	320 160	160 69	12 4.2	0.82 <0.50	3.5 <0.50	2.4 2.3	19 7	NA <0.0050
	*	11/29/95	920	170	7.4 ABLE – NO	0,58	66	3.5	78	0,018
<u>.</u>	•	05/30/96	WELL INA	CCESS	ABLE - NO	T SAMPLI	ED			
•	*	08/27/96 11/12/96	WELL INA	CCESS/	ABLE - NO ABLE - NO	T SAMPL	=D			

TABLE 2 ANALYTICAL RESULTS - GROUNDWATER MONITORING WELLS UNION PACIFIC RAILROAD **OAKLAND MOTOR FREIGHT FACILITY**

SAMPLE	SAMPLE	DATE	TPH/D	TPH/G	В	T	E	X	BTEX	As
LOCATION	ID	SAMPLED	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)
		1								
ADIMIDWO	APL/UP-W2	07/16/93	ND	ND.	B.0	ND	ND	ND	8	0.016
ALDOL-HE	.AFUUF112 "	08/26/93	240	94	ND	ND	35	2.4	37	0.023
		11/11/93	190	110	5.0	ND ND	38	2.6	46	ND
•		02/07/94	270	120	5.6	<0.50	38	1,8	46	<0.10
	•	05/03/94	100	<50	<0.50	< 0.50	<0.50	<0.50	Ö	<0.10
*	10 x 0 x 0 x 0 0 0 0 0 0 0 0 0 0 0 0 0 0	08/24/94	330	220	13.0	0.77	3.5	3.1	20	<0.10
· · · · · · · · · · · · · · · · · · ·		11/15/94	320	190	11.0	<0.50	63.0	5.4	79	NA
•		02/22/95	550	320	19.0	<0.50	100	9.5	130	NA
9		06/22/95	300	170	10.0	62	2.2	2.3	76	NA
u		08/09/95	180	62	3.5	< 0.50	<0.50	2.3	5.8	0.22
		11/29/95	690	110	7.2	<0.50	49	2.3	59	0.019
		02/27/96	480	100	5.3	< 0.50	33	2.9	41	NA
	•	05/30/96	280	<50	1.9	<0.50	<0.50	1.2	3.1	NA
•	•	08/27/96	320	<50	1.1	<0.50	1.0	<0.50	2.1	<0.10
e e	4	11/12/96	470	85	3.2	< 0.50	1.7	0,62	5,5	NA
	UPLICATES									
OKUS-W5	OKUS-W6	01/15/93	2800	510	50	10	170	19	250	NA
OKUS-W1	OKUS-W6	05/12/93	140	ND	ND	ND	ND	ND	ND	ND
APL/UP-W1	QA/QC-1	07/16/93	ND	0.21	22.4	ND	ND	2.4	25	0,012
OKUS-W4	OKUS-W9	08/26/93	2700	6200	340	78	4500	100	5000	0.10
OKUS-W8	OKUS-W9	11/11/93	1300	120	1.3	ND	4	1.4	7	2.40
OKUS-W3	QA/QC-1	02/08/94	2900	15000	280	64	5800	<0.50	6100	0.12
OKUS-W4	OKUS-QC1	05/03/94	2500	5400	300	41	5200	130	5700	0,12
OKUS-W8	OKUS-QC1	08/24/94	950	92	1.6	<0.50	<0.50	<0.50	2	<0.10
APL/UP-W2		11/16/94	310	190	10	<0,50	62	4.7	77	NA .
APL/UP-W2	APL-W12	02/22/95	490	360	20	<0.50	110	6.7	140	NA D.CO
APL/UP-W2	APL-W12	08/09/95	160	71	3,4	<0,50	<0.50	2.2	- 6	0.20
APL/UP-W1	APL-W11	11/29/95	1100	170	7.5	0.57	66	4.4	79	0.02 NA
OKUS-W1	OKUS-W11	02/27/96	330	<50	<0.50	<0.50	<0.50	<0.50 <0.50	ND ND	NA NA
OKUS-W1	OKUS-W11	05/30/96	570	<50	<0.50	<0.50	<0.50 <0.50	<0.50 <0.50	ND!	≪0.10°
OKUS-W1	OKUS-W11 OKUS-W12	08/27/96	330	<50	<0.50	<0.50 55	- 50.30 26	~ v.50 · · 89	380	NA
OKUS-W2	RIP BLANKS	11/12/96	3000	11000	210	<u> </u>	20	- 59	300	1395
UPME	OAK-FB 1	07/16/93	NA	NA	ND	ND	ND	ND	ND	NA
UPMF	OAK-TB 2	07/16/93	NA	NA	ND	ND	ND	ND	ND	NA
UPME	TB-1	08/27/93	NA.	NA.	ND	ND.	ND	ND.	ND	NA
UPMF	TB-2	08/27/93	NA	NA NA	ND	ND	ND	ND	ND	NA
UPME	TB-1	11/12/93	NA.	NA NA	ND ND	ND.	ND	ND	ND	NA
UPMF	TB-1	08/24/94	NA	NA NA	ND	ND	ND	ND	ND	NA
UPME	7B-1	11/16/94	NA.	NA.	NA NA	NA NA	NA NA	NA.	NA NA	NA
UPMF	TB-1	02/22/95	NA	ND	ND	ND	ND	ND	ND	NA
UPMF	TB-1	06/22/95	NA.	ND	ND	ND ND	ND	ND	ND	NA
UPMF	TB-1	08/09/95	NA	ND	ND	ND	ND	ND	ND	NA
UPMF	TRIP BLANK	11/29/95	NA:	ND	ND	ND	ND	ON COM	ND	NA
UPMF	TRIP BLANK	02/27/96	NA	ND	ND	ND	ND	ND	ND	NA
UPME	TRIP BLANK	05/29/96	NA	ND	ND.	ND	ND	ND	ND	NA
UPMF	TRIP BLANK	08/27/96	NA	ND	ND	ND	ND	ND	ND	NA
UPME	TRIP BLANK	11/12/96	NA NA	ND	ND ND	ND	ND	ND	ND	NA

