R.T. NAHAS COMPANY *Since 1947*

REAL ESTATE DEVELOPERS AND INVESTORS

20630 PATIO DRIVE
CASTRO VALLEY, CALIFORNIA 94546
TELEPHONE (510) 538-9600
FAX (510) 881-7618

August 8, 1994

Mr. Scott Seery
Hazardous Materials Specialist
Alameda County Health Care Services
80 Swan Way, Room 220
Oakland, CA 94621

Dear Scott:

Enclosed for your information is the Sixteenth Quarterly Groundwater Monitoring Report for the Unocal 76 Service Station on Redwood Road in Castro Valley.

Sincerely,

Randall E. Nahas

REN/hrs

Enclosure

BSK & ASSOCIATES

GEOTECHNICAL CONSULTANTS, INC.

BSK JOB NO. P92057.3

SIXTEENTH QUARTERLY GROUNDWATER MONITORING REPORT UNOCAL 76 SERVICE STATION 20405 AND 20629 REDWOOD ROAD CASTRO VALLEY, CALIFORNIA JULY 1994

BSK & Associates

BSK & Associates
1181 Quarry Lane
Building 300
Pleasanton, CA 94566
(510) 462-4000
(510) 462-6283 FAX

July 28, 1994

BSK JOB P92057.3

R. T. Nahas Company/Eden Managements
20630 Patio Drive
Castro Valley, CA 94546

Subject: Sixteenth Quarterly Groundwater Monitoring Report
Unocal 76 Service Station
20405 and 20629 Redwood Road
Castro Valley, California

Gentlemen:

As requested and authorized, we have performed groundwater monitoring well quarterly sampling at the above-referenced facility. This quarterly report presents the project background, groundwater data obtained during this sampling event, conclusions based on this quarter's data, and recommendations for further action. The site location is shown on Figure 1, Vicinity Map.

BACKGROUND

BSK & Associates installed three groundwater monitoring wells (MW-2, MW-3 and MW-4) in December 1989 at the Unocal 76 Service Station located at 20405 Redwood Road, Castro Valley, California. The service station location is shown on Figure 1, Vicinity Map. The monitoring facilities were installed in order to comply with the California UST Monitoring requirements of Alternative 6, Subchapter 16, Title 23, California Code of Regulations. The results of well installations, soil sampling and chemical testing of the soil and water samples were summarized in our Report P89134, dated February 5, 1990. The groundwater monitoring well locations are shown on Figure 2, Site Plan.

BSK performed an assessment of the lateral extent of shallow soil contamination in April 1991 (see our Report P90165, dated April 1991). During the investigation, shallow soil contamination was observed to occur from the pump islands to the south property boundary, and within the east and west property boundaries.

The seventh quarterly monitoring report included the results of additional lateral contamination characterization in the off-site area to the south (BSK Report P92057.3, dated May 29, 1992). This report indicated the extension of a groundwater contaminant plume south of the site, between Wells MW-6 and MW-5, but north of MW-7. Wells MW-5, MW-6 and MW-7 were installed during this investigation.

In our Special Sampling Report of December 23, 1992, BSK determined that concentrations of Total Petroleum Hydrocarbons as Gasoline (TPHg) at MW-7 were related to Perchloroethene contamination, possibly emanating from a nearby dry cleaner.

Review of Subsurface Conditions

The site subsurface soil conditions, as revealed in Borings MW-1A, MW-2, MW-3, and MW-4 of our previous investigation (P89134), consist primarily of silty and sandy clays. Four to five feet of black organic-rich silty clay fill are found immediately below the ground surface, followed by three to five feet of greenish-gray sandy/silty clay native material. In the western portion of the study area, the greenish clay is underlain by seven to eleven feet of yellow-brown sandy clay, grading to a clayey sand with depth. In the eastern portion of the tank area, the sandy clay and clayey sand are split by a six foot layer of silty clay. Light brown silty clay was encountered in each boring from 17 and 24 feet in depth, and continuing to the final depth explored. It is apparent from the boring logs that this lowermost clay layer slopes to the northeast.

In the areas of Wells MW-5 through MW-7, subsurface conditions comprised 10 to 20 feet of dark gray to yellow-gray silty clay, the upper 10 feet of which may be fill. The silty clay is underlain by 4 to 5 feet of orange-brown clayey silt to silty sand. This unit often contains fine, wet to saturated pores. At fifteen to twenty feet in depth, a silty to sandy grayish clay is encountered. This clay is very stiff to hard, often porous, and contains thin saturated lenses of fine sand and silt. At approximately 25 feet, clayey sand to sand was encountered. This unit is soft to firm and contains many fine lenses of sand, silt, and clay. The sand and silt are typically saturated.

Groundwater within the site has been encountered at both 13 to 15 feet and 19 to 23 feet. The lower water levels occur in clayey sands along the east and west boundaries of the site, and likely in its northern one-third. This water horizon is considered the first primary aquifer. A shallow "perched" water is found in clayey sand at 13 to 15 feet, occurring throughout the south-central portion of the site. Hydrostatic pressure in both units results in a piezometric surface 10 to 12 feet below ground surface. The similar piezometric surface suggests that the "perched" water is connected to the underlying aquifer. Additional evidence for this connection is the lack of a confining layer below the upper clayey sand in several borings in the south-central portion of the site.

