LAIDLAW ENVIRONMENTAL SERVICES

ENVIRONMENTAL PROTECTION

98 APR 30 PM 4:35

April 28, 1998

Mr. Harry Patterson
Union Pacific Railroad
1416 Dodge Street, Room 930
Omaha, Nebraska 68179

Subject: Final *First Quarter 19987 Monitoring Report* Oakland Motor Freight Facility, 1750 Ferro Street, Oakland, California, Laidlaw Project No. 96120-844

Dear Mr. Patterson:

Enclosed is the final copy of the *First Quarter 1998 Monitoring Report*, for the Union Pacific Motor Freight Facility at 1750 Ferro Street in Oakland, California. The Second Quarter 1997 Monitoring Report, dated July 29, 1997 included the following recommendations:

- Discontinue the operation of the product skimming pump in the recovery well (RW);
- Change the fluid-level measurement frequency in well RW from monthly to quarterly;
- Change the groundwater sample collection frequency from quarterly to semi-annually (first and third quarters); and,
- Change the reporting frequency from quarterly to semi-annually (April and October).

Mr. Larry Seto of the Alameda County Department of Environmental Health (ACDEH) has been assigned to the subject project. Mr. Seto needed time to review the project history and requested that Laidlaw continue the quarterly monitoring program in the meantime. Mr. Seto anticipates providing a response to the recommendations made in the July 1997 report by the beginning of May 1998. We will inform you of his decision as soon as it is known to us.

If you have any questions, please call us at (303) 938-5500.

Sincerely,

Teresa Van
Project Manager

Sam Marquis, R.G., P.G.
Project Hydrogeologist

cc: Larry Seto, ACDEH
John Prall, Port of Oakland
Jack Murphy, APL

5665 Flatiron Parkway Boulder, Colorado 80301-2800
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FIRST QUARTER 1998
MONITORING REPORT

UNION PACIFIC MOTOR FREIGHT
FACILITY
OAKLAND, CALIFORNIA

LAIDLAW Project No.
96120-844

Prepared For:

UNION PACIFIC RAILROAD
ENVIRONMENTAL MANAGEMENT
1416 DODGE STREET, ROOM 930
OMAHA, NEBRASKA 68179

Prepared by:

Laidlaw Consulting Services
5665 Flatiron Parkway
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April 28, 1998

FIRST QUARTER 1998 MONITORING REPORT
UNION PACIFIC RAILROAD
UNION PACIFIC MOTOR FREIGHT FACILITY
OAKLAND, CALIFORNIA
Laidlaw Project No. 96120-844

Prepared for:
Union Pacific Railroad
Environmental Management - Room 930
1416 Dodge Street
Omaha, Nebraska 68179

for submittal to:
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April 28, 1998

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1. INTRODUCTION

This report presents the results from the first quarter 1998 groundwater monitoring event conducted at the Union Pacific Railroad Motor Freight (UPMF) facility at 1750 Ferro Street in Oakland, California (Figure 1). It includes a discussion of the background information about the site, field and analytical results for the first quarter 1998 event, and conclusions. The report has been prepared by Consulting Services of Laidlaw Environmental Services (Laidlaw) on behalf of Union Pacific Railroad (UPRR). The first quarter 1998 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.

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 field work 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 first quarter 1998 monitoring event were analyzed for:

- total petroleum hydrocarbons as diesel (TPH-D) and 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 on a monthly basis by Burns and McDonnell. 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 February 4, 5, and 6, 1998 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 (fourth quarter 1997) was noted in all monitoring wells except for APL/UP-W1 and APL/UP-W2. These two wells exhibited water levels slightly lower than the previous quarter. 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 0.009 feet per foot (48 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

During the first quarter 1998 monitoring event, samples were collected from monitoring wells OKUS-W2, OKUS-W3, OKUS-W7, OKUS-W8, APL/UP-W1, and APL/UP-W2. Monitoring well OKUS-W1 was gauged but not sampled due to an error on the sample route agenda.

Monitoring well OKUS-W8 did not contain dissolved BTEX concentrations above the method detection limit (MDL) of 0.50 micrograms per liter (µg/l). Monitoring wells OKUS-W2 and OKUS-W3 samples contained dissolved BTEX. The samples collected from monitoring wells APL/UP-W1 and APL/UP-W2 contained dissolved benzene and xylenes. Dissolved BTEX appeared in the samples collected from monitoring well OKUS-W7.

Benzene concentrations ranged from below the MDL in well OKUS-W8 to 210 µg/l in OKUS-W3. The range for toluene was from below the MDL in wells OKUS-W3, OKUS-W7, OKUS-W8, APL/UP-W1, and APL/UP-W2 to 11 µg/l in OKUS-W2. Ethylbenzene was below the MDL in all wells sampled.

Xylenes ranged from below the MDL in wells OKUS-W3, OKUS-W7 and OKUS-W8 to 22 µg/l in APL/UP-W1. Total BTEX concentrations ranged from below the MDL in OKUS-W8 to 210 µg/l in OKUS-W3.

Dissolved TPH-G, indicative of gasoline, was detected in samples collected from all monitoring wells sampled during the first quarter 1998 monitoring event except for OKUS-W7. TPH-G concentrations ranged from below the MDL of 50 µg/l in OKUS-W7 to 6,000 µg/l in OKUS-W3.

Dissolved TPH-D, representing diesel fuel, was detected in samples collected from all monitoring wells sampled during the event. TPH-D concentrations ranged from 730 µg/l APL/UP-W2 to 3,400 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 and water level depth 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 first quarter 1998 sampling event. However, Laidlaw personnel did observe product on the water level probe after gauging the well on February 6, 1998. A site visit was not conducted by Burns and McDonnell field personnel during the first quarter 1998. Historically upon each site visit, Burns and McDonnell field personnel have detected only a sheen in well RW and have found the recovery barrel to be mostly empty.

4. CONCLUSIONS

On the basis of the information obtained from the first quarter 1998 monitoring activities, Laidlaw concludes that:

- The groundwater flow direction is to the east at an average gradient of 0.009 feet per foot (48 feet per mile), consistent with previous monitoring events;

- The dissolved BTEX and TPH concentrations in all wells are consistent with historic concentration ranges and, in most cases, are lower than previously observed levels; and

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

5. LIMITATIONS

The project and this report were undertaken for the exclusive use of the Union Pacific Railroad. Use by any other person or organization is subject to no warranty by UPRR or Laidlaw Environmental Services.