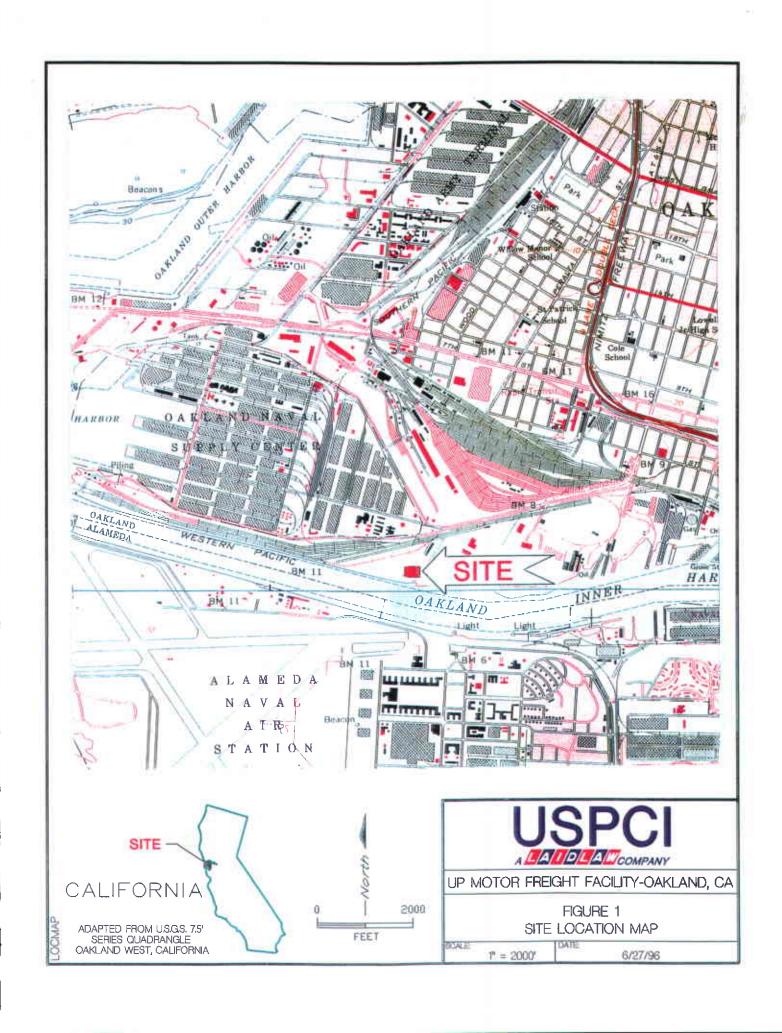
ND - Not Detected

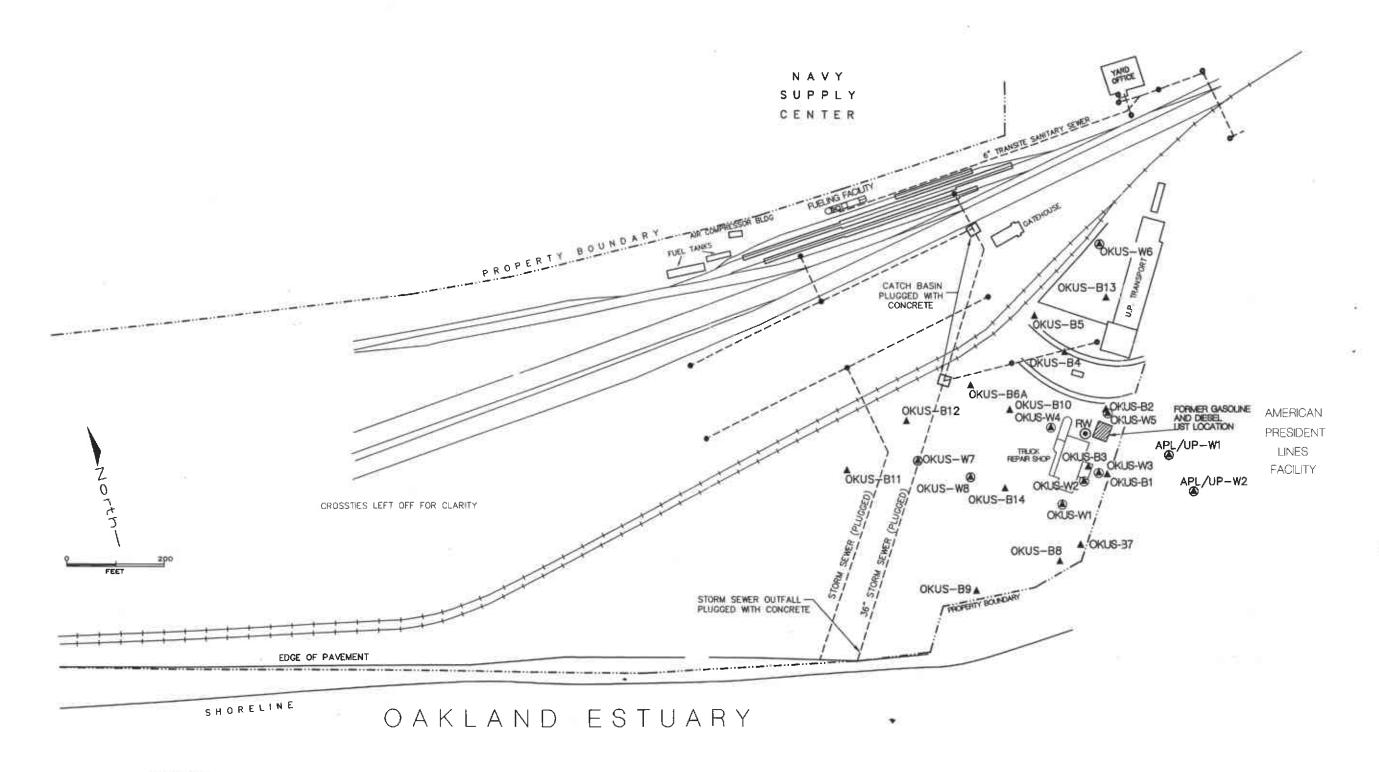
NA - Not Analyzed

BRK - Bottle broken during shipment TPH - Total Petroleum Hydrocarbons

mg/L - milligram per liter

ug/L - microgram per liter TPH/D - anaylzed using EPA Method 8015 Mod. TPH/G - anaylzed using EPA Method 8015 Mod. BTEX - analyzed using EPA Method 8020 As - analyzed using EPA Method 7060





