

April 14, 1988

Mr. Greg Zentner
Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6040
Oakland, CA 94607

RE: Econo Station
44 Lewelling Blvd.
San Lorenzo, CA

RECEIVED
APR 16 1988
HAZARDOUS WASTE PROGRAM

Dear Mr. Zentner:

Enclosed is a report prepared by Applied Geosystems presenting the first quarter, 1988, groundwater monitoring results.

The March analysis indicates that hydrocarbon constituent levels continue to decrease, most notably in the BTX. The groundwater elevation remained essentially unchanged and a gradient course direction to the Northwest was noted over this timeframe.

Kayo will monitor this site again in June and then go to a biannual frequency beginning in December.

Sincerely,



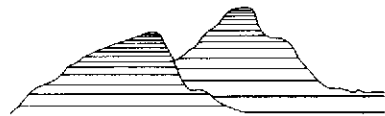
Paul Taylor
Coordinator - Environmental Affairs

Lodi Office: 900 S Cherokee LN
Lodi, CA 95240

Phone: 209/368-2731

PFT/dg

cc: Larry Seto - Alameda County Health Care Services



Applied GeoSystems

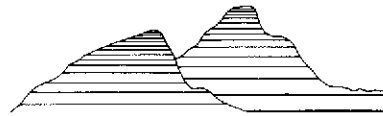
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LETTER REPORT
QUARTERLY QUANTITATIVE
GROUND-WATER MONITORING
at
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

AGS Job No. 87044-4

COPY



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April 11, 1988
0411ptay
87044-4

Mr. Paul Taylor
Kayo Oil Company
900 South Cherokee Lane
Lodi, California 95240

Subject: Letter Report No. 87044-4 regarding quarterly ground-water monitoring at the Econo Gasoline Station, 44 Lewelling Boulevard, San Lorenzo, California.

Mr. Taylor:

This letter report summarizes the results of ground-water monitoring performed by Applied GeoSystems (recommended in our report 87044-3 dated June 23, 1987), as required by the San Francisco Bay Region of the Regional Water Quality Control Board (RWQCB). The site is located on the south side of Lewelling Boulevard in San Lorenzo, as shown on the Site Vicinity Map, Plate P-1. At Kayo Oil Company's request, qualitative analysis of ground water at the site was performed monthly from June 1987 to September 1987. A quarterly monitoring schedule began in September 1987 and will continue through June 1988.

A geologist was present at the above-referenced site on March 10, 1988, to sample wells MW-1, MW-2, and MW-3. The locations of the wells are shown on the Ground-Water Potentiometric Surface Map, Plate P-2. An initial sample was collected from each of the wells to check for visual evidence of hydrocarbon contamination. The samples were collected by gently lowering approximately half of the length of a Teflon bailer past the air/water interface and collecting a sample from the surface of the water in each well. The water in the wells showed no floating product, sheen, or emulsion. Cumulative results of the subjective analyses are presented in Table 1, attached to this report.

