LETTER REPORT
GROUNDWATER MONITORING
FOURTH QUARTER 1992
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California

Job No. 87091-6D

12/16/92

December 16, 1992

Mr. Robert A. Boust
Unocal Corporation
2000 Crow Canyon Place
Suite 400
San Ramon, California 94583

Subject: Groundwater Monitoring, Fourth Quarter 1992, at Unocal Service Station No. 5367, 500 Bancroft Avenue, San Leandro, California.

Mr. Boust:

At Unocal's request, RESNA Industries has conducted the ground-water monitoring for the fourth quarter 1992 at the subject site (Plate 1).

Potentiometric data for all wells and ground-water samples for monitoring wells MW-1 through MW-3, and MW-8 were collected on November 18, 1992. Monitoring wells MW-4 through MW-7 are sampled on a semi-annual basis and were not scheduled for sampling this quarter. The field procedures used during the monitoring are attached. At Unocal's request, equipment rinseate and purge water were removed by RESNA Industries and transported under non-hazardous waste manifest to Gibson Oil and Refinery in Redwood City, California.

Cumulative potentiometric and analytical data are summarized in Table 1. Well purge data are summarized in Table 2. A Potentiometric Surface Map was constructed from the groundwater elevation data (Plate 2). Groundwater flow for the fourth quarter is predominantly southwest. This is generally consistent with the flow direction observed in September 1992. Copies of the Chain of Custody Record(s) and analytical reports are attached.

The next monitoring event has been scheduled for the week of February 1993. We recommend a signed copy of this report be forwarded to:

- Mr. Eddy So
  CRQCB, San Franisco Bay Region
  2101 Webster Street, Suite 500
  Oakland, California 94612; and

- Mr. Joe Ferreira
  San Leandro Fire Department
  835 East 14th Street
  San Leandro, California.

Please call if you have questions regarding this project.

Sincerely,
RESNA Industries, Inc.

Sheryl Fontaine
Staff Geologist

Gary Pischke, CEG 1501
Project Manager

SF/GP/lr
Attachments:

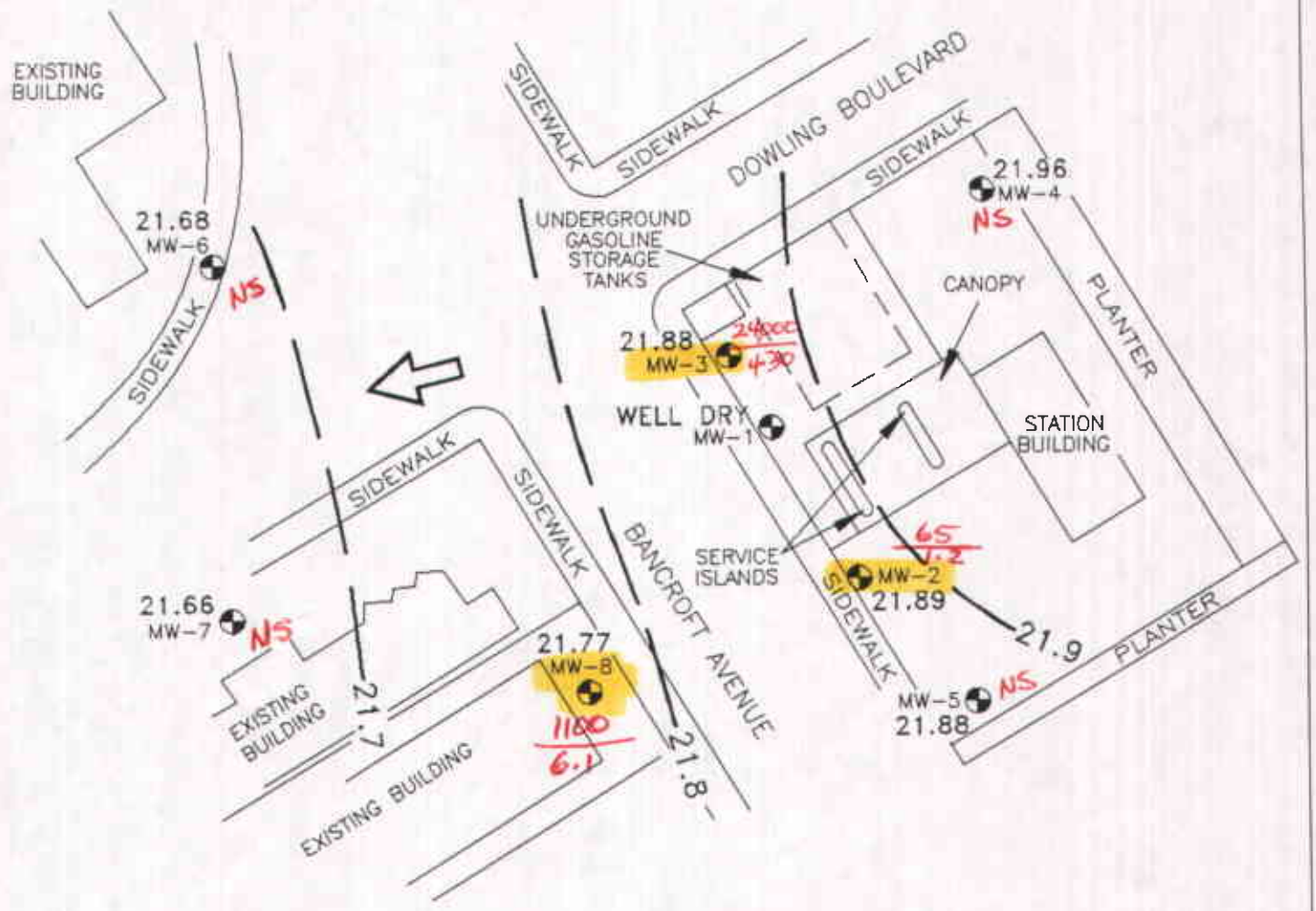
Plate 1,	Site Vicinity Map
Plate 2,	Site Plan and Potentiometric Surface Map (11/18/92)
Table 1,	Groundwater Monitoring Data
Table 2,	Well Purge Data Sheets

