



ARATEX SERVICES, Inc.

1834 WALDEN OFFICE SQUARE / SUITE #450 / SCHAUMBURG, IL 60173-4299 / 708-397-9500

90 AUG -9 AM 3: 04

August 6, 1990

Mr. Dennis Byrne
Hazardous Materials Specialist
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, CA 94621

Subject: Aratex Services, Inc.
958 28th Street
Oakland, CA

Dear Dennis:

Enclosed is a copy of the most recent quarterly groundwater monitoring results. Results from the three wells installed by IT Corp along with the wells recently installed by RMT, Inc. are included in this report. A copy of the report regarding the results from the investigation completed during the installation of these wells will be submitted to your office in the near future.

Please call if you have any questions.

Sincerely,

Rebecca J. Whitsett
Rebecca J. Whitsett
Environmental Engineer

cc: L. Feldman/San Francisco RWQCB
E. Slater
E. Silzenmayer
D. Gregor/EPA/California, San Francisco



West Coast Office
Suite 370
3250 Ocean Park Blvd.
Santa Monica, CA 90405
Phone: 213-452-5078
FAX: 213-450-5787

August 3, 1990

Ms. Rebecca J. Whitsett
ARATEX SERVICES, INC.
1834 Walden Office Square
Suite 450
Schaumburg, Illinois 60173

Dear Becky:

This letter report conveys the results and findings from RMT's March 1990 ground water sampling of the four wells at Aratex's Oakland, California facility #516. This work was performed in accordance with Project Element A of our proposal dated March 16, 1990, and executed on your verbal authorization of March 23, 1990. Background data is detailed in RMT's report titled, Soil And Ground Water Investigation For Aratex Services Facility #516 Located At 330 Chestnut Street Oakland, California, which is dated August 1989; a final version of the report was submitted on October 23, 1989.

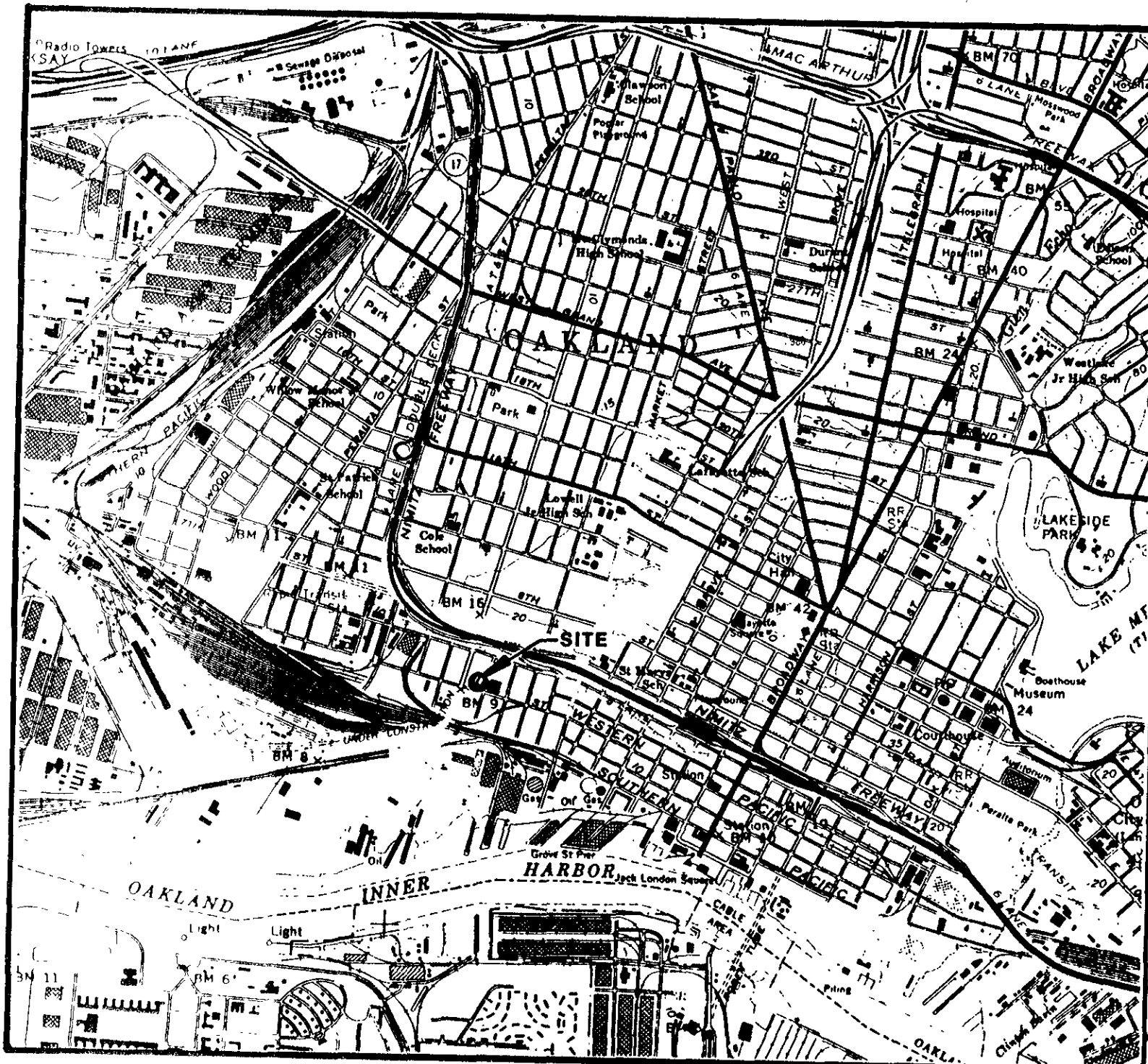
1.0 BACKGROUND

Facility #516 is an operating industrial laundry that is located, as depicted on Figure 1, in southwestern Alameda County and in the lowlands of Oakland between the Nimitz Freeway (Interstate Highway 880) and the Oakland Inner Harbor. Historically, this area of Oakland is borderline to reclaimed tidal flat lands and an area that has been used primarily for industrial and commercial purposes.

Available records indicate that the facility was developed in the late 1960's (C. Woodrow Bates, Civil Engineer; July 1966) and that through 1988, the laundry had an underground diesel fuel tank for backup boiler operations. The integrity of the tank and appurtenant piping was tested in July of 1987 and determined to be leaking. The tank was removed in December 1988; closure documentation was submitted [by Aratex] to the Alameda County, Health Care Services Agency (AC-HCSA). The AC-HCSA required supplementary subsurface investigations to evaluate if the soils and ground water had been affected by past tank operations.

