CAMBRIA

January 15, 1997

Mr. Scott O. Seery
Senior Hazardous Materials Specialist
Alameda County Health Care Services
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

Re: **Shell Service Station**
WIC # 204-6138-0501
3790 Hopyard Road
Pleasanton, California

Dear Mr. Seery:

On behalf of Shell Oil Products Company (Shell), Cambria Environmental Technology, Inc. (Cambria) is presenting this evaluation of hydrocarbon distribution and ground water hydrology at the site referenced above. We conducted this research in response to your July 31, 1996 letter to Mr. Jeff Granberry of Shell. Presented below is the scope of work and results of our research.

Scope of Work

To evaluate ground water hydrology and the correlation between ground water elevations and hydrocarbon concentrations, we:

- Reviewed available files on the site and added all available ground water elevation data prior to December 1992 into the data tables;
- Interpreted the correlation between hydrocarbon concentrations in ground water and ground water elevations;
- Examined the potential influence of the Arroyo Mocho canal on ground water hydrology beneath the site; and,
- Evaluated the possible risk of exposure to nearby receptors.

Ground Water Data

Cambria reviewed available historic files on the site and added the historic ground water elevation data to the ground water analytic table. The files did not contain ground water elevation data for February 1993 and June 1993. The amended ground water analytic table with the ground water elevations is

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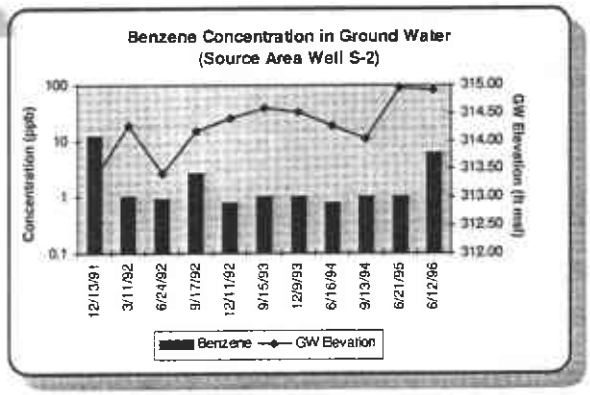
presented as Attachment A. As indicated in Table 1, hydrocarbon concentrations are consistently stable to decreasing in most wells.

Hydrocarbon Distribution in Ground Water

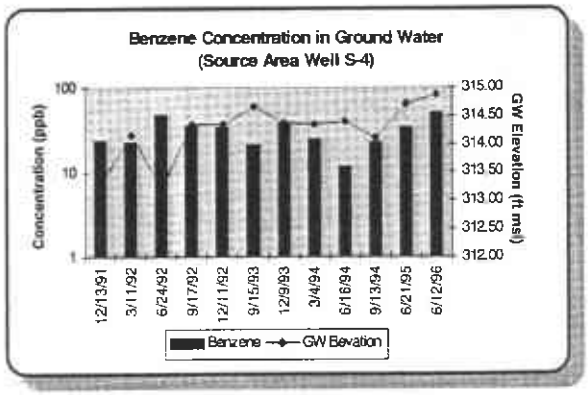
Ground water consistently flows south-southeastward beneath the site (Attachment B). Based on this ground water flow direction, the hydrocarbon extent in ground water is defined by monitoring wells S-7 through S-10.

The June 12, 1996 ground water sample for the intermediate monitoring well S-5 contained 1,400 parts per billion (ppb) MTBE. However, since no MTBE was detected in down gradient wells S-7 and S-9 and cross gradient wells S-8 and S-10, the extent of MTBE in ground water is defined by the existing wells.



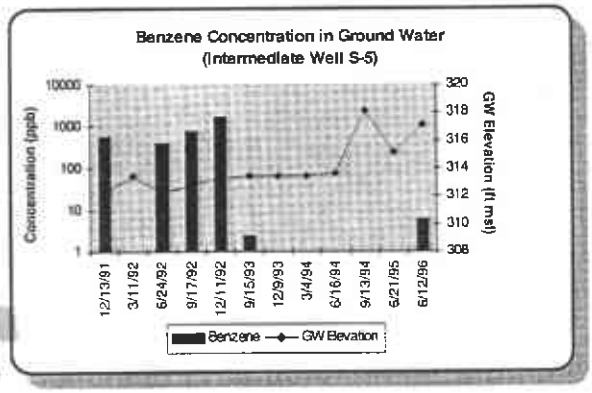
Hydrocarbon Concentration Fluctuations

One of our objectives was to determine whether hydrocarbon concentrations fluctuate with changes in ground water elevation. To assess whether there is a relationship, we graphed benzene concentrations and ground water elevations for several years for source area wells S-2 and S-4 and intermediate well S-5. As evidenced by the adjacent graphs, there is no consistent relationship between ground water elevations and hydrocarbon concentrations.



Arroyo Mocho Canal and Municipal Wells

Arroyo Mocho Canal: The Arroyo Mocho canal is about 625 ft south of the site and flows eastward. The canal is unlined and typically contains water only during the wet season. Pacific Environmental Group (PEG) surveyed the canal in March 1988 and determined that the canal bottom is about 12 ft lower than the water table



beneath the Shell site. As indicated on the figures in Attachment B, the ground water flow direction does not vary over time. However, the ground water gradient does vary somewhat, with shallower ground water gradients generally occurring during the wet season. Therefore, it is possible that ground water recharge from the Arroyo Mocho during the wet season could be causing ground water mounding beneath the canal that would decrease the ground water gradient at the Shell station. It is unlikely that the canal affects ground water flow during the dry season since the canal is typically dry.

Municipal Wells: The nearest municipal well is about ¼ mile southeast of the site. Since hydrocarbons in ground water extend at most 170 ft offsite (the distance to clean down gradient well S-9), it is unlikely that hydrocarbons from the site could affect the municipal wells. The fact that hydrocarbon concentrations are decreasing in the site wells indicates that the hydrocarbon plume is shrinking and that the hydrocarbon mass is being attenuated through natural biologic processes. Therefore, it is unlikely that the hydrocarbons detected at the Shell site could impact the municipal wells in the future.

Risk Review

The current and historic hydrocarbon concentrations in ground water do not appear to pose a risk to potential receptors. The Tier 1 Risk-Based Screening Level for inhalation in a commercial building by volatilization of benzene from ground water is 214 ppb, assuming a target risk level of 1 in 100,000.[1] Since only 6 ppb benzene was detected in the perimeter monitoring well S-5 in June 1996 and no benzene has been detected in the off site monitoring well S-9, there is no apparent risk due to inhalation of benzene vapors from ground water. As previously discussed, the extent of hydrocarbons is defined and hydrocarbon concentrations continue to decrease. Therefore, it is unlikely that the hydrocarbons will pose a risk in the future.

Discussion

This site appears to meet the criteria for a low-risk ground water site, specifically:

- The leak has stopped as indicated by decreasing hydrocarbon concentrations in ground water at the source area;
- Ground water is less than 50 ft deep;
- The site is adequately characterized;

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[1] Table X2.1 Example Tier 1 Risk-Based Screening Level (RBSL) Look-up Table: ***Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites***, ASTM Standard E1739-95, page 22.

- The hydrocarbon plume is stable or decreasing;
- No water wells or other sensitive receptors are likely to be impacted;
- The site presents no significant risk to human health; and,
- The site presents no significant risk to the environment.

Therefore, we request that you contact us regarding reviewing this site for closure. We will be glad to provide you with any additional documentation to assist you in your evaluation.

Closing

We appreciate your continued assistance with this case. Please call if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Sam Rangarajan
Hydrogeologist

N. Scott MacLeod, R.G.
Principal Geologist

STATE OF CALIFORNIA

Attachments: A - Ground Water Elevation and Analytic Data
B - Ground Water Contour Maps
C - Boring Logs and Geologic Cross-Sections
D - Area Well Survey

cc: R. Jeff Granberry, Shell Oil Products Company

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ATTACHMENT A

Ground Water Elevation and Analytic Data

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC# 204-6138-0501, 3790 Hopyard Road, Pleasanton, California

Well ID and Sampling Frequency	Sampling Date	Top-of-Casing (ft/msl)	Depth to Water (ft)	Ground Water Elevation (ft/msl)	TPH-G	TPH-D	B	T	E	X	MTBE
					← parts per billion (µg/L) →						
S-2	03/20/91	329.21	---	---	110	---	30	2.2	10	7.0	---
(Annually,	06/26/91		---	---	50[a]	---	6.3	<0.5	3.3	1.3	---
Second	09/05/91		---	---	90	---	12	3.2	2.5	2.3	---
Quarter)	12/13/91		15.85	313.36	<50	---	12	<0.5	<0.5	<0.5	---
	03/11/92		14.94	314.27	<30	---	<0.3	<0.3	<0.3	<0.3	---
	06/24/92		15.78	313.43	<50	---	0.9	<0.5	<0.5	<0.5	---
	09/17/92		15.03	314.18	78	---	2.6	1.3	1.3	0.9	---
	12/11/92		14.81	314.40	<50	---	0.8	<0.5	<0.5	<0.5	---
	02/04/93		---	---	55	---	1.3	0.7	0.7	<0.5	---
	06/03/93		---	---	<50	---	0.7	<0.5	<0.5	<0.5	---
	09/15/93		14.63	314.58	<50	---	<0.5	<0.5	<0.5	<0.5	---
	12/09/93		14.70	314.51	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/16/94		14.94	314.27	<50	---	0.8	<0.5	0.7	<0.5	---
	09/13/94		15.17	314.04	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/21/95		14.25	314.96	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/12/96		**14.31**	**314.90**	**<50**	**---**	**6.1**	**<0.5**	**<0.5**	**<0.5**	**48**
S-3	03/20/91	327.67	---	---	70	---	2.3	8.9	4.0	23	---
(Annually,	06/26/91		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
Second	09/05/91		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
Quarter)	12/13/91		13.87	313.80	<50	---	<0.5	<0.5	<0.5	<0.5	---
	03/11/92		13.05	314.62	<30	---	<0.5	<0.5	<0.5	<0.5	---
	06/24/92		13.86	313.81	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/17/92		13.01	314.66	<50	---	<0.5	<0.5	<0.5	<0.5	---
	12/11/92		13.00	314.67	<50	---	<0.5	<0.5	<0.5	<0.5	---
	02/04/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/03/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/15/93		13.02	314.65	---	---	---	---	---	---	---

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC# 204-6138-0501, 3790 Hopyard Road, Pleasanton, California (continued)

