FOURTH QUARTER 1997
MONITORING REPORT

UNION PACIFIC MOTOR FREIGHT
FACILITY
OAKLAND, CALIFORNIA

LAIDLAW Project No.
96120-844

Prepared For:

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January 28, 1998

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1. INTRODUCTION

This report presents the results from the fourth quarter 1997 groundwater monitoring event conducted at the Union Pacific Railroad Motor Freight (UPMF) facility at 1750 Ferro Street in Oakland, California (Figure 1). The report has been prepared by Consulting Services of Laidlaw Environmental Services (Laidlaw) on behalf of Union Pacific Railroad (UPRR). The scope of work for the fourth quarter 1997 event has been performed as part of the groundwater monitoring and reporting program at the facility. 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. This report includes a discussion of the background information about the site, field and analytical results for the fourth quarter 1997 event, and conclusions.

2. BACKGROUND INFORMATION

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

2.1 Site History

The (UPMF) 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 is referred to as "product."

Groundwater monitoring has been conducted at the site since 1993. A skimming system that removes product only has operated in recovery well RW since May 2, 1994.

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, 1991). 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 contracted with 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 UPMF 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 groundwater flow direction and gradient based on the groundwater elevations.

All groundwater samples for the fourth quarter 1997 monitoring event were analyzed for: (1) total petroleum hydrocarbons as diesel (TPH-D) and total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 8015 Modified; and (2) benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020.

Fluid-level measurements are collected from the recovery well RW on a monthly basis by Burns and McDonnell Waste Consultants. These measurements are made to assess the temporal variations in the thickness of product and to evaluate the effectiveness of the skimming system. Fluid-level measurements are collected from the remaining monitoring wells by Laidlaw personnel on a quarterly basis.

3. 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 18 and 19, 1997 and are compiled into Table 1. The data were used to produce the groundwater elevation map presented as Figure 3. An increase in groundwater elevations relative to the previous monitoring event (third quarter 1997) was noted in all monitoring wells. Since 1995, groundwater elevations have been highest during the first quarter of each year, and are typically lower during the second, third, and fourth quarters.

3.2 Groundwater Gradient

The groundwater gradient at the site averaged approximately 0.005 foot per foot (26 feet per mile) and the observed groundwater flow direction was to the east. The groundwater gradient and flow direction were consistent with gradients and flow directions observed during previous monitoring events.

3.3 Analytical Results

Analytical results for all monitoring wells sampled during the fourth quarter 1997 monitoring event are compiled into Table 2. Samples were collected from monitoring wells OKUS-W1, OKUS-W2, OKUS-W3, OKUS-W7, OKUS-W8, APL/UP-W2, 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 (µg/l). The samples collected from monitoring wells OKUS-W2, and OKUS-W3 contained dissolved BTEX. The samples collected from monitoring wells APL/UP-W1 and APL/UP-W2 contained dissolved benzene, ethylbenzene, and xylenes. The samples collected from monitoring well OKUS-W7 contained dissolved benzene and ethylbenzene. The samples collected from monitoring well OKUS-W8 contained dissolved xylene.

Benzene concentrations ranged from below the MDL in wells OKUS-W1 and OKUS-W8 to 260 µg/l in OKUS-W3. Toluene ranged from below the MDL in wells OKUS-W1, OKUS-W7, OKUS-W8, APL/UP-W1, and APL/UP-W2 to 67 µg/l in OKUS-W3. Ethylbenzene ranged from below the MDL in wells OKUS-W1 and OKUS-W8 to 5,600 µg/l in OKUS-W3. Xylenes ranged from below the MDL

in wells OKUS-W1 and OKUS-W7 to 280 µg/l in OKUS-W3. Total BTEX concentrations ranged from below the MDL in OKUS-W1 to 6,200 µg/l in OKUS-W3.

Dissolved TPH-G, indicative of gasoline, were detected in samples collected from all monitoring wells sampled during the fourth quarter 1997 monitoring event except for OKUS-W1 and OKUS-W7. TPH-G concentrations ranged from below the MDL of 50 µg/l in OKUS-W1 and OKUS-W7 to 6,800 µg/l in OKUS-W3.

Dissolved TPH-D concentrations representing diesel fuel, were detected in samples collected from all monitoring wells sampled during the event. TPH-D concentrations ranged from 260 µg/l in OKUS-W1 to 2,800 µg/l in OKUS-W3.

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

A product/water interface was not detected in recovery well RW during the fourth quarter sampling event. However, Laidlaw personnel did detect product sheen in the well on November 19, 1997. A site visit was not conducted by Burns and McDonnell field personnel during the fourth quarter 1997. Historically upon each site visit, Burns and McDonnell field personnel have detected a sheen in well RW and found the recovery barrel to be mostly empty.

4. CONCLUSIONS

On the basis of the information obtained from the fourth quarter 1997 monitoring activities, Laidlaw concludes that:

- The groundwater flow direction is to the east at an average gradient of 0.005 foot per foot (26 feet per mile). This result is consistent with previous monitoring events;

- The dissolved BTEX and TPH concentrations in all wells except for APL/UP-W1 and APL/UP-W2 are consistent with historic concentration ranges and, in most cases, are lower than previously observed levels.

- The BTEX and TPH concentrations in downgradient wells APL/UP-W1 and APL/UP-W2 show an increase from the preceding quarter and are found at higher concentrations than previously observed.

- Historic monitoring results show that residual petroleum contamination in the source area has decreased over time, which indicates that a continued source of contamination is not present and that remaining residual contamination is relatively static.

5. REFERENCES

Laidlaw (formerly USPCI), 1991. "Hydrocarbon Investigation and Remediation Design," Union Pacific Railroad, June 10, 1991.

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	08/09/95	N/A	NP	8.18	0.99	0.99
	9.17	11/29/95	N/A	NP	8.78	0.39	0.39
	9.17	02/27/96	N/A	NP	7.58	1.59	1.59
	9.17	05/29/96	N/A	NP	7.80	1.37	1.37
	9.17	08/27/96	N/A	NP	8.34	0.83	0.83
	9.17	11/12/96	N/A	NP	8.71	0.46	0.46
	9.17	02/17/97	N/A	NP	7.58	1.59	1.59
	9.17	05/21/97	N/A	NP	8.24	0.93	0.93
	9.17	08/27/97	N/A	NP	8.37	0.80	0.80
	9.17	11/19/97	N/A	NP	8.28	0.89	0.89
OKUS-W2	9.71	08/09/95	N/A	NP	9.09	0.62	0.62
	9.71	11/29/95	N/A	NP	9.69	0.02	0.02
	9.71	02/27/96	N/A	NP	8.49	1.22	1.22
	9.71	05/29/96	N/A	NP	8.72	0.99	0.99
	9.71	08/27/96	N/A	NP	9.24	0.47	0.47
	9.71	11/12/96	N/A	NP	9.63	0.08	0.08
	9.71	02/17/97	N/A	NP	8.41	1.30	1.30
	9.71	05/21/97	N/A	NP	9.13	0.58	0.58
	9.71	08/27/97	N/A	NP	9.29	0.42	0.42
	9.71	11/19/97	N/A	NP	9.21	0.50	0.50
OKUS-W3	9.80	08/09/95	N/A	NP	9.41	0.39	0.39
	9.80	11/29/95	N/A	NP	9.97	-0.17	-0.17
	9.80	02/27/96	N/A	NP	8.73	1.07	1.07
	9.80	05/29/96	N/A	NP	8.94	0.86	0.86
	9.80	08/27/96	N/A	NP	9.52	0.28	0.28
	9.80	11/12/96	N/A	NP	9.90	-0.10	-0.10
	9.80	02/17/97	N/A	NP	8.67	1.13	1.13
	9.80	05/21/97	N/A	NP	9.44	0.36	0.36
	9.80	08/27/97	N/A	NP	WELL INACCESSABLE		
	9.80	11/19/97	N/A	NP	9.45	0.35	0.35
OKUS-W4	7.35	08/09/95	N/A	NP	6.10	1.25	1.25
	7.35	11/29/95	N/A	NP	6.70	0.65	0.65
		05/13/97	WELL DECOMMISSIONED				
OKUS-W5	9.25	08/09/95	N/A	Trace	9.75	-0.50	-0.50
	9.25	09/07/95	N/A	Trace	9.56	-0.31	-0.31
	9.25	10/18/95	9.82	P	--	--	--
	9.25	11/10/95	9.97	P	--	--	--
	9.25	12/15/95	9.60	P	--	--	--

