

**ENSCO ENVIRONMENTAL**  
**SERVICES, INC.**

**MARCH QUARTERLY REPORT  
GROUNDWATER SAMPLING  
AND ANALYSES**

**FOR**

**SHELL OIL COMPANY  
7194 AMADOR VALLEY BLVD.  
DUBLIN, CALIFORNIA**

**Project No. 1826G  
March 1989**



a subsidiary of environmental system company

March 17, 1989

Shell Oil Company  
1390 Willow Pass Road  
Suite 900  
Concord, CA 94520

Attention: Ms. Diane Lundquist

Subject: March Quarterly Report  
Groundwater Sampling and Analyses  
Former Shell Gas Station, 7194 Amador Valley Boulevard, Dublin, California  
EES Project No. 1826E

Dear Ms. Lundquist:

This report presents the results of groundwater sampling and analyses performed at the subject site since May, 1988. It includes all current and past analytical data acquired during the course of this ongoing investigation.

If you have any questions, please call.

Sincerely,  
Ensco Environmental Services, Inc.

A handwritten signature in black ink that reads "Bryan W. Richter".

Bryan W. Richter  
Staff Geologist

A handwritten signature in black ink that reads "Lawrence D. Pavlak".

Lawrence D. Pavlak, C.E.G. 1187  
Senior Program Geologist

BR/LDP/sd  
Enclosure

**MARCH QUARTERLY REPORT  
GROUNDWATER SAMPLING AND ANALYSES**

**FOR**

**SHELL OIL COMPANY  
7194 AMADOR VALLEY BOULEVARD  
DUBLIN, CALIFORNIA**

**INTRODUCTION**

This report presents the results of groundwater monitoring by Ensco Environmental Services, Inc. (EES) at the former Shell Gas Station site located at 7194 Amador Valley Boulevard, in the City of Dublin, Alameda County, California (see Figure 1). EES has been conducting groundwater sampling at this site since May 1988. This is the first quarterly groundwater sampling report issued by EES for this property. The program objectives are listed below.

- Plot the groundwater contour surface and inferred flow direction.
- Investigate for the presence of a petroleum hydrocarbon plume and its concentrations.
- Compare current and past data.

The existence and degree of hydrocarbon contamination is determined by (1) checking for the presence of free-floating petroleum product in the groundwater monitoring wells and measuring its thickness and by (2) performing laboratory analyses on groundwater samples to determine concentrations of total petroleum hydrocarbons as gasoline (TPHG), with a breakdown of benzene, toluene, ethyl benzene, and total xylenes (BTEX) concentrations.

## BACKGROUND

EES, at the request of Shell Oil Company (Shell), is continuing to conduct an investigation of possible hydrocarbon contamination in the soil and groundwater beneath the former Shell Service Station located at 7194 Amador Valley Boulevard. EES performed a preliminary soil and groundwater investigation at this site in April of 1988. It was followed by a supplemental investigation which was started the following July. These reports were forwarded to you on May 25 and November 30, 1988.

This report details the results of the initial quarterly groundwater sampling phase of this investigation. EES installed groundwater monitoring wells MW-1 through MW-4 between May 4 and May 9, 1988. Groundwater monitoring wells MW-5, MW-6, and MW-7 were installed as part of the supplemental off-site field investigation conducted between July 19, and August 12, 1988. MW-5 is screened at a deeper interval than the other wells. EES installed five additional monitoring wells between February 21 and 23, 1989, and sampling of the groundwater from these wells will begin in March 1989. A detailed report describing these exploratory borings and their subsequent conversions to groundwater monitoring wells is presently being prepared.

## GROUNDWATER SAMPLING

The aforementioned monitoring wells are regularly sampled by EES and analyzed for TPHG and BTEX concentrations by a state-certified laboratory. Sampling of monitoring wells is performed in accordance with EES protocol. Appendix A contains a detailed explanation of these procedures. Purge water generated during the sampling of these wells is placed into properly labeled 55-gallon drums on site and then transported by a licensed hauler to a recycling facility.

### SITE CONDITIONS

All monitoring wells are field checked for petroleum odor, sheen, and the presence of floating product prior to sampling. EES sample technicians have noted no petroleum sheen or floating product during this investigation but did detect petroleum odor in groundwater purged from wells MW-1, MW-3, and MW-4. A slight petroleum odor was sporadically detected in MW-2, MW-5, MW-6, and MW-7.

Laboratory analyses of groundwater samples from all monitoring wells except MW-7 found detectable levels of TPHG and BTEX. Table 1 summarizes the quantitative analytical data and Appendix B contains copies of the laboratory reports. EES has developed logarithmic graphical representations of current data to show the variations in concentrations of TPHG and BTEX with respect to time. These graphs are presented as Figures 2 through 8.

EES has prepared groundwater surface contour maps based upon water depth data collected from the monitoring wells (Figures 9 through 14). Data is not available from the January monitoring due to equipment failure, thus no January groundwater contour map was prepared. The apparent groundwater surface is inclined to the southeast and the gradient has varied from approximately 0.0017 to 0.0027 feet per foot over the course of this study.

### LONG-TERM MONITORING

EES will continue to monitor the wells on a monthly schedule. This monitoring procedure will include: (1) depth-to-water measurements; (2) field checks for odor, sheen, or floating petroleum product; and (3) collection of groundwater samples for analysis by a state-certified laboratory. Laboratory analyses will be conducted to check for the presence of TPHG and BTEX. EES will issue the next quarterly groundwater sampling report in June 1989.

## CONCLUSIONS

1. Groundwater at the subject site was measured at elevations ranging between 325.01 and 326.61 feet above mean sea level during the last quarter.
2. Laboratory analyses of groundwater samples from well MW-7 revealed low to non-detectable amounts of TPHG and BTEX. No contaminants were detected in MW-7 during the January and February monitoring. Analyses of groundwater samples from wells MW-1 through MW-6 revealed detectable levels of TPHG and BTEX throughout the course of this study (Table 1). The highest benzene levels detected were in a groundwater sample collected from MW-1 in October 1988 and have varied from 0.12 to 6.7 ppm in that well.
3. EES will continue with the current monitoring schedule. We will begin monitoring wells MW-8 through MW-12 in March 1989. The next quarterly groundwater monitoring report, to be issued in June 1989, will include monthly depth, flow direction, gradient, and quality data derived from monitoring wells MW-1 through MW-12.

## REPORTING REQUIREMENTS

A copy of this report should be forwarded to the following agencies:

Alameda County Flood Control and  
Water Conservation District, (Zone 7)  
5997 Parkside Drive  
Pleasanton, California 94566  
Attn: Mr. Craig Mayfield  
Water Resources Engineer

Regional Water Quality Control Board  
San Francisco Bay Region  
1111 Jackson Street  
Oakland, California 94607  
Attn: Mr. Donald Dalke

Alameda County Health Care Services  
Department of Environmental Health  
Hazardous Materials Division  
80 Swan Way, Suite 200  
Oakland, California 94621  
Attn: Mr. Storm Goranson  
Hazardous Materials Specialist

### DISCLAIMER

This report has been prepared solely for the use of Shell and any reliance on this report by third parties shall be as such party's sole risk.

### LIMITATIONS

The discussions and recommendations presented in this report are based on the following:

1. The exploratory test borings drilled at the site.
2. The observations of field personnel.
3. The results of laboratory analyses performed by a state-certified laboratory.
4. Our understanding of the regulations of the State of California and Alameda County and/or the City of Dublin.

It is possible that variations in the soil or groundwater conditions could exist beyond the points explored in this investigation. Also, changes in the groundwater conditions could occur sometime in the future due to variations in rainfall, temperature, regional water usage or other factors.

The service performed by Ensco Environmental Services, Inc. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by Members of our profession currently practicing under similar conditions in the Dublin Area. Please note that contamination of soil and groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

The chemical analytical data included in this report have been obtained from a state-certified laboratory. The analytical methods employed by the laboratory were in accordance with procedures suggested by the U.S. EPA and the State of California. EES is not responsible for laboratory errors in procedure or result reporting.

Ensco Environmental Services  
 Project No. 1826G  
 7194 Amador Valley Blvd, Dublin

**TABLE 1  
 GROUND-WATER ANALYSES DATA**

WELL	DATE	TPHG (ppm)	BENZENE (ppm)	TOLUENE (ppm)	ETHYL BENZENE (ppm)	XYLENES (ppm)	DEPTH TO WATER (ft.)	WELL ELEV. (ft.)
MW-1	5/9/88	0.44	0.12	0.05	NA	0.12	8.72	334.83
	8/26/88	200	4.4	0.26	0.3	0.45	9.15	
	10/5/88	17	6.7	0.36	0.21	0.73	8.54	
	11/22/88	8	3.9	0.83	0.25	0.34	9.31	
	12/9/88	11	0.79	0.036	0.0073	0.068	9.33	
	1/13/89	8.8	3.8	0.11	0.33	0.09	NA	
	2/10/89	18	4.7	0.4	0.66	0.19	8.51	
MW-2	5/9/88	BRL	BRL	BRL	NA	BRL	10.85	336.96
	8/26/88	1.7	0.23	0.016	0.087	0.12	11.29	
	10/5/88	0.2	0.02	0.0023	0.0083	0.012	10.83	
	11/22/88	0.8	0.093	0.0016	0.0043	0.06	11.42	
	12/9/88	0.27	0.045	0.0036	0.0072	0.014	11.45	
	1/13/89	0.18	0.026	0.0023	0.017	0.007	NA	
	2/10/89	0.32	0.043	0.0017	0.034	0.015	10.74	
MW-3	5/9/88	0.076	0.01	0.0044	NA	0.015	10.59	336.96
	8/26/88	5.2	0.17	0.006	0.032	0.054	11.1	
	10/5/88	0.26	0.1	0.0027	0.0058	0.007	10.43	
	11/22/88	0.18	0.075	0.0014	0.0081	0.004	11.16	
	12/9/88	0.16	0.005	0.0059	ND	ND	11.24	
	1/13/89	0.16	0.036	0.0012	0.003	0.002	NA	
	2/10/89	0.3	0.083	ND	0.0086	0.008	10.43	
MW-4	5/9/88	0.29	0.076	0.033	NA	0.15	10.88	337.14
	8/26/88	2.1	0.64	0.041	0.11	0.16	11.34	
	10/5/88	0.45	0.11	0.0063	0.016	0.02	10.87	
	11/22/88	0.5	0.11	0.004	0.02	0.027	11.41	
	12/9/88	0.26	0.92	0.0075	0.0059	0.011	11.46	
	1/13/89	0.99	0.2	0.0065	0.046	0.014	NA	
	2/10/89	0.29	0.09	0.0036	0.0088	0.009	10.78	



**TABLE 1  
GROUND-WATER ANALYSES DATA (CONT.)**

WELL	DATE	TPHG (ppm)	BENZENE (ppm)	TOLUENE (ppm)	ETHYL BENZENE (ppm)	XYLENES (ppm)	DEPTH TO WATER (ft.)	WELL ELEV. (ft.)
MW-5	8/26/88	0.21	0.006	0.004	0.009	0.019	9.1	334.96
	10/5/88	7.5	2.7	BRL	0.11	0.59	9.95	
	11/22/88	0.15	0.021	0.026	0.003	0.002	8.93	
	12/9/88	0.24	0.037	0.0022	0.0067	0.0077	10.48	
	1/13/89	0.08	0.0016	ND	0.0077	0.002	NA	
	2/10/89	0.06	ND	ND	ND	ND	10.35	
MW-6	8/26/88	15	0.39	0.39	0.67	1.7	9.69	335.42
	10/5/88	2.7	0.13	0.038	0.96	0.22	9.27	
	11/22/88	NA	NA	NA	NA	NA	9.77	
	12/9/88	0.54	0.062	0.003	0.026	0.005	9.85	
	1/13/89	0.98	0.16	0.022	0.12	0.029	NA	
	2/10/89	1.9	0.29	0.024	0.093	0.048	9.1	
MW-7	8/26/88	BRL	0.0008	BRL	BRL	BRL	7.94	333.23
	10/5/88	BRL	BRL	BRL	BRL	BRL	7.54	
	11/22/88	0.7	0.041	0.009	0.001	0.02	NA	
	12/9/88	ND	ND	ND	ND	0.00055	7.53	
	1/13/89	ND	ND	ND	ND	ND	NA	
	2/10/89	ND	ND	ND	ND	ND	6.62	
RW-1	12/9/88	6.8	0.74	0.005	0.011	0.037	10.73	NA
RW-1	1/13/89	10	3.2	0.027	0.06	ND	NA	
	2/10/89	6	2.8	ND	ND	ND	10.91	

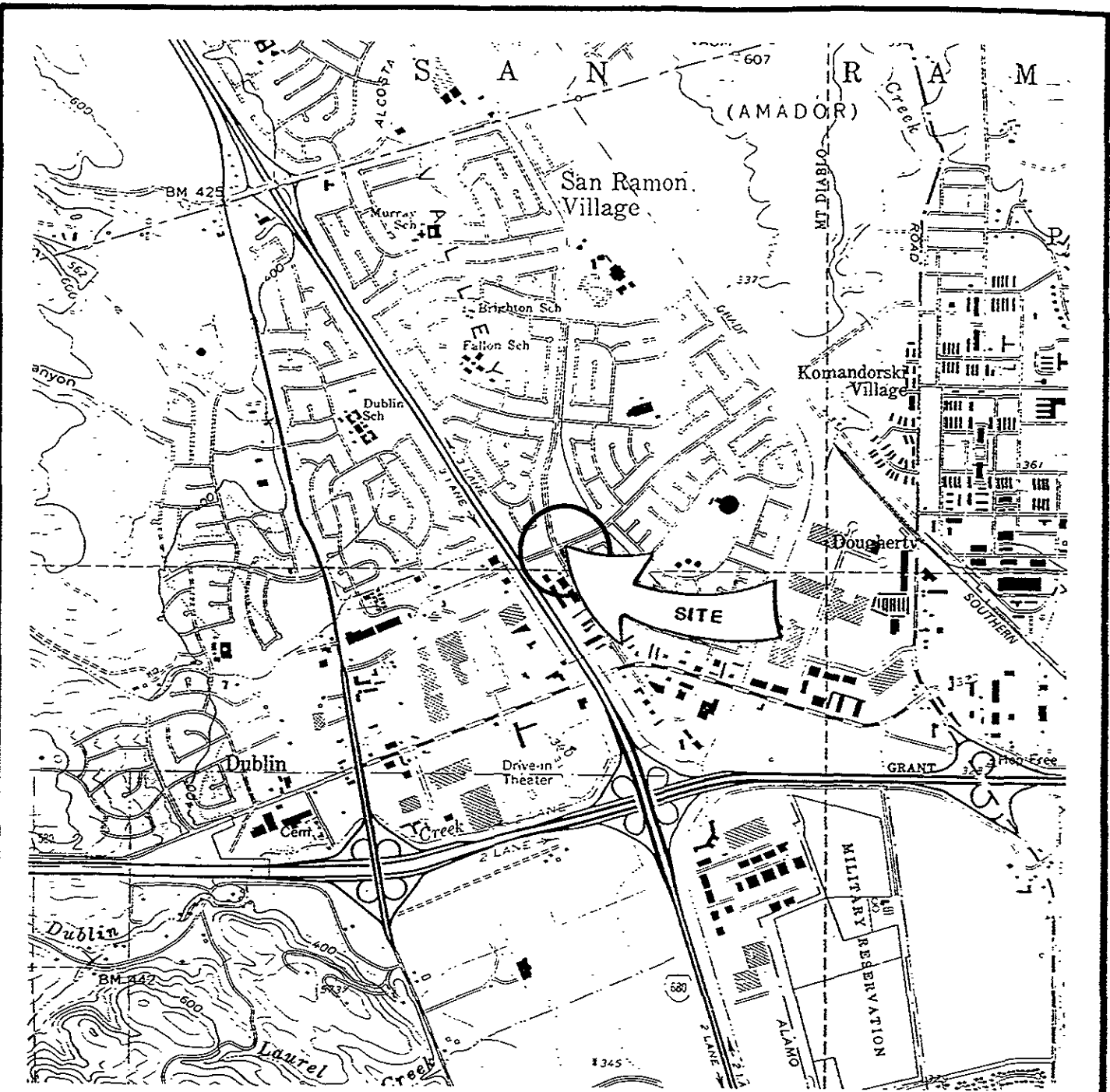
TPHG = Total Petroleum Hydrocarbons as Gasoline

ppm = parts per million

BRL = Below Reporting Limits

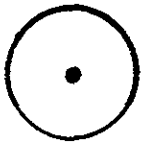
NA = Not Analyzed      ND = Not Detected

