GROUNDWATER MONITORING AND PRODUCT RECOVERY PROGRESS REPORT

ARAMARK UNIFORM SERVICES, INC.
330 CHESTNUT STREET
OAKLAND, CALIFORNIA

3-96

PREPARED FOR

ARAMARK UNIFORM SERVICES, INC.
SCHAUMBURG, ILLINOIS

PREPARED BY

RMT, INC.
MARINA DEL REY, CA

MARCH 1996

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Section 1
INTRODUCTION

1.1 Former Diesel Fuel UST Area

ARAMARK Uniform Services, Inc., (ARAMARK) owns and operates an industrial laundry facility located at 330 Chestnut Street in Oakland, California. A 2,000-gallon underground diesel fuel storage tank was formerly maintained at this facility to supply fuel for the operation of a boiler. The diesel fuel storage tank was removed from the facility in December 1988 and a tank closure documentation report was submitted to the Alameda County Environmental Health Department (ACEHD). Based on the information presented in the tank documentation report, the ACEHD requested that ARAMARK conduct post-closure sampling activities to determine whether the soil and groundwater surrounding the underground storage tank had been impacted by petroleum hydrocarbons.

Remedial investigation activities were conducted by RMT from March 1989, through November 1992, and included the advancement of soil borings and four groundwater monitoring wells (RAO-1 through RAO-4) in the vicinity of the former excavation area. The results of chemical analyses performed on groundwater samples collected from monitoring wells RAO-1 and RAO-2 identified the presence of total petroleum hydrocarbons (TPH) and benzene, toluene, and xylenes (BTX) and free-product was consistently observed in the groundwater monitoring well located within the former underground storage tank excavation (RAO-3). Because the results of the sampling activities indicated that the extent of petroleum hydrocarbon contamination was limited to the former tank excavation, a product recovery canister was installed in December 1992. To date, the product recovery system has recovered approximately 6,877-mL of free-product, however, the quantity of product recovered each sampling interval has significantly decreased. In addition, with the exception of the chemical analyses performed on groundwater samples collected during February 1995, the presence of TPH or BTX has not been identified in any groundwater sample collected since May 1993.

1.2 Former Diesel Fuel Dispenser and Mop Oil UST Area

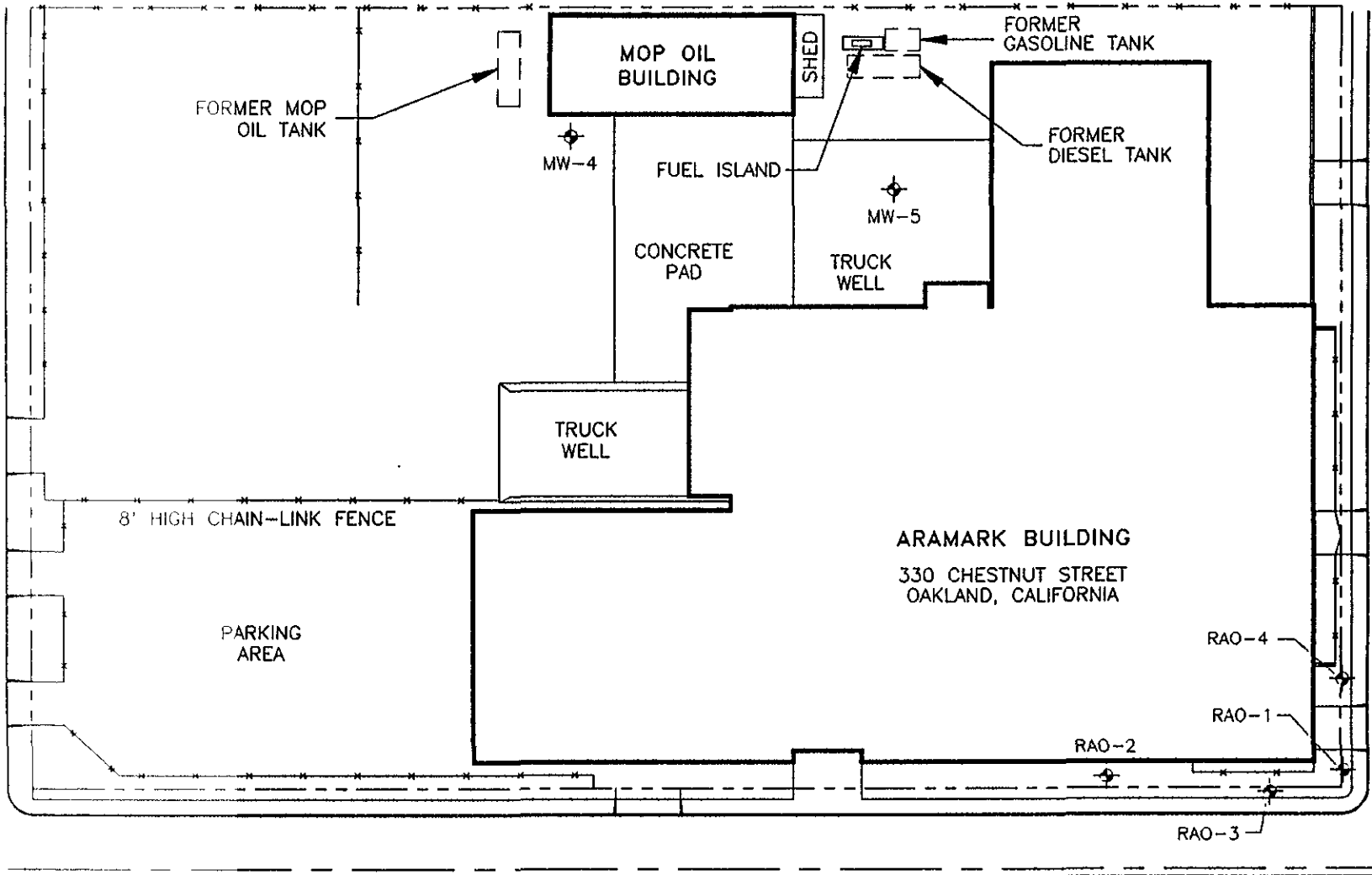
Two single walled, steel, underground petroleum hydrocarbon storage tanks were maintained at this facility to supply fuel for the delivery vehicles. In addition, an underground mop oil storage tank was also maintained at the facility. RMT, Inc. (RMT), was retained by ARAMARK to document the removal and disposal of the underground storage tanks and perform soil sampling as required by the ACEHD. Tank removal activities were conducted during the period of September 1993 through January 1994. The results of the chemical analyses performed on the soil samples collected from the floor of the former diesel fuel dispenser vault excavations, the former mop oil tank excavation, and in the vicinity of the eastern section of the loading dock identified the presence of petroleum hydrocarbons.