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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-W5	9.25	01/10/96	9.58	P	--	--	--
	9.25	02/16/96	9.08	P	--	--	--
	9.25	03/25/96	8.99	P	--	--	--
	9.25	04/18/96	9.22	P	--	--	--
	9.25	05/29/96	9.06	P	--	--	--
	9.25	06/13/96	9.11	P **	--	--	--
	9.25	07/25/96	9.11	P	--	--	--
	9.25	08/27/96	9.44	P	--	--	--
	9.25	09/16/96	N/A	--	--	--	--
	9.25	10/17/96	9.65	P	--	--	--
	9.25	11/12/96	9.87	P	--	--	--
	9.25	12/16/96	N/A	--	--	--	--
	9.25	01/20/97	N/A	--	--	--	--
	9.25	02/17/97	9.09	P	--	--	--
	9.25	05/21/97	9.29	P	--	--	--
	9.25	08/27/97	9.42	P	--	--	--
	9.25	11/19/97	9.87	P	--	--	--
OKUS-W6	7.02	08/09/95	5.65	P	--	--	--
	7.02	09/07/95	5.98	P	--	--	--
	7.02	10/18/95	6.38	P	--	--	--
	7.02	11/10/95	6.52	P	--	--	--
	7.02	12/15/95	5.47	P	--	--	--
	7.02	01/10/96	5.58	P	--	--	--
	7.02	02/16/96	4.70	P	--	--	--
	7.02	03/25/96	4.72	P	--	--	--
	7.02	04/18/96	5.19	P	--	--	--
	7.02	05/29/96	5.02	P	--	--	--
	7.02	06/13/96	4.99	P	--	--	--
	7.02	07/25/96	5.23	P	--	--	--
	7.02	08/27/96	5.82	P	--	--	--
	7.02	09/16/96	N/A	--	--	--	--
	7.02	10/17/96	6.50	P	--	--	--
	7.02	11/12/96	6.27	P	--	--	--
	7.02	12/16/96	N/A	--	--	--	--
	7.02	01/20/97	N/A	--	--	--	--
	7.02	02/17/97	4.71	P	--	--	--
	7.02	05/21/97	6.03	P	--	--	--
	7.02	08/27/97	6.00	P	--	--	--
	7.02	11/19/97	5.54	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.
OKUS-W7	6.91	08/09/95	N/A	NP	5.53	1.38	1.38
	6.91	11/29/95	N/A	NP	6.09	0.82	0.82
	6.91	02/27/96	N/A	NP	4.98	1.93	1.93
	6.91	05/29/96	N/A	NP	5.08	1.83	1.83
	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
	6.91	02/17/97	N/A	NP	4.85	2.06	2.06
	6.91	05/21/97	N/A	NP	5.53	1.38	1.38
	6.91	08/27/97	N/A	NP	5.76	1.15	1.15
	6.91	11/19/97	N/A	NP	5.65	1.26	1.26
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
	6.75	02/17/97	N/A	NP	4.69	2.06	2.06
	6.75	05/21/97	N/A	NP	5.36	1.39	1.39
	6.75	08/27/97	N/A	NP	5.59	1.16	1.16
	6.75	11/19/97	N/A	NP	5.45	1.30	1.30
APL/UP-W1	8.12	08/09/95	N/A	NP	10.01	-1.89	-1.89
	8.12	11/29/95	N/A	NP	10.29	-2.17	-2.17
	8.12	02/27/96	N/A	NP	WELL INACCESSABLE		
	8.12	05/29/96	N/A	NP	WELL INACCESSABLE		
	8.12	08/27/96	N/A	NP	WELL INACCESSABLE		
	8.12	11/12/96	N/A	NP	WELL INACCESSABLE		
	8.12	02/17/97	N/A	NP	10.02	-1.90	-1.90
	8.12	05/21/97	N/A	NP	10.14	-2.02	-2.02
	8.12	08/27/97	N/A	NP	9.91	-1.79	-1.79
	8.12	11/18/97	N/A	NP	9.32	-1.20	-1.20
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	8.89	-1.58	-1.58
	7.31	05/29/96	N/A	NP	9.68	-2.37	-2.37
	7.31	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
	7.31	02/17/97	N/A	NP	9.07	-1.76	-1.76
	7.31	05/21/97	N/A	NP	9.42	-2.11	-2.11
	7.31	08/27/97	N/A	NP	9.17	-1.86	-1.86
	7.31	11/18/97	N/A	NP	8.59	-1.28	-1.28

TABLE 1
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OAKLAND MOTOR FREIGHT FACILITY

WELL NO.	ELEV.* TOC	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	WATER ELEV.	CORR'D ELEV.
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	--	--
	--	11/10/95	9.58	--	N/A	--	--
	--	12/15/95	9.46	0.12P	9.58	--	--
	--	01/10/96	9.24	0.04	9.28	--	--
	--	02/16/96	N/A	--	8.73	--	--
	--	03/25/96	N/A	--	8.50	--	--
	--	04/18/96	N/A	--	8.70	--	--
	--	05/29/96	N/A	--	8.68	--	--
	--	06/13/96	N/A	--	8.68	--	--
	--	07/25/96	N/A	--	9.09	--	--
	--	08/27/96	N/A	--	9.18	--	--
	--	09/16/96	N/A	--	9.33	--	--
	--	10/17/96	N/A	--	9.50	--	--
	--	11/12/96	N/A	--	9.59	--	--
	--	12/16/96	9.12	0.10	9.22	--	--
	--	01/20/97	N/A	SHEEN	8.50	--	--
	--	02/11/97	N/A	NP	8.33	--	--
	--	03/06/97	N/A	NP	8.70	--	--
	--	04/29/97	N/A	SHEEN	9.03	--	--
	--	05/27/97	9.09	0.03	9.12	--	--
	--	07/15/97	N/A	NP	9.22	--	--
	--	08/27/97	N/A	SHEEN	9.29	--	--
	--	11/19/97	N/A	SHEEN	9.29	--	--

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

-- Information not available or inaccurate.