Groundwater flow direction at the site has been towards the southwest since December 1989. Gradient has varied at the site from 0.4% to 2.0%. Electrical conductivity is a relatively low 300 to 1,000 micromhos/cm, and pH has generally been slightly acidic. Seasonal precipitation appears to result in more southerly flow, a flatter gradient, and 1 to 2 feet higher water levels in early spring.

During soil boring investigations, soil contamination by petroleum hydrocarbons was observed olfactorily and by Photo-Ionization Detector (PID) in 13 borings in the project area. Hydrocarbons were detected at depths ranging from just below the asphalt pavement to 17 feet (the greatest depth of several borings in the area of greatest contamination). PID values reached 3,600 ppm total ionizable hydrocarbons in soil. The greatest concentrations were observed between 10 feet in depth

and first encountered groundwater (where encountered). It was noted that contamination was not always accompanied by soil staining, and volatilization was rapid upon exposure to air.

Groundwater contamination has been encountered at the site in samples obtained quarterly from Wells MW-2 and MW-3, and in Well MW-7. Wells MW-2 and MW-3 are adjacent to, and up and cross-gradient to what is believed to be the contaminant source area. Well MW-7 is down gradient from the source area; however, it appears that contamination encountered in Well MW-7 is not related to the Unocal contaminant plume.

SIXTEENTH QUARTERLY MONITORING ACTIVITIES

General

Quarterly monitoring of groundwater monitoring wells MW-2, MW-3 and MW-4 was performed on July 13, 1994. Monitoring wells MW-5, MW-6 and MW-7 were not sampled this quarter; MW-5 and MW-6 are sampled semi-annually, MW-7 was not sampled due to conflict with respect to responsibility for storage and disposal of the well effluent. The quarterly and semi-annual sampling schedule is approved by Mr. Scott Seery, case officer for the ACDEH, and reflects the results of quarterly monitoring performed at the Site since August 1990. Field procedures and observations are provided in the following text and Tables.

Field Work

Wells MW-2 through MW-4 were purged by an electric submersible pump. Three to four well casing volumes were removed from each well. Purge effluent was field monitored for pH, Temperature and Conductivity during purging to assess the influx of fresh formation water into the well. Purged water was transferred to 55-gallon DOT-approved steel drums for holding. Each drum was labeled according to its contents, content source, and date of accumulation.

Prior to purging, the depth to water in each well was measured using a Solinst electric sounding tape, marked in twentieths of a foot. The water depth was then interpolated to the 0.01 foot increment from the tape. Each well was subsequently examined for floating and sinking immiscible product layers and sheen, using a clear bailer having dual check valves for point-source sampling. Groundwater flow direction and gradient data were determined from the depth measurements using the three-point graphical solution method. The piezometric contour and elevation, and well water elevations, are presented in Figure 3, Potentiometric Surface Map.

Upon purge completion, each well was again measured to confirm a minimum of 80% well recovery prior to sampling. Water sampling was then performed with an electric submersible pump. Sampling for contaminants was performed in the order of contaminant volatility, with the most volatile constituent sampled first. Each water sample obtained for a specific contaminant, or contaminants, was decanted into the appropriate container with preservative (as necessary), sealed, labeled and refrigerated for delivery to our State-certified laboratory.

A Well Field Log was prepared for each well sampled, recording the water depth, well volume, pH, water temperature, conductivity and other data. The Well Field Logs are presented as Figures 4.1 through 4.3.

Site Hydrology

Groundwater measurements were made of the three sampled wells on July 13, 1994 in order to assess the flow direction and gradient. On that date, groundwater flow was south-southwest, similar to the previous quarter. The gradient was 0.7 percent, slightly less than the previous quarter. Groundwater levels were 0.47 to 0.80 feet less than the previous quarter. Groundwater flow direction and gradient are shown on Figure 3, Potentiometric Surface Map.

Temperature, conductivity and pH data are presented in the Well Field Logs, Figures 4.1 through 4.3. Little significant change has occurred in these parameters; conductivity was slightly decreased.

The changes in water level since April 1994 likely reflect seasonal fluctuation in precipitation inflow to the groundwater basin.

Chemical Analyses

Water samples obtained from Wells MW-2 and MW-3 were analyzed for constituents related to gasoline, since the wells are located adjacent to and downgradient from two 10,000 gallon underground gasoline tanks. The samples were tested for the following contaminants: Total Petroleum Hydrocarbons as Gasoline (TPHg) and Benzene, Toluene, Ethylbenzene and Xylene (BTEX). Well MW-4 was tested for waste-oil related contaminants: TPHg, TPHd, Oil and Grease and BTEX.

The contaminants tested for are those specified by the Tri-Regional Water Quality Control Board Recommendations of August 10, 1990, and listed in the ACDEH letter, dated April 26, 1990 to R.T. Nahas Co. Current and former analysis results are presented for comparison in the following tables. The Chemical Test Data Sheets are presented in Appendix A, Figures A-1 through A-4. The Project Chain-of-Custody record is shown in Figure A-5.

