RO049

PORT OF OAKLAND

Looks like potential closure w/ RMP

1049

00 JAN -9 PM 3:01

ENVIRONMENTAL PROTECTION

January 5, 2001

Mr. Barney Chan
Alameda County Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, #250
Alameda, CA 94502-6577

SUBJECT: QUARTERLY GROUNDWATER MONITORING REPORT - FORMER TANK NUMBERS MF-25 AND MF-26, METROPOLITAN OAKLAND INTERNATIONAL AIRPORT, UNITED AIRLINES HANGAR AREA - ECONOMY PARKING LOT SITE, 1100 AIRPORT DRIVE, OAKLAND, CALIFORNIA

Dear Mr. Chan:

Enclosed is a copy of the September 9, 2000 "*Quarterly Groundwater Monitoring Report, April 1, through June 30, 2000, United Airlines Hangar - Economy Parking Lot Site, Metropolitan Oakland International Airport (MOIA)*", 1100 Airport Drive, Oakland, California. Monitoring activities were performed by Harding Lawson Associates, (HLA), one of the as-needed consultants retained by the Port of Oakland (Port).

Should you have any questions or need additional information, please contact me at 627-1118. Thank you for your on-going assistance and support on this project.

Sincerely,

Dale Klettke, CHMM
Associate Environmental Scientist
Environmental Health & Safety Compliance

enclosure

c: Jeff Jones - EH & SC Files
c:\msoffice\winword\028691bc.92000

September 9, 2000

43145.4

Mr. Dale H. Klettke, CHMM
Port of Oakland
Environmental Health & Safety Compliance
530 Water Street, 2nd Floor
Oakland, California 94607

Quarterly Groundwater Monitoring Report
April 1 through June 30, 2000
United Airlines Hangar Area – Economy Parking Lot Site
Oakland International Airport
Oakland, California

Dear Mr. Klettke:

Harding Lawson Associates (HLA) presents this groundwater monitoring report summarizing groundwater conditions observed during the second quarter of 2000 in eight monitoring wells at the United Airlines Hangar Area - Economy Parking Lot Site, Oakland International Airport, Oakland, California (Plate 1). This report is the seventh of eight quarterly groundwater monitoring events that HLA will perform for the Port of Oakland in accordance with HLA's *Work Plan for Installation of Oxygen Releasing Compound (ORC)*, dated December 18, 1999.

BACKGROUND

In March 1992, the Port of Oakland removed two underground storage tanks (USTs) from the Economy Parking Lot Site, MF-25 and MF-26. The Port's contractor removed approximately 700 cubic yards of impacted soil and collected confirmation soil samples following soil removal. The former UST excavation (approximately 80-feet by 80-feet) was reportedly backfilled with permeable material. The area is now paved and used for parking (Plate 2). The Port's contractor installed Monitoring well MW-1 in 1992 where elevated concentrations of total petroleum hydrocarbons as diesel (TPHd) and total petroleum hydrocarbons as motor oil (TPHmo) were reported and two additional monitoring wells, MW-2 and MW-3, in 1995. Free product was observed in MW-2 and MW-3 in 1996 and 1997. The Port's contractor then installed MW-4 though MW-8 in 1998 and observed a sheen on groundwater from MW-2 and MW-4.

HLA installed the first batch treatment of ORC on December 23, 1998 along the upgradient edge of the former UST excavation at 11 locations. We installed a total of 780 pounds of time-release ORC after checking that no free product was present in the monitoring wells. HLA's subcontractor used a direct-push

rig to inject at total of 780 pounds of time-release ORC mixed into 60 gallons of water through 2-inch diameter rods to a depth of 4 to 8 feet below ground surface.

HLA installed a second batch treatment of ORC on January 7, 2000 in three areas: 250 pounds of ORC in the vicinity of MW-3; 250 pounds of ORC adjacent to MW-4 and 500 pounds of ORC focused in the vicinity of MW-2. We mobilized a direct-push rig to inject ORC under pressure at the former UST excavation at 9 drill locations. At all locations, a 2-inch diameter rod was pushed to a depth of 4 feet below ground surface. A total of approximately 1,000 pounds of time-release ORC was mixed into 300 gallons of water providing a 30 percent blend with a consistency similar to white wash.

GROUNDWATER SAMPLING AND ANALYSIS

HLA measured dissolved oxygen (DO) concentrations in the eight monitoring wells on a monthly basis between April 1 through June 30, 2000. On May 24, HLA measured groundwater elevations and collected groundwater samples for chemical analyses. Prior to purging or sampling the monitoring wells, HLA measured DO concentrations, reduction oxidation potential (Redox), water levels, and checked for free product with an interface probe. HLA monitored the pH, conductivity, and temperature of the groundwater during purging. We sampled the monitoring wells after purging at least three well volumes of groundwater and after parameters had stabilized to within 10 percent; the groundwater sampling forms with the field data are included in Appendix A. HLA collected water samples using a disposable Teflon bailer and decontaminated all sampling equipment by washing with a non-phosphate cleaning solution and rinsing with distilled water. HLA contained purged water in a 55-gallon drum for subsequent disposal by the Port of Oakland.

HLA placed the water samples in ice-chilled coolers and submitted them to Sequoia Analytical of Walnut Creek, California under chain-of-custody protocol. The samples were analyzed for the following analytes:

- Total petroleum hydrocarbons as gasoline (TPHg) by EPA Test Method 8015 (modified)
- Benzene, toluene, ethylbenzene, total xylenes (BTEX) and methyl t-butyl ether (MTBE) by EPA Test Method 8020
- TPHd, total petroleum hydrocarbons as jet fuel A (TPHjA), TPHmo by EPA Method 8015 with a silica gel cleanup procedure
- Ferrous iron, ferric iron, nitrate, sulfate, orthophosphate
- Total organic carbon (TOC) by EPA Method 415.2

- Halogenated and Aromatic Volatile Organics by EPA Method 8010 and 8020.

Due to an oversight in preparing the chain-of-custody, none of the samples were analyzed for purgeable halocarbons by EPA Method 8010. HLA resampled and analyzed the wells on July 10, 2000 for those analyses using the same sampling protocol. HLA performed these supplementary activities at no cost to the Port. The results of the July sampling event are included in this report. HLA contained the purge water in a 55-gallon drum for subsequent disposal by the Port of Oakland.

MONITORING RESULTS

No free product was observed in any of the eight monitoring wells. Groundwater elevations are presented in Table 1 and the elevations from May 24, 2000 are shown on Plate 3. The apparent groundwater gradient is towards the southwest. Chemical concentration results are shown in Tables 2, 3, and 4. DO concentrations are summarized in Table 5. The laboratory report and chain-of-custody forms are presented in Appendix B.

Petroleum hydrocarbons continue to be the found on site during this quarterly monitoring sampling. The analytical results for the petroleum hydrocarbons can be found in Table 2. TPHg was reported in five of the monitoring wells, MW-1, MW-2, MW-3, MW-4 and MW-8 at concentrations ranging from 6,300 micrograms per liter (µg/L) in MW-3 to 53 µg/L in MW-8. TPHd was reported in six of the wells, MW-1, MW-2, MW-3, MW-4, MW-5, and MW-8 at concentrations ranging from 130 µg/L in MW-8 to 8,000 µg/L in MW-2. TPHjA was reported in MW-1, MW-2, MW-3 and MW-4 at concentrations ranging from 8,100 µg/L and in MW-2 to a concentration of 410 µg/L in MW-1. TPHmo was reported in MW-2, MW-3, MW-4 and MW-5 concentrations ranging from 4,600 µg/L in MW-3 to 400 µg/L in MW-5. In general, the quarterly results indicate a continuing trend of decreasing petroleum hydrocarbons at the site.

Volatile organic compounds (VOCs) are also present in all wells except downgradient wells MW-5 and MW-6 (Table 3). The largest VOC concentrations were present at the upgradient well MW-8 and adjacent to the former UST excavation at MW-2. Several VOCs exceed the Maximum Contaminant Levels (MCLs).

The remaining chemical results for this quarterly report are found in Table 4. The concentration of sulfate decreased in all wells with decreases ranging from 17 percent in MW-6 to 89 percent in MW-3 from the previous quarter's sample results from March 23, 2000. For the same period, the concentrations of ferrous iron decreased in all wells except MW-1 with decreases ranging from 26 percent in MW-4 to 95 percent in MW-8. The total iron concentrations also decreased in all wells except MW-3 with decreases ranging from

47 percent in MW-2 to 99 percent in MW-6 and MW-7. The TOC, nitrate and orthophosphate concentrations remained relatively consistent with the previous quarter results.

QUALITY ASSURANCE AND QUALITY CONTROL

HLA collected quality assurance/quality control (QA/QC) samples to evaluate sample collection methods, sample handling procedures, and laboratory analysis. The field QA/QC samples consisted of a duplicate sample at MW-4.

The duplicate sample was submitted to the laboratory for same analyses as the original sample. HLA evaluated the analytical laboratory precision by calculating the relative percent difference (RPD) between original and duplicate samples collected at MW-6. The equation used to calculate the RPD is:

$$RPD = \frac{(X_1 - X_2)}{\bar{X}} \times 100$$

Where:

X_1 = concentration for sample 1 (original)

X_2 = concentration for sample 2 (duplicate)

$\bar{X}$ = mean of samples 1 and 2.

The relative percent difference between the analytical results from MW-4 and the duplicate sample ranged from zero to 44 percent with the ferrous iron relative percent difference equal to 85 percent. HLA considers the range of RPD to be acceptable.

CLOSURE

If you have any questions or need additional information, please contact either of the undersigned at (510) 451-1001.

Very truly yours,

HARDING LAWSON ASSOCIATES

Stephen J. Osborne
Geotechnical Engineer

SJO:dmw/43145/037800R

Attachments:
Table 1 - Groundwater Elevations
Table 2 - Groundwater Analytical Results – Petroleum Hydrocarbons
Table 3 - Groundwater Analytical Results – VOCs
Table 4 - Groundwater Analytical Results – Inorganics
Table 5 - Dissolved Oxygen Concentrations
Plate 1 - Vicinity Map
Plate 2 - Site Map
Plate 3 – Groundwater Elevation Map
Appendix A - Groundwater Sampling Forms
Appendix B - Laboratory Reports

Table 1. Groundwater Elevations
Quarterly Groundwater Monitoring Report
United Airlines Hangar Area - Economy Parking Lot Site
Oakland International Airport

Well Name	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	Note
MW-1	6.91	15-May-92	3.10	3.81	--	1
		7-Aug-92	3.20	3.71	--	1
		24-Nov-92	4.04	2.87	--	1
		12-Feb-93	--	--	--	1
		11-Mar-93	2.09	4.82	--	1
		17-May-93	3.14	3.77	--	1
		3-Aug-93	3.15	3.76	--	1
		25-Nov-93	3.59	3.32	--	1
		24-Mar-94	3.21	3.70	--	1
		9-May-94	2.99	3.92	--	1
		29-Aug-94	3.34	3.57	--	1
		27-Sep-94	3.51	3.40	--	1
		25-Apr-95	2.38	4.53	--	1
		11-Aug-95	3.08	3.83	--	1
		3-Nov-95	3.52	3.39	--	1
		19-Jun-96	2.93	3.98	--	1
		24-Oct-96	3.52	3.39	--	1
		22-Jan-97	2.61	4.30	--	1
		25-Apr-97	2.77	4.14	--	1
		6-Aug-97	3.27	3.64	--	1
		23-Dec-97	3.14	3.77	--	1
		26-Mar-98	2.09	4.82	--	1
		13-May-98	--	--	--	2
		16-Dec-98	2.95	3.96	--	
		26-Feb-99	5.83	1.08	--	
		20-May-99	2.62	4.29	--	
		17-Aug-99	3.30	3.61	--	
		11-Nov-99	4.44	2.47	--	
		23-Mar-00	2.57	4.34	--	
		25-Apr-00	2.67	4.24	--	
		24-May-00	2.83	4.08	--	
		10-Jul-00	3.00	3.91	--	
MW-2	6.63	25-Apr-95	2.20	4.43	--	1
		11-Aug-95	3.11	3.52	--	1
		3-Nov-95	3.28	3.35	--	1
		19-Jun-96	2.53	4.14	0.05	1,3
		24-Oct-96	3.44	3.31	0.16	1,3
		22-Jan-97	2.45	4.20	0.02	1,3
		25-Apr-97	2.60	4.05	0.03	1,3
		30-Jul-97	--	--	0.14	1,4
		6-Aug-97	2.96	3.67	--	1
		23-Dec-97	2.85	3.97	0.25	1,3
		26-Mar-98	1.72	4.92	0.005	1,3
	6.58	13-May-98	1.80	4.78	--	2,5
		16-Dec-98	2.60	3.98	--	
		26-Feb-99	2.06	4.52	--	
		20-May-99	2.40	4.18	--	

Table 1. Groundwater Elevations
Quarterly Groundwater Monitoring Report
United Airlines Hangar Area - Economy Parking Lot Site
Oakland International Airport

Well Name	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	Note
MW-2		17-Aug-99	2.92	3.66	--	
		11-Nov-99	3.05	3.53	--	
		23-Mar-00	2.27	4.31	--	
		25-Apr-00	2.34	4.24	--	
		24-May-00	2.22	4.36	--	
		10-Jul-00	2.70	3.88	--	
MW-3	7.36	25-Apr-95	2.20	5.16	--	1
		11-Aug-95	3.11	4.25	--	1
		3-Nov-95	3.28	4.08	--	1
		19-Jun-96	2.53	4.14	0.05	1,3
		24-Oct-96	3.44	3.31	0.16	1,3
		22-Jan-97	2.45	4.20	0.02	1,3
		25-Apr-97	3.13	4.24	0.01	1,3
		30-Jul-97	NM	NM	0.03	1,4
		6-Aug-97	3.76	3.60	--	1
		23-Dec-97	3.48	3.88	--	1
		26-Mar-98	2.36	5.00	0.005	1,3
		13-May-98	--	--	--	2
		16-Dec-98	3.40	3.96	--	
		26-Feb-99	2.49	4.87	--	
		20-May-99	2.96	4.40	--	
		17-Aug-99	3.64	3.72	--	
		11-Nov-99	3.88	3.48	--	
		23-Mar-00	2.55	4.81	--	
		25-Apr-00	2.90	4.46	--	
		24-May-00	2.68	4.68	--	
		10-Jul-00	3.37	3.99	--	
MW-4	6.92	13-May-98	2.01	4.91	--	2
		16-Dec-98	2.84	4.08	--	
		26-Feb-99	1.94	4.98	--	
		20-May-99	2.47	4.45	--	
		17-Aug-99	3.10	3.82	--	
		11-Nov-99	3.38	3.54	--	
		23-Mar-00	2.06	4.86	--	
		25-Apr-00	2.44	4.48	--	
		24-May-00	2.26	4.66	--	
		10-Jul-00	2.88	4.04	--	
MW-5	5.79	13-May-98	1.05	4.74	--	2
		16-Dec-98	1.95	3.84	--	
		26-Feb-99	1.50	4.29	--	
		20-May-99	2.05	3.74	--	
		17-Aug-99	2.30	3.49	--	
		11-Nov-99	2.34	3.45	--	
		23-Mar-00	1.60	4.19	--	6
		25-Apr-00	1.87	3.92	--	6
		24-May-00	1.75	4.04	--	6

Table 1. Groundwater Elevations
Quarterly Groundwater Monitoring Report
United Airlines Hangar Area - Economy Parking Lot Site
Oakland International Airport

Well Name	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	Note
MW-5		10-Jul-00	2.22	3.57	--	6
MW-6	6.39	13-May-98	1.91	4.48	--	2
		16-Dec-98	2.64	3.75	--	
		26-Feb-99	1.89	4.50	--	
		20-May-99	2.65	3.74	--	
		17-Aug-99	3.03	3.36	--	
		11-Nov-99	3.07	3.32	--	
		23-Mar-00	2.34	4.05	--	
		25-Apr-00	2.50	3.89	--	
		24-May-00	2.44	3.95	--	
		10-Jul-00	2.88	3.51	--	
MW-7	5.86	13-May-98	1.51	4.35	--	2
		16-Dec-98	2.13	3.73	--	
		26-Feb-99	1.58	4.28	--	
		20-May-99	2.23	3.63	--	
		17-Aug-99	2.57	3.29	--	
		11-Nov-99	2.57	3.29	--	
		23-Mar-00	1.90	3.96	--	
		25-Apr-00	2.16	3.70	--	
		24-May-00	2.06	3.80	--	
		10-Jul-00	2.44	3.42	--	
MW-8	7.56	13-May-98	2.46	5.10	--	2
		16-Dec-98	3.51	4.05	--	
		26-Feb-99	2.59	4.97	--	
		20-May-99	3.06	4.50	--	
		17-Aug-99	3.75	3.81	--	
		11-Nov-99	4.04	3.52	--	
		23-Mar-00	2.63	4.93	--	
		25-Apr-00	3.02	4.54	--	
		24-May-00	2.78	4.78	--	
		10-Jul-00	3.48	4.08	--	

Notes
1 - Data from Table 1-Results of Groundwater Sampling and Analysis, Port of Oakland, Oakland International Airport, United Airlines Hanger Area-Economy Parking Lot Site, by ITSI
2 - Data from Table 1of Results of Additional Site Investigation, Port of Oakland, Oakland International Airport, United Airlines Hanger Area-Economy Parking Lot Site, dated October 21, 1998 by ITSI
3 - GroundWater elevation calculated assuming a specific gravity of 0.75 for product.
4 - Free product removed from well during redevelopment (July 30, 1997).
5 - Well MW-2 was reconstructed in May 1998.
6 - Well MW-5 was damaged during construction activities in February 2000, top of casing elevation may have been effected.

