PORT OF OAKLAND

July 10, 1997

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 July 7, 1997 *Groundwater Monitoring and Sampling Report - Tanks MF-25 and MF-26, United Airlines Hangar - Economy Parking Lot Site, Metropolitan Oakland International Airport (MOIA)*, 1100 Airport Drive, Oakland, California. Monitoring activities were performed by Innovative Technical Solutions, Inc. (ITSI), one of the as-needed consultants retained by the Port of Oakland (Port).

Separate phase hydrocarbons were observed and thickness measured in two monitoring wells, MW-2 and MW-3. Groundwater samples were not collected from these two wells. Reported data are for the groundwater sample collected from MW-1.

We received your June 18, 1997 comment letter regarding our submittal entitled, *Site Status Report: Findings and Recommended Approach - Former Tank Numbers MF25 and MF26, Metropolitan Oakland International Airport, United Airlines Hangar - Economy Parking Lot Site, 1100 Airport Drive, Oakland, California*. The Port intends to prepare a work plan for additional site assessment. This investigation will be performed to verify that subject groundwater site conditions are "low risk".

Should you have any questions or need additional information, please contact me at 272-1118. Thank you for your on-going assistance and support on this project.

Sincerely,

Jeffrey L. Rubin, REA, CPSS
Associate Environmental Scientist
Environmental Health & Safety Compliance

Enclosure

cc: Rich Hiett, Regional Water Quality Control Board, San Francisco Bay Region (w enc)
Neil Werner - EH & SC (w/o enc)
Mark O'Brien - EH & SC (w/o enc)
Jeff Hess - ITSI (w/o enc)

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INNOVATIVE TECHNICAL SOLUTIONS, Inc.

ITSI

July 7, 1997

Project No. 95-113.28

Mr. Jeff Rubin
Port of Oakland
530 Water Street
Oakland, California 94607

Groundwater Monitoring and Sampling Report
Tanks MF25 and MF26, United Airlines Hangar - Economy Parking Lot Site
Metropolitan Oakland International Airport (MOIA)
1100 Airport Drive
Oakland, California
(Work Order No. 028691)

Dear Mr. Rubin:

This Groundwater Monitoring and Sampling Report (Report) has been prepared by Innovative Technical Solutions, Inc. (ITSI) on behalf of the Port of Oakland for groundwater monitoring and sampling performed on April 25, 1997 at the United Airlines Hangar-Economy Parking Lot Site, located at 1100 Airport Drive at the Metropolitan Oakland International Airport (MOIA) in Oakland, California. A site location map is shown on Figure 1.

The scope of work included monitoring three groundwater monitoring wells, MW-1, MW-2, and MW-3, and sampling MW-1. The monitoring wells are located in the vicinity of two former underground storage tanks: a 500-gallon oil/solvent tank (MF-25) and a 3,000-gallon oil/solvent tank (MF-26), removed in March 1992.

SAMPLING OF MONITORING WELL(S)

Groundwater monitoring and sampling was performed on April 25, 1997. The monitoring wells were initially gauged for depth to water and checked for the presence of separate phase hydrocarbons. Separate phase hydrocarbons were observed in two monitoring wells, MW-2 and MW-3. Depth to water and product thickness measurements were recorded on Monitoring Well Purge and Sample Forms. Copies of the Monitoring Well Purge and Sample Forms are provided in Attachment A.

1330 Broadway, Suite 1625, Oakland, CA 94612 (510) 286-8888 (510) 286-8889 fax

After depth to water measurements were recorded, monitoring well MW-1, with no separate phase hydrocarbons, was purged using a clean disposable bailer. Approximately three casing volumes of water were removed, or until pH, conductivity, and temperature readings stabilized indicating formation water had entered the monitoring well. Field parameters were recorded on a Monitoring Well Purge and Sample Form.

A groundwater sample from monitoring well MW-1 was collected using the disposable bailer and placed into laboratory provided containers. The sample containers were properly labeled with the sample number, date and time of collection, and sampler's initials, and were placed on ice in an insulated cooler. Purge water was stored in a properly labeled drum onsite.

The above field activities were performed in accordance with the site-specific Health and Safety Plan for groundwater monitoring and sampling activities at the site.

GROUNDWATER LEVELS IN MONITORING WELLS

Depth to water results are summarized in Table 1. Groundwater elevations were calculated using the measured depth to water and survey elevations of top of casing, and are provided in Table 1. This survey used the Port of Oakland datum, which is 3.2 feet below mean sea level. Figure 2 shows the elevation contours and groundwater flow direction for the site. The groundwater flow direction is to the southwest, with a gradient of approximately 0.005 ft/ft.

LABORATORY ANALYSIS OF GROUNDWATER SAMPLE

The sample was sent under chain-of-custody procedures to Pace Analytical in Petaluma, the Port of Oakland contract laboratory, and analyzed according to the following schedule:

Monitoring Well ID	Analyses						
	TPHg[1]	BTEX[2]	TPHj[3]	TPHd[4]	TPHmo[5]	VOCs[6]	TDS[7]
MW-1	x	x	x	x	x	x	x
MW-2	x	x	x	x	x	x	x
MW-3	x	x	x	x	x	x	x

[1]TPH as gasoline by California LUFT Method.
[2]Benzene, toluene, ethylbenzene, and xylenes by California LUFT Method.
[3]TPH as jet fuel by Modified EPA Method 8015 with silica gel cleanup procedure.
[4]TPH as diesel by Modified EPA Method 8015 with silica gel cleanup procedure.
[5]TPH as motor oil by Modified EPA Method 8015 with silica gel cleanup procedure.
[6]VOCs by EPA Method 8010.
[7]Total dissolved solids by EPA Method 160.1.

Laboratory results for the groundwater sample are summarized in Tables 2 and 3, and shown in Figure 3. Copies of the laboratory results, chromatograms and chain-of-custody are provided in Attachment B.

FINDINGS

Results of the April 25, 1997 groundwater monitoring and sampling are summarized below[1]:

- Separate phase hydrocarbons were observed in two monitoring wells, MW-2 and MW-3, at a thickness of 0.03 and 0.01 feet, respectively.
- TPHg was reported in MW-1 at a concentration of 110 µg/l.
- Benzene, ethylbenzene and xylenes were reported in MW-1 at concentrations of 1.2 µg/l, 1.0 µg/l and 1.2 µg/l, respectively.
- TPHj, TPHd and TPHmo were reportedly not detected in MW-1.
- 1,1-Dichloroethane (1,1-DCA), cis-1,2-dichloroethene (cis 1,2-DCE) and tetrachloroethene (PCE) were reported in monitoring well MW-1 at concentrations of 6.2 µg/l, 10 µg/l and 0.62 µg/l, respectively.
- TDS was reported in MW-1 at a concentration of 2,770 mg/l.

Please give us a call if you have any questions or comments.

Sincerely,

Jim Schollard
Environmental Scientist

Jeffrey D. Hess, R.G.
Project Director

Attachments

[1] Laboratory results represent the highest concentrations reported for either the sample or the field duplicate sample.