Well ID and Sampling Frequency	Sampling Date	Top-of-Casing (ft/msl)	Depth to Water (ft)	Ground Water Elevation (ft/msl)	TPH-G	TPH-D	B	T	E	X	MTBE
					← parts per billion (µg/L) →						
	12/09/93		---	---	---	---	---	---	---	---	---
	09/13/94		15.17	312.50	---	---	---	---	---	---	---
	06/21/95		12.49	315.18	50	---	4.1	<0.5	20	1.2	---
	06/12/96		**12.53**	**315.14**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2.5**
S-4 (Annually, Second Quarter)	03/20/91	328.53	---	---	1,200	---	100	<2.0	210	130	---
	06/26/91		---	---	220	---	14	<0.5	34	17	---
	09/05/91		---	---	580	---	31	0.8	53	26	---
	12/13/91		15.20	313.33	370	---	24	0.9	1.3	46	---
	03/11/92		14.37	314.16	1,600	---	23	1.2	12	20	---
	06/24/92		15.30	313.23	480	---	48	<1.0	95	22	---
	09/17/92		14.17	314.36	260	---	35	1.2	51	7.8	---
	12/11/92		14.18	314.35	270	---	34	0.8	28	4.5	---
	02/04/93		---	---	1,100	---	12	<5.0	89	100	---
	06/03/93		---	---	210	---	48	1.1	42	4.0	---
	09/15/93		13.86	314.67	700	---	21	<1.0	110	91	---
	12/09/93		14.16	314.37	250	---	39	<0.5	3.8	2.6	---
	03/04/94		14.17	314.36	150	---	25	1.4	6.8	2.8	---
	03/04/94[dup]		14.17	314.36	140	---	28	0.8	7.9	3.2	---
	06/16/94		14.14	314.39	90	---	12	<0.5	1.8	2.4	---
	06/16/94[dup]		14.14	314.39	80	---	5.9	<0.5	1.5	0.9	---
	09/13/94		14.42	314.11	<50	---	23	<0.5	4.9	2.4	---
	09/13/94[dup]		14.42	314.11	<50	---	23	<0.5	4.0	2.3	---
	06/21/95		13.82	314.71	270	---	34	1.4	25	7.6	---
	06/21/95[dup]		13.82	314.71	280	---	35	2.1	26	8.4	---
	06/12/96		**13.64**	**314.89**	**360**	**---**	**52**	**<0.5**	**<0.5**	**<0.5**	**92**
	06/12/96[dup]		**13.64**	**314.89**	**430**	**---**	**54**	**<1.2**	**72**	**21**	**96**

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC# 204-6138-0501, 3790 Hopyard Road, Pleasanton, California (continued)

Well ID and Sampling Frequency	Sampling Date	Top-of-Casing (ft/msl)	Depth to Water (ft)	Ground Water Elevation (ft/msl)	TPH-G	TPH-D	B	T	E	X	MTBE
					← parts per billion (µg/L) →						
S-5	03/20/91	329.66	---	---	310	---	39	12	18	30	---
(Annually,	06/26/91		---	---	1,300	---	250	62	120	180	---
Second	09/05/91		---	---	4,700	---	660	150	170	280	---
Quarter)	12/13/91		17.48	312.18	1,400	---	580	19	110	80	---
	03/11/92		16.22	313.44	<30	---	<0.3	<0.3	<0.3	<0.3	---
	06/24/92		17.47	312.19	1,800	---	380	52	120	180	---
	09/17/92		16.84	312.82	2,200	---	750	91	170	170	---
	12/11/92		16.37	313.29	8,700	---	1,600	66	48	340	---
	02/04/93		---	---	150	---	156	0.7	4.7	4.0	---
	06/03/93		---	---	480	---	140	3.4	17	14	---
	09/15/93		16.20	313.46	80	---	2.4	0.5	1.4	2.9	---
	12/09/93		16.26	313.40	120	---	0.56	<0.5	2.2	1.2	---
	03/04/94		16.25	313.41	70	---	<0.5	<0.5	<0.5	<0.5	---
	06/16/94		16.04	313.62	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/13/94		11.52	318.14	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/21/95		14.50	315.16	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/12/96		**12.53**	**317.13**	**<500**	**---**	**6.0**	**<5.0**	**<5.0**	**<5.0**	**1,400**
S-6	03/20/91	327.62	---	---	130[a]	---	606	0.6	0.7	3.0	---
(Annually,	06/26/91		---	---	120[a]	---	3.8	0.8	<0.5	1.7	---
Second	09/05/91		---	---	60	---	<0.5	0.8	<0.5	0.5	---
Quarter)	12/13/91		15.11	312.51	150	---	2.3	<0.5	<0.5	150	---
	03/11/92		16.35	311.27	<30	---	<0.3	<0.3	<0.5	<0.3	---
	06/24/92		16.51	311.11	170	---	<0.5	<0.5	<0.5	<0.5	---
	09/17/92		14.33	313.29	190	---	<0.5	1.6	<0.5	1.2	---
	12/11/92		14.48	313.14	180	---	<0.5	0.8	<0.5	0.7	---
	02/04/93		---	---	290	---	<0.5	<0.5	<0.5	0.7	---
	06/03/93		---	---	100	---	1.2	<0.5	<0.5	<0.5	---
	09/15/93		14.16	313.46	160	---	1.4	<0.5	0.9	2.0	---
	12/09/93		14.68	312.94	130	---	2.3	2.6	5.1	6.2	---

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC# 204-6138-0501, 3790 Hopyard Road, Pleasanton, California (continued)

Well ID and Sampling Frequency	Sampling Date	Top-of-Casing (ft/msl)	Depth to Water (ft)	Ground Water Elevation (ft/msl)	TPH-G	TPH-D	B	T	E	X	MTBE
					← parts per billion (µg/L) →						
	03/04/94		14.42	313.20	220	---	<0.5	<0.5	<0.5	<0.5	---
	06/16/94		14.92	312.70	60	---	<0.5	<0.5	<0.5	<0.5	---
	09/13/94		14.72	312.90	<50	---	<0.5	6.0	<0.5	<0.5	---
	06/21/95		13.86	313.76	270	---	<0.5	<0.5	<0.5	<0.5	---
	06/12/96		**13.90**	**313.72**	**200**	**---**	**2.0**	**<0.5**	**<0.5**	**<0.5**	**12**
S-7	03/20/91	328.67	---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/26/91		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/05/91		---	---	<50	---	<0.5	0.6	<0.5	<0.5	---
	12/13/91		17.70	310.97	<50	---	<0.6	<0.5	<0.5	<0.5	---
	03/11/92		17.06	311.61	<50	---	<0.3	<0.3	<0.3	<0.3	---
	06/24/92		17.80	310.87	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/17/92		17.00	311.67	<50	---	0.6	0.6	<0.5	<0.5	---
	12/11/92		17.35	311.32	<50	---	<0.5	<0.5	<0.5	<0.5	---
	02/04/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/03/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/15/93		16.65	312.02	---	---	---	---	---	---	---
	12/09/93		---	---	---	---	---	---	---	---	---
	09/13/94		16.83	311.84	---	---	---	---	---	---	---
	06/21/95		15.88	312.79	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/12/96		**16.22**	**312.45**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2.5**
S-8 (Annually, Second Quarter)	03/20/91	327.00	---	---	<50[a]	---	0.8	1.8	2.6	5.2	---
	06/26/91		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/05/91		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	12/13/91		15.73	311.27	<50	---	<0.5	<0.5	<0.5	<0.5	---
	03/11/92		14.64	312.36	<30	---	<0.3	<0.3	<0.3	<0.3	---
	06/24/92		15.77	311.23	<50	---	1.4	1.9	<0.5	<0.5	---
	09/17/92		15.37	311.63	<50	---	<0.5	<0.5	<0.5	<0.5	---
	12/11/92		14.94	312.06	<50	---	<0.5	<0.5	<0.5	<0.5	---

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC# 204-6138-0501, 3790 Hopyard Road, Pleasanton, California (continued)

Well ID and Sampling Frequency	Sampling Date	Top-of-Casing (ft/msl)	Depth to Water (ft)	Ground Water Elevation (ft/msl)	TPH-G	TPH-D	B	T	E	X	MTBE
					← parts per billion (µg/L) →						
	02/04/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/03/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/15/93		14.91	312.09	---	---	---	---	---	---	---
	12/09/93		---	---	---	---	---	---	---	---	---
	09/13/94		15.16	313.08	---	---	---	---	---	---	---
	06/21/95		14.11	312.89	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/12/96		**14.20**	**312.80**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2.5**
S-9	03/20/91	328.24	---	---	70[a]	---	0.7	0.7	<0.5	1.0	---
(Annually,	06/26/91		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
Second	09/05/91		---	---	<50	---	<0.5	0.8	<0.5	<0.5	---
Quarter)	12/13/91		18.18	310.06	<50	---	<0.5	<0.5	<0.5	<0.5	---
	03/11/92		17.37	310.87	<30	---	<0.3	<0.3	<0.3	<0.3	---
	06/24/92		18.45	309.79	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/17/92		17.88	310.36	<50	---	<0.5	<0.5	<0.5	<0.5	---
	12/11/92		17.34	310.90	<50	---	<0.5	<0.5	<0.5	<0.5	---
	02/04/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/03/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/15/93		17.42	310.82	---	---	---	---	---	---	---
	12/09/93		16.89	311.35	<50	---	<0.5	<0.5	<0.5	<0.5	---
	03/04/94		17.22	311.02	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/16/94		17.46	310.78	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/13/94		17.59	310.65	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/21/95		17.03	311.21	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/12/96		**16.76**	**311.48**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2.5**
S-10	03/20/91	326.55	---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
(Annually,	06/26/91		---	---	50	---	1.8	5.8	1.9	13	---
Second	09/05/91		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
Quarter)	12/13/91		14.77	311.78	<50	---	<0.5	<0.5	<0.5	<0.5	---

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC# 204-6138-0501, 3790 Hopyard Road, Pleasanton, California (continued)

Well ID and Sampling Frequency	Sampling Date	Top-of-Casing (ft/msl)	Depth to Water (ft)	Ground Water Elevation (ft/msl)	TPH-G	TPH-D	B	T	E	X	MTBE
					← parts per billion (µg/L) →						
	03/11/92		14.16	312.39	<30	---	<0.3	<0.3	<0.3	<0.3	---
	06/24/92		14.83	311.72	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/17/92		13.85	312.70	<50	---	<0.5	<0.5	<0.5	<0.5	---
	12/11/92		13.90	312.65	<50	---	<0.5	<0.5	<0.5	<0.5	---
	02/04/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/03/93		---	---	<50	---	<0.5	<0.5	<0.5	<0.5	---
	09/15/93		13.66	312.89	---	---	---	---	---	---	---
	12/09/93		---	---	---	---	---	---	---	---	---
	09/13/94		13.84	312.71	---	---	---	---	---	---	---
	06/21/95		13.08	313.47	---	---	---	---	---	---	---
	06/12/96		**13.34**	**313.21**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2.5**
SR-1	03/04/94	329.78	16.34	313.44	---	---	---	---	---	---	---
	06/16/94		16.72	313.06	---	---	---	---	---	---	---
SR-2	03/04/94	328.35	14.39	313.96	---	---	---	---	---	---	---
	06/16/94		14.48	313.87	---	---	---	---	---	---	---
SR-3	03/04/94	329.11	14.66	314.45	---	---	---	---	---	---	---
	06/16/94		14.96	314.15	---	---	---	---	---	---	---
Trip Blank	06/16/94				<50	<50	<0.5	<0.5	<0.5	<0.5	<50
	09/13/94				<50	---	<0.5	<0.5	<0.5	<0.5	---
	06/21/95				<50	---	<0.5	<0.5	<0.5	<0.5	---
DTSC MCLs					NE	NE	1	100[1c]	680	1,750	NE

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC# 204-6138-0501, 3790 Hopyard Road, Pleasanton, California (continued)

Abbreviations:

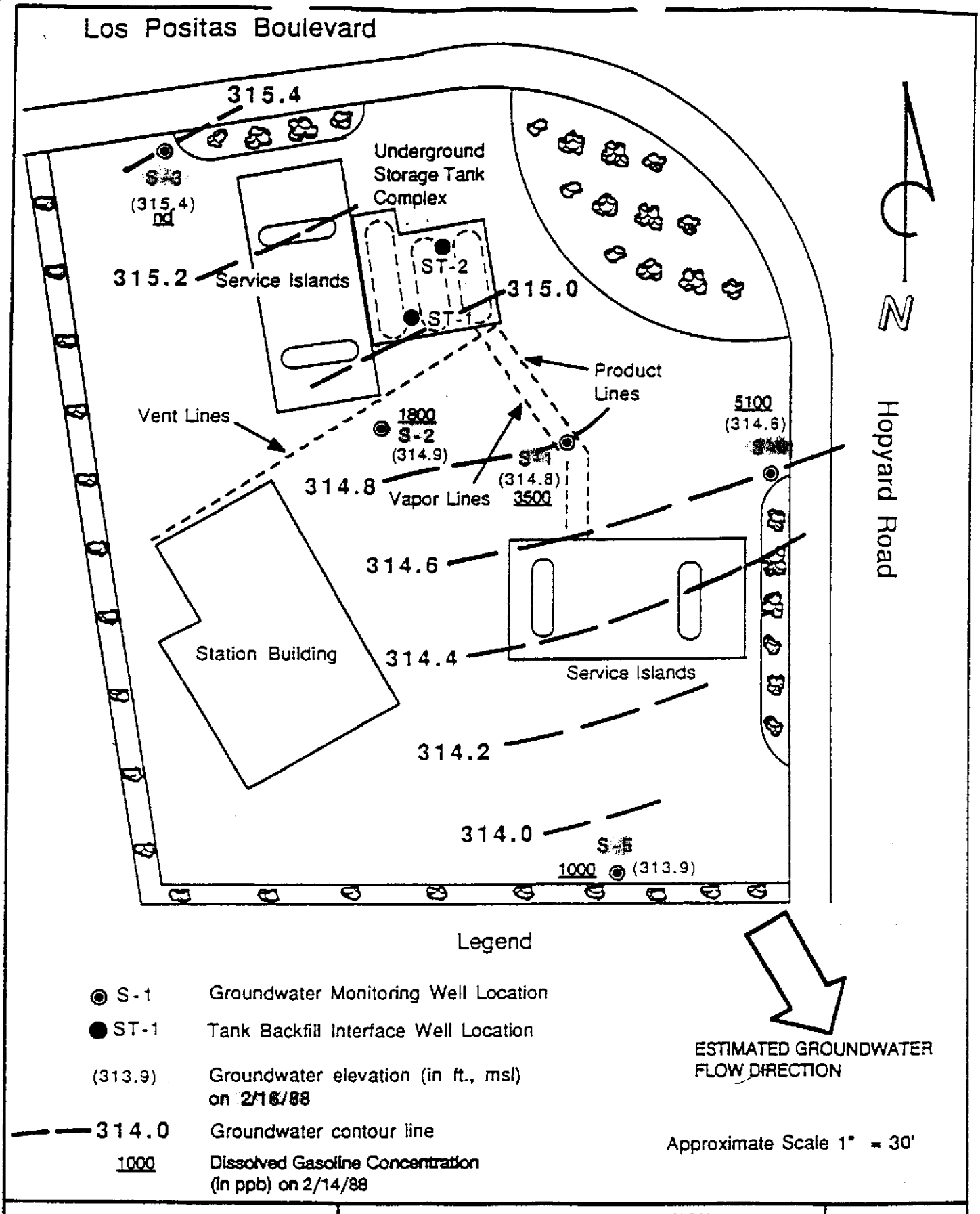
TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 8020
E = Ethylbenzene by EPA Method 8020
T = Toluene by EPA Method 8020
X = Xylenes by EPA Method 8020
DTSC MCLs = California Department of Toxic Substances Control maximum contaminant levels for drinking water
NE = Not established
--- = Not analyzed
<n = Not detected at detection limits of n ppb
dup = Duplicate sample

Notes:

a = Compounds detected within the chromatographic range of gasoline but not characteristic of the standard gasoline pattern
b = The result for gasoline is an unknown hydrocarbon which consists of a single peak
c = DTSC recommended action level; MCL not established

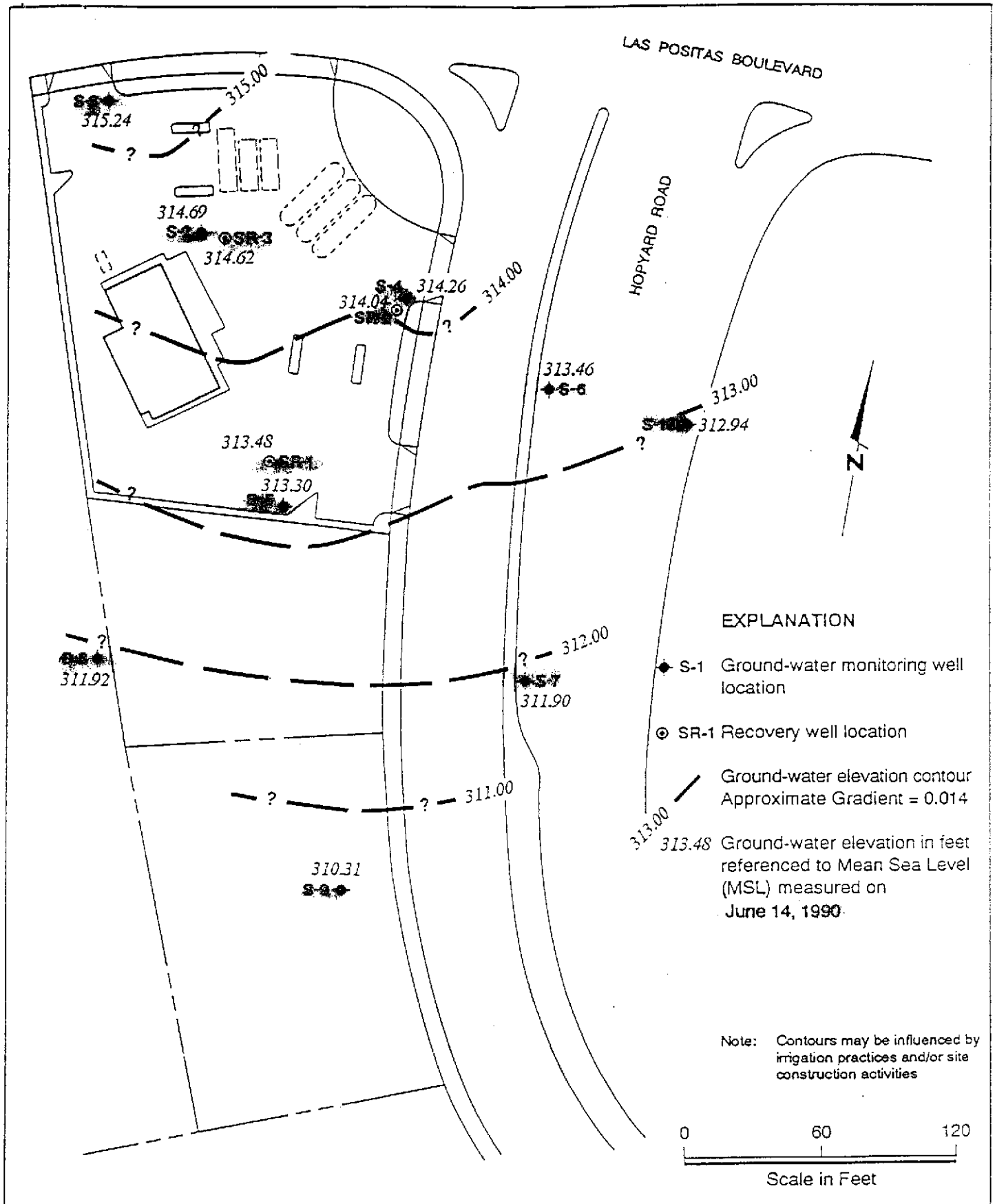
ATTACHMENT B

Ground Water Contour Maps



PACIFIC ENVIRONMENTAL GROUP INC.	**SHELL SERVICE STATION** Hopyard Road and West Las Positas Boulevard Pleasanton, California **SITE MAP**	FIGURE: **2** PROJECT: 101-08.02

SAN JOSE BLUEPRINT CO.
PRINTED ON 1000H-10

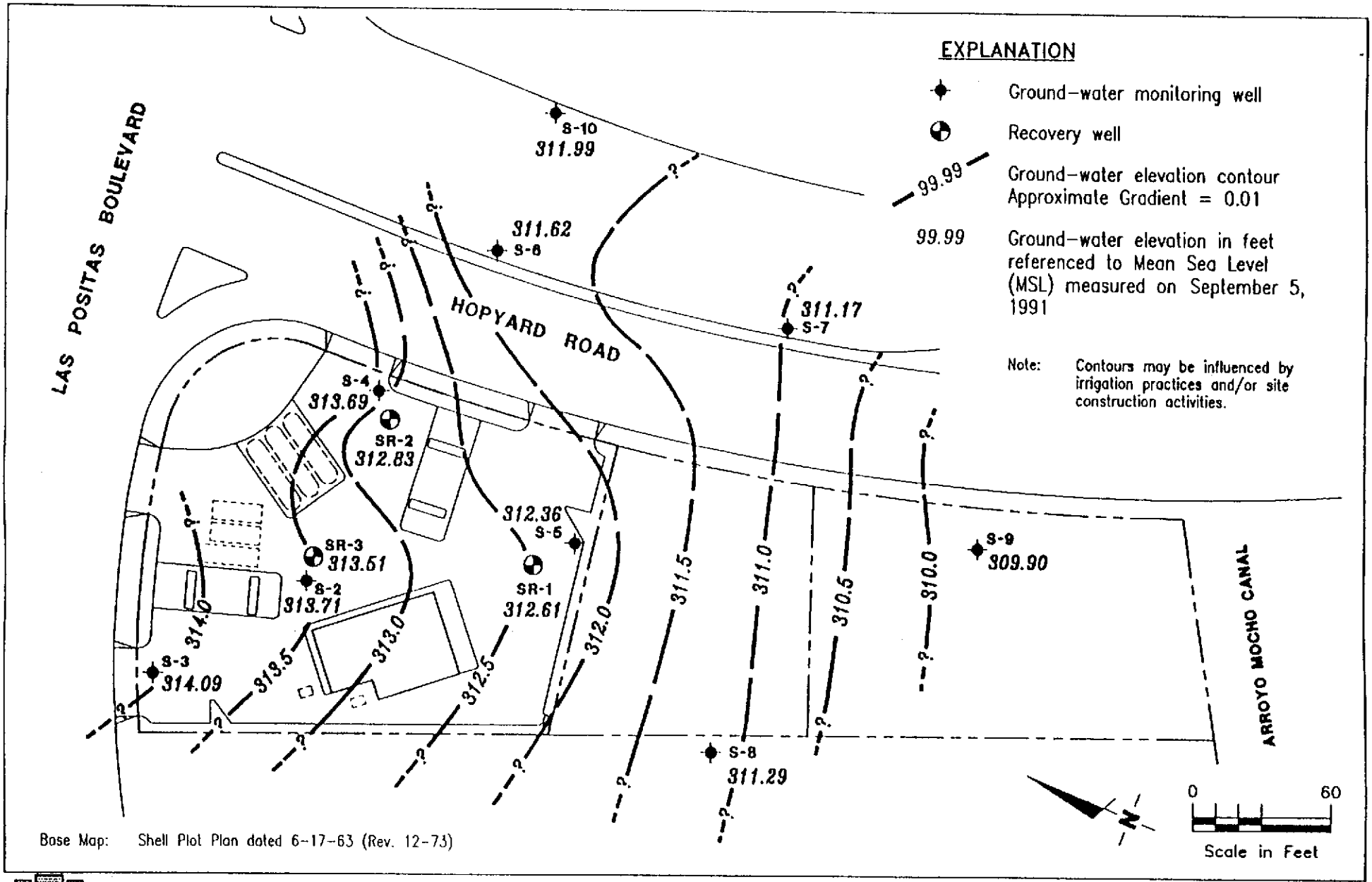


GeoStrategies Inc.