LEGEND

♠ OKUS-W1 MONITORING WELL LOCATION AND NUMBER

▲ OKUS-B1 BORING LOCATION AND NUMBER
 CATCH BASIN FOR STORM SEWER

RW RECOVERY WELL

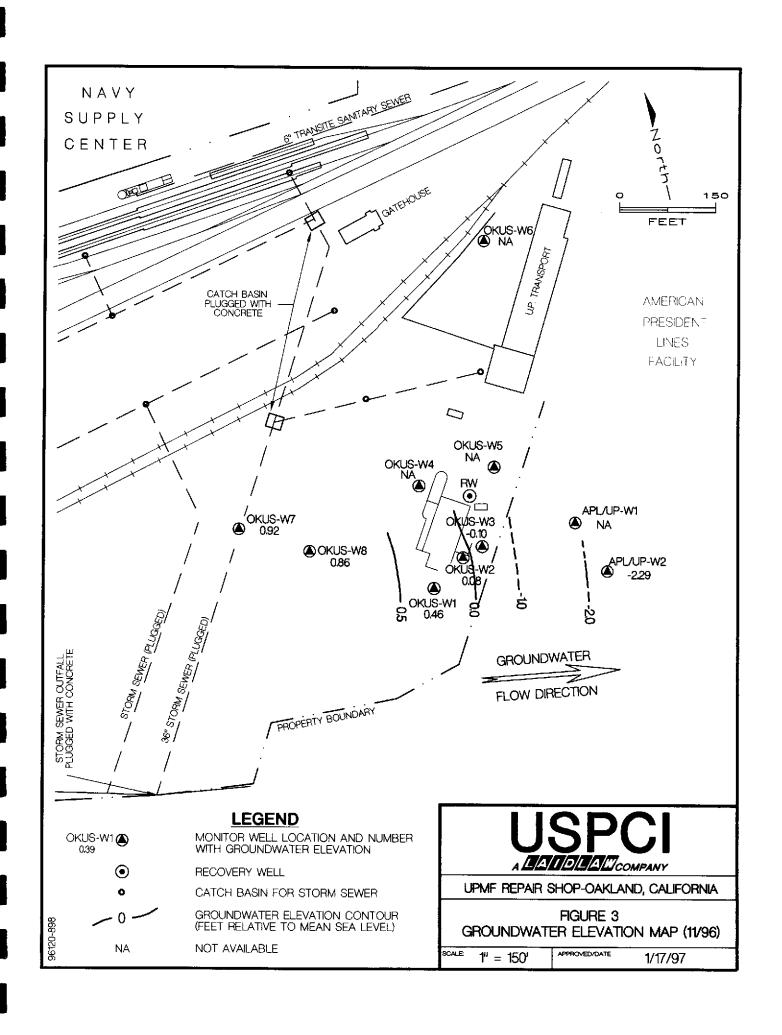
DNAM WRB 7/18/95 CHECKED APPROVED APPROVED USPC ALAIDEAWCOMPANY UPRR TOFC RAILYARD
UPMF REPAIR SHOP, OAKLAND, CALIFORNIA
FIGURE 2

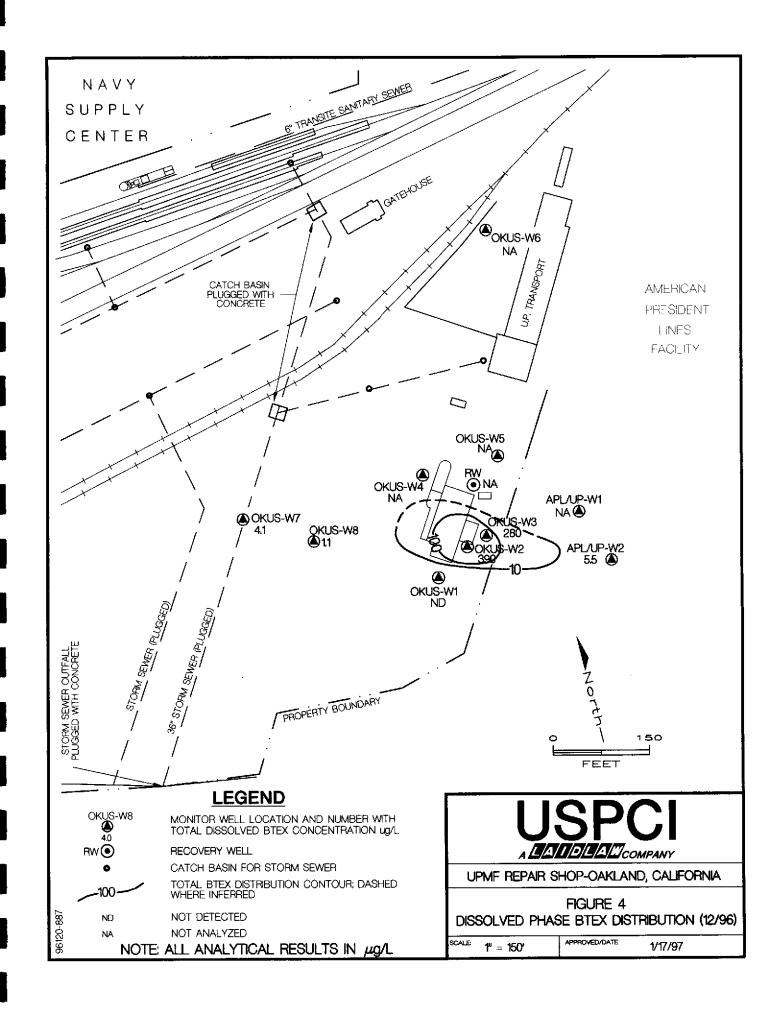
SITE VICINITY MAP

T=200' DATE 9/90

SCALE

DWG. NO. 96120-556





APPENDIX A

FLUID-LEVEL MEASUREMENTS AND SAMPLE COLLECTION LOGS

FLUID LEVEL MEASUREMENTS OAKLAND TRAILER ON FLAT CAR FACILITY UNION PACIFIC RAILROAD

DATE: 12-16-96

					· · · · · · · · · · · · · · · · · · ·
WELL NUMBER	TIME	DEPTH TO PRODUCT (feet)		AMOUNT OF PRODUCT RECV'D (gallons)	COMMENTS OR OBSERVATIONS
Ds -I					Well destroyed
DS-2	0857		8,70		Well destroyed
DS-3	0852		8/165		1
CKUSHI	0857	}	-9.70		Destrected
CKIS-5					Product too viscous
OKUS-62				<i>-</i>	(1 (1 11
RW-I	09160	9/12	9.22		
			7		
				1. 12	
				·····	*
	<u>. </u>			<u></u>	
					·
					