In response to the request from the ACEHD, ARAMARK engaged the services of RMT, Inc., to conduct soil and groundwater sampling activities in the vicinity of the former diesel fuel dispenser vaults and mop oil tank. Field activities were conducted on May 5, 1995 and included the advancement of two soil borings and the installation of two groundwater monitoring wells; MW-4 located in the vicinity of the former underground mop oil storage tank and MW-5 located in the vicinity of the former diesel fuel dispenser vaults (See Figure 1). The results of the chemical analyses performed on soil samples collected from soil borings located in the vicinity of the former mop oil and diesel fuel underground storage tanks did not identify the presence of petroleum hydrocarbons. In addition, although the results of the chemical analyses performed on groundwater samples collected from the newly installed monitoring wells identified the presence of total petroleum hydrocarbons, TPH-MS and TPH-D concentrations are generally less than 1-mg/L. A site plan showing the location of the former diesel fuel tanks and the mop oil tank is presented in Figure 1.

1.3 Purpose and Scope

The purpose of this report is to summarize the results of the groundwater monitoring activities conducted on February 1, 1996, at the ARAMARK facility. The scope of work conducted during the groundwater investigation included the following:

- The purging and sampling of three groundwater monitoring wells,
- The sampling of product recovery well RAO-3 in accordance with ACEHD letter dated November 6, 1995, and
- The chemical analyses of groundwater samples for the presence of BTEX and TPH-D, TPH-K, and TPH-SS using EPA SW-846 Method 8020 and EPA SW-846 Method 8015M, respectively.



LEGEND:

MW-5 GROUNDWATER MONITORING WELL

0 60 120

APPROXIMATE SCALE IN FEET

PROJECT: ARAMARK UNIFORM SERVICES OAKLAND, CALIFORNIA

SHEET TITLE: SITE PLAN

DRAWN BY: CRB	SCALE: 1" = 60'-0"	PROJ. NO. 12013.11
CHECKED BY:		FILE NO. 1102
APPROVED BY:	DATE PRINTED:	FIGURE 1
DATE: MAY 1995		

RMT Inc. - Los Angeles
Phone: 310/578-1241
4640 Admiralty Way
Suite 301
Marina Del Rey, CA 90292

Section 2
GROUNDWATER MONITORING ACTIVITIES

Groundwater sampling activities were conducted on February 1, 1996, and included obtaining static water level measurements and groundwater samples from monitoring wells RAO-1, MW-4, and MW-5. Groundwater samples were also collected from product recovery well RAO-3.

2.1 Static Water Level Measurements

Prior to collecting groundwater samples, the depth to groundwater was measured in each monitoring well using an electronic water level indicator. Three rounds of groundwater heights were taken to assess any variability in measurement.