Table 2. Groundwater Analytical Results - Petroleum Hydrocarbos
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl - benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TPHg (µg/L)	TPH Diesel (C1-C-22) (µg/L)	TPH Jet Fuel A (C9-C16) (µg/L)	TPH Motor Oil (>C16) (µg/L)	Unidentified Extractable Hydrocarbons (µg/L)	Note
MW-1	05/15/92	<0.4	<0.3	<0.3	<0.4	--	<50	--	--	--	--	1
	08/07/92	<0.4	<0.3	<0.3	<0.4	--	<50	--	800	--	--	1
	11/24/92	<0.4	<0.3	<0.3	<0.4	--	<50	--	<50	--	--	1
	02/12/93	<0.4	<0.3	<0.3	<0.4	--	<50	--	--	--	--	1
	05/17/93	<0.4	<0.3	<0.3	<0.4	--	<50	--	--	--	--	1
	08/03/93	<0.5	<0.5	<0.5	<0.5	--	<50	5,200	--	--	--	1
	11/25/93	<0.5	<0.5	<0.5	0.6	--	70	--	--	--	--	1
	05/09/94	<0.5	<0.5	<0.5	<0.5	--	<50	--	--	--	--	1
	08/29/94	<0.5	<0.5	2.7	<0.5	--	<50	--	--	--	--	1
	04/25/95	<5	<5	<5	<5	--	<50	1,400	<50	610	--	1
	08/11/95	<0.4	<0.3	<0.3	<0.4	--	<50	1,900	<50	1,200	--	1
	11/03/95	0.4	0.4	<0.3	<0.4	--	<50	4,200	<50	1,800	--	1
	06/19/96	0.99	<0.5	1.1	<1.0	--	<50	11,000	<500	820	--	1
	10/24/96	1.9	<0.5	<0.5	1.3	--	57	<250	<500	<250	--	1
	01/22/97	<0.5	<0.5	<0.5	<1.0	--	<50	220	<500	<250	--	1
	04/25/97	1.2	<0.5	1.0	1.2	--	110	<50	<500	<250	--	1
	08/06/97	2.1	<0.5	<0.5	<1.0	--	100	340	<500	<250	--	1
	12/23/97	0.7	<0.5	<0.5	<1.0	--	<50	<50	<50	<300	--	1
	03/26/98	<0.5	<0.5	<0.5	<1.0	--	<50	<48	<48	<290	--	2
	12/16/98	1.8	<0.5	<0.5	<0.5	<2.5	120	640	<50	<250	340	--
	02/26/99	0.96	<0.5	<0.5	<0.5	2.6	69	670	<50	350	<50	4
	05/20/99	1.7	<0.5	<0.5	<0.5	<2.5	85	380	<50	<250	<50	--
	08/17/99	2.6	0.52	<0.5	<0.5	<2.5	54	530	<50	<500	--	--
	11/11/99	2.5	<0.5	<0.5	<0.5	<2.5	96	1,100	<50	<250	--	--
	03/23/00	1.7	<0.5	<0.5	<0.5	3.2	--	1,100	<50	1,100	--	8
	04/25/00	--	--	--	--	--	60	--	--	--	--	8
	05/24/00	2.6	<0.5	<0.5	<0.5	<2.5	76	670	410	<250	--	8
MW-2	04/25/95	340	570	110	580	--	5,200	<10,000	13,000	19,000	--	1
	08/11/95	320	690	110	510	--	5,500	<8,000	7,900	20,000	--	1
	11/03/95	200	400	27	360	--	3,800	<11,000	11,000	4,200	--	1
	06/19/96	--[3]	--[3]	--[3]	--[3]	--	--[3]	--[3]	--[3]	--[3]	--	1
	10/24/96	--[3]	--[3]	--[3]	--[3]	--	--[3]	--[3]	--[3]	--[3]	--	1
	01/22/97	--[3]	--[3]	--[3]	--[3]	--	--[3]	--[3]	--[3]	--[3]	--	1
	04/25/97	--[3]	--[3]	--[3]	--[3]	--	--[3]	--[3]	--[3]	--[3]	--	1
	08/06/97	170	270	92	410	--	9,900	12,000	<1,000	2,300	--	1
	12/23/97	--[3]	--[3]	--[3]	--[3]	--	--[3]	--[3]	--[3]	--[3]	--	1
	03/26/98	--[3]	--[3]	--[3]	--[3]	--	--[3]	--[3]	--[3]	--[3]	--	1

Table 2. Groundwater Analytical Results - Petroleum Hydrocarbos
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl - benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TPHg (µg/L)	TPH Diesel (C1-C-22) (µg/L)	TPH Jet Fuel A (C9-C16) (µg/L)	TPH Motor Oil (>C16) (µg/L)	Unidentified Extractable Hydrocarbons (µg/L)	Note
MW-2	05/13/98	150	270	94	440	--	4,000	2,600	3,400	<290	--	2,3,4
	12/16/98	130	180	71	330	<50	4,600	<1,000	31,000	8,200	<1,000	--
	02/26/99	86	210	64	350	<100	4,700	<1,000	18,000	7,800	<1,000	--
	05/20/99	120	280	76	360	<2.5	4,700	<50	15,000	5,800	<50	--
	08/17/99	55	44	57	200	<2.5	17,000	<1000	22,000	<10000	--	--
	11/11/99	60	37	78	190	<2.5	3,800	<500	10,000	<2500	--	--
	03/23/00	92	180	97	310	<25	--	<500	36,000	26,000	--	8
	04/25/00	--	--	--	--	--	7,600	--	--	--	--	8
	05/24/00	100	180	96	310	<50	3,200	8,000	8,100	4,200	--	8
MW-3	04/25/95	150	600	100	580	--	7,200	<40000	38,000	31,000	--	1
	08/11/95	--	--	--	--	--	--	--	--	--	--	1,5
	11/03/95	--	--	--	--	--	--	--	--	--	--	1,5
	06/19/96	--	--	--	--	--	--	--	--	--	--	1,5
	10/24/96	--	--	--	--	--	--	--	--	--	--	1,5
	01/22/97	--	--	--	--	--	--	--	--	--	--	1,5
	04/25/97	--	--	--	--	--	--	--	--	--	--	1,5
	08/06/97	4	16	14	90	--	4,200	1,400	<500	<250	--	1,5
	12/23/97	13	16	9	116	--	2,200	79,000	110,000	8,200	--	1,5
	03/26/98	--	--	--	--	--	--	--	--	--	--	2,5
	12/16/98	<10	12	<10	43	<50	2,300	--	--	--	--	7
	02/26/99	16	16	10	40	<100	5,700	--	--	--	--	7
	05/20/99	20	25	7.8	37	<2.5	2,700	--	--	--	--	7
	08/17/99	14	<0.5	<0.5	15	<2.5	2,100	--	--	--	--	7
	11/11/99	7.8	<0.5	<0.5	17	<2.5	3,300	--	--	--	--	7
	03/23/00	13	20	16	48	<50	--	--	--	--	--	8
	04/25/00	--	--	--	--	--	8,000	6,200	7,100	4,600	--	8
	05/24/00	4.6	6.4	6.3	23	<13	6,300	6,200	7,100	4,600	--	8
MW-4	05/13/98	9.8	23	13	79	--	1,400	2,000	2,300	<310	--	2,3,4
	12/16/98	<10	<10	<10	58	<50	1,900	<1,000	40,000	8,800	<1,000	--
(Dup)	12/16/98	<10	<10	<10	51	<50	1,700	<1,000	41,000	9,400	<1,000	--
	02/26/99	13	<10	<10	22	<50	1,200	<500	5,500	<2,500	<500	--
(Dup)	02/26/99	16	<2.5	6.2	20	<10	1,200	<500	5,200	<2,500	<500	--
	05/20/99	16	0.83	3.0	10	5.5	670	<50	1,900	560	<50	--
(Dup)	05/20/99	15	0.78	3.0	11	5.4	1,100	<50	1,200	290	<50	--
	08/17/99	22	<0.5	<0.5	<0.5	<2.5	1,000	<50	2,000	<500	<50	--
(Dup)	08/17/99	24	3.10	3.2	16	<2.5	690	<50	1,700	<500	--	--
	11/01/99	11	<0.5	<0.5	12	<2.5	1,600	<50	2,400	<50	--	--

Table 2. Groundwater Analytical Results - Petroleum Hydrocarbos
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl - benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TPHg (µg/L)	TPH Diesel (C1-C-22) (µg/L)	TPH Jet Fuel A (C9-C16) (µg/L)	TPH Motor Oil (>C16) (µg/L)	Unidentified Extractable Hydrocarbons (µg/L)	Note
MW-4 (Dup)	11/01/99	11	1.40	2.7	16	<2.5	1,300	<50	1,800	<50	–	–
	03/23/00	10	0.95	2.0	12	<2.5	–	2,800	<50	2,200	–	8
(Dup)	03/23/00	10	0.81	2.0	12	<2.5	–	2,800	<50	2,100	–	8
	04/25/00	–	–	–	–	–	1,200	–	–	–	–	8
(Dup)	04/25/00	–	–	–	–	–	630	–	–	–	–	8
	05/24/00	14	<1.0	2.3	13	<5.0	690	2,500	2,100	1,800	–	8
(Dup)	05/24/00	13	<1.0	2.8	15	<5.0	560	3,100	2,600	2,200	–	8
MW-5	05/13/98	<0.5	<0.5	<0.5	<1.0	–	<50	<50	<50	<300	–	2
	12/16/98	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	260	–
	02/26/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	69	<50	<250	<50	–
	05/20/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	<50	–
	08/17/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	79	<50	<500	–	–
	11/11/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	93	<50	<250	–	–
	03/23/00	<0.5	<0.5	<0.5	<0.5	<2.5	–	140	<50	530	–	8
	04/25/00	–	–	–	–	–	<50	–	–	–	–	8
	05/24/00	<0.5	<0.5	<0.5	<0.5	<2.5	<50	73	<50	400	–	8
MW-6	05/13/98	<0.5	<0.5	<0.5	<1.0	–	<50	<48	<48	<290	–	2
	12/16/98	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	<50	–
	02/26/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	83	<50	<250	<50	–
	05/20/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	<50	–
	08/17/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	72	<50	<500	–	–
	11/11/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	93	<50	<250	–	–
	03/23/00	<0.5	<0.5	<0.5	<0.5	<2.5	–	120	<50	280	–	8
	04/25/00	–	–	–	–	–	<50	–	–	–	–	8
	05/24/00	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	–	8
MW-7	05/13/98	<0.5	0.6	<0.5	<1.0	–	<50	<51	<51	<310	–	2
	12/16/98	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	<50	–
	02/26/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	<50	–
	05/20/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	<50	–
	08/17/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	52	<50	<500	–	–
	11/11/99	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	–	–
	03/23/00	<0.5	<0.5	<0.5	<0.5	<2.5	–	<50	<50	<250	–	8
	04/25/00	–	–	–	–	–	<50	–	–	–	–	8
	05/24/00	<0.5	<0.5	<0.5	<0.5	<2.5	<50	<50	<50	<250	–	8
MW-8	05/13/98	2	<0.5	<0.5	<1.0	–	<50	<47	<47	<280	–	2
	12/16/98	4.1	<0.5	<0.5	<0.5	2.9	53	<50	200	<250	<50	6
	02/26/99	3.4	<0.5	<0.5	<0.5	2.7	<50	<50	<50	<250	<50	6

Table 2. Groundwater Analytical Results - Petroleum Hydrocarbos
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl - benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TPHg (µg/L)	TPH Diesel (C1-C-22) (µg/L)	TPH Jet Fuel A (C9-C16) (µg/L)	TPH Motor Oil (>C16) (µg/L)	Unidentified Extractable Hydrocarbons (µg/L)	Note
MW-8	05/20/99	2.8	<0.5	<0.5	<0.5	<2.5	<50	150	<50	<250	<50	--
	08/17/99	3.5	<0.5	<0.5	<0.5	2.9	51	190	<50	<250	--	--
	11/11/99	3.0	<0.5	<0.5	<0.5	3.2	<50	310	<50	<250	--	--
	03/23/00	2.1	<0.5	<0.5	<0.5	<2.5	--	450	<50	530	--	8
	04/25/00	--	--	--	--	--	77	--	--	--	--	8
	05/24/00	2.0	1.3	<0.5	<0.5	<2.5	53	130	<50	<250	--	8
MCLs		1.0	150	700	1,750	--	--	--	--	--	--	--

Note:

1 - Data from Table 2-Summary of Laboratory Results Tanks MF25 and MF26 (United Airlines Hanger Area - Economy Parking Lot Site) Metropolitan Oakland International Airport (MOIA), 1100 Airport Drive, Oakland California by ITSI.

2 - Data from Table 3 of Results of Additional Site Investigation, Port of Oakland, Oakland Internatinonal Airport, United Airlines Hanger Area-Economy Parking Lot Site, dated October 21, 1998 by ITSI dated October 21, 1998 by ITSI

3 - Hydrocarbons for TPHd do not match profile for laboratory standards

4 - Hydrocarbons for TPHd are lighter than indicated standard

5 - Not analyzed due to the presence of free product

6 - MTBE detected by GC methods at slightly over reporting limit has not been confirmed by MS.

7 - MW-3 has slow recovery so not enough water could be collected for all analysis.

8 - Due to an oversight TPH gas was not analyzed for in the March sampling event, the wells were resampled in April.

MCLs - Maximum Contaminant Levels

- Shaded areas indicate detected concentration exceeds MCL.

Table 3. Groundwater Analytical Results - VOCs
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking Lot
Oakland International Airport

Monitoring Well ID	Date	Acetone (µg/L)	2-Butanone (µg/L)	Chloroform (µg/L)	1,1-DCA (µg/L)	(cis/trans) 1,2-DCE (µg/L)	4-Methyl-2-Pentanone (µg/L)	1,1,1-TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	Chloroethane (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Notes
MW-1	11/24/92	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	1
	02/12/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	1
	05/17/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	1
	08/03/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	1
	11/25/93	ND	ND	ND	ND	6.0	ND	ND	ND	ND	--	--	--	--	1
	05/09/94	ND	ND	ND	ND	ND	ND	ND	ND	5.6	--	--	--	--	1
	09/27/94	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	1
	01/25/95	<20	<20	<5	<5	<5	<20	--	--	<5	--	--	--	--	1
	08/11/95	--	--	<0.5	4.3	13	--	2.0	1.8	0.6	--	--	--	--	1
	11/03/95	--	--	<0.5	1.3	3.7	--	0.6	0.5	<0.5	--	--	--	--	1
	06/19/96	--	--	<0.5	5.4	<0.5	--	<0.5	1.2	<0.5	--	--	--	--	1
	10/24/96	--	--	<0.5	12	<1.0	--	<0.5	1.4	<0.5	--	--	--	--	1
	01/22/97	--	--	<0.5	3.9	8.4	--	<0.5	1.7	<0.5	--	--	--	--	1
	04/25/97	--	--	<0.5	6.2	10	--	<0.5	1.2	0.62	--	--	--	--	1
	08/06/97	--	--	<0.5	14	19	--	<0.5	2.5	0.54	--	--	--	--	1
	12/23/97	--	--	<1.0	6.6	9.3	--	<1.0	<1.0	<1.0	--	--	--	--	1
	03/26/98	--	--	<1.0	5.3	8.1	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	3
	12/16/98	--	--	<0.5	20	18	--	<0.5	<0.5	<0.5	<1.0	<0.5	1.5	<1.0	--
	02/26/99	--	--	<0.5	15	9.8	--	2.9	<0.5	<0.5	<1.0	<0.5	0.79	<1.0	--
	05/20/99	--	--	<0.5	22	17	--	<0.5	<0.5	<0.5	<1.0	<0.5	1.5	1.2	--
	08/17/99	--	--	<0.5	23	15	--	<0.5	<0.5	<0.5	<1.0	<0.5	2.1	<1.0	--
	11/11/99	--	--	<0.5	21	19	--	<0.5	<0.5	<0.5	<1.0	<0.5	1.6	<1.0	--
	03/23/00	--	--	<1.0	24	11	--	<1.0	<1.0	<1.0	<1.0	<2.0	1.3	<1.0	--
	05/24/00	--	--	<1.0	24	11	--	<1.0	<1.0	<1.0	<1.0	<2.0	1.3	<1.0	6
	07/10/00	--	--	<1.0	30	16	--	<1.0	<1.0	<1.0	<1.0	<2.0	2.2	<1.0	6
MW-2	04/25/95	<200	200	<50	60	<50	<200	--	--	<50	--	--	--	--	1
	08/11/95	--	--	6.0	79	26	--	20	4.0	9.0	--	--	--	--	1
	11/03/95	--	--	<0.5	73	24	--	4.8	6.7	6.6	--	--	--	--	1
	06/19/96	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	10/24/96	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	01/22/97	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	04/25/97	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	08/06/97	--	--	<5	89	160	--	<5	<12	<5	--	--	--	--	1
	12/23/97	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	03/26/98	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	05/13/98	--	--	--	61	140	--	--	ND	<1.0	3.4	<1.0	<1.0	<2.0	3
	12/16/98	--	--	<5.0	68	220	--	<2.5	<2.5	<2.5	<1.0	<2.5	<2.5	<5.0	--
	02/26/99	--	--	<1.3	19	57	--	2.9	<1.3	<1.3	<2.5	<1.3	<1.3	<2.5	--
	05/20/99	--	--	<0.5	63	191.5	--	5.8	1.1	1.5	4.4	<0.5	0.82	<1.0	--
	08/17/99	--	--	<2.5	70	140	--	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<5.0	--
	11/11/99	--	--	<2.5	48	180	--	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<5.0	--
	03/23/00	--	--	<5.0	55	160	--	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	--
	05/24/00	--	--	<5.0	55	160	--	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	6
	07/10/00	--	--	<5.0	95	240	--	<5.0	<5.0	<5.0	6.6	<10	<5.0	<5.0	6

