EXXON COMPANY, U.S.A.

P.O. BOX 4415-HOUSTON, TEXAS 77210-4415

MARKETING DEPARTMENT
REAL ESTATE & ENGINEERING

ENVIRONMENTAL ENGINEERING

J. KEVIN HUNTER

MARKETING ENGINEER

February 1, 1990

Exxon R/S#: 7-3399
2991 Hopyard Road
Pleasanton, California

Mr. Lester Feldman
San Francisco Bay RWQCB
1800 Harrison, Suite 700
Oakland, California 94612

Dear Mr. Feldman:

Attached is a copy of the most recent progress report on the activities at our site on Hopyard Road in Pleasanton, California.

We have not been given access to the adjacent property to install the final two monitoring wells for delineation purposes. We have continued with efforts to mitigate the free product discovered in MW-9 and appear to have been successful. No measurable free product has been observed in this well since December 7, 1989.

The question of hydraulic control is difficult to address with certainty because of the limited time we have been able to obtain water levels from MW-9 and the low level of water in the aquifer at this time. The gradient appears to steepen moving north to south from MW-5s toward MW-7. Additional water level data including MW-9 will help resolve this issue. Measurements taken during pumping and with the pump shut down will also be useful in making this determination. Also, because monthly samples will be taken from MW-1 and MW-9 we will be able to establish a trend as to the migration of dissolved hydrocarbons in this area. Additional samples have recently been taken and results will be available shortly. In the interim, we will continue recovering water from MW-9 and are evaluating vapor recovery from the well as an additional measure to reduce the impact of hydrocarbons in the unsaturated portion of the aquifer.

90 FEB -5 AM 10:59

Please contact me at (713) 656-7755 if you have any questions about the activity at this site.

Sincerely,

JKH:sg
5746D/p.7
OVERNIGHT MAIL
Attachments

c - w/attachments:
Mr. S. S. Cusenza - City of Pleasanton
Mr. J. Killingstad - Alameda County Flood Control, Zone 7
Mr. R. Mueller - Pleasanton Fire Department
Mr. R. Shahid - Alameda County HMMP

w/o attachments:
Mr. J. R. Hastings
Mr. L. W. Lindeen
Mr. M. Thomson - Alameda County Office of the District Attorney
Mr. R. C. Witham - Applied GeoSystems

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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PROGRESS REPORT
ON
MONITORING AND REMEDIATION ACTIVITIES
at
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

2-1-90

AGS Job No. 18034-7

Report prepared for

Exxon Company, U.S.A.
P.O. Box 4415
Houston, Texas

by
Applied GeoSystems

Rodger C. Witham
Senior Project Geologist

Ashraf Mirza
Branch Manager

February 1, 1990

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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PROGRESS REPORT
ON
MONITORING AND REMEDIATION ACTIVITIES
at
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

For Exxon Company, U.S.A.

INTRODUCTION

This progress report summarizes the most recent environmental work that Applied GeoSystems performed at Exxon Station No. 7-3399, 2991 Hopyard Road in Pleasanton, California. Exxon Company, U.S.A. (Exxon) requested that this work be performed to satisfy the provisions of Cleanup and Abatement Order No. 89-132, issued by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) on August 11, 1989. Work included monitoring the ground water; removing gasoline product and water from one well; monitoring operation of the ground-water-recovery and soil-vapor-extraction systems; and performing soil-vapor-extraction testing. The purpose of this progress report is to present the data collected during the latest reporting interval. Interpretations; conclusions; recommendations; and supporting documentation will be presented in a site characterization report.

Applied GeoSystems' has submitted two progress reports (Applied GeoSystems, September 30, 1989; December 1, 1989) under Order No. 89-132. These reports describe work performed between August 1, 1988 and August 31, 1989, and September 1 and November

30, 1989, respectively. This third progress report describes activities conducted from December 1, 1989 through January 31, 1990.

The environmental work at the site is related to concerns about the potential of gasoline hydrocarbons reaching deeper aquifers that are being drawn from by City of Pleasanton Municipal Well No. 7 (Well No. 7). This well is approximately 275 feet north of the Exxon station property. Records provided by the City of Pleasanton indicate that Well No.7 was in operation approximately 10 percent of the time between September 1, 1989, and January 8, 1990. The well was pumped intermittently between September 1 and October 16, 1989. The duration of each pumping episode was less than 24 hours except on two occasions of approximately 54 hours (October 4 through 6) and 45 hours (October 7 through 9). The records available thus far indicate that Well No. 7 was not pumped from October 16, 1990, through January 8, 1990.

Site Location and Description

Exxon Station No. 7-3399 is at the eastern corner of Hopyard Road and Valley Avenue in Pleasanton, as shown on the Site Vicinity Map (Plate P-1). The Generalized Site Plan, Plate P-2, shows the general layout of station facilities. The service station was demolished in September 1988 and new station facilities were constructed between September 1988 and February 1989. The new underground storage tanks are near the northwest corner of the station property; the previous tanks were near the southeast edge of the property. The Generalized Site Plan shows the approximate locations of the present gasoline storage tanks and the former gasoline-storage tank pit.

Wells previously installed at the site include MW-1 through MW-4, MW-5d, MW-5s, MW-6 through MW-11, and VR-1 through VR-4. Borings B-4 and B-12 also were drilled. Wells MW-1, MW-2, MW-3, MW-4, MW-5s, MW-6, MW-7, MW-9, MW-10, and MW-11

were installed in the uppermost aquifer (approximately 50 to 60 feet below the ground surface), well MW-5d was installed into a second aquifer (approximately 67 to 80 feet below the ground surface) and well MW-8 was installed into a third aquifer (approximately 120 to greater than 140 feet below the ground surface). Wells MW-2, MW-3, and MW-6 have been destroyed. Well MW-7 is used to recover ground water.

Wells VR-1 through VR-4 were installed as vapor-recovery wells; VR-1 in the former gasoline-storage tank pit; VR-3 and VR-4 in the unsaturated silty clay that extends to approximately 38 to 40 feet below the ground surface; and well VR-2 in the upper portion of the uppermost aquifer materials that are now not saturated as a result of declining water levels.

Two additional wells are proposed to be drilled on adjacent property owned by Lucky Stores, Inc., of Dublin, California. Lucky Stores has not yet granted permission to install these wells.