Note: For detection limits, refer to laboratory reports

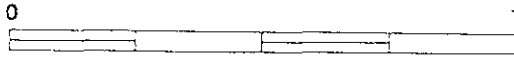


SOURCE: USGS 7.5' MAP, DUBLIN QUADRANGLE

**LEGEND**



SITE LOCATION



SCALE IN MILES



**SITE LOCATION MAP**

FORMER SHELL STATION

7194 AMADOR VALLEY BLVD

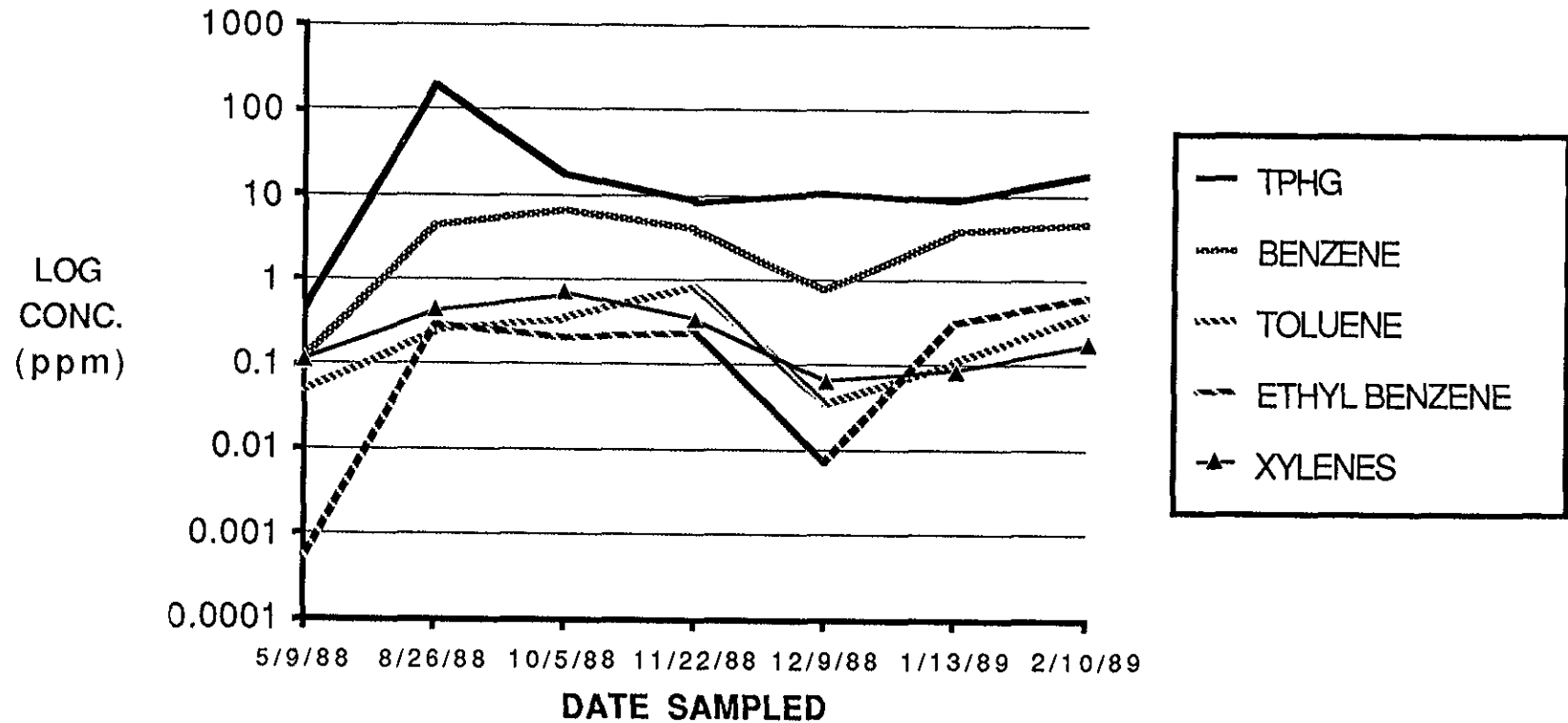
DUBLIN, CALIFORNIA

REVIEWED BY: \_\_\_\_\_ APPROVED BY: \_\_\_\_\_

DATE: 1826G DRAWN BY: J.C.

9-13-88 FIG. 1

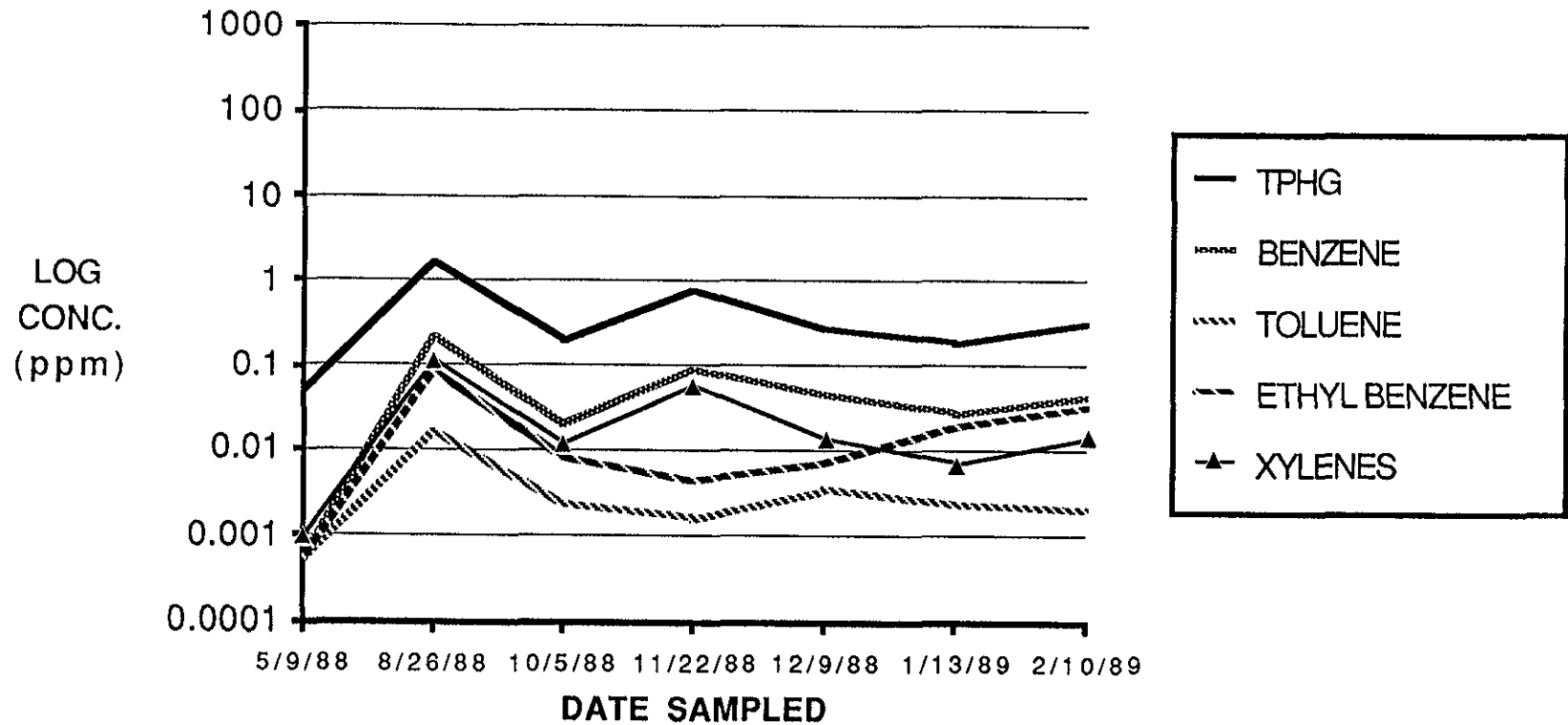
### MW-1 GROUNDWATER ANALYSES DATA



NOTE: Graphed results may display higher laboratory equipment detection or reporting limits. For exact analytical results, refer to appended laboratory reports.

Figure # 2

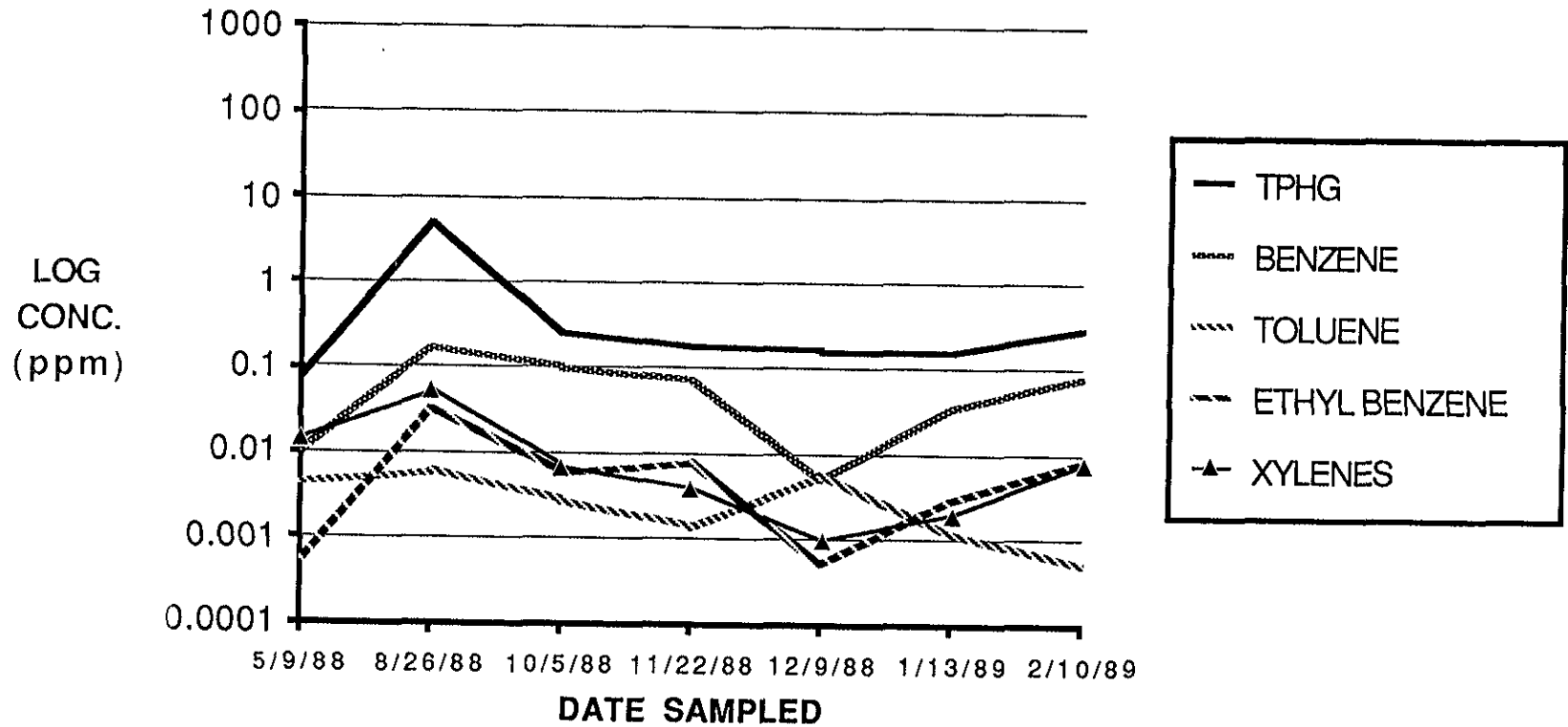
### MW-2 GROUNDWATER ANALYSES DATA



NOTE: Graphed results may display higher laboratory equipment detection or reporting limits. For exact analytical results, refer to appended laboratory reports.