Potentiometric Map
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE 3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CWP CEG 1262	7/90		

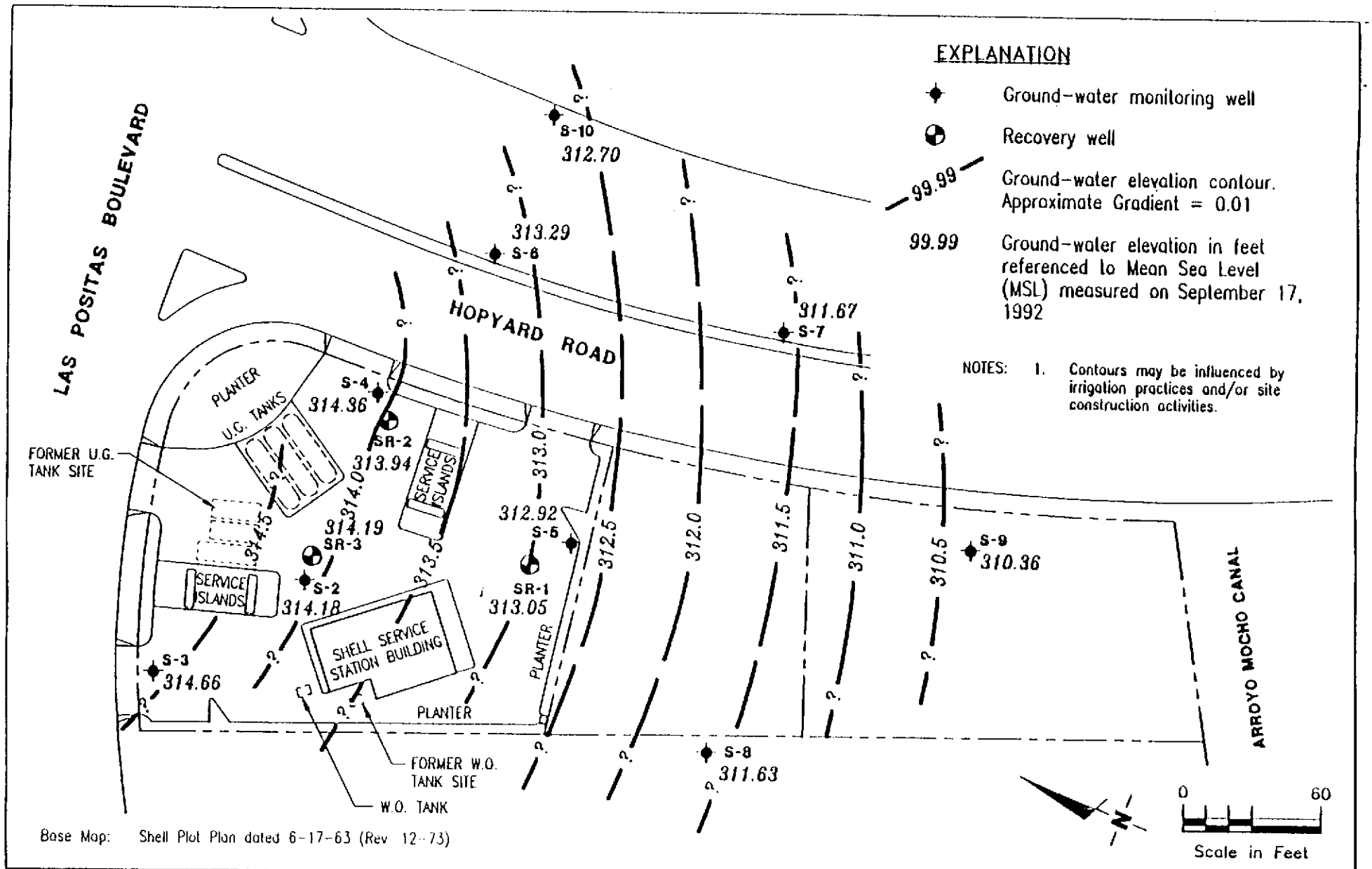


GeoStrategies Inc.

POTENTIOMETRIC MAP
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE
3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
763201-11	EPS	11/91	



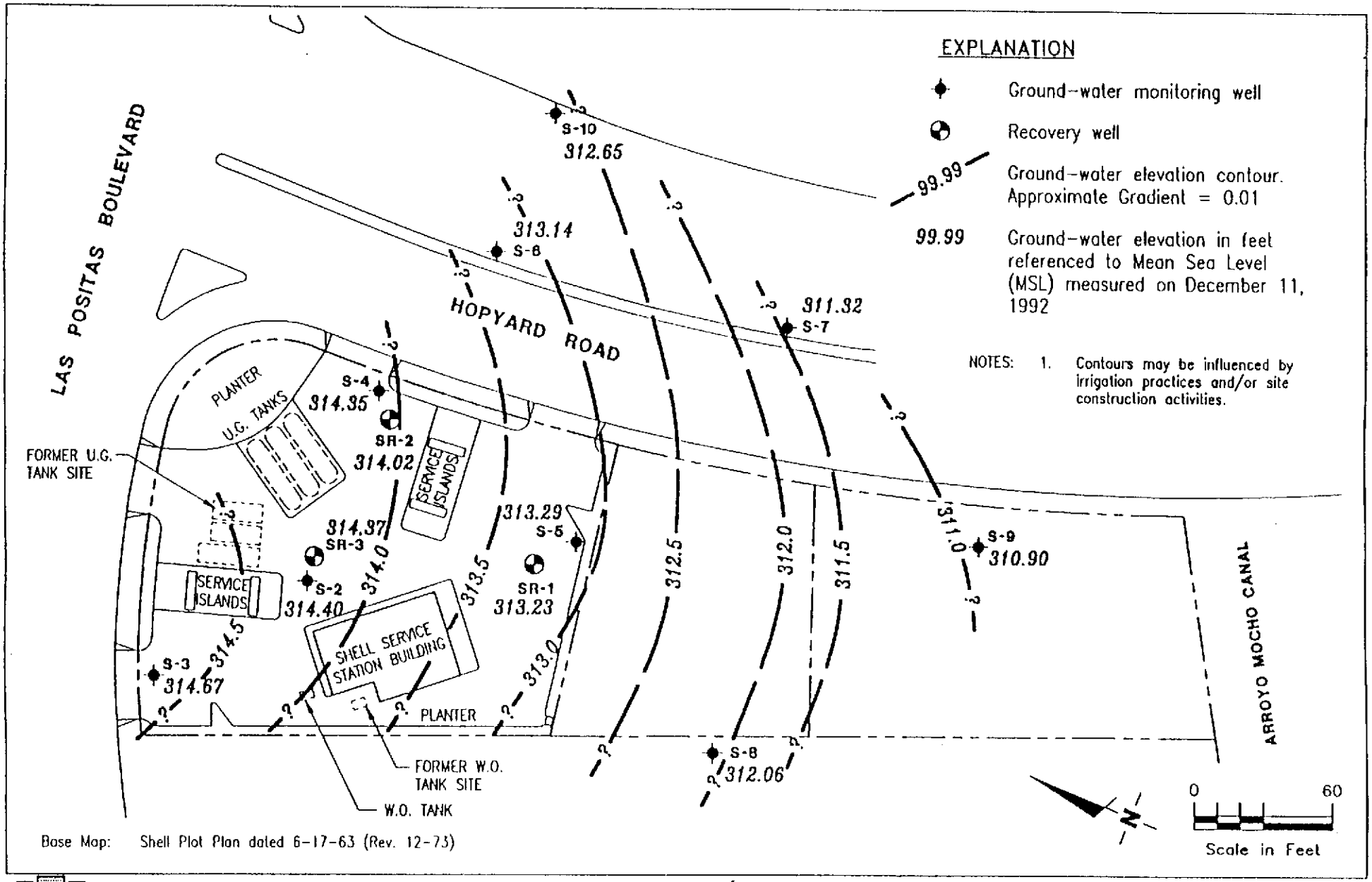
Base Map: Shell Plot Plan dated 6-17-63 (Rev 12-73)

GeoStrategies Inc.

SITE PLAN/POTENTIOMETRIC MAP
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
763201-15		11/92	



Base Map: Shell Plot Plan dated 6-17-63 (Rev. 12-73)

GeoStrategies Inc.

SITE PLAN/POTENTIOMETRIC MAP
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
763201-16		2/93	

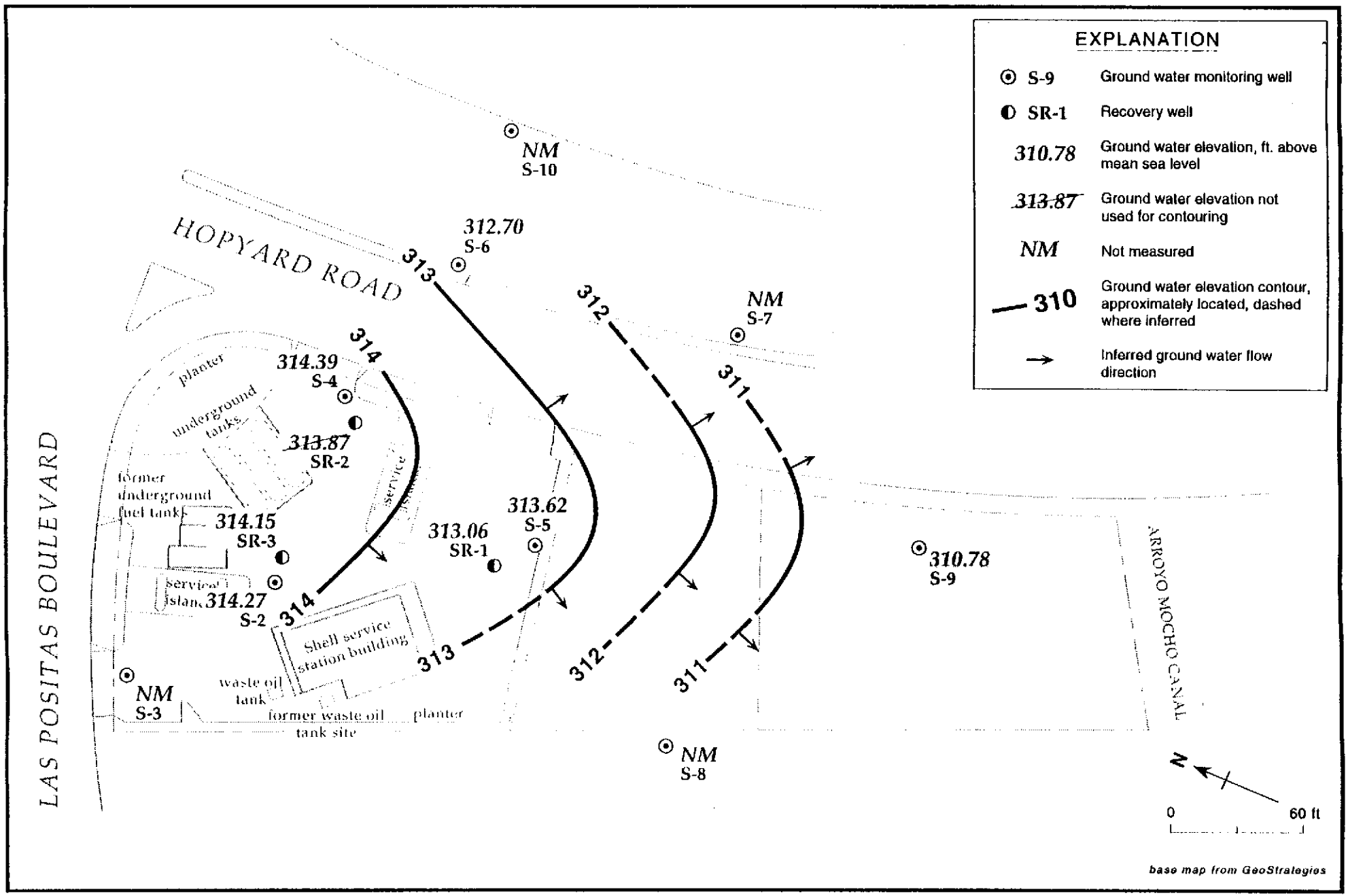


Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - June 16, 1994 - Shell Service Station WIC# 204-6138-0501
3790 Hopyard Road, Pleasanton, California

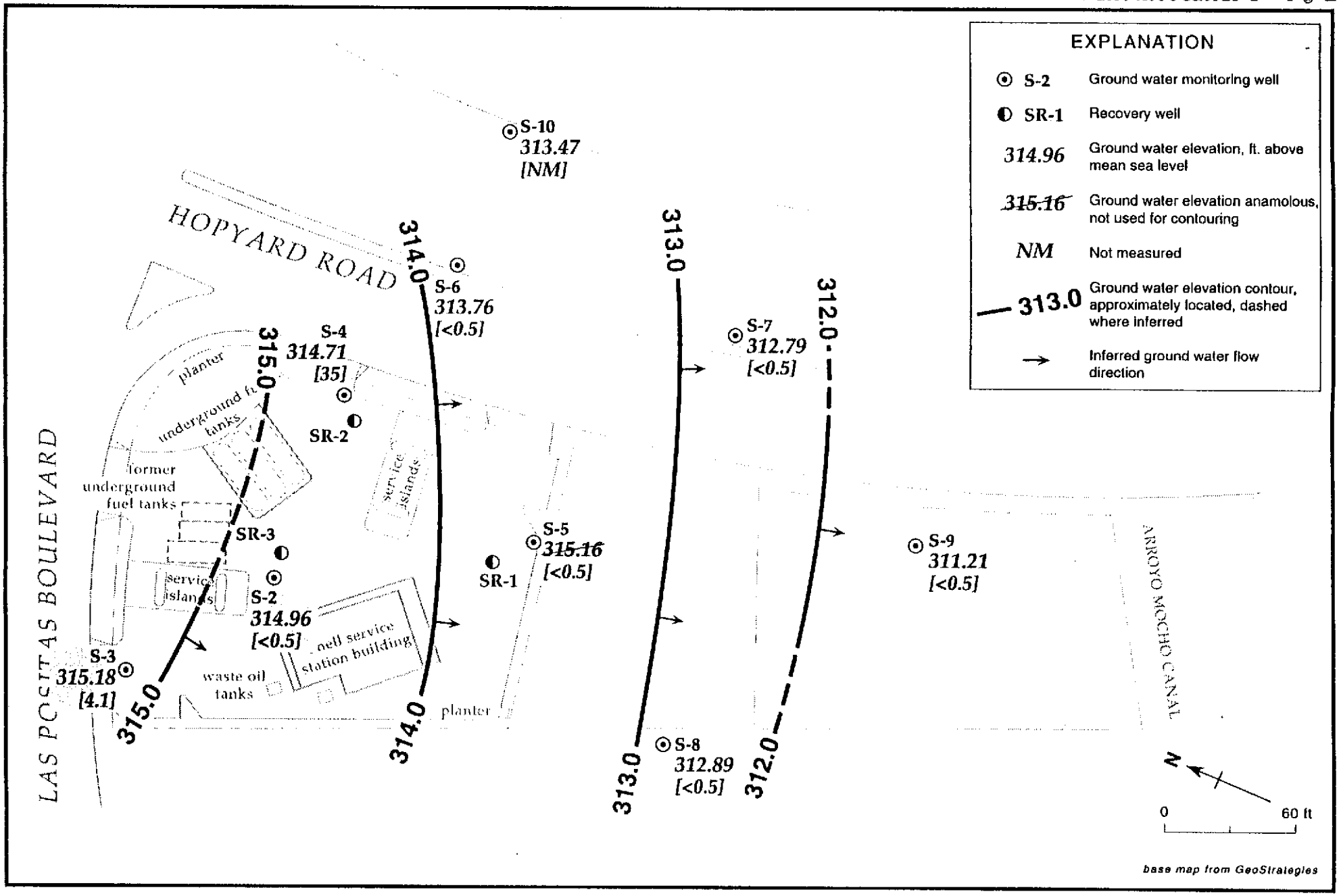
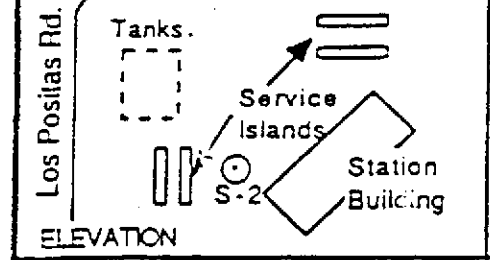


Figure 2. Monitoring Well Locations, Ground Water Elevation Contours, and Benzene Concentrations in Ground Water -June 21, 1995 - Shell Service Station WIC# 204-6138-0501 3790 Hopyard Road, Pleasanton, California

ATTACHMENT C

Soil Boring Logs and Geologic Cross-Sections

LOCATION MAP Hopyard Rd.



ELEVATION

PACIFIC ENVIRONMENTAL GROUP, INC.

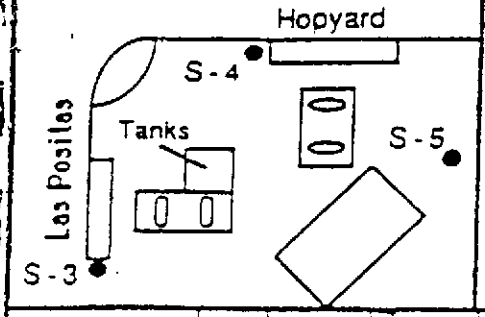
WELL / BORING NO. [redacted]
PAGE 1 OF 1

PROJECT NO. 101-08.01
LOGGED BY: EL
DRILLING METHOD: HSA
SAMPLING METHOD: CAL. MOD.
CASING TYPE: SHC. #40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: 12 X 20 SAND

CLIENT: G-R/SHELL
DATE DRILLED: 10/28/87
LOCATION: Hopyard & Los Positas
HOLE DIAMETER: 8"
HOLE DEPTH: 35'
WELL DEPTH: 35'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	TIP	PENETRATION RESISTANCE (BLOW/FT)	DEPTH (feet)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Concrete								ASPHALT & BASEROCK FILL
				2			CL	CLAY; gray; moderate plasticity; silty; trace fine to coarse sand; faint product odor.
	Dp	4.5	P	4				@3.5'; as above; 5-10% coarse sand to fine gravel; moderate product odor.
Bentonite				6				
				8				
	Dp	83.5	11	10			CH	CLAY; gray; high plasticity; trace coarse gravel; rootholes; stiff; faint product odor.
				12				
12 X 20 Sand	Dp	314	6	14			CL	CLAY; gray; moderate plasticity; trace fine sand; roots; occasional peaty interbeds; 5-15% organics; hydrogen sulfide odor; medium stiff; faint product odor.
				16				
				18				
	Wt	333	3	20				@ 19'; as above; soft; no product odor.
				22				
	Wt	20.5	7	24				@ 24'; as above; peat absent; medium stiff; no product odor.
				26				
Caved				28				
	Wt	5.5	10	30				@29'; as above; no product odor.
				32				
	Wt	11.5	12	34			CH	CLAY; gray; high plasticity; trace silt; stiff; no product odor.
				36				BOTTOM OF BORING AT 35 FEET
				38				
				40				
				42				
				44				

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

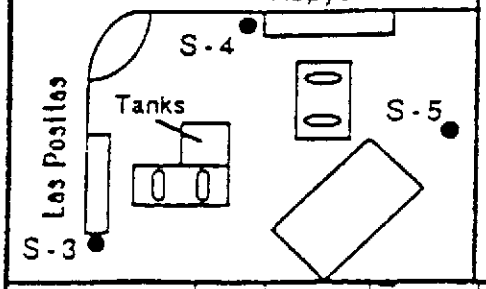
WELL / BORING NO.
PAGE 1 OF 1

PROJECT NO. 101-08.02
LOGGED BY: C.P.
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: 12 X 20 SAND

CLIENT: G.R. Shell
DATE DRILLED: 1-26-88
LOCATION: Hopyard & Las Positas
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DEPTH: 36'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	HNU READING	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
				2			CL	ASPHALT & BASEROCK - FILL CLAY; dark olive gray; moderate plasticity; trace coarse sand; roots; firm; no product odor.
CONCRETE	Dp	0.6	PUSH	4				
				6				
BENTONITE				8				
	Dp	3.0	13	10				@9'; as above; ; stiff; no product odor.
				12				
	Dp	2.0	4	14				@14'; as above; medium olive gray; rootholes; soft; no product odor.
				16				
12 X 20 SAND				18				
	Mst	0.0	5	20			CH	CLAY; mottled olive and gray; high plasticity; trace-5% organics; soft; no product odor.
				22				
	Mst	4.0	7	24				@24'; as above; mottled olive gray and black; trace organics; iron oxide staining; firm; no product odor.
				26				
				28				
	Mst	0.3	10	30			CL	CLAY; low plasticity; mottled olive and gray; 10-15% coarse sand; stiff; no product odor.
				32				
	Mst	0.0	11	34				@34'; as above; olive; trace organics; no sand; no product odor.
				36				BOTTOM OF BORING AT 36'
				38				
				40				
				42				
				44				

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

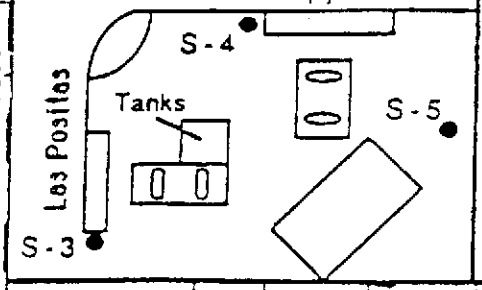
WELL / BORING NO.
PAGE 1 OF 1

PROJECT NO. 101-08.02
LOGGED BY: C.P.
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: 12 X 20 SAND

CLIENT: G.R. Shell
DATE DRILLED: 1-26-88
LOCATION: Hopyard & Las Positas
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DEPTH: 36'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	HI-NU READING	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
				0				ASPHALT, GRAVEL & BRICK.
				2			CL	CLAY; olive gray; low plasticity; trace coarse sand; trace organics; trace coarse gravel; firm; no product odor.
CONCRETE	Dp	12.2	PUSH	4				
				6				
				8				
BENTONITE	Dp	20	14	10				@9'; as above; moderate plasticity; no gravel; stiff; no product odor.
				12				
	Dp	78	5	14				@14'; as above; mottled medium brown and olive; low plasticity; trace medium sand; iron oxide staining; charcoal; roots; low plasticity; firm; no product odor; peat lens @14 1/2'.
				16				
				18				
12 X 20 SAND	Dp	188	8	20				@19'; as above; mottled green & olive; 5-10% silt; rootholes; firm; moderate product odor.
				22				
				24				@24'; as above; black; moderate plasticity; stiff; no product odor.
	Mst	110	12	26				
				28				
	Mst	22	14	30			CH	CLAY; dark gray; trace fine gravel; trace fine sand; no product odor.
				32				
				34				@34'; as above; olive; high plasticity; rootholes; trace organics; stiff; no prodcut odor.
	Mst	2.2	10	36				
				38				BOTTOM OF BORING AT 36'
				40				
				42				
				44				

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL [redacted]
BORING NO.
PAGE 1 OF 1

PROJECT NO. 101-08.02
LOGGED BY: C.P.
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: 12 X 20 SAND

CLIENT: G.R. Shell
DATE DRILLED: 1-26-88
LOCATION: Hopyard & Las Positas
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DEPTH: 35 1/2'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	H-NU READING	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
								ASPHALT & BASEROCK/GRAVEL
CONCRETE				2			CL	CLAY; dark olive gray; 10-15% fine gravel; medium plasticity; trace organics; trace medium sand; firm; no product odor.
	Dp	5.9	PUSH	4				
BENTONITE				6				
				8				
	Dp	42	14	10				@9'; as above; dark olive silty; no gravel; trace medium to coarse sand; clay sheared through center of sampler; stiff; faint product odor.
				12				
	Dp	35	8	14				
12 X 20 SAND				16			CH	CLAY; dark bluish gray; medium to high plasticity; trace coarse sand; peaty; 10-15% organics; stiff; moderate product odor (oil).
				18				
	Dp	254	9	20			CL	CLAY; medium brownish gray; moderate plasticity; trace-5% organics; iron oxide staining; rootholes; stiff; visible product sheen; strong product odor.
				22				
	Dp	50	7	24				@24'; as above; mottled gray and olive brown; firm; moderate product odor.
				26				
				28				
	Dp	58	8	30				@29'; as above; dark olive; trace organics; trace medium sand; firm; faint product odor.
				32				@30.5; silt lens.
CAVED				34				
	Dp	8.0	10	36				@34'; as above; medium olive gray; firm; thin lens of silty clay; no product odor.
				38				BOTTOM OF BORING AT 36'
				40				
				42				
				44				

Woodward-Clyde Consultants

PROJECT NAME GETTLER-RYAN NO. 8820011A

MONITORING WELL LOCATION	Los Positas and Hopyard, Pleasanton, CA						ELEVATION AND DATUM			
DRILLING AGENCY	Bay Land Drilling Co.	DRILLER	Kurt				DATE STARTED / DATE FINISHED	10/4/88		
DRILLING EQUIPMENT	Truck mounted CME - 75						COMPLETION DEPTH	35'	SAMPLER	Modified California
DRILLING METHOD	8" Hollow stem augers	DRILL BIT					NO. OF SAMPLES	DIST. 7	UNDIST.	
SIZE AND TYPE OF CASING	3" PVC Threaded	FROM	35	TO	0	FT.	WATER LEVEL	FIRST	COMPL. 12.1'	24 HRS.
TYPE OF PERFORATION	0.020" Slot	FROM	35	TO	10	FT.	LOGGED BY: K. Stevens		CHECKED BY: M. Bonhowen	
SIZE AND TYPE OF PACK	2/12 Lonestar Sand	FROM	35	TO	8	FT.				
TYPE OF SEAL NO. 1	Bentonite	FROM	8	TO	6.5	FT.				
TYPE OF SEAL NO. 2	Concrete	FROM	6.5	TO	0	FT.				

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION		USCS	Well Construction
			Asphalt and Gravel Base			
5	1		SILTY SAND silty sand with some gravel, loose, poorly sorted, dry	H Nu = 0.5 ppm No Hydrocarbon odor	SM	
10	2	3 4 7	CLAY dark gray clay, trace silt, very stiff, plastic	H Nu = 5.5 ppm No Hydrocarbon odor	CL	
15	3	2 4 5	dark gray with trace gravel, very stiff, plastic, dry to damp	H Nu = 6 ppm No Hydrocarbon odor	CL	
20	4	2 3 5	dark gray with layer fine silt, medium stiff, damp	H Nu = 130 ppm Hydrocarbon odor	CL	
25	5	3 4 7	mottled brown, black, gray clay with occasional gravel, stiff, plastic, damp	H Nu = 4 ppm No Hydrocarbon odor	CL	
30	6	4 4 5	dark gray clay, very stiff, plastic		CL	
			GRAVEL layer coarse gravel and some coarse sand, poorly sorted, wet	H Nu = 4.5 ppm No Hydrocarbon odor	GP	
35						

PROJECT NAME GETTLER-RYAN NO. 882001.1A

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	USCS	Well Construction
35	7	4 5 7	CLAY dark gray clay with trace gravel, soft, plastic, wet H.N.u = 1.5 ppm No Hydrocarbon odor	CL	

Total Depth = 35.5 feet

* = Lab Sample

40 45 50 55 60 65 70 75 80

Woodward-Clyde Consultants

PROJECT NAME GETTLER-RYAN NO. 8820011A

MONITORING WELL LOCATION	Los Positas and Hopyard, Pleasanton, CA							ELEVATION AND DATUM	
DRILLING AGENCY	Bay Land Drilling Co.	DRILLER	Kurt					DATE STARTED / DATE FINISHED	10/4/88
DRILLING EQUIPMENT	Truck mounted CME - 75							COMPLETION DEPTH 35	SAMPLER Modified California
DRILLING METHOD	8" Hollow stem augers	DRILL BIT						NO. OF SAMPLES: DIST. 7	UNDIST.
SIZE AND TYPE OF CASING	3" PVC Threaded	FROM	35	TO	0	FT.		WATER LEVEL: FIRST	COMPL. 15.8 / 24 HRS.
TYPE OF PERFORATION	0.020" Slot	FROM	35	TO	10	FT.		LOGGED BY: K. Stevens	CHECKED BY: M. Bonkowski
SIZE AND TYPE OF PACK	2/12 Lonestar Sand	FROM	35	TO	8	FT.			
TYPE OF SEAL NO. 1	Bentonite	FROM	8	TO	6.5	FT.			
TYPE OF SEAL NO. 2	Concrete	FROM	6.5	TO	0	FT.			

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION		USCS	Well Construction
0			Asphalt and Gravel Base		SM	
5	1	pushed @ 200 psi	SAND silty sand with some gravel, loose, poorly sorted, dry	HNu = 0 ppm No Hydrocarbon odor	CL	
10	2	pushed @ 200 psi	CLAY dark gray clay with some gravel, stiff, plastic, damp	HNu = 0 ppm No Hydrocarbon odor	SC CL	
15	3	2, 1, 3	CLAYEY SAND clayey sand with little gravel, loose, poorly sorted, moist CLAY dark gray clay with black mottling, trace sand and gravel, medium stiff, low plasticity	HNu = 0 ppm No Hydrocarbon odor	PT CL	
20	4	3, 3, 6	PEAT peat with trace clay, root material, moist CLAY dark gray clay, trace roots and root impressions, stiff, plastic	HNu = 0 ppm No Hydrocarbon odor		
25	5	2, 4, 7	dark gray clay	HNu = 0 ppm No Hydrocarbon odor		
30	6	4, 6, 7	mottled brown, black, gray clay with occasional gravel, moist to wet, soft, with occasional streaks of white	HNu = 0 ppm No Hydrocarbon odor		
35						

PROJECT NAME GETTLER-RYAN NO. 8820011A

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	USCS	Well Construction
35	7		dark green clay with trace gravel, soft, plastic, moist to wet — PID = 0 ppm; No Hydrocarbon odor	CL	

Total Depth = 35.5 feet

* = Lab Sample

40 45 50 55 60 65 70 75 80

Woodward-Clyde Consultants

PROJECT NAME GETTLER - RYAN NO. 8820011A/0118

MONITORING WELL LOCATION 3790 Hopyard Rd. Pleasanton, CA (S-8)			ELEVATION AND DATUM 100.00' site datum
DRILLING AGENCY Baylands	DRILLER K. Voss		DATE STARTED 2/24/89 DATE FINISHED 2/24/89
DRILLING EQUIPMENT Truck-mounted CME-75			COMPLETION DEPTH 35' / SAMPLER Modified California
DRILLING METHOD 8" hollow stem auger	DRILL BIT CME Carbide		NO. OF SAMPLES / DIST. ____ / UNDIST. 7
SIZE AND TYPE OF CASING 3" PVC	FROM 34.5 TO 0.5 FT.		WATER LEVEL / FIRST 16' Approx. / COMPL. ____ / 24 HRS. ____
TYPE OF PERFORATION 020 slotted	FROM 34.5 TO 9.5 FT.		LOGGED BY: C. Parten / CHECKED BY: M. Bonkowski
SIZE AND TYPE OF PACK 8 X 16	FROM 35.0 TO 7.5 FT.		
TYPE OF SEAL NO. 1 Bentonite	FROM 7.5 TO 6.5 FT.		
NO. 2 Grout	FROM 6.5 TO surface FT.		

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION		USCS	Well Construction
			3" Asphalt: base, gray brown SANDY CLAY with SAND		CL	
5	1	50 psi push	SILTY CLAY grayish brown, damp, medium firm, some roots		CL	
10	2	4 5 7	SILTY CLAY gray brown mottled, medium firm	HNu = 0 ppm	CL	
15	3	3 4 6	SILTY CLAY as above	HNu = 0 ppm ▼	CL	
20	4	3 4 6	SILTY CLAY gray and brown mottling, orange speckles (look like brick), roots, damp, medium firm	HNu = 0 ppm	CL	
25	5	3 5 5	SILTY CLAY gray and brown mottling, damp, medium firm	HNu = 0 ppm	CL	
30	6	3 4 6	SILTY CLAY as above	HNu = 0 ppm	CL	
35	7	3 5 6	SILTY CLAY gray and brown mottling, damp to moist, medium firm		CL	