Table 3. Groundwater Analytical Results - VOCs
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking Lot
Oakland International Airport

Monitoring Well ID	Date	Acetone (µg/L)	2-Butanone (µg/L)	Chloroform (µg/L)	1,1-DCA (µg/L)	(cis/trans) 1,2-DCE (µg/L)	4-Methyl-2-Pentanone (µg/L)	1,1,1-TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	Chloroethane (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Notes
MW-3	04/25/95	300	300	--	30	<30	200	--	--	<30	--	--	--	--	1
	08/11/95	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	11/03/95	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	06/19/96	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	10/24/96	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	01/22/97	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	04/25/97	--	--	--	--	--	--	--	--	--	--	--	--	--	1,2
	08/06/97	--	--	2.1	3.8	<0.5	--	<0.5	<1.2	0.62	--	--	--	--	1
	12/23/97	--	--	<1.0	4.2	<1.0	--	<1.0	<1.0	<1.0	--	--	--	--	1
	03/26/98	--	--	--	--	--	--	--	--	--	--	--	--	--	3,2
	12/16/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4
	02/26/99	--	--	<0.5	4.4	<0.5	--	1.6	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	05/20/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4
	08/17/99	NA	NA	<0.5	3.6	<0.5	NA	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	11/11/99	--	--	<0.5	3.2	<0.5	--	2.4	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	03/23/00	--	--	<1.0	4.8	<1.0	--	<1.0	<1.0	<1.0	1.8	<2.0	<1.0	<1.0	--
	05/24/00	--	--	<1.0	4.8	<1.0	--	<1.0	<1.0	<1.0	1.8	<2.0	<1.0	<1.0	6
	07/10/00	--	--	<1.0	8.8	<1.0	--	<1.0	<1.0	<1.0	1.1	<2.0	<1.0	<1.0	6
MW-4	05/13/98	--	--	--	31	9.9	--	--	--	2.8	2.8	<1.0	<1.0	<2.0	3
	12/16/98	--	--	<0.5	63	17	--	<5.0	<0.5	0.94	6.8	<0.5	1.6	<1.0	--
(Dup)	12/16/98	--	--	<0.5	52	14	--	<5.0	<0.5	0.88	4.4	<0.5	1.2	<1.0	--
	02/26/99	--	--	<0.5	38	26	--	1.4	<0.5	0.97	6.6	<0.5	<0.5	<1.0	--
(Dup)	02/26/99	--	--	<0.5	43	36	--	1.7	<0.5	1.3	8.3	<0.5	2.8	<1.0	--
	05/20/99	--	--	<0.5	45	42.1	--	<0.5	0.54	1.7	8.9	<0.5	2.8	<1.0	--
(Dup)	05/20/99	--	--	<0.5	46	39.4	--	3.9	0.59	1.9	8.6	<0.5	2.6	<1.0	--
	08/17/99	--	--	<0.5	37	22	--	<0.5	0.7	1.8	4.3	<0.5	2	<1.0	--
(Dup)	08/17/99	--	--	<0.5	45	0.77	--	<0.5	6.6	2	13	<0.5	2.8	<1.0	--
	11/11/99	--	--	<0.5	34	22	--	<0.5	<0.5	0.76	6.9	<0.5	1.1	<1.0	--
(Dup)	11/11/99	--	--	<0.5	38	23	--	<0.5	<0.5	0.86	7.9	<0.5	1.1	<1.0	--
	03/23/00	--	--	<1.0	24	13	--	<1.0	<1.0	<1.0	4.1	<2.0	<1.0	<1.0	--
(Dup)	03/23/00	--	--	<1.0	26	14	--	<1.0	<1.0	1.1	5.6	<2.0	1.1	<1.0	--
	05/24/00	--	--	<1.0	24	13	--	<1.0	<1.0	<1.0	4.1	<2.0	<1.0	<1.0	--
(Dup)	05/24/00	--	--	<1.0	26	14	--	<1.0	<1.0	1.1	5.6	<2.0	1.1	<1.0	--
	07/10/00	--	--	<2.5	48	25	--	<2.5	<2.5	<2.5	10	<5.0	<2.5	<2.5	6
(Dup)	07/10/00	--	--	<2.5	35	16	--	<2.5	<2.5	<2.5	7.3	<5.0	<2.5	<2.5	6
MW-5	05/13/98	--	--	--	<1.0	<1.0	--	--	--	<1.0	<2.0	<1.0	<1.0	<2.0	3
	12/16/98	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	02/26/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	05/20/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	08/17/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	11/11/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	03/23/00	--	--	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	--
	05/24/00	--	--	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	6
	07/10/00	--	--	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	6

Table 3. Groundwater Analytical Results - VOCs
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking Lot
Oakland International Airport

Monitoring Well ID	Date	Acetone (µg/L)	2-Butanone (µg/L)	Chloroform (µg/L)	1,1-DCA (µg/L)	(cis/trans) 1,2-DCE (µg/L)	4-Methyl-2-Pentanone (µg/L)	1,1,1-TCA (µg/L)	TCE (µg/L)	PCE (µg/L)	Chloroethane (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Notes
MW-6	05/13/98	--	--	--	<1.0	<1.0	--	--	--	<1.0	<2.0	<1.0	<1.0	<2.0	3
	12/16/98	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	02/26/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	05/20/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	08/17/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	11/11/99	--	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<1.0	--
	03/23/00	--	--	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	--
	05/24/00	--	--	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	6
	07/10/00	--	--	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	6
MW-7	05/13/98	--	--	--	8	<1.0	--	--	--	<1.0	<2.0	<1.0	3.4	<2.0	3
	12/16/98	--	--	<0.5	12	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	5.0	<1.0	--
	02/26/99	--	--	<0.5	15	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	6.8	<1.0	--
	05/20/99	--	--	<0.5	19	0.74	--	<0.5	<0.5	<0.5	<1.0	<0.5	7.3	<1.0	--
	08/17/99	--	--	<0.5	22	0.59	--	<0.5	<0.5	0.52	<1.0	<0.5	8.6	<1.0	--
	11/11/99	--	--	<0.5	17	<0.5	--	<0.5	<0.5	<0.5	<1.0	<0.5	6.3	<1.0	--
	03/23/00	--	--	<0.5	16	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	5.6	<1.0	--
	05/24/00	--	--	<0.5	16	<1.0	--	<1.0	<1.0	<1.0	<1.0	<2.0	6.0	<1.0	6
	07/10/00	--	--	<1.0	26	1.1	--	<1.0	<1.0	1.8	<1.0	<2.0	9.5	<1.0	6
MW-8	05/13/98	--	--	--	180	1.9	--	--	--	<1.0	<2.0	2.7	180	6.0	3
	12/16/98	--	--	<0.5	440	1.2	--	<0.5	<0.5	<0.5	<1.0	10	520	6.6	--
	02/26/99	--	--	<2.5	390	<2.5	--	<2.5	<2.5	<2.5	<5.0	6.9	490	10	--
	05/20/99	--	--	<0.5	410	1.2	--	<0.5	<0.5	<0.5	<1.0	8.3	480	3.9	--
	08/17/99	--	--	<2.5	500	<2.5	--	<2.5	<2.5	<2.5	<5	11	700	<5.0	--
	11/11/99	--	--	<5.0	300	<5.0	--	<5.0	<5.0	<5.0	<10	7.6	340	<10	--
	03/23/00	--	--	<10	240	<10	--	<10	<10	<10	<10	<20	230	<10	5
	05/24/00	--	--	<10	240	<10	--	<10	<10	<10	<10	<20	230	<10	6
	07/10/00	--	--	<10	380	<10	--	<10	<10	<10	<10	<20	420	<10	6
MCLs (California/Fed)		--	--	--	5/-	6/70	--	--	5/5	5/5	--	0.5/5	6/7	0.5/2	

1 - Data from Table 3-Summary of Laboratory Results for Volatile Organic Compounds Tanks MF25 and MF26 (United Airlines Hanger Area - Economy Parking Lot Site) Metropolitan Oakland International Airport (MOIA), 1100 Airport Drive, Oakland California by ITSI.

2 - Not sampled due to the presence of free product in monitoring well.

3 - Data from Table 4 of Results of Additional Site Investigation, Port of Oakland, Oakland International Airport, United Airlines Hanger Area - Economy Parking Lot Site, dated October 21, 1998 by ITSI

4 - MW-3 has slow recovery so not enough water could be collected for all analysis.

5 - A suspected lab contaminant, mehtylene chloride was detected at a concentration of 15 µg/L

6 - Due to an oversight, VOCs were not sampled during the May sampling event but were sampled on July 10, 2000.

MCLs - Maximum Contaminant Levels

- Shaded areas indicate detected concentration exceeds MCL.

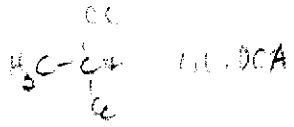


Table 4. Groundwater Analytical Results - Inorganics
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Ferrous Iron Fe^{+2} (mg/L)	Ferric Iron Fe^{+3} (mg/L)	Total Iron (mg/L)	Nitrate NO_3 (mg/L)	Sulfate (mg/L)	Ortho-phosphate PO_4 (mg/L)	TDS (mg/L)	TOC (mg/L)	Redox (millivolts)	Notes
MW-1	05/15/92	--	--	--	--	--	--	5,900	<5	--	1
	08/07/92	--	--	--	--	--	--	--	<5	--	1
	11/24/92	--	--	--	--	--	--	--	<5	--	1
	02/12/93	--	--	--	--	--	--	--	<5	--	1
	05/17/93	--	--	--	--	--	--	4,100	<5	--	1
	08/03/93	--	--	--	--	--	--	7,700	<5	--	1
	11/25/93	--	--	--	--	--	--	3,790	<5	--	1
	05/09/94	--	--	--	--	--	--	9,600	<0.93	--	1
	08/29/94	--	--	--	--	--	--	3,900	<1.0	--	1
	04/25/95	--	--	--	--	--	--	4,000	--	--	1
	08/11/95	--	--	--	--	--	--	8,500	--	--	1
	11/03/95	--	--	--	--	--	--	6,600	--	--	1
	06/19/96	--	--	--	--	--	--	3,040	--	--	1
	10/24/96	--	--	--	--	--	--	3,090	--	--	1
	01/22/97	--	--	--	--	--	--	4,240	--	--	1
	04/25/97	--	--	--	--	--	--	2,770	--	--	1
	08/06/97	--	--	--	--	--	--	2,430	--	--	1
	12/23/97	<0.2	3.9	--	<0.2	120	--	3,570	--	--	1
	03/26/98	0.41	2.1	--	<0.2	110	--	3,240	--	--	3
	12/16/98	--	--	3.3	<0.1	70	<0.5	--	32	40	--
	02/26/99	0.21	--	0.57	<0.1	110	1.1	--	30	147	--
	05/20/99	0.26	1.2	--	<0.1	97	1.5	--	22	96	--
	08/17/99	0.31	--	0.88	<0.1	100	1.3	--	74	151	--
	11/11/99	0.27	--	0.96	<0.1	110	1.3	--	108	57	--
	03/23/00	0.65	--	1.5	<0.1	53	<0.5	--	16.6	79	--
	04/25/00	--	--	--	--	--	--	--	--	90	--
	05/24/00	0.78	--	0.74	<0.1	35	<0.5	--	21.5	84	--
	07/10/00	--	--	--	--	--	--	--	--	193	--
MW-2	04/25/95	--	--	--	--	--	--	1,700	--	--	1
	08/11/95	--	--	--	--	--	--	2,500	--	--	1
	11/03/95	--	--	--	--	--	--	2,000	--	--	1
	06/19/96	--	--	--	--	--	--	--	--	--	1
	10/24/96	--	--	--	--	--	--	--	--	--	1
	01/22/97	--	--	--	--	--	--	--	--	--	1

Table 4. Groundwater Analytical Results - Inorganics
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Ferrous Iron Fe^{+2} (mg/L)	Ferric Iron Fe^{+3} (mg/L)	Total Iron (mg/L)	Nitrate NO_3 (mg/L)	Sulfate (mg/L)	Ortho-phosphate PO_4 (mg/L)	TDS (mg/L)	TOC (mg/L)	Redox (millivolts)	Notes
	04/25/97	--	--	--	--	--	--	--	--	--	1
	08/06/97	--	--	--	--	--	--	--	--	--	1
	04/25/97	--	--	--	--	--	--	--	--	--	1
	12/23/97	--	--	--	--	--	--	--	--	--	1,2
	05/13/98	0.53	8.0	--	<0.05	12	0.72	3,240	--	123	3
	12/16/98	--	--	28	<0.1	21	<0.5	--	210	146	--
	02/26/99	17	--	36	<0.1	27	0.59	--	100	-235	--
	05/20/99	8.9	36	--	<0.1	2	<1.0	--	130	-124	--
	08/17/99	0.37	--	31	0.15	33	<0.5	--	210	-110	--
	11/11/99	0.1	--	17	<0.1	10	<0.5	--	214	-145	--
	03/23/00	9	--	36	<0.1	4	<0.5	--	103	-116	--
	04/25/00	--	--	--	--	--	--	--	--	-118	--
	05/24/00	4.7	--	19	<0.2	0.54	<1.0	--	110	-147	--
	07/10/00	--	--	--	--	--	--	--	--	-130	--
MW-3	04/25/95	--	--	--	--	--	--	5,600	--	--	1
	08/11/95	--	--	--	--	--	--	--	--	--	1
	11/03/95	--	--	--	--	--	--	--	--	--	1
	06/19/96	--	--	--	--	--	--	--	--	--	1
	10/24/96	--	--	--	--	--	--	--	--	--	1
	01/22/97	--	--	--	--	--	--	--	--	--	1
	04/25/97	--	--	--	--	--	--	--	--	--	1
	08/06/97	--	--	--	--	--	--	15,100	--	--	1
	04/25/97	--	--	--	--	--	--	13,900	--	--	1
	12/23/97	--	--	--	--	--	--	--	--	--	1
	03/26/98	--	--	--	--	--	--	--	--	--	3,2
	12/16/98	--	--	--	--	--	--	--	240	157	4
	02/26/99	--	--	--	--	--	--	--	100	-142	4
	05/20/99	--	--	--	--	--	--	--	84	-125	4
	08/17/99	--	--	--	--	--	--	--	290	-156	4
	11/11/99	--	--	--	--	--	--	--	217	-272	4
	03/23/00	0.54	--	6.3	<1.0	380	4.7	--	102	-237	--
	04/25/00	--	--	--	--	--	--	--	--	-244	--
	05/24/00	0.27	--	13	<0.1	43	<1.0	--	97.5	-279	--
	07/10/00	--	--	--	--	--	--	--	--	-225	--

Table 4. Groundwater Analytical Results - Inorganics
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Ferrous Iron Fe^{+2} (mg/L)	Ferric Iron Fe^{+3} (mg/L)	Total Iron (mg/L)	Nitrate NO_3 (mg/L)	Sulfate (mg/L)	Ortho-phosphate PO_4 (mg/L)	TDS (mg/L)	TOC (mg/L)	Redox (millivolts)	Notes
MW-4	05/13/98	0.53	2.9	--	<0.05	20	2.1	1,420	66	168	3
	12/16/98	--	--	13	<0.1	2.8	4.1	--	140	118	-
(Dup)	12/16/98	--	--	11	<0.1	2.6	4.6	--	110	118	--
	02/26/99	<0.01	--	2.7	1.6	56	2.8	--	60	81	--
(Dup)	02/26/99	<0.01	--	2.9	1.3	54	2.9	--	95	81	--
	05/20/99	<0.01	3.7	--	<0.1	44	3.3	--	36	89	--
(Dup)	05/20/99	<0.01	2.9	--	0.22	56	2.2	--	39	208	--
	08/17/99	0.36	--	0.91	<0.1	13	2.4	--	110	208	--
(Dup)	08/17/99	0.017	--	1.3	<0.1	14	2.4	--	130	208	--
	11/11/99	<0.01	--	1.1	<0.1	3	2.8	--	116	122	--
(Dup)	11/11/99	<0.01	--	0.89	<0.1	3	2.9	--	93.5	122	--
	03/23/00	0.091	--	2.8	1.0	36	3.2	--	62.5	122	--
(Dup)	03/23/00	0.14	--	2	1.1	33	3.5	--	51.4	112	--
	04/25/00	--	--	--	--	--	--	--	--	-204	--
	05/24/00	0.067	--	1.4	<0.1	21	5.0	--	45.7	-137	--
(Dup)	05/24/00	0.029	--	1.0	<0.1	19	4.4	--	52.3	-137	--
	07/10/00	--	--	--	--	--	--	--	--	-194	--
MW-5	05/13/98	<0.2	0.7	--	0.36	250	0.47	2,300	20	150	3
	12/16/98	--	--	10	<0.1	340	0.57	--	32	46	--
	02/26/99	0.64	--	23	<0.1	260	1.2	--	22	230	--
	05/20/99	0.75	11	--	0.11	260	<1.0	--	15	209	--
	08/17/99	0.23	--	12	<0.1	350	<0.5	--	82	62	--
	11/11/99	0.046	--	2.9	<0.1	320	<0.5	--	94.5	-48	--
	03/23/00	8.6	--	74	<0.1	190	0.67	--	14.1	76	--
	04/25/00	--	--	--	--	--	--	--	--	-15	--
	05/24/00	3.9	--	5.3	<0.1	27	<0.5	--	17.7	23	--
	07/10/00	--	--	--	--	--	--	--	--	-121	--
MW-6	05/13/98	<0.2	0.69	--	2.1	400	0.15	4,240	13	126	3
	12/16/98	--	--	26	0.45	400	0.65	--	22	47	--
	02/26/99	0.44	--	16	4.3	380	0.89	--	42	262	--
	05/20/99	1.2	8.7	--	7.5	300	<1.0	--	22	227	--
	08/17/99	3.7	--	18	2.1	470	0.64	--	92	251	--
	11/11/99	0.15	--	12	0.91	440	0.58	--	103	216	--
	03/23/00	1.9	--	38	1.2	350	<0.5	--	22.3	133	--