The investigation requested by AC-HCSA was performed in June of 1989, by RMT for Aratex Services Inc. The investigation consisted of drilling and sampling to almost 30-foot depth at four locations. All four borings were completed as 2-inch diameter ground water monitoring wells. The investigation locations were all within 60 feet of the former tank's location (Figure 2). The major findings from the investigation were:

- The depth to ground water was less than ten feet.
- No detectable concentrations of petroleum-based organic compounds were noted for the vadose zone soil samples from borings RAO-1, RAO-2, and RAO-4.



QUADRANGLE LOCATION

FIGURE 1
LOCATION OF ARATEX
FACILITY #516,
OAKLAND, CAL.

SOURCE: USGS OAKLAND
 WEST QUADRANGLE MAP,
 7.5 MIN. SERIES.



NORTH

SCALE: 1"=2000'

RMT INC.	DWN. BY: SRC
	DATE: 7/89
	PROJ. # 1622.01

LEGEND

● GROUND WATER MONITORING WELL (JUNE 1989, RMT)

[] APPROXIMATE LIMIT OF FORMER TANK EXCAVATION

- X - FENCE

CHESTNUT STREET

OFFICE ENTRANCE

RAO-2

ARATEX FACILITY #516

RAO-3

FORMER TANK

BUILDING LIMIT

LANDSCAPED AREA

RAO-1

DRIVEWAY

CONCRETE PAD

RAO-4

OVERHEAD POWER LINES

UTILITY POLE

THIRD STREET

SITE PLAN

APPROX. SCALE: 1" = 20'

ARATEX SERVICES, INC.
330 CHESTNUT STREET, OAKLAND, CA


	DWN BY	BLF
	DATE	JUNE 1990
	PROJ #	1622.02

FIGURE 2

- No detectable concentrations of petroleum-based organic compounds were noted for the ground water samples obtained from monitoring wells RAO-1, RAO-2, and RAO-4.
- Diesel range hydrocarbons (TPH-D) and BTX&E compounds were detected in both the vadose zone soils and ground water sample obtained from boring/well RAO-3 [through the former tank's location].
- Although no free product was measured in any of the wells during the June 1989 ground water sampling, more than one-half foot of "diesel-like" product was measured in RAO-3 during subsequent ground water measurements.

Additional site background and hydrogeology information is presented in Attachment 1. More detailed information on the June 1989 investigation is presented in the August 1989 report.

2.0 PURPOSE

The objectives of this work were: (1) determine seasonal variation in ground water elevations and gradient; (2) measure the depth of floating product, if any, in the existing monitoring wells; (3) evaluate the extent of product migration, if any; and (4) outline a work scope to define the extent of the affected area. It should also be noted that the ultimate objective for all additional site work is for site remediation. Objectives 1 through 3 are addressed in the following sections; a proposed work plan to define the limits of the affected area is included as an attachment.

3.0 SCOPE

Ground water levels and floating product thickness were measured on several occasions prior to and after sampling the wells. All four ground water monitoring wells were sampled on March 23, 1990, and the samples analyzed for dissolved petroleum-based compounds. These results, in combination with previously developed site information, served as the basis for formulating the additional site investigation work scope that is necessary to define the limits of the affected area.

4.0 WATER TABLE MEASUREMENTS

Ground water table measurements made during the March 1990 ground water sampling are summarized in Table 1. The three measurements noted are for: (1) just prior to purging and sampling of the wells on March 23, 1990, (pre-sampling), (2) immediately after sampling, and (3) the day after sampling (post-sampling). Generally, draw down during purging and sampling was negligible; the depth to ground water remains relatively constant at about 8½ feet below ground surface; and the ground water flow direction is still southward at a gradient of less than 1%.

The pre- and post-sampling ground water depth measurements are approximately equal. As shown on Table 1, the difference between the two readings for each well are less than 0.05 feet. The post-sampling depth measurements minimize the extraneous influence of the floating product on ground water elevations in well RAO-3. Therefore, the post-sampling water table elevations are considered to be more representative of ground water conditions in the area of RAO-3 and thus appropriate for evaluating the prevailing ground water table conditions.

Based on a site datum [reference] elevation of 20 feet, ground water elevations vary from 11.25 feet at well RAO-2 to slightly less than 10.7 feet at wells RAO-1 and RAO-4. Figure 3 depicts the water table elevation contours and flow direction interpreted from the March 24 measurements for wells RAO-1, RAO-2, and RAO-4. As shown on Figure 3, the adjusted elevation for RAO-3 is comparable to the interpreted ground water table gradient.

TABLE 1

GROUND WATER TABLE MEASUREMENTS SUMMARY
ARATEX FACILITY #516
OAKLAND, CALIFORNIA

	RAO-1 [TOC @ 19.08']			RAO-2 [TOC @ 19.57']			RAO-3 [TOC @ 19.30']			RAO-4 [TOC @ 19.30']		
DATE	3-23-90	3-23-90	3-24-90	3-23-90	3-23-90	3-24-90	3-23-90	3-23-90	3-24-90	3-23-90	3-23-90	3-24-90
TIME	[~ 16:30]	[~ 17:10]	[~ 09:30]	[~ 14:00]	[~ 15:15]	[~ 09:20]	[~ 17:20]	[~ 18:30]	[~ 09:10]	[~ 15:30]	[~ 16:20]	[~ 09:40]
DEPTH(S) ¹ TO Product Water	n.d. 8.39	n.d. 8.40	n.d. 8.42	n.d. 8.32	n.d. 8.34	n.d. 8.35	8.07 9.20	- -	8.40 8.46	n.d. 8.62	n.d. 8.64	n.d. 8.68
ELEVATION(S) ² Product Water	n.a. 10.69	n.a. 10.68	n.a. 10.66	n.a. 11.25	n.a. 11.23	n.a. 11.22	n.a. 10.10	- -	10.90 10.84	n.a. 10.68	n.a. 10.66	n.a. 10.62
PRODUCT (inches)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	13.6 ³	-	0.7	n.a.	n.a.	n.a.

n.d. = not detected
n.a. = not applicable
"-" = not measured

1. Depths measured with electronic interface probe calibrated to 0.01 foot increments.
2. Elevations noted are relative to arbitrary site datum; not mean sea level.
3. Product thickness noted is the maximum reading; actual product thickness difficult to distinguish because there wasn't a distinct product to water interface.

RMT

Ground water table elevations, flow direction, and gradient are relatively stable over the approximately nine month period they have been measured. Variation between summer and late winter-early spring ground water levels is less than one foot; the flow direction is southward; and the flow gradient is less than 1%. Comparison of the two depth measurements made in June of 1989 to the measurements obtained in March of 1990 are included in Attachment 1. Also included in the attachment for reference purposes are: (1) a table summarizing well construction dimensions and (2) the ground water table map from the measurements of June 16, 1989.