Figure # 3

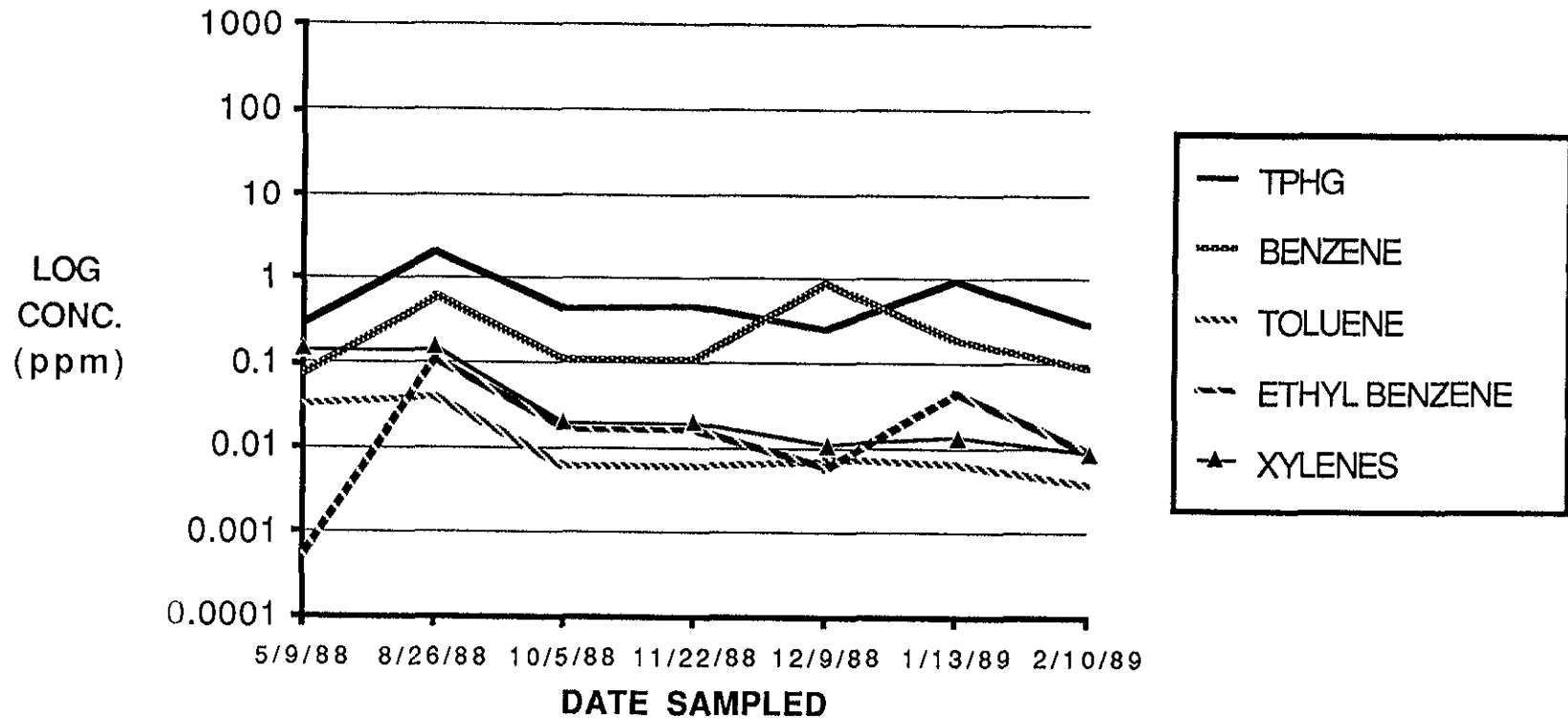
### MW-3 GROUNDWATER ANALYSES DATA



NOTE: Graphed results may display higher laboratory equipment detection or reporting limits. For exact analytical results, refer to appended laboratory reports.

Figure # 4

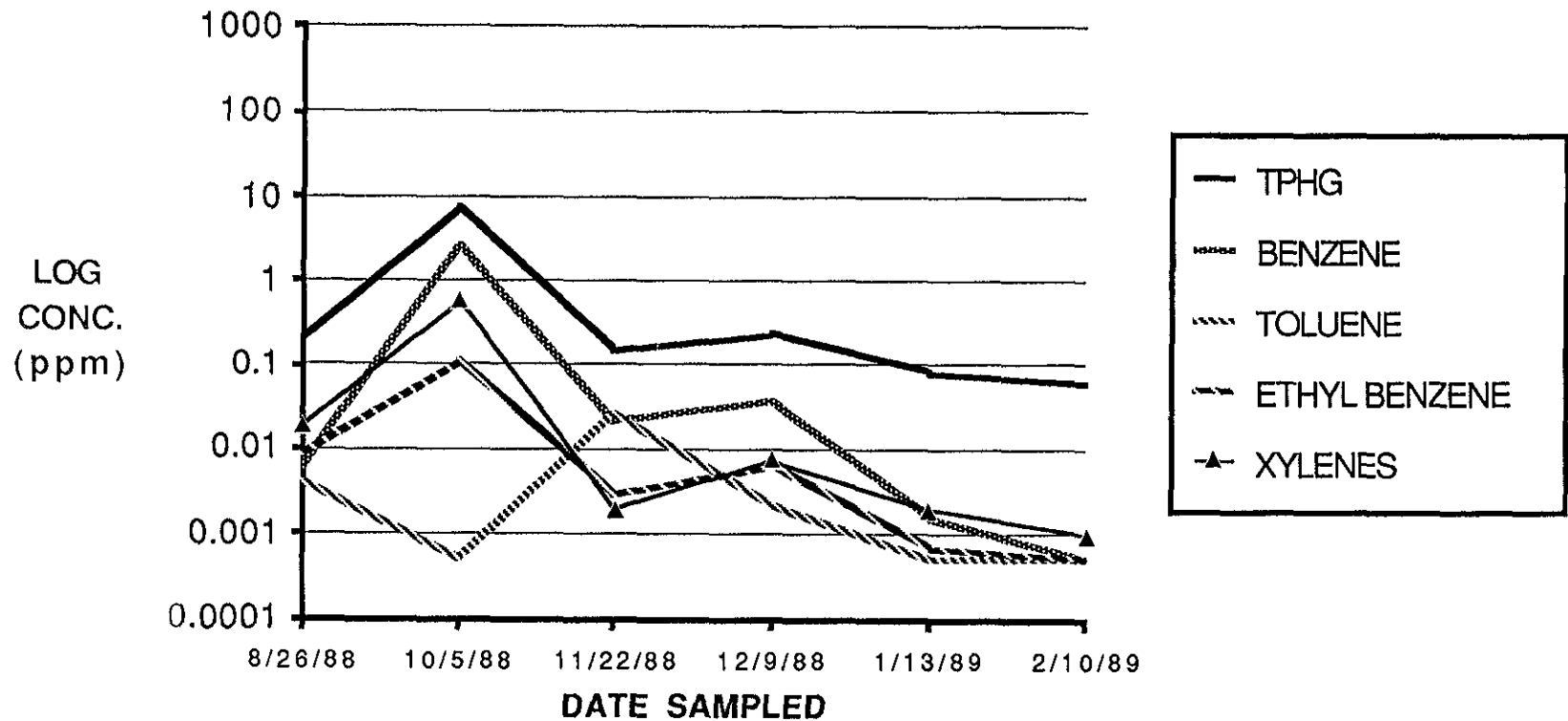
### MW-4 GROUNDWATER ANALYSES DATA



NOTE: Graphed results may display higher laboratory equipment detection or reporting limits. For exact analytical results, refer to appended laboratory reports.

Figure # 5

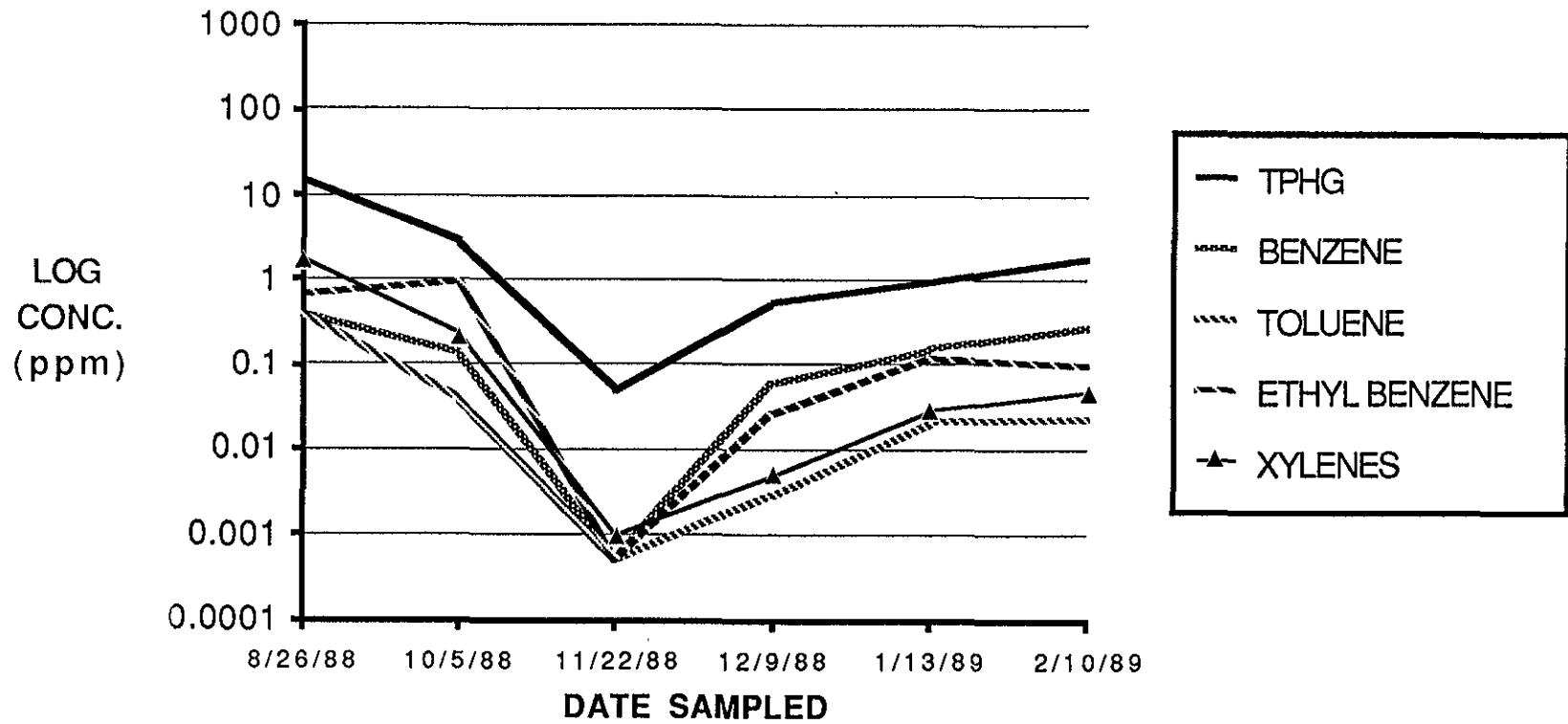
### MW-5 GROUNDWATER ANALYSES DATA



NOTE: Graphed results may display higher laboratory equipment detection or reporting limits. For exact analytical results, refer to appended laboratory reports.

Figure # 6

### MW-6 GROUNDWATER ANALYSES DATA

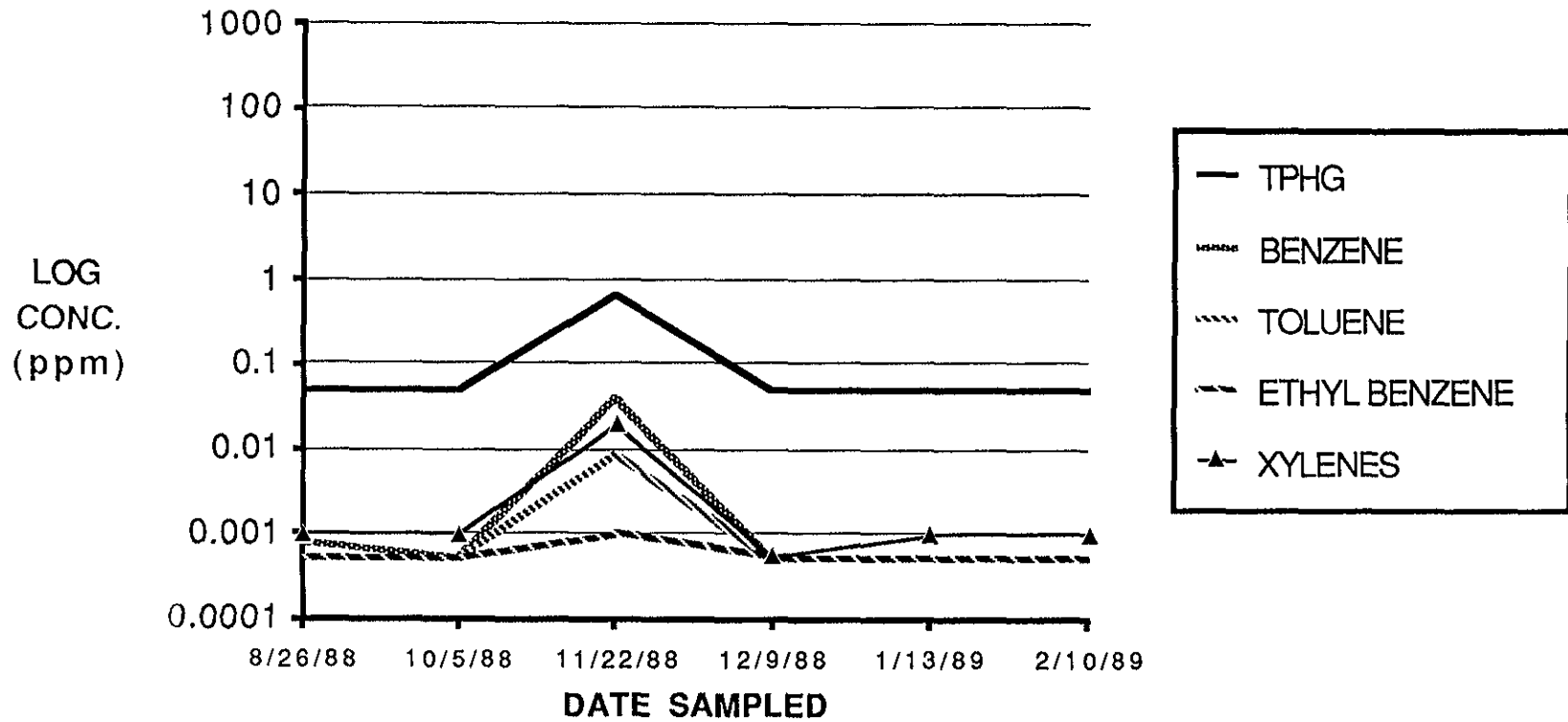


NOTE: Graphed results may display higher laboratory equipment detection or reporting limits. For exact analytical results, refer to appended laboratory reports.

Figure # 7



### MW-7 GROUNDWATER ANALYSES DATA



NOTE: Graphed results may display higher laboratory equipment detection or reporting limits. For exact analytical results, refer to appended laboratory reports.