GROUND-WATER MONITORING

Purging and Sampling Wells

Applied GeoSystems field personnel visited the site on December 20, 1989, to purge and sample water from ground-water wells MW-1, MW-4, MW-5d, MW-5s, and MW-7 (recovery well) through MW-11. The water samples collected were submitted to Applied GeoSystems' laboratory for testing for total petroleum hydrocarbons as gasoline (TPHg) by Environmental Protection Agency (EPA) modified Method 8015 and for the purgeable hydrocarbon constituents benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) by EPA Method 602. The cumulative results of these analyses and the of previous analyses are presented in Table 1. Concentrations of TPHg and BTEX in water from well MW-1

in December 1989 were equivalent to concentrations found in the September 1989 sampling episode. A trace concentration of total xylene isomers was detected in water from well MW-8; this compound most likely was introduced by sampling equipment.

Subjective Examination of Fluids in Wells

The site was visited on January 9, 1990, to measure water levels and subjectively examine the water in wells for evidence of gasoline hydrocarbons. Cumulative results of the water-level measurements and subjective evaluations of ground water that we have made at the site since 1988 are presented in Table 2. The table shows that water levels in the uppermost and second aquifers have risen slightly from measurements made in November 1989.

Removing Product and Water From Well MW-9

In addition to being purged on December 20, 1989, well MW-9 was bailed or pumped on December 1 and 7, 1989, and January 2, 1990, to remove free floating gasoline product found in this well on November 28, 1989. Approximately 200 gallons of fluid were removed from the well during the four purging episodes. An estimated 1 to 2 gallons of the fluid was gasoline product. The product and water were placed in drums and removed from the site by Armour Petroleum Service and Equipment Corporation of Fairfield, California on January 2, 1990. The free product in well MW-9 was reduced to a slight sheen after the December 7, 1989, pumping episode, as shown in Table 2.

Gradient and Direction of Ground-Water Flow

Measurements of the depth to ground water and survey data on the relative elevations of the wells were used to evaluate the gradient and direction of ground-water flow in the

uppermost aquifer on November 28, 1989, and January 9, 1990. The elevations of the wells and the depths to water were combined to estimate the elevation of the water surface (above mean sea level) of the uppermost aquifer; these data are shown in Table 3. Plates P-3 and P-4 were constructed to portray the estimated surface of the water table and the ground-water gradient. Plates P-3 and P-4 indicate that ground water flowed generally toward the southeast beneath most of the site. The ground-water gradient on November 28, 1989, varied from approximately 0.0002 to 0.0012 (0.02 to 0.12 foot vertical distance to 100 feet horizontal distance) and on January 9, 1990, was 0.0015 (0.15 foot vertical distance to 100 feet horizontal distance). The directions of flow on the two days are consistent with interpreted flow directions during the equivalent time period of the previous year (August 1988 through March 1989; see Applied GeoSystems August 28, 1989). The gradient appears to become slightly steeper as the ground-water from north of the station moves beneath the station property.

Some component of flow also is interpreted toward recovery well MW-7 on both days because this well was pumping when the water level was measured. The water-level data suggest that the zone of capture may be restricted in areal extent, which may be related to the presently restricted vertical dimension of the uppermost aquifer. The water level in well MW-9 could not be measured on November 28 because of the presence of free floating product. Additional water-level measurements, that include this well may help in evaluating the extent of the capture zone. Water-level measurements both during pumping and when not pumping ground water from recovery well MW-7 also will help in evaluating whether pumping influences the water level in other wells.

OPERATION OF HYDROCARBON REMEDIATION SYSTEMS

Ground Water

Ground water is currently being removed from the uppermost aquifer and discharged into the sanitary sewer under a permit from the Dublin-San Ramon Services District. As indicated in the second progress report, (Applied GeoSystems, December 1, 1989), operation of the ground-water recovery system resumed on October 30, 1989, after installing a new pump in a larger diameter (5 inches) recovery well (MW-7). The initial pumping rate on October 30 was 9 gallons per minute (gpm); the pumping rate on November 2, 1989, was approximately 0.075 gpm (4 1/2 gallons per hour), representing a substantial drop in rate of recovery. The pumping rate increased during December and January and was measured at 0.3 gpm and 0.36 gpm on December 15 and 20, 1989, respectively; and 0.51 and 0.55 gpm on January 2 and 9, 1990, respectively. The average pumping rate between January 16 and 18, 1990, was 0.64 gpm, and between January 18 and 22, 1990, was 0.46 gpm. Between October 30 1989, and January 22, 1990, approximately 31,950 gallons of water were recovered from well MW-7. The increase in recovery rate may be related to the slight rise in water level in the uppermost aquifer during December 1989.

Soil Hydrocarbon Vapor

Operation of the soil hydrocarbon-vapor extraction and treatment system resumed on January 11, 1990. This system was installed to remove residual hydrocarbon vapors that remained in the soil after the extended excavation around the former gasoline-storage tank pit in July 1988. The extraction system includes a 75 cubic feet per minute, liquid-ring vacuum pump that uses water for cooling and sealing purposes. Water is being supplied by our ground-water recovery system via the oil-water separator tank and the service station.

Two 150-pound carbon canisters, placed in series, are used to remove hydrocarbons from the influent air stream. Hydrocarbon vapors are being extracted from vapor recovery well VR-1, which was installed in the former gasoline storage tank pit.

Influent and effluent vapor samples were collected on January 11 and 15, 1990, and submitted to Trace Analysis Laboratory, Inc., of Hayward, California, for analysis for TPHg and BTEX using modified method CA-ADDL004. Table 4 presents the cumulative results of vapor-sample analyses from August and September 1989 and January 11, 1990.

VAPOR EXTRACTION TESTING

Vapor-recovery wells VR-2 through VR-4 were installed in November 1989 to delineate the extent of and later extract hydrocarbons found in soil when installing ground-water monitoring well MW-9. Two vapor-extraction tests, using well VR-2, were performed on December 14 and 15, 1989, to monitor the transient subsurface pressure distribution and effluent vapor concentrations. Well VR-2 was installed into the unsaturated portion of the sand and gravel that contains the uppermost aquifer. The well was pumped approximately 8 hours each day. Extracted vapors were passed through two 150-pound carbon canisters, placed in series before being vented to the atmosphere. Pressure gauges were installed on well MW-9 to monitor subsurface pressures. No pressure response was measured in the well during either test.