Table 4. Groundwater Analytical Results - Inorganics
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

Monitoring Well ID	Date	Ferrous Iron Fe+2 (mg/L)	Ferric Iron Fe+3 (mg/L)	Total Iron (mg/L)	Nitrate NO3 (mg/L)	Sulfate (mg/L)	Ortho-phosphate PO4 (mg/L)	TDS (mg/L)	TOC (mg/L)	Redox (millivolts)	Notes
	04/25/00	--	--	--	--	--	--	--	--	169	--
	05/24/00	0.67	--	0.12	1.8	290	0.53	--	27.2	172	--
	07/10/00	--	--	--	--	--	--	--	--	265	--
MW-7	05/13/98	<0.2	0.62	--	0.9	100	<0.03	1,380	7	132	3
	12/16/98	--	--	19	6.9	100	0.53	--	7.7	159	--
	02/26/99	0.15	--	14	8.3	82	0.78	--	20	272	--
	05/20/99	0.89	13	--	4.3	160	<1.0	--	6.8	243	--
	08/17/99	0.52	--	12	3.4	160	0.68	--	38	200	--
	11/11/99	0.34	--	3.7	2.9	140	<0.5	--	49.6	137	--
	03/23/00	3.4	--	53	7.1	120	<0.5	--	7.2	205	--
	04/25/00	--	--	--	--	--	--	--	--	237	--
	05/24/00	0.25	--	0.52	7.8	71	0.73	--	4.59	201	--
	07/10/00	--	--	--	--	--	--	--	--	226	--
MW-8	05/13/98	<0.2	2.2	--	<0.5	500	0.08	8,300	99	60.4	3
	12/16/98	--	--	37	<0.1	360	<0.5	--	2.4	83	--
	02/26/99	0.076	--	26	<0.1	290	0.69	--	63	280	--
	05/20/99	2	26	--	17	440	<1.0	--	21	196	--
	08/17/99	1.4	--	3.8	<0.2	580	<1.0	--	150	-62	--
	11/11/99	<0.01	--	46	20	400	<0.5	--	163	-31	--
	03/23/00	1.6	--	41	<1.0	440	<5.0	--	17.2	-10	--
	04/25/00	--	--	--	--	--	--	--	--	-70	--
	05/24/00	0.074	--	1.2	<0.1	260	1.6	--	19.1	-85	--
	07/10/00	--	--	--	--	--	--	--	--	-74	--

Notes

1 - Data from Table 4-Summary of Laboratory Results for Inorganic Anaalytes Tanks MF25 and MF26 (United Airlines Hanger Area - Economy Parking Lot Site) Metropolitan Oakland International Airport (MOIA), 1100 Airport Drive, Oakland California by ITSI.

2 - Not sampled due to presence of free product in monitoring well.

3 - Data from Table 5 of Results of Additional Site Investigation, Port of Oakland, Oakland International Airport, United Airlines Hanger Area Economy Parking Lot Site, dated October 21, 1998

4 - MW-3 has slow recovery so not enough water could be collected for all analysis.

Table 5 - Dissolved Oxygen Concentrations
Quarterly Groundwater Monitoring Report
United Airlines Hanger Economy Parking
Oakland International Airport

	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8
16-Dec-98	2.0	1.2	0.5	1.2	2.0	1.1	2.4	0.8
23-Dec-98	ORC injected in former UST cavity.							
6-Jan-99	>15 [1]	1.1 [2]	0.9	>15 [1,2]	1.3	2.8	3.0	0.6
12-Jan-99	>15 [1]	0.8	1.0	8.0	0.7	2.4	3.2	0.7
22-Jan-99	>15 [1]	0.6	0.8	1.4	1.1	3.1	4.7	1.4
30-Jan-99	>15 [1]	0.6	1.6	1.0	1.6	4.8	2.6	2.8
26-Feb-99	>15	0.5	0.5	1.4	1.1	4.4	4.0	5.2
30-Mar-99	>15	0.5 [2]	0.8	1.0	1.2	1.1	4.2	1.6
20-May-99	>15	1.0 [2]	1.4 [2]	1.5	1.7	1.9	3.2	1.2
23-Jun-99	>15	0.5 [2]	0.4 [2]	0.6	0.6	1.0	0.8	0.6
26-Jul-99	>15	0.5 [2]	0.4 [2]	0.6	0.8	0.6	0.5	0.7
17-Aug-99	>15	0.3 [2]	0.45 [2]	0.5	0.2	0.3	0.8	0.6
12-Sep-99	>15	0.5 [2]	0.3 [2]	0.8	0.4	0.5	0.5	0.4
19-Oct-99	>15	0.4 [2]	0.3 [2]	0.2	0.6	0.4	0.3	0.6
11-Nov-99	10.2	0.6 [2]	0.7 [2]	0.7	0.8	0.8	1.8	1.1
22-Dec-99	>15	0.3 [2]	0.3 [2]	0.4	0.7	0.4	0.8	0.4
6-Jan-00	>15	0.3 [2]	0.4 [2]	0.4	0.6	1.0	1.4	0.4
7-Jan-00	ORC injected in the vicinity of MW-2 and in the former UST cavity.							
14-Jan-00	>15	0.8 [2]	0.4 [2]	0.5	2.2	0.4	2.0	1.0
19-Jan-00	>15	0.6 [2]	0.4 [2]	0.4	1.4	1.6	1.0	0.7
26-Jan-00	14.2	0.7 [2]	0.4 [2]	0.6	0.5	2.7	6.0	1.7
29-Feb-00	13.2	0.9 [2]	0.9 [2]	0.8	-- [3]	1.0	2.2	3.4
23-Mar-00	>15	2.8 [2]	1.1 [2]	1.0	1.0	1.4	2.4	2.2
25-Apr-00	4.2	0.7 [2]	1.3 [2]	0.8	0.6	1.1	2.6	0.6
24-May-00	2.3	0.9 [2]	0.4 [2]	1.0	0.9	1.0	1.8	1.0
29-Jun-00	1.4	0.4 [2]	0.3 [2]	0.3	0.3	0.4	0.9	0.4
10-Jul-00	3.7	0.8 [2]	0.4 [2]	0.6	0.8	0.8	1.6	0.7

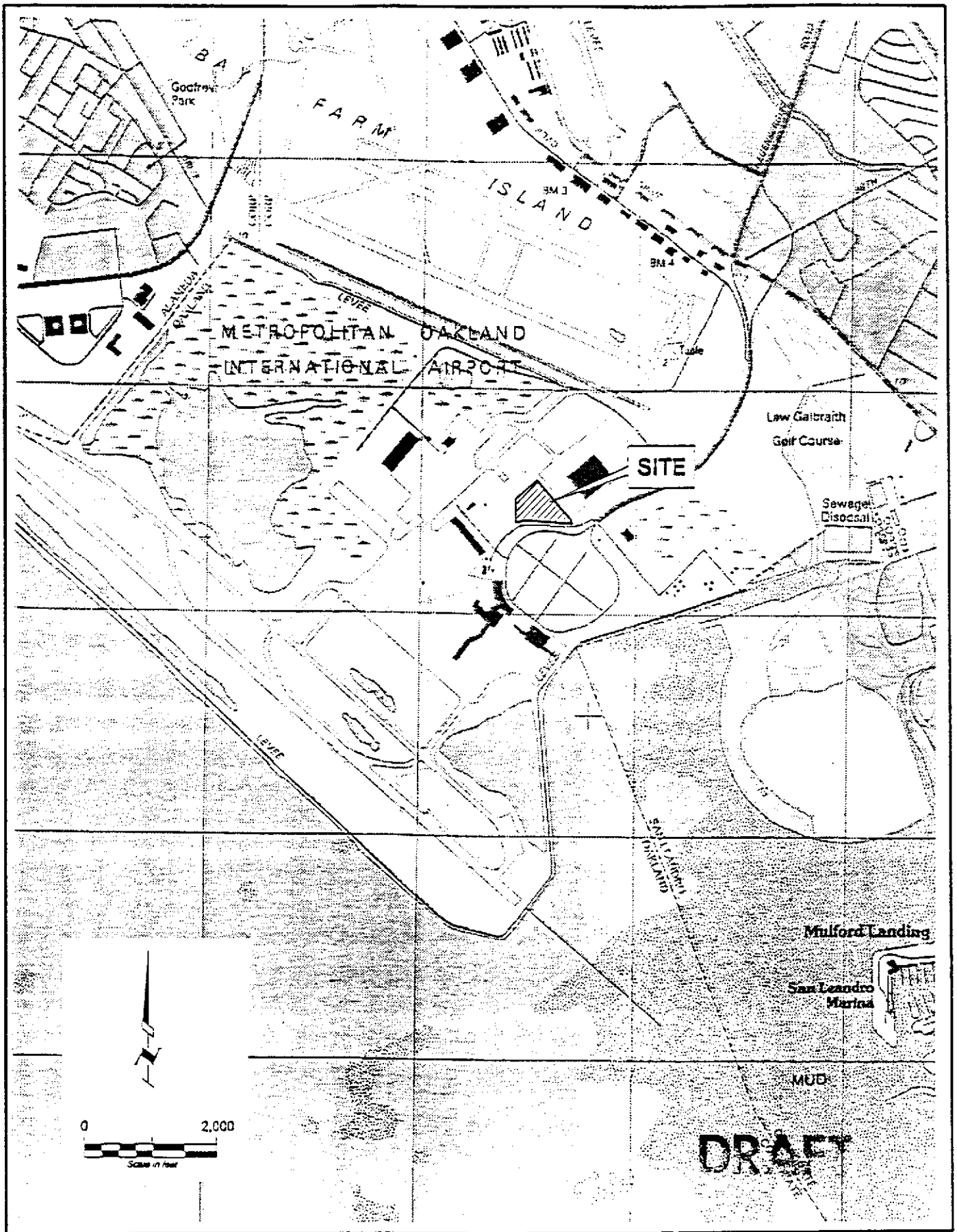
All concentrations are presented in milligrams per liter (mg/L)

Notes:

1 Milky water; ORC is visibly present in well.

2 Diesel odor

3 Well damaged in bus route repavement, unable to access



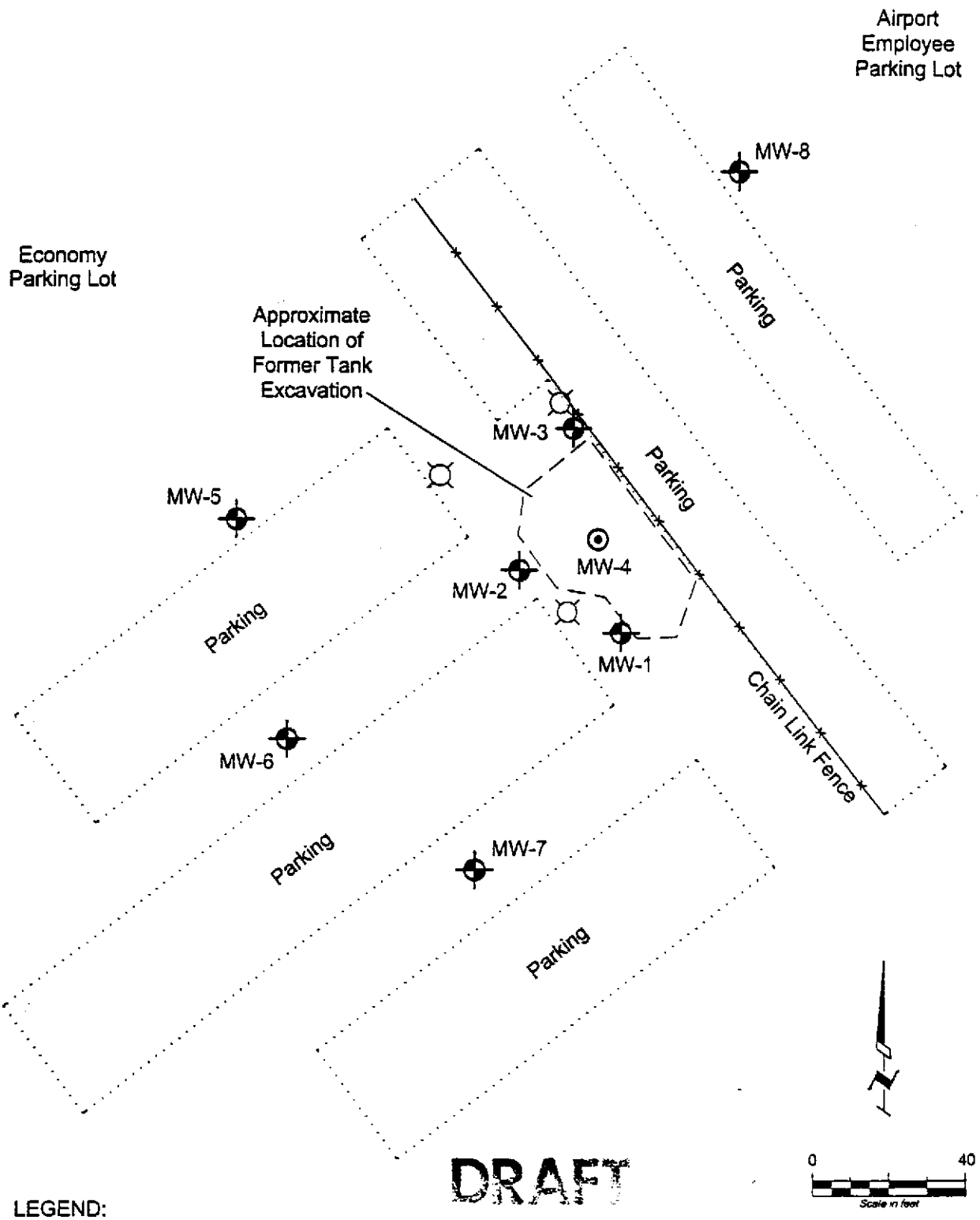
Harding Lawson Associates
Engineering and
Environmental Services

Site Location Map

Economy Parking Lot - United Airlines Hanger Site
Oakland International Airport
1100 Airport Drive, Oakland, California

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AJW	43145.4		7/00	...



LEGEND:

- Monitoring Well (2-in. diameter)
- Remediation Well (4-in. diameter)
- Light Pole

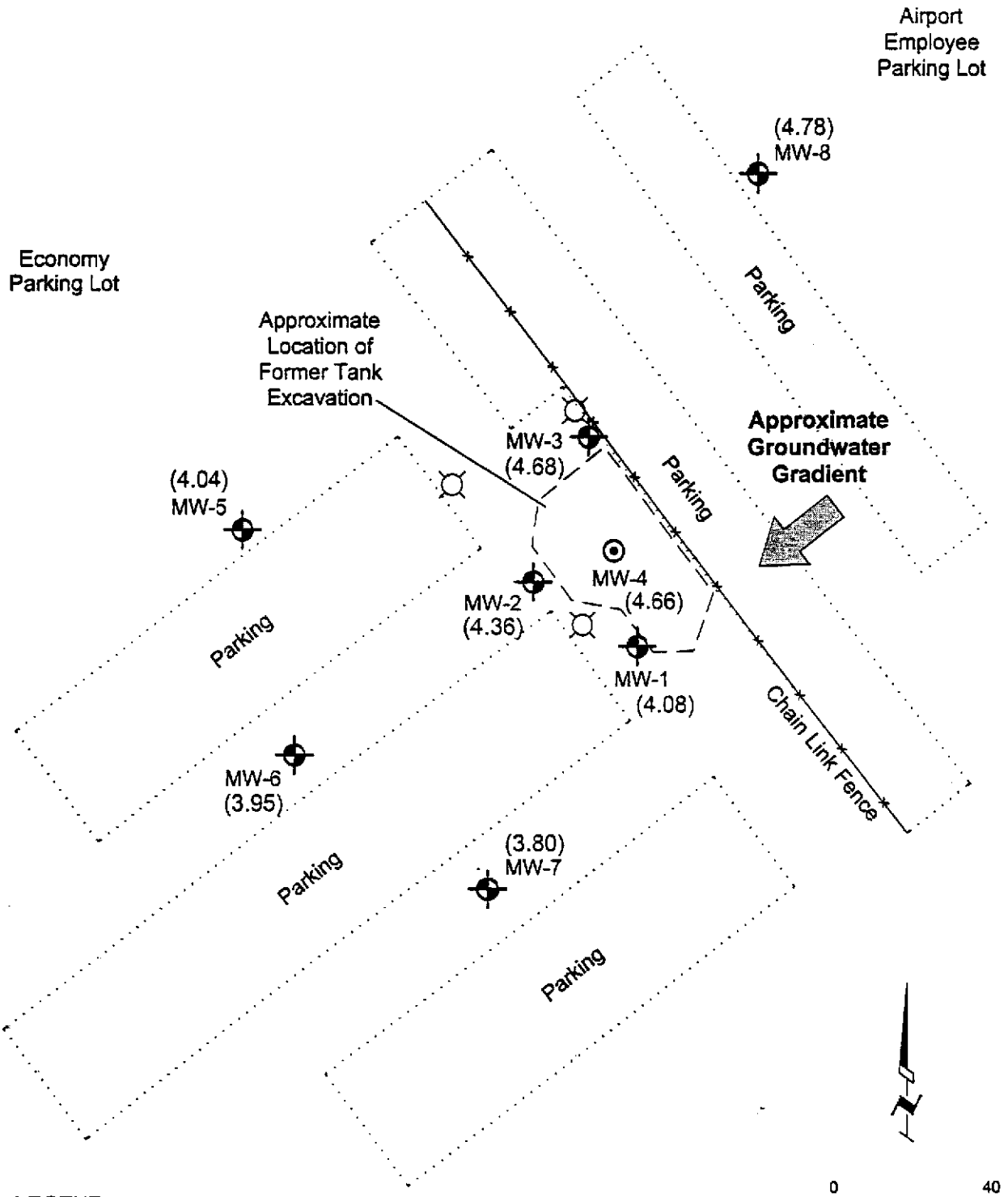
Reference:
Map based on a figure prepared by
Innovative Technologies Solutions, Inc.