WATER ANALYSES - BTEX

TABLE 1

(Results and Action Levels presented in µg/l)

Sample Date	Sample Location	Benzene (1)*	Toluene (100)+	Xylene (1750)*	Ethylbenzene (680)*
August 1990	Well MW-2	21	3.9	28	7.2
	Well MW-3	55	3.8	59	20
	Well MW-4	ND	ND	ND	ND
January 1991	Well MW-2	50	33	110	22
	Well MW-3	29	3.3	34	9.7
April 1991	Well MW-2	640	520	790	170
	Well MW-3	450	270	760	150
	Well MW-4	ND	ND	ND	ND
July 1991	Well MW-2	14	1	17	8
	Well MW-3	14	14	33	8
October 1991	Well MW-2	2.9	ND	6	2.5
	Well MW-3	ND	ND	ND	ND
	Well MW-4	ND	ND	ND	ND
January 1992	Well MW-2	480	870	860	160
	Well MW-3	4	10	8	2
April 1992	Well MW-2	70	0.3	7.0	15
	Well MW-3	1.0	0.4	0.9	ND
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	0.3	ND	ND
	Well MW-7	0.4	0.3	0.9	0.3
July 1992	Well MW-2	10	ND	2.3	0.6
	Well MW-3	1.3	0.4	1.3	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND
October 1992	Well MW-2	2.3	ND	3.0	2.3
	Well MW-3	2.1	ND	0.3	ND
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	0.4	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND
January 1993	Well MW-2	11	5.1	6.3	1.4
	Well MW-3	1.2	1.0	4.1	0.6
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND

WATER ANALYSES - BTEX

TABLE 1 (Continued)

(Results and Action Levels are presented in µg/l)

Sampling Date	Sample Location	Benzene (1)*	Toluene (100)+	Xylene (1750)*	Ethylbenzene (680)*
March 1993	Well MW-2	110	32	28	67
	Well MW-3	32	0.9	13	64
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND
July 1993	Well MW-2	17	1.1	12	6.0
	Well MW-3	24	11	82	14
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND
October 1993	Well MW-2	4.0	ND	3.1	2.3
	Well MW-3	5.0	ND	1.2	0.6
	Well MW-4	0.4	ND	0.4	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	0.7	ND
January 1994	Well MW-2	13	3.4	9.2	4.9
	Well MW-3	5.5	2.1	14	2.6
	Well MW-7	ND	ND	ND	ND
April 1994	Well MW-2	23	1.1	17	8.2
	Well MW-3	17	1.0	24	4.9
	Well MW-4	ND	ND	0.4	ND
	Well MW-5	ND	0.4	1.0	ND
	Well MW-6	ND	0.3	0.4	ND
	Well MW-7	ND	ND	ND	ND
July 1994	**Well MW-2**	**14**	**0.7**	**12**	**5.8**
	Well MW-3	**7.2**	**0.4**	**4.6**	**1.6**
	Well MW-4	**ND**	**0.6**	**ND**	**ND**

ND - None Detected
* - DHS: Primary Drinking Water Standard (3/89)
\+ - DHS: Action Level

WATER ANALYSES - TPH and OIL & GREASE

TABLE 2

(Results and Action Levels are presented in µg/l)

Sampling Date	Sample Location	TPH as Gasoline (100)*	TPH as Diesel (100)*	Oil and Grease Total (100*)	Oil and Grease Hydrocarbon (100*)
August 1990	Well MW-2	180	--	--	--
	Well MW-3	290	--	--	--
	Well MW-4	ND	ND	ND	--
January 1991	Well MW-2	430	--	--	--
	Well MW-3	110	--	--	--
April 1991	Well MW-2	4800	--	--	--
	Well MW-3	3600	--	--	--
	Well MW-4	ND	ND	ND	--
July 1991	Well MW-2	220	--	--	--
	Well MW-3	220	--	--	--
October 1991	Well MW-2	170	--	--	--
	Well MW-3	ND	ND	ND	--
	Well MW-4	ND	ND	ND	--
January 1992	Well MW-2	5200	--	--	--
	Well MW-3	60	--	--	--
April 1992	Well MW-2	300	--	--	--
	Well MW-3	ND	--	ND	--
	Well MW-4	ND	ND	ND	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	1300	--	--	--
July 1992	Well MW-2	84	--	--	--
	Well MW-3	ND	--	--	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	830	--	--	--
October 1992	Well MW-2	ND	--	--	--
	Well MW-3	ND	--	--	--
	Well MW-4	ND	120	ND	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	3900	--	--	--

WATER ANALYSES - TPH and OIL & GREASE
TABLE 2 (Continued)

(Results and Action Levels are presented in µg/l)

Sample Date	Sample Location	TPH as Gasoline (*)	TPH as Diesel (100,)	Oil & Grease, Total (*)	Oil & Grease, Hydrocarbon (*)
January 1993	Well MW-2	170	--	--	--
	Well MW-3	ND	--	--	--
	Well MW-4	ND	ND	ND	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	1900	--	--	--
March 1993	Well MW-2	720	--	--	--
	Well MW-3	330	--	--	--
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	830	--	--	--
July 1993	Well MW-2	220	--	--	--
	Well MW-3	330	--	--	--
	Well MW-4	ND	ND	--	1
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	680	--	--	--
October 1993	Well MW-2	98	--	--	--
	Well MW-3	ND	--	--	--
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	360	--	--	--
January 1994	Well MW-2	130	--	--	--
	Well MW-3	69	--	--	--
	Well MW-7	330	--	--	--
April 1994	Well MW-2	270	--	--	--
	Well MW-3	62	--	--	--
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	360	--	--	--
July 1994	**Well MW-2**	**180**	**--**	**--**	**--**
	Well MW-3	**52**	**--**	**--**	**--**
	Well MW-4	**ND**	**86**	**ND**	**ND**

-- - Not Tested
ND - None Detected
* - No Drinking Water Action Levels are provided for these compounds
1 - Results in mg/l
2 - 1980 US EPA 10-Day Suggested No Adverse Response Level (SNARL)

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

On the basis of our findings to date, an unauthorized motor-fuel release to soil and groundwater has occurred at the site in the vicinity of the two 10,000-gallon underground gasoline storage tanks.