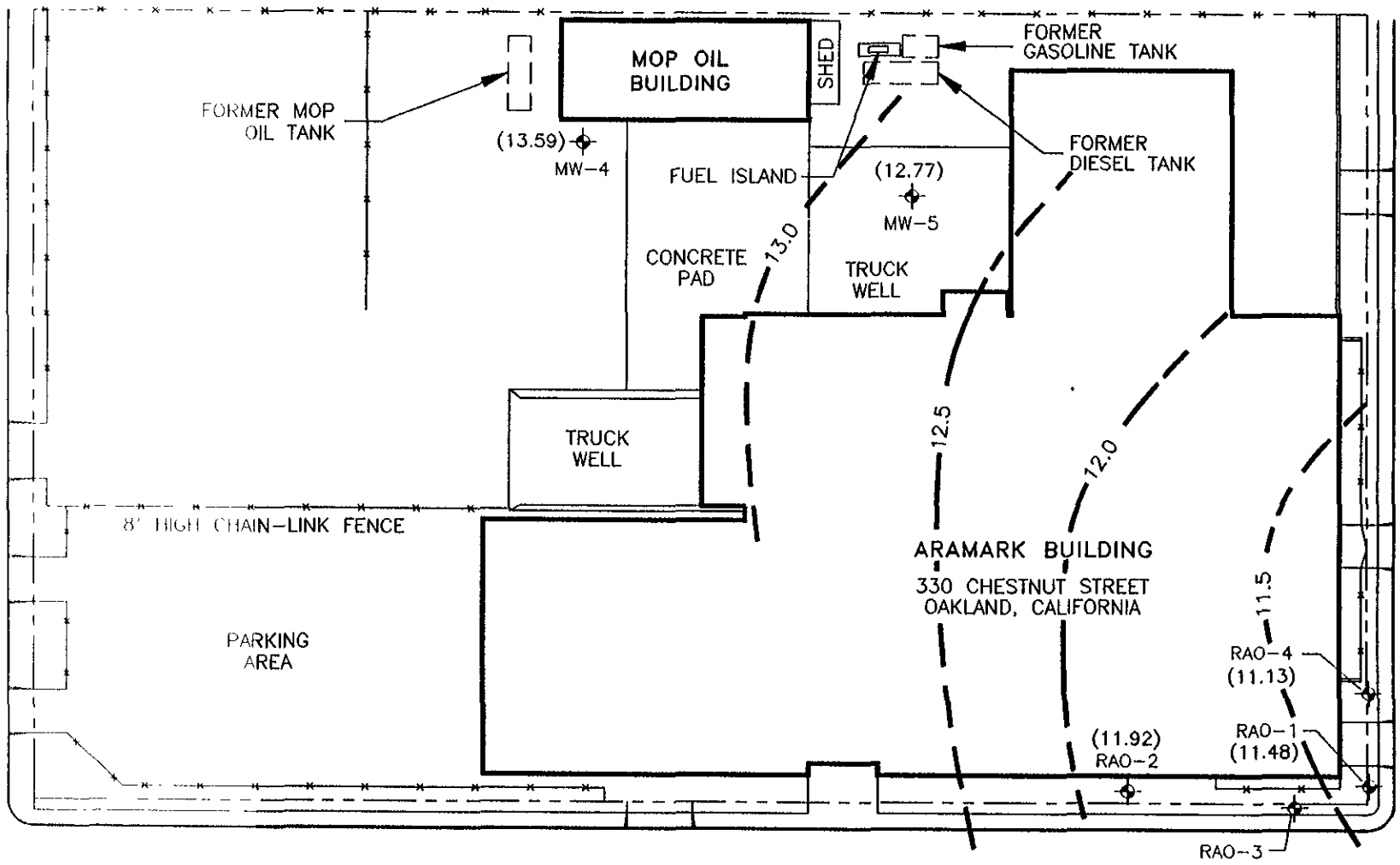
2.2 Groundwater Sample Collection

Groundwater samples were collected from monitoring wells RAO-1, MW-4, and MW-5, and from product recovery well RAO-3. Prior to sampling, each monitoring well was purged using a bailer. A minimum of three well casing volumes (casing and sand pack volume) were extracted from each well before collecting groundwater samples. The temperature, pH, and conductivity of the extracted groundwater was measured and recorded at least once per well casing volume. The well casing volume was determined by measuring and recording the static water level and calculating the well volume. The purging bailer was decontaminated between each sampling event by rinsing with tap water to remove particulates, washing with a tri-sodium phosphate solution, and rinsing with deionized water.

After each monitoring well had recharged to within 80 percent of its pre-purge volume (approximately 15-min) groundwater samples were collected utilizing a disposable Teflon bailer equipped with a teflon stopcock, and dispensed directly into 40-mL borosilicate vials with teflon septa and screw caps. All samples were preserved using hydrochloric acid and stored on ice pending transport to a commercial independent California-certified laboratory according to USEPA protocol, including chain-of-custody procedures. Groundwater sample collection data are presented in Appendix A.

2.3 Groundwater Flow

Static water level measurements obtained on February 1, 1996, are summarized in Table 1 and the water table map generated from the water level data is presented in Figure 2. The groundwater flow direction is southeast with a gradient of approximately 0.01-ft/ft.