<u> </u>				· ·	3
				· · · · · · · · · · · · · · · · · · ·	
	-				
				- · · · · · · · · · · · · · · · · · · ·	
	-				-
			,,		
·					
			-		
					

MAIL COPIES MONTHLY TO: USPCI/LAIDLAW, 5665 FLATIRON PARKWAY, BOULDER, COLORADO 80301 ATTENTION: DENTON MAULDIN

Measuring Point (MP) Location Top of casing Well No. OKUS-W1 Well Depth: (Below MP): 18.70 Feet Casing diameter: 2 Inches Depth To Ground Water (Below MP): 8.71 Feet Sample ID No. OKUS-W1 Method Of Well Development: Time: 11:40	
Well Depth: (Below MP): 18.70 Feet Casing diameter: 2 Inches Sampling Date: 11/13/96 Depth To Ground Water (Below MP): 8.71 Feet Sample ID No. OKUS-W1	
Depth To Ground Water (Below MP): 8.71 Feet Sample ID No. OKUS-W1	
Method Of Well Development: Time: 11:40	
historia or man paradophisms	
☐ Tap ☐ Submersible Pump ☐ Bladder Pump ☐ Riser Elevation (MP): 9.17 F	ect
■ Bailer □ Centrifugal Pump □ Other Top of Screen Elevation: 6.8:	5 Feet
Sampling Collection Method: Sample Appearance: Clear	
☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample ☐ Odor: Light - moderate	
■ Bailer Type:	
○ ABS Plastic ○ PVC ● HDPE plastic disposable	
Pump Intake Or Bailer Set At Feet Below MP Decontamination Performed: Probe	
Tubing Type (if Used):	
Tubing Used for: Sample Collection Well Development/Field Tests Samples Collected: TPH-Gasoline, TPH-D 8020 BTE	iesel, K
Time pH Corrected Temperature Water Level of Water in (Units) Conductance (Centigrade) (Nearest 0.01 Ft.) Removed From well Gallons	ng Rate n /Minute 'M)
11:15 Begin well	
11:23 7.3 1200 19.2 1.75	
11:27 7.4 1400 19.2 3.50	
11:30 7.4 1300 19.2 5.25	
11:40 Sample well	
At Least 3 Well Bore Volumes Were Evacuated Before Sampling Discharge Rate = GPM x 0.00223 = cfs	
Comments: (18.70 - 8.71) * 0.16 = 1.598 or about 1.75 gallons per volume	<u> </u>
[Comments may continued to the continued	ue on back]
Form Completed By: Mark McCormick Witnessed By:	

USPCI Project Name: UPMF Oaklar		USPCI Project Number: 96120-844					
Measuring Point (MP) Location Top	of casing			Well	No.	OKUS-W	2
Well Depth: (Below MP): 22.34 Feet							
Casing diameter: 2 Inches					San	pling Date: 11	13/96
Depth To Ground Water (Below MP):	9.62 Feet		Sample ID No. OKUS-W2				
Method Of Well Development:					Tim	ne: 12:15	
☐ Tap ☐ Submersible Pump	☐ Bladder Pump				Rise	er Elevation (MI	P): 9.71 Feet
■ Bailer ☐ Centrifugal Pump	Other				Top	of Screen Eleve	ation: 7.05 Feet
Sampling Collection Method:			Sample A	Appearar	cc: Very lightly	turbid	
☐ Tap ☐ Submersible Pump	☐ Bladder Pump	Sample		Odor: M	oderate	- strong	
■ Bailer <u>Type:</u>	Stainless Steel			Sampling	Probler	ns (if any):	
○ ABS Plastic ○ PVC	HDPE plas	tic disposable					
Pump Intake Or Bailer Set At	Feet Below Mi	P		Decontar	nination	Performed: Pr	obe
Tubing Type (if Used):							
Tubing Used for: Sample Collection	ion 🗆 Well Dev	elopment/Field	i Tests	Samples	Collecte		ne, TPH-Diesel, 8020 BTEX
Time pH Co (Units) Con		mperature entigrade)	re Water Level of Water i e) (Nearest 0.01 Ft.) Removed From well Gallons				Pumping Rate in Gallons/Minute (GPM)
11:50 Begin well							
11:55 6.9	3600	20.0				2.25	
12:00 6.9	3900	19.9				4.25	
	3900	19.8	· **			6.25	
12:15 Sample well			···				
							
At Least 3 Well Bore Volumes Were E	Tyanuated Refore S	Sempling	Discharge Rate	=	GPM ∗	0.00223 =	cfs
Comments: (22.34 - 9.62) * 0.16 = 2							
Duplicate sample labelle				. <u> </u>		<u></u>	
Duburate sample tabelle	A OKOS WILL WA	is tantu at 12:					
					<u> </u>	[Commen	ts may continue on back]
Form Completed By: Mark McCorm	nick		Witnessed By:				

USPCI Project	Name: UPMF ()akland	USPC	USPCI Project Number: 96120-844				
Measuring Poin	nt (MP) Location	Top of casing			ell No. OKUS-W	3		
Well Depth: (B	elow MP): 22.0	5 Feet						
Casing diamete	r: 2 Inches				Sampling Date: 11	/13/96		
Depth To Grou	nd Water (Below	MP): 9.90 Feet			Sample ID No. OKUS-W3			
Method Of Wo	ell Development:				Time: 12:55			
□ Tap	Submersible Pu	mp 🗆 Bladder	Pump		Riser Elevation (MI	P): 9.80 Feet		
■ Bailer [Centrifugal Pun	np 🗌 Other	.		Top of Screen Elev	ation: 6.55 Feet		
Sampling Coll	ection Method:			Sampl	e Appearance: Very lightly ye	turbid, light llow color		
☐ Tap ☐ Sub	mersible Pump	☐ Bladder	Odor:	Strong product				
■ Bailer Type	<u>e:</u> (Teflo	n O Stainless Ste	Sampl	ing Problems (if any): Wa	ter is reactive			
	ABS Plastic	PVC HDP	∃ plastic disposable					
Pump Intake O	r Bailer Set At _	Feet Bel	ow MP	Decor	ntamination Performed: Pr	obe		
Tubing Type (i	f Used):							
Tubing Used fo	or: 🗆 Sample C	Collection	ell Development/Fiel	ld Tests Samp	es Collected: TPH-Gasoli	ne, TPH-Diesel, 8020 BTEX		
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Pumping Rate in Gallons/Minute (GPM)			
12:30	Begin well							
12:35	7.0	3600	19.7		2.0			
12:39	6.9	3300	19.7		4.0			
12:44	6.9	3300	19.5		6.0			
12:55	Sample well							
		<u></u>		<u> </u>		<u> </u>		
		Were Evacuated Be		Discharge Rate =	GPM x 0.00223 =	cfs		
Comments: (22	2.05 - 9.90) * 0.1	lo = 1.944 or ab	out 2.0 gallons per	volume				
 					[Comme	nts may continue on back]		
Form Complete	d By: Mark Mo	Cormick		Witnessed By:				