N/A Non Applicable

NP - No Product

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 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)
OKUS-W1	OKUS-W1	01/14/93	ND	410	20	4	220	ND	240	ND
"	"	05/12/93	120	ND	ND	ND	ND	ND	ND	ND
"	"	08/25/93	100	ND	ND	ND	ND	ND	ND	ND
"	"	11/11/93	160	91	1.1	0.88	21	1.6	24	ND
"	"	02/08/94	92	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10
"	"	05/03/94	61	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10
"	"	08/24/94	86	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10
"	"	11/16/94	51	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
"	"	02/22/95	120	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
"	"	06/22/95	<50	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
"	"	08/09/95	<50	<50	<0.50	<0.50	<0.50	<0.50	ND	0.04
"	"	11/29/95	480	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.0050
"	"	02/27/96	330	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
"	"	05/30/96	320	<50	<0.50	<0.50	<0.50	<0.50	ND	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
"	"	02/18/97	400	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
"	"	05/21/97	190	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
"	"	08/27/97	140	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.0050
"	"	11/19/97	260	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
OKUS-W2	OKUS-W2	01/14/93	5400	14000	480	92	8500	ND	9100	0.036
"	"	05/12/93	2800	8800	220	47	4600	100	5000	0.093
"	"	08/25/93	6500	22000	420	92	10000	210	11000	0.089
"	"	11/11/93	7700	24000	540	150	13000	280	14000	ND
"	"	02/08/94	2300	4900	150	29	3000	78	3300	<0.10
"	"	05/03/94	2600	17000	300	<0.50	5800	220	6300	<0.10
"	"	08/24/94	8200	11000	320	67	7500	250	8100	<0.10
"	"	11/16/94	5500	10000	290	79	130	160	660	NA
"	"	02/22/95	2000	3500	100	18	1600	66	1800	NA
"	"	06/22/95	3200	13000	260	62	<0.50	110	430	NA
"	"	08/09/95	2900	4800	160	28	<0.50	200	390	0.92
"	"	11/29/95	5600	7100	240	34	<0.50	58	330	0.049
"	"	02/27/96	2400	5300	200	42	3400	160	3800	NA
"	"	05/30/96	1900	7000	210	<0.50	<0.50	180	390	NA
"	"	08/27/96	3100	6700	240	65	170	180	660	0.17
"	"	11/12/96	2900	6000	160	34	130	64	390	NA
"	"	02/18/97	3000	7800	190	44	4000	150	4390	NA
"	"	05/21/97	2500	3300	120	23	11	31	185	NA
"	"	08/27/97	1800	4600	140	34	76	48	300	0.052
"	"	11/19/97	2200	3300	120	23	2400	67	2600	NA
OKUS-W3	OKUS-W3	01/14/93	4200	4900	230	42	2600	44	2900	NA
"	"	05/12/93	4400	4600	290	60	3500	72	3900	0.14
"	"	08/25/93	2700	9400	280	55	4300	41	4700	0.08
"	"	11/11/93	5000	9500	390	110	5100	130	5700	0.14
"	"	02/08/94	4400	17000	420	78	9800	160	10000	0.12
"	"	05/03/94	3000	14000	310	61	6400	210	7000	0.14
"	"	08/24/94	4500	10000	350	78	7300	170	7900	<0.10
"	"	11/16/94	4700	9100	260	64	95	<0.50	420	NA
"	"	02/22/95	2400	7400	250	51	4400	150	4900	NA
"	"	06/22/95	3300	8100	250	53	<0.50	76	380	NA
"	"	08/09/95	3100	5200	200	39	<0.50	140	380	1.6
"	"	11/29/95	4500	5300	220	42	<0.50	44	310	0.18
"	"	02/27/96	4000	7900	330	75	6400	240	7000	NA
"	"	05/30/96	2300	8900	200	<0.50	<0.50	61	260	NA
"	"	08/27/96	2700	3100	170	37	64	36	310	0.20
"	"	11/12/96	4700	7400	220	60	<0.50	<0.50	280	NA
"	"	02/18/97	4600	9300	260	62	5800	85	6210	NA
"	"	05/21/97	2400	6100	190	43	120	41	394	NA
"	"	08/27/97	WELL INACCESSABLE - NOT SAMPLED							NA
"	"	11/19/97	2800	6800	260	67	5600	280	6200	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)
OKUS-W4	OKUS-W4	01/15/93	5400	8900	300	ND	4500	ND	4800	NA
"	"	05/12/93	2900	6000	320	110	4600	230	5300	0.16
"	"	08/26/93	2200	6700	350	72	4800	130	5400	0.098
"	"	11/11/93	2400	5500	250	53	4600	140	5000	0.13
"	"	02/07/94	2700	9100	250	<0.50	4900	150	5300	<0.10
"	"	05/03/94	2300	6500	240	34	4200	140	4600	0.12
"	"	08/24/94	2900	5200	200	41	3600	190	4000	0.11
"	"	11/16/94	2800	5500	320	52	<0.50	120	490	NA
"	"	02/22/95	2000	4300	250	47	2900	160	3400	NA
"	"	06/22/95	2700	4900	280	38	5200	140	5700	NA
"	"	08/09/95	2900	5300	270	54	<0.50	210	530	1.3
"	"	11/29/95	3100	4500	200	41	<0.50	46	290	0.14
"	"	05/13/97	WELL DECOMMISSIONED							
OKUS-W5	OKUS-W5	01/15/93	2900	550	53	11	180	20	260	NA
"	"	05/12/93	2100	550	81	14	250	37	380	0.56
"	"	08/25/93	PRODUCT IN WELL - NOT SAMPLED							
"	"	11/11/93	1600	590	14	3.1	54	6.2	77	0.53
"	"	02/07/94	1900	760	54	9.4	220	24	310	0.55
"	"	05/03/94	2000	820	57	9.5	240	27	330	0.38
"	"	08/24/94	1700	910	55	14	8.5	18	96	0.45
"	"	PRODUCT IN WELL - THE WELL HAS NOT BEEN SAMPLED SINCE 1994								
OKUS-W6	OKUS-W6	07/16/93	BRK	ND	2.5	ND	ND	ND	2.5	0.004
"	"	08/25/93	590	ND	2.6	ND	4.9	1.3	8.8	0.013
"	"	11/12/93	610	ND	3.6	ND	3.7	1.3	8.6	ND
"	"	PRODUCT IN WELL - THE WELL HAS NOT BEEN SAMPLED SINCE 1993								
OKUS-W7	OKUS-W7	07/16/93	ND	ND	2.1	ND	ND	ND	2.1	0.009
"	"	08/25/93	930	56	2.9	ND	1.2	ND	4.1	ND
"	"	11/12/93	1100	ND	ND	ND	ND	ND	ND	ND
"	"	02/07/94	1100	ND	0.7	<0.50	<0.50	<0.50	0.7	<0.10
"	"	05/03/94	1300	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10
"	"	08/24/94	910	<50	2.5	0.54	<0.50	<0.50	3.0	<0.10
"	"	11/16/94	820	<50	0.62	<0.50	<0.50	<0.50	0.6	NA
"	"	02/22/95	830	<50	0.54	<0.50	<0.50	<0.50	0.5	NA
"	"	06/22/95	850	<50	2.4	<0.50	0.52	<0.50	2.9	NA
"	"	08/09/95	640	71	4.2	<0.50	1.2	1.2	6.6	0.074
"	"	11/29/95	1300	64	4.3	<0.50	1.3	0.51	6.1	0.0095
"	"	02/27/96	2600	<50	1.5	<0.50	0.54	<0.50	2.0	NA
"	"	05/30/96	1900	60	2	<0.50	0.54	<0.50	2.0	NA
"	"	08/27/96	1700	70	2.3	<0.50	<0.50	<0.50	2.3	<0.10
"	"	11/12/96	1400	86	4.1	<0.50	<0.50	<0.50	4.1	NA
"	"	02/18/97	2000	<50	0.75	<0.50	<0.50	<0.50	0.7	NA
"	"	05/21/97	1200	<50	2.6	<0.50	0.84	<0.50	3.4	NA
"	"	08/27/97	700	65	4.7	0.53	1.3	1.5	8.0	0.0069
"	"	11/19/97	1600	<50	2.0	<0.50	0.84	<0.50	2.8	NA
OKUS-W8	OKUS-W8	07/16/93	ND	ND	ND	ND	ND	ND	ND	0.012
"	"	08/27/93	1100	120	1.3	ND	ND	0.85	2.2	ND
"	"	11/11/93	1300	190	3.5	1.3	46	4.9	55.7	ND
"	"	02/07/94	1000	120	0.9	<0.50	<0.50	<0.50	0.9	<0.10
"	"	05/03/94	780	79	0.99	<0.50	<0.50	<0.50	1.0	<0.10
"	"	08/24/94	700	100	1.4	<0.50	<0.50	<0.50	1.4	<0.10
"	"	11/16/94	830	110	0.77	<0.50	<0.50	<0.50	0.8	NA
"	"	02/22/95	370	150	0.96	<0.50	<0.50	1.2	2.2	NA
"	"	06/22/95	870	76	0.92	<0.50	<0.50	<0.50	0.9	NA
"	"	08/09/95	1100	90	1.1	<0.50	<0.50	1.3	2.4	0.078
"	"	11/29/95	2400	100	0.73	<0.50	<0.50	0.91	1.6	<0.0050
"	"	02/27/96	1900	80	<0.50	<0.50	<0.50	1.3	1.3	NA

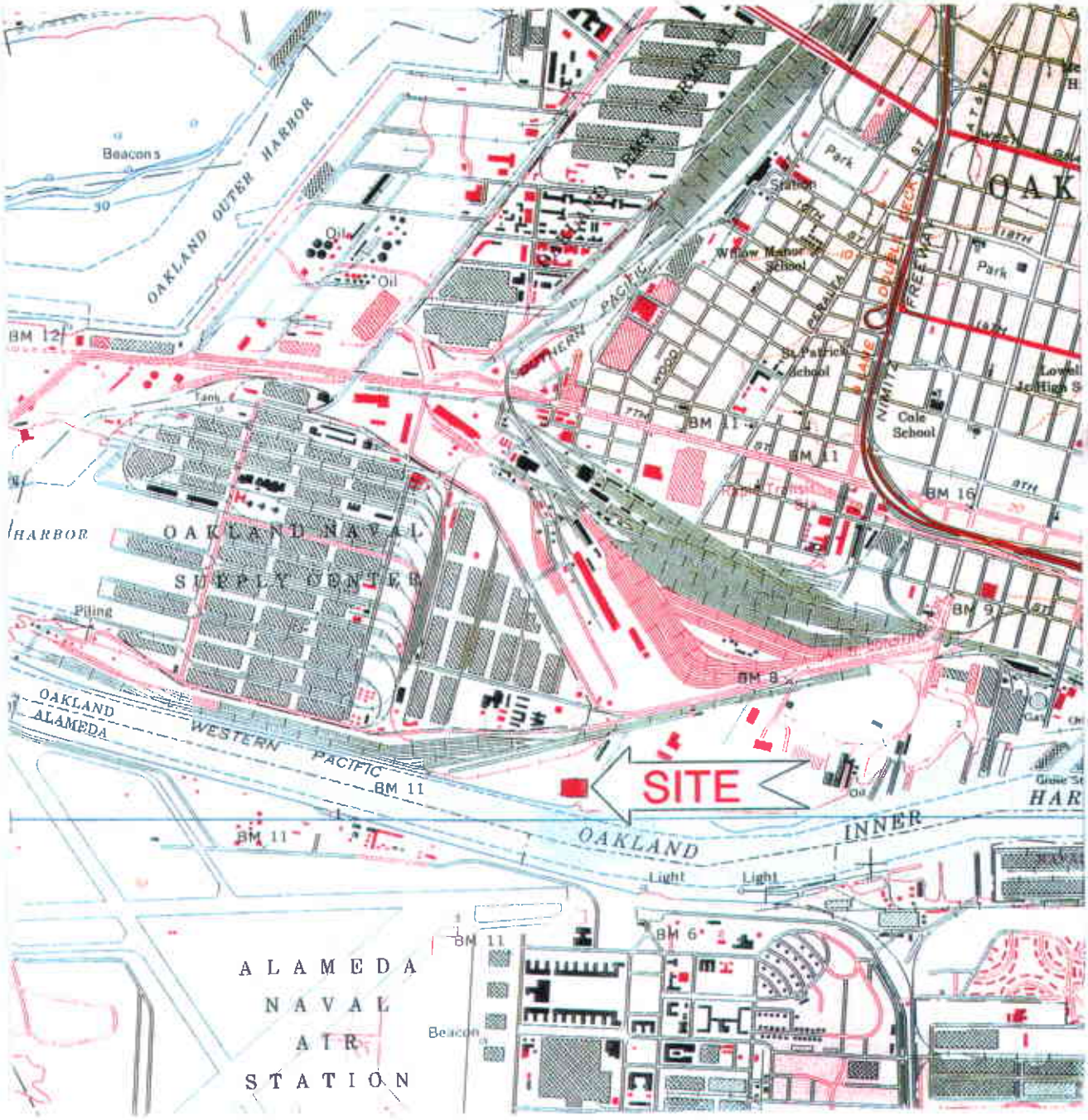
TABLE 2
ANALYTICAL RESULTS - GROUNDWATER MONITORING WELLS
UNION PACIFIC RAILROAD
OAKLAND MOTOR FREIGHT FACILITY