The conclusions provided in this report are based solely upon information provided to Laidlaw by UPRR, Burns & McDonnell, and as generated by Laidlaw for this project. Additional investigations as well as information not available to UPRR and Laidlaw at the time this project and report were completed may result in modifications to the understanding of the site, conclusions, and other items generated as part of the work.

The project and this report were conducted and prepared in accordance with generally accepted environmental and engineering practices with a standard of care appropriate to the project. UPRR and Laidlaw express and imply no other warranty.

6. 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.

See attachment 6-15-98 letter

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
	9.17	02/04/98	N/A	NP	6.95	2.22	2.22
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
	9.71	02/04/98	N/A	NP	7.50	2.21	2.21
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
	9.80	02/05/98	N/A	NP	7.65	2.15	2.15
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	--	--	--

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WELL NO.	ELEV.* TOC	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	WATER ELEV.	CORR'D ELEV.
OKUS-W5	9.25	12/15/95	9.60	P	--	--	--
	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	--	--	--
	9.25	02/05/98	7.13	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	--	--	--
	7.02	02/05/98	3.30	P	--	--	--

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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.
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
	6.91	02/04/98	N/A	NP	4.45	2.46	2.46
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
	6.75	02/04/98	N/A	NP	4.36	2.39	2.39
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
	8.12	02/04/98	N/A	NP	9.80	-1.68	-1.68
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

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.
APL/UP-W2	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
	7.31	02/04/98	N/A	NP	8.80	-1.49	-1.49
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	0.12	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	--	--
	--	02/06/98	N/A	SHEEN	7.24	--	--

* 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
"	"	08/25/83	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
"	"	02/05/98	WELL NOT SAMPLED							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
"	"	02/06/98	1600	1100	72	11	<0.50	18	100	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

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-W3	OKUS-W3	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
"	"	02/06/98	3400	6000	210	<0.50	<0.50	<0.50	210	NA
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
"	"	02/05/98	1500	<50	0.79	<0.50	<0.50	<0.50	0.8	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

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	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
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
"	"	02/05/98	1400	56	<0.50	<0.50	<0.50	<0.50	ND	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
"	"	02/05/98	1000	640	55	<0.50	<0.50	22	77	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
"	"	02/05/98	730	180	15	<0.50	<0.50	4.9	20	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)
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
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
UPMF	TRIP BLANK	02/02/98	NA	NA	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