5.0 FREE PRODUCT MEASUREMENTS

To date, floating free product has been detected in only well RAO-3. Product thickness was estimated to be greater than one foot just prior to the March 23 ground water sampling. Free product thickness was difficult to measure because there was not a well defined product-ground water interface. Both an ORS Environmental Equipment electronic [hydrocarbon-water] interface probe and clear, acrylic bailer were used in an attempt to define product thickness. The 1-foot thickness is based on the maximum reading obtained using the interface probe; this thickness was substantiated by the thickness observed in the bailer.

Historically, product thickness appears to increase slightly with time. Although a product sheen and odor was noted during the well's initial development and sampling (June 16, 1989), its thickness was too small to measure. Three months later (September 13, 1989) there was almost 0.6 feet of floating product in RAO-3. On March 23, 1990, free product thickness was estimated to be in excess of one foot.

Product thickness and ground water level measurements made approximately 16 hours after sampling reveal that the top of the fluid/product had dropped substantially (almost 0.7 feet) and that product thickness/accumulation was less than 0.1 feet. [As noted in the following section, well sampling included free product removal and purging of about 18 gallons of ground water.] In contrast, there was an immeasurable accumulation of free product in the week following initial well installation-development and initial ground water sampling.

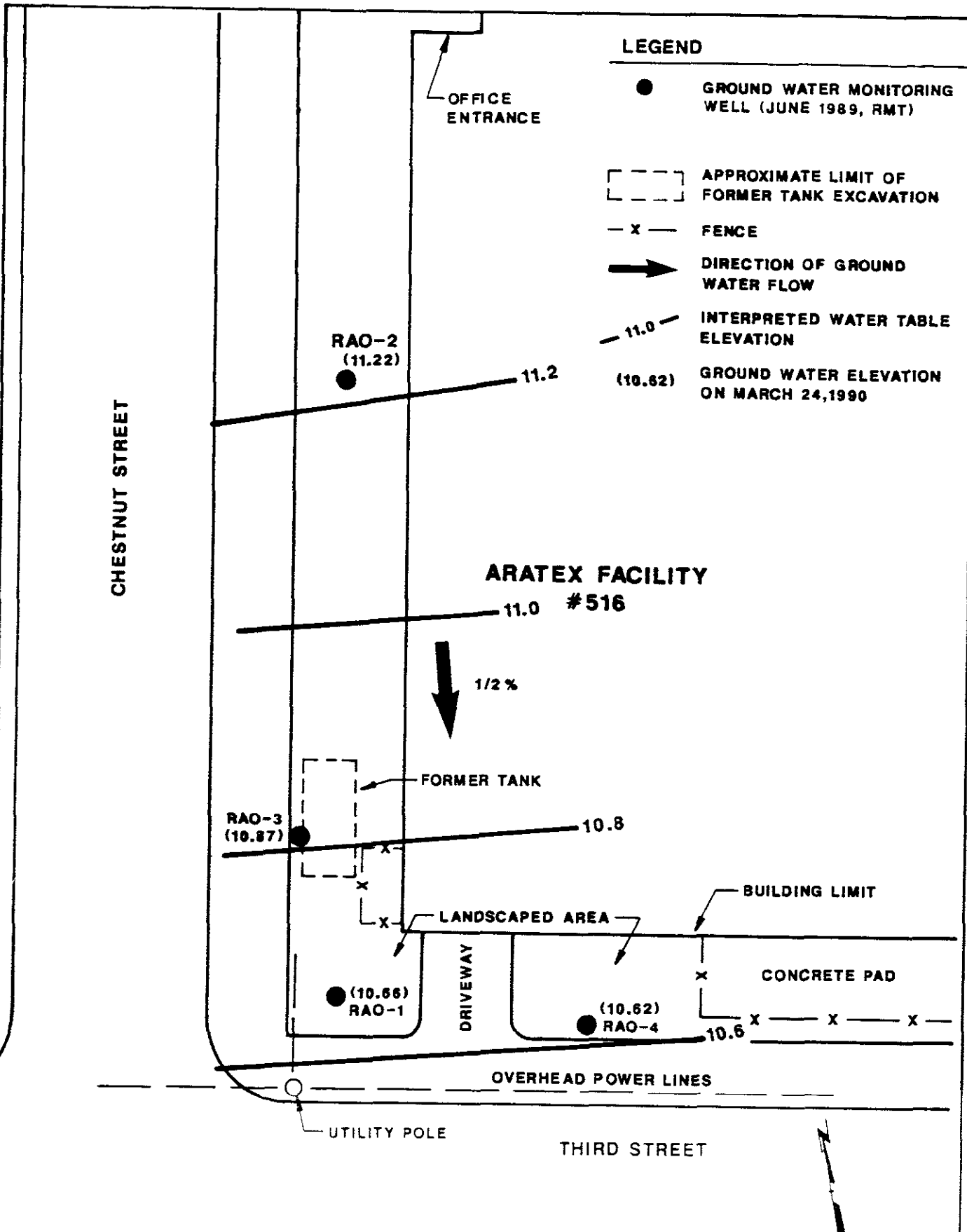
6.0 GROUND WATER SAMPLING AND ANALYSES

On the afternoon of March 23, 1990, all four existing ground water monitoring wells were sampled. Approximately 20 gallons were purged from each well before sampling; 20 gallons corresponds to more than 5 well casing volumes. Well purging, waste containment, sample preservation, and field decontamination procedures are summarized in Attachment 2. The same laboratory [TMA/Norcal of Richmond, California] that performed the analyses for the June of 1989 investigation was also used for these analyses.

Ground water samples were analyzed for dissolved concentrations of TPH-D by EPA Method 8015M and aromatic volatile organics (AVO or BTX&E) by EPA Method 602. The TPH-G samples were prepared by EPA Method 3510 in accordance with AC-HCSA requirements. A field blank was also tested by the above methods as a quality control check on field decontamination/sampling procedures. Results of the analyses and detection limits are summarized in Table 2; the laboratory report is included as Attachment 2. Summaries of the June 1989 analyses are included in Attachment 1.