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)
OKUS-W8	OKUS-W8	05/30/96	2200	210	<0.50	<0.50	<0.50	0.7	0.7	NA
"	"	08/27/96	2100	150	0.64	<0.50	<0.50	<0.50	0.64	<0.10
"	"	11/12/96	1600	170	<0.50	<0.50	<0.50	1.1	1.1	NA
"	"	02/18/97	1900	140	<0.50	<0.50	<0.50	1.3	1.3	NA
"	"	05/21/97	1600	100	1.3	<0.50	<0.50	1.1	2.4	NA
"	"	08/27/97	1100	100	1.5	<0.50	1.1	3.2	5.8	<0.0050
"	"	11/19/97	1500	94	<0.50	<0.50	<0.50	0.69	0.69	NA
APL/UP-W1	APL/UP-W1	07/16/93	700	300	25.4	1.7	ND	3.0	30	0.011
"	"	08/26/93	810	720	47	1.3	360	14	420	0.013
"	"	11/11/93	530	560	26	ND	220	11	260	ND
"	"	02/07/94	660	620	25	<0.50	180	10	220	<0.10
"	"	05/03/94	590	680	48	2.9	260	9.8	320	<0.10
"	"	08/24/94	420	830	48	4.8	12	3.2	68	<0.10
"	"	11/15/94	480	470	36	3.6	9.6	12	61	NA
"	"	02/22/95	510	470	33	2.8	170	9	210	NA
"	"	06/22/95	320	160	12	0.82	3.5	2.4	19	NA
"	"	08/09/95	160	69	4.2	<0.50	<0.50	2.3	7	<0.0050
"	"	11/29/95	920	170	7.4	0.58	66	3.5	78	0.018
"	"	02/27/96	WELL INACCESSABLE - NOT SAMPLED							
"	"	05/30/96	WELL INACCESSABLE - NOT SAMPLED							
"	"	08/27/96	WELL INACCESSABLE - NOT SAMPLED							
"	"	11/12/96	WELL INACCESSABLE - NOT SAMPLED							
"	"	02/18/97	1800	620	43	3.3	130	20	196	NA
"	"	05/21/97	850	260	22	<0.50	13	2.5	38	NA
"	"	08/27/97	930	310	31	1.2	9.7	8.5	50	0.026
"	"	11/18/97	1400	740	53	<0.50	370	28	450	NA
APL/UP-W2	APL/UP-W2	07/16/93	ND	ND	8.0	ND	ND	ND	8	0.016
"	"	08/26/93	240	94	ND	ND	35	2.4	37	0.023
"	"	11/11/93	190	110	5.0	ND	38	2.6	46	ND
"	"	02/07/94	270	120	6.6	<0.50	38	1.8	46	<0.10
"	"	05/03/94	100	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10
"	"	08/24/94	330	220	13	0.77	3.5	3.1	20	<0.10
"	"	11/15/94	320	190	11	<0.50	63	5.4	79	NA
"	"	02/22/95	550	320	19	<0.50	100	9.5	130	NA
"	"	06/22/95	300	170	10	62	2.2	2.3	76	NA
"	"	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
"	"	11/12/96	470	85	3.2	<0.50	1.7	0.62	5.5	NA
"	"	02/18/97	770	170	12	0.77	81	9.4	103	NA
"	"	05/21/97	430	92	4.8	<0.50	1.1	<0.50	5.9	NA
"	"	08/27/97	450	130	6.4	<0.50	3.8	1.9	12.0	0.017
"	"	11/18/97	640	300	17	<0.50	120	15	150	NA
	DUPLICATES									
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	OKUS-QC1	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
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

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)
DUPLICATES										
OKUS-W1	OKUS-W11	02/27/96	330	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
OKUS-W1	OKUS-W11	05/30/96	570	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
OKUS-W1	OKUS-W11	08/27/96	330	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10
OKUS-W2	OKUS-W12	11/12/96	3000	11000	210	55	26	89	380	NA
APL/UP-W1	APL/UP-W11	02/18/97	1800	370	42	1.4	140	18	201	NA
OKUS-W1	OKUS-W11	05/21/97	220	<50	<0.50	<0.50	<0.50	<0.50	ND	NA
OKUS-W2	OKUS-W12	08/27/97	1500	4800	140	29	70	23	260	0.068
OKUS-W7	OKUS-W17	11/19/97	1400	<50	2.1	<.50	0.66	<.50	2.8	NA
TRIP BLANKS										
UPMF	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
UPMF	TB-1	08/27/93	NA	NA	ND	ND	ND	ND	ND	NA
UPMF	TB-2	08/27/93	NA	NA	ND	ND	ND	ND	ND	NA
UPMF	TB-1	11/12/93	NA	NA	ND	ND	ND	ND	ND	NA
UPMF	TB-1	08/24/94	NA	NA	ND	ND	ND	ND	ND	NA
UPMF	TB-1	11/16/94	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	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	ND	ND	NA
UPMF	TRIP BLANK	02/27/96	NA	ND	ND	ND	ND	ND	ND	NA
UPMF	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
UPMF	TRIP BLANK	11/12/96	NA	ND	ND	ND	ND	ND	ND	NA
UPMF	TRIP BLANK	02/18/97	NA	ND	ND	ND	ND	ND	ND	NA
UPMF	TRIP BLANK	05/21/97	NA	ND	ND	ND	ND	ND	ND	NA
UPMF	TRIP BLANK	08/27/97	NA	ND	ND	ND	ND	ND	ND	NA
UPMF	TRIP BLANK	11/19/97	NA	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