Trace contaminant concentrations associated with gasoline (BTEX compounds) have decreased slightly in the wells sampled this quarter, and were detected in all wells sampled with the exception of Well MW-4. A trace concentration of Toluene was detected in Well MW-4. State and Federal Standards for drinking water were exceeded for benzene concentrations in Wells MW-2 and MW-3. Total Petroleum Hydrocarbons as Gasoline (TPHg) was detected in Wells MW-2, MW-3. Total Petroleum Hydrocarbons as Diesel was detected in Well MW-4.

The chromatograph of TPHd concentration detected in Well MW-4 is reported to be dissimilar to a Diesel standard (see Figure A-3, Appendix "A"). The laboratory reports that the chromatograph is reminiscent of aged/weathered product. The chromatograph is reported to contain mostly longer-chain hydrocarbons.

The southern limit of the gasoline contaminant plume is believed to be located north of Well MW-7, as evidenced from the general lack of detected aromatic hydrocarbons and other gasoline related compounds detected at MW-7 since analyses began in April 1992. The east and west plume limits are indicated to lie between Wells MW-5 and MW-6 by the only occasional encounter of trace concentrations of toluene and xylene compounds at these locations.

At this time, it appears that a dry cleaner located between the Unocal service station and Well MW-7 is a potential source for perchloroethene contamination in groundwater in Well MW-7.

Recommendations

With respect to the findings of this quarterly sampling, and the conclusions of this report, it is recommended that groundwater monitoring for gasoline constituents continue quarterly for Wells MW-2, MW-3 and MW-4, and bi-annually for Wells MW-5, MW-6 and MW-7.

REPORT DISTRIBUTION

Copies of this report should be submitted to the Alameda County Department of Environmental Health for their review. We are providing you with extra copies for this purpose. We understand that copies of the report may be forwarded by ACDEH to the Regional Water Quality Control Board in Oakland for their review.

Alameda County Department of Environmental Health
1181 Harbor Bay Parkway
Alameda, CA 94502

LIMITATIONS

The findings and conclusions presented in this report are based on field review and observations, and from the limited testing program described in this report. This report has been prepared in accordance with generally accepted methodologies and standards of practice in the area. No other warranties, expressed or implied, are made as to the findings, conclusions and recommendations included in the report.

The findings of this report are valid as of the present. The passage of time, natural processes or human intervention on the property or adjacent property can cause changed conditions which can invalidate the findings and conclusions presented in this report.

BSK is pleased to continue to be of service to you during this project. If you have questions concerning the contents of the report, please do not hesitate to contact us.

Respectfully submitted,
BSK & Associates

Alex Y. Eskandari, P.E.
Project Manager
C.E. No. 038101, R.E.A. No. 01528

Tim W. Berger, C.E.G. No. 1828
Project Geologist

AYE/TWB:ndp
(reports\env\P92057Q.394)

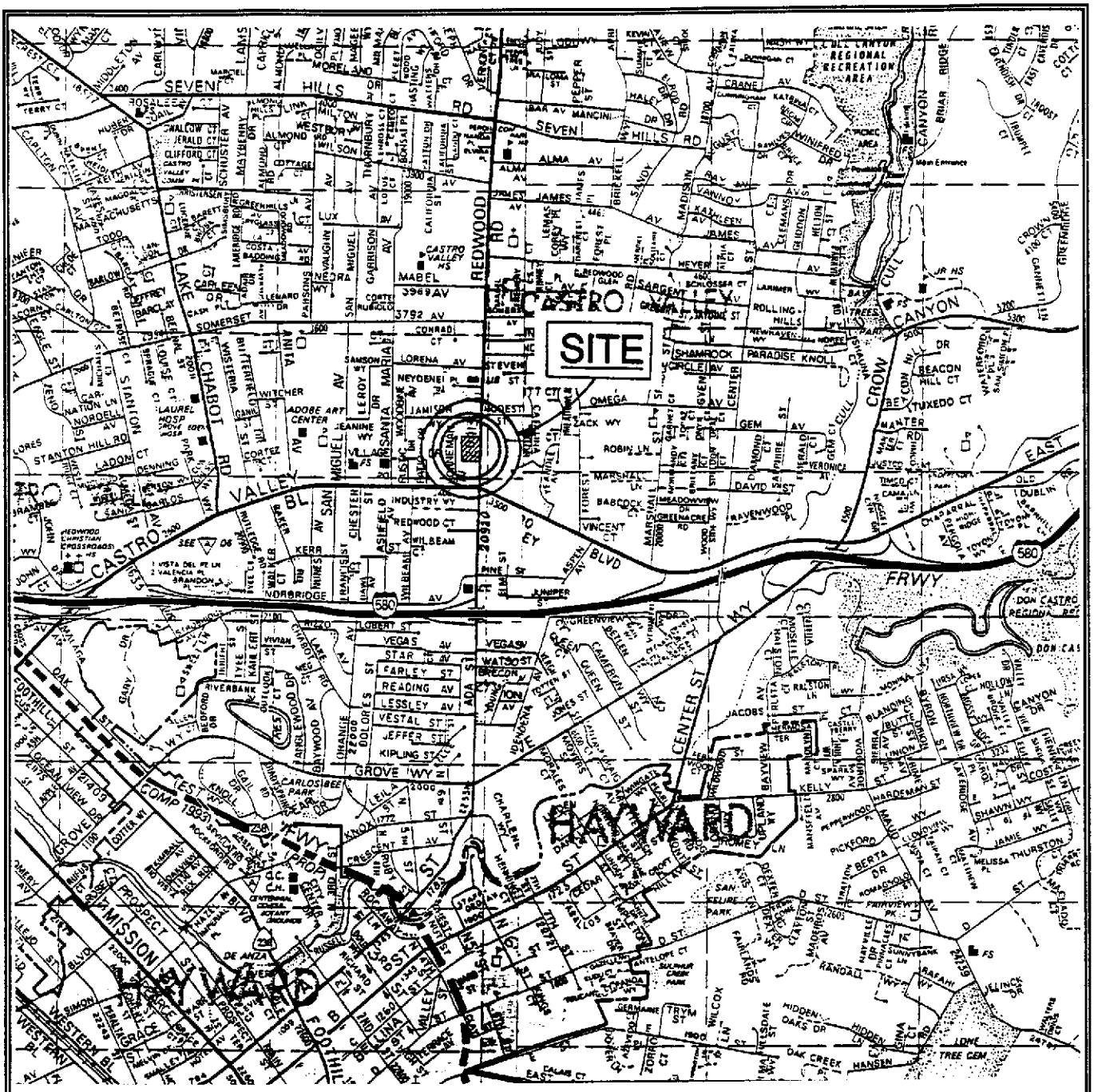
Distribution:
R.T. Nahas Co. (1 original and 3 copies)

The following are attached and complete this report:

FIGURE	1	Vicinity Map
FIGURE	2	Site Plan
FIGURE	3	Potentiometric Surface Map
FIGURES	4.1	
through	4.3	Well Field Logs

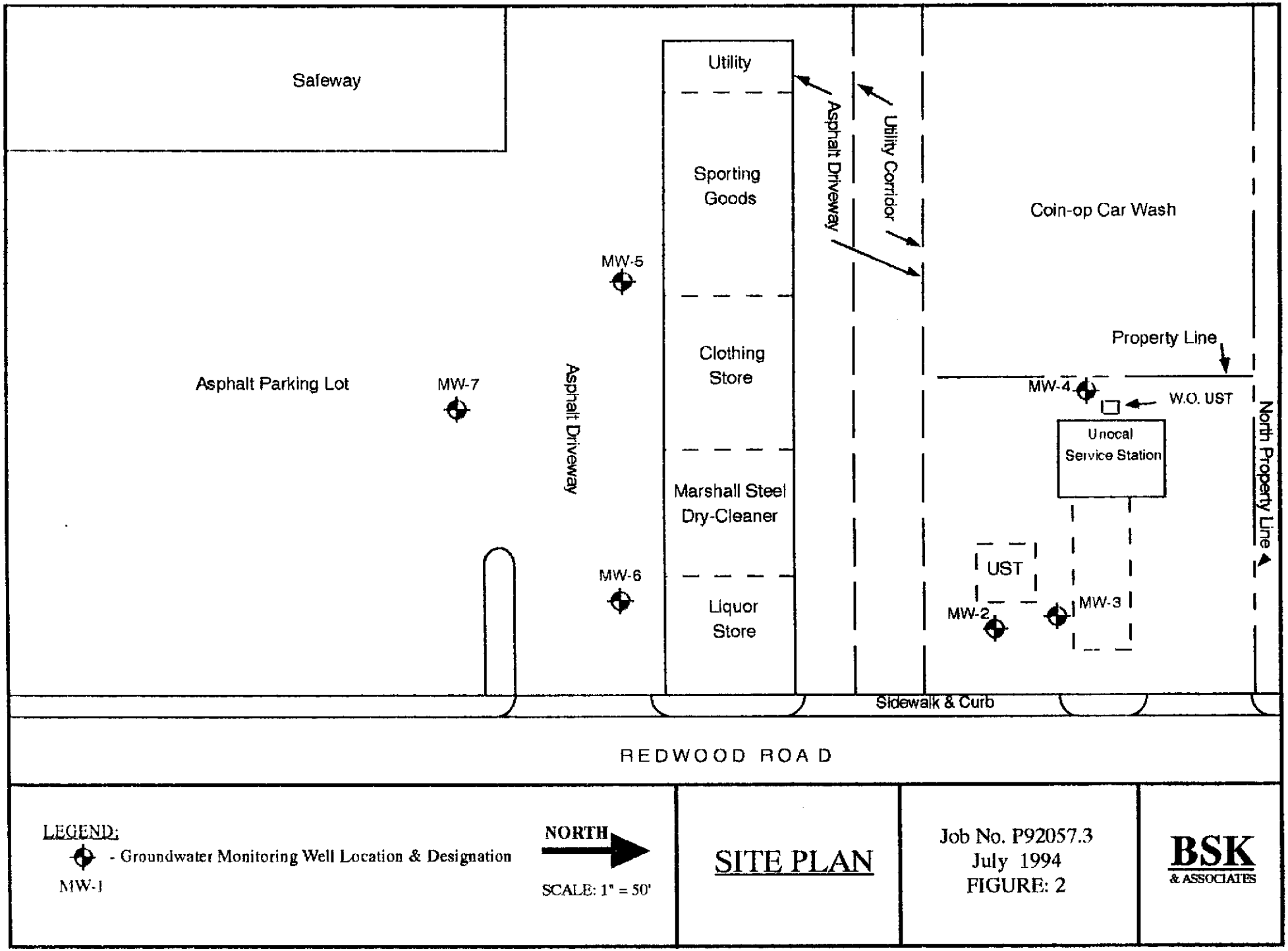
APPENDIX "A"

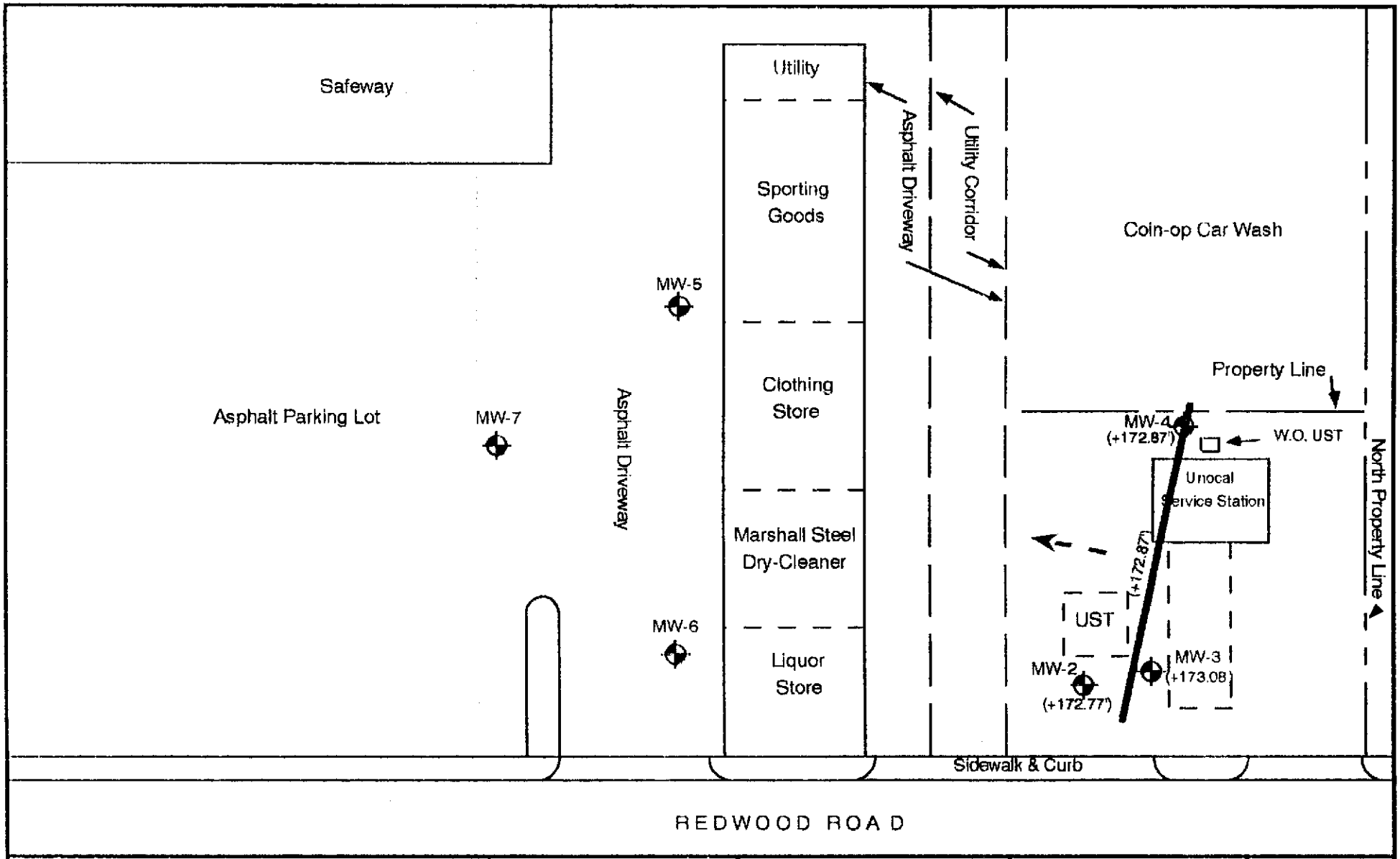
FIGURES	A-1	
through	A-4	Sixteenth Quarterly Laboratory Chemical Test Data Sheets
FIGURE	A-5	Project Chain-of-Custody Document



Source: Thomas Guide, 1992, Alameda and Contra Costa Counties

SIXTEENTH QUARTERLY GROUNDWATER MONITORING REPORT UNOCAL 76 SERVICE STATION 20405 AND 20629 REDWOOD ROAD CASTRO VALLEY, CALIFORNIA	**VICINITY MAP** **BSK Job No. P92057.3** **July 1994** **FIGURE: 1**	**BSK** **& ASSOCIATES**


Safeway
Utility
Asphalt Driveway
Utility Corridor
Sporting Goods
Coin-op Car Wash
MW-5
Property Line
Clothing Store
Asphalt Parking Lot
MW-7
Asphalt Driveway
MW-4
W.O. UST
Unocal Service Station
North Property Line
Marshall Steel Dry-Cleaner
UST
MW-6
MW-2
MW-3
Liquor Store
Sidewalk & Curb
REDWOOD ROAD
LEGEND:
- Groundwater Monitoring Well Location & Designation
MW-1
NORTH
SCALE: 1" = 50'
SITE PLAN
Job No. P92057.3
July 1994
FIGURE: 2
BSK
& ASSOCIATES


Safeway
Utility
Sporting Goods
Clothing Store
Marshall Steel Dry-Cleaner
Liquor Store
Asphalt Driveway
Utility Corridor
Coin-op Car Wash
Property Line
North Property Line
MW-5
MW-7
MW-6
Asphalt Parking Lot
Asphalt Driveway
MW-4 (+172.87')
W.O. UST
Unocal Service Station
(+172.87')
UST
MW-2 (+172.77')
MW-3 (+173.08')
Sidewalk & Curb
REDWOOD ROAD
LEGEND:
MW-1 - Groundwater Monitoring Well Location & Designation
- Groundwater Flow Direction (7/13/94)
- Line of Equal Groundwater Elevation (7/13/94)
(+170.00) - Groundwater Elevation (7/13/94)
NORTH
SCALE: 1" = 50'
GRADIENT: 0.7%
POTENTIOMETRIC SURFACE MAP
Job No. P92057.3
July 1994
FIGURE: 3
BSK & ASSOCIATES

BSK Job No.: P92057.3
Date: July 1994
Figure No.: 4.1

WELL FIELD LOG

Well Observation: x **Date:** 07/13/94
Sample Collection: x **Date:** 07/13/94

Project Name: Sixteenth Quarterly Sampling
Location: Nahas/Union 76
Personnel: RFG
Weather: Clear, ±85° F.

WELL INFORMATION:

Well Number	MW-2	**Date Purged**	07/13/94
Depth to Water - feet(TOC)	10.70	**Purge Method**	Electric submersible pump
Well Depth (feet)	30		
Water Volume (gallons)	3.1	**Purge Begin**	13:19
Reference Elevation - feet(TOC)	+183.47	**Purge End**	13:30
Groundwater Elevation (feet)	+172.77	**Purge Rate**	1.1 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None
Bottom: None
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
13:22	3.0	940	7.18	72	Light Brown Tint
13:25	6.0	874	7.48	71	Clear
13:28	9.0	851	7.52	70	"
13:30	12.0	848	7.48	70	"
13:35	Depth to Water: 11.90 feet				

SAMPLE COLLECTION DATA

Sampling Equipment: Electric Submersible Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
13:37	BTEX & TPHg	2-40ml glass VOC with HCl	20'

Field Observations: None

BSK Job No.:P92057.3
Date: July 1994
Figure No.: 4.2

WELL FIELD LOG

Well Observation: x **Date:** 07/13/94
Sample Collection: x **Date:** 07/13/94

Project Name: Sixteenth Quarterly Sampling
Location: Nahas/Union 76
Personnel: RFG
Weather: Clear, ±85° F.

WELL INFORMATION:

Well Number	MW-3	**Date Purged**	07/13/94
Depth to Water - feet(TOC)	10.95	**Purge Method**	Electric Submersible Pump
Well Depth (feet)	30		
Water Volume (gallons)	3.0	**Purge Begin**	14:12
Reference Elevation - feet(TOC)	+184.03	**Purge End**	14:23
Groundwater Elevation (feet)	+173.08	**Purge Rate**	1.1 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None
Bottom: None, some red flakes
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
14:13	3.0	769	7.57	71	Brown tint
14:17	6.0	763	7.58	71	"
14.21	9.0	741	7.55	70	Clear
14:23	12.0	738	7.58	70	"
14:30	Depth to Water: 11.1 feet				

SAMPLE COLLECTION DATA

Sampling Equipment: Electric Submersible Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
14:35	BTEX & TPHg	2-40ml glass VOC with HCl	20'

Field Observations: Six feet from active gas pump island

BSK Job No.: P92057.3
Date: July 1994
Figure No.: 4.3

WELL FIELD LOG

Well Observation: x **Date:** 07/13/94
Sample Collection: x **Date:** 07/13/94

Project Name: Sixteenth Quarterly Sampling
Location: Nahas/Union 76
Personnel: RFG
Weather: Clear, ±78° F.

WELL INFORMATION:

Well Number	MW-4	**Date Purged**	07/13/94
Depth to Water - feet(TOC)	11.74	**Purge Method**	Electric Submersible Pump
Well Depth (feet)	25		
Water Volume (gallons)	2.1	**Purge Begin**	12:18
Reference Elevation - feet(TOC)	+184.61	**Purge End**	12:29
Groundwater Elevation (feet)	+172.87	**Purge Rate**	0.91 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None, clear
Bottom: None, slight yellow tint
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
12:21	2.5	608	7.36	70	Light brown tint
12:23	5.0	552	7.15	69	Clearing
12:26	7.5	541	7.23	68	"
12:29	10.0	540	7.24	68	Clear
12:33	Depth to Water: 11.90'				

SAMPLE COLLECTION DATA

Sampling Equipment: Electric Submersible Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
12:35	BTEX & TPHg	2-40ml glass VOC with HCl	16'
"	TPHd	2-250 ml Amber Glass, w/H_2SO_4	"
"	Oil & Grease	1 Liter Amber Glass, w/H_2SO_4	"

Field Observations: None

APPENDIX A

CHEMICAL TEST DATA SHEETS

AND

PROJECT-CHAIN-OF-CUSTODY RECORD

BSK & Associates

FIGURE: A-1

ANALYTICAL BSK LABORATORIES
1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 497-2889
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 07/13/94
Time Sampled : 1337
Date Received : 07/14/94
Date of Analysis : 07/14/94
Report Issue Date: 07/20/94

Case Number : Ch942053
Lab ID Number : 2053-3
Project Number : P92057.3
Sample Description: MW-2

Sample Type: LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	14	0.3
Toluene	0.7	0.3
Ethylbenzene	5.8	0.3
Total Xylene Isomers	12	0.3
Total Petroleum Hydrocarbons (G)	180	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

NOTE:
Hydrocarbons in the gasoline boiling point range are reported, in accordance with the method, as gasoline.
Chromatography for this sample is described as consistent with the gasoline standard.