Figure # 8

UNION 76 STATION

MOBIL STATION

LEGEND

MW-1 GROUNDWATER MONITORING WELL

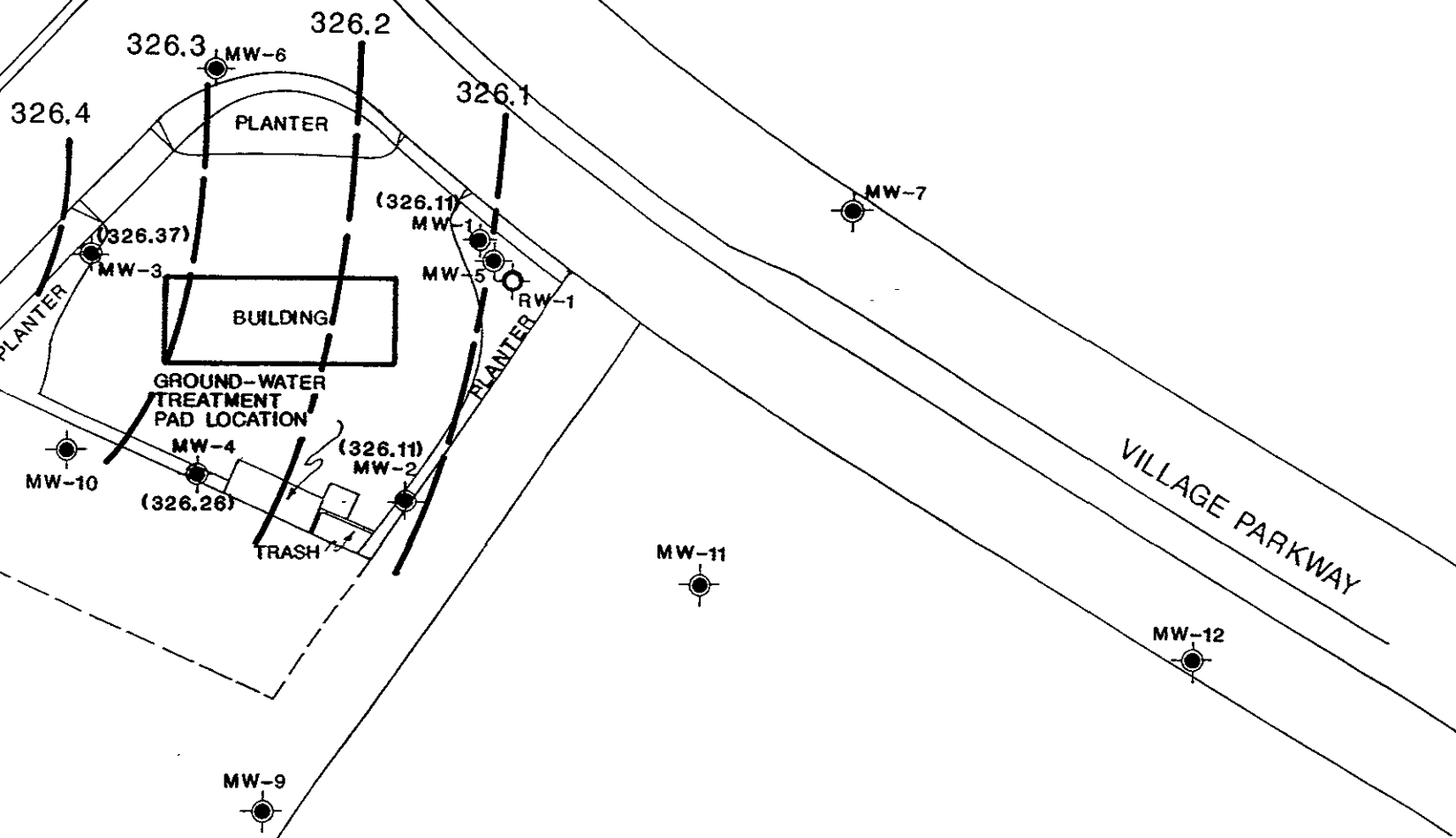
RW-1 RECOVERY WELL

(326.37) GROUNDWATER ELEVATION IN FEET (DATUM: M.S.L.)

326.4 GROUNDWATER ELEVATION CONTOUR LINE IN FEET (DATUM: M.S.L.)

AMADOR VALLEY BLVD.

VILLAGE PARKWAY



GROUNDWATER ELEVATION MAP (5/9/88)

FORMER SHELL STATION

7194 AMADOR VALLEY BLVD

DUBLIN, CALIFORNIA

REVIEWED BY

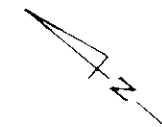
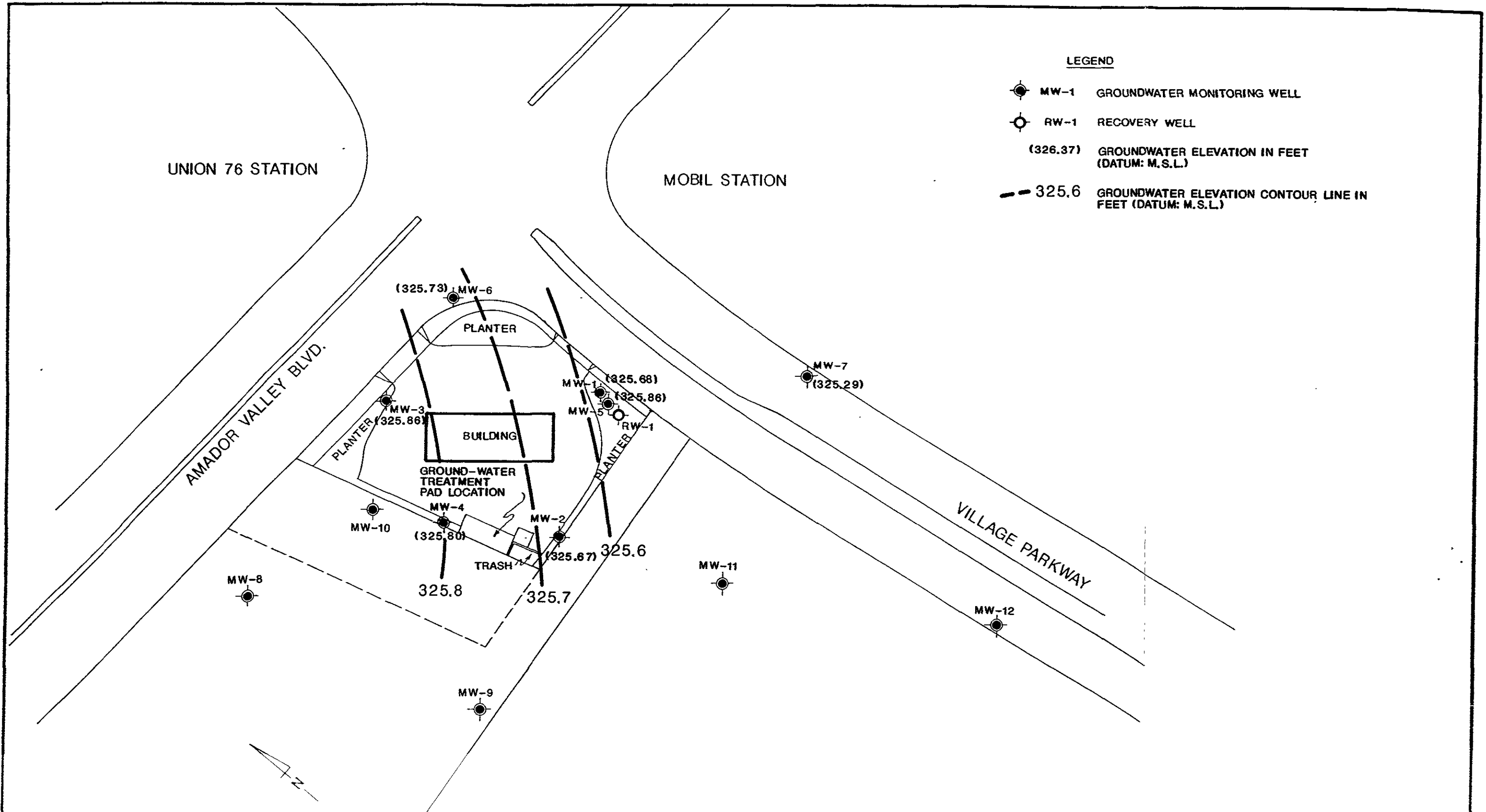
APPROVED BY

1826G

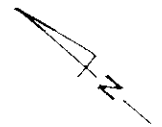
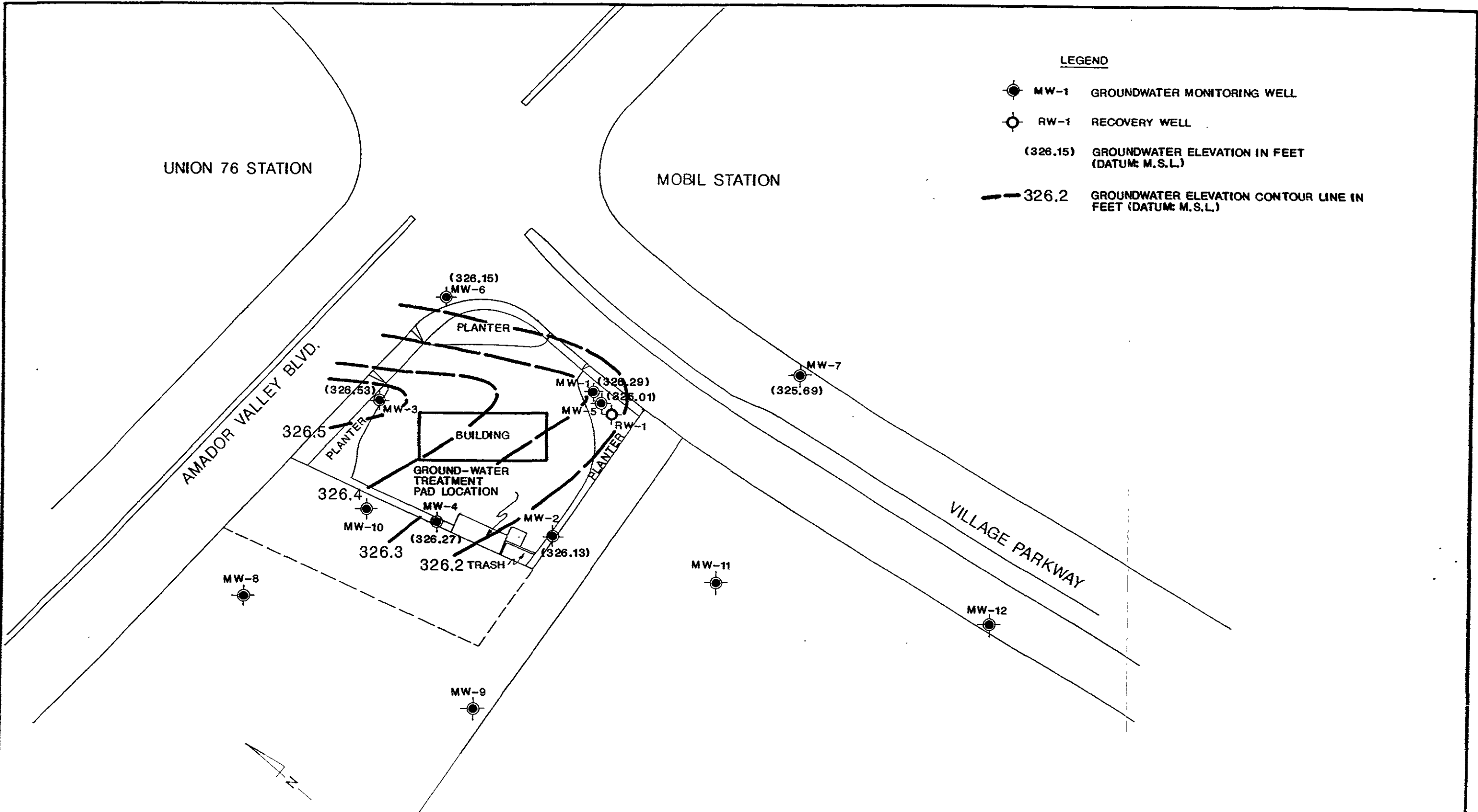
J.C.

DATE  
3-13-89

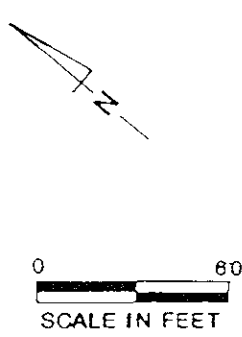
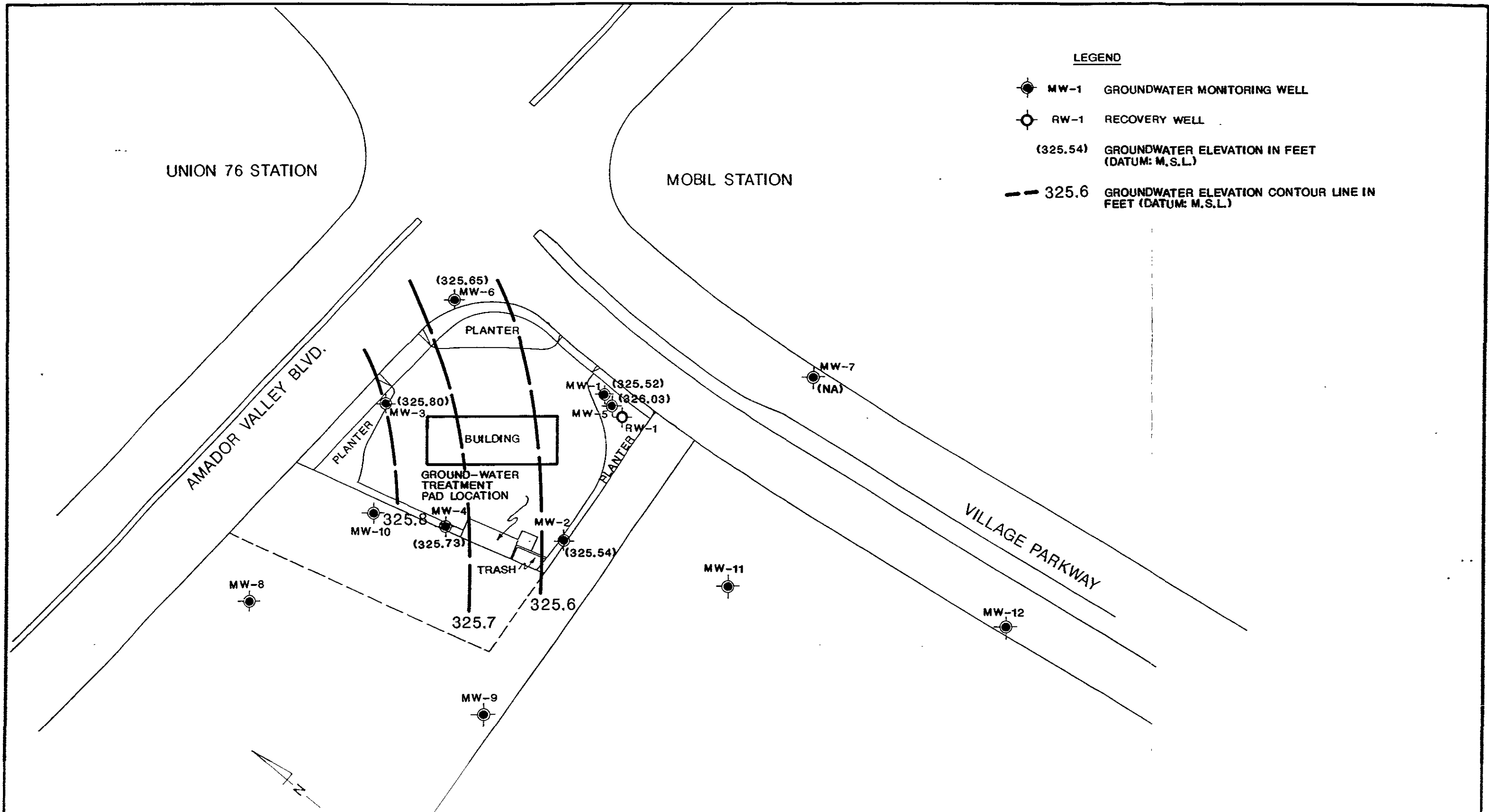
DRAWING  
FIG. 9