LEGEND:

MW-5 — GROUNDWATER MONITORING WELL

11.50 — LINE OF EQUAL GROUNDWATER IN FEET ABOVE MEAN SEA-LEVEL DASHED WHERE INFERRED

(12.77) — GROUNDWATER ELEVATION (IN FEET ABOVE MSL)

0 60 120

APPROXIMATE SCALE IN FEET

PROJECT:
ARAMARK UNIFORM SERVICES
OAKLAND, CALIFORNIA

SHEET TITLE:
WATER TABLE MAP - FEBRUARY 1, 1996

DRAWN BY: CRB	SCALE: 1" = 60'-0"	PROJ. NO. 12013.11
CHECKED BY:		FILE NO. 1102
APPROVED BY:	DATE PRINTED:	FIGURE 2
DATE: MAY 1995		

RMT Inc. – Los Angeles
Phone: 310/578-1241
4640 Admiralty Way
Suite 301
Marina Del Rey, CA 90292

Table 1

Static Water Level Measurement

Monitoring Well Location	TOC Elevation (ft above MSL)	Depth to Water (ft below TOC)	Groundwater Elevation (ft above MSL)
RAO-1	19.08	7.60	11.48
RAO-2	19.57	7.65	11.92
RAO-4	19.30	8.17	11.13
MW-4	22.69	9.10	13.59
MW-5	21.09	8.32	12.77

2.4 Chemical Analyses of Groundwater

Groundwater samples collected from monitoring well RAO-1 and product recovery well RAO-3 were analyzed for the presence of BTEX and TPH-D using EPA SW-846 Method 8020 and Method 8015M, respectively. Groundwater samples collected from monitoring wells MW-4 and MW-5 were analyzed for the presence of BTEX and TPH-D, TPH-K, and TPH-SS using EPA SW-846 Method 8020 and Method 8015M, respectively. The results of the laboratory analyses identified the presence of total petroleum hydrocarbons (TPH-D) in groundwater monitoring well RAO-1 and (TPH-SS) in groundwater monitoring well MW-5. However, it should be noted that the chromatograph generated for groundwater samples from RAO-1 and MW-5 did not resemble the hydrocarbon standards. In addition, although the presence of free product was identified in product recovery well (RAO-3), in accordance with the ACEHD letter dated November 6, 1995, groundwater samples were also collected from the RAO-3. As expected, the results of the chemical analyses performed on groundwater samples collected from the product recovery well identified the presence of significant concentrations of TPH-D (1,700,000-µg/L) and benzene (16-µg/L). The results of the laboratory analyses are summarized in Table 2 (diesel fuel UST Area) and Table 3 (former diesel fuel dispenser and mop oil UST area) and a copy of the laboratory report is included in Appendix B. All laboratory analyses were conducted by Curtis & Tompkins, Ltd., of Berkeley, California.

Table 2

Chemical Analyses of Groundwater (Former Diesel Fuel UST Area)

Sample Location	Sampling Date	Parameter (ug/L)				
		Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D
RAO-1	02-01-96	<0.5	<0.5	<0.5	<0.5	820[a]
	08-02-95	<0.5	<0.5	<0.5	<0.5	<50
	05-05-95	<0.5	<0.5	<0.5	<0.5	<50
	02-03-95	<0.5	<0.5	<0.5	<0.5	560
	11-18-94	<1.0	<1.0	<1.0	<1.0	<50
	08-12-94	<1.0	<1.0	<1.0	<1.0	<50
	04-28-94	<1.0	<1.0	<1.0	<1.0	<50
	01-29-94	<1.0	<1.0	<1.0	<1.0	<50
	11-11-93	<0.5	<0.5	<0.5	<0.5	<50
	08-02-93	<0.3	<0.3	<0.3	<0.5	<10
	05-11-93	0.4	0.5	<0.3	1.0	<10
RAO-2	11-14-95	<0.5	<0.5	<0.5	<0.5	870
	08-02-95	<0.5	<0.5	<0.5	<0.5	<50
	05-05-95	<0.5	<0.5	<0.5	<0.5	<50
	02-03-95	<0.5	<0.5	<0.5	<0.5	<50
	11-18-94	<1.0	<1.0	<1.0	<1.0	<50
	08-12-94	<1.0	<1.0	<1.0	<1.0	<50
	04-28-94	<1.0	<1.0	<1.0	<1.0	<50
	01-29-94	<1.0	<1.0	<1.0	<1.0	<50
	11-11-93	<0.5	<0.5	<0.5	<0.5	<50
	08-02-93	<0.3	<0.3	<0.3	<0.5	<10
	05-11-93	0.4	1.0	<0.3	1.0	56
RAO-3	02-01-96	16	<0.5	55	<0.5	1,700,000
RAO-4	11-14-95	<0.5	<0.5	<0.5	<0.5	800
	08-02-95	<0.5	<0.5	<0.5	<0.5	< <50
	05-05-95	<0.5	<0.5	<0.5	<0.5	<50
	02-03-95	<0.5	<0.5	<0.5	<0.5	<50
	11-18-94	<1.0	<1.0	<1.0	<1.0	<50
	08-12-94	<1.0	<1.0	<1.0	<1.0	<50
	04-28-94	<1.0	<1.0	<1.0	<1.0	<50
	01-29-94	<1.0	<1.0	<1.0	<1.0	<50
	11-11-93	<0.5	<0.5	<0.5	<0.5	<50
	08-02-93	<0.3	<0.3	<0.3	<0.5	<10
	05-11-93	<0.3	<0.3	<0.3	<0.5	<10