6.1 Analyses Results

Generally, the results of the March 1990 ground water analyses are comparable to the June of 1989 findings. As for the initial sampling, neither TPH-D or AVOs were detected in the ground water samples from wells RAO-1, RAO-2, and RAO-4. TPH-D, benzene and xylenes were detected in the ground water sample from well RAO-3. The dissolved TPH-D concentrations equaled 267 mg/L. Benzene was detected



GROUND WATER LEVELS - MARCH 24, 1990

ARATEX SERVICES, INC.
 330 CHESTNUT STREET, OAKLAND, CA

APPROX. SCALE: 1"=20'

	DWN BY	BLF
	DATE	JUNE 1990
	PROJ #	1622.02

FIGURE 3

TABLE 2
GROUND WATER ANALYSES RESULTS¹

<u>Compound</u>	<u>RAO-1</u>	<u>RAO-2</u>	<u>RAO-3</u>	<u>RAO-4</u>	<u>Detection Limit⁴</u>
<u>Fuel Range Analyses²:</u>					
TPH-D (mg/l)	ND/ND	ND/ND	133/267	ND/ND	0.5
<u>AVO Analyses³:</u>					
Benzene ($\mu\text{g/l}$)	ND/ND	ND/ND	3.4/1.9	ND/ND	0.2
Toluene ($\mu\text{g/l}$)	ND/ND	ND/ND	0.9/ND	ND/ND	0.2
Ethylbenzene ($\mu\text{g/l}$)	ND/ND	ND/ND	38/ND	ND/ND	0.2
Total Xylenes ($\mu\text{g/l}$)	ND/ND	ND/ND	86.0/143	ND/ND	<0.5

NOTES:

1. June 1989 sampling / March 1990 sampling.
2. TPH-D analyses by EPA Method 8015M and preparation method 3520.
3. AVO analyses by EPA Method 602; total xylenes summation of meta- and o/p-xylenes.
4. Detection limits are for March 1990 sample analyses.

at a concentration of 1.9 $\mu\text{g/l}$ and xylenes totaled 143 $\mu\text{g/l}$. Because of mixing during ground water purging and sampling, the reported concentrations for RAO-3 may not be representative of dissolved concentrations.

6.2 Field Blank Results

A field blank was prepared in the field using de-ionized water, following the sampling of RAO-3 and after decontamination. The field blank test results are included in Table 2. The analyses results for the first three wells sampled are non-detect for both the TPH-D and AVO analyses. Since RAO-3 was the last well sampled, it is evident that the minimal concentrations of BTX&E detected in the field blank are from sampling that well.

7.0 WASTE DISPOSAL

Waste soil and purge water from the site investigations were disposed of through a recycler. Romic Chemical Corporation of East Palo Alto, California picked up two, 55-gallon drums from Aratex facility #516 on May 16, 1990. The one drum of solids contained soil cuttings from boring RAO-3 and the other drum of liquid was the well's purge water from the March 1990 sampling. The waste manifest form is included at the end of Attachment 2.

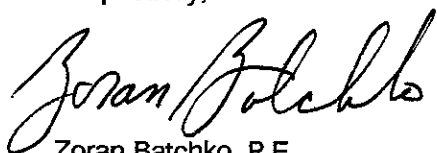
8.0 CONCLUSION

These March 1990 results confirm the presence of free product in well RAO-3, which is through the former tank's location. The ground water analyses results indicate that dissolved constituents have not migrated to the other three nearby site wells. As shown on Figure 3, the two downgradient wells are within 50 feet of well RAO-3. Thus, it appears that the affected zone remains localized to the vadose zone soils in the area of the former tank. Attachment 3 presents a proposed work scope to further define the areal extent of the affected area.

* * * * *

Please call either Ron or me if you have any questions regarding the preceding report. We look forward to your review of the enclosed work plan for the next phase of site work.

Respectfully,



Zoran Batchko, P.E.
Project Coordinator

cc: Ron Hayes



The following attachments complete this report.

- Attachment 1 - Project Background
- Attachment 2 - Laboratory Analysis Result - March 1990 Sampling
- Attachment 3 - Supplementary Areal Investigation

ATTACHMENT 1

PROJECT BACKGROUND

The California State Water Resources Board [via the Regional Water Quality Control Boards (RWQCB)] is responsible for protecting the Waters of the State, including ground water. Alameda County's HCSA administers a groundwater protection program for most communities within its boundaries, including Oakland. Mr. Dennis Byrne, Hazardous Materials Specialist with AC-HCSA, has indicated their minimum requirements for a site where free product has been detected are: (1) remove the free product followed by (2) periodic ground water monitoring. Free product has been detected in one of the ground water monitoring wells at facility #516.

1.0 TANK HISTORY

The following tank history is excerpted from documentation provided by Aratex. Facility personnel and the available records indicated that until December 16, 1988, facility #516 maintained a 2,000-gallon underground tank to store diesel fuel (Aratex; March 1, 1989). On July 7, 1987, SCS Engineers performed a precision tank test [Horner EZY-Chek] on the full UST system. During pre-test observations, no surface piping leaks were noted during the filling process. Additionally, about one to two inches of water accumulation were detected at the bottom of the tank. The leakage rate was so great during the test that SCS Engineers was not able to quantify it: "...due to unstabilized fuel level in the standpipe." Although not quantified, the results show that the tank was losing product. Moreover, one of their post-test observations noted that portions of the tank and or piping may have been damaged or corroded. Additionally, they noted that the tank was purportedly single-walled steel and between the age of 16 and 20 years. SCS Engineers recommend closure of the tank by removal.

On December 16, 1988, the tank was removed by subcontractor(s) for facility #516. The excavation extended down to about 8-foot depth, ground water was not encountered, and two samples of the exposed tank subgrade were obtained for organic compounds analyses. The two subgrade samples contained both diesel fuel range hydrocarbons (TPH-D) and oil and grease (O&G) at concentrations of more than 1,000 ppm. ARATEX's Staff Consultant met with AC-HCSA's Mr Dennis Byrne, Hazardous Materials Specialist, to discuss the tank closure. Additional subsurface investigations were agreed upon from the meeting.

2.0 SUBSURFACE INVESTIGATION

Aratex Services, Inc. of Schaumburg, Illinois (ARATEX) hired RMT, Inc. to complete the investigation required by AC-HCSA. The investigation consisted of four shallow borings that were completed as ground water monitoring wells. The field work was completed in June of 1989 and draft report submitted in August, 1989. The report was finalized in October. Table 1-1 summarizes well construction details.

Diesel range hydrocarbon (TPH-D); oil and grease; and benzene, toluene, total xylenes and ethylbenzene (BTX&E) were detected in both the soil samples and ground water samples from well RAO-3, which is through the former tank location. These compounds were not detected in the soil and ground water samples obtained from the other three investigation locations. The laboratory test results are summarized in Tables 1-2 and 1-3.