<b>GROUNDWATER ELEVATION MAP (8/26/88)</b>		REVIEWED BY	APPROVED BY
FORMER SHELL STATION			
7194 AMADOR VALLEY BLVD		JOB # 1826G	DRAWN BY J.C.
DUBLIN, CALIFORNIA		DATE 3-13-89	DRAWING # FIG. 10



<b>GROUNDWATER ELEVATION MAP (10/5/88)</b>		REVIEWED BY	APPROVED BY
FORMER SHELL STATION			
7194 AMADOR VALLEY BLVD		DATE	DRAWN BY
DUBLIN, CALIFORNIA		3-14-89	J.C.
		FIG. 11	



**GROUNDWATER ELEVATION MAP (11/22/88)**

FORMER SHELL STATION  
7194 AMADOR VALLEY BLVD  
DUBLIN, CALIFORNIA

REVIEWED BY	APPROVED BY
JOB # 1826G	DRAWN BY J.C.
DATE 3-14-89	DRAWING # FIG. 12

UNION 76 STATION

MOBIL STATION

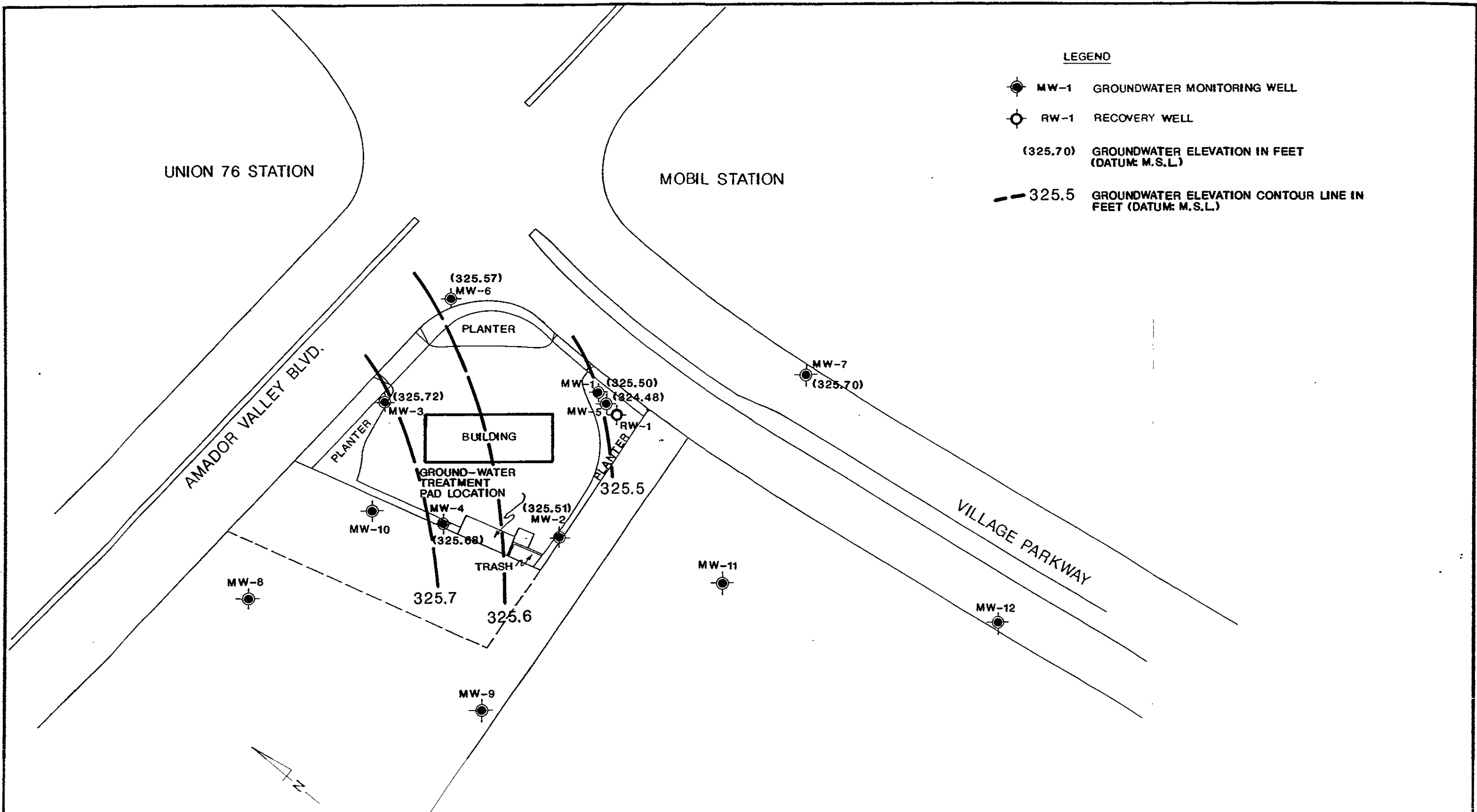
LEGEND

MW-1 GROUNDWATER MONITORING WELL

RW-1 RECOVERY WELL

(325.70) GROUNDWATER ELEVATION IN FEET (DATUM: M.S.L.)

325.5 GROUNDWATER ELEVATION CONTOUR LINE IN FEET (DATUM: M.S.L.)



0 60  
SCALE IN FEET



GROUNDWATER ELEVATION MAP (12/9/88)

FORMER SHELL STATION

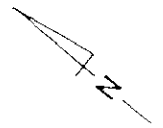
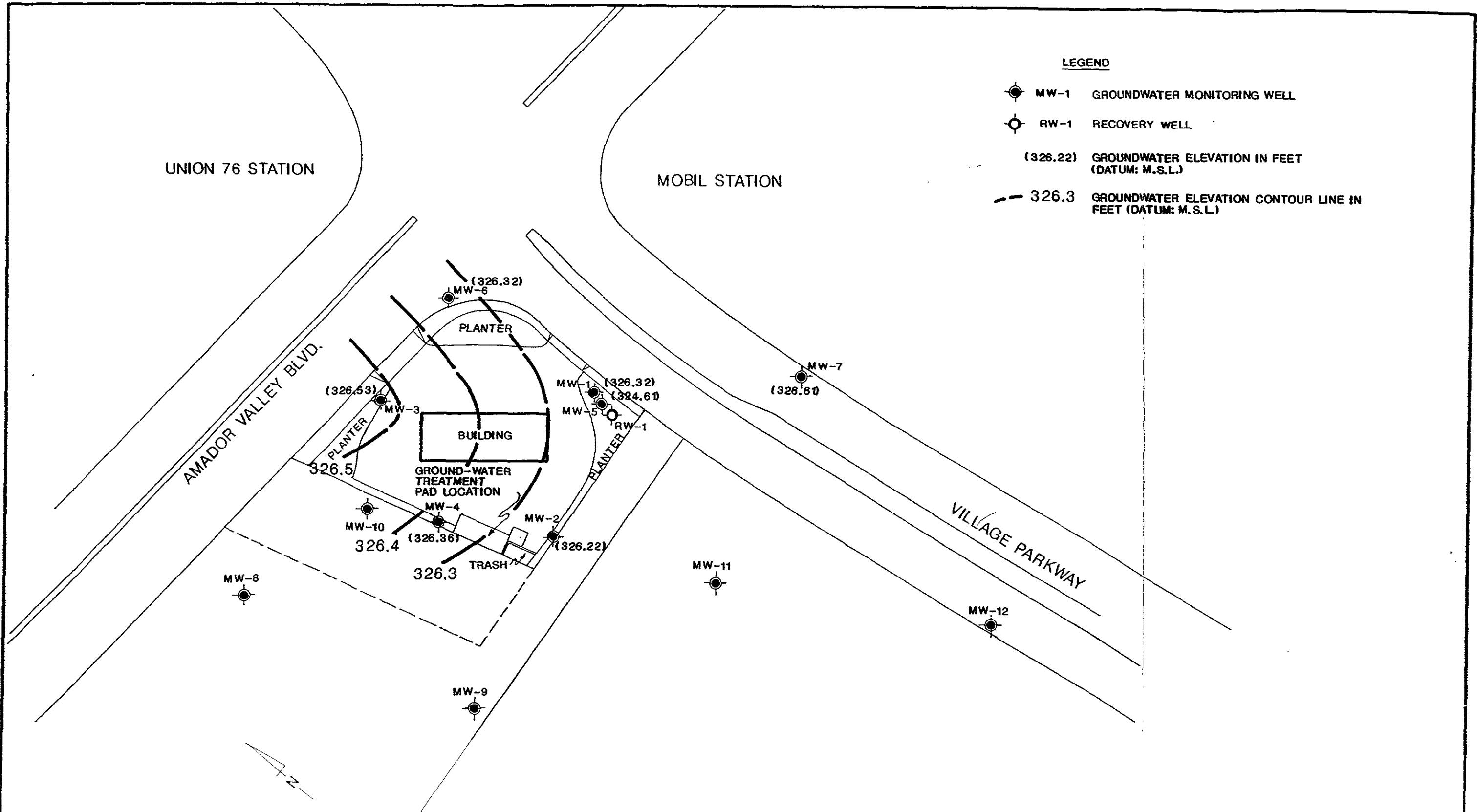
7194 AMADOR VALLEY BLVD


DUBLIN, CALIFORNIA

REVIEWED BY: APPROVED BY:

JOB # 1826G DRAWN BY J.C.

DATE 3-14-89 DRAWING # FIG. 13



	<b>GROUNDWATER ELEVATION MAP (2/10/89)</b>		REVIEWED BY	APPROVED BY
	FORMER SHELL STATION			
	7194 AMADOR VALLEY BLVD		JOB # 1826G	DRAWN BY J.C.
	DUBLIN, CALIFORNIA		DATE 3-14-89	DRAWING # FIG. 14

**APPENDIX A**

**WATER SAMPLING PROTOCOL  
LABORATORY PROCEDURES**



**ENSCO ENVIRONMENTAL SERVICES, INC.**

**WATER SAMPLING PROTOCOL**

## WATER SAMPLING PROTOCOL

Sampling of monitoring wells is performed by Ensco Environmental Services technicians. Field sampling procedures are as follows:

1. Measurement of liquid surface elevation and depth of monitoring well.
2. Field check for presence of floating product.
3. If measurement of floating product is  $<1/4$  inch, a ground water sample is taken.
4. Prior to sampling a minimum of four well casings volumes of water is removed.
5. During purging, water is monitored for temperature, pH, and specific conductance.
6. Samples for analysis are placed in EPA-approved containers.
7. Samples are immediately put in a chilled cooler for transportation to a state-certified analytical laboratory.
8. Appropriate documentation accompanies the sample at all times

## SAMPLING PROCEDURES

Equipment Cleaning - All water samples are placed in precleaned laboratory supplied glassware. Sample bottles and caps remain sealed until actual usage at the site. Before use at the site, all equipment which comes in contact with the well or ground water is thoroughly cleaned with trisodium phosphate and rinsed with deionized or distilled water. This procedure is followed between each well sampled, and wells are sampled in approximate order of increasing contamination. A pump blank is collected prior to all sampling. Pump blanks are analyzed periodically to ensure proper cleaning.

Water Level Measurements - Prior to checking for floating product, purging of the well, and sampling, the depth to water is measured in each well using a sealed sounding tape or a scaled electric sounder. Water levels are recorded in the field log book to the nearest 0.01 foot.

Floating Product Thickness - A field check for floating product is made with a clear acrylic or teflon bailer. Thickness of floating product is measured to the nearest 1/32 of an inch. Any observed film as-well-as odor and color of the water is recorded. If a teflon cord is used, the cord is cleaned. If a nylon or cotton cord is used, a new cord is used in each well.

### Water Sampling Procedures

Immediately prior to sampling of the ground water, four well-casing volumes of water are removed. Water is removed by either bailer or submersible nitrogen-driven bladder pump. During the purging operation, purged water is monitored for temperature, pH and specific conductance. If the well is dewatered during purging, and recovery to 80% is estimated or observed to exceed a two hour duration, a sample will be collected when sufficient volume is available for the sampling parameter.

After the wells are purged and the temperature, pH, and specific conductance of the water stabilize, a water sample is collected. Samples for volatile organic and gasoline analyses are placed in EPA-approved 40-ml containers with teflon-septa caps. Sample bottles are completely filled with water with no observed air bubbles present within the bottle. Samples for acid, base and neutral organics, pesticides and heavy metals analysis are placed in appropriate laboratory prepared containers. Water sample containers are labeled with the appropriate sample number, location, project name and number, time, and date of collection. All samples are placed in an iced cooler and transported to a state-certified analytical laboratory.

In cases where very oily contaminants are encountered teflon bailers may be substituted with stainless steel bailers. This will be done to minimize cross contamination.

Chain-of-custody forms are logged and signed and accompany the samples to the laboratory. One travel blank accompanies the samples and is held by the lab for possible analysis.

All sample containers issued by the laboratory are properly prepared by the laboratory for the requested analysis.

- Total Volatile Hydrocarbons and/or benzene, toluene and xylenes - 2 40-milliliter bottles
- Total Lead - 1 500-milliliter bottle
- Ethylene Dibromide - 1 500-milliliter bottle
- Metals - 1 500-milliliter bottle
- Pesticides/Herbicides - 2 2-liter bottles
- Acid Base Neutral Organics - 2 1-liter bottles
- Halogenated Volatile Organics - 2 40-milliliter bottles
- Aromatic Volatile Organics - 2 40-milliliter bottles (preserved)
- Total Phenolics - 1 1-liter bottle (preserved)

### Field Filtration of Samples

Samplers will refrain from filtering TOC, TOX or other organic compound samples as the increased handling required may result in the loss of chemical constituents of interest. Allowing the samples to settle prior to analysis followed by decanting the sample is preferable to filtration of these instances. If filtration is necessary for the determination of extractable organic compounds, the filtration should be performed in the laboratory. It may be necessary to run parallel sets of filtered and unfiltered samples with standards to establish the recovery of hydrophobic compounds when sample must be filtered. All the materials' precautions used in the construction of the sampling train should be observed for filtration apparatus. Vacuum filtration of ground water samples is not recommended.

Water samples for dissolved inorganic chemical constituents (e.g., metals, alkalinity and anionic species) will be filtered in the field.

### Sample Containers

Sample containers vary with each type of analytical parameter. Selected container types and materials are non-reactive with the sample and the particular analytical parameter being tested. Appropriate containers for volatile organics are glass bottles of at least 40 milliliters in size fitted with teflon-faced silicon septa. Sample containers are properly cleaned and sterilized by the certified laboratory according to the EPA protocol for the individual analysis.

### Sample Preservation and Shipment

Various preservatives are used by the certified laboratory to retard changes in samples. Sample shipment from Ensco Environmental Services to laboratories performing the selected analyses routinely occurs within 24 hours of sample collection.

**ENSCO ENVIRONMENTAL SERVICES, INC.**

**LABORATORY PROCEDURES**

## LABORATORY PROCEDURES

### Selection of the Laboratory

The laboratories selected to perform the analytical work are certified by the California State Department of Health Services as being qualified to perform the selected analyses. The selected laboratories are reviewed by Ensco Environmental Services, Inc. to ensure that an adequate quality control program is in place and certified by the State of California.