Thirteen vapor samples were collected at the wellhead of VR-2 during the 2 days of testing, and were submitted to Trace Analysis Laboratory, Inc. for analysis for TPHg and BTEX. The laboratory results are listed sequentially in Table 5; values given are in milligrams per cubic meter (mg/m^3). Concentrations of TPHg varied from approximately 7,300 mg/m^3 (approximately 1,785 parts per million [ppm]) to 18,000 mg/m^3 (approximately 4,400 ppm). Table 5 shows both increasing and decreasing concentrations during the 2 days of testing.

PLANNED WORK

Applied GeoSystems will continue the ground-water monitoring program. Wells MW-1 and MW-9 will be purged and water samples will be collected on a weekly basis for at least one month to evaluate the trend of hydrocarbon concentrations in ground water near these wells. Ground-water levels will be measured during this time to evaluate the gradient and direction of ground-water flow. As mentioned previously, measurements will be made both during pumping from well MW-7 and when the pump is shut down to evaluate whether pumping influences the water level in other wells. Well MW-8 will also be purged and sampled shortly to confirm the presence or absence of the total xylene isomers found during the December 1989 sampling event. As soon as permission is granted by Lucky Stores, two additional ground-water monitoring wells will be installed on their property adjacent to Exxon Station No. 7-3399.

The direction of ground-water flow since August 1988 (southeast to southwest) indicates that well MW-1 is upgradient of well MW-9. The concentrations of hydrocarbons found in water in MW-1; therefore, may be related to vapor-phase migration of the hydrocarbons in the presently unsaturated portion of the uppermost aquifer from the vicinity of well MW-9. Some short-term recovery of hydrocarbon vapors took place in December 1989, and concentrations of hydrocarbons in water in well MW-1 remained relative stable between September and December 1989. Additional monitoring of the water level in wells and concentrations of hydrocarbons in ground water should be performed to evaluate whether hydraulic control is taking place.

REFERENCES

Applied GeoSystems. August 28, 1989. Letter Report, Periodic Ground-Water Monitoring at Exxon Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Report No. 18034-4.

Applied GeoSystems. September 30, 1989. Progress Report on Ground-Water and Soil-Vapor Extraction and Treatment at Exxon Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Report No. 18034-4.

Applied GeoSystems. December 1, 1989. Progress Report, Delineation and Remediation of Hydrocarbons in Soil and Ground Water at Exxon Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Report No. 18034-7.

TABLE 1
RESULTS OF ANALYSES OF GROUND-WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 1 of 5)

Date	Sample No.	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	EPA 502.2	EPA 524.2
MW-1								
4/2/88	W-38-MW1	<0.0005	0.0017	<0.0005	<0.0005	<0.02	--	--
7/6/88	W-40-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/13/88	W-42-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
9/7/88	W-43-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
3/8/89	W-43-MW1	0.0016	<0.0005	<0.0005	<0.0005	<0.02	--	--
6/30/89	W-44-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/17/89	W-45-MW1	<0.0005	<0.0005	<0.0005	<0.0005	0.023	--	--
7/20/89	W-45-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/26/89	W-46-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
8/2/89	W-46-MW1	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
9/13/89	W-50-MW1	0.039	0.00060	<0.00050	0.0051	0.22	--	--
12/20/89	W-50-MW1	0.056	0.00072	<0.00050	0.00071	0.22	--	--
MW-2	(Well destroyed 7/12/88)							
7/6/88	W-41-MW2	5.7	18.5	2.9	21.4	62	--	--
MW-3	(Well destroyed 8/29/88)							
4/6/88	W-39-MW3	<0.0005	<0.0005	<0.0005	<0.0005	0.02		
7/6/88	W-41-MW3	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/13/88	W-43-MW3	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
8/26/88	W-44-MW3	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--

See notes on page 5 of 5.

TABLE 1
RESULTS OF ANALYSES OF GROUND-WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 2 of 5)

Date	Sample No.	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	EPA 502.2	EPA 524.2
MW-4								
4/11/88	W-37-MW4	0.0018	0.0163	0.0006	0.0071	0.08	--	--
7/6/88	W-41-MW4	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/13/88	W-42-MW4	<0.0005	0.0009	<0.0005	<0.0005	<0.02	--	--
9/7/88			(Well not accessible)					
3/8/89	W-43-MW4	0.0038	0.0010	<0.0005	<0.0005	0.44	--	--
6/30/89	W-44-MW4	<0.0005	<0.0005	<0.0005	<0.0005	0.10	--	--
7/17/89	W-45-MW4	<0.0005	<0.0005	<0.0005	<0.0005	0.39	--	--
7/20/89	W-45-MW4	<0.0005	<0.0005	<0.0005	<0.0005	0.20	ND*	--
7/26/89	W-46-MW4	<0.0005	<0.0005	<0.0005	<0.0005	0.066	--	--
8/2/89	W-46-MW4	--	--	--	--	--	--	ND*
9/13/89	W-50-MW4	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--
12/20/89	W-50-MW4	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--
MW-5d								
5/25/88	W-39-MW5a	<0.0005	0.0031	<0.0005	<0.0005	<0.02	--	--
7/6/88	W-41-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/13/88	W-43-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	0.04	--	--
3/8/89	W-43-MW5d	<0.0005	<0.0005	<0.0005	<0.001	<0.02	--	--
6/30/89	W-45-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/17/89	W-46-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/20/89	W-47-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/26/89	W-47-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
8/2/89	W-48-MW5d	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--

See notes on page 5 of 5.

TABLE 1
RESULTS OF ANALYSES OF GROUND-WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 3 of 5)

Date	Sample No.	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	EPA 502.2	EPA 524.2
MW-5d								
9/13/89	W-51-MW5d	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--
12/20/89	W-51-MW5d	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--
MW-5s								
5/25/88	W-41-MW5b	<0.0005	0.0009	<0.0005	<0.0005	<0.02	--	--
7/6/88	W-41-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/13/88	W-44-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/22/88	W-42-MW5s	0.0009	0.0041	0.0013	0.0087	0.05	--	--
8/5/88	W-25-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
9/7/88	W-43-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
3/8/89	W-43-MW5s	<0.0005	<0.0005	<0.0005	<0.001	<0.02	--	--
6/30/89	W-45-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/17/89	W-46-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/20/89	W-46-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
7/26/89	W-46-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
8/2/89	W-47-MW5s	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
9/13/89	W-50-MW5s	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--
12/20/89	W-50-MW5s	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--

See notes on page 5 of 5.