USPCI Project	Name: UPMF	Dakland		USPCI Project Number: 96120-844			
Measuring Poin	t (MP) Location	Top of casing			Well	No. OKUS-W4	1
Well Depth: (Bo	clow MP): 20.6	9 Feet					
Casing diameter	: 2 Inches					Sampling Date: N/	A.
Depth To Groun	nd Water (Below	MP): Not meast comments				Sample ID No. OK	US-W4
Method Of We	ll Development					Time: N/A	
□ Тар □	Submersible Pu	ımp 🗌 Bladder	Pump			Riser Elevation (MF	r): 7.11 Feet
☐ Bailer ☐	Centrifugal Pur	mp 🗆 Other				Top of Screen Eleva	tion: 2.11 Feet
Sampling Colle	ection Method:				Sample A	Appearance: N/A	
☐ Tap ☐ Sub	mersible Pump	☐ Bladder	Pump Sample		Odor: N	/ A	
☐ Bailer <u>Type</u>	: O Teflo	n O Stainless Ste	cel		Sampling	g Problems (if any): Well	inaccessable
C	ABS Plastic (PVC OHDP	E plastic disposable				
Pump Intake Or	Bailer Set At _	Feet Be	low MP		Deconta	mination Performed:	
Tubing Type (if	f Used):						
Tubing Used fo	r: 🗌 Sample (Collection	ell Development/Fic	ld Tests	Samples	Collected: None	
Time	pH (Units)	Corrected Temperature Water Level of V Conductance (Centigrade) (Nearest 0.01 Ft.) Removed				Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
WELL NOT	SAMPLED						
				<u> </u>			
				<u>.</u>			
					. <u> </u>		
					111		
At Least 3 Well	Bore Volumes V	Were Evacuated B	efore Sampling	Discharge Rate	e =	GPM x 0.00223 =	cfs_
	e well head is n area.	o longer accessab	le due to severe da	mage by UPMF	heavy ed	quipment and the subse	quent repaving of
							<u></u>
					_		
[Comments may con	tinue on back]	·····					
Form Completed	d By: Mark Mo	Cormick		Witnessed By:			

USPCI Project	Name: UPMF (Oakland	USPCI	USPCI Project Number: 96120-844				
Measuring Poin	t (MP) Location	Top of casing	<u>-</u>	Well	No. OKUS-W	5		
Well Depth: (Bo	low MP): 21.0	0 Feet						
Casing diameter	: 2 Inches				Sampling Date: N/A			
Depth To Produ	ct (Below MP):	9.87 Feet (S	ee comments)		Sample ID No. N/	Α		
Method Of We	ell Development:				Time: N/A			
□ Tap □	Submersible Pu	mp 🗌 Bladder		Riser Elevation (MF): 9.25 Feet			
☐ Bailer ☐	Centrifugal Pur	mp 🗆 Other		Top of Screen Eleve	ation: 5.95 Feet			
Sampling Colle	ection Method:			Sample	Appearance: N/A			
☐ Tap ☐ Sub	mersible Pump	☐ Bladder	Pump Sample	Odor: N	V/A			
☐ Bailer <u>Type</u>	Teflo	n O Stainless Sta	eel	Samplin	g Problems (if any): Prod	luct in well water		
	ABS Plastic () PVC						
Pump Intake Or	Bailer Set At _	Feet Be	low MP	Deconts	mination Performed: Pr	obe		
Tubing Type (if	Used):							
Tubing Used fo	r: 🗆 Sample C	Collection We	ell Development/Fie	d Tests Samples	Samples Collected: None			
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)		
WELL NOT	SAMPLED							
					-			
	-							
						_		
			d Before Sampling	Discharge Rate =	GPM x 0.00223 =	cfs		
					ement was not available.			
Th	e well was not s	sampled because	of the presence of p	phase-separated hydroca	rbon.			
	· · · · · · · · · · · · · · · · · · ·							
[Comments may con								
Form Completee	d By: Mark Mo	:Cormick		Witnessed By				

USPCI Project	USPCI	USPCI Project Number: 96120-844						
Measuring Poin	t (MP) Location	Top of casing		Well	l No.	OKUS-W	5	
Well Depth: (Be	clow MP): 16.3	0 Feet						
Casing diameter	r: 2 Inches			Sampling Date: N/A				
Depth To Produ	ict (Below MP):	6.27 Feet (S	ee comments)		Sar	nple ID No. N/A	4	
Method Of We	ll Development:				Tin	ne: N/A		
□ Tap □	Submersible Pu	mp 🗆 Bladder	Pump		Ris	er Elevation (MF	r): 7.29 Feet	
□ Bailer □	Centrifugal Pur	np 🗌 Other			To	p of Screen Eleva	ttion: 2.29 Feet	
Sampling Colle	ection Method:			Sample	Appeara	nce: N/A		
☐ Tap ☐ Sub	mersible Pump	☐ Bladder	Pump Sample	Odor: N	I/A			
☐ Bailer <u>Type</u>	<u>:</u> C Teflo	n O Stainless Ste	eel	Samplin	g Proble	ms (if any): Prod	uct in well water	
○ ABS Plastic ○ PVC								
Pump Intake Or	Bailer Set At _	Feet Be	low MP	Deconta	mination	Performed: Pr	obe	
Tubing Type (if Used):								
Tubing Used fo	r: 🗆 Sample C	Collection 🗆 We	ell Development/Fie	d Tests Samples	ests Samples Collected: None			
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Remo	ulative Volume of Water ved From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)	
WELL NOT	SAMPLED							
					ļ			
					<u> </u>			
						<u> </u>		
					-			
 			d Before Sampling	Discharge Rate =		0.00223 =	cfs	
Comments: Pro	duct was noted	as "Bunker C" t	ype hydrocarbon.	Depth to water measure	ement wa	as not available.		
Th	e well was not s	ampled because	of the presence of p	phase-separated hydroca	rbon.			
						<u>-</u> -	· · · · · · · · · · · · · · · · · · ·	
[Comments may con	tinue on back]	· · · · ·					<u></u>	
Form Completed	By: Mark Mc	Cormick		Witnessed By				