Harding Lawson Associates
Engineering and
Environmental Services

Site Plan
Economy Parking Lot - United Airlines Hanger Site
Oakland International Airport
1100 Airport Drive, Oakland, California

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AJW	43145.4		7/00	...



LEGEND:

(4.36) Groundwater Elevation (ft msl)

Monitoring Well (2-in. diameter)

Remediation Well (4-in. diameter)

Light Pole

DRAFT

Reference:
Map based on a figure prepared by
Innovative Technologies Solutions, Inc.

Harding Lawson Associates
Engineering and
Environmental Services

Groundwater Elevation Map
Economy Parking Lot - United Airlines Hanger Site
Oakland International Airport
1100 Airport Drive, Oakland, California

PLATE
3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AJW	43145.4		7/00	...

APPENDIX A

GROUNDWATER SAMPLING REPORTS

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 1

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Recorded By: Heather D. Lee (Signature)

Date: 5/24/00

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 13.09
Water Level Depth (WL in ft BTOC): 2.93
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(13.09 - 2.93) x 2 ² x 3 X 0.0408 = 5.02 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [x] °C [ ] °F	Turbidity (NTU)
Initial	4.09	4200	74.4	
1.5	~~3.95~~	7200	71.1	
3.5	3.27	5730	69.1	
5.5	3.32	5020	69.9	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1014
Purge Stop: 1027
Elapsed: 13

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 5.5 gallons

Observations During Purging (Well Condition, Color, Odor):
clear, no odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1036

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 1	3 VOA	TPH gas by 8015	HCL	Sequoia	
	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
	2 amber VOA	TOC by 415.1	HCL	Sequoia	
	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 2

Well Type: [x] Monitor [ ] Extraction [ ] Other ___ ; [x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Recorded By: Heath Dyer (Signature)

Date: 5/24/00

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2

Total Depth of Casing (TD in ft BTOC): 10.99

Water Level Depth (WL in ft BTOC): 2.22

No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon

[ ] Submersible - Type:

[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top

[ ] Other

Depth in feet (BTOC):

Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(10.99 - 2.22) x 2² x 3 x 0.0408 = 4.74 gals

TD (feet) | WL (Feet) | D (inches) | # V | Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. °C / °F	Turbidity (NTU)
Initial	7.08	2700	72.5	
1.5	7.16	2130	72.4	
3	7.01	2930	73.0	
4.5	6.96	3190	71.3	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0942

Purge Stop: 0949

Elapsed: 7

PURGE RATE

GPM: ___

GPM: ___

PURGE VOLUME

Volume: 4.5 gallons

Observations During Purging (Well Condition, Color, Odor):

Fuel odor, light green, silty

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 0958

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 2	3 VOA	TPH gas by 8015	HCL	Sequoia	
	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
	2 amber VOA	TOC by 415.1	HCL	Sequoia	
	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-3

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Recorded By: [signature] (Signature)

Date: 5/24/00

Sampled By: HDL (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 11.06
Water Level Depth (WL in ft BTOC): 2.68
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PURGE VOLUME CALCULATION

(11.06 - 2.68) x 2 ²X 3 X 0.0408 = 4.10 gals

TD (feet) WL (Feet) D (inches) #V Calculated Purge Volume

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [x] °C [ ] °F	Turbidity (NTU)
Initial	6.45	2440	68.1	
1	6.57	13400	66.4	
2	7.31	15800	65.7	
2.75	7.35	15900	65.4	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0240
Purge Stop: 0310
Elapsed: 0

PURGE RATE

GPM:
GPM:

PURGE VOLUME

Volume: Drg. 2.75 gallons

Observations During Purging (Well Condition, Color, Odor):
olive green, fuel odor, slear

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 0715

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-3	3 VOA	TPH gas by 8015	HCL	Sequoia	
"	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
"	2 amber VOA	TOC by 415.1	HCL	Sequoia	
MW-3B	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
MW-3A	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
"	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-4

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Date: 5/24/00

Recorded By: (Signature)

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 4
Total Depth of Casing (TD in ft BTOC): 9.97
Water Level Depth (WL in ft BTOC): 2.26
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: ~~teflon~~ pve
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(9.97 - 2.26) x 4 ²X 3 X 0.0408 = 15.09 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ]°C [x]°F	Turbidity (NTU)
Initial	7.63	2170	79.4	
5	7.65	2980	75.8	
10	7.92	2970	74.0	
16	7.99	3110	73.3	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1050
Purge Stop: 1053
Elapsed: 3

PURGE RATE

GPM:
GPM:

PURGE VOLUME

Volume: 16 gallons

Observations During Purging (Well Condition, Color, Odor):
light green, low odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1105

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-4	3 VOA	TPH gas by 8015	HCL	Sequoia	
	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
	2 amber VOA	TOC by 415.1	HCL	Sequoia	
	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.
MW-4	DUP (1120)

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 5

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Date: 5/24/00

Recorded By: _____ (Signature)

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 7.92
Water Level Depth (WL in ft BTOC): 1.75
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(7.92 - 1.75) x 2 x 3 x 0.0408 = 3.02 gals

TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp [ ]°C [x]°F	Turbidity (NTU)
Initial	8.52	501	71.4	
1	8.50	551	73.7	
2	8.25	536	74.4	
3.5	8.21	532	72.3	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0733
Purge Stop: 0744
Elapsed: 0

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 3.5 gallons

Observations During Purging (Well Condition, Color, Odor):
turbid brown, no odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 0752

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 5	3 VOA	TPH gas by 8015	HCL	Sequoia	
	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
	2 amber VOA	TOC by 415.1	HCL	Sequoia	
	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-6

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Recorded By: Heath Dee (Signature)

Date: 5/24/00

Sampled By: HDL (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 8.13
Water Level Depth (WL in ft BTOC): 2.49
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(8.13 - 2.44) x 2" x 3 X 0.0408 = 2.78 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [x] °C [ ] °F	Turbidity (NTU)
Initial	8.39	2260	68.7	
1	8.09	4570	70.2	
2	7.99	5440	70.9	
3	7.85	5990	70.1	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0809
Purge Stop: 0814
Elapsed: 6

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 3 gallons

Observations During Purging (Well Condition, Color, Odor):
light yellow green. NP odor, bottom is silty brown

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 0823

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-6	3 VOA	TPH gas by 8015	HCL	Sequoia	
	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
	2 amber VOA	TOC by 415.1	HCL	Sequoia	
	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-7

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Recorded By: _____ (Signature)

Date: 5/24/00

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 8.43
Water Level Depth (WL in ft BTOC): 2.06
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

8.43 - 2.06 x 2 ² x 3 x 0.0408 = 3.11 gals

TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. °C / °F	Turbidity (NTU)
Initial	8.00	1140	70.2	
1	8.34	1140	73.2	
2	8.03	2951	72.7	
3.5	8.05	357	71.5	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0941
Purge Stop: 0947
Elapsed: 8

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 3.5 gallons

Observations During Purging (Well Condition, Color, Odor):
light yellow to silty brown, no odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 0857

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-7	3 VOA	TPH gas by 8015	HCL	Sequoia	
	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
	2 amber VOA	TOC by 415.1	HCL	Sequoia	
	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-3

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - ORC Injection

Job Number: 43145.4

Recorded By: [signature] (Signature)

Date: 5/24/00

Sampled By: HDL (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 11.02
Water Level Depth (WL in ft BTOC): 2.78
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(11.02 - 2.78) x 2 x 3 x 0.0408 = 4.03 gals

TD (feet) | WL (Feet) | D (inches) | # V | Calculated Purge Volume

PURGE TIME

Purge Start: 0913
Purge Stop: 0920
Elapsed: 7

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 4.5 gallons

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. °C / °F	Turbidity (NTU)
Initial	7.31	10110	71.4	
1.5	7.67	10880	72.6	
3.0	7.43	11230	71.3	
4.5	7.37	11300	71.0	
Meter S/N	9510	9510	9510	

Observations During Purging (Well Condition, Color, Odor):
initially clear becomes silty brown, no odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 0923

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-3	3 VOA	TPH gas by 8015	HCL	Sequoia	
	3 VOA	8020/MTBE/BTEX	HCL	Sequoia	
	2 amber VOA	TOC by 415.1	HCL	Sequoia	
	1 LA	TPH diesel and TPH motor oil	none	Sequoia	
	1 500mL Poly	Ferric Iron	HNO3	Sequoia	
	1 500mL Poly	Ferrous Iron, NO3, SO4, PO4	none	Sequoia	24 hour HT on ferrous iron

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-1

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - Economy Parking

Job Number: 43145.5

Recorded By: [signature] (Signature)

Date: ## 7/10/00

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 13.09
Water Level Depth (WL in ft BTOC): 3
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(13.09 - 3) X 2 ² X 3 X 0.0408 = 4.94 gals
TD (feet) WL (Feet) D (inches) #V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. °C / °F	Turbidity (NTU)
Initial	8.16	3980	72.7	
1.5	~~8.08~~ 3.09	7060	75.4	
3.5	8.17	5550	75.6	
5	8.15	5170	74.2	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1119
Purge Stop: 1134
Elapsed: 15

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 5 gallons

Observations During Purging (Well Condition, Color, Odor):
clear, no odor

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1140

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-1	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Job Name: Port of Oakland - Economy Parking
Job Number: 43145.5
Recorded By: Heather Dyer (Signature)

Well Number: MW- 2
Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___
Date: ## 7/10/00
Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 10.99
Water Level Depth (WL in ft BTOC): 2.70
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(10.99 - 2.70) x 2 ² x 3 x 0.0408 = 4.00 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [x] °C [ ] °F	Turbidity (NTU)
Initial	7.70	2740	77.2	
1.5	7.20	2020	75.7	
3	7.12	3700	74.3	
4.5	7.10	3820	73.5	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1146
Purge Stop: 1156
Elapsed: 10

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 4.5 gallons

Observations During Purging (Well Condition, Color, Odor):
Sheen, light yellow-green fuel odor becomes gray

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable
Sample Time: 1200

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 2	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 3

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - Economy Parking

Job Number: 43145.5

Date: ## 7/10/00

Recorded By: Heather Lee (Signature)

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 11.06
Water Level Depth (WL in ft BTOC): 3.37
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(11.06 - 3.37) x 2 ² x 3 X 0.0408 = 3.76 gals

TD (feet) WL (Feet) D (inches) #V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. °C / °F	Turbidity (NTU)
Initial	8.24	3180	70.8	
1	8.24	14290	70.6	
1.75	8.28	16320	70.1	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 10:17
Purge Stop: 1022
Elapsed: 5

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: Dry @ 1.75 gallons

Observations During Purging (Well Condition, Color, Odor):
light green becomes grey, fuel odor, sheen

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1028

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 3	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 4

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - Economy Parking

Job Number: 43145.5

Recorded By: (Signature)

Date: ## 7/10/00

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 4
Total Depth of Casing (TD in ft BTOC): 9.97
Water Level Depth (WL in ft BTOC): 2.88
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(9.97 - 2.88) x 4² x 3 x 0.0408 = 13.89 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [x] °C [ ] °F	Turbidity (NTU)
Initial	8.47	2140	81.0	
5	8.88	3010	78.8	
10	8.89	3850	77.8	
15	8.91	3740	76.9	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1214 GPM: ___
Purge Stop: 1219 GPM: ___
Elapsed: 7

PURGE RATE

PURGE VOLUME

Volume: 15 gallons

Observations During Purging (Well Condition, Color, Odor):
sheen, fuel odor,

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1225

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 4	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.
MW-4	Dup (1235)

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-5

Well Type: [x] Monitor [ ] Extraction [ ] Other
[x] PVC [ ] St. Steel [ ] Other

Job Name: Port of Oakland - Economy Parking

Job Number: 43145.5

Recorded By: (Signature)

Date: ## 7/10/00

Sampled By: HDL (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 7.92
Water Level Depth (WL in ft BTOC): 2.22
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ____ to ____

PURGE VOLUME CALCULATION

(7.92 - 2.22) x 2 ² x 3 x 0.0408 = 2.79 gals

TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [x] °C [ ] °F	Turbidity (NTU)
Initial	8.02	2350	74.9	
1	7.95	2330	77.3	
2	7.71	4090	78.2	
3	7.59	6200	78.0	
4	7.64	5960	78.0	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0955
Purge Stop: 1004
Elapsed: 9

PURGE RATE

GPM:
GPM:

PURGE VOLUME

Volume: ~~Hot~~ 4 gallons

Observations During Purging (Well Condition, Color, Odor):
light clear yellow; no odor
becomes cloudy brown

Discharge Water Disposal: [ ] Storm Sewer [x] Sanitary Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1010

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-5	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 6

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - Economy Parking

Job Number: 43145.5

Date: # 7/10/00

Recorded By: (Signature)

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 8.13
Water Level Depth (WL in ft BTOC): 2.89
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(8.13 - 2.89) x 2² x 3 x 0.0408 = 2.57 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp [x] °C [ ] °F	Turbidity (NTU)
Initial	8.90	4020	80.2	
1	8.66	4870	80.0	
2	8.21	8580	79.6	
3	8.14	8610	78.2	
3.5	8.12	8710	78.0	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1039
Purge Stop: 1047
Elapsed: 8

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 3.5 gallons

Observations During Purging (Well Condition, Color, Odor):
silty brown, no odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1052

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 6	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 7

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - Economy Parking

Job Number: 43145.5

Recorded By: Heather Lee (Signature)

Date: ## 7/10/00

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 9.43
Water Level Depth (WL in ft BTOC): 2.44
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(9.43 - 2.44) x 2 ² x 3 x 0.0408 = 2.93 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ]°C [x]°F	Turbidity (NTU)
Initial	9.24	1580	79.4	
1	8.50	2140	77.9	
2	8.41	4360	77.1	
3	8.41	4270	77.3	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1100
Purge Stop: 1107
Elapsed: 7

PURGE RATE

GPM: ___
GPM: ___

PURGE VOLUME

Volume: 3 gallons

Observations During Purging (Well Condition, Color, Odor):
init. cloudy clear brown
silty brown, no odor

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 1112

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 7	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW- 8

Well Type: [x] Monitor [ ] Extraction [ ] Other ___ [x] PVC [ ] St. Steel [ ] Other ___

Job Name: Port of Oakland - Economy Parking

Job Number: 43145.5

Date: ## 7/15/00

Recorded By: Heather Lee (Signature)

Sampled By: HDL (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
Total Depth of Casing (TD in ft BTOC): 11.02
Water Level Depth (WL in ft BTOC): 3.49
No.of Well Volumes to be purged (# 3

PURGE METHOD

[x] Bailer - Type: teflon
[ ] Submersible - Type:
[ ] Other - Type:

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ___ to ___

PURGE VOLUME CALCULATION

(11.02 − 3.49) x 2 ² x 3 X 0.0408 = 3.69 gals

TD (feet) WL (Feet) D (inches) #V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. °C / °F	Turbidity (NTU)
Initial	7.66	1032	73.7	
1.5	7.50	1210	75.3	
3	7.44	1473	74.8	
4	7.45	1475	73.2	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0929
Purge Stop: 0939
Elapsed: 10

PURGE RATE

GPM:
GPM:

PURGE VOLUME

Volume: 4 gallons

Observations During Purging (Well Condition, Color, Odor):
light ~~brown~~ grey, no odor

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other onsite drum

WELL SAMPLING

[x] Bailer - Type: disposable

Sample Time: 0945

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW- 8	3 VOA	8010	HCL	Sequoia	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Sequoia
Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

3 July, 2000

Steve Osborne
Harding-Lawson Associates - Oakland
383 Fourth Street
Oakland, CA 94607

RE: Port of Oakland
Sequoia Report: W005652

Enclosed are the results of analyses for samples received by the laboratory on 24-May-00 18:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dimple Sharma
Project Manager

CA ELAP Certificate #1271

Sequoia Analytical
404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-3	W005652-01	Water	24-May-00 07:15	24-May-00 18:25
MW-5	W005652-02	Water	24-May-00 07:52	24-May-00 18:25
MW-6	W005652-03	Water	24-May-00 08:23	24-May-00 18:25
MW-7	W005652-04	Water	24-May-00 08:57	24-May-00 18:25
MW-8	W005652-05	Water	24-May-00 09:28	24-May-00 18:25
MW-2	W005652-06	Water	24-May-00 09:58	24-May-00 18:25
MW-1	W005652-07	Water	24-May-00 10:36	24-May-00 18:25
MW-4	W005652-08	Water	24-May-00 11:05	24-May-00 18:25
DUP	W005652-09	Water	24-May-00 11:20	24-May-00 18:25
MW-3A	W005652-10	Water	24-May-00 11:45	24-May-00 18:25