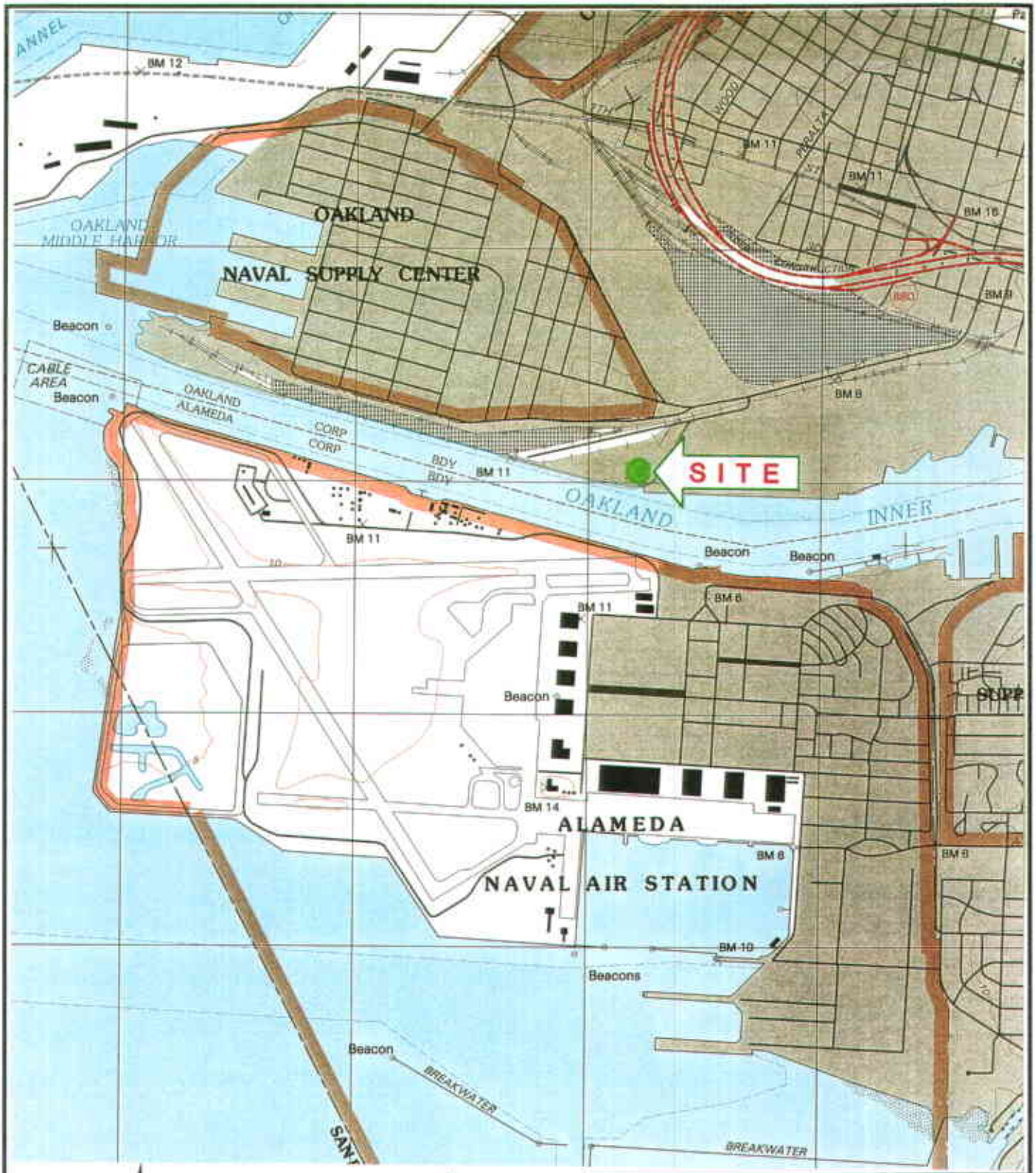
ug/L - microgram per liter

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



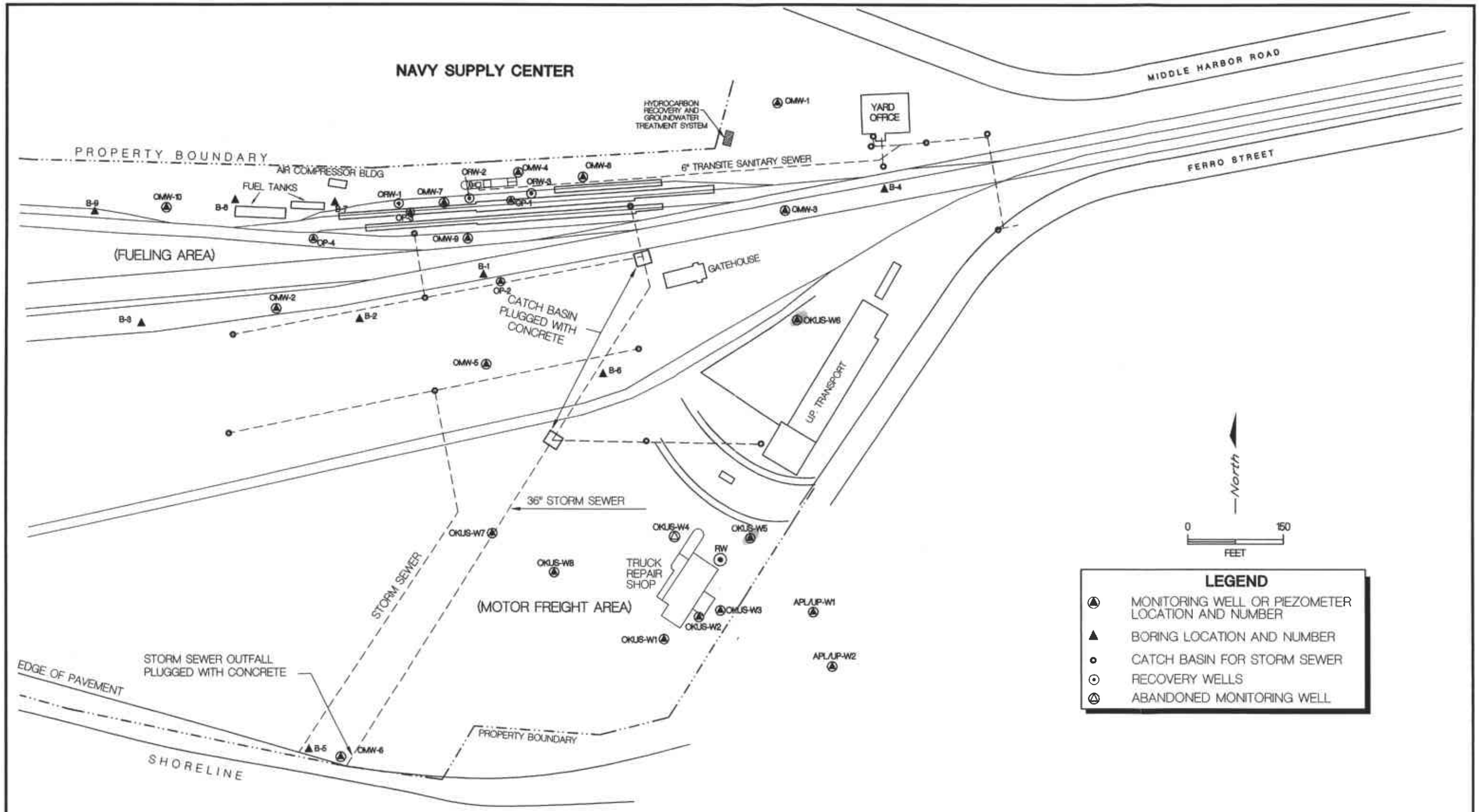
LOCMAP

LAIDLAW ENVIRONMENTAL SERVICES

UP MOTOR FREIGHT FACILITY-OAKLAND, CA

FIGURE 1
SITE LOCATION MAP

SCALE	DATE
1" = 2000'	4/7/98



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

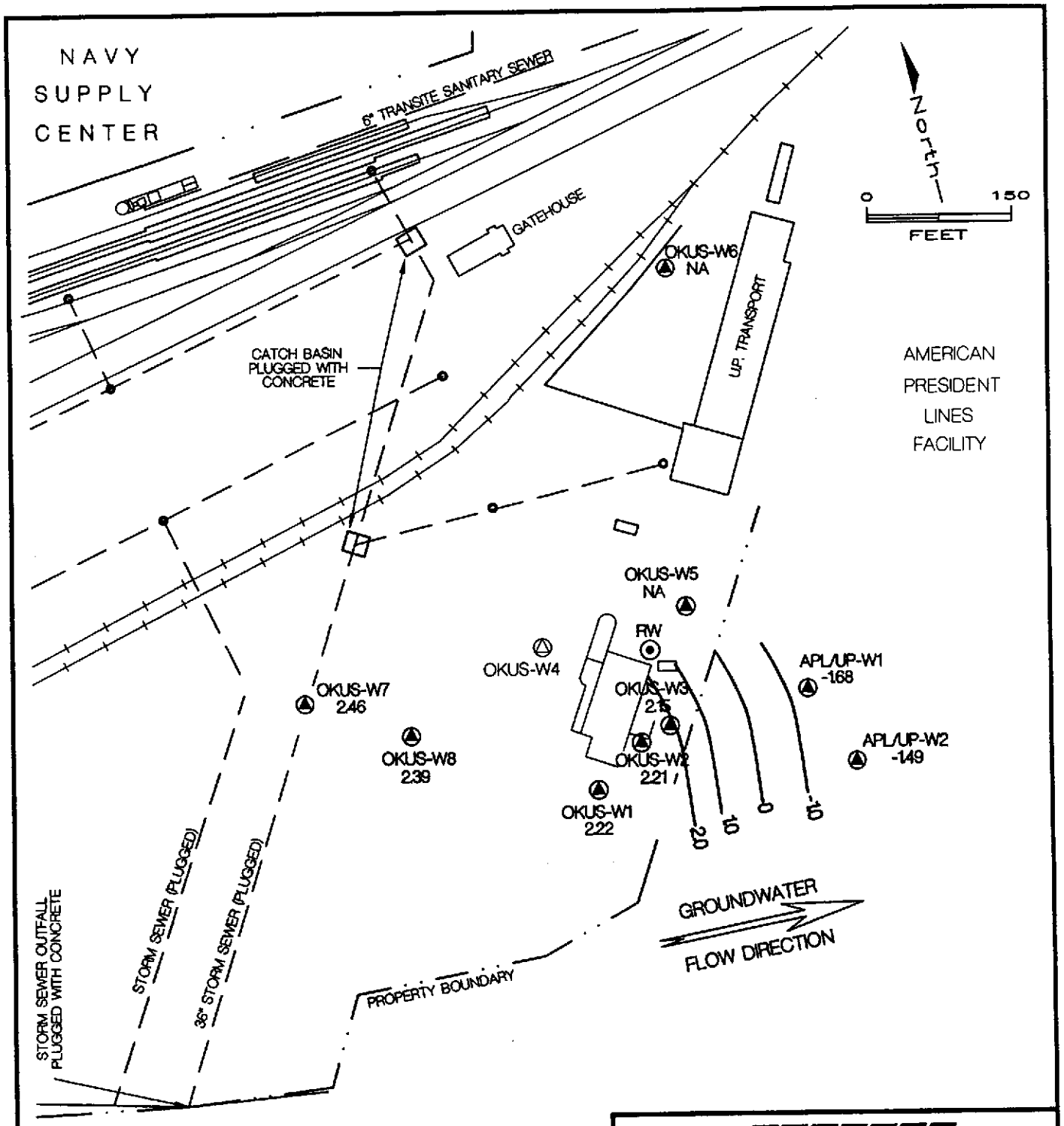
LAIDLAW ENVIRONMENTAL SERVICES

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

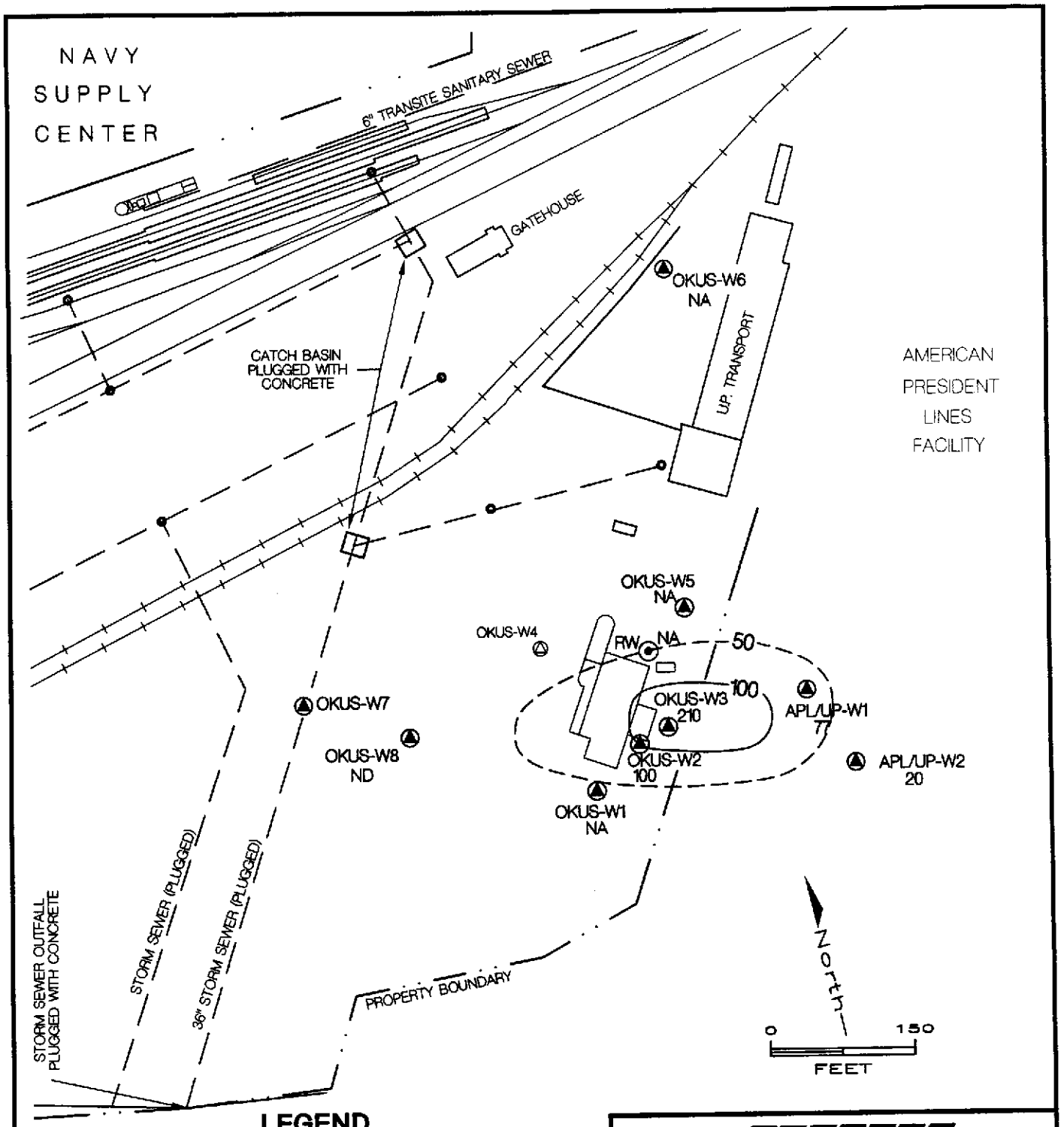
LAIDLAW ENVIRONMENTAL SERVICES

UPMF REPAIR SHOP-OAKLAND, CALIFORNIA

FIGURE 3
GROUNDWATER ELEVATION MAP (2-98)

SCALE: 1" = 150' | APPROVED/DATE

96120-0023



LEGEND

OKUS-W8 ▲ 58	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 (2-98)

SCALE: 1" = 150' | APPROVED/DATE

96120-0022

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**

Well No. OKUS-W2

Well Depth: (Below MP): **22.33 feet**

Casing Diameter: **2 inches**

Sampling Date: **2/6/98**

Depth to Ground Water (Below MP): **7.5 feet**

Sample ID No. **OKUS-2 and OKUS-2B**

Method of Well Development:

Time: **0925**

☐ 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: **Brown**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Diesel**

☑ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any): **Rain**

○ ABS Plastic ○ PVC ◉ HDPE

Pump Intake Or Bailer Set At N/A Feet Below MP

Decontamination Performed:

Tubing Type (if used):

Tubing Used For: ☐ Sample Collection ☑ Well Development/Field Tests

Samples Collected: **BTEX, TPH-D**

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)
0915	6.2	2,410	19.0		2	
0920	6.2	2,470	18.5		4	
0925	6.2	2,440	19.0		6	

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Joe Franzen**

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**

Well No. OKUS-W3

Well Depth: (Below MP): **22.09 feet**

Casing Diameter: **2 inches**

Sampling Date: **2/5/98**

Depth to Ground Water (Below MP): **7.65 feet**

Sample ID No. **OKUS-3 and OKUS-3B**

Method of Well Development:

Time: **8:57 AM**

☐ 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: **Yellow**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Diesel**