TABLE 1
RESULTS OF ANALYSES OF GROUND-WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 4 of 5)

Date	Sample No.	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	EPA 502.2	EPA 524.2
MW-6:	(Well destroyed 10/24/88)							
5/17/88	W-40-MW6	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	--	--
6/28/88	W-38-MW6	0.0318	0.0075	0.0054	0.0067	0.44	--	--
7/13/88	W-42-MW6	0.1623	0.0077	0.0225	0.0141	0.29	--	--
8/5/88	W-42-MW6	0.2450	0.0052	0.0471	0.0237	1.18	--	--
9/7/88	W-43-MW6	0.474	0.016	0.262	0.136	2.92	--	--
MW-7 (recovery well)								
7/13/88	W-34-MW7	0.86	1.91	0.71	4.42	16.7	--	--
7/22/88	W-50-MW7	0.136	0.085	0.005	0.058	0.46	--	--
8/5/88	W-45-MW7	0.0733	0.0528	0.0023	0.0281	0.27	--	--
2/9/89	W-50-MW7	0.600	0.688	0.010	0.448	6.7	--	--
6/30/89	W-Pump-MW7	0.18	0.050	0.013	0.040	1.1	--	--
8/2/89	W-TAP-MW7	0.0016	<0.0005	<0.0005	0.00060	0.031	--	--
9/13/89	W-Influent	<0.00050	0.0026	<0.00050	0.012	0.087	--	--
12/20/89	W-TAP-MW7	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--
Well No. 7								
7/20/89	Well 7	--	--	--	--	--	ND*	--
8/2/89	W-TAP-CW7	--	--	--	--	--	--	ND*
MW-8								
10/3/89	W-53-MW8	<0.00050	<0.00050	<0.00050	<0.00050	<0.020	--	--
12/20/89	W-52-MW8	<0.00050	<0.00050	<0.00050	0.00061	<0.020	--	--

See notes on page 5 of 5.

TABLE 1
RESULTS OF ANALYSES OF GROUND-WATER SAMPLES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 5 of 5)

Date	Sample No.	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	EPA 502.2	EPA 524.2
MW-9								
10/13/89	W-50-MW9	1.0	9.2	3.0	13	89	--	--
12/20/89	W-50-MW9	6.3	31	9.5	55	190	--	--
MW-10								
10/12/89	W-52-MW10	<0.00050	<0.00050	<0.00050	0.0015	0.020	--	--
12/20/89	W-52-MW10	<0.00050	<0.00050	<0.00050	0.0018	<0.020	--	--
MW-11								
11/16/89	W-51-MW11	0.0041	0.0094	0.00074	0.020	0.15	--	--
12/20/89	W-50-MW11	0.0072	0.0075	0.0029	0.013	0.15	--	--

Results in milligrams per liter (mg/l) = parts per million (ppm)
TPH = total petroleum hydrocarbons by Environmental Protection Agency Method 8015
EPA 502.2 = Environmental Protection Agency Method 502.2 (volatile organic compounds)
EPA 524.2 = Environmental Protection Agency Method 524.2 (volatile organic compounds)
< = Less than the method detection limits of the laboratory
-- = Not analyzed or not applicable
ND = Nondetectable or below the method detection limit(s) of the laboratory
* = Nondetectable concentrations for 58 volatile organic compounds
Well No. 7 = City of Pleasanton Municipal Well No. 7
Sample designation: W-50-MW11
- W = water
- 50 = depth of sample to the nearest foot (for well MW-7, sample collected from a sample port at the surface)
- MW11 = monitoring well number

TABLE 2
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 1 of 7)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-1	4/6/88	36.34	None	None
	4/8/88	36.29	None	None
	4/19/88	36.36	None	None
	6/6/88	38.16	None	None
	6/23/88	38.71	None	None
	6/28/88	39.16	--	--
	7/6/88	39.73	None	None
	7/13/88	40.22	None	None
	8/12/88	Well buried under excavated soil		
	8/26/88	41.90	--	--
	9/7/88	42.27	None	None
	12/7/88	43.94	None	None
	12/19/88	43.70	None	None
	2/9/89	42.53	--	--
	3/8/89	41.96	None	None
	4/3/89	41.59	--	--
	4/26/89	41.67	--	--
	6/30/89	43.79	None	None
	7/17/89	44.74	None	None
	7/18/89	44.76	--	--
	7/19/89	44.82	--	--
	7/20/89	44.85	None	None
	7/21/89	44.95	--	--
	7/26/89	45.42	None	None
	8/2/89	--	--	--
	8/3/89	46.18	--	--
	8/17/89	47.12	--	--
	9/13/89	49.08	None	None
	11/28/89	50.21	None	None
	1/9/90	49.31	None	None

See notes on page 7 of 7.

TABLE 2
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 2 of 7)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-2	4/2/88	--	3.0	Heavy
	4/4/88	--	18.0	Heavy
	4/5/88	--	18.0	Heavy
	4/6/88	39.31	38.4	Heavy
	4/8/88	--*	--*	--*
	4/19/88	38.90	29.76**	Heavy
	6/6/88	38.78	3.12	Heavy
	6/23/88	39.23	1.50	Heavy
	6/28/88	39.72	--	--
	7/6/88	40.31	None	Slight
	7/12/88	Well destroyed due to excavation (old pit)		
MW-3	4/6/88	37.19	None	None
	4/8/88	37.14	None	None
	4/19/88	37.22	None	None
	6/6/88	39.02	None	None
	6/23/88	39.58	None	None
	6/28/88	40.04	--	--
	7/6/88	40.60	None	None
	7/13/88	41.09	None	None
	8/12/88	Well buried under excavated soil		
	8/26/88	42.77	--	--
	8/29/88	Well destroyed due to excavation (new pit)		
MW-4	4/8/88	36.41	None	None
	4/19/88	36.51	None	None
	6/6/88	38.26	None	None
	6/23/88	38.83	None	None
	6/28/88	39.28	--	--
	7/6/88	39.85	None	None
	7/13/88	40.31	None	None
	8/12/88	Well buried under excavated soil		

See notes on page 7 of 7.

TABLE 2
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 3 of 7)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-4	8/26/88	42.01	--	--
	9/7/88	Not accessible due to construction		
	12/7/88	Not accessible due to construction		
	12/19/88	43.83	None	None
	2/9/89	42.67	--	--
	3/8/89	42.11	None	None
	4/3/89	41.73	--	--
	4/26/89	41.79	--	--
	6/30/89	43.88	None	None
	7/17/89	44.85	None	None
	7/18/89	44.88	--	--
	7/19/89	44.92	--	--
	7/20/89	44.98	None	None
	7/21/89	45.04	--	--
	7/26/89	45.50	None	None
	8/2/89	--	--	--
	8/3/89	46.28	--	--
	8/17/89	47.22	--	--
	9/13/89	49.19	None	None
	11/28/89	50.34	None	None
	1/9/90	49.47	None	None
B-4	4/2/88	--	None	None
MW-5d	5/25/88	38.55	None	None
	6/6/88	38.90	None	None
	6/23/88	39.56	None	None
	6/28/88	40.23	--	--

See notes on page 7 of 7.

TABLE 2
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 4 of 7)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-5d	7/6/88	40.69	None	None
	7/13/88	41.22	None	None
	8/12/88	42.34	--	--
	8/26/88	42.60	--	--
	9/7/88	42.99	--	--
	12/7/88	44.58	None	None
	2/9/89	Casing head damaged by construction		
	3/8/89	Casing head cut to lower elevation		
		42.49	None	None
	4/3/89	42.21	--	--
	4/26/89	42.36	--	--
	6/30/89	44.79	None	None
	7/17/89	45.73	None	None
	7/18/89	45.75	--	--
	7/19/89	44.89	--	--
	7/20/89	46.02	None	None
	7/21/89	46.18	--	--
	7/26/89	46.83	None	None
	8/2/89	--	--	--
	8/3/89	47.67	--	--
	8/17/89	48.27	--	--
	9/13/89	50.60	None	None
	11/28/89	51.16	None	None
	1/9/90	50.42	None	None
MW-5s	5/25/88	38.46	None	None
	6/6/88	38.86	None	None
	6/23/88	39.52	None	None
	6/28/88	39.84	--	--
	7/6/88	40.45	None	None
	7/13/88	40.90	None	None
	7/22/88	41.30	None	None

See notes on page 7 of 7.

TABLE 2
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 5 of 7)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-5s	8/5/88	23.84▼	None	None
	8/12/88	42.21	--	--
	8/26/88	42.55	--	--
	9/7/88	42.94	None	None
	12/7/88	44.67	None	None
	2/9/89	43.19	--	--
	3/8/89	Casing head cut to lower elevation		
		42.11	None	None
	4/26/89	41.84	--	--
	6/30/89	43.95	None	None
	7/17/89	44.91	None	None
	7/18/89	44.93	--	--
	7/19/89	44.98	--	--
	7/20/89	45.02	None	None
	7/21/89	45.10	--	--
	7/26/89	45.57	None	None
	8/2/89	--	--	--
	8/3/89	46.31	--	--
	8/17/89	47.25	--	--
	9/13/89	49.22	None	None
	11/28/89	50.39	None	None
	1/9/90	49.51	None	None
MW-6	5/11/88	37.71	None	None
	6/6/88	38.70	None	None
	6/23/88	39.23	None	None
	6/28/88	39.74	None	None
	7/13/88	40.78	None	None
	8/5/88	41.72	None	None
	8/12/88	42.14	--	--
	8/17/88	Well buried under excavated soil		
	8/26/88	42.51	--	--
	9/7/88	42.85	None	None
	10/24/88	Well destroyed for station construction		

See notes on page 7 of 7.

TABLE 2
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 6 of 7)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-7	7/13/88	40.50	None	None
	7/22/88	41.85#	None##	None##
	8/5/88	41.45#	None##	None##
	8/12/88	42.69	--	--
	9/7/88	42.60	--	--
	12/7/88	Not accessible		
	1/17/89	43.20	--	--
	2/9/89	Not accessible, pump equipment in well		
	10/12/89	49.93	None	None
	11/28/89	57.61#	--	--
	1/9/90	57.57#	--	--
MW-8	10/1/89	53.88	None	None
	11/28/89	53.74	None	None
	1/9/90	57.90	None	None
MW-9	10/12/89	50.24	None	None
	11/28/89	50.59	1.0	Heavy
	12/1/89	50.32	0.25	Heavy
	12/7/89	50.13	1.92	Heavy
	12/13/89	49.91	None	Slight
	12/20/89	49.78	None	Slight
	1/2/90	--	None	Slight
	1/9/90	49.39	None	Slight

See notes on page 7 of 7.

TABLE 2
CUMULATIVE RESULTS OF SUBJECTIVE ANALYSES
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California
(page 7 of 7)

Well/Boring	Date	Depth to Water	Floating Product	Sheen
MW-10	10/12/89	51.93	None	None
	11/28/89	51.88	None	None
	12/20/89	51.47	None	None
	1/9/90	50.98	None	None
MW-11	11/10/89	50.64	None	None
	11/28/89	50.51	None	V. Slight
	12/20/89	51.47	None	None
	1/9/90	49.68	None	None

Depth to water is in feet below top of casing.
Thickness of floating product is in inches.
-- = Not measured
* = Not measured because of installed product-skimmer pump
** = Thickness of floating product after the well was allowed to recharge for approximately 3 hours.
▾ = Anomalous water level possibly due to recharge from a perched water zone.
= Pumping-water level.
= Water inspected in oil-water separator tank.

TABLE 3
GROUND-WATER ELEVATION DATA
UPPERMOST AQUIFER
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

Well No.	Casing Elevation	Depth to Ground Water	Ground-Water Elevation
November 28, 1989			
MW-1	321.44	50.21	271.23
MW-4	321.56	50.34	271.22
MW-5s	321.64	50.39	271.25
MW-7	321.27	57.61*	263.66
MW-9	321.44	Floating Product	
MW-10	322.99	51.88	271.11
MW-11	321.71	50.51	271.20
January 9, 1990			
MW-1	321.44	49.31	272.13
MW-4	321.56	49.47	272.09
MW-5s	321.64	49.51	272.13
MW-7	321.27	57.57*	263.70
MW-9	321.44	49.39	272.05
MW-10	322.99	50.98	272.01
MW-11	321.71	49.68	272.03

Elevation is in feet above mean sea level.
Depth to ground water is in feet below the top of the casing.
* = pumping water level

TABLE 4
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF VAPOR SAMPLES FROM WELL VR-1
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

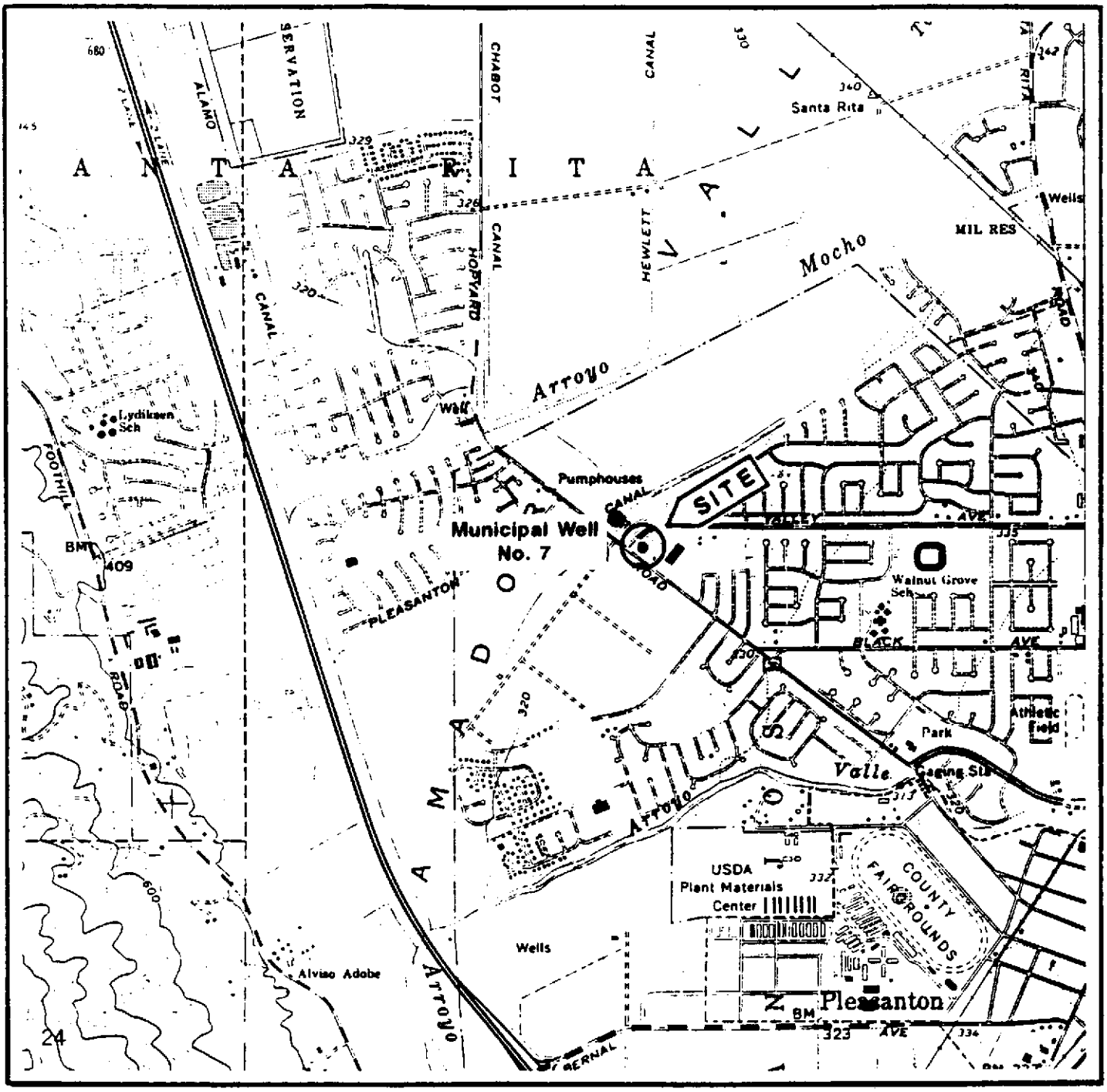
Date	Sample No.	B	T	E	X	TPHg
Influent						
8/7/89	Inlet #1	25	7.1	<2	<7	9,300
8/7/89	Inlet #2*	18	<2	<2	<7	8,200
8/15/89	No. 5	6.3	2.1	<2	6.7	1,200
8/22/89	7 Inlet	6.0	6.5	1.8	20	1,200
9/11/89	9-Inlet	2.6	<1	<2	2.6	1,800
9/15/89	12-Inlet	3.8	2.7	<2	5.5	2,000
1/11/90	1-030-0111-Inlet	<40	<30	440	<90	2,200
1/11/90	1-0245-0111-Inlet	8.2	<3	<4	<9	1,000
1/15/90	1-1115-0115-Inlet@	<2	<2	<2	<2	180
Effluent (from first carbon canister)						
9/11/89	10-Middle	<0.2	0.60	0.32	4.7	310
Effluent (from second carbon canister)						
8/7/89	Outlet #1	0.79	0.32	0.46	1.5	150
8/7/89	Outlet #2*	0.44	0.13	0.45	0.89	110
8/15/89	No. 6	3.5	<2	<3	<8	1,400
8/22/89	8 Outlet	4.3	<0.4	<0.5	1.7	1,300
9/11/89	11-Outlet	<0.03	<0.02	0.074	0.063	28
9/15/89	13-Outlet	0.58	<0.2	<0.3	<0.4	1,400
1/11/90	3-0245-0111-Outlet	<0.1	<0.1	<0.2	<0.4	8.9

Results in milligrams per cubic meter (mg/m^3)
Influent = vapor sample collected before entering carbon filtration system
Effluent = vapor sample collected after passing through either one or both carbon filtration units
* = duplicate sample
@ = sample collected immediately after system shut down
< = less than the method detection limit of the laboratory

TABLE 5
RESULTS OF LABORATORY ANALYSIS OF INFLUENT VAPOR SAMPLES
FROM VAPOR-EXTRACTION TESTS ON WELL VR-2
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

Sample No.	B	T	E	X	TPHg
December 14, 1989					
VR2-1-1214	88	64	21	75	11,000
VR2-2-1214	100	110	29	99	9,400
VR2-3-1214	150	140	36	120	9,200
VR2-4-1214	140	140	32	100	8,200
VR2-5-1214	200	230	54	200	12,000
VR2-6-1214	200	230	58	220	12,000
VR2-7-1214	200	270	69	270	13,000
VR2-8-1214	190	260	60	230	12,000
December 15, 1989					
VR2-2-1215	180	280	120	430	18,000
VR2-5-1215	84	200	43	150	9,000
VR2-6-1215	140	140	37	130	7,300
VR2-7-1215	120	250	55	200	15,000
VR2-8-1215	200	220	55	210	10,000