Dimple Sharma, Project Manager

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

[illegible]arding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
[illegible]W-3 (W005652-01) Water Sampled: 24-May-00 07:15 Received: 24-May-00 18:25									**P-07**
Purgeable Hydrocarbons	**6300**	250	ug/l	5	0F06001	06-Jun-00	06-Jun-00	EPA 8015M/8020	
Benzene	**4.6**	2.5	"	"	"	"	"	"	
Toluene	**6.4**	2.5	"	"	"	"	"	"	
Ethylbenzene	**6.3**	2.5	"	"	"	"	"	"	
Xylenes (total)	**23**	2.5	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	13	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*91.7 %*	*70-130*		"	"	"	"	
[illegible]W-5 (W005652-02) Water Sampled: 24-May-00 07:52 Received: 24-May-00 18:25									
[illegible]rgeable Hydrocarbons	ND	50	ug/l	1	0F05001	05-Jun-00	05-Jun-00	EPA 8015M/8020	
Benzene	ND	0.50	"	"	"	"	"	"	
[illegible]luene	ND	0.50	"	"	"	"	"	"	
[illegible]hylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
[illegible]thyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
[illegible]rrogate: a,a,a-Trifluorotoluene		*92.3 %*	*70-130*		"	"	"	"	
MW-6 (W005652-03) Water Sampled: 24-May-00 08:23 Received: 24-May-00 18:25									
[illegible]rgeable Hydrocarbons	ND	50	ug/l	1	0F05001	05-Jun-00	05-Jun-00	EPA 8015M/8020	
Benzene	ND	0.50	"	"	"	"	"	"	
[illegible]luene	ND	0.50	"	"	"	"	"	"	
[illegible]ylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
[illegible]thyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
[illegible]rogate: a,a,a-Trifluorotoluene		*99.0 %*	*70-130*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7 (W005652-04) Water Sampled: 24-May-00 08:57 Received: 24-May-00 18:25									
Purgeable Hydrocarbons	ND	50	ug/l	1	0F05001	05-Jun-00	05-Jun-00	EPA 8015M/8020	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*93.0 %*	*70-130*		"	"	"	"	
MW-8 (W005652-05) Water Sampled: 24-May-00 09:28 Received: 24-May-00 18:25									**P-03**
Purgeable Hydrocarbons	53	50	ug/l	1	0F07001	07-Jun-00	07-Jun-00	EPA 8015M/8020	
Benzene	**2.0**	0.50	"	"	"	"	"	"	
Toluene	**1.3**	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*89.3 %*	*70-130*		"	"	"	"	
MW-2 (W005652-06) Water Sampled: 24-May-00 09:58 Received: 24-May-00 18:25									**P-01**
Purgeable Hydrocarbons	**3200**	1000	ug/l	20	0F07002	07-Jun-00	07-Jun-00	EPA 8015M/8020	
Benzene	**100**	10	"	"	"	"	"	"	
Toluene	**180**	10	"	"	"	"	"	"	
Ethylbenzene	**96**	10	"	"	"	"	"	"	
Xylenes (total)	**310**	10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	50	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*92.0 %*	*70-130*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

[illegible]rding-Lawson Associates - Oakland	Project: Port of Oakland	
583 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (W005652-07) Water Sampled: 24-May-00 10:36 Received: 24-May-00 18:25									**P-03**
Purgeable Hydrocarbons	76	50	ug/l	1	0F07001	07-Jun-00	07-Jun-00	EPA 8015M/8020	
Benzene	2.5	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*90.7 %*		*70-130*		"	"	"	
MW-4 (W005652-08) Water Sampled: 24-May-00 11:05 Received: 24-May-00 18:25									**P-01**
Purgeable Hydrocarbons	690	100	ug/l	2	0F07002	07-Jun-00	07-Jun-00	EPA 8015M/8020	
Benzene	14	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	2.3	1.0	"	"	"	"	"	"	
Xylenes (total)	13	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*98.0 %*		*70-130*		"	"	"	
DUP (W005652-09) Water Sampled: 24-May-00 11:20 Received: 24-May-00 18:25									**P-01**
Purgeable Hydrocarbons	560	100	ug/l	2	0F07002	07-Jun-00	07-Jun-00	EPA 8015M/8020	
Benzene	13	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	2.8	1.0	"	"	"	"	"	"	
Xylenes (total)	15	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*99.3 %*		*70-130*		"	"	"	

Sequoia Analytical
404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland 383 Fourth Street Oakland CA, 94607	Project: Port of Oakland Project Number: 43145.4 Project Manager: Steve Osborne	**Reported:** 03-Jul-00 10:25

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5 (W005652-02) Water Sampled: 24-May-00 07:52 Received: 24-May-00 18:25									
Jet-A (C9-C17)	ND	50	ug/l	1	0E31017	31-May-00	29-Jun-00	DHS LUFT	
Diesel Range Hydrocarbons	**73**	50	"	"	"	"	01-Jun-00	"	D-14
Motor Oil (C16-C36)	**400**	250	"	"	"	"	"	"	D-05
Surrogate: n-Pentacosane		*68.2 %*	*50-150*		"	"	"	"	
MW-6 (W005652-03) Water Sampled: 24-May-00 08:23 Received: 24-May-00 18:25									
Jet-A (C9-C17)	ND	50	ug/l	1	0E31017	31-May-00	07-Jun-00	DHS LUFT	
Diesel Range Hydrocarbons	ND	50	"	"	"	"	"	"	
Motor Oil (C16-C36)	ND	250	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*62.2 %*	*50-150*		"	"	"	"	
MW-7 (W005652-04) Water Sampled: 24-May-00 08:57 Received: 24-May-00 18:25									
Jet-A (C9-C17)	ND	50	ug/l	1	0E31017	31-May-00	01-Jun-00	DHS LUFT	
Diesel Range Hydrocarbons	ND	50	"	"	"	"	"	"	
Motor Oil (C16-C36)	ND	250	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*58.0 %*	*50-150*		"	"	"	"	
MW-8 (W005652-05) Water Sampled: 24-May-00 09:28 Received: 24-May-00 18:25									
Jet-A (C9-C17)	ND	50	ug/l	1	0E31017	31-May-00	01-Jun-00	DHS LUFT	
Diesel Range Hydrocarbons	**130**	50	"	"	"	"	"	"	D-13
Motor Oil (C16-C36)	ND	250	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*66.1 %*	*50-150*		"	"	"	"	
MW-2 (W005652-06) Water Sampled: 24-May-00 09:58 Received: 24-May-00 18:25									
Jet-A (C9-C17)	**8100**	250	ug/l	5	0E31017	31-May-00	01-Jul-00	DHS LUFT	D-04
Diesel Range Hydrocarbons	**8000**	50	"	1	"	"	01-Jun-00	"	D-18
Motor Oil (C16-C36)	**4200**	250	"	"	"	"	"	"	D-12
Surrogate: n-Pentacosane		*68.2 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (W005652-07) Water	**Sampled: 24-May-00 10:36**	**Received: 24-May-00 18:25**							
Jet-A (C9-C17)	**410**	50	ug/l	1	0E31017	31-May-00	23-Jun-00	DHS LUFT	D-14
Diesel Range Hydrocarbons	**670**	50	"	"	"	"	"	"	D-13
Motor Oil (C16-C36)	ND	250	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*127 %*	*50-150*		"	"	"	"	
MW-4 (W005652-08) Water	**Sampled: 24-May-00 11:05**	**Received: 24-May-00 18:25**							
Jet-A (C9-C17)	**2100**	50	ug/l	1	0E31017	31-May-00	30-Jun-00	DHS LUFT	D-04
Diesel Range Hydrocarbons	**2500**	50	"	"	"	"	02-Jun-00	"	D-13
Motor Oil (C16-C36)	**1800**	250	"	"	"	"	"	"	D-14
Surrogate: n-Pentacosane		*86.2 %*	*50-150*		"	"	"	"	
DUP (W005652-09) Water	**Sampled: 24-May-00 11:20**	**Received: 24-May-00 18:25**							
Jet-A (C9-C17)	**2600**	50	ug/l	1	0E31017	31-May-00	30-Jun-00	DHS LUFT	D-04
Diesel Range Hydrocarbons	**3100**	50	"	"	"	"	02-Jun-00	"	D-13
Motor Oil (C16-C36)	**2200**	250	"	"	"	"	"	"	D-14
Surrogate: n-Pentacosane		*103 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5 (W005652-02) Water	**Sampled: 24-May-00 07:52**	**Received: 24-May-00 18:25**							
Ferrous Iron	3.9	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	5.3	0.010	"	"	"	"	08-Jun-00	"	
MW-6 (W005652-03) Water	**Sampled: 24-May-00 08:23**	**Received: 24-May-00 18:25**							
Ferrous Iron	0.67	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	0.12	0.010	"	"	"	"	08-Jun-00	"	
MW-7 (W005652-04) Water	**Sampled: 24-May-00 08:57**	**Received: 24-May-00 18:25**							
Ferrous Iron	0.25	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	0.52	0.010	"	"	"	"	08-Jun-00	"	
MW-8 (W005652-05) Water	**Sampled: 24-May-00 09:28**	**Received: 24-May-00 18:25**							
Ferrous Iron	0.074	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	1.2	0.010	"	"	"	"	08-Jun-00	"	
MW-2 (W005652-06) Water	**Sampled: 24-May-00 09:58**	**Received: 24-May-00 18:25**							
Ferrous Iron	4.7	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	19	0.010	"	"	"	"	08-Jun-00	"	
MW-1 (W005652-07) Water	**Sampled: 24-May-00 10:36**	**Received: 24-May-00 18:25**							
Ferrous Iron	0.78	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	0.74	0.010	"	"	"	"	08-Jun-00	"	
MW-4 (W005652-08) Water	**Sampled: 24-May-00 11:05**	**Received: 24-May-00 18:25**							
Ferrous Iron	0.067	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	1.4	0.010	"	"	"	"	08-Jun-00	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

arding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
P (W005652-09) Water Sampled: 24-May-00 11:20 Received: 24-May-00 18:25									
rrous Iron	**0.029**	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	**1.0**	0.010	"	"	"	"	08-Jun-00	"	
V-3A (W005652-10) Water Sampled: 24-May-00 11:45 Received: 24-May-00 18:25									
rrous Iron	**0.27**	0.010	mg/l	1	0F07009	07-Jun-00	08-Jun-00	EPA 6010A	
Ferric Iron	**13**	0.010	"	"	"	"	08-Jun-00	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland 383 Fourth Street Oakland CA, 94607	Project: Port of Oakland Project Number: 43145.4 Project Manager: Steve Osborne	**Reported:** 03-Jul-00 10:25

Conventional Chemistry Parameters by APHA/EPA Methods

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5 (W005652-02) Water	**Sampled: 24-May-00 07:52**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	ND	0.50	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
MW-6 (W005652-03) Water	**Sampled: 24-May-00 08:23**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	**0.53**	0.50	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
MW-7 (W005652-04) Water	**Sampled: 24-May-00 08:57**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	**0.73**	0.50	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
MW-8 (W005652-05) Water	**Sampled: 24-May-00 09:28**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	**1.6**	0.50	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
MW-2 (W005652-06) Water	**Sampled: 24-May-00 09:58**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	ND	1.0	mg/l	2	0E31016	25-May-00	25-May-00	EPA 300.0	
MW-1 (W005652-07) Water	**Sampled: 24-May-00 10:36**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	ND	0.50	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
MW-4 (W005652-08) Water	**Sampled: 24-May-00 11:05**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	**5.0**	0.50	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
DUP (W005652-09) Water	**Sampled: 24-May-00 11:20**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	**4.4**	0.50	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
MW-3A (W005652-10) Water	**Sampled: 24-May-00 11:45**	**Received: 24-May-00 18:25**							
Orthophosphate as PO4	ND	1.0	mg/l	2	0E31016	25-May-00	25-May-00	EPA 300.0	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

[illegible]rding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
[illegible]kland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Anions by EPA Method 300.0

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5 (W005652-02) Water	**Sampled: 24-May-00 07:52**	**Received: 24-May-00 18:25**							
Nitrate as NO3	ND	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	**27**	1.0	"	10	"	"	25-May-00	"	
MW-6 (W005652-03) Water	**Sampled: 24-May-00 08:23**	**Received: 24-May-00 18:25**							
Nitrate as NO3	**1.8**	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	**290**	10	"	100	"	"	25-May-00	"	
MW-7 (W005652-04) Water	**Sampled: 24-May-00 08:57**	**Received: 24-May-00 18:25**							
Nitrate as NO3	**7.8**	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	**71**	1.0	"	10	"	"	25-May-00	"	
MW-8 (W005652-05) Water	**Sampled: 24-May-00 09:28**	**Received: 24-May-00 18:25**							
Nitrate as NO3	ND	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	**260**	10	"	100	"	"	25-May-00	"	
MW-2 (W005652-06) Water	**Sampled: 24-May-00 09:58**	**Received: 24-May-00 18:25**							
Nitrate as NO3	ND	0.20	mg/l	2	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	**0.54**	0.20	"	"	"	"	25-May-00	"	
MW-1 (W005652-07) Water	**Sampled: 24-May-00 10:36**	**Received: 24-May-00 18:25**							
Nitrate as NO3	ND	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	**35**	1.0	"	10	"	"	25-May-00	"	
MW-4 (W005652-08) Water	**Sampled: 24-May-00 11:05**	**Received: 24-May-00 18:25**							
Nitrate as NO3	ND	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	**21**	0.20	"	2	"	"	25-May-00	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Anions by EPA Method 300.0

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DUP (W005652-09) Water Sampled: 24-May-00 11:20 Received: 24-May-00 18:25									
Nitrate as NO3	ND	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	19	0.20	"	2	"	"	25-May-00	"	
MW-3A (W005652-10) Water Sampled: 24-May-00 11:45 Received: 24-May-00 18:25									
Nitrate as NO3	ND	0.10	mg/l	1	0E31016	25-May-00	25-May-00	EPA 300.0	
Sulfate as SO4	43	1.0	"	10	"	"	25-May-00	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

arding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Conventional Chemistry Parameters by APHA/EPA Methods

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
W-3 (W005652-01) Water	Sampled: 24-May-00 07:15	Received: 24-May-00 18:25							
tal Organic Carbon	97.5	20.0	mg/l	20	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
MW-5 (W005652-02) Water	Sampled: 24-May-00 07:52	Received: 24-May-00 18:25							
tal Organic Carbon	17.7	4.00	mg/l	4	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
MW-6 (W005652-03) Water	Sampled: 24-May-00 08:23	Received: 24-May-00 18:25							
Total Organic Carbon	27.2	2.00	mg/l	2	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
W-7 (W005652-04) Water	Sampled: 24-May-00 08:57	Received: 24-May-00 18:25							
Total Organic Carbon	4.59	1.00	mg/l	1	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
W-8 (W005652-05) Water	Sampled: 24-May-00 09:28	Received: 24-May-00 18:25							
tal Organic Carbon	19.1	1.00	mg/l	1	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
MW-2 (W005652-06) Water	Sampled: 24-May-00 09:58	Received: 24-May-00 18:25							
tal Organic Carbon	110	20.0	mg/l	20	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
MW-1 (W005652-07) Water	Sampled: 24-May-00 10:36	Received: 24-May-00 18:25							
tal Organic Carbon	21.5	1.00	mg/l	1	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
W-4 (W005652-08) Water	Sampled: 24-May-00 11:05	Received: 24-May-00 18:25							
Total Organic Carbon	45.7	10.0	mg/l	10	0F07005	06-Jun-00	06-Jun-00	SM 5310C	
P (W005652-09) Water	Sampled: 24-May-00 11:20	Received: 24-May-00 18:25							
Total Organic Carbon	52.3	1.00	mg/l	1	0F07005	06-Jun-00	06-Jun-00	SM 5310C	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0F05001 - EPA 5030B [P/T]										
Blank (0F05001-BLK1)				Prepared: 05-Jun-00 Analyzed: 07-Jun-00						
Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	*33.2*		"	*30.0*		*111*	*70-130*			
LCS (0F05001-BS1)				Prepared: 05-Jun-00 Analyzed: 07-Jun-00						
Benzene	16.2	0.50	ug/l	20.0		81.0	70-130			
Toluene	18.0	0.50	"	20.0		90.0	70-130			
Ethylbenzene	19.4	0.50	"	20.0		97.0	70-130			
Xylenes (total)	59.5	0.50	"	60.0		99.2	70-130			
Surrogate: a,a,a-Trifluorotoluene	*26.4*		"	*30.0*		*88.0*	*70-130*			
LCS Dup (0F05001-BSD1)				Prepared & Analyzed: 05-Jun-00						
Benzene	16.5	0.50	ug/l	20.0		82.5	70-130	1.83	20	
Toluene	18.1	0.50	"	20.0		90.5	70-130	0.554	20	
Ethylbenzene	19.4	0.50	"	20.0		97.0	70-130	0	20	
Xylenes (total)	59.1	0.50	"	60.0		98.5	70-130	0.675	20	
Surrogate: a,a,a-Trifluorotoluene	*26.6*		"	*30.0*		*88.7*	*70-130*			
Matrix Spike (0F05001-MS1)	**Source: W005686-07**			Prepared: 05-Jun-00 Analyzed: 07-Jun-00						
Benzene	16.5	0.50	ug/l	20.0	ND	82.5	70-130			
Toluene	18.0	0.50	"	20.0	ND	90.0	70-130			
Ethylbenzene	20.9	0.50	"	20.0	ND	104	70-130			
Xylenes (total)	59.9	0.50	"	60.0	ND	99.8	70-130			
Surrogate: a,a,a-Trifluorotoluene	*25.9*		"	*30.0*		*86.3*	*70-130*			