a Laboratory report indicates that the results of the chemical analyses do not resemble the diesel hydrocarbon standard.

Table 3

Chemical Analyses of Groundwater (Former Dispenser and Mop Oil UST Area)

Sample Location	Sampling Date	Parameter (ug/L)						
		Benzene	Toluene	Ethylbenzene	Xylenes	TPH-SS	TPH-K	TPH-D
MW-4	02-01-96	<0.5	<0.5	<0.5	<0.5	<500	<500	<500
	11-14-95	<0.5	<0.5	<0.5	<0.5	--	--	1,100
	08-02-95	ND	ND	ND	ND	--	--	180
	05-05-95	--	--	--	--	--	--	500
MW-5	02-01-96	<0.5	<0.5	<0.5	<0.5	840[a]	<500	<500
	11-14-95	<0.5	<0.5	<0.5	<0.5	--	--	2,100
	08-02-95	<0.5	<0.5	<0.5	<0.5	--	--	380
	05-05-95	<0.5	<0.5	<0.5	<0.5	--	--	1,100

a Laboratory report indicates that the results of the chemical analyses do not resemble the stoddard hydrocarbon standard.

2.5 Disposal of Purged Groundwater

Groundwater extracted during monitoring well purging activities was contained in 55-gal DOT-approved drums, labeled with the date, generator's name, site location, source, and stored on-site pending off-site disposal.

Section 3

PRODUCT RECOVERY ACTIVITIES

In December 1992, a product recovery system, consisting of a removable canister (a buoy sheathed by a semi-permeable hydrophobic membrane atop a product storage sump) was installed in monitoring well RAO-3 located in the vicinity of the former diesel fuel UST excavation. During the period from December 1992 through May 1995, approximately 6,202-mL of free-product was recovered, however, product recovery activities conducted during the period from June 1995 through October 1995 did not result in the recovery of any additional free product. Based on these findings, in November 1995, the ACEHD requested that ARAMARK collect groundwater samples from the product recovery well to determine the groundwater quality in the vicinity of the former diesel fuel UST excavation, however, it was agreed that the sampling activities would be postponed until the residual petroleum hydrocarbon buildup on the well screen and in the surrounding sand pack could be remediated. With ACEHD approval, RMT added approximately 15-gallons of a dilute solution (5%) of hydrogen peroxide (H_2O_2) to product recovery RAO-3 on a monthly basis during the period between November 1995 and January 1996 to help remove the residual petroleum hydrocarbons present within the well packing.

Although unanticipated (i.e., product recovery activities conducted during the last 7-months did not result in the recovery of any free product), product recovery activities conducted during the quarterly groundwater sampling activities conducted in February 1996 resulted in the recovery of approximately 400-mL of free-product. The results of the February 1996 product recovery activities are most likely due to an elevated groundwater table saturating previously unsaturated TPH-impacted zones (e.g., the groundwater surface has risen approximately 1 to 2-ft during the last three months) and the fact that residual petroleum hydrocarbons present in the product recovery well screen and well packing have been substantially remediated (e.g., the residual product most likely partially clogged the well screen and sand packing and may have limited free product recovery). A summary of the product recovery operations is presented in Appendix D.

APPENDIX A

GROUNDWATER SAMPLE COLLECTION DATA

GROUNDWATER SAMPLING INFORMATION

Project Name:	ARAMARK – OAKLAND
Project Number:	
Sampling Date:	02/01/96

Monitoring Well Location	Purge Number	Purge Volume (gal)	Temp (°C)	pH	Turbidity (NTU)	DTW (ft-bgs)	Cond (µS/cm)
MW-5	1	1	14.9	7.1	390	8.32	2.38
	2						
	3	Dry @ 3-gal.					
MW-4	1	1	15.2	7.3	58.1	9.10	1.79
	2						
	3	Dry @ 1-gal.					
RAO-1	1	1	15.0	7.1	27.22	7.60	1.48
	2						
	3	Dry @ 2-gal.					
RAO-3	1	FREE	PRODUCT	ENCOUNTERED			
	2						
	3						
RAO-4	1					8.17	
	2						
	3						
RAO-2	1					7.65	
	2						
	3						

APPENDIX B

LABORATORY REPORT

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

RMT, Inc.
4640 Admiralty Way
Suite 301
Marina Del Rey, CA 90292

Date: 09-FEB-96
Lab Job Number: 124288
Project ID: N/A
Location: Aramark-Oakland

Reviewed by: _____

Reviewed by: _____

LABORATORY NUMBER: 124288
CLIENT: RMT, INC.
LOCATION: ARAMARK-OAKLAND

DATE SAMPLED: 02/01/96
DATE RECEIVED: 02/01/96
DATE EXTRACTED: 02/01/96
DATE ANALYZED: 02/07-09/96
DATE REPORTED: 02/09/96
BATCH NO: 25709

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	STODDARD RANGE (ug/L)	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)
124288-001	MW-4	ND(500)	ND(500)	ND(500)
124288-002	MW-5	840*	**	***
124288-003	RAO-1	NR	NR	820*
124288-004	RAO-3	NR	NR	1,700,000
METHOD BLANK		ND(500)	ND(500)	ND(500)

NR = Not requested.

ND = Not detected at or above reporting limit. Reporting limit applies to all analytes.

* Sample chromatogram does not resemble hydrocarbon standard.
** Kerosene range not reported due to overlap of hydrocarbon ranges.
*** Diesel range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY: BS/BSD

RPD, %	7
RECOVERY, %	98

BTXE

Client: RMT, Inc.
Location: Aramark-Oakland

Analysis Method: EPA 8020
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
124288-001	MW-4	25789	02/01/96	02/07/96	02/07/96	
124288-002	MW-5	25789	02/01/96	02/07/96	02/07/96	
124288-003	RAO-1	25789	02/01/96	02/07/96	02/07/96	
124288-004	RAO-3	25789	02/01/96	02/07/96	02/07/96	

Analyte Diln Fac:	Units	124288-001 1	124288-002 1	124288-003 1	124288-004 1
Benzene	ug/L	<0.5	<0.5	<0.5	16
Toluene	ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	ug/L	<0.5	<0.5	<0.5	55
m,p-Xylenes	ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	ug/L	<0.5	<0.5	<0.5	<0.5
Surrogate					
Trifluorotoluene	%REC	99	74	101	100
Bromobenzene	%REC	102	75	106	114

BTXE

Client: RMT, Inc.
Location: Aramark-Oakland

Analysis Method: EPA 8020
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
124288-005	BLANK	25789	02/01/96	02/07/96	02/07/96	

Analyte	Units	124288-005
Diln Fac:		1
Benzene	ug/L	<0.5
Toluene	ug/L	<0.5
Ethylbenzene	ug/L	<0.5
m,p-Xylenes	ug/L	<0.5
o-Xylene	ug/L	<0.5
Surrogate		
Trifluorotoluene	%REC	98
Bromobenzene	%REC	97

Curtis & Tompkins, Ltd.

Lab #: 124288 BATCH QC REPORT

BTXE	
Client: RMT, Inc.	Analysis Method: EPA 8020
Location: Aramark-Oakland	Prep Method: EPA 5030
METHOD BLANK	
Matrix: Water	Prep Date: 02/07/96
Batch#: 25789	Analysis Date: 02/07/96
Units: ug/L	
Diln Fac: 1	

MB Lab ID: QC14591

Analyte	Result
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
m,p-Xylenes	<0.5
o-Xylene	<0.5

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	101	58-130
Bromobenzene	100	62-131

Lab #: 124288 BATCH QC REPORT

BTXE

Client: RMT, Inc.
Location: Aramark-Oakland

Analysis Method: EPA 8020
Prep Method: EPA 5030

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water
Batch#: 25789
Units: ug/L
Diln Fac: 1

Prep Date: 02/07/96
Analysis Date: 02/07/96

BS Lab ID: QC14592

Analyte	Spike Added	BS	%Rec #	Limits
Benzene	20	18.6	93	80-120
Toluene	20	20.7	104	80-120
Ethylbenzene	20	20.9	105	80-120
m,p-Xylenes	40	41.6	104	80-120
o-Xylene	20	21.7	109	80-120

Surrogate	%Rec	Limits
Trifluorotoluene	101	58-130
Bromobenzene	106	62-131

BSD Lab ID: QC14593

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Benzene	20	18.5	93	80-120	1	<20
Toluene	20	20	100	80-120	3	<20
Ethylbenzene	20	20.7	104	80-120	1	<20
m,p-Xylenes	40	40.7	102	80-120	2	<20
o-Xylene	20	21.6	108	80-120	1	<20

Surrogate	%Rec	Limits
Trifluorotoluene	100	58-130
Bromobenzene	106	62-131

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

RMT INC. LABORATORIES 12420

Madison, WI 53717
744 Heartland Trail
Phone (608) 831-4444
FAX (608) 831-7530

Fox Valley, WI · Columbus, OH · Milwaukee, WI · Nashville, TN · Greenville, SC · Augusta, GA · Lansing, MI · Chicago, IL · Los Angeles, CA · Cincinnati, OH · Madison, WI

F-268 (R2/92)
(Use Black Ink Only)

CHAIN OF CUSTODY RECORD

№ 051582

Bottles Prepared by | Date/Time 2/1/96

Project No | Client: Mmink-Oakland

Container Inventory: S7000 AIO / DIESEL / KEROSENE; VTEX; DIOSD only / per ...

Filtered (Yes/No)
Preserved (Code)

Code: A - None, B - HNO3, C - H_2SO_4, D - NaOH, E - HCl, F - ____

Lab No	Yr / Date	Time	Sample Station ID	Total Number Of Containers								MATRIX	Comments:
1	/		MW-4	4	/	/						WATER	
2			MW-5	4	/	/							
3			MW-1	4	///	/	/						
4			MW-3	4	///	/	/						
5	/		BLANK	2		/						↓	

SAMPLER
Relinquished by (Sig.) ① [signature] | Date/Time 2/1/96 2:00 pm | Received by (Sig.) ② Shipper Name & # [signature] | Date/Time 2/1/96 2:20

Relinquished by (Sig.) ③ | Date/Time | Received by (Sig.) ④ Shipper Name & # | Date/Time

Relinquished by (Sig.) ⑤ | Date/Time | Received by (Sig.) ⑥ Shipper Name & # | Date/Time

HAZARDS ASSOCIATED WITH SAMPLES

(For Lab Use Only)
Receipt Temp 4°C
Receipt pH

Custody Seal Present/Absent | Seal Intact/Not Intact | Seal #'s

WHITE - LABORATORY COPY YELLOW - REPORT APPENDIX PINK - SAMPLER/SUBMITTER

APPENDIX C

PRODUCT RECOVERY OBSERVATIONS

Product Recovery Observations

Sampling Date	Volume of Product Removed (mL)	Volume of Water Removed (mL)	Depth to Product (ft-bgs)	Depth to Water (ft-bgs)	Thickness of Product (ft)
12-03-92	0	20	8.65	8.67	0.02
12-04-92	0	0	8.61	8.63	0.02
12-08-92	18	0	8.52	8.52	0.00
12-09-92	10	0	8.24	8.24	0.00
12-10-92	0	3	8.02	8.02	0.00
12-14-92	30	200	8.28	8.29	0.01
12-15-92	0	0	8.32	8.32	0.00
12-16-92	0	0	8.52	8.52	0.00
12-18-92	18	0	8.63	8.66	0.03
12-21-92	10	0	8.39	8.42	0.03
12-22-92	20	30	8.56	8.58	0.02
12-23-92	18	0	8.35	8.37	0.02
12-24-92	22	0	8.42	8.53	0.11
12-28-92	15	0	8.53	8.64	0.01
12-29-92	20	0	8.58	8.60	0.02
12-30-92	18	0	8.22	8.24	0.02
01-04-93	23	18	8.45	8.47	0.02
01-05-93	12	0	8.28	8.30	0.02
01-06-93	10	0	8.05	8.48	0.43
01-07-93	8	0	8.64	8.66	0.02
01-08-93	3	10	8.36	8.37	0.01
01-11-93	8	0	8.02	8.16	0.14
01-12-93	13	8	7.68	8.06	0.38
01-13-93	45	0	7.64	8.04	0.40
01-14-93	40	0	8.00	8.32	0.32
01-15-93	40	0	7.98	8.30	0.32
01-18-93	48	0	8.00	8.11	0.11
01-19-93	50	0	8.00	8.22	0.22
01-20-93	44	0	8.00	8.02	0.02
01-21-93	5	40	7.84	8.00	0.16
01-22-93	450	42	7.74	7.98	0.24
02-04-93	25	500	7.99	8.45	0.46
03-25-93	380	70	8.11	8.20	0.09
04-09-93	500	18	8.11	8.20	0.09
04-23-93	210	60	7.49	7.51	0.02
05-03-93	560	90	8.54	8.58	0.04
05-11-93	38	114	8.35	8.45	0.10
05-20-93	1	0	8.39	8.42	0.03
06-02-93	5	55	8.37	8.41	0.04
06-18-93	100	0	8.46	8.57	0.14
07-09-93	150	0	8.20	8.25	0.05
11-11-93	40	80	7.98	7.91	0.07
12-10-93	20	25	8.62	8.59	0.03
01-29-94	0	0	8.76	8.76	0.00
03-10-94	0	0	8.63	8.63	0.00

Product Recovery Observations

Sampling Date	Volume of Product Removed (mL)	Volume of Water Removed (mL)	Depth to Product (ft-bgs)	Depth to Water (ft-bgs)	Thickness of Product (ft)
05-03-94	1,976	658	8.93	9.15	0.22
06-17-94	6	565	8.85	8.85	0.00
06-21-94	1	540	8.50	8.52	0.02
06-28-94	5	400	8.69	8.71	0.01
07-08-94	26	500	8.61	8.61	0.00
07-14-94	0	400	8.73	8.73	0.00
07-20-94	20	500	8.60	8.62	0.02
07-26-94	60	560	8.68	8.71	0.03
08-02-94	21	500	8.46	8.50	0.04
08-12-94	30	640	7.74	7.79	0.05
08-18-94	0	550	9.24	9.24	0.00
08-25-94	0	550	8.78	8.78	0.00
08-31-94	0	550	8.74	8.74	0.00
09-09-94	150	375	7.74	7.76	0.02
09-15-94	0	525	8.93	8.93	0.00
09-22-94	5	305	8.97	8.99	0.02
09-30-94	0	420	8.86	8.86	0.00
10-07-94	0	550	8.74	8.74	0.00
10-14-94	0	520	8.80	8.80	0.00
10-21-94	0	520	8.88	8.88	0.00
10-28-94	0	525	8.90	8.90	0.00
11-04-94	0	550	8.00	8.00	0.00
11-09-94	0	520	7.99	7.99	0.00
11-18-94	80	430	8.05	8.15	0.10
11-25-94	130	300	8.00	7.99	0.01
11-30-94	30	260	7.94	7.95	0.01
12-09-94	30	480	8.03	8.07	0.04
12-16-94	30	120	7.96	7.99	0.03
12-22-94	20	500	8.06	8.09	0.03
12-29-94	80	360	7.71	7.73	0.02
01-06-95	25	500	7.57	7.60	0.03
01-13-95	50	70	7.55	7.54	0.01
01-20-95	5	510	7.53	7.54	0.01
01-26-95	30	500	7.38	7.41	0.03
01-31-95	30	320	7.47	7.48	0.01
02-09-95	20	210	7.63	7.63	0.00
02-14-95	20	175	7.62	7.64	0.02
02-24-95	30	310	7.85	7.89	0.04
03-03-95	20	340	7.75	7.78	0.03
03-09-95	30	510	7.31	7.34	0.03
03-17-95	10	510	7.28	7.29	0.01
03-24-95	15	485	7.23	7.24	0.01
03-31-95	15	475	7.47	7.48	0.01

Product Recovery Observations

Sampling Date	Volume of Product Removed (mL)	Volume of Water Removed (mL)	Depth to Product (ft-bgs)	Depth to Water (ft-bgs)	Thickness of Product (ft)
04-07-95	35	285	7.61	7.62	0.01
04-14-95	20	280	7.68	7.69	0.01
04-21-95	20	290	7.75	7.73	0.02
04-28-95	40	420	7.65	7.68	0.03
05-06-95	20	360	7.70	7.71	0.01
05-12-95	20	390	7.70	7.70	0.00
05-19-95	10	370	7.90	7.90	0.00
05-26-95	10	380	7.80	7.80	0.00
06-02-95	0	240	7.86	7.86	0.00
06-09-95	0	330	7.80	7.80	0.00
06-16-95	0	170	7.87	7.87	0.00
06-23-95	0	300	7.99	7.99	0.00
06-30-95	0	300	7.88	7.88	0.00
07-07-95	0	280	7.82	7.82	0.00
07-14-95	0	290	7.86	7.86	0.00
07-21-95	0	540	7.90	7.90	0.00
07-28-95	0	500	7.92	7.92	0.00
08-04-95	0	480	7.86	7.86	0.00
08-11-95	0	530	7.88	7.88	0.00
08-18-95	0	520	7.86	7.86	0.00
08-25-95	0	500	7.90	7.90	0.00
09-05-95	0	310	8.15	8.15	0.00
09-12-95	0	400	8.10	8.10	0.00
09-19-95	0	390	8.20	8.20	0.00
09-26-95	0	380	8.25	8.25	0.00
10-03-95	0	385	8.15	8.15	0.00
10-10-95	0	230	8.42	8.42	0.00
10-17-95	0	240	8.39	8.39	0.00
10-24-95	0	250	8.40	8.40	0.00
10-31-95	0	255	8.44	8.44	0.00
11-07-95	0	260	8.42	8.42	0.00
11-14-95	0	400	8.43	8.43	0.00
11-21-95	0	420	8.48	8.48	0.00
11-28-95	0	480	8.50	8.50	0.00
12-05-95	0	400	8.55	8.55	0.00
12-15-95	0	550	8.40	8.40	0.00
12-22-95	0	490	8.36	8 36	0.00
12-29-95	0	570	7.85	7 85	0.00
01-05-96	0	560	7.82	7.82	0 00
01-12-96	0	480	7 52	7.52	0 00
01-19-96	0	460	7 54	7 54	0 00
01-26-96	0	450	7 53	7.53	0.00
02-01-96	400	1000	7 03	7.12	0 09
02-09-96	275	480	7.34	7.36	0.02
Total to Date	6,877				