LOCMAP

ADAPTED FROM U.S.G.S. 7.5' SERIES QUADRANGLE OAKLAND WEST, CALIFORNIA

North

0 2000

FEET

USPCI

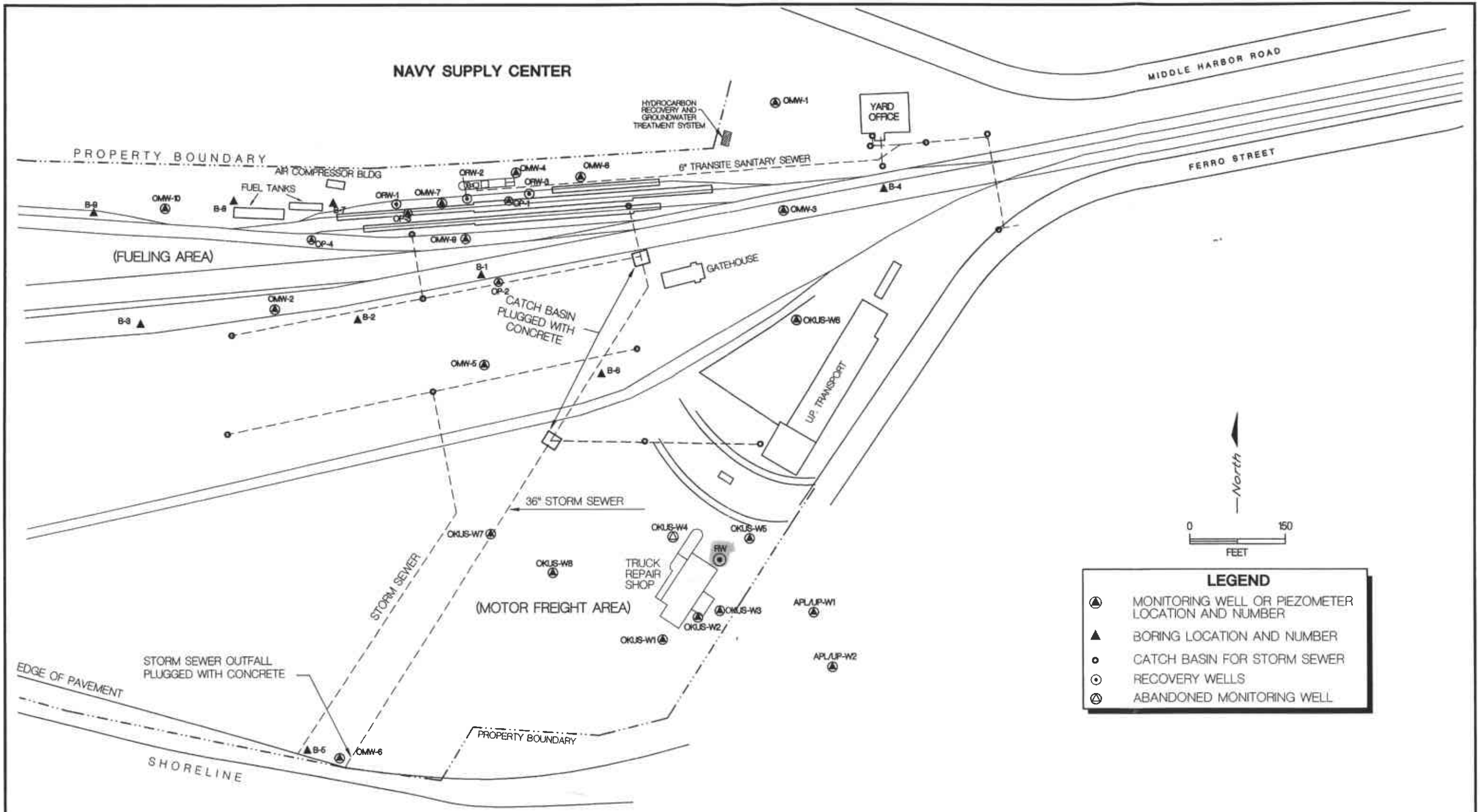
A LAIDLAW COMPANY

UP MOTOR FREIGHT FACILITY-OAKLAND, CA

FIGURE 1

SITE LOCATION MAP

SCALE	DATE
1" = 2000'	6/27/96



	BY	DATE
DRAWN	CJJ	10/15/97
CHECKED		
APPROVED		
APPROVED		
APPROVED		

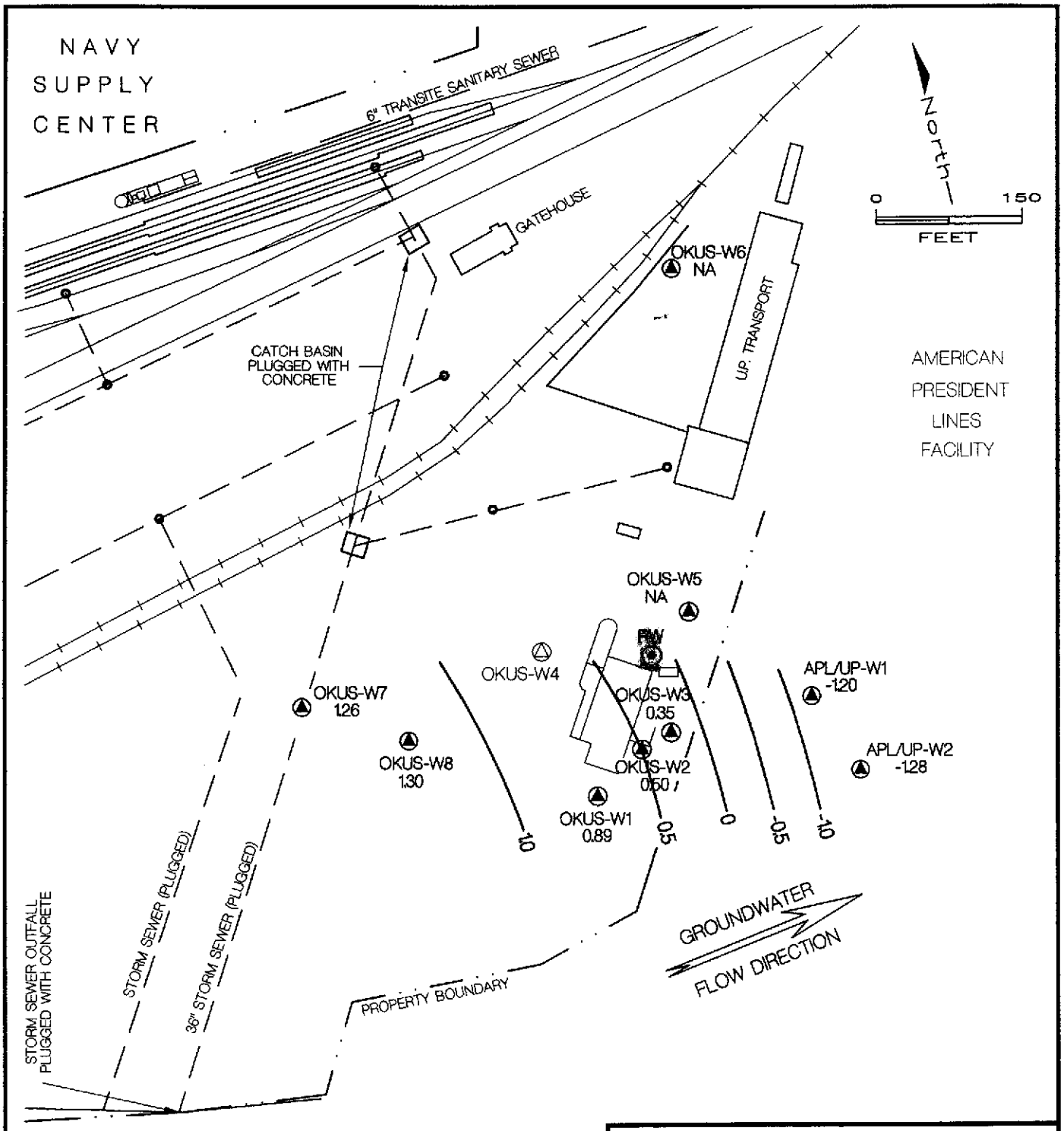
LAIDLAW ENVIRONMENTAL SERVICES

UPRR TOFC RAILYARD
UPMF REPAIR SHOP- OAKLAND, CALIFORNIA

FIGURE 2
SITE VICINITY MAP

SCALE: 1" = 150'

DWG. NO: 96120-861



LEGEND

OKUS-W1 -1.79	MONITOR WELL LOCATION AND NUMBER WITH GROUNDWATER ELEVATION
	RECOVERY WELL
	CATCH BASIN FOR STORM SEWER
0	GROUNDWATER ELEVATION CONTOUR (FEET RELATIVE TO MEAN SEA LEVEL)
NA	NOT AVAILABLE
	ABANDONED WELL