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland
583 Fourth Street
Oakland CA, 94607

Project: Port of Oakland
Project Number: 43145.4
Project Manager: Steve Osborne

Reported:
03-Jul-00 10:25

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT - Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0F05001 - EPA 5030B [P/T]										
Matrix Spike Dup (0F05001-MSD1)	**Source: W005686-07**			Prepared: 05-Jun-00 Analyzed: 07-Jun-00						Q-07
Benzene	15.2	0.50	ug/l	20.0	ND	76.0	70-130	8.20	20	
Toluene	16.9	0.50	"	20.0	ND	84.5	70-130	6.30	20	
Ethylbenzene	15.3	0.50	"	20.0	ND	76.5	70-130	30.9	20	
Xylenes (total)	54.9	0.50	"	60.0	ND	91.5	70-130	8.71	20	
Surrogate: a,a,a-Trifluorotoluene	*26.4*		"	*30.0*		*88.0*	*70-130*			
Batch 0F06001 - EPA 5030B [P/T]										
Blank (0F06001-BLK1)				Prepared & Analyzed: 06-Jun-00						
Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	*31.0*		"	*30.0*		*103*	*70-130*			
LCS (0F06001-BS1)				Prepared & Analyzed: 06-Jun-00						
Benzene	17.3	0.50	ug/l	20.0		86.5	70-130			
Toluene	19.0	0.50	"	20.0		95.0	70-130			
Ethylbenzene	19.6	0.50	"	20.0		98.0	70-130			
Xylenes (total)	62.0	0.50	"	60.0		103	70-130			
Surrogate: a,a,a-Trifluorotoluene	*25.6*		"	*30.0*		*85.3*	*70-130*			
Matrix Spike (0F06001-MS1)	**Source: W005716-09**			Prepared & Analyzed: 06-Jun-00						
Benzene	16.1	0.50	ug/l	20.0	ND	80.5	70-130			
Toluene	17.6	0.50	"	20.0	ND	88.0	70-130			
Ethylbenzene	18.4	0.50	"	20.0	ND	92.0	70-130			
Xylenes (total)	57.3	0.50	"	60.0	ND	95.5	70-130			
Surrogate: a,a,a-Trifluorotoluene	*26.5*		"	*30.0*		*88.3*	*70-130*			

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland
383 Fourth Street
Oakland CA, 94607

Project: Port of Oakland
Project Number: 43145.4
Project Manager: Steve Osborne

Reported:
03-Jul-00 10:25

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT - Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0F06001 - EPA 5030B [P/T]										
Matrix Spike Dup (0F06001-MSD1)	**Source: W005716-09**			Prepared & Analyzed: 06-Jun-00						
Benzene	16.5	0.50	ug/l	20.0	ND	82.5	70-130	2.45	20	
Toluene	18.4	0.50	"	20.0	ND	92.0	70-130	4.44	20	
Ethylbenzene	17.3	0.50	"	20.0	ND	86.5	70-130	6.16	20	
Xylenes (total)	61.4	0.50	"	60.0	ND	102	70-130	6.91	20	
Surrogate: a,a,a-Trifluorotoluene	*25.4*		"	*30.0*		*84.7*	*70-130*			
Batch 0F07001 - EPA 5030B [P/T]										
Blank (0F07001-BLK1)				Prepared & Analyzed: 07-Jun-00						
Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	*29.9*		"	*30.0*		*99.7*	*70-130*			
LCS (0F07001-BS1)				Prepared & Analyzed: 07-Jun-00						
Benzene	16.4	0.50	ug/l	20.0		82.0	70-130			
Toluene	18.3	0.50	"	20.0		91.5	70-130			
Ethylbenzene	19.6	0.50	"	20.0		98.0	70-130			
Xylenes (total)	60.1	0.50	"	60.0		100	70-130			
Surrogate: a,a,a-Trifluorotoluene	*27.6*		"	*30.0*		*92.0*	*70-130*			
LCS Dup (0F07001-BSD1)				Prepared & Analyzed: 07-Jun-00						
Benzene	16.6	0.50	ug/l	20.0		83.0	70-130	1.21	20	
Toluene	17.6	0.50	"	20.0		88.0	70-130	3.90	20	
Ethylbenzene	20.1	0.50	"	20.0		101	70-130	2.52	20	
Xylenes (total)	57.8	0.50	"	60.0		96.3	70-130	3.90	20	
Surrogate: a,a,a-Trifluorotoluene	*25.6*		"	*30.0*		*85.3*	*70-130*			

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

arding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
akland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
tch 0F07002 - EPA 5030B [P/T]										
Blank (0F07002-BLK1)				Prepared & Analyzed: 07-Jun-00						
geable Hydrocarbons	ND	50	ug/l							
zene	ND	0.50	"							
Toluene	ND	0.50	"							
ylbenzene	ND	0.50	"							
enes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
rogate: a,a,a-Trifluorotoluene	*28.0*		"	*30.0*		*93.3*	*70-130*			
S (0F07002-BS1)				Prepared & Analyzed: 07-Jun-00						
Benzene	24.0	0.50	ug/l	20.0		120	70-130			
ene	23.3	0.50	"	20.0		116	70-130			
ylbenzene	22.9	0.50	"	20.0		114	70-130			
Xylenes (total)	66.2	0.50	"	60.0		110	70-130			
rogate: a,a,a-Trifluorotoluene	*28.9*		"	*30.0*		*96.3*	*70-130*			
Matrix Spike (0F07002-MS1)	**Source: W005736-02**			Prepared & Analyzed: 07-Jun-00						
zene	21.3	0.50	ug/l	20.0	ND	106	70-130			
ene	21.4	0.50	"	20.0	ND	107	70-130			
Ethylbenzene	21.5	0.50	"	20.0	ND	108	70-130			
Xylenes (total)	62.2	0.50	"	60.0	ND	104	70-130			
rogate: a,a,a-Trifluorotoluene	*26.8*		"	*30.0*		*89.3*	*70-130*			
Matrix Spike Dup (0F07002-MSD1)	**Source: W005736-02**			Prepared & Analyzed: 07-Jun-00						
zene	22.0	0.50	ug/l	20.0	ND	110	70-130	3.23	20	
ene	22.1	0.50	"	20.0	ND	111	70-130	3.22	20	
Ethylbenzene	22.3	0.50	"	20.0	ND	111	70-130	3.65	20	
enes (total)	63.7	0.50	"	60.0	ND	106	70-130	2.38	20	
rogate: a,a,a-Trifluorotoluene	*28.2*		"	*30.0*		*94.0*	*70-130*			

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0E31017 - EPA 3510B										
Blank (0E31017-BLK1)				Prepared & Analyzed: 31-May-00						
Hydraulic Fluid	ND	250	ug/l							
Jet-A (C9-C17)	ND	50	"							
Diesel Range Hydrocarbons	ND	50	"							
Motor Oil (C16-C36)	ND	250	"							
Surrogate: n-Pentacosane	*20.7*		"	*33.3*		*62.2*	*50-150*			
LCS (0E31017-BS1)				Prepared: 31-May-00 Analyzed: 09-Jun-00						
Diesel Range Hydrocarbons	410	50	ug/l	500		82.0	35-125			
Surrogate: n-Pentacosane	*52.0*		"	*33.3*		*156*	*50-150*			*S-03*
LCS Dup (0E31017-BSD1)				Prepared: 31-May-00 Analyzed: 09-Jun-00						
Diesel Range Hydrocarbons	486	50	ug/l	500		97.2	35-125	17.0	50	
Surrogate: n-Pentacosane	*51.3*		"	*33.3*		*154*	*50-150*			*S-03*

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
583 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0F07009 - 200.7										
Blank (0F07009-BLK1)				Prepared: 07-Jun-00 Analyzed: 08-Jun-00						
Ferric Iron	ND	0.010	mg/l							
LCS (0F07009-BS1)				Prepared: 07-Jun-00 Analyzed: 08-Jun-00						
Ferric Iron	1.05	0.010	mg/l	1.00		105	80-120			
LCS Dup (0F07009-BSD1)				Prepared: 07-Jun-00 Analyzed: 08-Jun-00						
Ferric Iron	1.03	0.010	mg/l	1.00		103	80-120	1.92	20	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0E31016 - General Preparation										
Blank (0E31016-BLK1)				Prepared & Analyzed: 25-May-00						
Orthophosphate as PO4	ND	0.50	mg/l							
LCS (0E31016-BS1)				Prepared & Analyzed: 25-May-00						
Orthophosphate as PO4	17.3	0.50	mg/l	20.0		86.5	80-120			
Matrix Spike (0E31016-MS1)		Source: W005636-01		Prepared & Analyzed: 25-May-00						
Orthophosphate as PO4	63.3	2.0	mg/l	40.0	28	88.2	75-125			
Matrix Spike Dup (0E31016-MSD1)		Source: W005636-01		Prepared & Analyzed: 25-May-00						
Orthophosphate as PO4	63.6	2.0	mg/l	40.0	28	89.0	75-125	0.473	20	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland 583 Fourth Street Oakland CA, 94607	Project: Port of Oakland Project Number: 43145.4 Project Manager: Steve Osborne	**Reported:** 03-Jul-00 10:25

Anions by EPA Method 300.0 - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0E31016 - General Preparation										
Blank (0E31016-BLK1)				Prepared & Analyzed: 25-May-00						
Nitrate as NO3	ND	0.10	mg/l							
Sulfate as SO4	ND	0.10	"							
LCS (0E31016-BS1)				Prepared & Analyzed: 25-May-00						
Nitrate as NO3	9.39	0.10	mg/l	10.0		93.9	80-120			
Sulfate as SO4	8.43	0.10	"	10.0		84.3	80-120			
Matrix Spike (0E31016-MS1)	Source: W005636-01			Prepared & Analyzed: 25-May-00						
Nitrate as NO3	19.8	0.40	mg/l	20.0	ND	99.0	75-125			
Sulfate as SO4	22.4	0.40	"	20.0	6.2	81.0	75-125			
Matrix Spike Dup (0E31016-MSD1)	Source: W005636-01			Prepared & Analyzed: 25-May-00						
Nitrate as NO3	20.2	0.40	mg/l	20.0	ND	101	75-125	2.00	20	
Sulfate as SO4	22.5	0.40	"	20.0	6.2	81.5	75-125	0.445	20	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	03-Jul-00 10:25

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0F07005 - General Preparation										
Blank (0F07005-BLK1)				Prepared & Analyzed: 06-Jun-00						
Total Organic Carbon	ND	1.00	mg/l							
LCS (0F07005-BS1)				Prepared & Analyzed: 06-Jun-00						
Total Organic Carbon	11.2	1.00	mg/l	10.0		112	80-120			
Matrix Spike (0F07005-MS1)		Source: MJE0950-05		Prepared & Analyzed: 06-Jun-00						
Total Organic Carbon	10.0	2.00	mg/l	10.0	ND	93.8	75-125			
Matrix Spike Dup (0F07005-MSD1)		Source: MJE0950-05		Prepared & Analyzed: 06-Jun-00						
Total Organic Carbon	11.5	2.00	mg/l	10.0	ND	109	75-125	14.0	20	

Sequoia Analytical

404 N. Wiget Lan
Walnut Creek, CA 945
(925) 988-960
FAX (925) 988-96
www.sequoialabs.co

Harding-Lawson Associates - Oakland 383 Fourth Street Oakland CA, 94607	Project: Port of Oakland Project Number: 43145.4 Project Manager: Steve Osborne	**Reported:** 03-Jul-00 10:25

Notes and Definitions

D-04	Chromatogram Pattern: Jet Fuel C9-C17.
D-05	Chromatogram Pattern: Motor Oil C16-C36.
D-12	Chromatogram Pattern: Unidentified Hydrocarbons > C16
D-13	Chromatogram Pattern: Diesel C9-C24
D-14	Chromatogram Pattern: Unidentified Hydrocarbons C9-C24
D-18	Chromatogram Pattern: Diesel C9-C24 + Unidentified Hydrocarbons >C16
P-01	Chromatogram Pattern: Gasoline C6-C12
P-03	Chromatogram Pattern: Unidentified Hydrocarbons C6-C12
P-07	Chromatogram Pattern: Gasoline C6-C12 + Unidentified Hydrocarbons >C10
Q-07	The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch.
S-03	The surrogate recovery for this sample is outside of established control limits. Review of associated QC indicates the recovery for this surrogate does not represent an out-of-control condition.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Attn: Dimple

WO 5652

№ 2538

CHAIN OF CUSTODY FORM

Lab: Sequoia

Harding Lawson Associates
383 Fourth Street, Third Floor
Oakland, California 94607
(510) 451-1001 - Phone
(510) 451-3165 - Fax

Samplers: Heather Lee

Job Number: 43145.21

Name/Location: Port of Oakland - Economy Parking

Project Manager: Steve Osborne

Recorder: Heather Lee (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	# CONTAINERS & PRESERV.: Unpres.	H2SO4	HNO3	HCl	Ice	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Day	Time	STATION DESCRIPTION/ NOTES
	X							3	X	M	W	- 4	0	0	5	2 4 0 7 1 5	01A-H
	X				2		1	8	X	M	W	- 5	0	0	5	2 4 0 7 5 2	02A-K
	X				2		1	8	X	M	W	- 6	0	0	5	2 4 0 8 2 3	03
	X				2		1	8	X	M	W	- 7	0	0	5	2 4 0 8 5 7	04
	X				2		1	8	X	M	W	- 8	0	0	5	2 4 0 9 2 8	05
	X				2		1	9	X	M	W	- 2	0	0	5	2 4 0 9 5 8	06A-J
	X				2		1	8	X	M	W	- 1	0	0	5	2 4 1 0 3 5	07A-K
	X				2		1	8	X	M	W	- 4	0	0	5	2 4 1 1 0 5	08
	X				2		1	8	X	D	U	P	0	0	5	2 4 1 1 2 0	09
	X				1		1		X	M	W	- 3A	0	0	5	2 4 1 1 1 5	10AB

ANALYSIS REQUESTED

EPA 8010	EPA 9020	EPA 8260	EPA 8270	METALS	EPA 8015M/TPHG	EPA 8020/BTEX	EPA 8015M/TPHd,o	TPHjet(A)	TOC by 415.1	Ferrous Iron	Nitrate	Sulfate	Orthophosphate
				X	X	X	TPH		X	X	X	X	X
				X	X	X	X		X	X	X	X	X
				X	X	X	X		X	X	X	X	X
				X	X	X	X		X	X	X	X	X
				X	X	X	X		X	X	X	X	X
				X	X	X	/		X	X	X	X	X
				X	X	X	X		X	X	X	X	X
				X	X	X	X		X	X	X	X	X
				X	X	X	X		X	X	X	X	X
				X	X	X	X		X	X	X	X	X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						Standard TAT
						24 hr hold time on Ferrous Iron
						TPHd, TPHmo + TPHjet(A) w/ silica gel clean up

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
Heather Lee		Mark Coll	5-24 1125
RELINQUISHED BY: (Signature)		RECEIVED BY: (Signature)	
Mark Coll 5-24 1125			
RELINQUISHED BY: (Signature)		RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)		RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
METHOD OF SHIPMENT			5/24/91 18:25

SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink

Sequoia
Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

12 July, 2000

Steve Osborne
Harding-Lawson Associates - Oakland
383 Fourth Street
Oakland, CA 94607

RE: Port of Oakland
Sequoia Report: W005674

Enclosed are the results of analyses for samples received by the laboratory on 25-May-00 11:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dimple Sharma
Project Manager

CA ELAP Certificate #1271

Sequoia Analytical
404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	12-Jul-00 12:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-3B	W005674-01	Water	24-May-00 17:25	25-May-00 11:55

Sequoia Analytical - Walnut Creek

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Dimple Sharma, Project Manager

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA. 94607	Project Manager: Steve Osborne	12-Jul-00 12:47

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TW-3B (W005674-01) Water Sampled: 24-May-00 17:25 Received: 25-May-00 11:55									
Diesel-A (C9-C17)	**9800**	250	ug/l	5	0E31017	31-May-00	27-Jun-00	DHS LUFT	D-03
Diesel Range Hydrocarbons	**14000**	250	"	"	"	"	"	"	D-13
Motor Oil (C16-C36)	**2100**	1300	"	"	"	"	"	"	D-12
Surrogate: n-Pentacosane		*321 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	12-Jul-00 12:47

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0E31017 - EPA 3510B										
Blank (0E31017-BLK1)				Prepared & Analyzed: 31-May-00						
Jet-A (C9-C17)	ND	50	ug/l							
Diesel Range Hydrocarbons	ND	50	"							
Motor Oil (C16-C36)	ND	250	"							
Surrogate: n-Pentacosane	*20.7*		"	*33.3*		*62.2*	*50-150*			
LCS (0E31017-BS1)				Prepared: 31-May-00 Analyzed: 09-Jun-00						
Diesel Range Hydrocarbons	410	50	ug/l	500		82.0	35-125			
Surrogate: n-Pentacosane	*52.0*		"	*33.3*		*156*	*50-150*			*S-03*
LCS Dup (0E31017-BSD1)				Prepared: 31-May-00 Analyzed: 09-Jun-00						
Diesel Range Hydrocarbons	486	50	ug/l	500		97.2	35-125	17.0	50	
Surrogate: n-Pentacosane	*51.3*		"	*33.3*		*154*	*50-150*			*S-03*