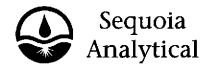
USPCI Project	Name: UPMF	Oakland		USPCI Project Number: 96120-844				
Measuring Poi	nt (MP) Location	Top of casing			Well	No. OKUS-W	7	
Well Depth: (I	Below MP): 19.8	8 Feet						
Casing diamete	er: 2 Inches				Sampling Date: 11/13/96			
Depth To Gro	und Water (Below	MP): 6.00 Feet				Sample ID No. OK	US-W7	
Method Of W	ell Development	<u>.</u>				Time: 10:30		
□ Tap (☐ Submersible Pt	ımp 🗆 Bladder	Pump			Riser Elevation (MF	P): 7.4 Feet	
■ Bailer [☐ Centrifugal Pu	mp 🗌 Other				Top of Screen Eleva	ation: 2.4 Feet	
Sampling Col	Sampling Collection Method:					Appearance: Clear		
☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample					Odor: L	ight		
■ Bailer <u>Type:</u>					Samplin	g Problems (if any):		
	ABS Plastic (PVC HDP	E plastic disposable					
Pump Intake C	Or Bailer Set At _	Feet Be	low MP		Deconta	mination Performed: Pr	obe	
Tubing Type (if Used):								
Tubing Used for: Sample Collection Well Development/Field Tests Samples Collected: TPH-Gasoline, TPH-Diesel 8020 BTEX								
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Le (Nearest 0.0		Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)	
10:07	Begin well						<u> </u>	
10;13	7.0	2100	19.5			2.25		
10:17	6.9	2100	19.3			4.50		
10:22	7.0	2100	19.3			6.75		
10:30	Sample well							
			 					
At Least 3 We	ll Bore Volumes	Were Evacuated Be	efore Sampling	Discharge Rate	; =	GPM x 0.00223 =	cfs	
Comments: (1	9.88 - 6.00) * 0.	16 = 2.221 or ab	out 2.25 gallons per	r volume				
<u>T</u>	PH-Diesel sampl	e X 3 for MS/MS	D					
[Comments ma	y continue on bac	 :k]						
	ed By: Mark Mo	***		Witnessed By:	· · · · · ·			
								

USPCI Project	USPCI Project Name: UPMF Oakland USPCI Project Number: 96120-844								
Measuring Poi	nt (MP) Location	Top of casing	•••	Wel	l No. OKUS-W	8			
Well Depth: (E	Below MP): 14.8	0 Feet							
Casing diamete	er: 2 Inches			Sampling Date: 11/13/96					
Depth To Grou	ınd Water (Below	MP): 5.90 Feet		Sample ID No. OKUS-W8					
Method Of W	ell Development;			Time: 11:05					
□ Tap [☐ Submersible Pu	mp 🗆 Bladder	Pump		Riser Elevation (MI	P): 7.11 Feet			
■ Bailer [☐ Centrifugal Pur	np 🗆 Other			Top of Screen Elev	ation: 2.11 Feet			
Sampling Coll	ection Method:	 		Sample	Appearance: Very slightl	y turbid, yellow			
☐ Tap ☐ Sul	bmersible Pump	☐ Bladder	Pump Sample	Odor: I	Light				
■ Bailer <u>Typ</u>	e: O Teflo	n O Stainless Sta	el	Samplir	ng Problems (if any):				
			plastic disposable						
		Feet Bel	• -	Decont	amination Performed: Pr	obe			
Tubing Type (· · · <u> · · · · · · · · · · · · · · ·</u>						
Tubing Used for: Sample Collection Well Development/Field Tests Samples Collected: TPH-Gasoline, TPH-D 8020 BTEX									
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)			
10:45	Begin well								
10:50	6.8	3800	19.8		1.5				
10:53	6.8	3700	19.5		3.0	_			
10:57	6.9	3700	19.4		4.5				
11:05	Sample well								
		Were Evacuated Bo	efore Sampling out 1.5 gallons per	Discharge Rate =	GPM x 0.00223 =	cfs			
[Comments may co	ontinue on back]		· · · · · · · · · · · · · · · · · · ·						
Form Complete	ed By: Mark Mo	Cormick		Witnessed By:					

USPCI Project	Name: UPMF	Oakland		USPCI	Project Number: 96120-	844	
Measuring Poin	t (MP) Location	Top of casing		We	ll No. APL-W1		
Well Depth: (B	elow MP): 21.8	7 Feet	·-				
Casing diameter	r: 2 Inches			Sampling Date: N/A			
Depth To Grou	nd Water (Below	MP): Not meas		Sample ID No. APL-W1			
Method Of We	ell Development				Time: N/A		
□ Тар □	Submersible Pu	ımp 🗆 Bladder	Pump		Riser Elevation (MI	P): 7.11 Feet	
☐ Bailer ☐	Centrifugal Pur	mp 🗆 Other			Top of Screen Eleve	ation: 2.11 Feet	
Sampling Collection Method:				Sample	Appearance: N/A		
☐ Tap ☐ Sub	mersible Pump	☐ Bladder	Pump Sample	Odor:	N/A		
☐ Bailer Type	: O Teflo	n 🔘 Stainless St	eel	Sampli	ng Problems (if any): We	ll inaccessable	
	ABS Plastic (PVC OHDP	E disposable				
Pump Intake O	r Bailer Set At _	Feet Be	low MP	Decon	tamination Performed:		
Tubing Type (i	f Used):						
Tubing Used for: Sample Collection Well Development/Field Tests Samples Collected: None							
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)	
WELL NOT	SAMPLED	, ,	<u>-</u>				
					<u> </u>		
					-		
	<u> </u>	1	<u> </u>	<u> </u>		<u> </u>	
		Were Evacuated B		Discharge Rate =	GPM x 0.00223 =	cfs	
	e well was inacc sample the well.		acked container tra	ilers resting on the wel	l head. The sampler was	unable to gauge	
[Comments may con	ntinue on back]						
Form Complete	d By: Mark Mo	Cormick		Witnessed By:	· · · · · · · · · · · · · · · · · · ·		