TABLE 1-1

WELLS CONSTRUCTION SUMMARY

	<u>RAO-1</u>	<u>RAO-2</u>	<u>RAO-3</u>	<u>RAO-4</u>
Top of Casing ¹	19.08	19.57	19.30	19.30
<u>Depth To²:</u>				
Top of Grout	~ 1/2	~ 1/2	~ 1/2	~ 1/2
Top of Bentonite	~ 3	~ 4	~ 3	~ 3
Top of Filter Pack	~ 5½	~ 5½	~ 4½	~ 5
Top of Screen	~ 7	~ 7	~ 6½	~ 7
Bottom of Screen	~ 25	~ 27	~ 24	~ 27
Bottom of Filter	~ 25	~ 27	~ 24	~ 27
Well Interval	5½-25	5½-27	4½-24	5-27

Notes:

1. Top of Casing elevations surveyed by RMT relative to arbitrary site datum.
2. All measurements noted in feet relative to ground surface; measurements are considered approximate.

TABLE 1-2
ANALYTICAL RESULTS OF SOIL SAMPLES¹

Boring Number	Sample Depth (Feet)	Diesel Range ² (mg/kg)	Aromatic Volatile Hydrocarbons ³ ($\mu\text{g}/\text{kg}$)				Oil ⁴ and Grease (mg/kg)
			Benzene	Toluene	Ethylbenzene	Xylenes	
RAO-1	5	ND	ND	ND	ND	ND	ND
RAO-1	10	ND	ND	ND	ND	ND	ND
RAO-1	20	ND	ND	ND	ND	ND	ND
RAO-2	5	ND	ND	ND	ND	ND	ND
RAO-2	10	ND	ND	ND	ND	ND	ND
RAO-2	15	ND	ND	ND	ND	ND	ND
RAO-2	20	ND	ND	ND	ND	ND	ND
RAO-3	8	22,529	ND	75	840	2,700	8,200
RAO-3	15	ND	ND	ND	ND	ND	ND
RAO-3	20	ND	ND	ND	ND	ND	ND
RAO-4	5	ND	ND	ND	ND	ND	ND
RAO-4	10	ND	ND	ND	ND	ND	ND

1. See RMT report "Soil and Ground Water Investigation For: Aratex Services Facility #516 Located at 330 Chestnut Street, Oakland, California," dated August 1989, for detailed discussion of sampling and laboratory testing. Sampled on June 9, 1989.
2. TPH-D - Total Petroleum Hydrocarbons as diesel; analyses performed by EPA Method 8015M (modified). Detection limits of 2 mg/kg.

ND - Not detected at the limit of detection.
3. Aromatic Volatile Hydrocarbons (BTX&E) analyses performed by EPA Method 8020. Detection limits of 0.3 $\mu\text{g}/\text{kg}$.
4. Oil and grease analyses performed by EPA Method 503. Detection limits of 100 mg/kg.

TABLE 1-3

SUMMARY OF LABORATORY RESULTS ON GROUND WATER¹

Parameter	Sample Point			
	RAO-1	RAO-2	RAO-3	RAO-4
TPH - as Diesel ² ppm	ND	ND	132.8	ND
Benzene ³ (µg/l)	ND	ND	3.4	ND
Toluene ³ (µg/l)	ND	ND	0.9	ND
Ethylbenzene ³ (µg/l)	ND	ND	38.0	ND
Xylenes ³ (µg/l)	ND	ND	86.0	ND

1. ND - Not detected at the limit of detection.

See RMT report "Soil and Ground Water Investigation for: Aratex Services Facility #516 located at 330 Chestnut Street, Oakland, California" dated August 1989 for detailed discussion of sampling and laboratory testing. Sampled on June 16, 1989.

2. Total petroleum hydrocarbons (TPH) analyses performed by EPA method 8015M. Minimum detection limits of 0.04 mg/l except for RAO-4 which had a minimum detection limit of 0.57 mg/l.
3. Benzene, toluene, ethylbenzene and xylenes analyses performed by EPA Method 8020. Minimum detection limits of 0.3 µg/l.

Although a sheen and strong odor were noted during the initial well sampling of RAO-3 on June 16, 1989, the thickness of floating product was too thin to measure. Approximately one half foot of floating product was measured in well RAO-3 three months later [September, 1989]. AC-HCSA has indicated that where free product exists the areal extent of the affected area needs to be define and that both the free product and its source be removed. Table 1-4 summarizes ground water and free product measurements completed to date.

3.0 LOCAL GEOLOGY

Geologically, the site is located in an area that is borderline to the Merrit Sand Unit and artificial fill. Historically, the near shore tidal flats have been reclaimed with dredged materials from the Bay. The Merrit Sand is characterized as a slightly coherent, normally consolidated, silty, fine-grained sand that is occasionally clayey with sandy clay lenses (D.H.Radbruch,1957). Radbruch characterizes the artificial fill "miscellaneous refuse, bay mud or sand dredged from the bay, and often times indistinguishable from natural bay mud or Merrit sand." The facility is at the approximate boundary of the previously reclaimed area based on available U.S.G.S. maps (Nichols and Wright, 1971).

Geologic data for the general site area and past investigations at the facility indicate the site is on the Merrit Sand Unit of the East Bay Plain. Underlying the Merrit is the Posey Unit, which is characterized as a firm sandy clay with occasional fine gravels and grading with depth to fine- to medium-grained sand. Field observations to the depths explored are consistent with the local geologic descriptions.

Regionally, the ground water gradient is toward the Bay. Local ground water is influenced by topography, seasonal precipitation variations, surface drainage or recharge features, and local stratigraphy conditions. Ground water in the area of the tidal flats is generally constant the year round. The elevation of the local water table is estimated to be several feet above the mean elevation for the nearby bay. Depth to ground water at the site is at about 8 to 9 feet. Table 1-4 summarizes the water table depth measurements and ground water elevations completed to date.

TABLE 1-4

WATER TABLE ELEVATIONS SUMMARY^{1,2}
 ARATEX FACILITY #516
 OAKLAND, CALIFORNIA

	RAO-1 TOC @ 19.08						RAO-2 TOC @ 19.57					
DATE:	6-09-89	6-16-89	3-07-90	3-23-90	3-23-90	3-24-90	6-09-89	6-16-89	3-07-90	3-23-90	3-23-90	3-24-90
TIME:				[~16:30]	[~17:10]	[~09:30]				[~14:00]	[~15:15]	[~09:20]
DEPTHS:												
Product:	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Water:	8.05	8.17	8.24	8.39	8.40	8.42	7.78	8.17	9.19	8.32	8.34	8.35
ELEVATION(S):												
Product:	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Water:	11.03	10.91	10.84	10.69	10.68	10.66	11.79	11.4	10.38	11.25	11.23	11.22
PRODUCT (in):	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

NOTES:

1. Borings and wells by RMT, Inc. in June of 1989; reference "Soil and Ground Water Investigation For: Aratex Services; Facility #516," dated August 1989.
2. Top of casings (T.O.C.) surveyed by RMT in June of 1989; reference to an arbitrary site datum -- not mean sea level.
3. No measurable quantity of free product although presence of sheen noted.
4. Top of product and depth to product-water interface not noted.
5. Only able to distinguish depth to top of free product; equipment malfunction.
6. Top of free product clearly distinguished. However, depth to ground water not repeatable; the measurement noted is for maximum depth reading obtained with electronic interface probe and therefore represents maximum free product thickness at location RAO-3.
7. Measurements not made due to darkness.

n.d. = not detected

n.a. = not applicable



TABLE 1-4
(Continued)

WATER TABLE ELEVATIONS SUMMARY^{1,2}
ARATEX FACILITY #516
OAKLAND, CALIFORNIA

	RAO-3 TOC @ 19.30						RAO-4 TOC @ 19.30							
	DATE: TIME:	6-09-89	6-16-89	9-13-89	3-07-90	3-23-90	3-23-90	3-24-90	6-09-89	6-09-89	3-07-90	3-23-90	3-23-90	3-24-90
DEPTHS:						[~17:20]	[~18:30]	[~09:10]				[~15:30]	[~16:20]	[~09:10]
Product:	cf Note 3	cf Note 3	cf Note 4	8.20 ⁴	8.07 ⁶	cf Note 7	8.40	n.d.	n.d.	cf Note 8	n.d.	n.d.	n.d.	
Water:	8.03	8.16		cf Note 5 9.20 ⁶		cf Note 7	8.46	8.31	8.47	cf Note 8	8.62	8.64	8.68	
ELEVATION(S):														
Product:	cf Note 4	cf Note 4	-	11.1	11.23	cf Note 7	10.90	n.a.	n.a.	cf Note 8	n.a.	n.a.	n.a.	
Water:	11.27	11.14	-	cf Note 5 10.10		cf Note 7	10.84	10.99	10.83	cf Note 8	10.68	10.66	10.62	
PRODUCT (in):	sheen	sheen	7.0	cf Note 5 13.6 ⁶		cf Note 7	0.7	n.a.	n.a.	cf Note 8	n.a.	n.a.	n.a.	

NOTES:

- Borings and wells by RMT, Inc. in June of 1989; reference "Soil and Ground Water Investigation For: Aratex Services; Facility #516," dated August 1989.
- Top of casings (T.O.C.) surveyed by RMT in June of 1989; reference to an arbitrary site datum – not mean sea level.
- No measurable quantity of free product although presence of sheen noted.
- Top of product and depth to product-water interface not noted. *assume inches*
- Only able to distinguish depth to top of free product; equipment malfunction.
- Top of free product clearly distinguished. However, depth to ground water not repeatable; the measurement noted is for maximum depth reading obtained with electronic interface probe and therefore represents maximum free product thickness at location RAO-3.
- Measurements not made due to darkness.
- Well covered on this reading date.

n.d. = not detected

n.a. = not applicable



ATTACHMENT 2

LABORATORY ANALYSES RESULTS - MARCH 1990 SAMPLING

Ground Water [Monitoring Well] Samples

TMA
Thermo Analytical Inc.

Job No 1622.02

TMA/Norcal

2030 Wright Avenue

P.O. Box 4040

Richmond, CA 94804-0040

(415) 235-2633 Fax No (415) 235-0438

April 16, 1990

RMT, Incorporated
3250 Ocean Park Boulevard
Suite 370
Santa Monica, CA 90405

Attention: Mr. Zoran Batchko

TMA/Norcal I.D.: 6607-7

RMT, Incorporated Project Number: ARTX #516, PN 62.12


Dear Mr. Batchko:

Enclosed are the results for four water samples and one field blank received on March 24, 1990. The chromatograms are enclosed for the Diesel analyses. <WITH RMT>

If you have any questions please call Robert Fox at (415) 235-2633 extension 254.

Submitted by:

Prepared by:


Julie Wose
Gas Chromatography
Supervisor


Robert Fox
Program Manager/Chemist

Attachments: Diesel Results (1 page)
EPA Method 602 Results (6 pages)
Chromatograms (16 pages)
Chain-of-Custody Forms (2 pages)

PETROLEUM HYDROCARBONS
ANALYSIS RESULTS REPORT

Lab Name: TMA/Norcal
Client: RMT, INCORPORATED
Matrix: Water

Date Received: 3-24-90
Date Analyzed: 3-27-90

Analysis/Method: MODIFIED - 8015

TMA/Norcal ID	Client ID	Diesel (mg/L)	Detection Limit (mg/L)
6607-7-1	RAO-1	<0.5	0.5
6607-7-2	RAO-2	<0.5	0.5
6607-7-3	RAO-3	267	0.5
6607-7-4	RAO-4	<0.5	0.5
6607-7-5	TRIP BLANK	<0.5	0.5

Renee Doherty
Analyst

~~_____~~
Data Release Authorized By

EPA METHOD 602
TARGET ANALYTE RESULTS

Client: RMT INC.
 Client Sample ID: RAO-1
 TMA/Norcal SAMPLE ID: 6607-7-1

Date Received: 3/22/90
 Date Analyzed: 4/05/90

CAS. No	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	< 0.20	0.20
108-88-3	Toluene	< 0.20	0.20
108-90-7	Chlorobenzene	< 0.50	0.50
100-41-4	Ethylbenzene	< 0.20	0.20
108-38-3	m-Xylene	< 0.50	0.50
1330-20-7	o/p-Xylenes	< 0.10	0.10
541-73-1	1,3-Dichlorobenzene	< 0.50	0.50
95-50-1	1,2-Dichlorobenzene	< 0.50	0.50
106-46-7	1,4-Dichlorobenzene	< 0.50	0.50

G. J. Smith
 Analyst

[Signature]
 Data Release Authorized By

EPA METHOD 602
TARGET ANALYTE RESULTS

Client: RMT INC.
 Client Sample ID: RAO-2
 TMA/Norcal SAMPLE ID: 6607-7-2

Date Received: 3/22/90
 Date Analyzed: 4/05/90

CAS. No	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	< 0.20	0.20
108-88-3	Toluene	< 0.20	0.20
108-90-7	Chlorobenzene	< 0.50	0.50
100-41-4	Ethylbenzene	< 0.20	0.20
108-38-3	m-Xylene	< 0.50	0.50
1330-20-7	o/p-Xylenes	< 0.10	0.10
541-73-1	1,3-Dichlorobenzene	< 0.50	0.50
95-50-1	1,2-Dichlorobenzene	< 0.50	0.50
106-46-7	1,4-Dichlorobenzene	< 0.50	0.50