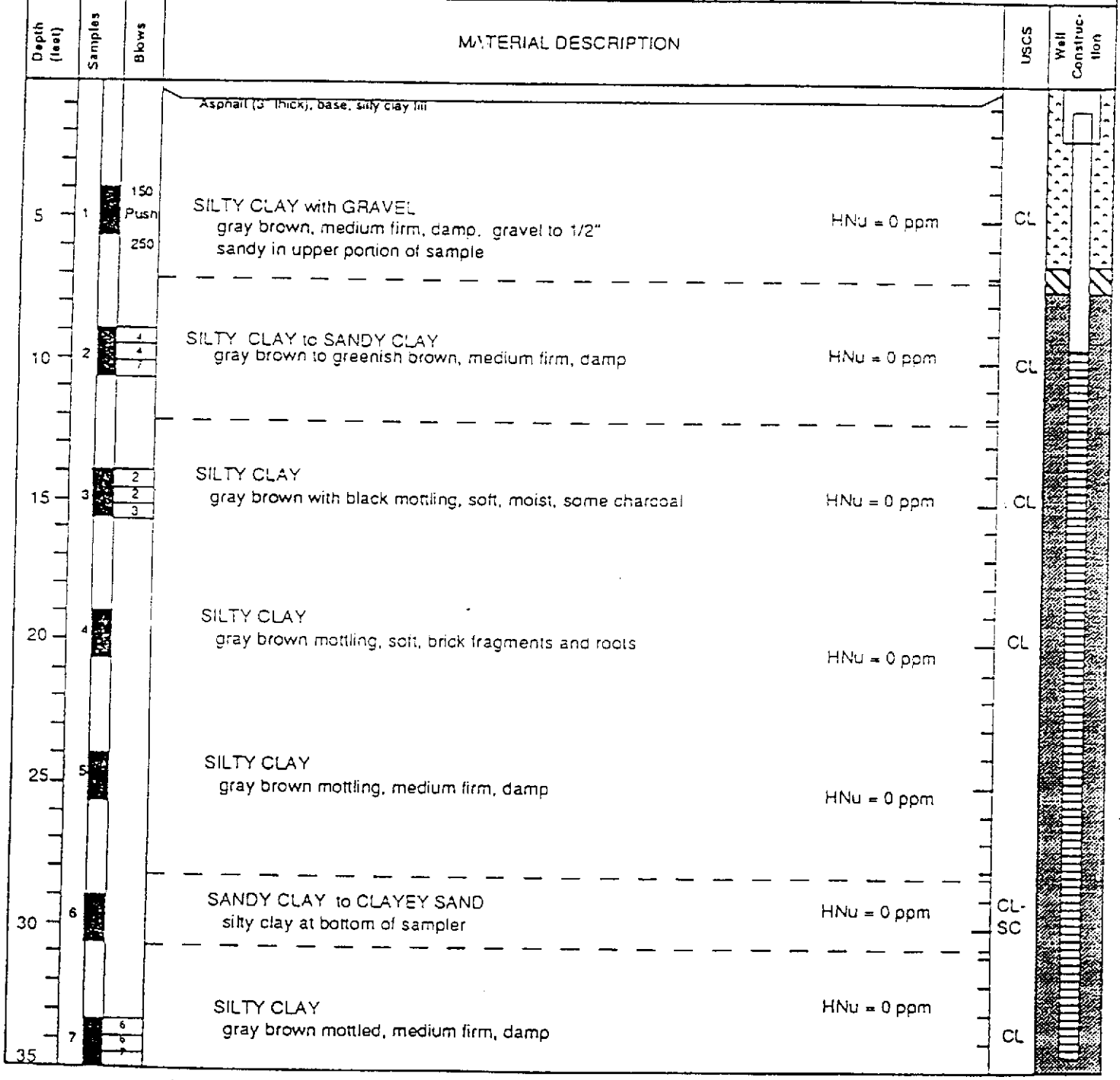
Total Depth = 35.0 feet

LOG OF MONITORING WELL NO. S-8 SHEET 1 OF 1

Woodward-Clyde Consultants

PROJECT NAME GETTLER - RYAN NO. 8820011A/0118

MONITORING WELL LOCATION	3790 Hopyard Rd, Pleasanton, CA (S-9)	ELEVATION AND DATUM	101.24' site datum
DRILLING AGENCY	Baylands	DRILLER	K. Voss
		DATE STARTED	2/24/89
		DATE FINISHED	2/24/89
DRILLING EQUIPMENT	Truck-mounted CME-75	COMPLETION DEPTH	35.0'
SAMPLER	California Modified		
DRILLING METHOD	8" Hollow-stem auger	DRILL BIT	CME Carbide
NO. OF SAMPLES	DIST. ___	UNDIST. 7	
SIZE AND TYPE OF CASING	3" PVC	FROM 34.5 TO 0.5 FT.	WATER LEVEL FIRST ___ COMPL. ___ 24 HRS. ___
TYPE OF PERFORATION	020 slotted	FROM 34.5 TO 9.5 FT.	LOGGED BY: C. Parten
CHECKED BY:	M. Bonkowski		
SIZE AND TYPE OF PACK	8 X 16	FROM 35 TO 7.5 FT.	
TYPE OF SEAL	NO. 1 Bentonite pellets	FROM 7.5 TO 6.5 FT.	
	NO. 2 Grout	FROM 6.5 TO surface FT.	



Total Depth = 35.0 feet

LOG OF MONITORING WELL NO. S-9 SHEET 1 OF 1

Field location of boring:

(See Plate 2)

Project No.:	7632	Date: 08/09/89	Boring No: [redacted]
Client:	Shell Oil Company		
Location:	3790 Hopyard Road		
City:	Pleasanton, California		Sheet 1 of 2
Logged by:	J. Vargas	Driller: Bayland	

Drilling method: Hollow-Stem Auger

Hole diameter: 8-inches

Casing installation data: See Well Construction Detail

Top of Box Elevation: Datum:

Water Level	12.93				
Time					
Date	08/11/89				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 2 feet
				2				
				3				GRAVEL with SAND (GP) - olive gray (5Y 4/2), loose, damp; 60% gravel; 30-40% sand; 5% clay.
				4				
	250	S&H		5				
	150	push						
NS	150			6				
				7				CLAY with SILT (CL) - very dark gray (5Y 3/1), medium stiff, damp; 70% clay; 20% silt; 10% sand; medium plasticity; no chemical odor.
				8				
				9				
	150	S&H		10				gravel and sand stringers; no chemical odor.
	150	push						
NS	150			11				
				12				
				13				
				14				
	2	S&H		15				stiff; roots; black organics; mottled brown; no chemical odor.
	3							
0	5		S-10-15	16				
				17				
				18				
				19				

Remarks: NS = no sample

GeoStrategies Inc.

Log of Boring

BORING NO. S-10

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CMP CEG 1262	08/89		

Field location of boring:

(See Plate 2)

Project No.: 7632	Date: 08/09/89	Boring No: S-10	
Client: Shell Oil Company			
Location: 3790 Hopyard Road			
City: Pleasanton, California		Sheet 2 of 2	
Logged by: J. Vargas	Driller: Bayland		

Drilling method: Hollow-Stem Auger

Hole diameter: 8-inches

Casing installation data: See Well Construction Detail

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
	2	S&H		20				
	4							
0	7		S-10-20					
				21				
				22				
				23				
				24		▽		saturated at 24 feet; interbedded lamina of fine sand;
	3	S&H						trace coarse sand; no chemical odor.
	5			25				
0	8		S-10-25					
				26				
				27				
				28				
				29				
	4	S&H						damp; no chemical odor.
	5			30				
0	7		S-10-30					
				31				
				32				
				33				CLAY with SILT (CL) - dark gray (5Y 4/1), stiff, damp;
								80% clay; 20% silt; high plasticity; brown oxidation
				34				stains; no chemical odor.
	5	S&H						
	5			35				
0	7		S-10-35					
				36				Bottom of boring at 35.5 feet.
								Bottom of sample at 35.5 feet.
				37				08/09/89
				38				
				39				

Remarks:

GSI GeoStrategies Inc.

Log of Boring

BORING NO. S-10

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CWP CEG 1262	08/89		

(See Plate 2)

Project No.: 7632	Date: 08/09/89	Boring No: [redacted]	
Client: Shell Oil Company			
Location: 3790 Hopyard Road			
City: Pleasanton, California		Sheet 1 of 2	
Logged by: J. Vargas	Driller: Bayland		

Drilling method: Hollow-Stem Auger
Hole diameter: 12-inches
Casing installation data: See Well Construction Detail
Top of Box Elevation: Datum:

Water Level			
Time			
Date			

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 1.0 foot
				2				CLAY with SILT (CL) - dark olive gray (5Y 3/2), stiff, damp; medium plasticity; 20% silt; 10-15% fine to coarse sand; trace organics, trace fine gravel, mottled brown; green staining; no chemical odor.
				3				
				4				
	250	S&H		5				COLOR CHANGE to black (5Y 2.5/1) at 4.5 feet.
	250	push						
0	400		SR-1-5					CLAYEY SAND (SC) - dark gray (5Y 4/1), medium dense, damp; 60% fine sand; 40% clay; no chemical odor.
				6				CLAY with SILT (CL) - black (5Y 2.5/1), very stiff, damp; medium plasticity; 80% clay; 20% silt; no chemical odor.
				7				
				8				
				9				COLOR CHANGE to olive (5Y 4/4) at 9.0 feet.
	400	S&H	SR-1-9					COLOR CHANGE to black (5Y 2.5) at 9.5 feet; no chemical odor.
	400	push		10				
NS	450							
				11				
				12				
				13				
				14				
	3	S&H						
	5			15				stiff; no chemical odor.
0	10		SR-1-15					
				16				
				17				
				18				

Remarks: Drilled with 8-inch Hollow-Stem Augers on 08/09/89.
Completed on 9/20/89 with 12-inch Hollow-Stem Augers.

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Log of Boring

BORING NO.

SR-1

JOB NUMBER	REVIEWED BY PG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CWD CEG 12/92	08/89		

Field location of boring:

(See Plate 2)

Project No.: 7632	Date: 08/09/89	Boring No: SR-1	
Client: Shell Oil Company			
Location: 3790 Hopyard Road			
City: Pleasanton, California		Sheet 2 of 2	
Logged by: J. Vargas	Driller: Bayland		

Drilling method: Hollow-Stem Auger

Hole diameter: 12-inches

Casing installation data: See Well Construction Detail

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
	3	S&H		20				SANDY CLAY (CL) - olive gray (5Y 4/2), stiff, saturated; medium plasticity; 60% clay; 40% sand; brown-gray mottling; roots; moderate chemical odor.
	5							
13.6	8		SR-1-20					
				21				
				22				
				23				
				24				
	0	S&H		25				CLAY with SILT (CL) - black (5Y 2.5/1), soft, damp, medium plasticity; 10-20% silt; trace organics; roots; burrows; no chemical odor.
	1							
0	4		SR-1-25					
				26				
				27				
				28				moist clay to sand interbed at 24 feet.
				29				
	4	S&H		30				stiff; saturated sandy lamina at 29.5 feet. Increased sand, mottled; no chemical odor.
	4							
0	6		SR-1-30					
				31				
				32				
				33				
				34				
	3	S&H		35				saturated at 34.5 to 35 feet; no chemical odor.
	5							
0	7		SR-1-35					
				36				
				37				Bottom of boring at 35.5 feet.
								Bottom of sample at 35.5 feet.
				38				09/20/89
				39				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. SR-1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CWP CEG 1262	08/89		

Field location of boring: (See Plate 2)	Project No.: 7632	Date: 09/20/89	Boring No: [redacted]
	Client: Shell Oil Company		
	Location: 3970 Hopyard Road		
	City: Pleasanton, California		Sheet 2
	Logged by: D. Ferreira	Driller: Bayland	of 2
Drilling method: Hollow-Stem Auger	Casing installation data: See Well Construction Detail		
Hole diameter: 12-inches	Top of Box Elevation:	Datum:	

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
	3	S&H		20				COLOR CHANGE to dark gray (2.5Y N4/), stiff,
	4							saturated, low plasticity; trace very fine sand; trace silt;
81	5		SR-2-20					trace organics; weak sulfur odor.
				21				
				22				
				23				
				24				COLOR CHANGE to very dark gray (5Y 3/1), moist, low
	2	S&H						plasticity; trace very fine sand; trace silt; trace organics;
	5			25				trace wood fragments; rootholes filled with silty clay;
73	6		SR-2-25					weak sulfer odor
				26				
				27				
				28				
				29				CLAY (CH) - dark gray (5Y4/1) - stiff, moist, high
	3	S&H						plasticity; trace very fine to fine sand; trace silt; trace
	6			30				organics; oxidation filling rootholes; moderate sulfur
45	9		SR-2-30					odor.
				31				
				32				
				33				
				34				
	6	S&H						moderate to high plasticity.
	6			35				
4	9		SR-2-35					Bottom of boring at 35.5 feet.
				36				Bottom of sample at 35.5 feet.
								09/20/89
				37				
				38				
				39				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. SR-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	[signature] CEG 1262	09/89		

Field location of boring: (See Plate 2)

Project No.: 7632	Date: 09/20/89	Boring No: SR-2	
Client: Shell Oil Company			
Location: 3970 Hopyard Road			
City: Pleasanton, California		Sheet 1	
Logged by: D. Ferreira	Driller: Bayland	of 2	

Drilling method: Hollow-Stem Auger
Hole diameter: 12-inches
Casing installation data: See Well Construction Detail
Top of Box Elevation: Datum:

Water Level								
Time								
Date								

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 0.6 feet
				2				
				3				CLAY with GRAVEL (CL) - brown (10YR 5/4), stiff, damp, low plasticity; 15% gravel; 10% sand; no chemical odor.
				4				SANDY CLAY (CL) - dark gray (5Y 4/1), stiff, damp, low plasticity; increasing sand to 30%; no chemical odor.
	100	S&H		5				
	100	push						
0	100		SR-2-5	6				CLAY (CL) - very dark gray (5Y 3/1), medium stiff, damp, low plasticity; 5% fine sand; 5% silt; trace organics; trace pebbles; roots; weak chemical odor.
				7				
				8				
				9				
	150	S&H		10				
	150	push						
5	150		SR-2-10	11				COLOR CHANGE to dark gray (5Y 4/1); medium plasticity; no chemical odor.
				12				
				13				
				14				
	0	S&H		15				
	2							COLOR CHANGE to very dark gray (5Y 3/1), low plasticity; 10% silt; weak chemical odor.
12	4		SR-2-15	16				
				17				
				18				
				19		▽		

Remarks: Boring drilled with 8-inch Hollow-Stem Augers 09/20/89.
Completed 09/20/89 with 12-inch Hollow-Stem Augers.

GeoStrategies Inc.

Log of Boring

BORING NO. SR-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CMP CEG 12/62	08/89		

Field location of boring: (See Plate 2)

Project No.: 7632	Date: 09/19/89	Boring No: SR-3
Client: Shell Oil Company		
Location: 3970 Hopyard Road		
City: Pleasanton, California		Sheet 2
Logged by: D. Ferreira	Driller: Bayland	of 2

Drilling method: Hollow-Stem Auger

Hole diameter: 12-inches

Casing installation data: See Well Construction Detail

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
	0	S&H		20				COLOR CHANGE to dark gray (5Y 4/1), medium stiff,
	2							saturated; trace fossils; trace calcium nodules; no
235	5		SR3-20					chemical odor.
				21				
				22				
				23				
				24				
	6	S&H		25				stiff, moist, medium plasticity; trace silt; trace organics;
	5							weak H_2S odor.
284	7		SR3-25	26				
				27				
				28				
				29				
	3	S&H		30				COLOR CHANGE to gray (10YR 5/1), damp, medium to
	6							high plasticity, saturated rootholes; small mollusk fossils;
115	6		SR3-30	31				red oxidation at 30 feet; no chemical odor.
				32				
				33				
				34				
	4	S&H						
	5			35				CLAY (CH) - dark gray (10YR 4/1), stiff, moist, high
135	7		SR-3-35					plasticity; saturated rootholes; 10% organic matter; trace
				36				sand; trace silt; trace cobbles; no chemical odor.
				37				Bottom of sample at 35.5 feet.
								Bottom of boring at 35.5 feet.
				38				09/19/89
				39				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. SR-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CMP CEG 1262	9/89		

Field location of boring:	Project No.: 7632	Date: 09/19/89	Boring No:
(See Plate 2)	Client: Shell Oil Company		SR3
	Location: 3970 Hopyard Road		
	City: Pleasanton, California		Sheet 1
	Logged by: D. Ferreira	Driller: Bayland	of 2

Drilling method: Hollow-Stem Auger
Hole diameter: 12-inches
Casing installation data: See Well Construction Detail
Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 0.8 feet
				2				FILL - Clay (CL) - very dark gray (2.5Y N3/), stiff, damp, medium to high plasticity; no chemical odor.
				3				10% gravel; cobbles at 2 feet; trace sand; oxidation stains at 2.5 feet in rootholes.
				4				
	150	S&H						
	250	push		5				
50	150		SR-3-10					FILL - Gravel (GP) - dark gray (2.5Y N4/), medium dense, saturated (perched zone); asphalt fragments; asphalt odor.
				6				
				7				
				8				
				9				
	100	S&H						
	100	push		10				CLAY (CL) - very dark gray (5Y 3/1), medium stiff, damp, medium plasticity; trace silt; weak chemical odor.
50	150		SR-3-10					
				11				
				12				
				13				
				14				
	2	S&H						CLAY (CL-CH) - black (2.5Y N2/), stiff, moist, medium to high plasticity; trace silt; slightly mottled; rootholes; moderate H_2S odor.
	3			15				
220	6		SR-3-15					
				16				
				17				
				18				
				19	▽			

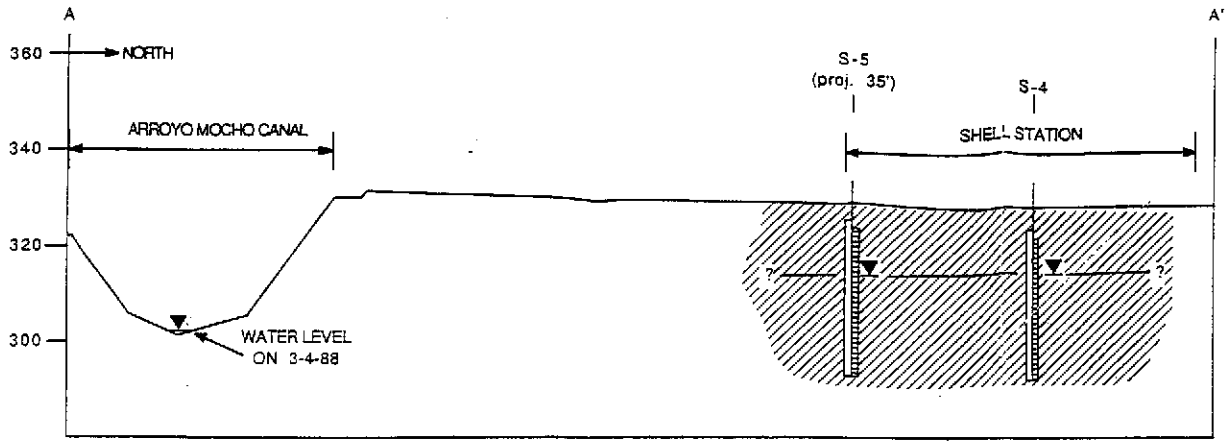
Remarks: Boring drilled 09/19/89 with 8-inch Hollow-Stem Augers.
Completed on 09/19/89 with 12-inch Hollow-Stem Augers.

GSI GeoStrategies Inc.

Log of Boring

BORING NO. SR-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632	CWP CEG 1262	08/89		



LEGEND

GROUNDWATER MONITORING WELL

SCREENDED INTERVAL

GRAVEL PACK

WATER LEVEL (2/14/88)

CLAY DEPOSITS (CL, CH)

NOTE: REFER TO FIGURE 3 FOR CROSS-SECTION LOCATION.

HORIZONTAL SCALE

0 50 100

PROJECT NUMBER

DRAWN BY DATE/NUMBER

REVISIONS

PACIFIC ENVIRONMENTAL GROUP, INC.

SHELL SERVICE STATION
Hopyard Road and West Las Positas Boulevard
Pleasanton, California

CROSS-SECTION A-A'

FIGURE: 4

PROJECT: 101-08.02

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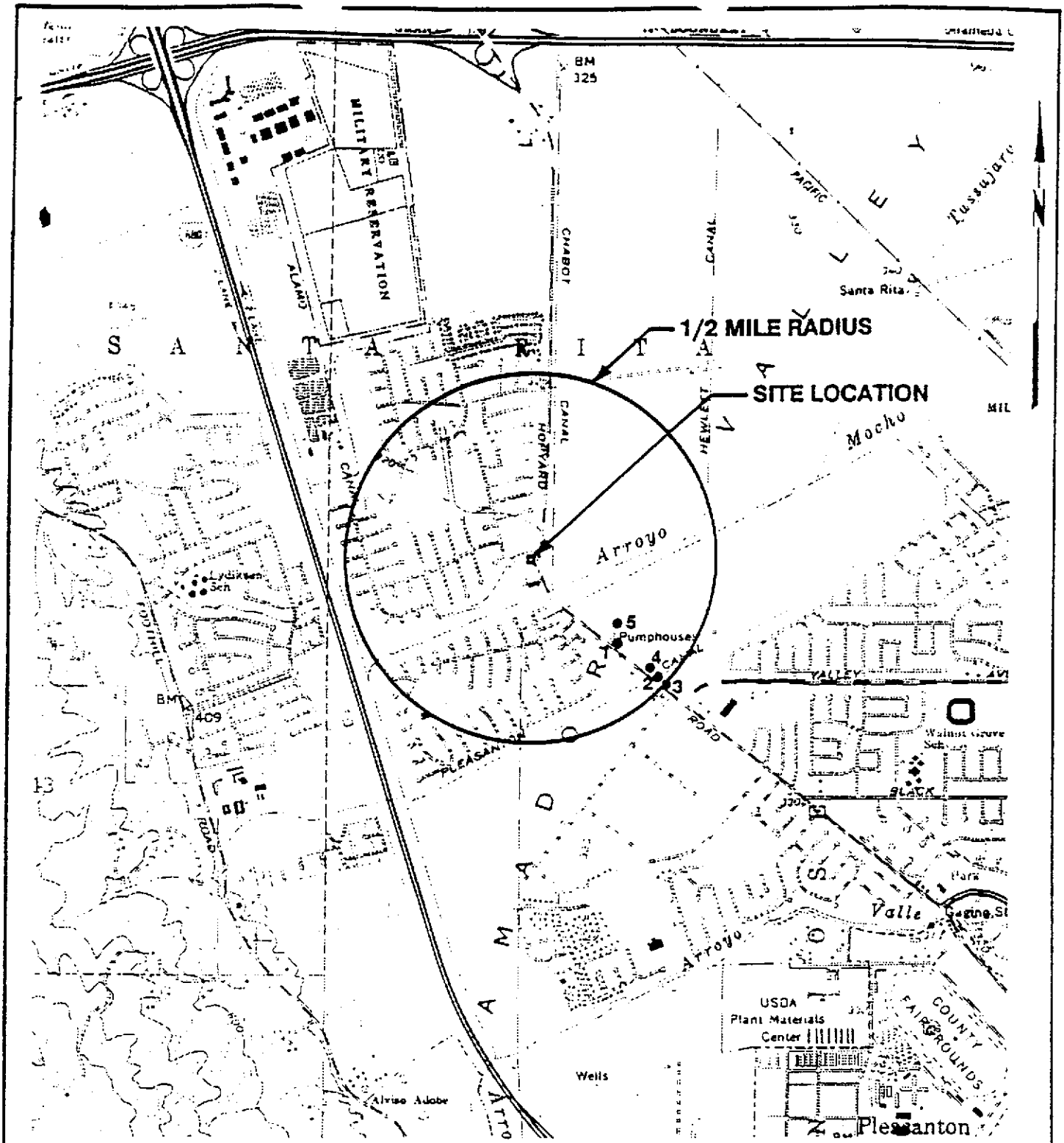
ATTACHMENT D

Area Well Survey



LEGEND

- Water-supply well location

APPROXIMATE SCALE: 1" = 2000'

Base Map From USGS Topographic Map

PACIFIC ENVIRONMENTAL GROUP INC.	**SHELL SERVICE STATION** Hopyard Road and West Las Positas Boulevard Pleasanton, California	FIGURE: 1
	SITE LOCATION MAP	PROJECT: 101-08.02

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TABLE 2

SUMMARY OF WELL SURVEY DATA

Water-Producing Wells
Within 1/2-Mile Radius of the Site

Map Symbol	Well Number	Well Depth(ft)	Year Drilled	Usage	Status
1	3S1E18A1	389	1986	Municipal	Active
2	3S1E18A2	233	1970	Municipal	Active
3	3S1E18A4	750	1967	?	?
4	3S1E18A5	454	1977	Municipal	Inactive (temp.)
5	3S1E18A6	510	1987	Municipal	No pump yet