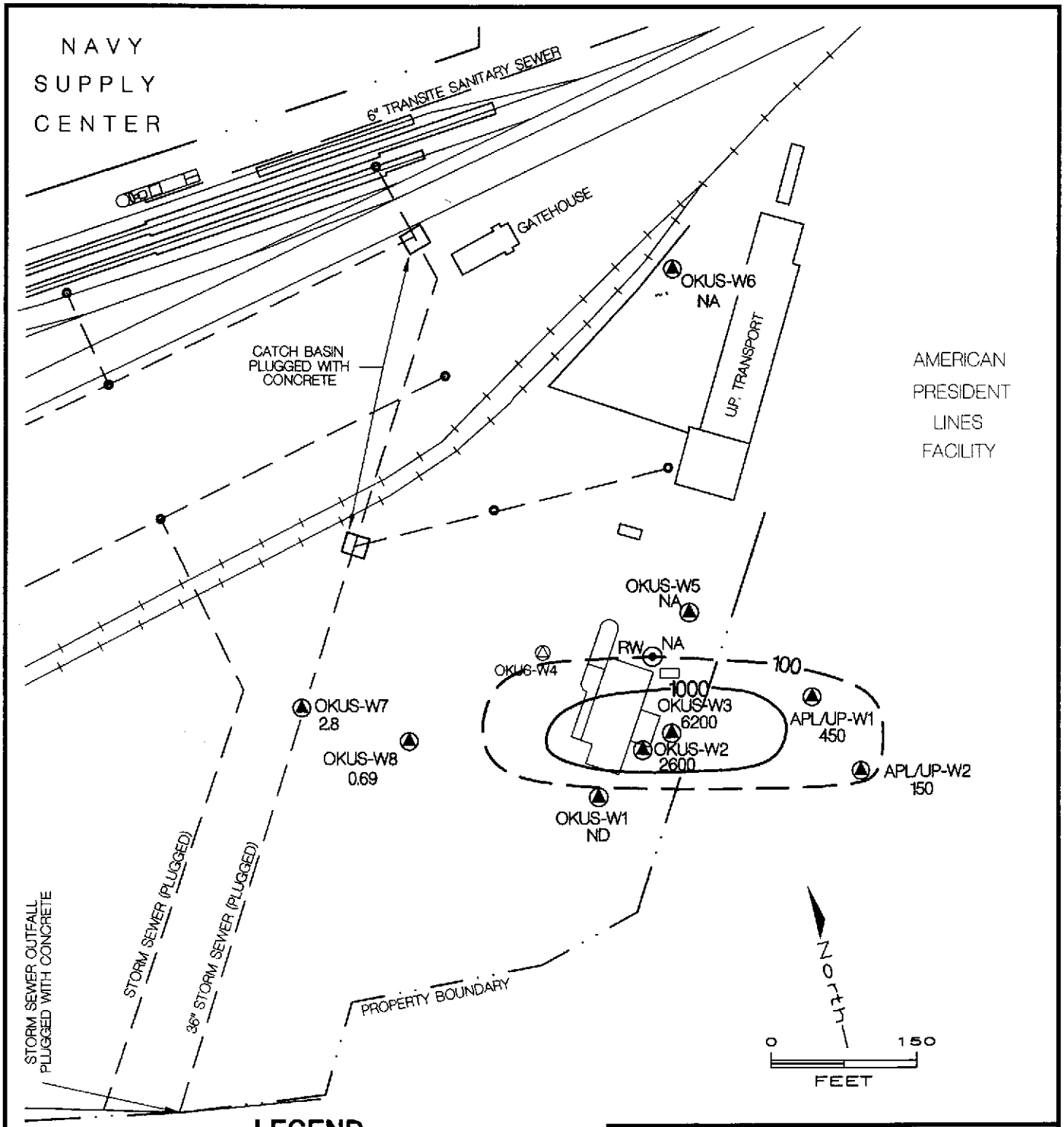
LAIDLAW ENVIRONMENTAL SERVICES

UPMF REPAIR SHOP-OAKLAND, CALIFORNIA

FIGURE 3
GROUNDWATER ELEVATION MAP (11/97)

SCALE: 1" = 150' | APPROVED/DATE

96120-0007



LEGEND

OKUS-W8 5.8	MONITOR WELL LOCATION AND NUMBER WITH TOTAL DISSOLVED BTEX CONCENTRATION ug/L
RW	RECOVERY WELL
	CATCH BASIN FOR STORM SEWER
100	TOTAL BTEX DISTRIBUTION CONTOUR; DASHED WHERE INFERRED
ND	NOT DETECTED
NA	NOT ANALYZED
	ABANDONED WELL

NOTE: ALL ANALYTICAL RESULTS IN µg/L

LAIDLAW ENVIRONMENTAL SERVICES

UPMF REPAIR SHOP-OAKLAND, CALIFORNIA

FIGURE 4
DISSOLVED PHASE BTEX DISTRIBUTION (11/97)

SCALE: 1" = 150'

APPROVED/DATE

96120-0006

APPENDIX A

FLUID-LEVEL MEASUREMENTS AND SAMPLE COLLECTION LOGS

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight** | Laidlaw Project Number: **96120-844**

Measuring Point (MP) Location: **Top Of Casing (North Side)**

Well Depth: (Below MP): **18.70 Feet**

Well No. OKUS-W1

Casing Diameter: **2 Inches** | Sampling Date: **11/19/97**

Depth to Ground Water (Below MP): **8.28 Feet** | Sample ID No. **OKUS-W1**

Method of Well Development: | Time: **11:40**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump | Riser Elevation (MP): **9.17 Feet**

▩ Bailer ☐ Centrifugal Pump ☐ Other | Top of Screen Elevation: **6.85 Feet**

Sampling Collection Method: | Sample Appearance: **Clear**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample | Odor: **Light**

▩ Bailer Type ○ Teflon ○ Stainless Steel | Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

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: **BTEX, TPH-Gasoline, and TPH-Diesel**

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)
11:25	**Begin Well**					
11:28	**7.0**	**800**	**19.5**		**1.75**	
11:33	**7.0**	**800**	**20.0**		**3.50**	
11:36	**7.0**	**800**	**20.0**		**5.25**	
11:40	**Sample Well**					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick** Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight** | Laidlaw Project Number: **96120-844**

Measuring Point (MP) Location: **Top of Casing (North Side)**

Well Depth: (Below MP): **22.34 Feet**

Well No. OKUS-W2

Casing Diameter: **2 Inches** | Sampling Date: **11/19/97**

Depth to Ground Water (Below MP): **9.21 Feet** | Sample ID No. **OKUS-W2**

Method of Well Development: | Time: **11:10**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump | Riser Elevation (MP): **9.71 Feet**

■ Bailer ☐ Centrifugal Pump ☐ Other | Top of Screen Elevation: **7.05 Feet**

Sampling Collection Method: | Sample Appearance: **Clear**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample | Odor: **Moderate**

■ Bailer Type ○ Teflon ○ Stainless Steel | Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

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: **BTEX, TPH-Gasoline, and TPH-Diesel**

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)
10:46	**Begin Well**					
10:51	**7.0**	**3,200**	**19.0**		**2.25**	
10:56	**7.0**	**3,100**	**19.0**		**4.50**	
11:00	**7.0**	**3,000**	**19.0**		**6.50**	
11:10	**Sample Well**					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick** Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight**

Laidlaw Project Number: **96120-844**

Measuring Point (MP) Location: **Top of Casing (North Side)**

Well No. OKUS-W3

Well Depth: (Below MP): **22.05 Feet**

Casing Diameter: **2 Inches**

Sampling Date: **11/19/97**

Depth to Ground Water (Below MP): **9.45 Feet**

Sample ID No. **OKUS-W3**

Method of Well Development:

Time: **10:30**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump

Riser Elevation (MP): **9.80 Feet**

■ Bailer ☐ Centrifugal Pump ☐ Other

Top of Screen Elevation: **6.55 Feet**

Sampling Collection Method:

Sample Appearance: **Clear**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Strong**

■ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

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: **BTEX, TPH-Gasoline, and TPH-Diesel**

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)
10:10	**Begin Well**					
10:14	**7.0**	**3,000**	**19.0**		**2.0**	
10:19	**7.0**	**3,100**	**19.0**		**4.0**	
10:24	**7.0**	**2,900**	**19.5**		**6.0**	
10:30	**Sample Well**					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick**

Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight**	Laidlaw Project Number: **96120-844**
Measuring Point (MP) Location: **Top of Casing (North Side)**	**Well No. OKUS-W5**
Well Depth: (Below MP): **21.00 Feet**	
Casing Diameter: **2 Inches**	Sampling Date: **N/A**
Depth to Product (Below MP): **9.87 Feet**	Sample ID No. **N/A**
Method of Well Development:	Time: **17:15**
☐ Tap ☐ Submersible Pump ☐ Bladder Pump	Riser Elevation (MP): **9.25 Feet**
☐ Bailer ☐ Centrifugal Pump ☐ Other	Top of Screen Elevation: **5.95 Feet**
Sampling Collection Method:	Sample Appearance: **N/A**
☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample	Odor: **N/A**
☐ Bailer Type ○ Teflon ○ Stainless Steel	Sampling Problems (if any): **Product in well water**
○ ABS Plastic ○ PVC ○ HDPE	
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:

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						

Comments: **The well was not sampled because of the presence of phase-separated hydrocarbon.**

[Comments may continue on back]

Form Completed By: **Mark McCormick** Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight**	Laidlaw Project Number: **96120-844**
Measuring Point (MP) Location: **Top of Casing (North Side)**	**Well No. OKUS-W6**
Well Depth: (Below MP): **16.30 Feet**	
Casing Diameter: **2 Inches**	Sampling Date: **N/A**
Depth to Product (Below MP): **5.54 Feet**	Sample ID No. **N/A**
Method of Well Development:	Time: **17:00**
☐ Tap ☐ Submersible Pump ☐ Bladder Pump	Riser Elevation (MP): **7.02 Feet**
☐ Bailer ☐ Centrifugal Pump ☐ Other	Top of Screen Elevation: **2.29 Feet**
Sampling Collection Method:	Sample Appearance: **N/A**
☐ Tap ☐ Submersible Pump ☑ Bladder Pump Sample	Odor: **N/A**
☐ Bailer Type ○ Teflon ○ Stainless Steel	Sampling Problems (if any): **Product in well water**
○ ABS Plastic ○ PVC ○ HDPE	
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:

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						

Comments: **The well was not sampled because of the presence of phase-separated hydrocarbon.**

[Comments may continue on back]

Form Completed By: **Mark McCormick** Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight**

Laidlaw Project Number: **96120-844**

Measuring Point (MP) Location: **Top of Casing (North Side)**

Well No. OKUS-W7

Well Depth: (Below MP): **19.88 Feet**

Casing Diameter: **2 Inches**

Sampling Date: **11/19/97**

Depth to Ground Water (Below MP): **5.65 Feet**

Sample ID No. **OKUS-W7**

Method of Well Development:

Time: **09:45**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump

Riser Elevation (MP): **6.91 Feet**

▩ Bailer ☐ Centrifugal Pump ☐ Other

Top of Screen Elevation: **2.4 Feet**

Sampling Collection Method:

Sample Appearance: **Clear**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **None**

▩ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

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: **BTEX, TPH-Gasoline, and TPH-Diesel**

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)
09:19	**Begin Well**					
09:25	**7.0**	**2,700**	**18.5**		**2.25**	
09:30	**7.1**	**2,500**	**18.0**		**4.50**	
09:35	**7.0**	**2,400**	**18.0**		**7.00**	
09:45	**Sample Well**					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments: **Duplicate Sample (OKUS-W17) at 09:50**

[Comments may continue on back]

Form Completed By: **Mark McCormick**

Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight** | Laidlaw Project Number: **96120-844**

Measuring Point (MP) Location: **Top of Casing (North Side)**

Well Depth: (Below MP): **14.80 Feet**

Well No. OKUS-W8

Casing Diameter: **2 Inches** | Sampling Date: **11/19/97**

Depth to Ground Water (Below MP): **5.45 Feet** | Sample ID No. **OKUS-W8**

Method of Well Development: | Time: **09:05**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump | Riser Elevation (MP): **6.75 Feet**

▩ Bailer ☐ Centrifugal Pump ☐ Other | Top of Screen Elevation: **2.11 Feet**

Sampling Collection Method: | Sample Appearance: **Clear**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample | Odor: **None**

▩ Bailer Type ○ Teflon ○ Stainless Steel | Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

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: **BTEX, TPH-Gasoline, and TPH-Diesel**

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)
08:45	**Begin Well**					
08:48	**7.0**	**2,800**	**18.5**		**1.5**	
08:52	**7.0**	**2,900**	**19.0**		**3.0**	
08:55	**7.0**	**2,800**	**19.0**		**4.5**	
09:05	**Sample Well**					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick** Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight** | Laidlaw Project Number: **96120-844**

Measuring Point (MP) Location: **Top of Casing (North Side)**

Well Depth: (Below MP): **21.86 Feet**

Well No. APL/UP-W1

Casing Diameter: **2 Inches** | Sampling Date: **11/18/97**

Depth to Ground Water (Below MP): **9.32 Feet** | Sample ID No. **APL/UP-W1**

Method of Well Development: | Time: **17:00**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump | Riser Elevation (MP): **8.12 Feet**

■ Bailer ☐ Centrifugal Pump ☐ Other | Top of Screen Elevation: **2.11 Feet**

Sampling Collection Method: | Sample Appearance: **Clear**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample | Odor: **Moderate**

■ Bailer Type ○ Teflon ○ Stainless Steel | Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

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: **BTEX, TPH-Gasoline, and TPH-Diesel**

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)
16:38	**Begin Well**					
16:42	**7.0**	**2,300**	**17.5**		**2.0**	
16:46	**7.0**	**2,200**	**17.5**		**4.0**	
16:50	**7.1**	**2,100**	**17.5**		**6.0**	
17:00	**Sample Well**					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments: **3 samples of TPH-Diesel were taken for MS/MSD**

3 VOAs for MS/MSD

[Comments may continue on back]

Form Completed By: **Mark McCormick** Witnessed By:

LAIDLAW SAMPLING AND WELL STABILIZATION FORM

Laidlaw Project Name: **UP Motor Freight**

Laidlaw Project Number: **96120-844**

Measuring Point (MP) Location: **Top of Casing (North Side)**

Well Depth: (Below MP): **17.00 Feet**

Well No. APL/UP-W2

Casing Diameter: **2 Inches**

Sampling Date: **11/18/97**

Depth to Ground Water (Below MP): **8.59 Feet**

Sample ID No. **APL/UP-W2**

Method of Well Development:

Time: **16:30**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump

Riser Elevation (MP): **7.31 Feet**

▩ Bailer ☐ Centrifugal Pump ☐ Other

Top of Screen Elevation: **2.62 Feet**

Sampling Collection Method:

Sample Appearance: **Clear**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Light - Moderate**

▩ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

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: **BTEX, TPH-Gasoline, and TPH-Diesel**

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)
16:10	**Begin Well**					
16:15	**7.2**	**2,500**	**20.0**		**1.5**	
16:18	**7.2**	**2,200**	**19.5**		**3.0**	
16:21	**7.2**	**2,100**	**19.5**		**4.5**	
16:30	**Sample Well**					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick**

Witnessed By:

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Laidlaw Environmental Services	Client Project ID:	UP Motor Freight	Sampled: Nov 18-19, 97
5665 Flatiron Pkwy.	Sample Matrix:	Water	Received: Nov 19, 1997
Boulder, CO 80301	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Dec 12, 1997
Attention: Denton Mauldin	First Sample #:	711-1316	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 711-1316 APL/UP-W2	Sample I.D. 711-1317 APL/UP-W1	Sample I.D. 711-1318 OKUS-W8	Sample I.D. 711-1319 OKUS-W7	Sample I.D. 711-1320 OKUS-W17	Sample I.D. 711-1321 OKUS-W3
QC Batch Number:		GC120297 802002A	GC120197 802002A	GC120197 802002A	GC120197 802002A	GC120197 802002A	GC120197 802002A
Purgeable Hydrocarbons	50	300	740	94	N.D.	N.D.	6,800
Benzene	0.50	17	53	N.D.	2.0	2.1	260
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	67
Ethyl Benzene	0.50	120	370	N.D.	0.84	0.66	5,600
Total Xylenes	0.50	15	28	0.69	N.D.	N.D.	280
Chromatogram Pattern:		Gasoline	Gasoline	Gasoline & Unidentified Hydrocarbons >C8	--	--	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	4.0	10	1.0	1.0	1.0	100
Date Analyzed:	12/2/97	12/1/97	12/1/97	12/1/97	12/1/97	12/1/97
Instrument Identification:	HP-2	HP-2	HP-2	HP-2	HP-2	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	111	106	109	114	112	120

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

Melissa A. Brewer
Client Services Representative

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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Laidlaw Environmental Services	Client Project ID:	UP Motor Freight	Sampled: Nov 19, 1997
5665 Flatiron Pkwy.	Sample Matrix:	Water	Received: Nov 19, 1997
Boulder, CO 80301	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Dec 12, 1997
Attention: Denton Mauldin	First Sample #:	711-1322	

QC Batch Number:	GC120297 802004A	GC120197 802002A	GC120197 802002A	GC120197 802002A	GC120297 802002A	GC120297 802004A

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 711-1322 OKUS-W2	Sample I.D. 711-1323 OKUS-W1	Sample I.D. 711-1324 Trip Blank	Sample I.D. Method Blank	Sample I.D. Method Blank	Sample I.D. Method Blank
Purgeable Hydrocarbons	50	3,300	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	120	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	23	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	2,400	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	67	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Gasoline	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	40	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	12/2/97	12/1/97	12/1/97	12/1/97	12/2/97	12/2/97
Instrument Identification:	HP-4	HP-2	HP-2	HP-2	HP-2	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	112	113	112	114	115	110

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer
Client Services Representative

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Laidlaw Environmental Services	Client Project ID:	UP Motor Freight	Sampled: Nov 18-19, 97
5665 Flatiron Pkwy.	Sample Matrix:	Water	Received: Nov 19, 1997
Boulder, CO 80301	Analysis Method:	EPA 3510/8015 Mod.	Reported: Dec 12, 1997
Attention: Denton Mauldin	First Sample #:	711-1316	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 711-1316 APL/UP-W2*	Sample I.D. 711-1317 APL/UP-W1*	Sample I.D. 711-1318 OKUS-W8*	Sample I.D. 711-1319 OKUS-W7*	Sample I.D. 711-1320 OKUS-W17*	Sample I.D. 711-1321 OKUS-W3*
QC Batch Number:		SP112597 8015EXA	SP112597 8015EXA	SP112597 8015EXA	SP112597 8015EXA	SP112597 8015EXA	SP112597 8015EXA
Extractable Hydrocarbons	50	640	1,400	1,500	1,600	1,400	2,800
Chromatogram Pattern:		Diesel & Unidentified Hydrocarbons <C12	Diesel & Unidentified Hydrocarbons <C12	Diesel & Unidentified Hydrocarbons <C12 >C18	Diesel	Diesel	Diesel & Unidentified Hydrocarbons <C12

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	11/25/97	11/25/97	11/25/97	11/25/97	11/25/97	11/25/97
Date Analyzed:	12/2/97	12/2/97	12/2/97	12/2/97	12/2/97	12/2/97
Instrument Identification:	HP-3B	HP-3B	HP-3B	HP-3B	HP-3B	HP-3B