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

[illegible]rding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.4	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	12-Jul-00 12:47

Notes and Definitions

[illegible]03	Chromatogram Pattern: Unidentified Hydrocarbons C9-C17.
D-12	Chromatogram Pattern: Unidentified Hydrocarbons > C16
[illegible]13	Chromatogram Pattern: Diesel C9-C24
S-03	The surrogate recovery for this sample is outside of established control limits. Review of associated QC indicates the recovery for this surrogate does not represent an out-of-control condition.
[illegible]ET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
[illegible]R	Not Reported
dry	Sample results reported on a dry weight basis
[illegible]PD	Relative Percent Difference

Harding Lawson Associates
383 Fourth Street, Third Floor
Oakland, California 94607
(510) 451-1001 - Phone
(510) 451-3165 - Fax

CHAIN OF CUSTODY FORM

Nº 2540

Lab: Sequoia Wa05674

Samplers: Heather Lee

Job Number: 43145.4

Name/Location: Port of Oakland - Economy Parking

Project Manager: ~~Tim~~ Steve Osborne Recorder: Heather Lee (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	# CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCl	Ice	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Day	Time	STATION DESCRIPTION/ NOTES
GW	X				1				X	M	W	28	00	05	24	17	25

ANALYSIS REQUESTED

EPA 8010	EPA 8020	EPA 8260	EPA 8270	METALS	EPA 8015M/TPHG	EPA 8020/BTEX	EPA 8015M/TPHd,o	
								X EPA 8015M TPHd, TPHmo w/silica gel clean

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						Standard TAT

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) Heather Lee	RECEIVED BY: (Signature)	DATE/TIME 5/25 10:14
RELINQUISHED BY: (Signature) 5/25/1155	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) DATE/TIME	RECEIVED FOR LAB BY: (Signature) (ME)	DATE/TIME 5/25/04 11:55

METHOD OF SHIPMENT

SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink

Sequoia
Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

25 July, 2000

Steve Osborne
Harding-Lawson Associates - Oakland
383 Fourth Street
Oakland, CA 94607

RE: Port of Oakland
Sequoia Report: W007189

Enclosed are the results of analyses for samples received by the laboratory on 11-Jul-00 15:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dimple Sharma
Project Manager

CA ELAP Certificate #1271

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland
383 Fourth Street
Oakland CA, 94607

Project: Port of Oakland
Project Number: 43145.5
Project Manager: Steve Osborne

Reported:
25-Jul-00 10:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-8	W007189-01	Water	10-Jul-00 09:45	11-Jul-00 15:10
MW-5	W007189-02	Water	10-Jul-00 10:10	11-Jul-00 15:10
MW-3	W007189-03	Water	10-Jul-00 10:28	11-Jul-00 15:10
MW-6	W007189-04	Water	10-Jul-00 10:52	11-Jul-00 15:10
MW-7	W007189-05	Water	10-Jul-00 11:12	11-Jul-00 15:10
MW-1	W007189-06	Water	10-Jul-00 11:40	11-Jul-00 15:10
MW-2	W007189-07	Water	10-Jul-00 12:00	11-Jul-00 15:10
MW-4	W007189-08	Water	10-Jul-00 12:25	11-Jul-00 15:10
DUP	W007189-09	Water	10-Jul-00 12:35	11-Jul-00 15:10

Sequoia Analytical - Walnut Creek

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Dimple Sharma, Project Manager

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-8 (W007189-01) Water Sampled: 10-Jul-00 09:45 Received: 11-Jul-00 15:10									
Chloromethane	ND	20	ug/l	10	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	10	"	"	"	"	"	"	
Bromomethane	ND	10	"	"	"	"	"	"	
Chloroethane	ND	10	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
Freon 113	ND	10	"	"	"	"	"	"	
1,1-Dichloroethene	**420**	10	"	"	"	"	"	"	
Methylene chloride	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	10	"	"	"	"	"	"	
1,1-Dichloroethane	**380**	10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	10	"	"	"	"	"	"	
Chloroform	ND	10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	10	"	"	"	"	"	"	
Carbon tetrachloride	ND	10	"	"	"	"	"	"	
1,2-Dichloroethane	ND	20	"	"	"	"	"	"	
Trichloroethene	ND	10	"	"	"	"	"	"	
1,2-Dichloropropane	ND	10	"	"	"	"	"	"	
Bromodichloromethane	ND	10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	10	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	10	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane	ND	10	"	"	"	"	"	"	
Chlorobenzene	ND	10	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
1,1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	20	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*120 %*	*50-150*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*110 %*	*50-150*		"	"	"	"	

Sequoia Analytical
1404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5 (W007189-02) Water Sampled: 10-Jul-00 10:10 Received: 11-Jul-00 15:10									
Chloromethane	ND	2.0	ug/l	1	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	2.0	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*100 %*	*50-150*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*120 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

arding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
akland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V-3 (W007189-03) Water Sampled: 10-Jul-00 10:28 Received: 11-Jul-00 15:10									
Chloromethane	ND	2.0	ug/l	1	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	**1.1**	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	**9.8**	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	2.0	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*110 %*	*50-150*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*120 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (W007189-04) Water Sampled: 10-Jul-00 10:52 Received: 11-Jul-00 15:10									
Chloromethane	ND	2.0	ug/l	1	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
Methylene chloride	ND	10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	2.0	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*100 %*	*50-150*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*120 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

[illegible]arding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7 (W007189-05) Water Sampled: 10-Jul-00 11:12 Received: 11-Jul-00 15:10									
Chloromethane	ND	2.0	ug/l	1	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	**9.8**	1.0	"	"	"	"	"	"	
Methylene chloride	ND	10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	**26**	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**1.1**	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	**1.8**	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Trichloropropane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	2.0	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*100 %*	*50-150*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*110 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland 383 Fourth Street Oakland CA, 94607	Project: Port of Oakland Project Number: 43145.5 Project Manager: Steve Osborne	**Reported:** 25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (W007189-06) Water Sampled: 10-Jul-00 11:40 Received: 11-Jul-00 15:10									
Chloromethane	ND	2.0	ug/l	1	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethene	2.2	1.0	"	"	"	"	"	"	
Methylene chloride	ND	10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	30	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	16	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	2.0	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*110 %*	*50-150*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*140 %*	*50-150*		"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

[redacted]rding-Lawson Associates - Oakland	Project: Port of Oakland	
583 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (W007189-07) Water Sampled: 10-Jul-00 12:00 Received: 11-Jul-00 15:10									
C[redacted]romethane	ND	10	ug/l	5	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
B[redacted]momethane	ND	5.0	"	"	"	"	"	"	
C[redacted]roethane	**5.5**	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	2.5	"	"	"	"	"	"	
Freon 113	ND	5.0	"	"	"	"	"	"	
1,[redacted]Dichloroethene	ND	5.0	"	"	"	"	"	"	
M[redacted]ylene chloride	ND	50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,[redacted]Dichloroethane	**95**	5.0	"	"	"	"	"	"	
cis[redacted],2-Dichloroethene	**240**	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
1,[redacted]-Trichloroethane	ND	5.0	"	"	"	"	"	"	
C[redacted]on tetrachloride	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	10	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
1,[redacted]Dichloropropane	ND	5.0	"	"	"	"	"	"	
B[redacted]modichloromethane	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
tra[redacted]-1,3-Dichloropropene	ND	2.5	"	"	"	"	"	"	
1,[redacted]-Trichloroethane	ND	2.5	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
D[redacted]omochloromethane	ND	2.5	"	"	"	"	"	"	
1,[redacted]Dibromoethane	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	2.5	"	"	"	"	"	"	
1,[redacted],2-Tetrachloroethene	ND	2.5	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	2.5	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,[redacted]Dichlorobenzene	ND	10	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*110 %*	*50-150*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*130 %*	*50-150*		"	"	"	"	

Sequoia Analytical
404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (W007189-08) Water Sampled: 10-Jul-00 12:25 Received: 11-Jul-00 15:10									
Chloromethane	ND	5.0	ug/l	2.5	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	2.5	"	"	"	"	"	"	
Bromomethane	ND	2.5	"	"	"	"	"	"	
Chloroethane	**10**	2.5	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.3	"	"	"	"	"	"	
Freon 113	ND	2.5	"	"	"	"	"	"	
1,1-Dichloroethene	ND	2.5	"	"	"	"	"	"	
Methylene chloride	ND	25	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	2.5	"	"	"	"	"	"	
1,1-Dichloroethane	**48**	2.5	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**25**	2.5	"	"	"	"	"	"	
Chloroform	ND	2.5	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	2.5	"	"	"	"	"	"	
Carbon tetrachloride	ND	2.5	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	2.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	2.5	"	"	"	"	"	"	
Bromodichloromethane	ND	2.5	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	2.5	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.3	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.3	"	"	"	"	"	"	
Tetrachloroethene	ND	2.5	"	"	"	"	"	"	
Dibromochloromethane	ND	1.3	"	"	"	"	"	"	
1,2-Dibromoethane	ND	2.5	"	"	"	"	"	"	
Chlorobenzene	ND	2.5	"	"	"	"	"	"	
Bromoform	ND	1.3	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.3	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.3	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	2.5	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromodifluoromethane		*84.0 %*	*50-150*	"	"	"	"		
Surrogate: 4-Bromofluorobenzene		*98.0 %*	*50-150*	"	"	"	"		

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

[redacted]arding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
[redacted]P (W007189-09) Water Sampled: 10-Jul-00 12:35 Received: 11-Jul-00 15:10									
[redacted]oromethane	ND	5.0	ug/l	2.5	0G18006	18-Jul-00	18-Jul-00	EPA 8010B	
Vinyl chloride	ND	2.5	"	"	"	"	"	"	
[redacted]omomethane	ND	2.5	"	"	"	"	"	"	
[redacted]loroethane	**7.3**	2.5	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.3	"	"	"	"	"	"	
Freon 113	ND	2.5	"	"	"	"	"	"	
[redacted]-Dichloroethene	ND	2.5	"	"	"	"	"	"	
[redacted]thylene chloride	ND	25	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	2.5	"	"	"	"	"	"	
[redacted]-Dichloroethane	**35**	2.5	"	"	"	"	"	"	
[redacted]-1,2-Dichloroethene	**16**	2.5	"	"	"	"	"	"	
Chloroform	ND	2.5	"	"	"	"	"	"	
[redacted]1-Trichloroethane	ND	2.5	"	"	"	"	"	"	
[redacted]bon tetrachloride	ND	2.5	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	2.5	"	"	"	"	"	"	
[redacted]-Dichloropropane	ND	2.5	"	"	"	"	"	"	
[redacted]modichloromethane	ND	2.5	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	2.5	"	"	"	"	"	"	
[redacted]ns-1,3-Dichloropropene	ND	1.3	"	"	"	"	"	"	
[redacted]2-Trichloroethane	ND	1.3	"	"	"	"	"	"	
Tetrachloroethene	ND	2.5	"	"	"	"	"	"	
[redacted]romochloromethane	ND	1.3	"	"	"	"	"	"	
[redacted]-Dibromoethane	ND	2.5	"	"	"	"	"	"	
Chlorobenzene	ND	2.5	"	"	"	"	"	"	
Bromoform	ND	1.3	"	"	"	"	"	"	
[redacted]2,2-Tetrachloroethane	ND	1.3	"	"	"	"	"	"	
[redacted]-Dichlorobenzene	ND	1.3	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	2.5	"	"	"	"	"	"	
[redacted]-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
[redacted]rogate: Dibromodifluoromethane		*76.0 %*		*50-150*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.0 %*		*50-150*	"	"	"	"	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland 383 Fourth Street Oakland CA, 94607	Project: Port of Oakland Project Number: 43145.5 Project Manager: Steve Osborne	**Reported:** 25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B - Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0G18006 - EPA 5030B [P/T]										
Blank (0G18006-BLK1)			Prepared & Analyzed: 18-Jul-00							
Chloromethane	ND	2.0	ug/l							
Vinyl chloride	ND	1.0	"							
Bromomethane	ND	1.0	"							
Chloroethane	ND	1.0	"							
Trichlorofluoromethane	ND	0.50	"							
Freon 113	ND	1.0	"							
1,1-Dichloroethene	ND	1.0	"							
Methylene chloride	ND	10	"							
trans-1,2-Dichloroethene	ND	1.0	"							
1,1-Dichloroethane	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
Chloroform	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
Carbon tetrachloride	ND	1.0	"							
1,2-Dichloroethane	ND	2.0	"							
Trichloroethene	ND	1.0	"							
1,2-Dichloropropane	ND	1.0	"							
Bromodichloromethane	ND	1.0	"							
cis-1,3-Dichloropropene	ND	1.0	"							
trans-1,3-Dichloropropene	ND	0.50	"							
1,1,2-Trichloroethane	ND	0.50	"							
Tetrachloroethene	ND	1.0	"							
Dibromochloromethane	ND	0.50	"							
1,2-Dibromoethane	ND	1.0	"							
Chlorobenzene	ND	1.0	"							
Bromoform	ND	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.50	"							
1,3-Dichlorobenzene	ND	0.50	"							
1,4-Dichlorobenzene	ND	1.0	"							
1,2-Dichlorobenzene	ND	2.0	"							
Surrogate: Dibromodifluoromethane	*11.0*		"	*10.0*		*110*	*50-150*			
Surrogate: 4-Bromofluorobenzene	*10.0*		"	*10.0*		*100*	*50-150*			

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland	Project: Port of Oakland	
383 Fourth Street	Project Number: 43145.5	**Reported:**
Oakland CA, 94607	Project Manager: Steve Osborne	25-Jul-00 10:26

Volatile Organic Compounds by EPA Method 8010B - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0G18006 - EPA 5030B [P/T]										
LCS (0G18006-BS1)				Prepared & Analyzed: 18-Jul-00						
1,1-Dichloroethene	23.0	1.0	ug/l	20.0		115	65-135			
Trichloroethene	23.0	1.0	"	20.0		115	70-130			
Chlorobenzene	21.0	1.0	"	20.0		105	70-130			
Surrogate: Dibromodifluoromethane	*10.0*		"	*10.0*		*100*	*50-150*			
Surrogate: 4-Bromofluorobenzene	*12.0*		"	*10.0*		*120*	*50-150*			
Matrix Spike (0G18006-MS1)		**Source: W007213-01**		Prepared & Analyzed: 18-Jul-00						
1,1-Dichloroethene	22.0	1.0	ug/l	20.0	ND	110	60-140			
Trichloroethene	22.0	1.0	"	20.0	ND	110	60-140			
Chlorobenzene	26.0	1.0	"	20.0	ND	130	60-140			
Surrogate: Dibromodifluoromethane	*9.40*		"	*10.0*		*94.0*	*50-150*			
Surrogate: 4-Bromofluorobenzene	*14.0*		"	*10.0*		*140*	*50-150*			
Matrix Spike Dup (0G18006-MSD1)		**Source: W007213-01**		Prepared & Analyzed: 18-Jul-00						
1,1-Dichloroethene	21.0	1.0	ug/l	20.0	ND	105	60-140	4.65	25	
Trichloroethene	21.0	1.0	"	20.0	ND	105	60-140	4.65	25	
Chlorobenzene	24.0	1.0	"	20.0	ND	120	60-140	8.00	25	
Surrogate: Dibromodifluoromethane	*9.60*		"	*10.0*		*96.0*	*50-150*			
Surrogate: 4-Bromofluorobenzene	*14.0*		"	*10.0*		*140*	*50-150*			

Sequoia Analytical
404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Harding-Lawson Associates - Oakland 383 Fourth Street Oakland CA, 94607	Project: Port of Oakland Project Number: 43145.5 Project Manager: Steve Osborne	**Reported:** 25-Jul-00 10:26

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Harding Lawson Associates
383 Fourth Street, Third Floor
Oakland, California 94607
(510) 451-1001 - Phone
(510) 451-3165 - Fax

CHAIN OF CUSTODY FORM

1/007189 Nº 2547

Lab: Sequoia

Samplers: Heather Lee

Job Number: 43145.5

Name/Location: Port of Oakland - Economy Parking

Project Manager: Steve Osborne Recorder: Heather Lee (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	# CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO$_3$	HCL	Ice	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Day	Time	STATION DESCRIPTION/ NOTES
	X							3	X	MW-	3		00	07	10	0945	01 A-C
	X							3	X	MW-	5		00	07	10	1015	02
	X							3	X	MW-	3		00	07	10	1028	03
	X							3	X	MW-	6		00	07	10	1052	04
	X							3	X	MW-	7		00	07	10	1112	05
	X							3	X	MW-	1		00	07	10	1140	06
	X							3	X	MW-	2		00	07	10	1200	07
	X							3	X	MW-	4		00	07	10	1225	08
	X							3	X	DUP			00	07	10	1231	09

ANALYSIS REQUESTED

EPA 8010	EPA 8020	EPA 8260	EPA 3270	METALS	EPA 8015M/TPHG	EPA 3020/BTEX	EPA 3015M/TPHd,o
X							
X							
X							
X							
X							
X							
X							
X							
X							

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						Standard TAT

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
Heather Lee	Mark Collins	7/11 1317
RELINQUISHED BY: (Signature) Mark Collins 7-11-89/1317	RECEIVED BY: (Signature) Constance Gannon WC	7/11/89 15:10
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

METHOD OF SHIPMENT

SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink