R.T. NAHAS COMPANY Since 1972

REAL ESTATE DEVELOPERS AND INVESTORS

20630 PATIO DRIVE
CASTRO VALLEY, CALIFORNIA 94546
TELEPHONE (415) 538-9600

91 JAN 31 AM 11:06

January 30, 1991

reviewed 3/8/91

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

RE: Tien's Unocal Station
20405 Redwood Road, Castro Valley, CA
Second Quarterly Groundwater Monitoring Report

Dear Mr. Seery:

Enclosed are two copies of BSK Associate's Second Quarterly Groundwater Monitoring Report. The contaminants in each of the two wells seem to be fluctuating radically over time and even Alex Eskandari with BSK is not sure what is happening.

I am still waiting for a second price for the downgradient well and I should be able to let a contract early in February.

On another topic, with the looming drought and the need for obtaining water wherever it is available, I thought perhaps we could use the water in these wells for irrigation. What are the County standards for level of contaminants for irrigation water and might this not be a way to help mitigate one problem while solving another?

I look forward to your response.

Sincerely,

Randall E. Nahas

REN/hrs

Enclosures

BSK & ASSOCIATES
JOB No. P90165

SECOND QUARTERLY GROUNDWATER MONITORING REPORT
UNOCAL 76 SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA
JANUARY 1991

BSK
& Associates

BSK & Associates, Geotechnical Consultants, Inc.

Geotechnical Engineering * Engineering Geology * Environmental Engineering * Engineering Laboratories * Chemical Laboratories

January 30, 1991 BSK JOB P90165

R. T. Nahas Company/Eden Managements
20630 Redwood Road
Castro Valley, CA 94546

Attention: Mr. Randy T. Nahas

SUBJECT: Second Quarterly Groundwater Monitoring Report
Unocal 76 Service Station
20405 Redwood Road
Castro Valley, California

Gentlemen:

As requested and authorized, we have performed monthly groundwater monitoring well sampling (October 1990 to January 1991) at the above-referenced facility. This quarterly report presents the groundwater data obtained during the monthly sampling, project background, conclusions based on this quarter's data, and recommendations for further action, if necessary.

BACKGROUND

BSK & Associates installed three groundwater monitoring wells in December 1989, designated as MW-2, MW-3 and MW-4 on the attached Site Plan (Figure 1), at the Unocal 76 Service Station located at 20405 Redwood Road, Castro Valley, California. 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. Initially, the plan included four monitoring wells with at least one well (MW-1) to be located down-gradient of the existing tank

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☐ **Visalia,** California 93291 * 808 E. Douglas Avenue * Telephone (209) 732-8857, Fax (209) 732-6570
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☒ **Pleasanton,** California 94566 * 5729-F Sonoma Drive * Telephone (415) 462-4000, Fax (415) 462-6283
☐ **Sacramento,** California 95829 * 9901 Horn Road, Suite C * Telephone (916) 363-1871, Fax (916) 363-1875

cluster. However, due to the encounter of fuel contamination of soil from approximately 10 to 13 feet below grade, during monitoring well installation, the down-gradient borings (MW-1 and MW-1A) were backfilled with 11-sack cement-sand grout following soil sampling in order to avoid further groundwater contamination. 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. Water test data from this report is presented in Appendix "B" of this Work Plan.

Following our meeting with Eden Management and Mr. Scott Seery on April 24, 1990, and receipt of the Alameda County Environmental Health letter dated April 24, 1990, we prepared and submitted our proposal PR90066 to provide quarterly monitoring services for one year, and to assess the extent of soil contamination at the subject site. The Soil Contamination Assessment Work Plan was prepared in accordance with Appendix "A" of the Regional Board Staff Recommendations. Performance of the contamination assessment is pending, based upon findings of this report and response from regulatory agency(ies).

The first quarterly groundwater monitoring report was submitted on August 30, 1990. The first quarterly report concluded that an apparent unauthorized petroleum release had occurred at the site, based on groundwater data adjacent to, but up-gradient from the UST group. This report also reiterated that a down-gradient well does not exist at the site. The groundwater contamination data from this report is presented in Appendix "B".

BSK & Associates conducted monthly monitoring of the existing wells from October 1990 to January 1991 in compliance with the requirements set forth in the October 11, 1990 letter from Alameda County Environmental Health Agency to R.T. Nahas Company. This letter was prepared following review of our first quarterly report and required monthly sampling and testing of Monitoring Wells MW-2 and MW-3, monthly observation and quarterly sampling of MW-4, and preparation of a quarterly report by February 1991, which constitutes this report.

Review of Subsurface Conditions

The site subsurface soil conditions, as exposed by 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 between 17 and 24 feet, and continued to the final depth explored. It is apparent from the boring logs that this lower-most clay slopes to the northeast. For additional subsurface detail, see Subsurface Profile, Figure 2.

Groundwater was encountered in each boring. In the eastern portion of the site, groundwater was first encountered in Borings MW-2 and MW-3 at 20-1/2 and 19 feet below surface. The water level then stabilized in an open well at approximately 12-1/2 feet in depth. In the western portion of the site, Wells MW-1, MW-1A and MW-4 encountered an elevated saturated zone between 16 and 17 feet. In MW-1, water was again encountered at 20 feet, with stiff, moist clays separating the saturated zones. Localized groundwater flow in February 1990 was southwesterly, with a gradient of less than 1.0 percent.

Soil and groundwater petroleum contamination was observed in **Borings MW-1 and MW-1A**, resulting in the abandonment of this area as a monitoring well site. In Boring MW-1, Photo-ionization Detector (PID) measurements detected hydrocarbon compounds from 15 to 17 feet. **The PID readings were especially high in the saturated zone at 17 feet.** In Boring MW-1A, hydrocarbons were detected from 10 to 17 feet and were strongest at 10 feet. Also in MW-1A, **oily water was observed seeping into the open boring at a depth of 15 feet.** Small amounts of photo-ionizable compounds were encountered in Borings MW-2, MW-3 and MW-4 as well, but were not considered significant.

The Unocal Station Manager reported to BSK that an excavation had been made at one time at the west end of the two 10,000-gallon tanks to accommodate repairs, and that petroleum leakage had occurred into this excavation, concurrent with a rainstorm. This may explain the presence of a perched saturated zone and petroleum contaminants in that area.

SECOND QUARTERLY MONITORING ACTIVITIES

General

Monthly monitoring of the installed Underground Storage Tank (UST) groundwater monitoring wells (MW-2 and MW-3) was performed on October 15 and December 4, 1990, and January 3, 1991. (November was not sampled due to the lateness of October sampling and schedule uncertainty.) Well MW-4 was sampled in October only, as per ACEH instruction. Field procedures and observations are provided in the following text and figures.

Field Work

Three groundwater monitoring wells (MW-2, MW-3 and MW-4) were located adjacent to two 10,000-gallon gasoline USTs and one waste oil UST. The wells were installed and developed in December 1989 (see BSK & Associates Report P89134, dated 2/5/90).

The wells were purged using a PVC hand pump. Five to six well volumes were removed from each well. Purge effluent was field monitored for pH, Conductivity and Temperature during purging, to assess the influx of fresh formational water into the well. Purged water was then transferred to a 55-gallon DOT-approved steel drum for holding. The drum was labeled according to its contents, suspected contaminants, content source, date, etc.

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 extrapolated to the hundredth of a foot increment from the tape. Each well was subsequently examined for floating and sinking immiscible product layers, sheen and odor, using a clean PVC bailer having dual check valves for point source sampling. Groundwater flow direction and gradient data were determined from the depth measurements, and are presented in Figures 3.1, 3.2 and 3.3, Groundwater Flow Direction and Gradient.

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 a teflon bailer. Contaminants were sampled for in the order of their volatility, with the most volatile constituents sampled first. Contaminants known to have densities greater than water were sampled for at the bottom of the well. Each water sample obtained for a specific contaminant, or contaminants, was placed into the appropriate receptacle, sealed, labeled and refrigerated for delivery to our State-certified laboratory.

A Well Field Log was prepared for each well sampled, which records water depth, well volume, water temperature and other data. The Well Field Logs are shown as Figures 4.1 through 4.9.

Site Hydrology

Shallow groundwater conditions at the site have remained essentially steady since December 1989, with minor fluctuations of flow direction, gradient and water depth. Flow direction has been to the southwest, varying 7 degrees during the past year. Gradient has ranged 0.75 percent, from 1.14% to 0.4%. Water depth has varied approximately one-half foot, approximately 12 feet below the ground surface.

Trends during the year indicate a flattening of the groundwater gradient, to a December low of 0.4%. The groundwater level has dropped approximately one-third foot overall, and flow direction has swung several degrees westerly.

The groundwater conditions described are illustrated in Figures 3.1 through 3.3. Conductivity, pH and temperature data are presented in the Well Field Logs, Figures 4.1 through 4.9. Little significant change has occurred in these parameters.

Chemical Analyses

The water samples obtained from Wells MW-2 and MW-3 were analyzed for constituents related to gasoline, due to the wells location adjacent to two 10,000 gallon underground gasoline tanks. The contaminants tested for were Total Volatile Hydrocarbons (TVH) and Benzene, Toluene, Xylene and Ethylbenzene (BTXE). Monitoring Well MW-4 was sampled for the waste-oil related contaminants: TVH, BTXE, Total Petroleum Hydrocarbons as diesel (TPH) and Oil and Grease.

The contaminants tested for are those specified by the Tri-Regional Water Quality Control Board Recommendations of July 6, 1990. The analyses results are presented in the following tables. The Chemical Test Data Sheets are presented in Appendix "A", Figures A-1 through A-7. Project Chain-of-Custody records are shown as Figures A-8 through A-10.

WATER ANALYSES

TABLE 1
(Results in ppb)

Month	Sample Locations	Benzene (1*)	Toluene (100+)	Xylene (1750*)	Ethylbenzene (680*)
October 1990	Well MW-2	64	30	160	35
	Well MW-3	18	ND	5.6	3.8
	Well MW-4	ND	ND	ND	ND
December 1990	Well MW-2	17	10	59	13
	Well MW-3	7	2	5	2
January 1991	Well MW-2	50	33	110	22
	Well MW-3	29	3.3	34	9.7

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

TABLE 2
(Results in ppb)

Month	Sample Location	TPH (100*)	TVH (100*)	Oil and Grease (100*)
October 1990	Well MW-2	--	740	--
	Well MW-3	--	87	--
	Well MW-4	ND	ND	ND
December 1990	Well MW-2	--	370	--
	Well MW-3	--	76	--
January 1991	Well MW-2	--	430	--
	Well MW-3	--	110	--

ND = None Detected

-- = Not Tested

*Quantified Action Levels are not provided for these parameters. The amount given is often informally used by regulatory agencies as a threshold value.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Contaminants associated with gasoline have increased in the wells sampled, since the first samples were analyzed in December 1989. In the first samples, only Well MW-2 showed 72 ppb Total Volatile Hydrocarbons (TVH). The latest samples (January 1991) contained Benzene, Toluene, Xylene and Ethylbenzene (BTXE), and TVH in Wells MW-2 and MW-3. Benzene amounts in both wells exceed state and federal limits; TVH values exceed 100 ppb. The greater contaminant amounts in Wells MW-2 and MW-3 were recorded in October 1990. The reason for the peak is unknown. Well MW-4 has not revealed detectable amounts of the contaminants analyzed since monitoring began.

The source of the detected contamination is unclear. Wells MW-2 and MW-3 are located up-gradient from the USTs, as determined from past and present groundwater flow data. A groundwater well located down-gradient from the USTs does not exist due to contaminated soils encountered during the initial monitoring facilities installation (for details, see Our Report P89134). It is possible that a contaminant source is located off the site to the northeast. This is unlikely, however, due to the absence of an identifiable source in that direction. The probable contaminant source is the UST group and/or related plumbing. Monitoring wells impacted by contamination are close enough to the tanks to be affected by a fuel release.

Recently performed precision testing of the tanks and associated plumbing was reported to have revealed no leakage in the system. It is believed by R.T. Nahas that an accidental release of an unknown amount of fuel into the tank excavation, during piping repair several years ago, is the source of the contaminants.

On the basis of our findings to date, an unauthorized fuel release is indicated at the site, in the vicinity of the two 10,000-gallon underground gasoline storage tanks.

Recommendations

With respect to the obtained field data, and conclusions presented, the following recommendations are considered appropriate at this time:

1. Installation and Sampling of a Down-gradient Monitoring Well -- A down-gradient groundwater monitoring well does not exist at this time. If the contamination source is the tank excavation area at the site, a down-gradient well would better indicate contaminant amounts entering the shallow groundwater system.

2. Soil Sampling -- As described in our Work Plan of August 30, 1990, a survey of soil conditions at the site should be made to determine the lateral and vertical (to the groundwater surface) extent of soil contamination. Tank backfill samples should be analyzed to verify or refute the presence of motor fuel.

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 ACEH to the Regional Water Quality Control Board in Oakland for their review.

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

The following are attached and complete this report:

FIGURE 1 - Vicinity Map/Site Plan

FIGURE 2 - Subsurface Profile

FIGURES 3.1 through 3.3 - Groundwater Flow Direction and Gradient

FIGURES 4.1 through 4.9 - Well Field Logs

APPENDIX "A"

FIGURES A-1 through A-7 - Second Quarterly Laboratory Chemical Test Data Sheets

FIGURES A-8 through A-10 - Project Chain-of-Custody Records

APPENDIX "B"

FIGURES B-1 through B-2 - Summary of Previous Chemical Test Data

Respectfully submitted,
BSK & Associates

Alex Y. Eskandari, C.E. 38101
Manager - Geotechnical Services

Tim W. Berger, R.E.A. 02333
Staff Geologist

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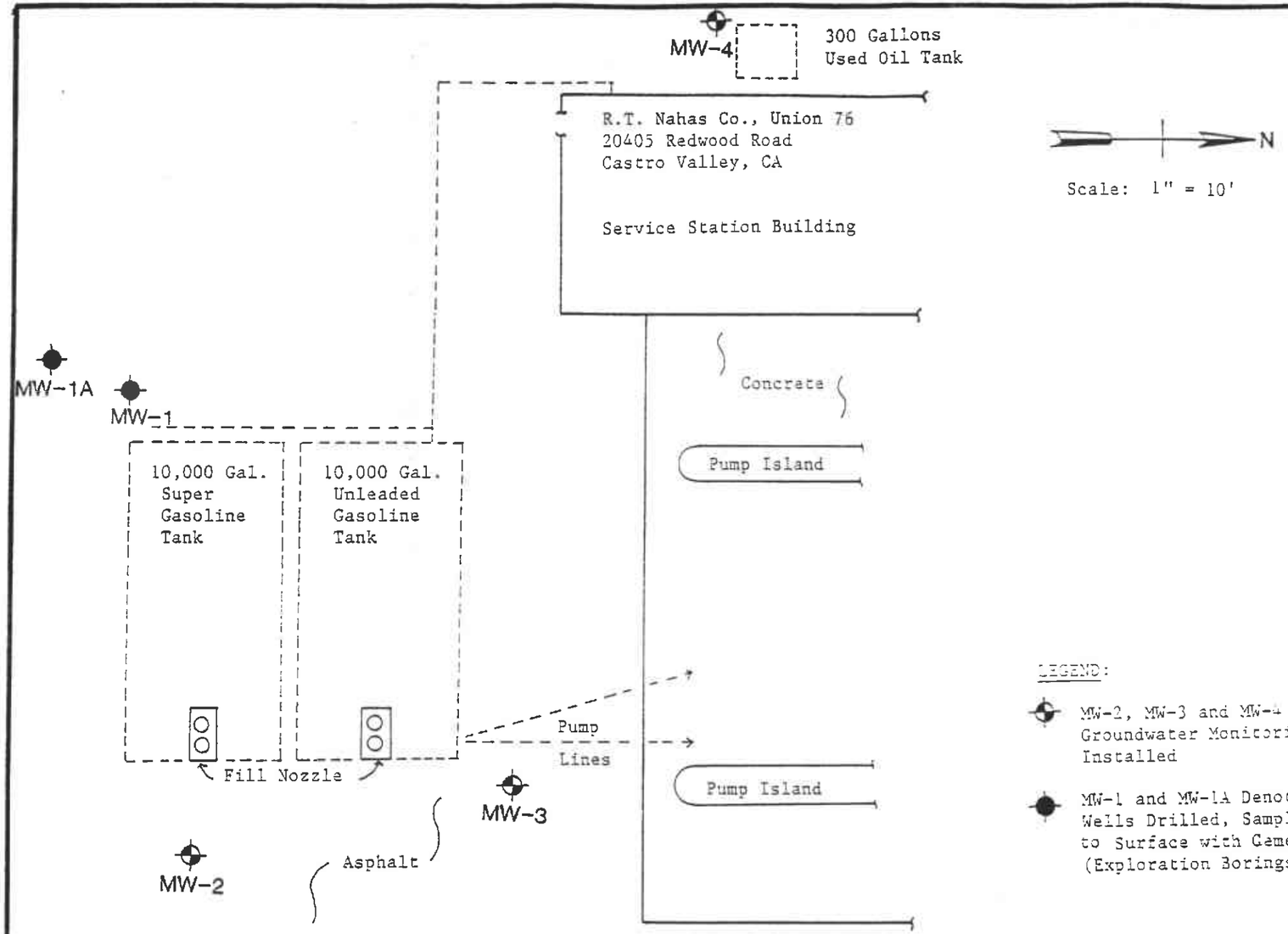

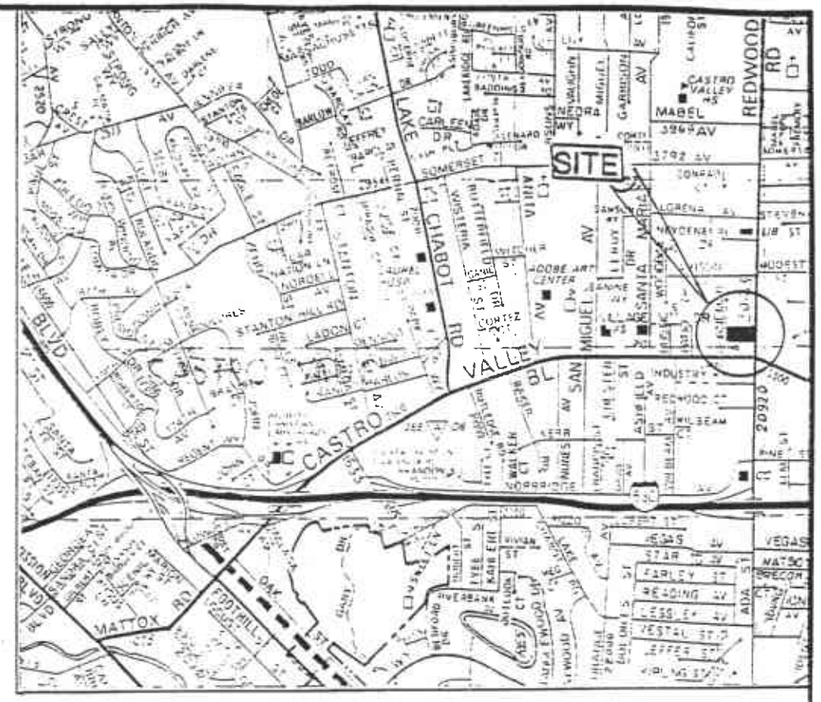

VICINITY MAP
(N.T.S.)

LEGEND:

MW-2, MW-3 and MW-4 Denote Groundwater Monitoring Wells Installed

MW-1 and MW-1A Denote Wells Drilled, Sampled and Backfilled to Surface with Cement Grout (Exploration Borings)

SITE PLAN

SECOND QUARTERLY GROUNDWATER MONITORING REPORT
UNOCAL 76 SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

Job No. P90165
January 1991
FIGURE; 1

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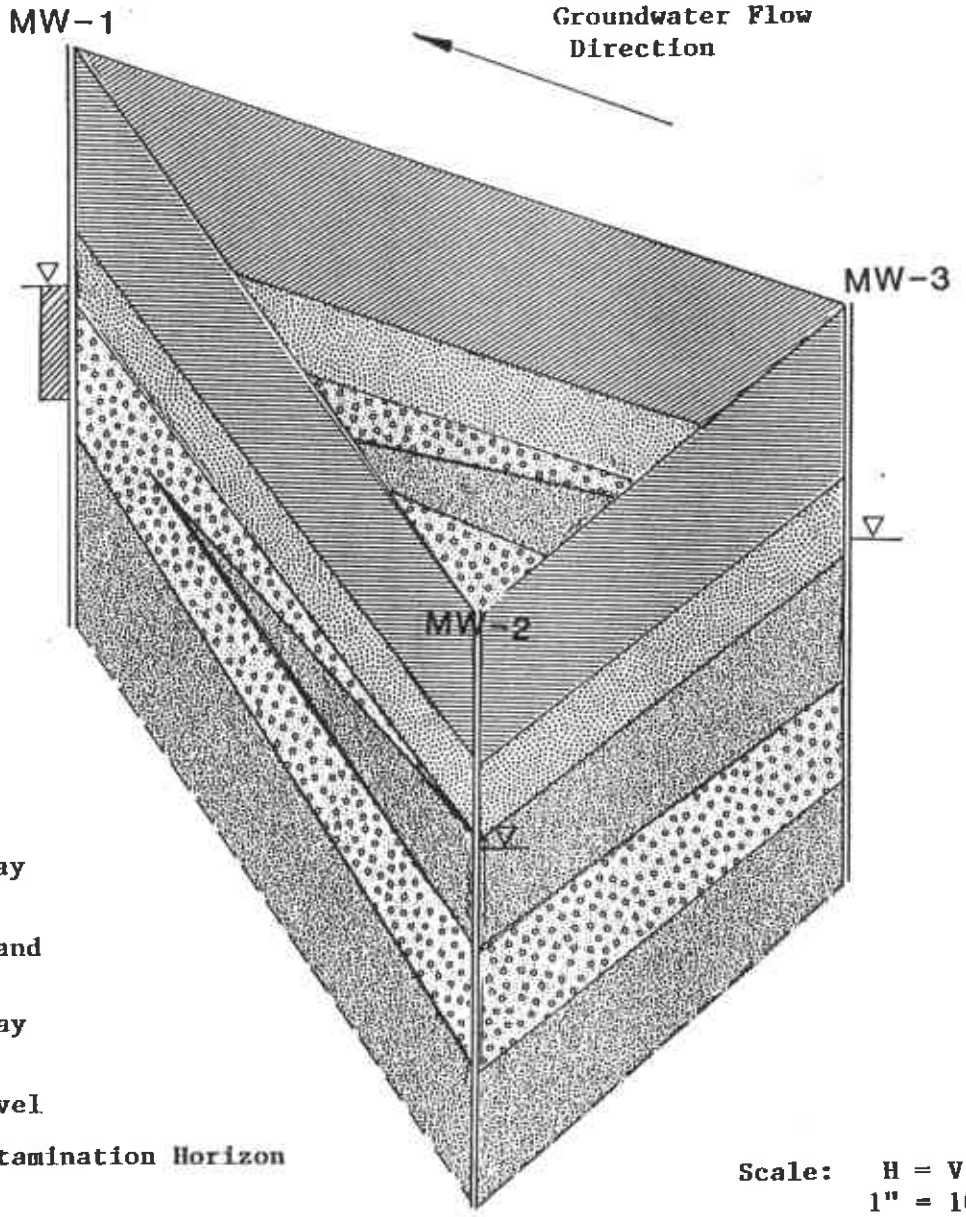

LEGEND:

- Clay
- Sandy Clay
- Clayey Sand
- Silty Clay
- Water Level
- Soil Contamination Horizon

Scale: H = V
1" = 10'

CHECKED BY

DATE

BY

SUBSURFACE PROFILE

SECOND QUARTERLY GROUNDWATER MONITORING REPORT

UNOCAL 76 SERVICE STATION

20405 REDWOOD ROAD

CASTRO VALLEY, CALIFORNIA

Job No. P90165
January 1991
FIGURE: 2

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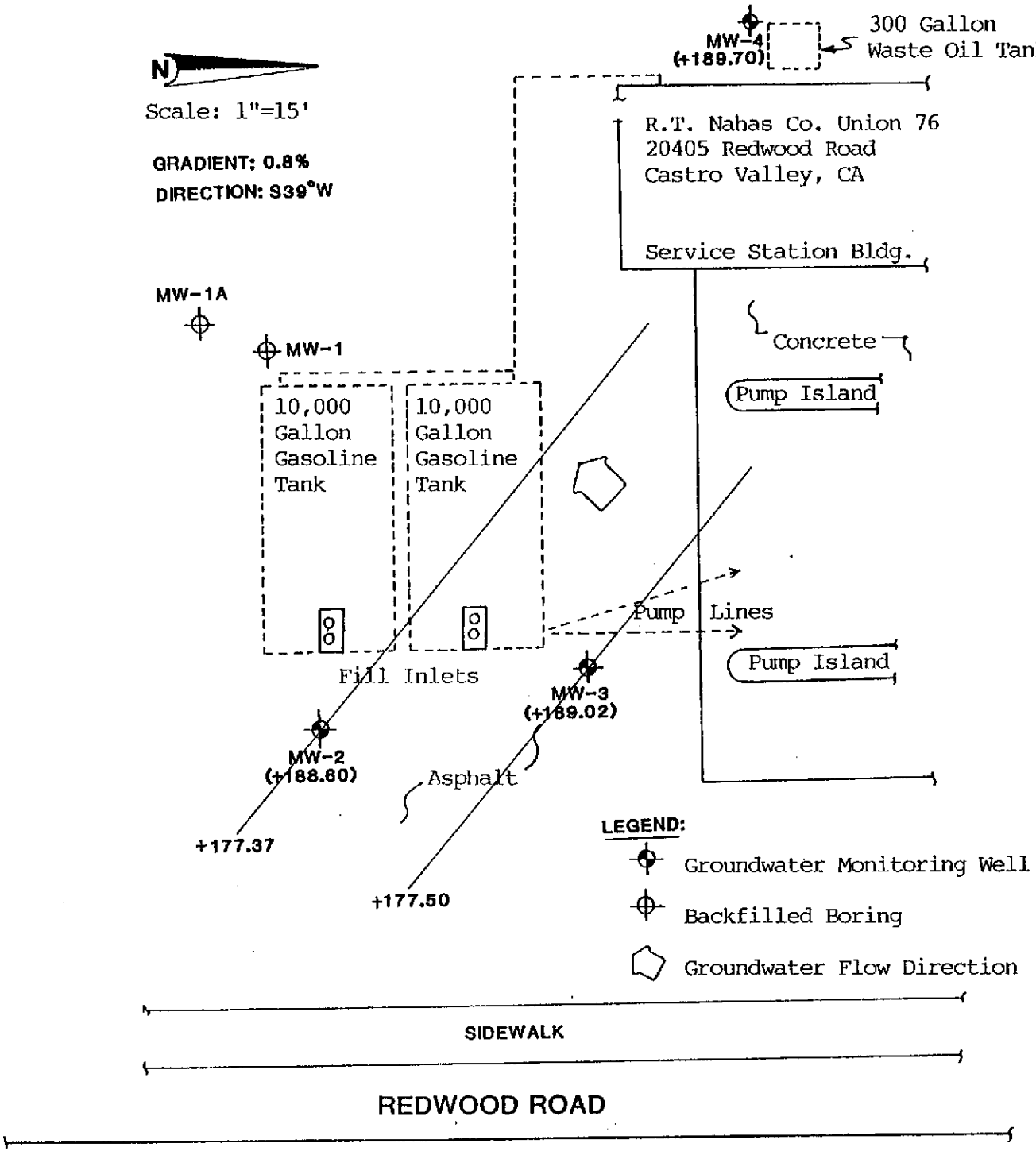


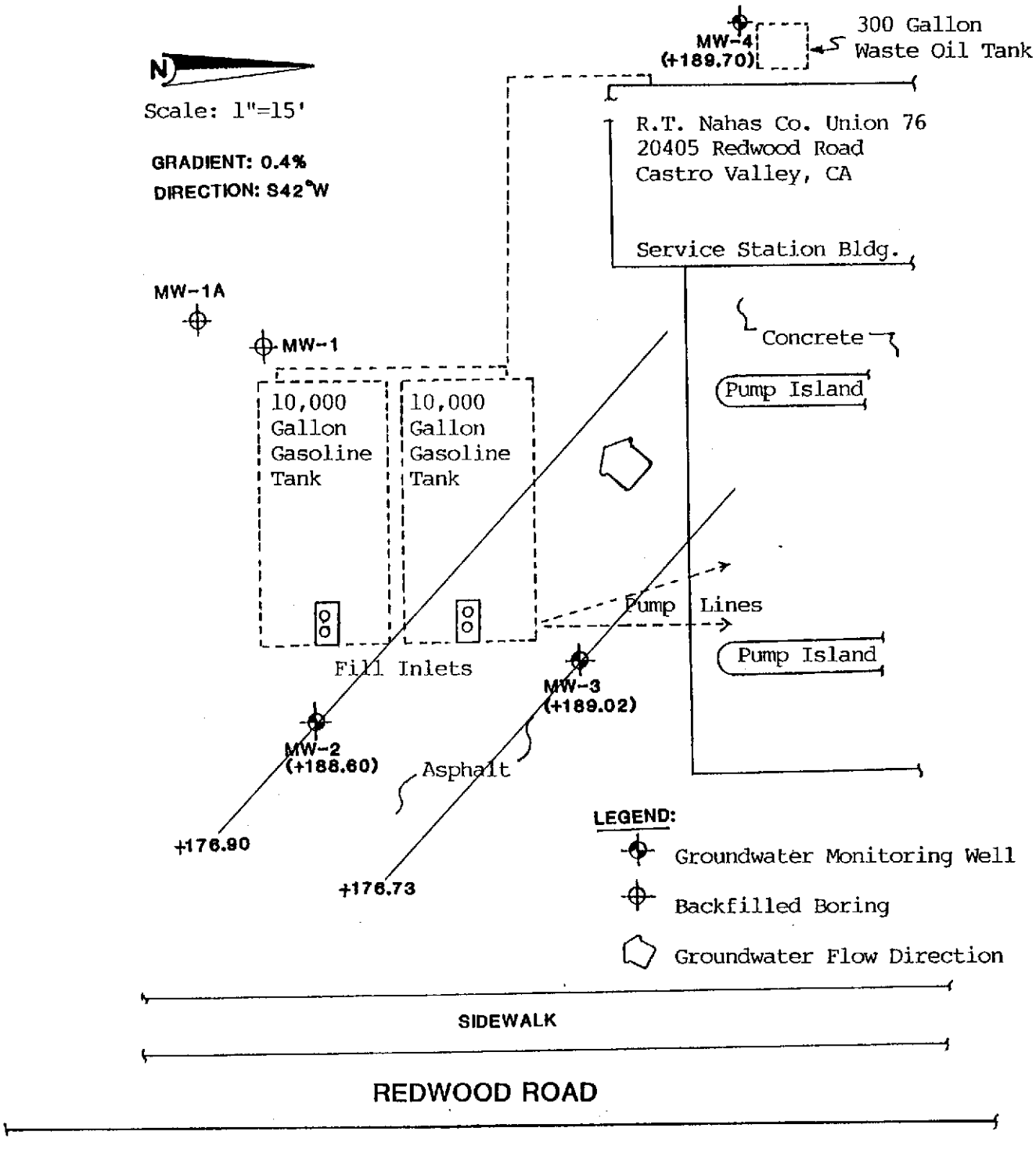
GROUNDWATER FLOW DIRECTION AND GRADIENT: 01/03/91

SECOND QUARTERLY GROUNDWATER
MONITORING REPORT
UNOCAL 76 SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

Job No. P90105
January 1991
FIGURE: 3.1

BSK & Associates

CHECKED BY TWB DATE 1/23/91 BY EM



GROUNDWATER FLOW DIRECTION AND GRADIENT: 12/04/90

SECOND QUARTERLY GROUNDWATER MONITORING REPORT

UNOCAL 76 SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

Job No. P90165
January 1991
FIGURE: 3.2

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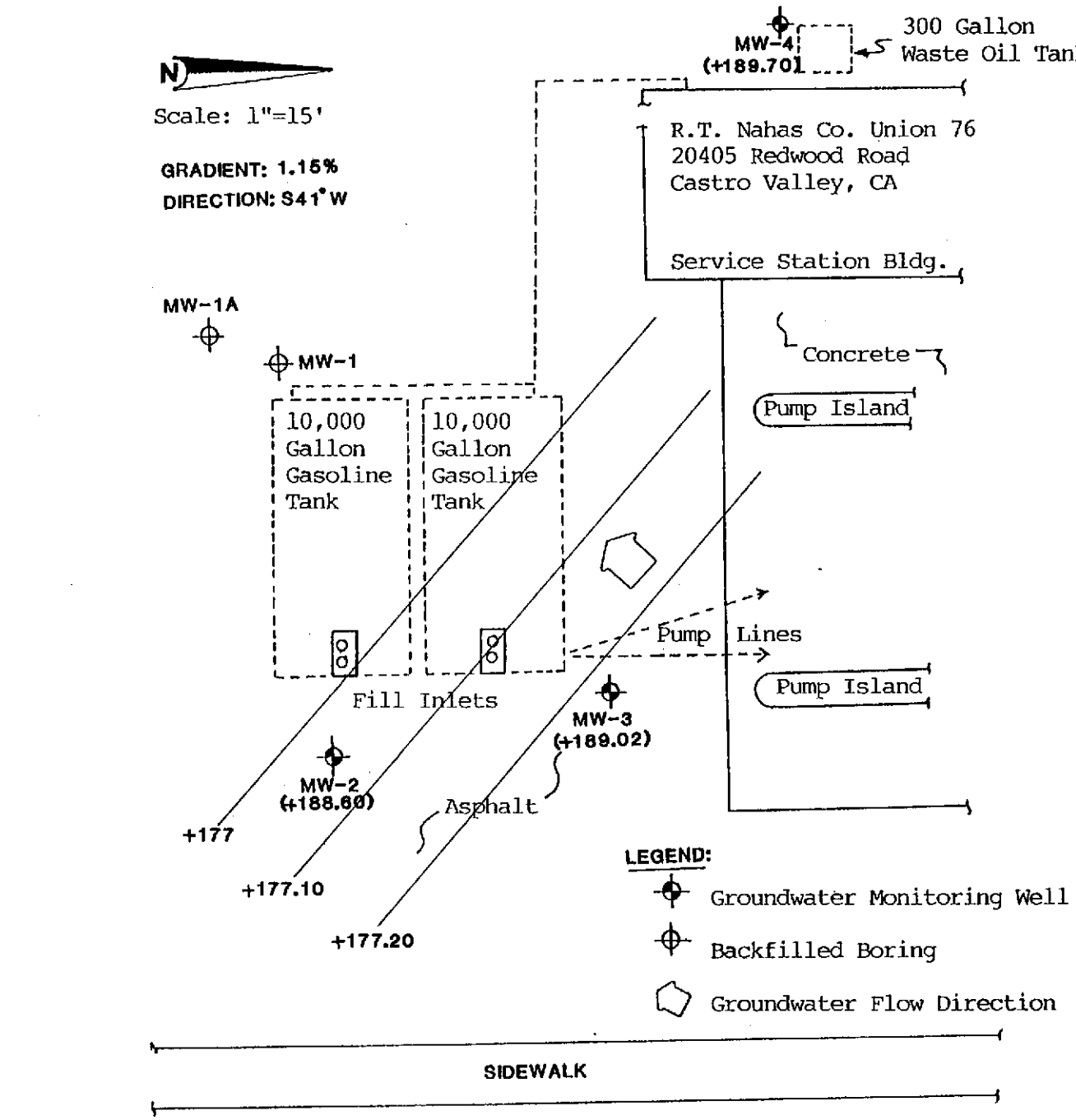
BY EU DATE 1/25/91 CHECKED BY TWB



GROUNDWATER FLOW DIRECTION AND GRADIENT: 10/15/90

Job No. P90165
January 1991
FIGURE: 3.3

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Project No. : P90165
Date : January 1991
Figure No. : 4.1

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: _____ Date: _____
SAMPLE COLLECTION: X Date: 01/03/91

PROJECT NAME & LOCATION: Unocal 76, Castro Valley

PERSONNEL: M. Cline
WEATHER: Clear/Cool

WELL INFORMATION

Well No.: MW-2
Depth to Water: 11.23 Feet
Water Volume: 2.9 Gallons
Reference Point Elevation: +188.60 MSL
Groundwater Elevation: +177.37 MSL
Measurement Technique: Solinst Electric Sounding Tape

Date Purged: 01/03/91
Purge Method: PVC Hand Pump
Purge Begin: 13:50
End Purge: 14:06
Development/Purge Rate: 0.94 GPM

IMMISCIBLE LAYERS:

Top: None observed - No Odor
Bottom: 3" Clay-colloids with hydrocarbon odor
Detection Method: Visual/Olfactory
Collection Method: PYC Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	Volume Removed (gal.)	Electrical Conductivity (Ec/Range)	pH	Temperature (F)	Comments
13:57	5	1029	8.6	73.5	
14:02	10	981	7.6	73.5	
14:06	15	959	7.4	73.4	

SAMPLE COLLECTION DATA:

Sampling Equipment and Procedures: Teflon Bailer

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH
14:15	TVH & BTXE	2 (40 ml.) Vials with HCL	12 Feet

Field Observations: Moderate indistinct odor during purge

BSK & Associates

Project No. : P90165
Date : January 1991
Figure No. : 4.2

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: _____ Date: _____
SAMPLE COLLECTION: X Date: 01/03/91

PROJECT NAME & LOCATION: Unocal 76, Castro Valley

PERSONNEL: M. Cline
WEATHER: Clear Cool

WELL INFORMATION

Well No.: MW-3
Depth to Water: 11.52 Feet
Water Volume: 3.0 Gallons
Reference Point Elevation: +189.02 MSL
Groundwater Elevation: +177.50 MSL
Measurement Technique: Solinst Electric Sounding Tape

Date Purged: 01/03/91
Purge Method: PVC Hand Pump
Purge Begin: 15:02
End Purge: 15:13
Development/Purge Rate: 1:4 GPM

IMMISCIBLE LAYERS:

Top: None observed - No Odor
Bottom: Rust colored particles with musty odor
Detection Method: Visual/Olfactory
Collection Method: PYC Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	Volume Removed (gal.)	Electrical Conductivity (Ec/Range)	pH	Temperature (F)	Comments
15:07	5	853	7.6	70.0	
15:11	10	871	7.1	72.8	
15:13	15	872	6.8	72.5	

SAMPLE COLLECTION DATA:

Sampling Equipment and Procedures: Teflon Bailer

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH
15:20	TVH & BTXE	2 (40 ml.) Vials with HCL	12 Feet

Field Observations: _____

BSK & Associates

Project No. : P90165
Date : January 1991
Figure No. : 4.3

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: _____ Date: _____
SAMPLE COLLECTION: X Date: 01/03/91

PROJECT NAME & LOCATION: Unocal 76, Castro Valley

PERSONNEL: M. Cline
WEATHER: Clear/Cool

WELL INFORMATION

Well No.: MW-4
Depth to Water: 12.41 Feet
Water Volume: 1.9 Gallons
Reference Point Elevation: +189.70 MSL
Groundwater Elevation: +177.29
Measurement Technique: Solinst Electric Sounding Tape

Date Purged: 01/03/91
Purge Method: PVC Hand pump
Purge Begin: NA
End Purge: NA
Development/Purge Rate: NA

IMMISCIBLE LAYERS:

Top: None Observed - No Odor
Bottom: 3' Clay Colloids - No Odor
Detection Method: Visual/Olfactory
Collection Method: PYC Bailer

WELL DEVELOPMENT/PURGE DATA: NA

TIME	Volume Removed (gal.)	Electrical Conductivity (Ec/Range)	pH	Temperature (F)	Comments

SAMPLE COLLECTION DATA:
Sampling Equipment and Procedures: NA

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH

Field Observations: _____

BSK & Associates

Project No. : P90165
Date : January 1991
Figure No. : 4.4

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: _____ Date: _____
SAMPLE COLLECTION: X Date: 12/05/90

PROJECT NAME & LOCATION: _____

PERSONNEL: M. Cline
WEATHER: Clear/Cool

WELL INFORMATION

Well No.: MW-2
Depth to Water: 11.70 Feet
Water Volume: 2.9 Gallons
Reference Point Elevation: +188.60 MSL
Groundwater Elevation: +176.90 MSL
Measurement Technique: Solinst Electrict Sounding Tape

Date Purged: 12/05/90
Purge Method: PVC Hand Pump
Purge Begin: 10:07
End Purge: 10:26
Development/Purge Rate: 0.8 GPM

IMMISCIBLE LAYERS:

Top: No Observed - No Odor
Bottom: None Observed - No Odor
Detection Method: Visual/Olfactory
Collection Method: PVC Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	Volume Removed (gal.)	Electrical Conductivity (Ec/Range)	pH	Temperature (F)	Comments
10:12	4	1027	7.7	68.4	
10:17	4	975	7.2	68.7	
10:21	12	939	6.9	69.2	
10:36	16	937	6.7	70.4	

SAMPLE COLLECTION DATA:

Sampling Equipment and Procedures: Teflon Bailer

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH
10:35	TVH & BTXE	2 (40 ml.) Vials with HCL	12 Feet

Field Observations: Slight indistinct odor during purge

BSK & Associates

Project No. : P90165
Date : January 1991
Figure No. : 4.5

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: _____ Date: _____
SAMPLE COLLECTION: _____ Date: _____

PROJECT NAME & LOCATION: Unocal 76, Castro Valley

PERSONNEL: M. Cline
WEATHER: Clear/Cool

WELL INFORMATION

Well No.: MW-4
Depth to Water: 12.97 Feet
Water Volume: 1.9 Gallons
Reference Point Elevation: +189.70 MSL
Groundwater Elevation: +176.73 MSL
Measurement Technique: Solinst Electric Sounding Tape

Date Purged: NA
Purge Method: NA
Purge Begin: NA
End Purge: NA
Development/Purge Rate: NA

IMMISCIBLE LAYERS:

Top: None Observed - No Odor
Bottom: None Observed - No Odor
Detection Method: Visual Olfactory
Collection Method: PVC Bailer

WELL DEVELOPMENT/PURGE DATA: NA

TIME	Volume Removed (gal.)	Electrical Conductivity (Ec/Range)	pH	Temperature (F)	Comments

SAMPLE COLLECTION DATA:
Sampling Equipment and Procedures: NA

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH

Field Observations: No Sample collected for laboratory testing

BSK & Associates

Project No. : P90165
Date : January 1991
Figure No. : 4.6

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: _____ Date: _____
SAMPLE COLLECTION: X Date: 12/04/90

PROJECT NAME & LOCATION: Unocal 76, Castro Valley

PERSONNEL: M. Cline
WEATHER: Clear/Cool

WELL INFORMATION

Well No.: MW-3
Depth to Water: 11.92 Feet
Water Volume: 2.9 Gallons
Reference Point Elevation: +189.02 MSL
Groundwater Elevation: +177.10 MSL
Measurement Technique: Solinst Electric Sounding Tape

Date Purged: 12/04/90
Purge Method: PVC Hand Pump
Purge Begin: 11:50
End Purge: 12:03
Development/Purge Rate: 0.9 GPM

IMMISCIBLE LAYERS:

Top: None Observed - No Odor
Bottom: 1' Clay, Slight indistinct odor
Detection Method: Visual/Olfactory
Collection Method: PVC Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	Volume Removed (gal.)	Electrical Conductivity (Ec/Range)	pH	Temperature (F)	Comments
11:54	4	815	8.0	68.0	
11:59	8	810	7.1	67.8	
12:03	12	814	6.8	68.2	

SAMPLE COLLECTION DATA:

Sampling Equipment and Procedures:

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH
12:12	TVH & BTXE	2 (40 ml.) Vials with HCL	12 Feet

Field Observations: No Odor during purge

BSK & Associates

Project No.: P90165
Date: October 15, 1990
Figure No.: 4.7

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: ___ Date: _____
SAMPLE COLLECTION: X Date: 10/15/90

PROJECT NAME & LOCATION: Unocal 76, Castro Valley, California

PERSONNEL: K. O'Connell
WEATHER: Clear/Warm

WELL INFORMATION:
Well No.: MW-2
Depth to water: 11:55 Feet
Well Depth: 30 Feet
Water Volume: 3.0 Gallons
Reference Point Elevation: +188.60 MSL
Groundwater Elevation: +177.05 MSL
Measurement Technique: Solinst Electric Sounding Tape

Date Purged: 10/15/90
Purge Method: PVC Hand Pump
Purge Begin: 1:17 p.m.
End Purge: 1:35 p.m.

IMMISCIBLE LAYERS:
TOP: None Observed - No Odor **BOTTOM:** None Observed - No Odor
Detection Method: Visual Olfactory
Collection Method: PVC Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gal)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMPERATURE (° F)	COMMENTS
1:19	3	891	7.10	73.1	
1:22	6	876	6.87	74.2	
1:27	9	846	6.84	74.3	
1:31	12	833	6.76	74.1	
1:35	15	857	6.77	74.1	

SAMPLE COLLECTION DATA:
Sampling Equiptment and Procedures: Teflon "Point Sample" Bailer

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH
1:40	TVH & BTXE	2 (40 ml.) Vials with HCL	12 Feet

Field Observations: _____

BSK & Associates

Project No.: P90165
Date: October 15, 1990
Figure No.: 4.8

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: ___ **Date:** _____
SAMPLE COLLECTION: X **Date:** 10/15/90

PROJECT NAME & LOCATION: Unocal 76, Castro Valley, California

PERSONNEL: K. O'Connell
WEATHER: Clear/Warm

WELL INFORMATION:
Well No.: MW-3
Depth to water: 11.80 Feet
Well Depth: 30 Feet
Water Volume: 3.0 Gallons
Reference Point Elevation: +189.02 MSL
Groundwater Elevation: +177.22 MSL
Measurement Technique: Solinst Electric Well Sounder

Date Purged: 10/15/90
Purge Method: PVC Hand Pump
Purge Begin: 12:00 noon
End Purge: 12:35 p.m.

IMMISCIBLE LAYERS:
TOP: None Observed - No Odor **BOTTOM:** None Observed - No Odor
Detection Method: Visual/Olfactory
Collection Method: PVC Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gal)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMPERATURE (° F)	COMMENTS
12:05	3	757	7.3	77.5	
12:13	6	745	7.12	77.3	
12:17	9	747	7.11	76.9	
12:22	12	748	7.05	76.5	
12:35	15	747	7.05	76.5	

SAMPLE COLLECTION DATA:
Sampling Equiptment and Procedures: Teflon "Point Sample" Bailer

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH
12:39	TVH & BTXE	2 (40 ml) Vials with HCL	12 Feet

Field Observations: _____

BSK & Associates

Project No.: P90165
Date: October 15, 1990
Figure No.: 4.9

INDIVIDUAL WELL FIELD LOG

WELL DEVELOPMENT: ___ **Date:** ___
SAMPLE COLLECTION: X **Date:** 10/15/90

PROJECT NAME & LOCATION: Unocal 76, Castro Valley, California

PERSONNEL: K. O'Connell
WEATHER: Clear/Warm

WELL INFORMATION:
Well No.: MW-4
Depth to water: 12.80 Feet
Well Depth: 25 Feet
Water Volume: 2.0 Gallons
Reference Point Elevation: +189.70 MSL
Groundwater Elevation: +176.90 MSL
Measurement Technique: Solinst Electric Well Sounder

Date Purged: 10/15/90
Purge Method: PVC Hand Pump
Purge Begin: 2:00 p.m.
End Purge: 2:15 p.m.

IMMISCIBLE LAYERS:
TOP: None Observed - No odor **BOTTOM:** None Observed - No Odor
Detection Method: Visual/Olfactory
Collection Method: PVC Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gal)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMPERATURE (° F)	COMMENTS
2:05	3	660	7.43	75.9	
2:00	6	653	7.17	73.8	
2:11	9	653	6.95	73.9	
2:15	12	648	6.92	73.9	

SAMPLE COLLECTION DATA:
Sampling Equiptment and Procedures:

TIME	TYPE OF TEST	AMOUNT/CONTAINER USED	DEPTH
2:23	TVH & BTXE	2 (40 ml.) Vials with HCL	13 Feet
2:25	TPH as Diesel	2 Amber 1000 ml. Flasks	22 Feet
2:30	Oil and Grease	2 Amber 1000 ml. Flasks	22 Feet

Field Observations:

BSK & Associates

APPENDIX "A"

SECOND QUARTERLY LABORATORY CHEMICAL TEST DATA SHEETS

BSK
& Associates

FIGURE: A-1

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-6935

BSK-Pleasanton
P90165
R.T. Nahas

Report Date 01/09/91

Sample Type Liquid

Date Sampled 01/03/91

Date Received 01/04/91

Date of Analyses 01/07/91

Lab Number	Sample Description
Ch910063-1	MW-2 #1 1415 hrs.
Ch910063-2	MW-3 #1 1520 hrs.

Analyses for BTXE and TVH

Compound	Results (ug/L) 0063-1	Results (ug/L) 0063-2	Detection Limit (DLR)
Benzene	50	29	0.5
Toluene	33	3.3	0.5
Ethylbenzene	22	9.7	0.5
Total Xylene Isomers	110	34	0.5
Total Volatile Hydrocarbons	430	110	50

Method: BTXE-EPA 8020 TVH-EPA 8015M
ND-None Detected BDL-Below Detection Limit
DLR-Detection Limit For the Purposes of Reporting
ug/L - Microgram per Liter

Cynthia Pigman,
QA/QC Supervisor

Michael Brechmann,
Organics Supervisor

R051890

FIGURE: A-2

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-6935

BSK-Pleasanton
P90165
R. T. Nahas

Date Reported 12/13/90

Date Sampled 12/04/90

Date Received 12/05/90

Sample Type Liquid

Date Analyses Completed 12/06/90

Lab Number	Sample Description
Ch905069-1	MW-2 #1 1035 hrs.
Ch905069-2	MW-3 #1 1212 hrs.

Water Analyses for BTXE and TVH

Compound	Lab.No. 5069-1 (ug/L)	Lab.No. 5069-2 (ug/L)	Detection Limit (DLR)
Benzene	17	7	0.5
Toluene	10	2	0.5
Ethylbenzene	13	2	0.5
Total Xylene Isomers	59	5	0.5
Total Volatile Hydrocarbons	370	76	50.

Method: BTXE-EPA 8020 TVH-EPA 8015M

DLR-Detection Limit For the Purposes of Reporting

ug/L - Microgram per Liter

Cynthia Pigman,
QA/QC Supervisor

Michael Brechmann,
Organics Supervisor

R051890

FIGURE: A-3

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-7427

BSK-Pleasanton
P90165
R.T. Nahas

Lab No. Ch904269-1

Report Date 10/24/90

Sample Type Water

Date Sampled 10/15/90

Sample Description 1340 hrs.

Date Received 10/16/90

MW #2

Date of Analyses 10/17/90

Water Analyses for BTXE and TVH

Compound	Results (ug/l)	Detection Limit (DLR)
Benzene	18	0.5
Toluene	ND	0.5
Ethylbenzene	3.8	0.5
Total Xylene Isomers	5.6	0.5
Total Volatile Hydrocarbons	87	50

Method: BTXE-EPA 8020 TVH-EPA 8015M

ND-None Detected BDL-Below Detection Limit

DLR-Detection Limit For the Purposes of Reporting

Cynthia Pigman,
QA/QC Supervisor

Michael Brechmann,
Organics Supervisor

FIGURE: A-4

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-7427

BSK-Pleasanton
P90165
R.T. Nahas

Lab No. Ch904269-2

Report Date 10/24/90

Sample Type Water

Date Sampled 10/15/90

Sample Description 1239 hrs.

Date Received 10/16/90

MW #3

Date of Analyses 10/17/90

Water Analyses for BTXE and TVH

Compound	Results (ug/l)	Detection Limit (DLR)
Benzene	64	0.5
Toluene	30	0.5
Ethylbenzene	35	0.5
Total Xylene Isomers	160	0.5
Total Volatile Hydrocarbons	740	50

Method: BTXE-EPA 8020 TVH-EPA 8015M

ND-None Detected BDL-Below Detection Limit

DLR-Detection Limit For the Purposes of Reporting

Cynthia Pigman,
QA/QC Supervisor

Michael Brechmann,
Organics Supervisor

FIGURE: A-5

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-7427

BSK-Pleasanton
P90165
R.T. Nahas

Lab No. Ch904269-3

Report Date 10/24/90

Sample Type Water

Date Sampled 10/15/90

Sample Description 1423 hrs.

Date Received 10/16/90

MW #4

Date of Analyses 10/17/90

Water Analyses for BTXE and TVH

Compound	Results (ug/l)	Detection Limit (DLR)
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Total Xylene Isomers	ND	0.5
Total Volatile Hydrocarbons	ND	50

Method: BTXE-EPA 8020 TVH-EPA 8015M

ND-None Detected BDL-Below Detection Limit

DLR-Detection Limit For the Purposes of Reporting

Cynthia Pigman,
QA/QC Supervisor

Michael Brechmann,
Organics Supervisor

FIGURE: A-6

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-7427

BSK-Pleasanton
P90165
R.T. Nahas

Lab No. Ch904269-4

Report Date 10/24/90

Sample Type Liquid

Date Sampled 10/15/90

Sample Description 1425 hrs.

Date Received 10/16/90

MW#4 #2

Date Analyses Completed 10/20/90

Water Analyses for TPH

Compound	Results (ug/l)	Detection Limit (DLR)
Total Petroleum Hydrocarbons	ND	100

Method: TPH DHS GC/FID

ND-None Detected BDL-Below Detection Limit

DLR-Detection Limit For the Purposes of Reporting

Cynthia Pigman
QA/QC Supervisor

Michael J. Brechmann
Organics Supervisor

042490

FIGURE: A-7

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-7427

BSK-Pleasanton
P90165
R.T. Nahas

Lab No. Ch904269-5

Report Date 10/24/90

Sample Type Water

Date Sampled 10/15/90

Sample Description 1430 hrs.

Date Received 10/16/90

MW#4 #3

Date of Analyses 10/19/90

Total Oil & Grease

Analyte	Units	Results	DLR
Total Oil and Grease.....	mg/l	ND	1

ND-None Detected BDL-Below Detection Limit
DLR-Detection Limit For the Purposes of Reporting
Analyses performed by SM 503B/413.2

Cynthia Pigman
QA/QC Supervisor

Michael J. Brechmann
Organics Supervisor

BSK Log Number 0063

ANALYSIS REQUEST/CHAIN OF CUSTODY RECORD

1000-0497

Client Name: R T Nahas	Project or P.O.#: P90165
Address: 5729 F Sonoma Dr.	Phone #: (415) 462-4000
City, State, Zip: Pleasanton, CA 94566	Report, attention: Alex Estandari

Sampled by: M. Cline

Lab Use Only in this section

Analysis required: TVH & BTXE; Hazardous sample Special handling required

1/16

Date sampled	Time sampled	Type (See key below)	Sample description	Number of containers	Lab Sample number	Sample Seals (See key below)	TVH & BTXE	Remarks
1-3-91	14:15	AQ	MW-2 #1	2	-1	P	X	2X40ml
1-3-91	15:20	AQ	MW-3 #1	2	-2	V	X	V

IMPORTANT NOTICE: No samples will be analyzed without an authorized signature in this section.

I am hereby requesting BSK's Normal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in the U.S. E.P.A. SW 846 and that there is no extra charge for this service.

By: Marty Cline
Authorized Signature

I am hereby requesting BSK's Formal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in U.S. EPA Contract Laboratory Program Statement of Work, Section F, and that there is a charge of $50.00 per work order or $5.00 a bottle, whichever is greater.

By: _____
Authorized Signature

	Signature	Print Name	Company	Date	Time
Relinquished by	Marty Cline	Martin Cline	BSK & Assoc.	1-3-91	16:45
Received by	[signature]	L. Eldridge	LAB	1/4	0830
Relinquished by					
Received by					
Relinquished by					
Received by					

BSK & Associates Chemical Laboratories

1414 Stanislaus Street Fresno, California 93706

Telephone (209) 485-8310 • Fax (209) 485-7427

KEY: Type: AQ–Aqueous SL–Sludge SO–Soil PE–Petroleum OT–Other
Seals: P–Present A–Absent B–Broken
DISTRIBUTION: WHITE, CANARY - LABORATORY PINK - ORIGINATOR
Note:
Samples are discarded 14 days after results are reported unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

FIGURE: A-8

BSK Log Number 5069

ANALYSIS REQUEST/CHAIN OF CUSTODY RECORD

1000-7730

Client Name: RT Nahas	Project or P.O.#: P90165
Address: 5729-F Sonoma Dr.	Phone #: (415) 462-4000
City, State, Zip: Pleasanton CA 94566	Report, attention: Tim Berger

Lab Use Only in this section

Analysis required: TVH & BTXE; Hazardous sample Special handling required

12-18-90

Date sampled	Time sampled	Type (See key below)	Sampled by: M. Cline / Sample description	Number of containers	Lab Sample number	Sample Seals (See key below)	TVH & BTXE	Hazardous sample Special handling required	Remarks
12-4-90	10:35	AQ	MW-2 #1	2	-1	P	X		2x40 ml
12-4-90	12:12	AQ	MW-3 #1	2	-2	√	X		√

IMPORTANT NOTICE: No samples will be analyzed without an authorized signature in this section.

I am hereby requesting BSK's Normal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in the U.S. E.P.A. SW 846 and that there is no extra charge for this service.

By: Marty Cline
Authorized Signature

I am hereby requesting BSK's Formal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in U.S. EPA Contract Laboratory Program Statement of Work, Section F, and that there is a charge of $50.00 per work order or $5.00 a bottle, whichever is greater.

By: _____
Authorized Signature

	Signature	Print Name	Company	Date	Time
Relinquished by	Marty Cline	Martin Cline	BSK & Assoc.	12-4-90	14:30
Received by	Cecil Harris	C Harris	BSK-F	12-5-90	1230
Relinquished by					
Received by					
Relinquished by					
Received by					

BSK & Associates Chemical Laboratories

1414 Stanislaus Street Fresno, California 93706

Telephone (209) 485-8310 • Fax (209) 485-7427

KEY: Type: AQ–Aqueous SL–Sludge SO–Soil PE–Petroleum OT–Other
Seals: P–Present A–Absent B–Broken
DISTRIBUTION: WHITE, CANARY - LABORATORY PINK - ORIGINATOR
Note:
Samples are discarded 14 days after results are reported unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

FIGURE: A-9

BSK Log Number 4269

ANALYSIS REQUEST/CHAIN OF CUSTODY RECORD

1000-0492

Client Name: R.T. NAHAS (BSK PLEASANTON)	Project or P.O.#: P90165
Address: 5729-F Sonoma Drive	Phone #: (415) 462-4000
City, State, Zip: PLEASANTON CA 94566	Report, attention: ALEX

Lab Use Only in this section

Analysis required: TVH & BTXE; TPH @ Diesel; Oil & Grease; Hazardous sample Special handling required

10-25-90
~~10-16-90~~

Date sampled	Time sampled	Type (See key below)	Sampled by: K. O'Connell Sample description	Number of containers	Lab Sample number	Sample Seals (See key below)	Remarks
10/15	1:40	AQ	MW#2 (1)	2	-1	P	2x 40ml
	12:39	AQ	MW#3 (1)	2	-2		"
	2:23	AQ	MW#4 (1)	2	-3		"
	2:25	AQ	MW#4 #2	2	-4		2x 1L
	2:30	AQ	MW#4 #3	2	-5		2x 1L

IMPORTANT NOTICE: No samples will be analyzed without an authorized signature in this section.

I am hereby requesting BSK's Normal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in the U.S. E.P.A. SW 846 and that there is no extra charge for this service.

By: K. O'Connell
Authorized Signature

I am hereby requesting BSK's Formal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in U.S. EPA Contract Laboratory Program Statement of Work, Section F, and that there is a charge of $50.00 per work order or $5.00 a bottle, whichever is greater.

By: _____
Authorized Signature

	Signature	Print Name	Company	Date	Time
Relinquished by	K. O'Connell	Kath O'Connell	BSK & Assoc.	10-15-90	3:30
Received by	Cecil Harris	C. Harris	BSK	10-16-90	1156
Relinquished by					
Received by					
Relinquished by					
Received by					

BSK & Associates Chemical Laboratories

1414 Stanislaus Street Fresno, California 93706

Telephone (209) 485-8310 • Fax (209) 485-7427

KEY: Type: AQ–Aqueous SL–Sludge SO–Soil PE–Petroleum OT–Other
Seals: P–Present A–Absent B–Broken
DISTRIBUTION: WHITE, CANARY - LABORATORY PINK - ORIGINATOR
Note:
Samples are discarded 14 days after results are reported unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

FIGURE: A-10

APPENDIX "B"

SUMMARY OF PREVIOUS CHEMICAL TEST DATA

FEBRUARY 5, 1990 to AUGUST 30, 1990

BSK
& Associates

FIGURE: B-1

BSK REPORT P90165
FIRST QUARTERLY MONITORING REPORT
AUGUST 30, 1990

WATER ANALYSES

TABLE 1
(Results in ppb)

Sample Locations	Benzene (1*)	Toluene (100+)	Xylene (1750*)	Ethylbenzene (680*)
Well MW-2	21	3.9	28	7.2
Well MW-3	55	3.8	59	20
Well MW-4	ND	ND	ND	ND

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

TABLE 2
(Results in ppb)

Sample Locations	TPH (100*)	TVH (100*)	Oil and Grease (100*)
Well MW-2	--	180	--
Well MW-3	--	290	--
Well MW-4	ND	ND	ND

ND = None Detected

-- = Not Tested

*Quantified Action Levels are not provided for these parameters. The amount given is often informally used by regulatory agencies as a threshold value.

BSK & Associates

FIGURE: B-2

BSK REPORT P89134
FEBRUARY 5, 1990

WATER ANALYSES

TABLE I

BTXE (ppb)

No BTXE compounds were detected in the water samples analyzed.

TABLE II

TPH Gas, TPG Diesel, Oil and Grease, Total Lead (ppb)

Sample Location	TPH as Gas (NAV)	TPH as Diesel (NAV)	Oil and Grease (NAV)	Total Lead (NAV)
Well MW-2	72	NT	NT	NT

NT = Not Tested
NAV = Not Available

TABLE III

Purgeable Halocarbons

No purgeable halocarbons were detected in the water samples analyzed.

BSK & Associates