☑ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any): **Rain**

○ ABS Plastic ○ PVC ◉ HDPE

Pump Intake Or Bailer Set At N/A Feet Below MP

Decontamination Performed:

Tubing Type (if used):

Tubing Used For: ☐ Sample Collection ☐ Well Development/Field Tests

Samples Collected: **BTEX, TPH-D**

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)
0845	6.2	2,698	20.0		2	
0851	6.2	3,080	19.5		4	
0856	6.2	3,180	20.0		6	

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Joe Franzen**

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**

Well No. OKUS-W7

Well Depth: (Below MP): **19.84 feet**

Casing Diameter: **2 inches**

Sampling Date: **2/5/98**

Depth to Ground Water (Below MP): **4.45 feet**

Sample ID No. **OKUS-W-7 and OKUS-W7B**

Method of Well Development:

Time: **1648**

☐ 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: **Yellowish**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Slight diesel**

☑ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

Pump Intake Or Bailer Set At N/A Feet Below MP

Decontamination Performed:

Tubing Type (if used):

Tubing Used For: ☐ Sample Collection ☐ Well Development/Field Tests

Samples Collected: **BTEX, TPH-D**

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)
1617	6.2	3,370	19.0		3	
1638	5.9	3,300	19.5		6	
1644	5.9	3,240	19.0		9	

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Joe Franzen**

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**

Well No. OKUS-W8

Well Depth: (Below MP): **14.8 feet**

Casing Diameter: **2 inches**

Sampling Date: **2/5/98**

Depth to Ground Water (Below MP): **4.36 feet**

Sample ID No. **OKUS-W-8 and OKUS-W8B**

Method of Well Development:

Time: **1721**

☐ 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: **Dark Brown**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Diesel**

☑ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

Pump Intake Or Bailer Set At N/A Feet Below MP

Decontamination Performed:

Tubing Type (if used):

Tubing Used For: ☐ Sample Collection ☐ Well Development/Field Tests

Samples Collected: **BTEX, TPH-D**

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)
1703	6.5	5,180	20.0		2	
1707	6.5	5,090	19.0		4	
1720	6.5	5,140	18.5		6	

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Joe Franzen**

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**

Well No. APL/UP-W1

Well Depth: (Below MP): **21.85 feet**

Casing Diameter: **2 inches**

Sampling Date: **2/5/98**

Depth to Ground Water (Below MP): **9.8 feet**

Sample ID No. **APL/UP-W1 and APL/UP-W1B**

Method of Well Development:

Time: **1523**

☐ 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: **Yellow**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Slight diesel odor**

☑ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

Pump Intake Or Bailer Set At N/A Feet Below MP

Decontamination Performed:

Tubing Type (if used):

Tubing Used For: ☐ Sample Collection ☐ Well Development/Field Tests

Samples Collected: **BTEX, TPH-D**

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)
1512	6.2	2,570	18.0		2	
1517	6.2	2,630	18.5		4	
1522	6.2	2,630	19.5		6	

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Joe Franzen**

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**

Well No. APL/UP-W2

Well Depth: (Below MP): **16.98 feet**

Casing Diameter: **2 inches**

Sampling Date: **2/5/98**

Depth to Ground Water (Below MP): **8.8 feet**

Sample ID No. **APL/UP-W1 and APL/UP-W1B**

Method of Well Development:

Time: **1548**

☐ 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: **Yellowish**

☐ Tap ☐ Submersible Pump ☐ Bladder Pump Sample

Odor: **Slight diesel**

☑ Bailer Type ○ Teflon ○ Stainless Steel

Sampling Problems (if any):

○ ABS Plastic ○ PVC ◉ HDPE

Pump Intake Or Bailer Set At N/A Feet Below MP

Decontamination Performed:

Tubing Type (if used):

Tubing Used For: ☐ Sample Collection ☐ Well Development/Field Tests

Samples Collected: **BTEX, TPH-D**

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)
1540	6.2	2,660	18.5		1.5	
1544	6.2	2,660	18.5		3.0	
1548	6.2	2,660	18.5		4.5	

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Comments:

[Comments may continue on back]

Form Completed By: **Joe Franzen**

Witnessed By:

4

Rainy
Cloudy
50°F

2/4/58

0800 PACKED COOLERS

0830 - 0930
WENT TO UPS BUT
THEY DIDN'T OPEN
UNTIL 10. THEN TRAVELLED
TO OAKLAND

0940 ARRIVED AT
UPRR YARD IN
OAKLAND

OMW-1 0948
TOOK DTW
WELL COVER BROKEN

DTW = 1.78
TD = 12.02

2/4/58 5

OMW-3 1000
TD = 12.41
DTW = .94

OMW-10 1015
TD = 3.0
DTW = 12.85

OMW-08 1025
TD = 10.58
DTW = 1.67

Couldn't get to Motor
FREIGHT
AREA
OMW-02
OMW-06
OMW-05

LEFT SITE 1030

Checked into motel 1045

1100 - 1145 LUNCH

1200 - 1245 Shipped samples to Lab equip. back to LESE

1245 - DROVE STEVE to Airport.

1400 checked back at motel, picked up supplies called SEQUOIA for more bottles

1430 Arrived back at Oakland site

Got access to FREIGHT AREA

1530

OMW-6

DTW = 5.85

TD = 11.76

1630

OMW-5

DTW = 3.05

TD = 12.45

DOES NOT HAVE A LOCK CONTAINED IN POT HOLE

8 2/4/98

1645
OMW-2

TD = 9.97

DTW = 1.72

1710

• OKUS-W7

TD = 19.84

DTW = 4.46

1739

OKUS - W8

TD = 14.8

DTW = 4.36

2/4/98 9

APL/UP-W1

1800 TD = 21.85

DTW = 9.8

APL/UP-W2

1815 TD = 16.98

DTW = 8.8

1825

OKUS-W2

TD = 22.33

DTW = 7.5

1835

OKUS-W3

TD = 18.7

DTW = 6.95

checked wrong well located at OKUS-W1

10 2/5/58 WEATHER RAIN WINDY 50°F

0700 - 0800
Figure purge vol.
Fill out well forms

0800 Arrive at site
check-in w/ foreman

checked dtw & TD
at well OKUS-W1
instead of OKUS-W3
night before

OKUS-W3
0815 TD = 22.09
DTW = 7.65

0936 OKUS-W5
DTP = 7.13

Extremely Thick product

11

0900
OKUS-W6
DTP = 3.3
THICK CRUDE PRODUCT

0910 CALIBRATE CONDUC.
BEGIN SAMPLING
~~WELL~~ F ~~TIME~~ F.

No water levels for parameters so ~~of~~ F ~~clean~~ clean wells are not contaminated