### Chain-of-Custody Control

The following procedures are used during sampling and analytical activities to provide chain-of-custody control during transfer of samples from collection through delivery to the laboratories. Record keeping activities used to achieve chain-of-custody control are:

- Contact made by sampling organization with facility supervisor and laboratory prior to sampling to alert them of dates of sampling and sample delivery.
- Well location map with well identification number prominently displayed.
- Field log book for documenting sampling activities in the field.
- Labels for identifying individual samples.
- Chain-of-custody record for documenting transfer and possession of samples.
- Laboratory analysis request sheet for documenting analyses to be performed.

## Analytical Procedures

The analysis of ground water samples is conducted in accordance with accepted quantitative analytical procedures. The following four publications are considered the primary references for ground water sample analysis, and the contracts with the laboratories analyzing the samples stipulate that the methods set out in these publications be used. Please note that procedures used are periodically updated by federal and state agencies, and the certified laboratories amend analysis as required by the update.

- Standard Methods for the Examination of Water and Wastewater, 16th Ed., American Public Health Association, et al., 1985.
- Methods for Chemical Analysis of Water and Wastes, U.S. EPA, 600/4-79-020, March 1979.
- Test Methods for Evaluation of Solid Waste: Physical/Chemical Methods, U.S. EPA SW-846, 1982.
- Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA, 600/4-82-057, 1982.
- Practical Guide for Ground water Sampling, EPA, 600/2-85/104, September 1985.
- RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, EPA, September 1986.

## Analytical Methods

The analytical methods used by the selected laboratories are those required by the type of analysis (fuels, metals, etc.) These methods are those currently approved by the State Regional Water Quality Control Board.



**APPENDIX B**

**LABORATORY ANALYTICAL REPORTS**




**24 hour RUSTH**  
CHAIN OF CUSTODY RECORD

Anamatrix

P.O. 8746

PROJECT NO		PROJECT NAME				TEST REQUESTED										REMARKS
18266		Shell-7194 Amador Valley, Dublin														
SAMPLERS (Signature)																
Rachel Hess and Jim Chapin																
NO	DATE	TIME	DRIVE	GRAB	STATION AND LOCATION					TU	W	TH	F	SA	TEST REQUESTED	
MW2	8-26-88	10 <sup>15</sup> A			2 preserved vva ea					X						
MW4		11 <sup>20</sup> A								X						
MW3		12 <sup>10</sup> P								X						
MW4		12 <sup>30</sup> P								X						
MW7		12 <sup>52</sup> P								X						
MW4		1:14P								X						
MW5		2:00P								X						
										X						
RELINQUISHED BY			DATE	TIME	RECEIVED BY:					RELINQUISHED BY:			DATE	TIME	RECEIVED BY	
Rachel Hess																
RELINQUISHED BY			DATE	TIME	RECEIVED BY:					RELINQUISHED BY:			DATE	TIME	RECEIVED BY LABORATORY	
Jim Palmer			8/29/88	11:31a	[Signature]											
REMARKS																
Report to Rich Gardner																
DISTRIBUTION																



**ensco environmental services, inc.**  
41674 Christy Street  
Fremont, CA 94538-3114  
(415) 659-0404  
Fax: (415) 651-4677  
Contr. Lic. No. 464324

King of the Hill

# CHAIN OF CUSTODY RECORD

P.O. 10582


PROJECT NO		PROJECT NAME					TEST REQUESTED										REMARKS			
SAMPLERS (Signature)																				
NO	DATE	TIME	DRIVE	GRAB	STATION AND LOCATION	X18/HAL														
MW-7		4:55			2 preserved vials ea.	X														
MW-6		12:30			"	X														
MW-3		1:20			"	X														
MW-1		3:20			"	X														
MW-5		7:00			"	X														
MW-2		9:51 AM			"	X														
MW-4		10:45 AM			"	X														

MDWA  
TAT

RELINQUISHED BY <i>Chris Chapin</i>	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY
					10/19/88	10:45	Fyhi Hernandez Lehc

REMARKS

DISTRIBUTION




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Anamatrix

CHAIN OF CUSTODY RECORD

P.O.# 111515

PROJECT NO		PROJECT NAME		TEST REQUESTED		REMARKS		
1826		Shell-Dublin		Amador Valley Blvd			Normal TAT	
SAMPLERS (Signature) <i>Shinshaka</i>								
NO	DATE	TIME	DRIVE	GRAB	STATION AND LOCATION	TUH/BEX		
MW-4	11/22	10:56			2 pres near each			
MW-1	11/22	11:15			↓			
MW-3	11/22	11:48						
MW-2	11/22	12:13						
MW-5	11/22	12:42						
MW-6	11/22	1:05						
MW-7								
RELINQUISHED BY		DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY
<i>[Signature]</i>		11/23/88	10:43	<i>[Signature]</i>	<i>[Signature]</i>	11-28-88	12:10	
RELINQUISHED BY		DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY
						11/28/88	12:10	Taylor Hernandez
REMARKS								
ATTN Rich Garlow						41638 CHRISTY STREET FREMONT, CA 94538 (415) 659-0404 CONT LIC #184331		
DISTRIBUTION								

Sequence

# CHAIN OF CUSTODY RECORD

P.O. # 11277

PROJECT NO		PROJECT NAME				TEST REQUESTED										REMARKS
18066		Shell Oil, Dublin														
SAMPLERS (Signature)																
Tristan Kitch Knopf, John Borego																
NO	DATE	TIME	DRIVE	GRAB	STATION AND LOCATION											
MW-2	12-1	8:28A			2 preserved vials ea.											
MW-2	"	9:28A			"											
MW-4	"	9:40A			"											
MW-3	"	10:03A			"											
MW-6	"	10:20A			"											
MW-1	"	10:53A			"											
MW-5	"	11:45A			"											
MW-7	"	12:00p.			"											

RELINQUISHED BY: <i>[Signature]</i>	DATE: 12-12-88	TIME: 11:42A	RECEIVED BY: <i>[Signature]</i>	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY LABORATORY:

REMARKS

DISTRIBUTION



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 Fremont, CA 94538-3114  
 (415) 659-0404  
 Fax (415) 651-4677  
 Contr Lic No 464324

Quametric

CHAIN OF CUSTODY RECORD

PG, 12070

PROJECT NO		PROJECT NAME		TEST REQUESTED		REMARKS
1826 G		Shell - Dublin 7194 Amador Valley Blvd.				
SAMPLERS (Signature)						
John C. Bongo, Monroe						
NO	DATE	TIME	DRIVE	GRAB	STATION AND LOCATION	
MW-7	1/3/89	11:50A			2. pws VOA5	TUH 1/89
MW-2		11:02A				X
MW-4		11:45A				X
MW-3		12:07P				X
MW-1		1:01P				X
MW-6		1:05P				X
<del>MW-5</del>		2:15P				X
RW-1	✓	3:20				X

RELINQUISHED BY: John Monroe	DATE:	TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

REMARKS: report to Kent Parrish

1-17-89 10:10 Tajhi Meadows

Asymmetry

# CHAIN OF CUSTODY RECORD

P.O. 12408


PROJECT NO 122-1		PROJECT NAME Shell Oil Dublin		7194 Amador Valley		TEST REQUESTED										Normal TAT								
SAMPLERS (Signature) John Monroe + Borrego						TVH/BTX	TDS																	
NO	DATE	TIME	DRIVE	GRAB	STATION AND LOCATION																			
BB-1	2/10/89	11:20			3 pres VOA																			
MW-7		11:46			" " "																			
MW-2		12:03			" " "																			
MW-3		12:39			" " "																			
MW-4		12:52			" " "																			
MW-1		1:48			" " "																			
MW-6		1:59			" " "																			
MW-5		3:29			" " "																			
RW-1		3:40			" " "																			
					+ 1 liter																			

RELINQUISHED BY <i>[Signature]</i>	DATE	TIME	RECEIVED BY.	RELINQUISHED BY.	DATE	TIME	RECEIVED BY.
RELINQUISHED BY	DATE	TIME	RECEIVED BY.	RELINQUISHED BY	DATE	TIME	RECEIVED BY
RELINQUISHED BY	DATE	TIME	RECEIVED BY.	RELINQUISHED BY	DATE	TIME	RECEIVED BY LABORATORY

REMARKS: Report to Rich Garland

DISTRIBUTION

2/13/89 11:45 *[Signature]*



**ensco environmental services, inc.**  
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 Fremont, CA 94538-3114  
 (415) 659-0404  
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# SEQUOIA ANALYTICAL

2549 Middlefield Road  
Redwood City, CA 94063 • (415) 364-9222 • FAX (415) 364-9233

ENSCO  
41638 Christy Street  
Fremont, CA 94538  
Attn: Ken Rike

Date Sampled: 05/09/88  
Date Received: 05/09/88  
Date Reported: 05/12/88  
Project: 1826G

TOTAL PETROLEUM FUEL  
HYDROCARBONS WITH BTX DISTINCTION


Sample Number  
8050566

Sample Description  
Water, MW-1, SDC-1027,  
Shell, Dublin

	<u>Detection</u> <u>Limit</u> ppb	<u>Sample</u> <u>Results</u> ppb
Low to Medium Boiling Point Hydrocarbons	50	440
Benzene	0.5	120
Toluene	0.5	50
Xylenes	0.5	120

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

  
Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

2549 Middlefield Road  
Redwood City, CA 94063 • (415) 364-9222 • FAX (415) 364-9233

ENSCO  
41638 Christy Street  
Fremont, CA 94538  
Attn: Ken Rike

Date Sampled: 05/09/88  
Date Received: 05/09/88  
Date Reported: 05/12/88  
Project: 1826G

TOTAL PETROLEUM FUEL  
HYDROCARBONS WITH BTX DISTINCTION

Sample Number

80050567

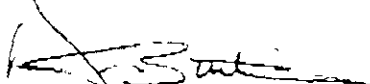
Sample Description

Water, MW-2, SDC-1028,  
Shell, Dublin

	<u>Detection Limit</u> ppb	<u>Sample Results</u> ppb
Low to Medium Boiling Point Hydrocarbons	50	< 50
Benzene	0.5	< 0.5
Toluene	0.5	< 0.5
Xylenes	0.5	< 0.5

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

  
Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

2549 Middlefield Road  
Redwood City, CA 94063 • (415) 364-9222 • FAX (415) 364-9233

ENSCO  
41638 Christy Street  
Fremont, CA 94538  
Attn: Ken Rike

Date Sampled: 05/09/88  
Date Received: 05/09/88  
Date Reported: 05/12/88  
Project: 1826G

TOTAL PETROLEUM FUEL  
HYDROCARBONS WITH BTX DISTINCTION

Sample Number  
8050568

Sample Description  
Water, MW-3, SDC-1029,  
Shell, Dublin

	<u>Detection Limit</u> ppb	<u>Sample Results</u> ppb
Low to Medium Boiling Point Hydrocarbons	50	76
Benzene	0.5	10
Toluene	0.5	4.4
Xylenes	0.5	15

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

2549 Middlefield Road  
Redwood City, CA 94063 • (415) 364-9222 • FAX (415) 364-9233

ENSCO  
41638 Christy Street  
Fremont, CA 94538  
Attn: Ken Rike

Date Sampled: 05/09/88  
Date Received: 05/09/88  
Date Reported: 05/12/88  
Project: 1826G

TOTAL PETROLEUM FUEL  
HYDROCARBONS WITH BTX DISTINCTION

Sample Number  
8050569

Sample Description  
Water, MW-4, SDC-1030,  
Shell, Dublin

	<u>Detection Limit</u> ppb	<u>Sample Results</u> ppb
Low to Medium Boiling Point Hydrocarbons	50	290
Benzene	0.5	76
Toluene	0.5	33
Xylenes	0.5	150

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton  
Laboratory Director

**ANAMETRIX, INC.**

LABORATORY SERVICES

ENVIRONMENTAL • ANALYTICAL CHEMISTRY

1961 CONCOURSE DR. SUITE E • SAN JOSE, CA 95131

TEL (408) 432-8192 • FAX (408) 432-8198

Rich Garlow  
Ensco/Exceltech  
41674 Christy Street  
Fremont, CA 94538-3114

September 1, 1988  
Work Order Number 8808232  
Date Received 08/29/88  
PO No. 8746

Dear Mr. Garlow:

Seven water samples were received for analysis of BTEX plus total volatile hydrocarbons as gasoline by gas chromatography, using the following EPA method(s):

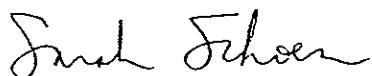
ANAMETRIX I.D.	SAMPLE I.D.	METHOD(S)
--		
8808232-01	1826G MW2	8015/8020
-02	" MW4	"
-03	" MW3	"
-04	" MW1	"
-05	" MW7	"
-06	" MW6	"
-07	" MW5	"

RESULTS

See enclosed data sheets, Pages 2 thru 8.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,



Sarah Schoen, Ph.D.  
GC Manager

SRS/lm

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW2  
 Matrix : WATER  
 Date sampled : 08-26-88  
 Date anl. TVH: 08-29-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8808232-01  
 Analyst : *mf*  
 Supervisor : *rw*  
 Date released : 09-01-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	1	230
108-88-3	Toluene	1	16
100-41-4	Ethylbenzene	1	87
1330-20-7	Total Xylenes	1	120
	TVH as Gasoline	50	1700

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW4  
 Matrix : WATER  
 Date sampled : 08-26-88  
 Date anl. TVH: 08-29-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8808232-G2  
 Analyst : *AW*  
 Supervisor : *SM*  
 Date released : 09-01-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	1	640
108-88-3	Toluene	1	41
100-41-4	Ethylbenzene	1	110
1330-20-7	Total Xylenes	1	160
	TVH as Gasoline	50	2100

BRL - Below reporting limit.

TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.

TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW3  
 Matrix : WATER  
 Date sampled : 08-26-88  
 Date anl. TVH: 08-29-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8808232-03  
 Analyst : *mt*  
 Supervisor : *SW*  
 Date released : 09-01-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	1	170
108-88-3	Toluene	1	6
100-41-4	Ethylbenzene	1	32
1330-20-7	Total Xylenes	1	54
	TVH as Gasoline	50	5200

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.



ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW1  
 Matrix : WATER  
 Date sampled : 08-26-88  
 Date anl. TVH: 08-29-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8803232-04  
 Analyst : *mi*  
 Supervisor : *FJ*  
 Date released : 09-01-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	1	4400
108-88-3	Toluene	1	260
100-41-4	Ethylbenzene	1	300
1330-20-7	Total Xylenes	1	450
	TVH as Gasoline	50	200000

- BRL - Below reporting limit.  
 TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.  
 TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.  
 TOG - Total Oil & Grease is determined by Standard Method 503E.  
 BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (406) 432-8192

Sample I.D. : 1826G MW7  
 Matrix : WATER  
 Date sampled : 08-26-88  
 Date anl. TVH: 08-31-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8808232-05  
 Analyst : *AW*  
 Supervisor : *SW*  
 Date released : 09-01-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	0.5	0.8
108-88-3	Toluene	1	BRL
100-41-4	Ethylbenzene	1	BRL
1330-20-7	Total Xylenes	1	BRL
	TVH as Gasoline	50	BRL

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW6  
 Matrix : WATER  
 Date sampled : 08-26-88  
 Date anl. TVH: 08-29-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8808232-06  
 Analyst : *mb*  
 Supervisor : *JMS*  
 Date released : 09-01-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	1	390
108-88-3	Toluene	1	390
100-41-4	Ethylbenzene	1	690
1330-20-7	Total Xylenes	1	1700
	TVH as Gasoline	50	15000

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW5  
 Matrix : WATER  
 Date sampled : 08-26-88  
 Date anl. TVH: 08-30-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8808232-07  
 Analyst : *mt*  
 Supervisor : *Smj*  
 Date released : 09-01-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	1	6
108-88-3	Toluene	1	4
100-41-4	Ethylbenzene	1	9
1330-20-7	Total Xylenes	1	19
	TVH as Gasoline	50	210

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.



1954 Concourse Drive Suite E  
San Jose CA 95128  
(408) 432-8192 - Fax (408) 432-8195

Kent Parrish  
Ensco Environmental Services  
41674 Christy Street  
Fremont, CA 94538-3114

October 25, 1988  
Work Order Number 8810061  
Date Received 10/10/88  
PO No. 10582  
Site: Shell Oil  
7194 Amador Valley Blvd.  
Dublin, CA  
Ensco Project No. 1826G

Dear Mr. Parrish:

Seven water samples were received for analysis of BTEX plus total volatile hydrocarbons as gasoline by gas chromatography, using the following EPA method(s):

ANAMETRIX I.D.	SAMPLE I.D.	METHOD(S)
8810061-01	1826G MW-7	TVH/BTEX
-02	" MW-6	"
-03	" MW-3	"
-04	" MW-1	"
-05	" MW-5	"
-06	" MW-2	"
-07	" MW-4	"

**RESULTS**

See enclosed data sheets, Pages 2 thru 8.

NOTE: Amounts reported are net values, i.e. corrected for method blank contamination.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

Sarah Schoen, Ph.D.  
GC Manager

SRS/dg

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-7	Anametrix I.D. : 8810061-01
Matrix : WATER	Analyst : <i>aw</i>
Date sampled : 10-05-88	Supervisor : <i>DS</i>
Date anl. TVH: 10-14-88	Date released : 10-25-88
Date ext. TEH: NA	Date ext. TOG : NA
Date anl. TEH: NA	Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	BRL
108-88-3	Toluene	0.0005	BRL
100-41-4	Ethylbenzene	0.0005	BRL
1330-20-7	Total Xylenes	0.001	BRL
	TVH as Gasoline	0.05	BRL

BRL - Below reporting limit. —  
 TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.  
 TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.  
 TOG - Total Oil & Grease is determined by Standard Method 503E.  
 BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-6  
Matrix : WATER  
Date sampled : 10-05-88  
Date anl. TVH: 10-14-88  
Date ext. TEH: NA  
Date anl. TEH: NA

Anamatrix I.D. : 8810061-02  
Analyst : *aw*  
Supervisor : *mf*  
Date released : 10-25-88  
Date ext. TOG : NA  
Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0025	0.13
108-88-3	Toluene	0.0025	0.038
100-41-4	Ethylbenzene	0.0025	0.096
1330-20-7	Total Xylenes	0.005	0.22
	TVH as Gasoline	0.25	2.7

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-3  
 Matrix : WATER  
 Date sampled : 10-05-88  
 Date anl. TVH: 10-14-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8810061-03  
 Analyst : a  
 Supervisor : *fnj*  
 Date released : 10-25-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.10
108-88-3	Toluene	0.0005	0.0027
100-41-4	Ethylbenzene	0.0005	0.0058
1330-20-7	Total Xylenes	0.001	0.007
	TVH as Gasoline	0.05	0.26

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.



ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-1  
Matrix : WATER  
Date sampled : 10-05-88  
Date anl. TVH: 10-19-88  
Date ext. TEH: NA  
Date anl. TEH: NA

Anamatrix I.D. : 8810061-04  
Analyst : *w*  
Supervisor : *SJS*  
Date released : 10-25-88  
Date ext. TOG : NA  
Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.025	6.7
108-88-3	Toluene	0.025	0.36
100-41-4	Ethylbenzene	0.025	0.21
1330-20-7	Total Xylenes	0.05	0.73
	TVH as Gasoline	2.5	17

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-5  
 Matrix : WATER  
 Date sampled : 10-05-88  
 Date anl. TVH: 10-14-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8810061-05  
 Analyst : *aw*  
 Supervisor : *JM*  
 Date released : 10-25-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0125	2.7
108-88-3	Toluene	0.0125	BRL
100-41-4	Ethylbenzene	0.0125	0.11
1330-20-7	Total Xylenes	0.025	0.59
	TVH as Gasoline	1.25	7.5

BRL - Below reporting limit.

TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.

TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-2  
 Matrix : WATER  
 Date sampled : 10-05-88  
 Date anl. TVH: 10-14-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8810061-06  
 Analyst : *aw*  
 Supervisor : *JW*  
 Date released : 10-25-88  
 Date ext. TCG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.020
108-88-3	Toluene	0.0005	0.0023
100-41-4	Ethylbenzene	0.0005	0.0083
1330-20-7	Total Xylenes	0.001	0.012
	TVH as Gasoline	0.05	0.20

BRL - Below reporting limit.

TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.

TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-4                      Anametrix I.D. : 8810061-07  
 Matrix : WATER                                      Analyst : *a*  
 Date sampled : 10-05-88                      Supervisor : *FS*  
 Date anl. TVH: 10-14-88                      Date released : 10-25-88  
 Date ext. TEH: NA                                      Date ext. TOG : NA  
 Date anl. TEH: NA                                      Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.11
108-88-3	Toluene	0.0005	0.0063
100-41-4	Ethylbenzene	0.0005	0.016
1330-20-7	Total Xylenes	0.001	0.020
	TVH as Gasoline	0.05	0.45

- BRL - Below reporting limit.
- TVH - Total Volatile Hydrocarbons is determined by modified EPA 8015 with either headspace or purge and trap.
- TEH - Total Extractable Hydrocarbons is determined by modified EPA 8015 with direct injection.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX- Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow CRWQCB Region 2 guidelines.



1961 Concourse Drive Suite E  
San Jose, CA 95131  
(408) 432-8192 • Fax (408) 432-8198

Rich Garlow  
Ensco Environmental Service, Inc.  
41674 Christy St.  
Fremont, CA 94538-3114

December 9, 1988  
Work Order Number 8811187  
Date Received 11/28/88  
PO No. 11158  
Site: Shell Oil  
7194 Amador Blvd.  
Dublin, CA

Dear Mr. Garlow:

Six water samples were received for analysis of BTEX plus total volatile hydrocarbons as gasoline by gas chromatography, using the following method(s):

ANAMETRIX I.D.	SAMPLE I.D.	METHOD(S)
8811187-01	1826 MW-4	TVH/BTEX
-02	" MW-1	"
-03	" MW-3	"
-04	" MW-2	"
-05	" MW-5	"
-06	" MW-7	"

RESULTS

See enclosed data sheets, Pages 2-7.

NOTE: Amounts reported are net values, i.e. corrected for method blank contamination.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

Sarah Schoen, Ph.D.  
GC Manager

SRS/dm

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826 MW-4  
 Matrix : WATER  
 Date sampled : 11-22-88  
 Date anl. TVH: 12-01-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8811187-01  
 Analyst : *W*  
 Supervisor : *SW*  
 Date released : 12-09-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.001	0.11
108-88-3	Toluene	0.001	0.004
100-41-4	Ethylbenzene	0.001	0.020
1330-20-7	Total Xylenes	0.002	0.027
	TVH as Gasoline	0.1	0.5

- BRL - Below reporting limit.  
 TVH/TPHG - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.  
 TEH/TPHD - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.  
 TOG - Total Oil & Grease is determined by Standard Method 503E.  
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826 MW-1  
 Matrix : WATER  
 Date sampled : 11-22-88  
 Date anl. TVH: 12-05-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8811187-02  
 Analyst : *aw*  
 Supervisor : *MS*  
 Date released : 12-09-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.01	3.9
108-88-3	Toluene	0.01	0.83
100-41-4	Ethylbenzene	0.01	0.25
1330-20-7	Total Xylenes	0.02	0.34
	TVH as Gasoline	1.0	8

- BRL - Below reporting limit.
- TVH/TPHG - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TEH/TPHD - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826 MW-3  
 Matrix : WATER  
 Date sampled : 11-22-88  
 Date anl. TVH: 12-03-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8811187-03  
 Analyst :  
 Supervisor :  
 Date released : 12-09-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.075
108-88-3	Toluene	0.0005	0.0014
100-41-4	Ethylbenzene	0.0005	0.0081
1330-20-7	Total Xylenes	0.001	0.004
	TVH as Gasoline	0.05	0.18

- BRL - Below reporting limit.
- TVH/TPHG - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TEH/TPHD - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, CA



ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826 MW-2  
 Matrix : WATER  
 Date sampled : 11-22-88  
 Date anl. TVH: 12-01-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8811187-04  
 Analyst : *aw*  
 Supervisor : *SM*  
 Date released : 12-09-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.001	0.093
108-88-3	Toluene	0.001	0.0016
100-41-4	Ethylbenzene	0.001	0.0043
1330-20-7	Total Xylenes	0.002	0.060
	TVH as Gasoline	0.1	0.8

BRL - Below reporting limit.

TVH/TPHG - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

TEH/TPHD - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826 MW-5  
 Matrix : WATER  
 Date sampled : 11-22-88  
 Date anl. TVH: 12-01-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anamatrix I.D. : 8811187-05  
 Analyst : *W*  
 Supervisor : *JMS*  
 Date released : 12-09-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.021
108-88-3	Toluene	0.0005	0.026
100-41-4	Ethylbenzene	0.0005	0.0030
1330-20-7	Total Xylenes	0.001	0.002
	TVH as Gasoline	0.05	0.15

- BRL - Below reporting limit.  
 TVH/TPHG - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.  
 TEH/TPHD - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.  
 TOG - Total Oil & Grease is determined by Standard Method 503E.  
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826 MW-7  
 Matrix : WATER  
 Date sampled : 11-22-88  
 Date anl. TVH: 12-06-88  
 Date ext. TEH: NA  
 Date anl. TEH: NA

Anametrix I.D. : 8811187-06  
 Analyst : *EW*  
 Supervisor : *MS*  
 Date released : 12-09-88  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Reporting Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.005	0.041
108-88-3	Toluene	0.005	0.009
100-41-4	Ethylbenzene	0.005	0.001
1330-20-7	Total Xylenes	0.01	0.02
	TVH as Gasoline	0.5	0.7

BRL - Below reporting limit.

TVH/TPHG - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

TEH/TPHD - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, CA



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233


Enasco Environmental Services	Client Project ID: #1826G, Shell, 7194 Amador Valley,	Sampled: Dec 9, 1988
41674 Christy Street	Matrix Descript: Water Dublin, PO #11277	Received: Dec 12, 1988
Fremont, CA 94538	Analysis Method: EPA 5030/8015/8020	Analyzed: Dec 23, 1988
Attention: Chris Palmer	First Sample #: 812-1334	Reported: Dec 28, 1988

## TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons ug/L (ppb)	Benzene ug/L (ppb)	Toluene ug/L (ppb)	Ethyl Benzene ug/L (ppb)	Xylenes ug/L (ppb)
812-1334	MW-7	N.D.	N.D.	N.D.	N.D.	0.55
812-1335	MW-2	270	45	3.6	7.2	14
812-1336	MW-4	260	92	7.5	5.9	11
812-1337	MW-3	160	5.0	0.59	N.D.	N.D.
812-1338	MW-6	540	62	3.0	26	5.0
812-1339	MW-1	11,000	790	36	7.3	68
812-1340	MW-5	240	37	2.2	6.7	7.7
812-1341	RW-1	6,800	740	5.0	11	37

Detection Limits:	50.0	0.5	0.5	0.5	0.5
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard  
Analytes reported as N.D. were not present above the stated limit of detection

SEQUOIA ANALYTICAL  
  
 Arthur G. Burton  
 Laboratory Director



1951 Concourse Drive Suite E  
San Jose CA 95131  
(408) 432-8192 • Fax: (408) 432-8198

Kent Parrish  
Ensco Environmental Services, Inc.  
41674 Christy St.  
Fremont, CA 94538-3114

January 31, 1989  
Work Order Number 8901092  
Date Received 01/17/89  
PO No. 12070  
Site: Shell Oil Company  
7194 Amador Valley Blvd.  
Dublin, CA

Dear Mr. Parrish:

Eight water samples were received for analysis of BTEX plus total petroleum hydrocarbons as gasoline by gas chromatography, using the following method(s):

ANAMETRIX I.D.	SAMPLE I.D.	METHOD(S)
8901092-01	1826G MW-7	TPHg/BTEX
-02	" MW-2	"
-03	" MW-4	"
-04	" MW-3	"
-05	" MW-1	"
-06	" MW-6	"
-07	" MW-5	"
-08	" R MW-1	"

**RESULTS**

See enclosed data sheets, Pages 2-9.

NOTE: Amounts reported are net values, i.e. corrected for method blank contamination.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

Sarah Schoen, Ph.D.  
GC Manager

SRS/dm

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-7  
 Matrix : WATER  
 Date sampled : 01-13-89  
 Date anl.TPHg: 01-19-89  
 Date ext.TPHd: NA  
 Date anl.TPHd: NA

Anamatrix I.D. : 8901092-01  
 Analyst : *LS*  
 Supervisor : *MS*  
 Date released : 01-31-89  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	ND
108-88-3	Toluene	0.0005	ND
100-41-4	Ethylbenzene	0.0005	ND
1330-20-7	Total Xylenes	0.001	ND
	TVH as Gasoline	0.05	ND

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, Ca.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-2  
 Matrix : WATER  
 Date sampled : 01-13-89  
 Date anl.TPHg: 01-19-89  
 Date ext.TPHd: NA  
 Date anl.TPHd: NA

Anamatrix I.D. : 8901092-02  
 Analyst : *av*  
 Supervisor : *SJ*  
 Date released : 01-31-89  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.026
108-88-3	Toluene	0.0005	0.0023
100-41-4	Ethylbenzene	0.0005	0.019
1330-20-7	Total Xylenes	0.001	0.007
	TVH as Gasoline	0.05	0.18

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, Ca.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-4  
 Matrix : WATER  
 Date sampled : 01-13-89  
 Date anl.TPHg: 01-24-89  
 Date ext.TPHd: NA  
 Date anl.TPHd: NA

Anamatrix I.D. : 8901092-03  
 Analyst : *aw*  
 Supervisor : *δr*  
 Date released : 01-31-89  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0025	0.20
108-88-3	Toluene	0.0025	0.0065
100-41-4	Ethylbenzene	0.0025	0.046
1330-20-7	Total Xylenes	0.005	0.014
	TVH as Gasoline	0.25	0.99

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, Ca.



ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-3  
 Matrix : WATER  
 Date sampled : 01-13-89  
 Date anl.TPHg: 01-23-89  
 Date ext.TPHd: NA  
 Date anl.TPHd: NA

Anamatrix I.D. : 8901092-04  
 Analyst : *W*  
 Supervisor : *JS*  
 Date released : 01-31-89  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.036
108-88-3	Toluene	0.0005	0.0012
100-41-4	Ethylbenzene	0.0005	0.0030
1330-20-7	Total Xylenes	0.001	0.002
	TVH as Gasoline	0.05	0.16

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, Ca.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-1  
Matrix : WATER  
Date sampled : 01-13-89  
Date anl.TPHg: 01-24-89  
Date ext.TPHd: NA  
Date anl.TPHd: NA

Anamatrix I.D. : 8901092-05  
Analyst : *aw*  
Supervisor : *DU*  
Date released : 01-31-89  
Date ext. TOG : NA  
Date anl. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.025	3.8
108-88-3	Toluene	0.025	0.11
100-41-4	Ethylbenzene	0.025	0.33
1330-20-7	Total Xylenes	0.05	0.09
	TVH as Gasoline	2.5	8.8

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
7194 Amador Valley Blvd.  
Dublin, Ca.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-6  
 Matrix : WATER  
 Date sampled : 01-13-89  
 Date anl.TPHg: 01-23-89  
 Date ext.TPHd: NA  
 Date anl.TPHd: NA

Anamatrix I.D. : 8901092-06  
 Analyst : *aw*  
 Supervisor : *FS*  
 Date released : 01-31-89  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.001	0.16
108-88-3	Toluene	0.001	0.022
100-41-4	Ethylbenzene	0.001	0.12
1330-20-7	Total Xylenes	0.002	0.029
	TVH as Gasoline	0.05	0.98

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, Ca.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-5  
 Matrix : WATER  
 Date sampled : 01-13-89  
 Date anl.TPHg: 01-19-89  
 Date ext.TPHd: NA  
 Date anl.TPHd: NA

Anamatrix I.D. : 8901C92-07  
 Analyst : *ai*  
 Supervisor : *RS*  
 Date released : 01-31-89  
 Date ext. TOG : NA  
 Date ani. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.0016
108-88-3	Toluene	0.0005	ND
100-41-4	Ethylbenzene	0.0005	0.0007
1330-20-7	Total Xylenes	0.001	0.002
	TVH as Gasoline	0.05	0.08

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
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 Dublin, Ca.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G RW-1  
 Matrix : WATER  
 Date sampled : 01-13-89  
 Date anl.TPHg: 01-24-89  
 Date ext.TPHd: NA  
 Date anl.TPHd: NA

Anamatrix I.D. : 8901092-08  
 Analyst : *aw*  
 Supervisor : *FIS*  
 Date released : 01-31-89  
 Date ext. TOG : NA  
 Date anl. TOG : NA

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.025	3.2
108-88-3	Toluene	0.025	0.027
100-41-4	Ethylbenzene	0.025	0.060
1330-20-7	Total Xylenes	0.05	ND
	TVH as Gasoline	2.5	10

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley Blvd.  
 Dublin, Ca.

VOLATILE AROMATIC MATRIX SPIKE REPORT  
EPA METHOD 602, 6020

Sample I.D. : METHOD SPIKE  
Matrix : WATER  
Date sampled : NA  
Date analyzed : 01-23-89

Anamatrix I.D. : SPK0123  
Analyst : *W*  
Supervisor : *SW*  
Date released : 01-31-89  
Instrument I.D.: HP10

Compound Name	SPIKE AMT. (ug/L)	MS (ug/L)	REC MS	MSD (ug/L)	REC MSD	RPD	%REC LIMITS
Benzene	5	4.3	86%	3.7	74%	15%	46 - 119
Toluene	5	4.2	84%	3.9	78%	7%	71 - 110
Ethylbenzene	5	5.9	118%	5.5	110%	7%	68 - 167
M&P-Xylenes	10	9.1	91%	8.6	86%	6%	48 - 160
O-Xylene	5	4.7	94%	4.4	88%	7%	52 - 149

\* Limits established 1/88 through 9/88 by Anamatrix, Inc.

Shell Oil  
7194 Amador Valley Blvd.  
Dublin, CA

# ANAMETRIX INC

Environmental & Analytical Chemistry  
1961 Concourse Drive, Suite E, San Jose CA 95131  
(408) 432-8192 • Fax: (408) 432-8198



# REPORT

Kent Parrish  
Ensco Environmental Services  
41674 Christy St.  
Fremont, CA 94538-3114

February 28, 1989  
Anamatrix W.O.#: 8902094  
Date Received : 02/13/89  
Purchase Order#: 12408

Dear Mr. Parrish:

Your samples have been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS.

NOTE: Amounts reported are net values, i.e. corrected for method blank contamination.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

A handwritten signature in cursive script, appearing to read "Sarah Schoen".

Sarah Schoen, Ph.D.  
GC Manager

SS/dm

REPORT SUMMARY  
ANAMETRIX, INC. (408) 432-8192

Client	: Ensco Environmental Services	Anamatrix W.O.#:	8902094
Address	: 41674 Christy St.	Date Received	: 02/13/89
City	: Fremont, CA 94538-3114	Purchase Order#:	12408
Attn.	: Kent Parrish	Project No.:	1826G
		Date Released	: 02/28/89

Anamatrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
8902094-01	1826G BB-1	WATER	02/10/89	TPH		02/15/89	N/A
8902094-02	1826G MW-7	WATER	02/10/89	TPH		02/15/89	N/A
8902094-03	1826G MW-2	WATER	02/10/89	TPH		02/15/89	N/A
8902094-04	1826G MW-3	WATER	02/10/89	TPH		02/15/89	N/A
8902094-05	1826G MW-4	WATER	02/10/89	TPH		02/16/89	N/A
8902094-06	1826G MW-1	WATER	02/10/89	TPH		02/14/89	N/A
8902094-07	1826G MW-6	WATER	02/10/89	TPH		02/16/89	N/A
8902094-08	1826G MW-5	WATER	02/10/89	TPH		02/16/89	N/A
8902094-09	1826G RW-1	WATER	02/10/89	TPH		02/15/89	N/A



ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G BB-1	Anamatrix I.D. : 8902094-01
Matrix : WATER	Analyst : RK
Date sampled : 02/10/89	Supervisor : SJ
Date anl.TPHg: 02/15/89	Date released : 02/28/89
Date ext.TPHd: N/A	Date ext. TOG : N/A
Date anl.TPHd: N/A	Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	ND
108-88-3	Toluene	0.0005	ND
100-41-4	Ethylbenzene	0.0005	ND
1330-20-7	Total Xylenes	0.001	ND
	TPH as Gasoline	0.05	ND

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
7194 Amador Valley  
Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-7  
Matrix : WATER  
Date sampled : 02/10/89  
Date anl.TPHg: 02/15/89  
Date ext.TPHd: N/A  
Date anl.TPHd: N/A

Anamatrix I.D. : 8902094-02  
Analyst : RK  
Supervisor : *MS*  
Date released : 02/28/89  
Date ext. TOG : N/A  
Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	ND
108-88-3	Toluene	0.0005	ND
100-41-4	Ethylbenzene	0.0005	ND
1330-20-7	Total Xylenes	0.001	ND
	TPH as Gasoline	0.05	ND

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
7194 Amador Valley  
Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-2  
Matrix : WATER  
Date sampled : 02/10/89  
Date anl.TPHg: 02/15/89  
Date ext.TPHd: N/A  
Date anl.TPHd: N/A

Anamatrix I.D. : 8902094-03  
Analyst : RK  
Supervisor : JMS  
Date released : 02/28/89  
Date ext. TOG : N/A  
Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.043
108-88-3	Toluene	0.0005	0.0017
100-41-4	Ethylbenzene	0.0005	0.034
1330-20-7	Total Xylenes	0.001	0.015
	TPH as Gasoline	0.05	0.32

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
7194 Amador Valley  
Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-3  
 Matrix : WATER  
 Date sampled : 02/10/89  
 Date anl.TPHg: 02/15/89  
 Date ext.TPHd: N/A  
 Date anl.TPHd: N/A

Anametrix I.D. : 8902094-04  
 Analyst : RK  
 Supervisor : SWP  
 Date released : 02/28/89  
 Date ext. TOG : N/A  
 Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.083
108-88-3	Toluene	0.0005	ND
100-41-4	Ethylbenzene	0.0005	0.0086
1330-20-7	Total Xylenes	0.001	0.008
	TPH as Gasoline	0.05	0.30

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley  
 Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-4  
 Matrix : WATER  
 Date sampled : 02/10/89  
 Date anl.TPHg: 02/16/89  
 Date ext.TPHd: N/A  
 Date anl.TPHd: N/A

Anamatrix I.D. : 8902094-05  
 Analyst : RK  
 Supervisor : MJ  
 Date released : 02/28/89  
 Date ext. TOG : N/A  
 Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	0.090
108-88-3	Toluene	0.0005	0.0036
100-41-4	Ethylbenzene	0.0005	0.0088
1330-20-7	Total Xylenes	0.001	0.009
	TPH as Gasoline	0.05	0.29

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley  
 Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-1  
Matrix : WATER  
Date sampled : 02/10/89  
Date anl.TPHg: 02/14/89  
Date ext.TPHd: N/A  
Date anl.TPHd: N/A

Anamatrix I.D. : 8902094-06  
Analyst : RK  
Supervisor : Mir  
Date released : 02/28/89  
Date ext. TOG : N/A  
Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.025	4.7
108-88-3	Toluene	0.025	0.40
100-41-4	Ethylbenzene	0.025	0.66
1330-20-7	Total Xylenes	0.05	0.19
	TPH as Gasoline	2.5	18

- ND - Not detected at or above the practical quantitation limit for the method.  
 TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.  
 TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.  
 TOG - Total Oil & Grease is determined by Standard Method 503E.  
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
7194 Amador Valley  
Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-6  
Matrix : WATER  
Date sampled : 02/10/89  
Date anl.TPHg: 02/16/89  
Date ext.TPHd: N/A  
Date anl.TPHd: N/A

Anamatrix I.D. : 8902094-07  
Analyst : RK  
Supervisor : RJ  
Date released : 02/28/89  
Date ext. TOG : N/A  
Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0025	0.29
108-88-3	Toluene	0.0025	0.024
100-41-4	Ethylbenzene	0.0025	0.093
1330-20-7	Total Xylenes	0.005	0.048
	TPH as Gasoline	0.25	1.9

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
7194 Amador Valley  
Dublin, CA

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G MW-5  
 Matrix : WATER  
 Date sampled : 02/10/89  
 Date anl.TPHg: 02/16/89  
 Date ext.TPHd: N/A  
 Date anl.TPHd: N/A

Anamatrix I.D. : 8902094-08  
 Analyst : RK  
 Supervisor : DJP  
 Date released : 02/28/89  
 Date ext. TOG : N/A  
 Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.0005	ND
108-88-3	Toluene	0.0005	ND
100-41-4	Ethylbenzene	0.0005	ND
1330-20-7	Total Xylenes	0.001	ND
	TPH as Gasoline	0.05	0.06

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley  
 Dublin, CA



ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1826G RW-1  
 Matrix : WATER  
 Date sampled : 02/10/89  
 Date anl.TPHg: 02/15/89  
 Date ext.TPHd: N/A  
 Date anl.TPHd: N/A

Anamatrix I.D. : 8902094-09  
 Analyst : RK  
 Supervisor : DJ  
 Date released : 02/28/89  
 Date ext. TOG : N/A  
 Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ppm)	Amount Found (ppm)
71-43-2	Benzene	0.01	2.8
108-88-3	Toluene	0.01	ND
100-41-4	Ethylbenzene	0.01	ND
1330-20-7	Total Xylenes	0.02	ND
	TPH as Gasoline	1.0	6

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Shell Oil  
 7194 Amador Valley  
 Dublin, CA



# McINTOSH LABORATORIES

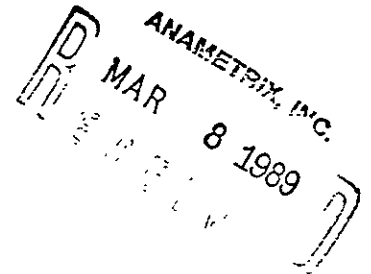
2292 TRADE ZONE BLVD.

SAN JOSE, CALIFORNIA 95131

(408)946-3935

Date Reported: 2/22/89  
Date Received: 2/15/89  
Date sampled: 2/10/89  
Sampled by: Client

: Anamatrix, Inc.  
: 1901 Concourse Drive, Suite E  
: San Jose, Calif. 95131  
: Attn: Marina Silvia



Sample Identification: SML 42312 - 6902098 - TCEA Arden Valley, Dublin

Parameter	Methodology Reference	Analytical Results Milligrams/Liter
Aluminum (Al)	EPA 202.1/7020	:
Arsenic (As)	EPA 208.3/7061	:
Antimony (Sb)	EPA 204.1/7040	:
Barium (Ba)	EPA 208.1/7050	:
Boron (B)	EPA 212.3	:
Cadmium (Cd)	EPA 215.1/7130	:
Chromium (Cr+6)	EPA 719c	:
Chromium (Cr)	EPA 215.1/7190	:
Copper (Cu)	EPA 220.1/7210	:
Cyanide (CN)	EPA 325.1/9010	:
Fluoride (F)	EPA 340.2	:
Lead (Pb)	EPA 239.1/7420	:
Manganese (Mn)	EPA 243.1/7460	:
Mercury (Hg)	EPA 245.1/7470	:
Nickel (Ni)	EPA 249.1/7520	:
Ammonia (N)	EPA 350.2	:
Nitrogen (TKN)	EPA 351.3	:
Phenolics	EPA 420.1/9065	:
Selenium (Se)	EPA 270.3/7741	:
Silver (Ag)	EPA 272.1/7760	:
Zinc (Zn)	EPA 239.1/7950	:
Demand (BOD)	EPA 405.1	:
Demand (COD)	EPA 410.1/811.1	:
Total Solids	EPA 410.1/811.1	:
Total Dissolved Solids	EPA 410.1/811.1	:
Total Suspended Solids	EPA 410.1/811.1	:
Total Phosphorus	EPA 410.1/811.1	:
Total Nitrogen	EPA 410.1/811.1	:
Total Ammonia Nitrogen	EPA 410.1/811.1	:
Total Chloride	EPA 410.1/811.1	:
Total Sulfate	EPA 410.1/811.1	:
Total Hardness	EPA 410.1/811.1	:

By: *John McIntosh*

SHELL STATUS LOG

Project Number 1826G  
7194 Amador Valley Boulevard  
Dublin, California

Date Mailed	Report Dated	Description
5/25/88		Initial Soil and Groundwater Investigation
		Report to Diane Lundquist
11/30/88		Supplemental Soil and Groundwater Investigation
		Report to Diane Lundquist
3/17/89		March Quarterly Groundwater Sampling Report
		to Diane Lundquist