Results in milligrams per cubic meter (mg/m^3)
Influent = vapor sample collected before entering carbon filtration system



Source: U.S. Geological Survey
7.5-Minute Quadrangle
Dublin, California
Photorevised 1980

N

Approximate Scale
2000 1000 0 2000 4000
feet

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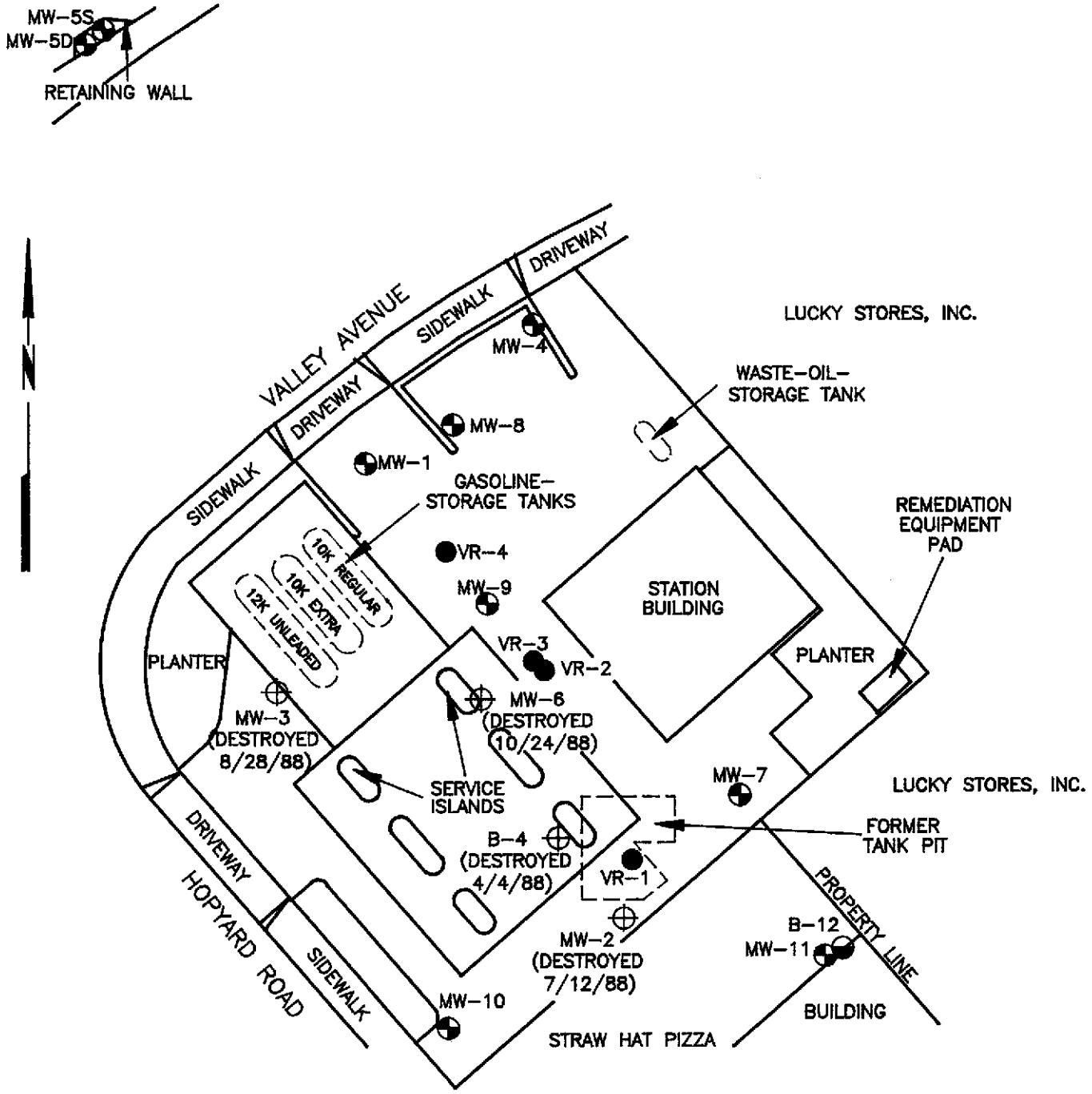
PROJECT NO. 18034-7

SITE VICINITY MAP
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

PLATE
P - 1



MW-7 = Monitoring well
VR-1 = Vapor recovery well
B-12 = Soil boring
MW-6 = Former well or boring