WELL	TIME
OMW-1	0945
OMW-8	1030
OMW-10	1102
OMW-6	1155
OMW-5	1308
LUNCH	1330 - 1400

12 2/5/98

ARRIVE BACK AT SITE 1400

BEGAN SAMPLING

WELL	TIME
OMW-3	1449
APL/UP-W1	1523
APL/UP-W2	1548
OKUS-W7	1648
OKUS-W8	1721

Left site at 1730

2/6/98 13

cloudy 50°F
raining

ARRIVED AT SITE
0800

BEGAN SAMPLING

WELL	TIME
OMW-2	0825
OKUS-3	0857
OKUS-2	0925

LEFT SITE AT 0945
TO CHECK OUT OF
MOTEL

ARRIVED BACK AT
SITE AT 1130

RW-1

1130

~~DTW~~ DTW = 7.24

TD = 15.45

WATER HAD SOAPY APPEARANCE
PROBE GAVE SERIES OF
BEEPS NOT INDECATING
OIL.
WHEN PROBE WAS REMOVED
FROM TO MEASUREMENT
PRODUCT WAS OBSERVED
ON PROBE.

LEFT SITE AT 1145
FOR LAB TO DROP
OFF SAMPLES

1230
ARRIVED AT LAB
I FORGOT A DUPLICATE
SAMPLE SO I WENT
BACK TO LAB AND GOT
ANOTHER SAMPLE SET.

ARRIVED BACK AT
SITE 1415
TOOK SAMPLE AT
OMW-1 AT 1415
SAMPLE ID
OMW-100

LEFT ~~AT~~ SITE 1420
SHIPPED SAMPLE AT
1500 FROM UPS
OVERNIGHT
PROCEEDED TO AIRPORT

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 Service	Client Project ID:	Oakland	Sampled: Feb 5, 1998
5665 Flatiron Pkwy	Sample Matrix:	Water	Received: Feb 6, 1998
Boulder, CO 80301	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Feb 23, 1998
Attention: Lisa Hennessy	First Sample #:	802-0520	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 802-0520 OMW-1	Sample I.D. 802-0521 OMW-8	Sample I.D. 802-0522 OMW-10	Sample I.D. 802-0523 OMW-6	Sample I.D. 802-0524 OMW-3	Sample I.D. 802-0525 APL/UP-W1
QC Batch Number:		GC021798 802004A	GC021798 802004A	GC021898 802004A	GC021798 802004A	GC021798 802004A	GC021898 802004A
Purgeable Hydrocarbons	50	N.D.	N.D.	190	N.D.	N.D.	640
Benzene	0.50	N.D.	N.D.	18	N.D.	N.D.	55
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	22
Chromatogram Pattern:		--	--	Unidentified Hydrocarbons >C8 & Discrete Peaks <C7	--	--	Gasoline & Discrete Peak

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	2.0	1.0	1.0	5.0
Date Analyzed:	2/17/98	2/17/98	2/18/98	2/17/98	2/17/98	2/18/98
Instrument Identification:	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	107	109	106	113	112	113

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
Project Manager

Please Note:
** Revised report issued 03/13/98 **

Sequoia Analytical

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Laidlaw Environmental Service	Client Project ID:	Oakland	Sampled: Feb 5 - 6, 98
5665 Flatiron Pkwy	Sample Matrix:	Water	Received: Feb 6, 1998
Boulder, CO 80301	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Feb 23, 1998
Attention: Lisa Hennessy	First Sample #:	802-0526	

QC Batch Number:	GC021798	GC021798	GC021798	GC021798	GC021798	GC021898
	802004A	802009A	802009A	802009A	802009A	802009A

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 802-0526 APL/UP -W2	Sample I.D. 802-0527 OKUS-W7	Sample I.D. 802-0528 OKUS-W8	Sample I.D. 802-0529 OMW-5	Sample I.D. 802-0530 OMW-2	Sample I.D. 802-0531 OKUS-3
Purgeable Hydrocarbons	50	180	N.D.	56	N.D.	N.D.	6,000
Benzene	0.50	15	0.79	N.D.	N.D.	N.D.	210
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	2.3	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	4.9	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Gasoline & Discrete Peak	--	Unidentified Hydrocarbons >C8	--	--	Gasoline & Discrete Peak

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	100
Date Analyzed:	2/17/98	2/17/98	2/17/98	2/17/98	2/17/98	2/18/98
Instrument Identification:	HP-4	HP-9	HP-9	HP-9	HP-9	HP-9
Surrogate Recovery, %: (QC Limits = 70-130%)	123	103	104	104	103	103

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
Project Manager

Please Note:
** Revised report issued 03/13/98 **

8020520.LLL <2>

Sequoia Analytical

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

Laidlaw Environmental Service	Client Project ID:	Oakland	Sampled: Feb 6, 1998
5665 Flatiron Pkwy	Sample Matrix:	Water	Received: Feb 6, 1998
Boulder, CO 80301	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Feb 23, 1998
Attention: Lisa Hennessy	First Sample #:	802-0532	

QC Batch Number:	GC021798	GC021798	GC021798	GC021798	GC021898	GC021898
	802009A	802009A	802004A	802009A	802004A	802009A

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 802-0532 OKUS-2	Sample I.D. 802-0547 Trip Blank	Sample I.D. Method Blank	Sample I.D. Method Blank	Sample I.D. Method Blank	Sample I.D. Method Blank
Purgeable Hydrocarbons	50	1,100	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	72	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	11	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	18	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Gasoline & Discrete Peak	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	20	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	2/17/98	2/17/98	2/17/98	2/17/98	2/18/98	2/18/98
Instrument Identification:	HP-9	HP-9	HP-4	HP-9	HP-4	HP-9
Surrogate Recovery, %: (QC Limits = 70-130%)	103	104	110	106	112	105

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
Project Manager

Please Note:
** Revised report issued 03/13/98 **

8020520.LLL <3>

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

Laidlaw Environmental Service	Client Project ID:	Oakland	Sampled: Feb 5, 1998
5665 Flatiron Pkwy	Sample Matrix:	Water	Received: Feb 6, 1998
Boulder, CO 80301	Analysis Method:	EPA 3510/8015 Mod.	Reported: Feb 23, 1998
Attention: Lisa Hennessy	First Sample #:	802-0520	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 802-0520 OMW-1B	Sample I.D. 802-0521 OMW-8B	Sample I.D. 802-0522 OMW-10B	Sample I.D. 802-0523 OMW-6B	Sample I.D. 802-0524 OMW-3B	Sample I.D. 802-0525 APL/UP-W1B
QC Batch Number:		SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA
Extractable Hydrocarbons	50	N.D.	1,900	9,100	1,500	1,300	1,000
Chromatogram Pattern:		--	Diesel	Diesel	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:	2/12/98	2/12/98	2/12/98	2/12/98	2/12/98	2/12/98
Date Analyzed:	2/12/98	2/12/98	2/12/98	2/12/98	2/12/98	2/12/98
Instrument Identification:	HP-3A	HP-3A	HP-3A	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

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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Laidlaw Environmental Service	Client Project ID:	Oakland	Sampled: Feb 5-6, 1998
5665 Flatiron Pkwy	Sample Matrix:	Water	Received: Feb 6, 1998
Boulder, CO 80301	Analysis Method:	EPA 3510/8015 Mod.	Reported: Feb 23, 1998
Attention: Lisa Hennessy	First Sample #:	802-0526	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 802-0526 APL/UP -W2B	Sample I.D. 802-0527 OKUS-W7B	Sample I.D. 802-0528 OKUS-W8B	Sample I.D. 802-0529 OMW-5B	Sample I.D. 802-0530 OMW-2B	Sample I.D. 802-0531 OKUS-3B
QC Batch Number:		SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA	SP021298 8015EXA
Extractable Hydrocarbons	50	730	1,500	1,400	2,200	1,800	3,400
Chromatogram Pattern:		Diesel & Unidentified Hydrocarbons <C12	Diesel	Diesel & Discrete Peaks	Diesel & Unidentified Hydrocarbons >C18	Diesel	Diesel & Unidentified Hydrocarbons <C14

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	2/12/98	2/12/98	2/12/98	2/12/98	2/12/98	2/12/98
Date Analyzed:	2/12/98	2/12/98	2/12/98	2/13/98	2/12/98	2/12/98
Instrument Identification:	HP-3B	HP-3A	HP-3A	HP-3B	HP-3A	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
Client Services Representative

8020520.LLL <5>

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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Laidlaw Environmental Service	Client Project ID:	Oakland	Sampled:	Feb 6, 1998
5665 Flatiron Pkwy	Sample Matrix:	Water	Received:	Feb 6, 1998
Boulder, CO 80301	Analysis Method:	EPA 3510/8015 Mod.	Reported:	Feb 24, 1998
Attention: Lisa Hennessy	First Sample #:	802-0532		

QC Batch Number: SP021298 SP021298

8015EXA 8015EXA

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 802-0532 OKUS-2B	Sample I.D. Method Blank
Extractable Hydrocarbons	50	1,600	N.D.
Chromatogram Pattern:		Diesel & Unidentified Hydrocarbons <C12	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Extracted:	2/12/98	2/12/98
Date Analyzed:	2/12/98	2/12/98
Instrument Identification:	HP-3A	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
Client Services Representative

8020520.LLL <6>

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 Service
5665 Flatiron Pkwy
Boulder, CO 80301
Attention: Lisa Hennessy

Client Project ID: Oakland
Matrix: Liquid
QC Sample Group: 8020520-547
Reported: Feb 23, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
QC Batch#:	GC021798	GC021798	GC021798	GC021798	SP021298
	802009A	802009A	802009A	802009A	8015EXA
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 3510
Analyst:	K. Nill	K. Nill	K. Nill	K. Nill	K. Grubb
MS/MSD #:	8020703	8020703	8020703	8020703	BLK021298
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	2/17/98	2/17/98	2/17/98	2/17/98	2/12/98
Analyzed Date:	2/17/98	2/17/98	2/17/98	2/17/98	2/12/98
Instrument I.D.#:	HP-9	HP-9	HP-9	HP-9	HP3B
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	500 µg/L
Result:	21	22	22	67	380
MS % Recovery:	105	110	110	112	76
Dup. Result:	20	21	20	62	270
MSD % Recov.:	100	105	100	103	54
RPD:	4.9	4.7	9.5	7.8	35
RPD Limit:	0-20	0-20	0-20	0-20	0-50

LCS #:	9LCS021798	9LCS021798	9LCS021798	9LCS021798	LCS021298
Prepared Date:	2/17/98	2/17/98	2/17/98	2/17/98	2/12/98
Analyzed Date:	2/17/98	2/17/98	2/17/98	2/17/98	2/12/98
Instrument I.D.#:	HP-9	HP-9	HP-9	HP-9	HP-3B
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	500 µg/L
LCS Result:	21	22	22	66	430
LCS % Recov.:	105	110	110	110	86

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

Sequoia Analytical

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Laidlaw Environmental Service
5665 Flatiron Pkwy
Boulder, CO 80301
Attention: Lisa Hennessy

Client Project ID: Oakland
Matrix: Liquid
QC Sample Group: 8020520-547

Reported: Feb 23, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC021798	GC021798	GC021798	GC021798
	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:	K. Nill	K. Nill	K. Nill	K. Nill
MS/MSD #:	8020736	8020736	8020736	8020736
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	2/17/98	2/17/98	2/17/98	2/17/98
Analyzed Date:	2/17/98	2/17/98	2/17/98	2/17/98
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:	21	20	19	59
MS % Recovery:	105	100	95	98
Dup. Result:	20	20	18	57
MSD % Recov.:	100	100	90	95
RPD:	4.9	0.0	5.4	3.4
RPD Limit:	0-20	0-20	0-20	0-20

LCS #:	4LCS021798	4LCS021798	4LCS021798	4LCS021798
Prepared Date:	2/17/98	2/17/98	2/17/98	2/17/98
Analyzed Date:	2/17/98	2/17/98	2/17/98	2/17/98
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:	21	20	19	59
LCS % Recov.:	105	100	95	98

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

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 Service
5665 Flatiron Pkwy
Boulder, CO 80301
Attention: Lisa Hennessy

Client Project ID: Oakland
Matrix: Liquid
QC Sample Group: 8020520-547

Reported: Feb 25, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC021898	GC021898	GC021898	GC021898
	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:	K. Nill	K. Nill	K. Nill	K. Nill
MS/MSD #:	8020736	8020736	8020736	8020736
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	2/17/98	2/17/98	2/17/98	2/17/98
Analyzed Date:	2/17/98	2/17/98	2/17/98	2/17/98
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:	21	20	19	59
MS % Recovery:	105	100	95	98
Dup. Result:	20	20	18	57
MSD % Recov.:	100	100	90	95
RPD:	4.9	0.0	5.4	3.4
RPD Limit:	0-20	0-20	0-20	0-20

LCS #:	4LCS021898	4LCS021898	4LCS021898	4LCS021898
Prepared Date:	2/18/98	2/18/98	2/18/98	2/18/98
Analyzed Date:	2/18/98	2/18/98	2/18/98	2/18/98
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:	18	18	17	54
LCS % Recov.:	90	90	85	90

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

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.

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Laidlaw Environmental Service
5665 Flatiron Pkwy
Boulder, CO 80301
Attention: Lisa Hennessy

Client Project ID: Oakland
Matrix: Liquid
QC Sample Group: 8020520-547
Reported: Feb 25, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC021898 802009A	GC021898 802009A	GC021898 802009A	GC021898 802009A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	K. Nill	K. Nill	K. Nill	K. Nill
MS/MSD #:	8020821	8020821	8020821	8020821
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	2/18/98	2/18/98	2/18/98	2/18/98
Analyzed Date:	2/18/98	2/18/98	2/18/98	2/18/98
Instrument I.D.#:	HP-9	HP-9	HP-9	HP-9
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Result:	20	21	21	64
MS % Recovery:	100	105	105	107
Dup. Result:	21	21	21	64
MSD % Recov.:	105	105	105	107
RPD:	4.9	0.0	0.0	0.0
RPD Limit:	0-20	0-20	0-20	0-20

LCS #:	9LCS021898	9LCS021898	9LCS021898	9LCS021898
Prepared Date:	2/18/98	2/18/98	2/18/98	2/18/98
Analyzed Date:	2/18/98	2/18/98	2/18/98	2/18/98
Instrument I.D.#:	HP-9	HP-9	HP-9	HP-9
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
LCS Result:	19	20	20	61
LCS % Recov.:	95	100	100	102

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

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

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

Melissa A. Brewer
Client Services Representative

Sequoia Analytical

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Laidlaw Environmental Service	Client Project ID:	Oakland	
5665 Flatiron Pkwy			Received: Feb 6, 1998
Boulder, CO 80301			
Attention: Lisa Hennessy	Lab Number:	8020520-547	Reported: Mar 13, 1998

LABORATORY NARRATIVE

EPA 5030/8015 Mod./8020: Total Purgeable Petroleum Hydrocarbons with BTEX Distinction

A discrete peak was noted on samples 802-0525, 802-0526, 802-0531, and 802-0532 between the retention times for Chlorobenzene and Ethyl Benzene. This peak was identified as a non-gasoline compound by GC/MS.

SEQUOIA ANALYTICAL, #1271

Melissa A. Brewer

Melissa A. Brewer
Project Manager

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

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

Company Name: LAIDLAW ENVIRONMENTAL SERVICES	Project Name: OAKLAND
Address: 5665 FLATIRON PKWY	Billing Address (if different):
City: Boulder State: Co. Zip Code: 80301	
Telephone: (303) 938-5500 FAX #:	P.O. #:
Report To: DENTON MAULDIN Sampler: JOE FRANZEN	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

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	BTEX	TPH-D	Comments
1. OMW-1B	2/5/98 0945	H2O	1		8020520	AB	X	
2. OMW-1	2/5/98 0945	H2O	1			X		
3. OMW-8B	2/5/98 1030	H2O	1		8020521	AB	X	
4. OMW 8	2/5/98 1030	H2O	1			X		
5. OMW-10B	2/5/98 1102	H2O	1		8020522	AB	X	
6. OMW-10	2/5/98 1102	H2O	1			X		
7. OMW-6B	2/5/98 1155	H2O	1		8020523	AB	X	
8. OMW-6	2/5/98 1155	H2O	1			X		
9. OMW-3B	2/5/98 1448	H2O	1		8020524	AB	X	
10. OMW-3	2/5/98 1448	H2O	1			X		

Relinquished By:	Date 2/6/98	Time 12 YO	Received By:	Date:	Time:
Relinquished By:	Date	Time	Received By:	Date:	Time:
Relinquished By	Date	Time	Received By Lab C. Palmer	Date: 2/6/98	Time: 1240

Method of Shipment

Pink - Client
Yellow - Sequoia
White - Sequoia

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

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

Company Name: LAIDLAW ENVIRONMENTAL SERVICES	Project Name: OAKLAND
Address: 5665 FLATIRON PKWY	Billing Address (if different):
City: BOULDER State: Co. Zip Code: 80301	
Telephone: (303) 938-5500 FAX #:	P.O. #:
Report To: DENTON MAULDIN Sampler: JOE FRANZEN (F)	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

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	BTEX	TPH-D	Comments
1. APL/UP-W1B	2/5/98 1523	H2O	1		8020525	AB	X	
2. APL/UP-W1	2/5/98 1523					X		
3. APL/UP-W2B	2/5/98 1548				8020526	AB	X	
4. APL/UP-W2	2/5/98 1548					X		
5. OKUS-W7B	2/5/98 1645				8020527	AB	X	
6. OKUS-W7	2/5/98 1645					X		
7. OKUS-W8B	2/5/98 1722				8020528	AB	X	
8. OKUS-W8	2/5/98 1722					X		
9. OMW-5B	2/5/98 1310				8020529	AB	X	
10. OMW-5	2/5/98 1310					X		

Pink - Client
Yellow - Sequoia
White - Sequoia

Relinquished By: Joe Franzen	Date: 2/6/98	Time: 1240	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab: C. Palmer	Date: 2/6/98	Time: 1240

Received in Good Condition? ❑ Yes ❑ No Samples on Ice? ❑ Yes ❑ No Method of Shipment

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

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

Company Name: LAIDLAW ENVIRONMENTAL	Project Name: OAKLAND
Address: 5665 FLATIRON PKWY	Billing Address (if different):
City: Boulder State: Co. Zip Code: 80301	
Telephone: (303) 938-5500 FAX #:	P.O. #:
Report To: DENTON MAULDEN Sampler: JOE FRANZEN (F)	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

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #		BTEX	TPH-D	Comments
1. OMW-2B	2/6/98 0825	H2O	1		8020530	AB	X		
2. OMW-2	2/6/98 0825					X			
3. OKUS-3B	2/6/98 0857				8020531	AB	X		
4. OKUS-3	2/6/98 0857					X			
5. OKUS-2B	2/6/98 0925				8020532	AB	X		
6. OKUS-2	2/6/98 0925					X			
7. Trip Blank	2/2/98				8020547				
8.									
9.									
10.		↓	↓						

Relinquished By:	Date: 2/6/98	Time: 1240	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab: C. Palmer	Date: 2/6/98	Time: 1240

Pink - Client
Yellow - Sequoia
White - Sequoia

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