TABLE 1

GROUNDWATER ELEVATIONS
TANKS MF25 AND MF26 (UNITED AIRLINES HANGAR-ECONOMY PARKING LOT SITE)
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT (MOIA)
1100 AIRPORT DRIVE
OAKLAND, CALIFORNIA

Monitoring Well ID	Elevation of Top of Casing (feet)	Date of Monitoring	Measured Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (feet)	Note
MW-1	6.91	5/15/92	3.10	-	3.81	1
		8/7/92	3.20	-	3.71	1
		11/24/92	4.04	-	2.87	1
		2/12/93	-	-	-	1
		3/11/93	2.09	-	4.82	1
		5/17/93	3.14	-	3.77	1
		8/3/93	3.15	-	3.76	1
		11/25/93	3.59	-	3.32	1
		3/24/94	3.21	-	3.70	1
		5/9/94	2.99	-	3.92	1
		8/29/94	3.34	-	3.57	1
		9/27/94	3.51	-	3.40	1
		4/25/95	2.38	-	4.53	1
		8/11/95	3.08	-	3.83	1
		11/3/95	3.52	-	3.39	1
		6/19/96	2.93	-	3.98	
		10/24/96	3.52	-	3.39	
		1/22/97	2.61	-	4.30	
		4/25/97	2.77	-	4.14	
MW-2	6.63	4/25/95	2.20	-	4.43	1
		8/11/95	3.11	-	3.84	1
		11/3/95	3.28	-	3.35	1
		6/19/96	2.53	0.05	4.14	2
		10/24/96	3.44	0.16	3.31	2
		1/22/97	2.45	0.02	4.20	2
		4/25/97	2.60	0.03	4.05	2
MW-3	7.36	4/25/95	2.78	-	4.58	1
		8/11/95	3.62	-	4.02	1
		11/3/95	4.05	-	3.63	1
		6/19/96	3.17	0.01	4.20	2
		10/24/96	4.02	0.02	3.36	2
		1/22/97	2.86	0.005	4.50	2
		4/25/97	3.13	0.01	4.24	2

1 Data from Table 1, Results of Groundwater Sampling Analysis for Petroleum Hydrocarbons, BTEX, and TDS, Port of Oakland, Oakland International Airport, United Airlines Hangar Area-Economy Parking Lot Site, dated February 21, 1996, by Alisto Engineering Group.

2 Groundwater elevation calculated assuming a specific gravity of 0.75 for product.

TABLE 2

SUMMARY OF LABORATORY RESULTS
TANKS MF25 AND MF26 (UNITED AIRLINES HANGAR AREA - ECONOMY PARKING LOT SITE)
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT (MOIA)
1100 AIRPORT DRIVE
OAKLAND, CALIFORNIA

Monitoring Well ID	Date of Sampling	TPHg (µg/l)	B (µg/l)	T (µg/l)	E (µg/l)	X (µg/l)	TPHj (µg/l)	TPHd (µg/l)	TPHmo (µg/l)	TOG (µg/l)	TDS (mg/l)	Note
MW-1	5/15/92	<50	<0.4	<0.3	<0.3	<0.4	-	-	-	<5,000	5,900	1
	8/7/92	<50	<0.4	<0.3	<0.3	<0.4	800	-	-	<5,000	-	1
	11/24/92	<50	<0.4	<0.3	<0.3	<0.4	<50	-	-	<5,000	-	1
	2/12/93	<50	<0.4	<0.3	<0.3	<0.4	-	-	-	<5,000	-	1
	5/17/93	<50	<0.4	<0.3	<0.3	<0.4	-	-	-	<5,000	4,100	1
	8/3/93	<50	<0.5	<0.5	<0.5	<0.5	-	5,200	-	<5,000	7,700	1
	11/25/93	70	<0.5	<0.5	<0.5	0.6	-	-	-	<5,000	3,790	1
	5/9/94	<50	<0.5	<0.5	<0.5	<0.5	-	-	-	<930	9,600	1
	8/29/94	<50	<0.5	<0.5	2.7	<0.5	-	-	-	<1,000	3,900	1
	4/25/95	<50	<5	<5	<5	<5	<50	1,400	610	-	4,000	1
	8/11/95	<50	<0.4	<0.3	<0.3	<0.4	<50	1,900	1,200	-	8,500	1
	11/3/95	<50	0.4	0.4	<0.3	<0.4	<50	4,200	1,800	-	6,600	1
	6/19/96	<50	0.99	<0.5	1.1	<1.0	<500	11,000	820	-	3,040	
	10/24/96	57	1.9	<0.5	<0.5	1.3	<500	<250	<250	-	3,090	
	1/22/97	<50	<0.5	<0.5	<0.5	<1.0	<500	220[3]	<250	-	4,240	
	4/25/97*	110	1.2	<0.5	1.0	1.2	<500	<50[4]	<250	-	2,770	
MW-2	4/25/95	5,200	340	570	110	580	13,000	<10,000	19,000	-	1,700	1
	8/11/95	5,500	320	680	110	510	7,900	<8,000	20,000	-	2,500	1
	11/3/95	3,800	200	400	27	360	11,000	<11,000	4,200	-	2,000	1
	6/19/96	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	-	[2]	
	10/24/96	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	-	[2]	
	1/22/97	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	-	[2]	
	4/25/97	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	-	[2]	

TABLE 2 (continued)

SUMMARY OF LABORATORY RESULTS
TANKS MF25 AND MF26 (UNITED AIRLINES HANGAR AREA - ECONOMY PARKING LOT SITE)
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT (MOIA)
1100 AIRPORT DRIVE
OAKLAND, CALIFORNIA

Monitoring Well ID	Date of Sampling	TPHg (µg/l)	B (µg/l)	T (µg/l)	E (µg/l)	X (µg/l)	TPHj (µg/l)	TPHd (µg/l)	TPHmo (µg/l)	TOG (µg/l)	TDS (mg/l)	Note
MW-3	4/25/95	7,200	150	600	100	580	38,000	<40,000	31,000	-	5,600	1
	8/11/95	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-	-[2]	1
	11/3/95	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-	-[2]	1
	6/19/96	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-	-[2]	
	10/24/96	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-	-[2]	
	1/22/97	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-	-[2]	
	4/25/97	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-	-[2]	

* Lab results reported from the highest concentrations detected in the sample or in the field duplicate sample (QC-1).

1 Data from Table 1, Results of Groundwater Sampling Analysis for Petroleum Hydrocarbons, BTEX, and TDS, Port of Oakland, Oakland International Airport, United Airlines Hangar Area-Economy Parking Lot Site, dated February 21, 1996, by Alisto Engineering Group.

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

3 Hydrocarbons present do not match profile of laboratory standard.

4 Single analyte peak(s) are present in fuel range. Fuel hydrocarbon pattern is not present.

TABLE 3

SUMMARY OF LABORATORY RESULTS FOR VOLATILE ORGANIC COMPOUNDS
TANKS MF25 AND MF26 (UNITED AIRLINES HANGAR AREA-ECONOMY PARKING LOT SITE)
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT (MOIA)
1100 AIRPORT DRIVE
OAKLAND, CALIFORNIA

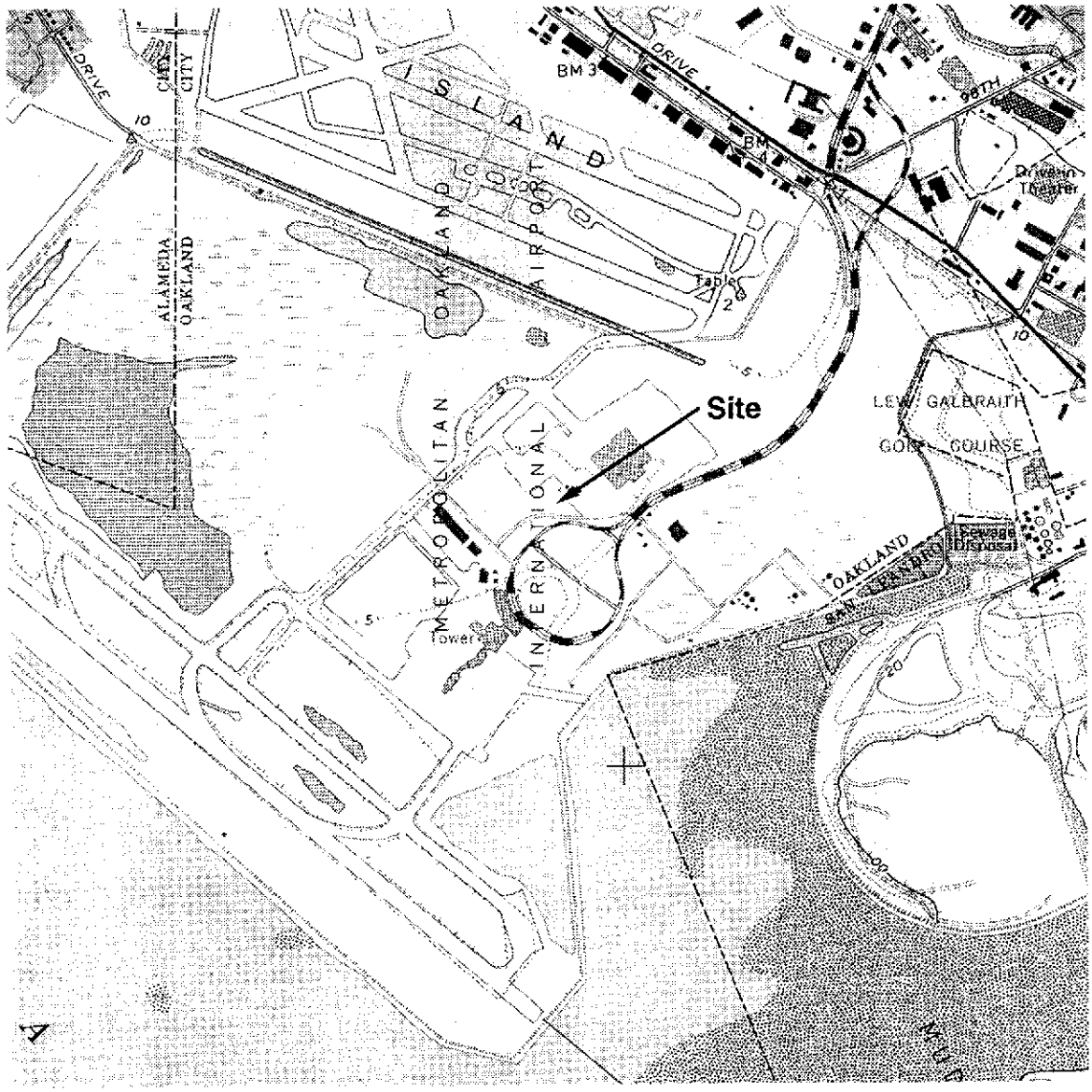
Monitoring Well ID	Date of Sampling	Acetone (µg/l)	2-Butanone (µg/l)	Chloroform (µg/l)	1,1-DCA (µg/l)	(cis/trans) 1,2-DCE (µg/l)	4-Methyl-2-Pentanone (µg/l)	1,1,1-TCA (µg/l)	TCE (µg/l)	PCE (µg/l)	Note
MW-1	11/24/92	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
	2/12/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
	5/17/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
	8/3/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
	11/25/93	ND	ND	ND	ND	6	ND	ND	ND	ND	1
	5/9/94	ND	ND	ND	ND	ND	ND	ND	ND	5.5	1
	9/27/94	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
	4/25/95	<20	<20	<5	<5	<5	<20	-	-	<5	1
	8/11/95	-	-	<0.5	4.3	13	-	2	1.8	0.6	1
	11/3/95	-	-	<0.5	1.3	3.7/<0.4	-	0.6	0.5	<0.5	1
	6/19/96	-	-	<0.5	5.4	-/<0.5	-	<0.5	1.2	<0.5	
	10/24/96	-	-	<0.5	12	-/<1.0	-	<0.5	1.4	<0.5	
	1/22/97	-	-	<0.5	3.9	8.4/<1.0	-	<0.5	1.7	<0.5	
	4/2597*	-	-	<0.5	6.2	10/<1.0	-	<0.5	<1.2	0.62	
MW-2	4/25/95	<200	200	<50	50	<50	<200	-	-	<50	1
	8/11/95	-	-	5	79	26	-	20	4	9	1
	11/3/95	-	-	<0.5	73	24/<0.4	-	4.8	6.7	6.8	1
	6/19/96	2	2	2	2	2	2	2	2	2	
	10/24/96	2	2	2	2	2	2	2	2	2	
	1/22/97	2	2	2	2	2	2	2	2	2	
	4/2597	2	2	2	2	2	2	2	2	2	
MW-3	4/25/95	300	300	-	30	<30	200	-	-	<30	1
	8/11/95	2	2	2	2	2	2	2	2	2	1
	11/3/95	2	2	2	2	2	2	2	2	2	1
	6/19/96	2	2	2	2	2	2	2	2	2	
	10/24/96	2	2	2	2	2	2	2	2	2	
	1/22/97	2	2	2	2	2	2	2	2	2	
	4/2597	2	2	2	2	2	2	2	2	2	

* Lab results reported from the highest concentrations detected in the sample or in the field duplicate sample (QC-1).

1 Data from Table 1, Results of Groundwater Sampling Analysis for Petroleum Hydrocarbons, BTEX, and TDS, Port of Oakland, Oakland International Airport, United Airlines Hangar Area-Economy Parking Lot Site, dated February 21, 1996, by Alisto Engineering Group.

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

95-113.03/F 1-SiteLoc



0 1,000 Feet 2,000 Feet

Approximate Scale

FIGURE 1

SITE LOCATION

United Airlines Hangar-Economy Parking Lot Site
Oakland International Airport
1100 Airport Drive

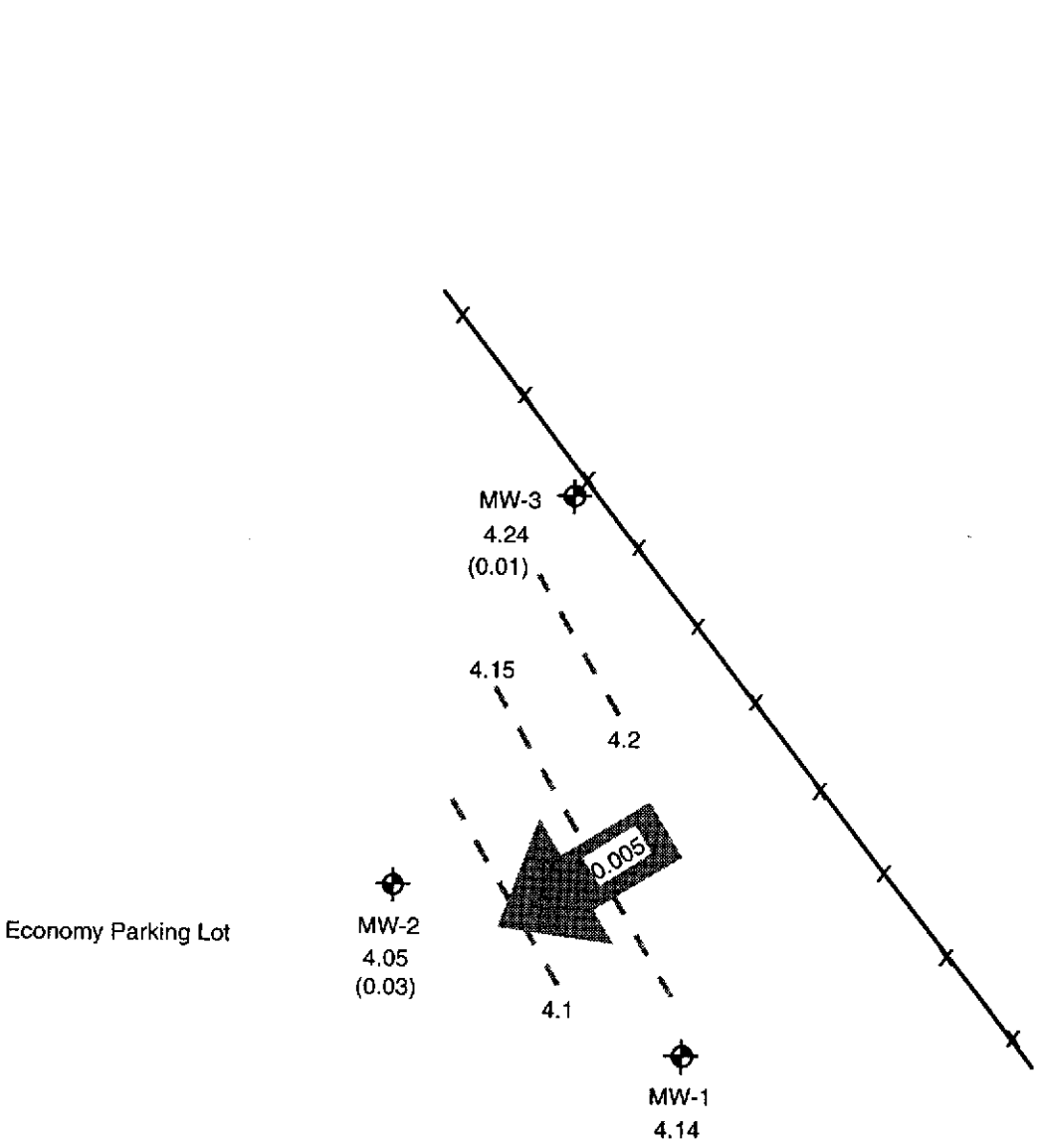
PORT OF OAKLAND

ITSI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

Source: San Leandro, California 7.5-minute U.S.G.S. Quadrangle, dated 1959, and photorevised 1980.

95-113.28/F.2-GWElev



Legend

Monitoring Well

4.24 Groundwater Elevation on 4/25/97

(0.03) Product Thickness on 4/25/97

Groundwater Elevation Contour Lines

Groundwater Flow Direction and Gradient

0 20 Feet 40 Feet

Approximate Scale

Source: Adapted from Figure 2, Potentiometric Groundwater Elevation Contour Map, November 3, 1995, Alisto Engineering Group.

FIGURE 2

GROUNDWATER ELEVATIONS AND FLOW DIRECTION FOR APRIL 25, 1997

United Airlines Hangar-Economy Parking Lot Site
Oakland International Airport
1100 Airport Drive

PORT OF OAKLAND

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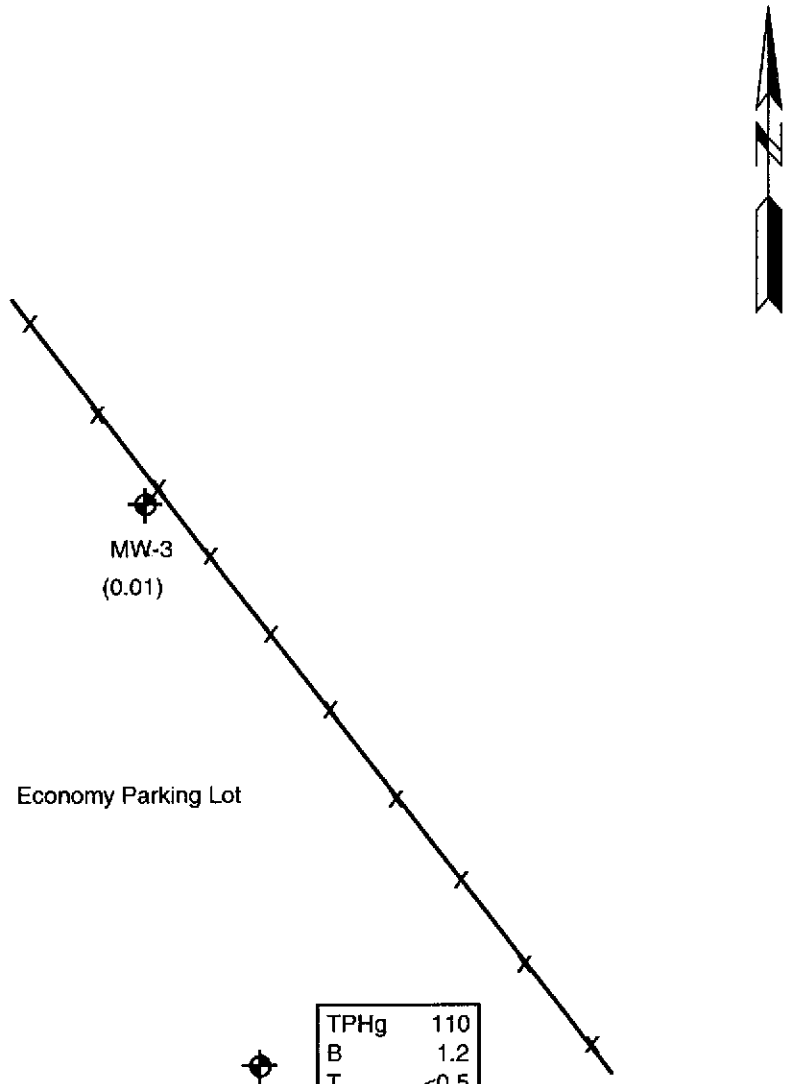
INNOVATIVE TECHNICAL SOLUTIONS, INC.

95-113.28/F.3-Conc



Legend

Monitoring Well

0.02 Product Thickness on 4/25/97

Groundwater Concentrations in µg/l on 4/25/97

TPHg	110
B	1.2
T	<0.5
E	1.0
X	1.2
TPHj	<500
TPHd	<50
TPHmo	<250
1,1-DCA	6.2
1,2-DCE	10
TCE	<1.2
PCE	0.62

TPHg - TPH as gasoline
B - Benzene
T - Toluene
E - Ethylbenzene
X - Total xylenes
TPHj - TPH as jet fuel
TPHd - TPH as diesel
TPHmo - TPH as motor oil
1,1-DCA - 1,1-Dichloroethane
1,2-DCE - cis-1,2-Dichloroethene
TCE - Trichloroethene
PCE - Perchloroethene

0 20 Feet 40 Feet

Approximate Scale

Source: Adapted from Figure 2, Potentiometric Groundwater Elevation Contour Map, November 3, 1995, Alisto Engineering Group.

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS AND VOCs IN GROUNDWATER ON APRIL 25, 1997

United Airlines Hangar-Economy Parking Lot Site
Oakland International Airport
1100 Airport Drive

PORT OF OAKLAND

ITSI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

ATTACHMENT A

COPIES OF MONITORING WELL PURGE AND SAMPLE FORMS

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: P/O - Economy Parking PROJECT NO.: 95-113.28

WELL NO.: MW-1 TESTED BY: J. Scholland DATE: 4/25/97

Measuring Point Description: notch T.O.C. Static Water Level (ft.): 2.77

Total Well Depth (ft.): 11.81 Sample Method: Disposable bailer

Water Level Measurement Method: Solinist Interface Probe Time Sampled: 1200 / QC-1 @ 1205

Purge Method: Disposable Bailer Sample Depth (ft.): > 3.0'

Time Start Purge: 1132 Field Filtering: None

Time End Purge: 1150 Field Preservation: Hg. Blue Ice

Comments: water over T.O.C., removed. Well cap broken (replaced) + lock corroded shut (replaced w/ 0895 keyed Brass lock); collected duplicate QC-1 @ 1205

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in)			=	Casing Volume (gal)
							2	4	6		1.45
	11.81	-	2.77	=	9.04	x	0.16	0.64	1.44	=	(3 vols = 4.3)

Time	1135	1146	1150				
Volume Purged (gals)	1.5	1.5	1.5				
Cumulative Volume Purged (gals)	1.5	3.0	4.5				
Cumulative Number of Casing Volumes	1.03	2.06	3.09				
Purge Rate (gpm)	0.5	NA	0.4				
Temperature (F°) or (C°)	83.7	80.6	78.6				
pH	8.06	8.12	8.10				
Specific Conductivity (µmhos/cm) X1000	9.82	8.95	8.37				
Dissolved Oxygen (mg/L)	NA	→	→				
Turbidity/Color (NTU)	light olive-grey/cloudy	→	→				
Odor	None	→	→				
Dewatered?	No	→	approaching				

CHECKED BY: _____ DATE: _____

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: P/O - Economy Parking PROJECT NO.: 95-113.28

WELL NO.: MW-2 TESTED BY: J Schollard DATE: 4/25/97

Measuring Point Description: mark/notch T.O.C. Static Water Level (ft.): DTP = 2.57 / DTW = 2.60 } 0.03

Total Well Depth (ft.): NM Sample Method: Not Sampled *

Water Level Measurement Method: Solinist Interface Probe Time Sampled: ____

Purge Method: NA Sample Depth (ft.): ____

Time Start Purge: " Field Filtering: ____

Time End Purge: " Field Preservation: ____

Comments: bentonite clay hydrated over T.O.C. (removed); brown oily residue on tip of probe, bailer subjective collected: brown oily liquid (product), collected a few mls of product from sides & interior of bailer for visual inspection.

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2: 0.16	4: 0.64	6: 1.44	=	Casing Volume (gal)

Time							
Volume Purged (gals)							
Cumulative Volume Purged (gals)							
Cumulative Number of Casing Volumes							
Purge Rate (gpm)	* Not sampled due to presence of free product						
Temperature (F°) or (C°)							
pH							
Specific Conductivity (µmhos/cm)							
Dissolved Oxygen (mg/L)							
Turbidity/Color (NTU)							
Odor							
Dewatered?							

CHECKED BY: ____ DATE: ____

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: P/O - Economy Parking PROJECT NO.: 95-113.28

WELL NO.: MW-3 TESTED BY: J. Schollard DATE: 4/25/97

Measuring Point Description: notch @ T.O.C. Static Water Level (ft.): DTP = 3.12 / DTW = 3.13 } 0.01

Total Well Depth (ft.): N.M. Sample Method: Not Sampled*

Water Level Measurement Method: Solinst Interface Probe Time Sampled: ↓

Purge Method: N.A. Sample Depth (ft.): ↓

Time Start Purge: ↓ Field Filtering: ↓

Time End Purge: ↓ Field Preservation: ↓

Comments: Bentonite clay hydrated over T.O.C. (removed); lock corroded shut (replaced w/ same brass lock); brown oily residue on tip of probe

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2: 0.16	4: 0.64	6: 1.44	=	Casing Volume (gal)

Time								
Volume Purged (gals)								
Cumulative Volume Purged (gals)								
Cumulative Number of Casing Volumes								
Purge Rate (gpm)								
Temperature (F°) or (C°)		*Not Sampled due to presence of free product						
pH								
Specific Conductivity (µmhos/cm)								
Dissolved Oxygen (mg/L)								
Turbidity/Color (NTU)								
Odor								
Dewatered?								

CHECKED BY: _____ DATE: _____

ITSI

ATTACHMENT B

COPIES OF LABORATORY REPORTS, CHROMATOGRAMS AND CHAIN-OF-CUSTODY FORM FOR GROUNDWATER SAMPLES

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Analytical

May 06, 1997

Mr. Jim Schollard
Innovative Technical Solutions
1330 Broadway, Suite 1625
Oakland, CA 94612

RE: Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Dear Mr. Schollard:

Enclosed are the results of analyses for sample(s) received on April 25, 1997. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew
Project Manager

CA ELAP Certificate Number 2059

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
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Pace Analytical

DATE: 05/06/97
PAGE: 1

Innovative Technical Solutions
1330 Broadway, Suite 1625
Oakland, CA 94612

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Attn: Mr. Jim Schollard
Phone: (510)286-8888

Pace Sample No: 70952999 Date Collected: 04/25/97 Matrix: Water
Client Sample ID: MW-1 Date Received: 04/25/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Wet Chemistry							
Total Dissolved Solids	Method: EPA 160.1						
Total Dissolved Solids	2770	mg/L	5	04/28/97	LDA		
GC -- Volatiles							
Volatile Halogenated Organics	Method: EPA 8010						
Chloromethane	ND	ug/L	0.8	04/30/97	ADS	74-87-3	
Bromomethane	ND	ug/L	3	04/30/97	ADS	74-83-9	
Vinyl Chloride	ND	ug/L	1.8	04/30/97	ADS	75-01-4	
Chloroethane	ND	ug/L	5.2	04/30/97	ADS	75-00-3	
Methylene Chloride	ND	ug/L	2.5	04/30/97	ADS	75-09-2	
Trichlorofluoromethane	ND	ug/L	5	04/30/97	ADS	75-69-4	
1,1-Dichloroethene	ND	ug/L	1.3	04/30/97	ADS	75-35-4	
1,1-Dichloroethane	4.0	ug/L	0.7	04/30/97	ADS	75-34-3	
trans-1,2-Dichloroethene	ND	ug/L	1	04/30/97	ADS	156-60-5	
Chloroform	ND	ug/L	0.5	04/30/97	ADS	67-66-3	
1,2-Dichloroethane	ND	ug/L	0.5	04/30/97	ADS	107-06-2	
1,1,1-Trichloroethane	ND	ug/L	0.5	04/30/97	ADS	71-55-6	
Carbon Tetrachloride	ND	ug/L	1.2	04/30/97	ADS	56-23-5	
Bromodichloromethane	ND	ug/L	1	04/30/97	ADS	75-27-4	
1,2-Dichloropropane	ND	ug/L	0.5	04/30/97	ADS	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	3.4	04/30/97	ADS	10061-01-5	
Trichloroethene	ND	ug/L	1.2	04/30/97	ADS	79-01-6	
Dibromochloromethane	ND	ug/L	0.9	04/30/97	ADS	124-48-1	
1,1,2-Trichloroethane	ND	ug/L	0.5	04/30/97	ADS	79-00-5	
trans-1,3-Dichloropropene	ND	ug/L	3.4	04/30/97	ADS	10061-02-6	
Bromoform	ND	ug/L	2	04/30/97	ADS	75-25-2	
Tetrachloroethene	ND	ug/L	0.5	04/30/97	ADS	127-18-4	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.5	04/30/97	ADS	79-34-5	
Chlorobenzene	ND	ug/L	0.7	04/30/97	ADS	108-90-7	
2-Chloroethyl Vinyl Ether	ND	ug/L	5	04/30/97	ADS	110-75-8	
1,2-Dichlorobenzene	ND	ug/L	1	04/30/97	ADS	95-50-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Pace Analytical

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Pace Sample No: 70952999 Date Collected: 04/25/97 Matrix: Water
Client Sample ID: MW-1 Date Received: 04/25/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
1,3-Dichlorobenzene	ND	ug/L	1	04/30/97	ADS	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1	04/30/97	ADS	106-46-7	
cis-1,2-Dichloroethene	6.4	ug/L	0.5	04/30/97	ADS	156-59-2	
Bromochloromethane (S)	114	%		04/30/97	ADS	74-97-5	
1,4-Dichlorobutane (S)	111	%		04/30/97	ADS	110-56-5	
GAS/BTEX, Water		Method: EPA 8015M/8020M					
Gasoline	110	ug/L	50	04/30/97	ADS		
Benzene	1.1	ug/L	0.5	04/30/97	ADS	71-43-2	
Toluene	ND	ug/L	0.5	04/30/97	ADS	108-88-3	
Ethylbenzene	ND	ug/L	0.5	04/30/97	ADS	100-41-4	
Xylene (Total)	ND	ug/L	1	04/30/97	ADS	1330-20-7	
a,a,a-Trifluorotoluene (S)	95	%		04/30/97	ADS	2164-17-2	
4-Bromofluorobenzene (S)	100	%		04/30/97	ADS	460-00-4	
GC -- Semi-VOA							
TPH by 8015M w/ silica gel		Method: EPA 8015M w/ SG					
Diesel Fuel	ND	mg/L	0.05	04/30/97	PAA	11-84-7	1
Motor Oil	ND	mg/L	0.25	04/30/97	PAA		
JP4	ND	mg/L	0.5	04/30/97	PAA		
n-Pentacosane (S)	88	%		04/30/97	PAA	629-99-2	
Date Extracted				04/28/97			

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Petaluma, CA 94954
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Fax: 707-792-0342

Pace Analytical

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Pace Sample No: 70953005 Date Collected: 04/25/97 Matrix: Water
Client Sample ID: QC-1 Date Received: 04/25/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC -- Volatiles							
Volatile Halogenated Organics	Method: EPA 8010						
Chloromethane	ND	ug/L	0.8	05/01/97	ADS	74-87-3	
Bromomethane	ND	ug/L	3	05/01/97	ADS	74-83-9	
Vinyl Chloride	ND	ug/L	1.8	05/01/97	ADS	75-01-4	
Chloroethane	ND	ug/L	5.2	05/01/97	ADS	75-00-3	
Methylene Chloride	ND	ug/L	2.5	05/01/97	ADS	75-09-2	
Trichlorofluoromethane	ND	ug/L	5	05/01/97	ADS	75-69-4	
1,1-Dichloroethene	ND	ug/L	1.3	05/01/97	ADS	75-35-4	
1,1-Dichloroethane	6.2	ug/L	0.7	05/01/97	ADS	75-34-3	
trans-1,2-Dichloroethene	ND	ug/L	1	05/01/97	ADS	156-60-5	
Chloroform	ND	ug/L	0.5	05/01/97	ADS	67-66-3	
1,2-Dichloroethane	ND	ug/L	0.5	05/01/97	ADS	107-06-2	
1,1,1-Trichloroethane	ND	ug/L	0.5	05/01/97	ADS	71-55-6	
Carbon Tetrachloride	ND	ug/L	1.2	05/01/97	ADS	56-23-5	
Bromodichloromethane	ND	ug/L	1	05/01/97	ADS	75-27-4	
1,2-Dichloropropane	ND	ug/L	0.5	05/01/97	ADS	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	3.4	05/01/97	ADS	10061-01-5	
Trichloroethene	ND	ug/L	1.2	05/01/97	ADS	79-01-6	
Dibromochloromethane	ND	ug/L	0.9	05/01/97	ADS	124-48-1	
1,1,2-Trichloroethane	ND	ug/L	0.5	05/01/97	ADS	79-00-5	
trans-1,3-Dichloropropene	ND	ug/L	3.4	05/01/97	ADS	10061-02-6	
Bromoform	ND	ug/L	2	05/01/97	ADS	75-25-2	
Tetrachloroethene	0.62	ug/L	0.5	05/01/97	ADS	127-18-4	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.5	05/01/97	ADS	79-34-5	
Chlorobenzene	ND	ug/L	0.7	05/01/97	ADS	108-90-7	
2-Chloroethyl Vinyl Ether	ND	ug/L	5	05/01/97	ADS	110-75-8	
1,2-Dichlorobenzene	ND	ug/L	1	05/01/97	ADS	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1	05/01/97	ADS	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1	05/01/97	ADS	106-46-7	
cis-1,2-Dichloroethene	10	ug/L	0.5	05/01/97	ADS	156-59-2	
Bromochloromethane (S)	113	%		05/01/97	ADS	74-97-5	
1,4-Dichlorobutane (S)	112	%		05/01/97	ADS	110-56-5	
GAS/BTEX, Water	Method: EPA 8015M/8020M						
Gasoline	98	ug/L	50	04/30/97	ADS		
Benzene	1.2	ug/L	0.5	04/30/97	ADS	71-43-2	
Toluene	ND	ug/L	0.5	04/30/97	ADS	108-88-3	
Ethylbenzene	1.0	ug/L	0.5	04/30/97	ADS	100-41-4	
Xylene (Total)	1.2	ug/L	1	04/30/97	ADS	1330-20-7	
a,a,a-Trifluorotoluene (S)	97	%		04/30/97	ADS	2164-17-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Analytical

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Pace Sample No: 70953005 Date Collected: 04/25/97 Matrix: Water
Client Sample ID: QC-1 Date Received: 04/25/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
4-Bromofluorobenzene (S)	101	%		04/30/97	ADS	460-00-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

PARAMETER FOOTNOTES

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
(S)	Surrogate
[1]	Single analyte peak(s) are present in fuel range. Fuel hydrocarbon pattern is not present.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
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Pace Analytical

QUALITY CONTROL DATA

Innovative Technical Solutions
1330 Broadway, Suite 1625
Oakland, CA 94612

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Attn: Mr. Jim Schollard
Phone: (510)286-8888

QC Batch ID: 23203
QC Batch Method: EPA 8015M/8020M
Analysis Method: EPA 8015M/8020M
Analysis Description: GAS/BTEX, Water
Associated Pace Samples: 70952999 70953005

METHOD BLANK: 70955943
Associated Pace Samples:
70952999 70953005

Parameter	Units	Method Blank Result	PRL	Footnotes
Gasoline	ug/L	ND	50	
Benzene	ug/L	ND	0.5	
Toluene	ug/L	ND	0.5	
Ethylbenzene	ug/L	ND	0.5	
Xylene (Total)	ug/L	ND	1	
a,a,a-Trifluorotoluene (S)	%	98		
4-Bromofluorobenzene (S)	%	96		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 70951215 70951223

Parameter	Units	70950746	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Benzene	ug/L	0.1184	100	97.85	97.7	100.1	100	2	
Toluene	ug/L	0.1466	100	97.50	97.4	99.18	99.0	2	
Ethylbenzene	ug/L	0	100	95.66	95.7	97.40	97.4	2	
Xylene (Total)	ug/L	0.3629	300	292.6	97.4	297.3	99.0	2	
a,a,a-Trifluorotoluene (S)					103		104		
4-Bromofluorobenzene (S)					108		108		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Pace Analytical

QUALITY CONTROL DATA

DATE: 05/06/97
PAGE: 7

Pace Project Number: 708214
Client Project ID: MOIA. Port of Oakland

LABORATORY CONTROL SAMPLE & LCSD: 70950852 70950860

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	LCSD Result	Spike Dup % Rec	RPD	Footnotes
Benzene	ug/L	100	100.6	101	102.0	102	1	
Toluene	ug/L	100	100.7	101	101.0	101	0	
Ethylbenzene	ug/L	100	98.56	98.6	98.92	98.9	0	
Xylene (Total)	ug/L	300	301.2	100	301.9	101	1	
a,a,a-Trifluorotoluene (S)				104		102		
4-Bromofluorobenzene (S)				109		107		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Pace Analytical

QUALITY CONTROL DATA

Innovative Technical Solutions
1330 Broadway, Suite 1625
Oakland, CA 94612

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Attn: Mr. Jim Schollard
Phone: (510)286-8888

QC Batch ID: 23284
QC Batch Method: EPA 3520
Analysis Method: EPA 8015M w/ SG
Analysis Description: TPH by 8015M w/ silica gel
Associated Pace Samples: 70952999

METHOD BLANK: 70953609
Associated Pace Samples:
70952999

Parameter	Units	Method Blank Result	PRL	Footnotes
Diesel Fuel	mg/L	ND	0.05	
Motor Oil	mg/L	ND	0.25	
JP4	mg/L	ND	0.5	
n-Pentacosane (S)	%	120		

LABORATORY CONTROL SAMPLE & LCSD: 70953617 70953625

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	LCSD Result	Spike Dup % Rec	RPD	Footnotes
Diesel Fuel	mg/L	1.0	0.5478	54.8	0.5646	56.5	3	
n-Pentacosane (S)				94		103		

REPORT OF LABORATORY ANALYSIS

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Pace Analytical

QUALITY CONTROL DATA

Innovative Technical Solutions
1330 Broadway, Suite 1625
Oakland, CA 94612

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Attn: Mr. Jim Schollard
Phone: (510)286-8888

QC Batch ID: 23309
QC Batch Method: EPA 160.1
Analysis Method: EPA 160.1
Analysis Description: Total Dissolved Solids
Associated Pace Samples: 70952999

METHOD BLANK: 70954771
Associated Pace Samples:
70952999

Parameter	Units	Method Blank Result	PRL	Footnotes
Total Dissolved Solids	mg/L	ND	5	

SAMPLE DUPLICATE: 70954789

Parameter	Units	70952718	Dup. Result	RPD	Footnotes
Total Dissolved Solids	mg/L	222.0	239.0	7	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical

QUALITY CONTROL DATA

Innovative Technical Solutions
1330 Broadway, Suite 1625
Oakland, CA 94612

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

Attn: Mr. Jim Schollard
Phone: (510)286-8888

QC Batch ID: 23337
QC Batch Method: EPA 8010
Analysis Method: EPA 8010
Analysis Description: Volatile Halogenated Organics
Associated Pace Samples: 70952999 70953005

METHOD BLANK: 70955950
Associated Pace Samples:
70952999 70953005

Parameter	Units	Method Blank Result	PRL	Footnotes
Chloromethane	ug/L	ND	0.8	
Bromomethane	ug/L	ND	3	
Vinyl Chloride	ug/L	ND	1.8	
Chloroethane	ug/L	ND	5.2	
Methylene Chloride	ug/L	ND	2.5	
Trichlorofluoromethane	ug/L	ND	5	
1,1-Dichloroethene	ug/L	ND	1.3	
1,1-Dichloroethane	ug/L	ND	0.7	
trans-1,2-Dichloroethene	ug/L	ND	1	
Chloroform	ug/L	ND	0.5	
1,2-Dichloroethane	ug/L	ND	0.5	
1,1,1-Trichloroethane	ug/L	ND	0.5	
Carbon Tetrachloride	ug/L	ND	1.2	
Bromodichloromethane	ug/L	ND	1	
1,2-Dichloropropane	ug/L	ND	0.5	
cis-1,3-Dichloropropene	ug/L	ND	3.4	
Trichloroethene	ug/L	ND	1.2	
Dibromochloromethane	ug/L	ND	0.9	
1,1,2-Trichloroethane	ug/L	ND	0.5	
trans-1,3-Dichloropropene	ug/L	ND	3.4	
Bromoform	ug/L	ND	2	
Tetrachloroethene	ug/L	ND	0.5	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.5	
Chlorobenzene	ug/L	ND	0.7	
2-Chloroethyl Vinyl Ether	ug/L	ND	5	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical

QUALITY CONTROL DATA

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

METHOD BLANK: 70955950
Associated Pace Samples:
70952999 70953005

Parameter	Units	Method Blank Result	PRL	Footnotes
1,2-Dichlorobenzene	ug/L	ND	1	
1,3-Dichlorobenzene	ug/L	ND	1	
1,4-Dichlorobenzene	ug/L	ND	1	
cis-1,2-Dichloroethene	ug/L	ND	0.5	
Bromochloromethane (S)	%	107		
1,4-Dichlorobutane (S)	%	111		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 70955968 70955976

Parameter	Units	70952379	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Chloromethane	ug/L	0	20	7.760	38.8	7.648	38.2	2	
Bromomethane	ug/L	0	20	18.98	94.9	20.17	101	6	
Vinyl Chloride	ug/L	0	20	15.23	76.2	15.34	76.7	1	
Chloroethane	ug/L	0	20	18.67	93.4	18.52	92.6	1	
Methylene Chloride	ug/L	0.1414	20	17.94	89.0	17.48	86.7	3	
Trichlorofluoromethane	ug/L	0	20	18.64	93.2	19.22	96.1	3	
1,1-Dichloroethene	ug/L	2.625	20	19.92	86.5	20.19	87.8	1	
1,1-Dichloroethane	ug/L	0.1819	20	18.90	93.6	18.57	91.9	2	
trans-1,2-Dichloroethene	ug/L	0	20	18.28	91.4	17.97	89.9	2	
Chloroform	ug/L	0	20	18.17	90.9	18.34	91.7	1	
1,2-Dichloroethane	ug/L	0.1242	20	18.72	93.0	19.65	97.6	5	
1,1,1-Trichloroethane	ug/L	21.47	20	30.31	44.2	30.36	44.5	1	1
Carbon Tetrachloride	ug/L	0	20	18.93	94.7	18.84	94.2	1	
Bromodichloromethane	ug/L	0	20	19.19	96.0	19.24	96.2	0	
1,2-Dichloropropane	ug/L	0	20	18.91	94.6	19.13	95.7	1	
cis-1,3-Dichloropropene	ug/L	0	20	18.31	91.6	19.29	96.5	5	
Trichloroethene	ug/L	0	20	18.52	92.6	18.02	90.1	3	
Dibromochloromethane	ug/L	0	20	19.74	98.7	19.70	98.5	0	
1,1,2-Trichloroethane	ug/L	0	20	18.43	92.2	18.87	94.4	2	
trans-1,3-Dichloropropene	ug/L	0	20	18.51	92.6	18.51	92.6	0	
Bromoform	ug/L	0	20	20.00	100	20.22	101	1	
Tetrachloroethene	ug/L	0	20	18.16	90.8	18.84	94.2	4	
1,1,2,2-Tetrachloroethane	ug/L	0	20	16.73	83.7	18.57	92.9	10	
Chlorobenzene	ug/L	0	20	17.79	89.0	18.56	92.8	4	
1,2-Dichlorobenzene	ug/L	0	20	18.43	92.2	19.50	97.5	6	
1,3-Dichlorobenzene	ug/L	0	20	18.64	93.2	19.24	96.2	3	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical

QUALITY CONTROL DATA

Pace Project Number: 708214
Client Project ID: MOIA, Port of Oakland

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 70955968 70955976

Parameter	Units	70952379	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
1,4-Dichlorobenzene	ug/L	0.2382	20	18.76	92.6	19.34	95.5	3	
cis-1,2-Dichloroethene	ug/L	0	20	18.41	92.1	18.48	92.4	0	
Bromochloromethane (S)					99		100		
1,4-Dichlorobutane (S)					94		95		

LABORATORY CONTROL SAMPLE & LCSD: 70955984 70955992

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	LCSD Result	Spike Dup % Rec	RPD	Footnotes
Chloromethane	ug/L	20	16.56	82.8	11.48	57.4	36	2
Bromomethane	ug/L	20	21.30	107	20.29	101	6	
Vinyl Chloride	ug/L	20	17.68	88.4	16.82	84.1	5	
Chloroethane	ug/L	20	20.07	100	19.54	97.7	2	
Methylene Chloride	ug/L	20	20.30	102	19.27	96.4	6	
Trichlorofluoromethane	ug/L	20	20.88	104	19.76	98.8	5	
1,1-Dichloroethene	ug/L	20	21.03	105	20.61	103	2	
1,1-Dichloroethane	ug/L	20	20.39	102	20.79	104	2	
trans-1,2-Dichloroethene	ug/L	20	20.02	100	20.35	102	2	
Chloroform	ug/L	20	19.95	99.8	20.25	101	1	
1,2-Dichloroethane	ug/L	20	20.01	100	20.39	102	2	
1,1,1-Trichloroethane	ug/L	20	20.59	103	20.37	102	1	
Carbon Tetrachloride	ug/L	20	20.30	102	20.58	103	1	
Bromodichloromethane	ug/L	20	20.09	100	20.27	101	1	
1,2-Dichloropropane	ug/L	20	20.13	101	20.46	102	1	
cis-1,3-Dichloropropene	ug/L	20	20.31	102	20.74	104	2	
Trichloroethene	ug/L	20	20.59	103	20.23	101	2	
Dibromochloromethane	ug/L	20	19.81	99.1	19.92	99.6	1	
1,1,2-Trichloroethane	ug/L	20	20.84	104	20.49	102	2	
trans-1,3-Dichloropropene	ug/L	20	20.85	104	20.51	103	1	
Bromoform	ug/L	20	19.89	99.5	20.04	100	1	
Tetrachloroethene	ug/L	20	20.38	102	20.69	103	1	
1,1,2,2-Tetrachloroethane	ug/L	20	16.63	83.2	19.50	97.5	16	2
Chlorobenzene	ug/L	20	20.24	101	20.66	103	2	
1,2-Dichlorobenzene	ug/L	20	21.23	106	18.97	94.9	11	
1,3-Dichlorobenzene	ug/L	20	21.02	105	19.63	98.2	7	
1,4-Dichlorobenzene	ug/L	20	20.82	104	19.28	96.4	8	
cis-1,2-Dichloroethene	ug/L	20	20.71	104	20.49	102	2	
Bromochloromethane (S)				105		103		
1,4-Dichlorobutane (S)				105		101		

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QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
RPD	Relative Percent Difference
(S)	Surrogate
[1]	The spike recovery was outside acceptance limits for the MS and /or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
[2]	RPD value was outside of control limits, however % Recoveries were acceptable. Samples for QC batch accepted base on % recoveries and completeness of QC data.

REPORT OF LABORATORY ANALYSIS