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

Melissa A. Brewer
Client Services Representative

Please Note:
* See Laboratory Narrative

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Laidlaw Environmental Services	Client Project ID:	UP Motor Freight	Sampled: Nov 19, 1997
5665 Flatiron Pkwy.	Sample Matrix:	Water	Received: Nov 19, 1997
Boulder, CO 80301	Analysis Method:	EPA 3510/8015 Mod.	Reported: Dec 12, 1997
Attention: Denton Mauldin	First Sample #:	711-1322	

QC Batch Number: SP112597 8015EXA | SP112597 8015EXA | SP112597 8015EXA

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 711-1322 OKUS-W2 *	Sample I.D. 711-1323 OKUS-W1 *	Sample I.D. Method Blank
Extractable Hydrocarbons	50	2,200	260	N.D.
Chromatogram Pattern:		Diesel & Unidentified Hydrocarbons <C12	Diesel	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0
Date Extracted:	11/25/97	11/25/97	11/25/97
Date Analyzed:	12/2/97	12/2/97	12/3/97
Instrument Identification:	HP-3B	HP-3B	HP-3A

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

Melissa A. Brewer
Client Services Representative

Please Note:
* See Laboratory Narrative

Sequoia Analytical

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Laidlaw Environmental Services
5665 Flatiron Pkwy.
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: UP Motor Freight
Matrix: Liquid
QC Sample Group: 7111316-324
Reported: Dec 12, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
QC Batch#:	GC120197	GC120197	GC120197	GC120197	SP112597
Analy. Method:	802002A EPA 8020	802002A EPA 8020	802002A EPA 8020	802002A EPA 8020	8015EXA EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 3510
Analyst:	D. Newcomb	D. Newcomb	D. Newcomb	D. Newcomb	K. Grubb
MS/MSD #:	7111303	7111303	7111303	7111303	7111317
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	1,400 µg/L
Prepared Date:	12/1/97	12/1/97	12/1/97	12/1/97	11/25/97
Analyzed Date:	12/1/97	12/1/97	12/1/97	12/1/97	12/2/97
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2	HP-3A
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	500 µg/L
Result:	20	21	22	66	1,700
MS % Recovery:	100	105	110	110	60
Dup. Result:	20	21	22	68	1,800
MSD % Recov.:	100	105	110	113	80
RPD:	0.0	0.0	0.0	3.0	5.7
RPD Limit:	0-20	0-20	0-20	0-20	0-50

LCS #:	2LCS120197	2LCS120197	2LCS120197	2LCS120197	LCS112597
Prepared Date:	12/1/97	12/1/97	12/1/97	12/1/97	11/25/97
Analyzed Date:	12/1/97	12/1/97	12/1/97	12/1/97	12/2/97
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2	HP-3B
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	500 µg/L
LCS Result:	20	21	22	66	300
LCS % Recov.:	100	105	110	110	59

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

SEQUOIA ANALYTICAL, #1271

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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Laidlaw Environmental Services
5665 Flatiron Pkwy.
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: UP Motor Freight
Matrix: Liquid
QC Sample Group: 7111316-324
Reported: Dec 12, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC120297	GC120297	GC120297	GC120297
	802002A	802002A	802002A	802002A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	D. Newcomb	D. Newcomb	D. Newcomb	D. Newcomb
MS/MSD #:	7111601	7111601	7111601	7111601
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	12/2/97	12/2/97	12/2/97	12/2/97
Analyzed Date:	12/2/97	12/2/97	12/2/97	12/2/97
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Result:	22	22	24	70
MS % Recovery:	110	110	120	117
Dup. Result:	22	23	23	72
MSD % Recov.:	110	115	115	120
RPD:	0.0	4.4	4.3	2.8
RPD Limit:	0-20	0-20	0-20	0-20

LCS #:	2LCS120297	2LCS120297	2LCS120297	2LCS120297
Prepared Date:	12/2/97	12/2/97	12/2/97	12/2/97
Analyzed Date:	12/2/97	12/2/97	12/2/97	12/2/97
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
LCS Result:	21	22	23	71
LCS % Recov.:	105	110	115	118

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer
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** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

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Laidlaw Environmental Services
5665 Flatiron Pkwy.
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: UP Motor Freight
Matrix: Liquid
QC Sample Group: 7111316-324
Reported: Dec 12, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC120297	GC120297	GC120297	GC120297
	802004A	802004A	802004A	802004A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	D. Newcomb	D. Newcomb	D. Newcomb	D. Newcomb
MS/MSD #:	7111487	7111487	7111487	7111487
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	12/2/97	12/2/97	12/2/97	12/2/97
Analyzed Date:	12/2/97	12/2/97	12/2/97	12/2/97
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Result:	20	20	20	62
MS % Recovery:	100	100	100	103
Dup. Result:	21	21	20	62
MSD % Recov.:	105	105	100	103
RPD:	4.9	4.9	0.0	0.0
RPD Limit:	0-20	0-20	0-20	0-20

LCS #:	4LCS120297	4LCS120297	4LCS120297	4LCS120297
Prepared Date:	12/2/97	12/2/97	12/2/97	12/2/97
Analyzed Date:	12/2/97	12/2/97	12/2/97	12/2/97
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
LCS Result:	20	20	19	61
LCS % Recov.:	100	100	95	102

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

SEQUOIA ANALYTICAL, #1271

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

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Laidlaw Environmental Services	Client Project ID:	UP Motor Freight	
5665 Flatiron Pkwy.			Received: Nov 19, 1997
Boulder, CO 80301			
Attention: Denton Mauldin	Lab Number:	7111316-324	Reported: Dec 12, 1997

LABORATORY NARRATIVE

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

The recovery of the Laboratory Control Sample was outside the lower control limit. Although the recoveries of the Matrix Spike and Matrix Spike Duplicate samples were within control limits, the results for these samples can only be considered estimated. There was no additional sample for re-extraction.

All other quality control measures were within criteria.

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

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Client Services Representative

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

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☒ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600 FAX (510) 988-9673

Company Name: LAIDLAW ENV. SERVICES		Project Name: UP MOTOR FREIGHT	
Address: 5665 FLATIRON PKWY		Billing Address (if different):	
City: BOULDER State: CO Zip Code: 80301			
Telephone: (303) 938-5500	FAX #: (303) 938-5520	P.O. #: 96120-844	
Report To: DENTON MAULDIN	Sampler: MARK MCCORMICK	QC Data: ❑ Level D (Standard) ☒ Level C ❑ Level B ❑ Level A	

Turnaround Time: ☒ 10 Working Days ❑ 7 Working Days ❑ 5 Working Days ❑ 3 Working Days ❑ 2 Working Days ❑ 24 Hours ❑ 2 - 8 Hours

❑ Drinking Water ❑ Waste Water ☒ Other GW

Analyses Requested: MOD 8015 TPH-DIESEL; MOD 8015 TPH-GASOLINE; 8020 BTEX

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #				Comments
1. APL/UP-W2	11/18/97 1630	AQU	1	1L AMBER	7111316	X			
2.			2	VOA			X	X	
3. APL/UP-W1	1700		3	1L AMBER	7111317	X			USE FOR
4.	1700		3	VOA			X	X	MS/MSD
5. OKUS-W8	11/19/97 0905		1	1L AMBER	7111318	X			
6.			2	VOA			X	X	
7. OKUS-W7	0945		1	1L AMBER	7111319	X			
8.			2	VOA			X	X	
9. OKUS-W17	0950		1	1L AMBER	7111320	X			
10.			2	VOA			X	X	

Relinquished By: [signature]	Date: 11/19/97	Time: 1300	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab: [signature]	Date: 11/19/97	Time: 1300

Pink - Client
Yellow - Sequoia
White - Sequoia

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

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☒ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600 FAX (510) 988-9673

Company Name:	Project Name: UP MOTOR FREIGHT
Address: SAME AS PAGE 1	Billing Address (if different):
City: State: Zip Code:	
Telephone: FAX #:	P.O. #: 96120-844
Report To: Sampler:	QC Data: ❑ Level D (Standard) ☒ Level C ❑ Level B ❑ Level A

Turnaround Time: ☒ 10 Working Days ❑ 7 Working Days ❑ 5 Working Days ❑ 3 Working Days ❑ 2 Working Days ❑ 24 Hours ❑ 2 - 8 Hours

❑ Drinking Water ❑ Waste Water ☒ Other GW

Analyses Requested: MOD 8015 TPH-DIESEL; MOD 8015 TPH-GASOLINE; 8020 BTEX

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #										Comments
1. OKUS-W3	11/19/97 1030	AQU	1	1L AMBER	7111321	X									
2.			3	VOA			X	X							
3. OKUS-W2 (MW3)	1110		1	1L AMBER	7111322	X									
4.			3	VOA			X	X							
5. OKUS-W1	1140		1	1L AMBER	7111323	X									
6.			3	VOA			X	X							
7. TRIP BLANK			1	VOA	7111324		X	X							
8.															
9.															
10.															

Relinquished By: [signature]	Date: 11/19/97	Time: 1300	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab: [signature]	Date: 11/19/97	Time: 1300

Pink - Client
Yellow - Sequoia
White - Sequoia