USPCI Project	Name: UPMF ()akland		USPCI Project Number: 96120-844			
Measuring Poin	t (MP) Location	Top of casing		Well	No. APL-W2		
Well Depth: (Be	elow MP): 17.0	0 Feet					
Casing diameter	r: 2 Inches			Sampling Date: 11/13/96			
Depth To Grou	nd Water (Below	MP): 9.57 Feet			Sample ID No. AP	L-W2	
Method Of We	ell Development:				Time: 09:45		
□ Tap □	Submersible Pu	mp 🗌 Bladder	Pump		Riser Elevation (MP): 7.62 Feet	
■ Bailer □	Centrifugal Pur	np 🗆 Other			Top of Screen Eleva	tion: 2.62 Feet	
Sampling Colle	ection Method:			Sample	Appearance: Clear		
☐ Tap ☐ Sub	mersible Pump	☐ Bladder	Pump Sample	Odor: N	lone		
■ Bailer Type	Teflo	n O Stainless Ste	æl	Samplin	g Problems (if any):		
	ABS Plastic (PVC HDP	disposable				
Pump Intake Or	Bailer Set At _	Feet Bel	ow MP	Deconta	mination Performed: Prob	oe	
Tubing Type (if	f Used):						
Tubing Used fo	r: 🗆 Sample C	Collection	ell Development/Fiel	d Tests Samples	Collected: TPH-Gasolia 8	ne, TPH-Diesel, 1020 BTEX	
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)	
00.00	D	(ишпо/ст)	<u> </u>		(Galous)	(01.72)	
09:22 09:29	Begin well 7.4	2100	19.8		1.25		
09:33	7.3	2200	19.6		2.50		
09:35	7.3	2100	19.5		3.75		
09;45	Sample well						
			·				
	<u> </u>		<u> </u>			<u> </u>	
At Least 3 We	ell Bore Volumes	Were Evacuated l	Before Sampling	Discharge Rate =	GPM x 0.00223 =	cfs	
Comments: (17	7.00 - 9.57) * 0.1	16 = 1.189 or abo	out 1.25 galloos per	r volume			
Sa	mpler pulled 2	old bailers from t	oottom of well befo	re purging			
					[Commen	ts may continue on back	
Form Complete	d By: Mark Mo	Cormick		Witnessed By:			

APPENDIX B ANALYTICAL REPORTS



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

U.S.P.C.I. / Laidlaw 5665 Flatiron Pkwy Boulder, CO 80301

Client Project ID: Sample Matrix: Analysis Method:

UP Motor Freight Water

EPA 5030/8015 Mod./8020

Sampled: Received: Reported: Nov 13, 1996 Nov 13, 1996 Nov 26, 1996

Attention: Denton Mauldin

First Sample #:

611-0840

GC112296

GC112296

GC112296

GC112296

QC Batch Number:

GC112296

GC112296

802005A

802005A

802005A 802005A 802005A 802005A TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

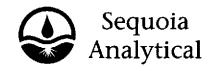
Analyte	Reporting Limit μg/L	Sample I.D. 611-0840 APL/UP-W2	Sample I.D. 611-0841 OKUS-W7	Sample I.D. 611-0842 OKUS-W8	Sample I.D. 611-0843 OKUS-W1	Sample I.D. 611-0844 OKUS-W2	Sample I.D. 611-0845 OKUS-W12
Purgeable Hydrocarbons	50	85	86	170	N.D.	6,000	11,000
Benzene	0.50	3.2	4.1	N.D.	N.D.	160	210
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	34	55
Ethyl Benzene	0.50	1.7	N.D.	N.D.	N.D.	130	26
Total Xylenes	0.50	0.62	N.D.	1.1	N.D.	64	89
Chromatogram Pat	tern:	Discrete Peaks	Gasoline & Unidentified Hydrocarbons > C8	Gasoline & Unidentified Hydrocarbons > C8		Discrete Peaks > Gasoline	Discrete Peaks ⇒Gasoline
Quality Control Da	ıta						
Report Limit Multipl	lication Factor:	1.0	1.0	2.0	1.0	50	50
Date Analyzed:		11/22/96	11/22/96	11/22/96	11/22/96	11/22/96	11/22/96
Instrument Identific	ation:	HP-5	HP-5	HP-5	HP-5	HP-5	HP-5
Surrogate Recovery (QC Limits = 70-13		80	81	84	96	88	81

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard. nalytes reported as N.D. were not detected above the stated reporting limit.

BEQUOIA ANALYTICAL, #1271

Nelissa Q. Brewer

Velissa A. Brewer Client Services Representative



680 Chesapeake Drive 404 N. Wiget Lane

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

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U.S.P.C.I. / Laidlaw 5665 Flatiron Pkwy Boulder, CO 80301

Client Project ID: Sample Matrix:

UP Motor Freight Water

EPA 5030/8015 Mod./8020

Sampled: Received: Nov 13, 1996 Nov 13, 1996

Attention: Denton Mauldin

Analysis Method: First Sample #:

Reported: Nov 26, 1996

QC Batch Number:

GC112296

611-0846 GC112296

802005A 802005A TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit μg/L	Sample I.D. 611-0846 OKUS-W3	Sample I.D. Method Blank	
Purgeable Hydrocarbons	50	7,400	N.D.	
Benzene	0.50	220	N.D.	
Toluene	0.50	60	N.D.	
Ethyl Benzene	0.50	N.D.	N.D.	
Total Xylenes	0.50	N.D.	N.D.	
Chromatogram Pat	tern:	Discrete Peaks > Gasoline		
Quality Control Da	ita			
Report Limit Multipl	ication Factor:	100	1.0	
Date Analyzed:		11/22/96	11/22/96	
nstrument Identifica	ation:	HP-5	HP-5	
Surrogate Recovery (QC Limits = 70-130		85	91	

urgeable Hydrocarbons are quantitated against a fresh gasoline standard. nalytes reported as N.D. were not detected above the stated reporting limit.

EQUOIA ANALYTICAL, #1271

issa a Brewer

Melissa A. Brewer lient Services Representative



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U.S.P.C.I. / Laidlaw 5665 Flatiron Pkwy Boulder, CO 80301 Attention: Denton Mauldin

Client Project ID: Sample Matrix: Analysis Method:

First Sample #:

UP Motor Freight Water

EPA 3510/8015 Mod.

Sampled: Received: Reported:

Nov 13, 1996 Nov 13, 1996 Nov 26, 1996

QC Batch Number:

SP112096

611-0840 SP112096

SP112096

SP112096

SP112096

SP112096

8015EXA

8015EXA

8015EXA

8015EXA

8015EXA

8015EXA

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit μg/L	Sample I.D. 611-0840 APL/UP-W2	Sample i.D. 611-0841 OKUS-W7	Sample I.D. 611-0842 OKUS-W8	Sample I.D. 611-0843 OKUS-W1	Sample I. D. 611-0844 OKUS-W2	Sample I.D. 611-0845 OKUS-W12
Extractable Hydrocarbons	50	470	1,400	1,600	180	2,900	3,000
Chromatogram Patt	ern:	Diesel & Unidentified Hydrocarbons >C20	Diesel & Unidentified Hydrocarbons > C20	Diesel & Unidentified Hydrocarbons > C20	Diesel & Unidentified Hydrocarbons > C20	Diesel & Unidentified Hydrocarbons < C15 > C20	Diesel & Unidentified Hydrocarbons < C15 > C20

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	11/20/96	11/20/96	11/20/96	11/20/96	11/20/96	11/20/96
Date Analyzed:	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96
Instrument Identification:	HP-3A	HP-3B	HP-3B	HP-3B	НР-ЗВ	HP-3B

ixtractable Hydrocarbons are quantitated against a fresh diesel standard. nalytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, #1271

Velissa A. Brewer lient Services Representative



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

U.S.P.C.I. / Laidlaw 5665 Flatiron Pkwy Boulder, CO 80301

Client Project ID: Sample Matrix:

UP Motor Freight Water

EPA 3510/8015 Mod.

Sampled: Received: Nov 13, 1996 Nov 13, 1996

Attention: Denton Mauldin

Analysis Method: First Sample #:

Reported:

Nov 26, 1996

QC Batch Number:

SP112096

611-0846 SP112096

8015EXA

8015EXA TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit μg/L	Sample I.D. 611-0846 OKUS-W3	Sample I.D. Method Blank		
Extractable Hydrocarbons	50	4,700	N.D.		
Chromatogram Pa	ttern:	Diesel & Unidentified Hydrocarbons < C15	••		

Quality Control Data

Report Limit Multiplication Factor: 10 1.0

Date Extracted: 11/20/96 11/20/96

Date Analyzed: 11/22/96 11/21/96

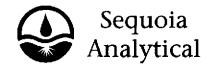
Instrument Identification: HP-3A HP-3B

xtractable Hydrocarbons are quantitated against a fresh diesel standard. nalytes reported as N.D. were not detected above the stated reporting limit.

EQUOIA ANALYTICAL, #1271

elissa a Brewer

Melissa A. Brewer Client Services Representative



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U.S.P.C.I. / Laidlaw 5665 Flatiron Pkwy Boulder, CO 80301 Attention: Denton Mauldin

Client Project ID: UP Motor Freight

Matrix: Liquid

QC Sample Group: 6110840-846

Reported:

Nov 27, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl	Xylenes	Diesel	
			Benzene			
QC Batch#:	GC112296	GC112296	GC112296	GC112296	SP112096	
	802005A	802005A	802005A	802005A	8015EXA	
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015	
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 3510	
Analyst:	D. Newcomb	D. Newcomb	D. Newcomb	D. Newcomb	D. Sharma	
MS/MSD #:	6110841	6110841	6110841	6110841	6110841	
Sample Conc.:	4.1 μg/L	N.D.	N.D.	N.D.	1400 μg/L	
Prepared Date:	11/22/96	11/22/96	11/22/96	11/22/96	11/20/96	
Analyzed Date:	11/22/96	11/22/96	11/22/96	11/22/96	11/21/96	
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3B	
Conc. Spiked:	20 μg/L	20 μg/L	20 μg/L	60 μg/L	300 μg/L	
Result:	20	18	18	57	840	
MS % Recovery:	80	90	90	95	-	
Dup. Result:	20	18	19	57	970	
MSD % Recov.:	80	90	95	95	•	
RPD:	0.0	0.0	5.4	0.0	14	
RPD Limit:	0-25	0-25	0-25	0-25	0-50	

LCS #:	5LCS112296	5LCS112296	5LCS112296	5LCS112296	LCS112096
Prepared Date:	11/22/96	11/22/96	11/22/96	11/22/96	11/20/96
Analyzed Date:	11/22/96	11/22/96	11/22/96	11/22/96	11/21/96
nstrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3B
Conc. Spiked:	20 μg/L	20 μg/L	20 μg/L	60 μg/L	$300\mu\mathrm{g/L}$
LCS Result:	17	17	18	55	290
LCS % Recov.:	85	85	90	92	97

MS/MSD LCS	70-130	70-130	70-130	70-130	60-140	
Control Limits						

SEQUOIA ANALYTICAL, #1271

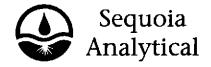
Melissa a. Brew

Melissa A. Brewer Client Services Representative 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



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U.S.P.C.I. / Laidlaw 5665 Flatiron Pkwy

UP Motor Freight Client Project ID:

Received:

Nov 13, 1996

Boulder, CO 80301

Attention: Denton Mauldin

Lab Number:

6110840-846

Reported:

Nov 27, 1996

LABORATORY NARRATIVE

EPA 8015 Mod./3510: Total Extractable Petroleum Hydrocarbons Quality Control

Q.C. Batch #: SP1120968015EXA Date Analyzed: November 21, 1996

Results for the Matrix Spike and Matrix Spike Duplicate were less than the result of the spiked sample. This appears to be due to matrix interference. The batch was validated using the LCS result.

All other quality control measures were within criteria.

EQUOIA ANALYTICAL, #1271

lissa a. Brewer

Helissa A. Brewer lient Services Representative



1 680 Chesapeake Drive • Bedwood City, CA 94063 • (415) 364 6560 (F43) 4(15) 364 923 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600 FAX (510) 988-9673

Company Name: US	PCI/LAID	LAW	,			Project	Name:	13	D	MO	TOL	{ F	REIG	HT		٦
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Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	6		10 XX	//	/,	/,	/ ,	//		Comments	7
1. APL/UP-WZ	11/13/96 0945	AQU	3	VOA		X		6	1108	340						7
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3. OKU5; W7	1030		3	MOA		X		61	108	41						
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5. DKUS,-WB	1105		3	VOA		X		61	1108	42						
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3. DKU3,-W3	1255		3	NOA		$ \times $		6	110	346					
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