LEGEND:

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

91 1009 BTPL.t

FIGURE: A-2

ANALYTICAL BSK LABORATORIES
1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 497-2889
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 07/13/94
Time Sampled : 1435
Date Received : 07/14/94
Date of Analysis : 07/14/94
Report Issue Date: 07/20/94

Case Number : Ch942053
Lab ID Number : 2053-2
Project Number : P92057.3
Sample Description: MW-3

Sample Type: LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	7.2	0.3
Toluene	0.4	0.3
Ethylbenzene	1.6	0.3
Total Xylene Isomers	4.6	0.3
Total Petroleum Hydrocarbons (G)	52	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

NOTE:
Hydrocarbons in the gasoline boiling point range are reported, in accordance with the method, as gasoline.
Chromatography for this sample is described as consistent with the gasoline standard.

LEGEND:

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

1 1009 BTPL.t

FIGURE: A-3

ANALYTICAL BSK LABORATORIES
1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 497-2889
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 07/13/94
Time Sampled : 1235
Date Received : 07/14/94
Report Issue Date: 07/20/94

Case Number : Ch942053
Lab ID Number : 2053-1
Project Number : P92057.3
Sample Description: MW-4

Sample Type: LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Date of Analysis : 07/14/94

Compound	Results	DLR
Benzene	ND	0.3
Toluene	0.6	0.3
Ethylbenzene	ND	0.3
Total Xylene Isomers	ND	0.3
Total Petroleum Hydrocarbons (G)	ND	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

NOTE:
Hydrocarbons in the gasoline boiling point range are reported, in accordance with the method, as gasoline.

Analyses for TPH (Total Petroleum Hydrocarbons) as Diesel by Method DHS GC/FID.

Results Reported in Micrograms per Liter (µg/L)

Date of Analysis : 07/19/94

Analyte	Results	DLR
Total Petroleum Hydrocarbons (D)	86	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

NOTE:
Hydrocarbons in the diesel boiling point range are reported, in accordance with the method, as diesel.
Chromatography for this sample is described as inconsistent with the diesel standard.

LEGEND:
DLR: Detection Limit for the Purposes of Reporting. ND: None Detected
Exceptional sample conditions or matrix interferences may result in higher detection limits.

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

R920213 BTL.T

FIGURE: A-4

ANALYTICAL BSK LABORATORIES
1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 497-2889
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 07/13/94
Time Sampled : 1235
Date Received : 07/14/94
Date of Analysis : 07/19/94
Report Issue Date: 07/20/94

Case Number : Ch942053
Lab ID Number : 2053-1
Project Number : P92057.3
Sample Description: MW-4

Sample Type: LIQUID

Analyses For Total & Hydrocarbon Oil & Grease By EPA Methods 413.2 & 418.1

Results Reported in Milligrams Per Liter (mg/L)

Analyte	Results	DLR
Total Oil and Grease.....	ND	1
Hydrocarbon Oil and Grease	ND	1

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

P920302 OGTHL41

ANALYTICAL
BSK
LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, CA 93706
(209) 485-8310
(800) 877-8310
(209) 485-6935 FAX

Analyses Request / Chain of Custody

BSK Log Number: 2053

Analytical Due Date: 7/25/94

Shaded areas for LAB use only

Requested Analyses

Client Name: Nahas c/o BSK	Report Attention: Tim Berger	Phone #: (510) 462-4000
Address: 1181 Quarry Ln #300	Project, Quote or PO #: P92057.3	FAX #: (510) 462-0283
City, State, Zip: Pleasanton CA 94566	Copy to:	System #:

LAB use only Sample #	Type	# Cont.	Date Sampled	Time Sampled	Sampled by: Sample Description/Location	Comment or Station Code	BTXE	TPH-G	TPH-D	Oil & Grease (Hexane extractable)							
1	L	3	7/13/94	12:35	MW-4	Record temp	X	X	X	X							
2	L	2	7/13/94	14:35	MW-3	1.0°C	X	X									
3	L	2	7/13/94	13:37	MW-2		X	X									

ANALYST COPY

Matrix Type: L - Liquid S - Solid G - Gas
Type of Hazards Associated with Samples:

Additional Services:
Rush Priority: [ ] - 2 Day [ ] - 5 Day
[ ] - Formal Chain of Custody [ ] - QC Data package

Additional Services Authorized by: _____ (Signature)

Payment Received with Delivery
Date: _____ Amount: $ _____
Check # _____ Initials _____
Reciept # _____

	Signature	Print Name	Company	Date	Time
Requested / Relinquished by:	Frank R. Gregoras	F. Robert Gregoras	BSK - P	7/14/94	10:10
Received / Relinquished by:					
Received / Relinquished by:					
Received / Relinquished by:					
Received for Laboratory by:	Frances Carrasco	Frances Carrasco	BSK Lab	7/14/94	1010

FIGURE: A-5