Approximate Scale

40 20 0 40 80

feet

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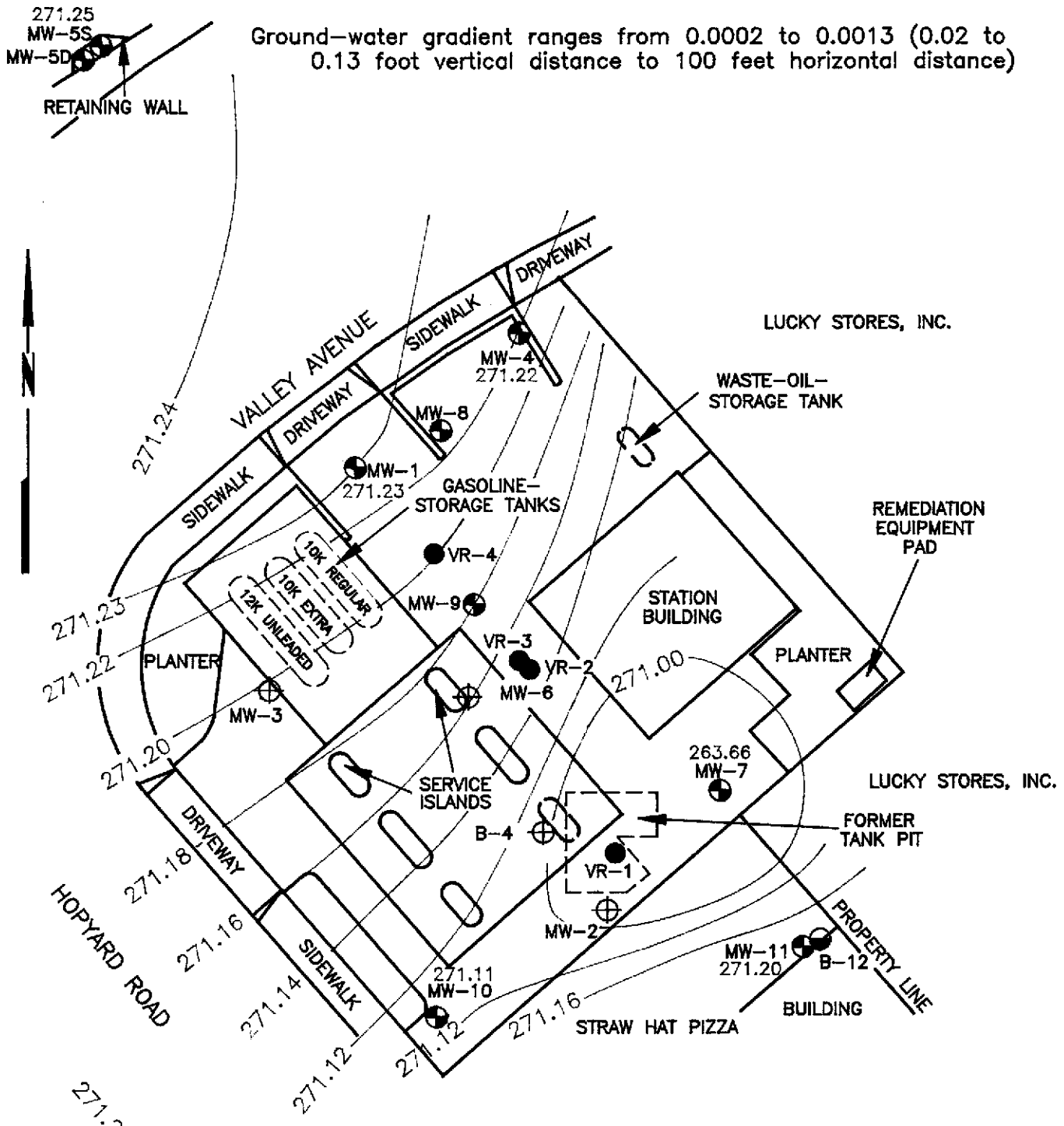
PROJECT NO. 18034-7

GENERALIZED SITE PLAN
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

PLATE

P - 2



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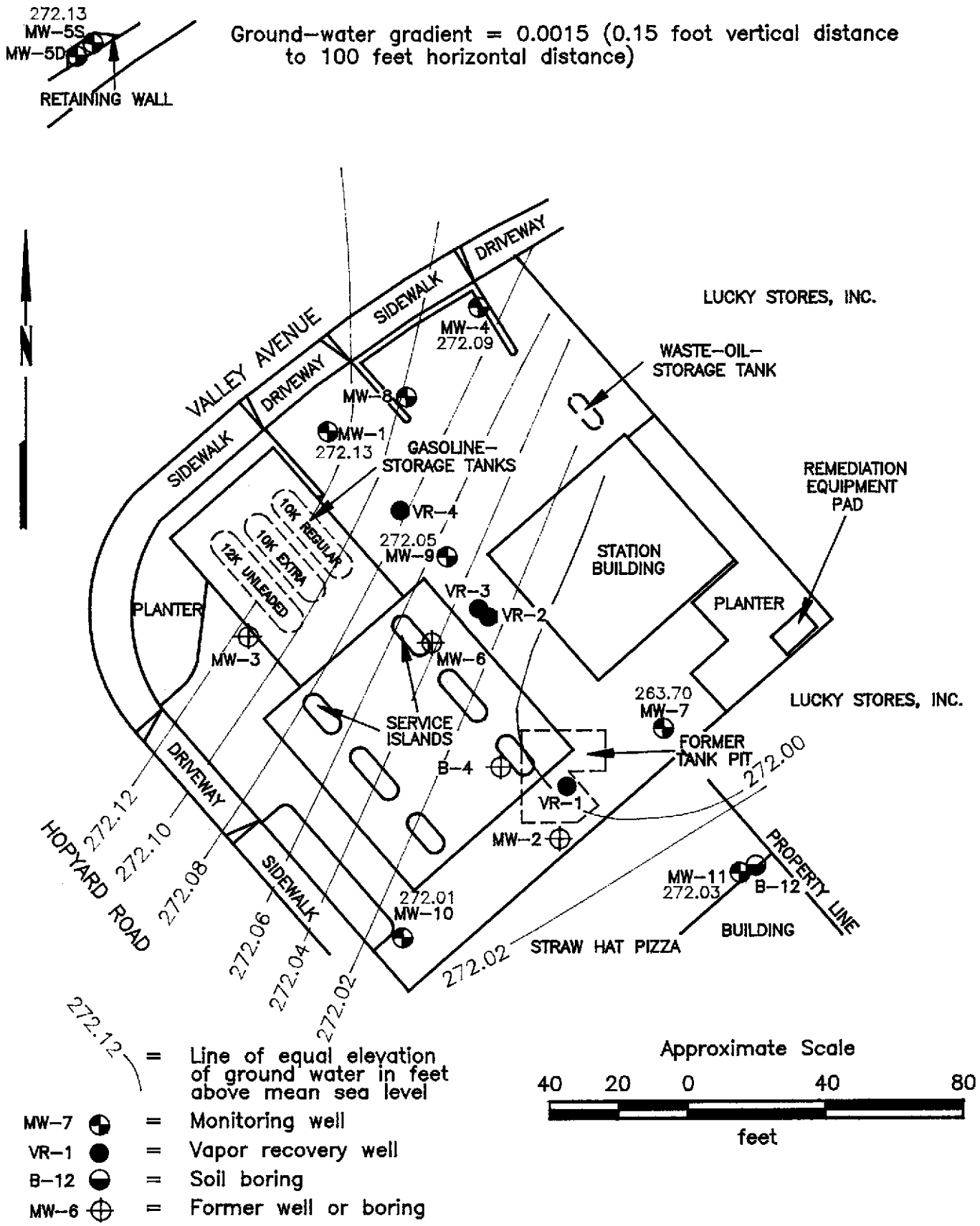
PROJECT NO. 18034-7

GROUND-WATER ELEVATION MAP
November 28, 1989
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

PLATE

P - 3



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PROJECT NO. 18034-7

GROUND-WATER ELEVATION MAP
January 9, 1990
Exxon Station No. 7-3399
2991 Hopyard Road
Pleasanton, California

PLATE

P - 4