Field Methods
Chain of Custody Record
Laboratory Analysis Reports

SOURCE: U.S. GEOLOGICAL SURVEY
7.5-MINUTE QUADRANGLE
SAN LEANDRO, CA.
PHOTOREVISED 1980

APPROXIMATE SCALE
0 1000 2000 4000
FEET

RESNA	SITE LOCATION MAP	PLATE
	UNOCAL STATION NO. 5367	1
	500 BANCROFT AVENUE	
PROJECT NO. 87091.6F	SAN LEANDRO, CALIFORNIA	



TPH-G (ppb)
benzene

- - 21.7 = Inferred line of equal groundwater elevation in feet above mean sea level

21.96 = Groundwater elevation in feet above mean sea level

= Inferred direction of groundwater flow

MW-8 = Monitoring well

N

Approximate Scale

50 25 0 50 100

feet

	SITE PLAN AND POTENTIOMETRIC SURFACE MAP (11/18/92)	PLATE
	UNOCAL STATION NO. 5367	2
PROJECT NO. 87091.6F	500 BANCROFT AVENUE	
	SAN LEANDRO, CALIFORNIA	

December 16, 1992
Unocal Station No. 5367, San Leandro, California

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 1 of 5)

Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Observations
MW-1	09/23/87	57.83	33.40	24.43							FP = 0.02, S = N/A
	09/24/87		33.24	24.59							FP = 0.01, S = N/A
	10/06/87		33.39	24.44							FP = 0.01, S = N/A
	11/05/87		34.14	23.69							FP = 0.31, S = N/A
	11/13/87		34.15	23.68							FP = 0.38, S = N/A
	11/19/87		33.89	23.94							FP = 0.06, S = N/A
	04/27/88		32.40	25.43							FP = 0.01, S = N/A
	09/07/88						WELL DRY				
	10/03/88						WELL DRY				
	01/27/89						WELL DRY				
	02/16/90						WELL DRY				
	07/19/90						WELL DRY				
	08/24/90						WELL DRY				
	11/30/90						WELL DRY				
	02/06/91						WELL DRY				
	05/06/91		33.00	24.83							FP = No, S = No
	09/27/91						WELL DRY				
	03/31/92		31.00	26.83	330,000	N/A	8,200	33,000	6,800	36,000	FP = No, S = No
	06/18/92		32.76	25.07	680,000	N/A	9,000	40,000	7,600	44,000	FP = No, S = No
	10/16/92						WELL DRY				
	11/18/92						WELL DRY				
MW-2	10/03/88	58.13	36.04	22.09	1,760	N/A	47.8	7.4	20.9	81.6	FP = No, S = No
	01/27/89		34.77	23.36	510	N/A	58.0	8.7	22.6	20.3	FP = No, S = No
	02/16/90		34.50	23.63	840	N/A	50.0	0.5	28.0	44.0	FP = No, S = No
	05/90		NM	NM	1,000	N/A	39.0	<0.5	32.0	52.0	FP = NM, S = NM
	07/19/90		35.72	22.41							FP = No, S = No
	08/24/90		36.30	21.83	330	N/A	17	<0.5	19	20	FP = No, S = No
	11/30/90		37.40	20.73	400	N/A	41	<0.5	39	37	FP = No, S = No
	02/07/91		37.27	20.86	510	N/A	40	<0.5	29	44	FP = No, S = No
	05/06/91		33.31	24.82	2,300	N/A	150	10	52	110	FP = No, S = No

See Notes on Page 5 of 5.

December 16, 1992
Unocal Station No. 5367, San Leandro, California

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 2 of 5)

Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Observations
MW-2	09/27/91	58.13	36.86	21.27	110	N/A	2.6	<0.5	5.6	5.1	FP = No, S = No
	12/27/91		37.66	20.47	170	N/A	3.9	<0.5	7.3	60	FP = No, S = No
	03/31/92		31.27	26.86	4,200	N/A	110	3	190	250	FP = No, S = No
	06/18/92		33.09	25.04	1,200	N/A	35	1.6	56	26	FP = No, S = No
	09/30/92		NM	NM	820	N/A	21	<0.5	42	25	FP = No, S = No
	10/16/92		35.87	22.26		NOT ANALYZED					FP = No, S = No
	11/18/92		36.24	21.89	65	N/A	1.2	<0.5	2.8	1.4	FP = No, S = No
MW-3	10/03/88	57.92	35.86	22.06	61,000	N/A	1,060	3,380	1,520	8,720	FP = No, S = No
	01/27/89		34.60	23.32	39,000	N/A	1,570	2,830	1,250	7,070	FP = No, S = No
	02/16/90		35.23	22.69	22,000	N/A	710	4,100	6,900	33,000	FP = No, S = No
	05/90		NM	NM	19,000	N/A	330	170	310	1,500	FP = NM, S = NM
	07/19/90		35.50	22.42			NOT ANALYZED				FP = No, S = No
	08/24/90		36.08	21.84	19,000	N/A	480	160	510	1,500	FP = No, S = No
	11/30/90		37.17	20.75	13,000	N/A	390	81	410	1,000	FP = No, S = No
	02/06/91		37.07	20.85	13,000	N/A	310	150	380	1,200	FP = No, S = No
	05/06/91		33.11	24.81	39,000	N/A	1,000	570	930	3,900	FP = No, S = No
	09/27/91		36.64	21.28	4,000	N/A	160	84	180	560	FP = No, S = No
	12/27/91		37.46	20.46	31,000	N/A	240	280	400	1,600	FP = No, S = No
	03/31/92		31.10	26.82	100,000	N/A	1,900	1,900	2,300	9,400	FP = No, S = No
	06/18/92		32.83	25.09	180,000	N/A	2,200	1,700	2,300	1,100	FP = No, S = No
	09/30/92		NM	NM	36,000	N/A	730	200	1,000	4,400	FP = NM, S = NM
	10/16/92		35.66	22.26			NOT ANALYZED				FP = No, S = No
	11/18/92		36.04	21.88	24,000**	N/A	430	160	640	2,800	FP = No, S = No
MW-4	10/03/88	58.29	36.12	22.17	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	01/27/89		34.87	23.42	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	02/16/90		35.60	22.69	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/90		NM	NM	<20	N/A	<0.5	<0.5	0.68	1.4	FP = NM, S = NM
	07/19/90		35.78	22.51			NOT ANALYZED				FP = No, S = No

See Notes on Page 5 of 5.

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Observations
MW-4	08/24/90	58.29	36.35	21.94	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		37.46	20.83	<50	N/A	<0.5	<0.5	<0.5	1.2	FP = No, S = No
	02/06/91		37.40	20.89	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/06/91		33.39	24.90			NOT ANALYZED				FP = No, S = No
	09/27/91		36.90	21.39	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		37.76	20.53	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		31.41	26.88	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	06/18/92		33.09	25.20	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	10/16/92		35.92	22.37	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		36.33	21.96			Not Sampled				
MW-5	02/16/90	58.50	35.89	22.61	67	N/A	0.51	1.6	2.9	7.5	FP = No, S = No
	05/90		NM	NM	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = NM, S = NM
	07/19/90		36.10	22.40			NOT ANALYZED				FP = No, S = No
	08/24/90		36.67	21.83	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		37.74	20.76	<50	N/A	<0.5	0.7	<0.5	<0.5	FP = No, S = No
	02/06/91		37.62	20.88	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/06/91		33.67	24.83			NOT ANALYZED				FP = No, S = No
	09/27/91		37.23	21.27	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		38.02	20.48	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		31.62	26.88	<50	N/A	<0.5	<0.5	<0.5	1.1	FP = No, S = No
	06/18/92		33.46	25.04			NOT ANALYZED				FP = No, S = No
	10/16/92		36.23	22.27	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		36.62	21.88			Not Sampled				
MW-6	02/16/90	56.96	34.50	22.46	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/90		NM	NM	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = NM, S = NM
	07/19/90		34.74	22.22	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	08/24/90		35.32	21.64	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		36.38	20.58	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	02/06/91		36.27	20.69	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No

See Notes on Page 5 of 5.

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Observations
MW-6	05/06/91	56.96	32.41				NOT ANALYZED				FP = No, S = No
	09/27/91		35.87	21.09	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		36.67	20.29	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		30.32	26.64	<50	N/A	<0.5	1.3	<0.5	2.0	FP = No, S = No
	06/18/92		32.18	33.78	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	10/16/92		34.92	22.04	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		35.28	21.68			Not Sampled				
MW-7	02/16/90	57.25	35.75	21.50	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/90		NM	NM	24	N/A	<0.5	<0.5	0.74	1.7	FP = NM, S = NM
	07/19/90		35.03	22.22			NOT ANALYZED				FP = No, S = No
	08/24/90		35.64	21.61	<20	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		36.68	20.57	<50	N/A	<0.5	<0.5	0.6	1.5	FP = No, S = No
	02/06/91		36.55	20.70	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/06/91		32.69	24.56	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	09/27/91		36.18	21.07	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		36.96	20.29	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		30.56	26.69	<50	N/A	<0.5	<0.5	<0.5	0.9	FP = No, S = No
	06/18/92		32.52	24.73			NOT ANALYZED				FP = No, S = No
	10/16/92		35.24	22.01	<50	N/A	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		35.59	21.66			Not Sampled				
MW-8	02/16/90	57.71	35.10	22.61	1,900	N/A	11	<0.5	52	55	FP = No, S = No
	05/90		NM	NM	770	N/A	6.5	<0.5	20	32	FP = NM, S = NM
	07/19/90		35.41	22.30			NOT ANALYZED				FP = No, S = No
	08/24/90		36.00	21.71	990	N/A	13	<0.5	48	66	FP = No, S = No
	11/30/90		37.08	20.63	570	N/A	13	<0.5	45	36	FP = No, S = No
	02/06/91		36.92	20.79	630	N/A	9.6	<0.5	35	36	FP = No, S = No
	05/06/91		33.03	24.68	14,000	N/A	80	<0.5	250	550	FP = No, S = No
	09/27/91		36.55	21.16	720	N/A	13	4.3	26	26	FP = No, S = No
	12/27/91		37.34	20.37	1,600	N/A	15	2.9	40	49	FP = No, S = No

See Notes on Page 5 of 5.

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 5 of 5)

Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Observations
MW-8	03/31/92	57.71	31.93*	25.78	15,000	N/A	120	1.0	430	530	FP = No, S = No
	06/18/92						WELL INACCESSIBLE				
	10/16/92		35.58	22.13	300	N/A	0.96	<0.5	4.0	3.5	FP = No, S = No
	11/18/92		35.94	21.77	1,100	N/A	6.1	<0.5	13	5.6	FP = No, S = No

Notes:
Analytical results in parts per billion (ppb)
Static water level measured in feet below top of casing
N/A = Not Analyzed
< = Not detected. Number following < indicates applicable detection limit.
TPHg = Total petroleum hydrocarbons as gasoline
TPHd = Total petroleum Hydrocarbons as diesel
NM = Not measured
FP = Free product
S = Sheen
* = Data suspect; not used in water-elevation determination.
** = Chromatogram contains early eluting peak.

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
October 2, 1992
(page 1 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 8					
Start	11:30				
	11:45	2	68.2	7.22	1.52
	12:00	4	66.0	6.50	0.90
	12:15	6	64.9	6.46	0.88

Notes:

Well Diameter (inches):	2
Depth to Bottom (feet):	43.62
Depth to Water - initial (feet):	35.94
Percent Recovery:	100
Time Sampled:	12:30
Gallons per Well Casing Volume:	1.47
Gallons Purged:	6
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	3

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
October 2, 1992
(page 2 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 2					
Start	12:45				
	1:00	7	67.6	7.30	1.12
	1:15	14	68.7	7.16	0.78
	1:30	21	68.5	6.84	0.76

Notes:

Well Diameter (inches):	4
Depth to Bottom (feet):	46.60
Depth to Water - initial (feet):	36.24
Percent Recovery:	100
Time Sampled:	1:45
Gallons per Well Casing Volume:	6.83
Gallons Purged:	21
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	3

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
October 2, 1992
(page 3 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 3					
Start	2:00				
	2:15	8	67.8	7.16	1.33
	2:30	16	68.4	6.90	0.89
	2:45	25	68.0	6.96	0.87

Notes:

Well Diameter (inches):	4
Depth to Bottom (feet):	48.28
Depth to Water - initial (feet):	36.04
Percent Recovery:	100
Time Sampled:	3:00
Gallons per Well Casing Volume:	8.07
Gallons Purged:	25
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	3

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
October 2, 1992
(page 4 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 7					
Start	11:50				
	12:00	2	65.2	6.94	500
	12:10	4	66.3	6.93	540
	12:20	6	67.4	6.97	570

Notes:

Well Diameter (inches):	2
Depth to Bottom (feet):	44
Depth to Water - initial (feet):	34.90
Percent Recovery:	100
Time Sampled:	12:30
Gallons per Well Casing Volume:	1.54
Gallons Purged:	6
Well Casing Volume Purged:	>3
Approximate Pumping Rate (gpm):	Protocol

December 16, 1992
Unocal Station 5367, San Leandro, California

FIELD METHODS

Groundwater Sampling

The static water level in each well was measured to the nearest 0.01 foot with an electronic water-level sounder cleaned with a laboratory-grade, non-phosphatic detergent and deionized water before use in each well. A clean bailer was used to obtain a sample from the surface of the water in the well for subjective analysis of hydrocarbons. The sample was retrieved and visually examined for floating product, sheen, color, and clarity.

Approximately 3 casing volumes of ground water were purged from the wells using an electrical submersible pump. The pump, cables, and hoses were cleaned with a laboratory-grade, non-phosphatic detergent and water before use in each well. The wells were purged until withdrawal was of sufficient duration to result in stabilized pH, temperature, and electrical conductivity of the water, as measured by portable meters calibrated to a standard pH buffer and conductivity standards. The wells recovered to more than 90 percent of the static water level before samples were collected. At Unocal's request, the purged water was removed from the site, transported to Gibson Oil & Refining Company, Inc. in Redwood City, California, and recycled.

Before collecting each ground-water sample, field personnel cleaned the Teflon bailer with a laboratory-grade, non-phosphatic detergent and rinsed it with tap water and distilled water. When required, appropriate preservatives were added to the sample containers. A sample of the formation water then was collected from the surface of the water in each of the wells with the Teflon bailer and slowly transferred to sample containers.

Reporting Results of Analyses

Hydrocarbon constituents in ground-water samples are reported by the laboratory in units of parts per billion (ppb). The maximum contaminant levels listed in Title 22 of the California Code of Regulations for benzene, ethylbenzene, and total xylene isomers in drinking water are 1.0, 680, and 1,750 ppb, respectively. The action level established by the California Department of Health Services for toluene is 100 ppb. We report ground-water chemical data in units of ppb to conform with the laboratory reports.

Sample Labeling and Handling

Water samples for hydrocarbon analysis were preserved in new 40-milliliter glass vials that contained concentrated hydrochloric acid as a preservative. The water samples were sealed with Teflon-lined lids to eliminate air bubbles. The sample containers were labeled in the

field with the site identification, monitoring well number and depth, and date and promptly placed in iced storage for transport to the laboratory. Field personnel initiated Chain of Custody Records in the field that accompanied the samples to a laboratory certified by the State of California for the analyses requested. Samples were transported promptly to the RESNA laboratory.

ANALYSIS REPORT

1020lab.frm

Attention: Mr. Brian Worden
RESNA
42501 Albrae Street
Fremont, CA 94538
Project: 87091-6D, Unocal Bancroft

Date Sampled: 11-18-92
Date Received: 11-18-92
BTEX Analyzed: 11-23-92
TPHg Analyzed: 11-23-92
TPHd Analyzed: NR
Matrix: Water

	Benzene ppb	Toluene ppb	Ethyl-benzene ppb	Total Xylenes ppb	TPHg ppb	TPHd ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	50
SAMPLE Laboratory Identification						
W-35-MW8 W1211335	6.1	ND	13	5.6	1100	NR
W-36-MW2 W1211336	1.2	ND	2.8	1.4	65	NR
W-36-MW3 W1211337	430	160	640	2800	24000*	NR

ppb = parts per billion = μg/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.
* **Chromatogram also contains a discrete early eluting peak.**

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.
TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

December 1, 1992
Date Reported

QUALITY ASSURANCE/QUALITY CONTROL REPORT

1020lab.frm

Attention: Mr. Brian Worden
RESNA
42501 Albrae St.
Fremont, CA 94538
Project: 87091-6D, Unocal Bancroft

Date Analyzed: 11-23-92
G.C. #: 2
Matrix: Water

	Benzene ppb	Toluene ppb	Ethyl-benzene ppb	Total Xylenes ppb	TPHg ppb	TPHd ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	50
Blank	ND	ND	ND	ND	ND	NR

	Benzene %	Toluene %	Ethyl-benzene %	Total Xylenes %	TPHg %	TPHd %
Standard	96	90	93	92	86	NR
MS	115	111	117	109	88	NR
MSD	110	105	109	99	91	NR
RPD	4.44	5.55	7.08	9.62	3.35	NR

ppb = parts per billion = ug/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.
MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference

	Acceptable Range
Standard	85-115%
Blank	ND
MS/MSD	70-130%
RPD	<25%

Laboratory Representative

December 1, 1992
Date Reported

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

05752

PROJECT NO.	PROJECT NAME/SITE
87091-6D	UNOCAL BARSTOW

SAMPLERS (SIGN) Louis Wies / (PRINT) Louis Wies

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	REMARKS
W-35-MW8	11/18/92	12:30		✓	HCl	✓	3	W	✓	✓						W/241335
W-36-MW2		1:45		✓	HCl	✓	3	W	✓	✓						336
W-36-MW3		3:00		✓	HCl	✓	3	W	✓	✓						337

ANALYSIS REQUESTED

P.O. #:

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Louis Wies	11/18/92	4:00	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE 11/18/92	TIME 4:00	RECEIVED BY LABORATORY: Anthony Green

LABORATORY: RESNA

REQUESTED TURNAROUND TIME: 2 WK

RECEIPT CONDITION: good

PLEASE SEND RESULTS TO: BRIAN WORDER

PROJECT MANAGER: BRIAN WORDER

GROUND-WATER SAMPLING

UNOCAL BANCROFT
H_2O SUB'S

Project No. 87091-6D
Date 11/8/92
Page 1 of

SUBJECTIVE ANALYSIS:

	WELL NO.	INITIAL DEPTH TO WATER	TIME	TOTAL DEPTH	PRODUCT THICKNESS	SHEEN	EMULSION	NOTICEABLE PRODUCT ODOR
4"	MW 4	36.33	10:30	47.80	—	NO	NO	NO
2"	MW 5	36.62	10:35	44.14	—	NO	NO	NO
	MW 6	35.28	10:40	44.36	—	NO	NO	NO
	MW 7	35.59	10:45	43.82	—	NO	NO	NO
→	MW 8	35.94	10:50	43.62	—	NO	NO	YES
→	MW 2	36.24	10:55	46.60	—	NO	NO	YES
→	MW 3	36.04	11:00	48.28	—	NO	NO	YES
→	MW 1 - DRY		11:05	34.60	—	—	—	—