GO Smith
 Analyst

[Signature]
 Data Release Authorized By

EPA METHOD 602
 TARGET ANALYTE RESULTS

TMA/Norcal

Client: RMT INC.
 Client Sample ID: BAO-3
 TMA/Norcal SAMPLE ID: 6607-7-3

Date Received: 3/22/90
 Date Analyzed: 4/06/90

CAS. No	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	<u>1.9</u>	1.0
108-88-3	Toluene	< <u>1.0</u>	1.0
108-90-7	Chlorobenzene	< <u>2.5</u>	2.5
100-41-4	Ethylbenzene	< <u>1.0</u>	1.0
108-38-3	m-Xylene	<u>83</u>	2.5
1330-20-7	o/p-Xylenes	<u>60</u>	5.0
541-73-1	1,3-Dichlorobenzene	< <u>1.0</u>	1.0
95-50-1	1,2-Dichlorobenzene	< <u>1.0</u>	1.0
106-46-7	1,4-Dichlorobenzene	< <u>1.0</u>	1.0

C. Smith
 Analyst

[Signature]
 Data Release Authorized By

EPA METHOD 602
 TARGET ANALYTE RESULTS

TMA/Norcal

Client: RMT INC.
 Client Sample ID: RAO-4
 TMA/Norcal SAMPLE ID: 6607-7-4

Date Received: 3/22/90
 Date Analyzed: 4/05/90

CAS. No	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	< 0.20	0.20
108-88-3	Toluene	< 0.20	0.20
108-90-7	Chlorobenzene	< 0.50	0.50
100-41-4	Ethylbenzene	< 0.20	0.20
108-38-3	m-Xylene	< 0.50	0.50
1330-20-7	o/p-Xylenes	< 0.10	0.10
541-73-1	1,3-Dichlorobenzene	< 0.50	0.50
95-50-1	1,2-Dichlorobenzene	< 0.50	0.50
106-46-7	1,4-Dichlorobenzene	< 0.50	0.50

C O Smith
 Analyst

[Signature]
 Data Release Authorized By

EPA METHOD 602
 TARGET ANALYTE RESULTS

TMA/Norcal

Client: RMT INC.
 Client Sample ID: TRIP BLANK
 TMA/Norcal SAMPLE ID: 6607-7-5

Date Received: 3/22/90
 Date Analyzed: 4/05/90

CAS. No	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	<u>0.54</u>	0.2
108-88-3	Toluene	<u>0.39</u>	0.2
108-90-7	Chlorobenzene	< <u>0.50</u>	0.5
100-41-4	Ethylbenzene	<u>0.75</u>	0.2
108-38-3	m-Xylene	<u>5.8</u>	0.5
1330-20-7	o/p-Xylenes	<u>3.3</u>	1.0
541-73-1	1,3-Dichlorobenzene	< <u>0.50</u>	0.5
95-50-1	1,2-Dichlorobenzene	< <u>0.50</u>	0.5
106-46-7	1,4-Dichlorobenzene	< <u>0.50</u>	0.5

G. D. Smith
 Analyst

[Signature]
 Data Release Authorized By

EPA METHOD 602
TARGET ANALYTE RESULTS

Client: RMT
 Client Sample ID: NA
 TMA/Norcal SAMPLE ID: METHOD BLANK

Date Received: NA
 Date Analyzed: 4/05/90

CAS No	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	< 0.2	0.2
108-88-3	Toluene	< 0.2	0.2
108-90-7	Chlorobenzene	< 0.5	0.5
100-41-4	Ethylbenzene	< 0.2	0.2
541-73-1	1,3-Dichlorobenzene	< 0.5	0.5
95-50-1	1,2-Dichlorobenzene	< 0.5	0.5
106-46-7	1,4-Dichlorobenzene	< 0.5	0.5

AS Smith
 Analyst

[Signature]
 Data Release Authorized By

TMA

Thermo Analytical Inc.

TARS Prepared by TMA Cooler #19

CALL ZORAN BATCHKO 213-452-5078

TMA/Norcal 2030 Wright Avenue / P.O. Box 4040 / Richmond, CA 94804-0040 / (415) 235-2633 / FAX (415) 235-0438

Chain of Custody

CLIENT ADDRESS						PARAMETERS												# CONTAINERS	DATE <u>3/23/90</u> PAGE <u>1</u> OF <u>2</u>
PROJECT						SAMPLE TYPE OR MATRIX													
CLIENT ADDRESS: <u>RMT, Inc.</u> <u>3250 Ocean Park Blvd</u> <u>Suite 370</u> <u>Santa Monica, CA 90705</u> PROJECT: <u>ARTX #516</u> <u>P.N. 62.12</u>						8015A Diesel GAS EPA 602 (BTEX) Oil & Grease Archive												OBSERVATIONS, COMMENTS, VOLUMES, SPECIAL OR ADDITIONAL TESTS <u>NORMAL T.A.T.</u>	
SAMPLE NO	DATE	TIME	LOCATION	Size	No														
RAO-1	3/23/90	16:15		40ml	2	X												↑	
RAO-1	"	17:15		"	"	X												6	
RAO-1	"	17:15		"	"													↓	
RAO-1	"	17:15		1L	1													1	
RAO-2	"	15:00		40ml	2	X												↑	
RAO-2	"	15:00		"	"	X												6	
RAO-2	"	15:00		"	"													↓	
RAO-2	"	15:00		1L	1													1	
RAO-3	"	18:25		40ml	2	X												↑	
RAO-3	"	18:25		"	"	X												5	
RAO-3	"	18:25		"	1													↓	
RAO-3	"	18:25		1L	1													1	
1) RELINQUISHED BY: Signature		DATE	2) RECEIVED BY: Signature		DATE	3) RELINQUISHED BY: Signature		DATE	4) RECEIVED BY: Signature		DATE	TOTAL NUMBER OF CONTAINERS							
Signature: <u>Zoran Batchko</u>		DATE: <u>3/24/90</u>	Signature: <u>Kermit Blum</u>		DATE: <u>3/24/90</u>	Signature: _____		DATE: _____	Signature: _____		DATE: _____	METHOD OF SHIPMENT							
Printed Name: <u>Zoran Batchko</u>		TIME: <u>11:05</u>	Printed Name: <u>TMA/Norcal</u>		TIME: <u>11:05</u>	Printed Name: _____		TIME: _____	Printed Name: _____		TIME: _____	SPECIAL SHIPMENT-HANDLING OR STORAGE REQUIREMENTS							
Company: <u>RMT Inc</u>			Company: _____			Company: _____			Company: _____										
5) RELINQUISHED BY: Signature		DATE	6) RECEIVED BY: Signature		DATE	7) RELINQUISHED BY: Signature		DATE	RECEIVED BY (Laboratory) Signature		DATE								
Printed Name: _____		TIME: _____	Printed Name: _____		TIME: _____	Printed Name: _____		TIME: _____	Printed Name: _____		TIME: _____								
Company: _____			Company: _____			Company: _____			TMA/Norcal										



Thermo Analytical Inc.

Jars Prepared by TMA Cooler #9

CALL ZORAN BATCHKO 213-452-5078

TMA/Norcal 2030 Wright Avenue / P.O. Box 4040 / Richmond, CA 94804-0040 / (415) 235-2633 / FAX (415) 235-0438

Chain of Custody

CLIENT			PARAMETERS										# CONTAINERS	DATE <u>3/23/90</u> PAGE <u>2</u> OF <u>2</u>		
ADDRESS			80ISM	EPA 602	DIESEL	GREASE	ARCHIVE								SAMPLE TYPE OR MATRIX (e.g. water, soil, filters, charcoal tube, asbestos, oil)	OBSERVATIONS, COMMENTS, VOLUMES, SPECIAL OR ADDITIONAL TESTS
PROJECT																
SAMPLERS (SIGNATURE)													Normal T.A.T.			
SAMPLE NO	DATE	TIME	LOCATION	SIZE	No											
RAC-4	3/23/90	16:00		40ml	2	X								water	1	
RAC-4	"	16:00		40ml	2	X								water	6	
RAC-4	"	16:00		40ml	2				/					water	4	
RAC-4	"	16:00		1 L	1				/					water	1	
TRIP Field	"	16:20	AFTER RAC-1	40ml	3	X	X							water	3	
	↑ 20															
	3/27/90															
1) RELINQUISHED BY: Signature			DATE	2) RECEIVED BY: Signature			DATE	3) RELINQUISHED BY: Signature			DATE	4) RECEIVED BY: Signature			DATE	TOTAL NUMBER OF CONTAINERS
Zoran Batchko			3/23/90	Kermit Blum			3-24									METHOD OF SHIPMENT
Printed Name			TIME	Printed Name			TIME	Printed Name			TIME	Printed Name			TIME	SPECIAL SHIPMENT-HANDLING OR STORAGE REQUIREMENTS
Company				Company				Company				Company				
5) RELINQUISHED BY: Signature			DATE	6) RECEIVED BY: Signature			DATE	7) RELINQUISHED BY: Signature			DATE	RECEIVED BY (Laboratory) Signature			DATE	
Printed Name			TIME	Printed Name			TIME	Printed Name			TIME	Printed Name			TIME	
Company				Company				Company				TMA/Norcal				

ATTACHMENT 3

SUPPLEMENTARY AREAL INVESTIGATION

The additional subsurface investigations proposed below are designed primarily to better define the areal extent of the affected soils around the former tank's location and provide additional data necessary for evaluating the need for free product recovery system. Ground water is at about 8½ feet below ground surface in the area of RAO-3. The water table gradient is less 1% to the south by south east. Two previous ground samplings and analyses indicate that the diesel-like compound, which has been detected at location RAO-3, has not reached either of the two downgradient wells, which are located within 50 feet of the tank's former location.

1.0 GENERAL

From the two samplings completed to date and the free product measurements, it appears that (1) the source of the product is local to the former tank location [RAO-3 area], and (2) possibly accumulating from an above ground water source. The following supplementary investigation program is designed to further define the areal extent of the affected soils.

2.0 APPROACH

A combination of shallow borings, soil sampling, and laboratory analyses for petroleum hydrocarbons are proposed. Soil borings would be limited to the lesser of: (1) top of ground water or (2) 10 feet deep. Ground water table depth would be based on interpretations from measurements made in the existing site wells that are free of floating product; an interface probe would be used for free product/depth to ground water measurements. Borings would be grouted at the completion of drilling and sampling.

3.0 LOCATIONS

A series of three to six borings that step out from location RAO-3 are proposed to delineate the areal extent of the affected zone. Proposed boring locations are depicted on Figure A. Boring SB-1 would be drilled about ten feet north [toward RAO-2] of RAO-3; this is estimated to be the approximate northern limit of the former tank excavation. Borings SB-2 and SB-3 would be located in a like manner west and south of RAO-3. Up to three additional borings would be drilled if contamination is indicated by either field observations or VOC emission on the recovered soil samples from the initial three borings. These additional borings would be stepped out an additional 10 feet from RAO-3 along the same general alignment. Soil samples collected during the drilling phase would be analyzed for petroleum based concentrations as described below.

4.0 SAMPLING AND ANALYSES

Sampling would begin at a depth of 5 feet and continue thereafter at every 1-foot interval until completion. Alternatively a 5-foot long, continuous core sample would be obtained beginning at 5-foot depth. Representative samples of each lithologic zone would be prepared if continuous sampling is used. Recovered samples would be logged in the field by an engineer or geologist. Additionally, the recovered samples would be monitored [in the field] for VOC emissions with a calibrated photoionization detector (PID). Drilling and sampling would be performed either manually or by short-boom, truck mounted equipment. In either case, auger drilling methods would be used.

LEGEND

- GROUND WATER MONITORING WELL (JUNE 1989, RMT)
- ⊕ PROPOSED BORING
- [- - -] APPROXIMATE LIMIT OF FORMER TANK EXCAVATION
- X - FENCE

CHESTNUT STREET

OFFICE ENTRANCE

ARATEX FACILITY #516

RAO-2

SB-1

FORMER TANK

SB-3

SB-5

RAO-3

SB-4

SB-2

SB-6

RAO-1

LANDSCAPED AREA

DRIVEWAY

BUILDING LIMIT

CONCRETE PAD

RAO-4

OVERHEAD POWER LINES

UTILITY POLE

THIRD STREET

PROPOSED INVESTIGATION PLAN

ARATEX SERVICES, INC.
330 CHESTNUT STREET, OAKLAND, CA

APPROX. SCALE: 1" = 20'


	DWN BY	BLF
	DATE	JUNE 1990
	PROJ #	1622.02

FIGURE A

Two samples from each boring would be analyzed by a California DOHS - certified laboratory for diesel range petroleum hydrocarbons (TPH-D) and BTX&E concentrations. These laboratory analyses would be performed within the prescribed one week turnaround time.

Drill cuttings, ground water, and removed free product, if any, will be stored in 55-gallon, DOT-approved drums supplied by the drilling subcontractor. Drums will be labeled with at least sampling date, content, and, as necessary, a hazard warning.

The completed borings would be grouted with neat cement grout at the completion of the day's drilling and sampling. Any accumulated slough or fluids would be cleaned out prior to grouting.

5.0 OUTPUTS

A letter report detailing the supplementary investigation and findings therefrom. The letter will include an assessment and recommendation on whether additional site investigations are necessary of if there is sufficient information to proceed with a remediation approach.