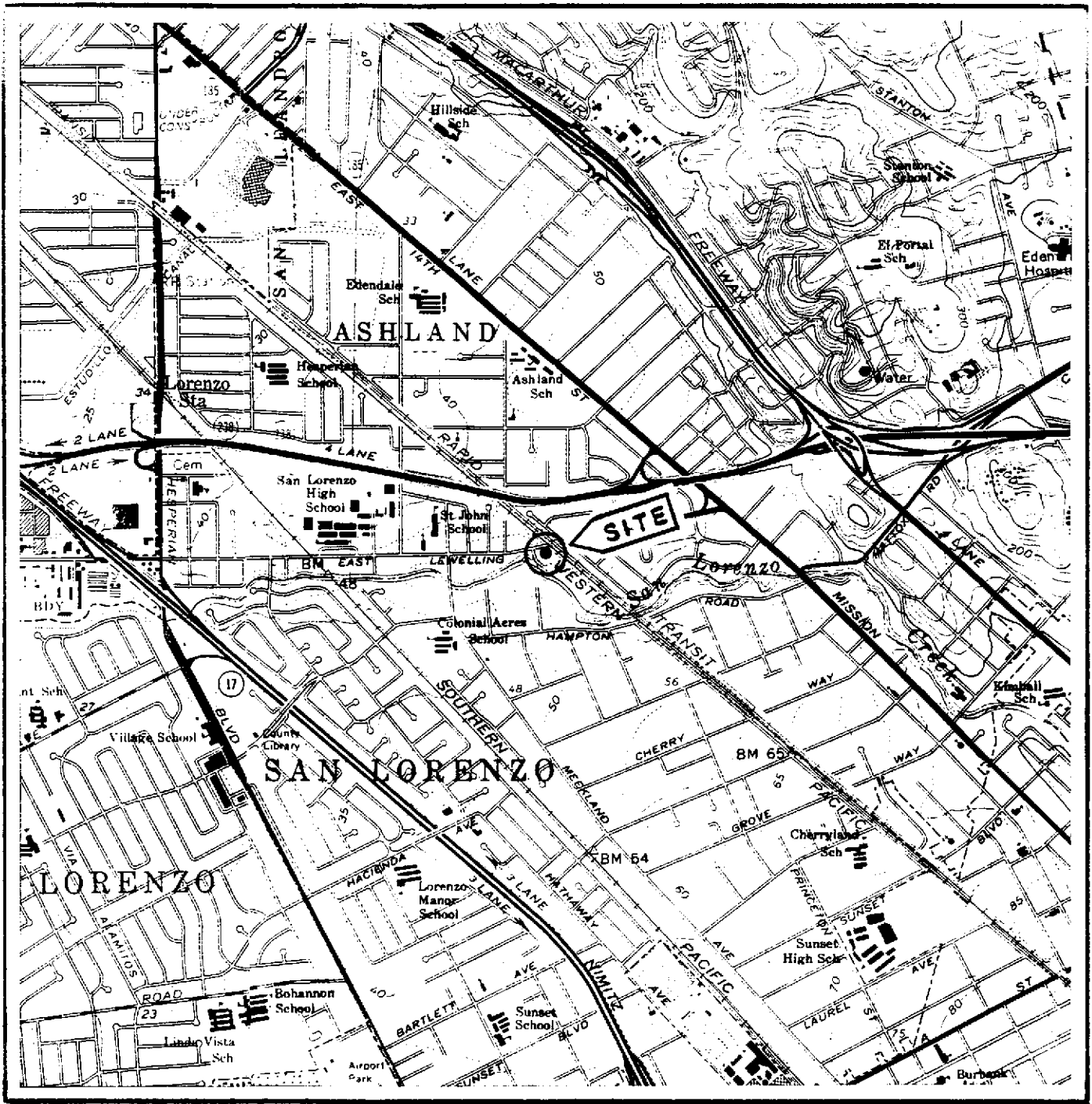
Prior to performing the subjective analyses, a static water-level measurement was made using a Solinst water-level indicator. The water-level measurements were used to produce the Ground-Water Potentiometric Surface Map shown on Plate P-2. The direction of ground-water flow, on March 10, 1988, was toward the west.

After performing the subjective analyses, the wells were purged of approximately four well volumes of water and were allowed to recover to static water level. Samples for laboratory analyses were then collected with a laboratory-cleaned Teflon bailer. A sample from each well was collected from a selected depth below the static water level. The samples were transferred to laboratory-cleaned 40-milliliter glass Volatile Organic Analysis (VOA) vials. Hydrochloric acid was added to the vials to minimize bacterial degradation of the samples.

The samples were sealed with Teflon-lined caps, stored on ice, and delivered to laboratories that are certified by the State of California for the analyses requested. A Chain of Custody Record were initiated by the sampler and are enclosed with this report. The samples were analyzed for total petroleum hydrocarbons (TPH) and the hydrocarbon constituents benzene, ethylbenzene, toluene, and total xylenes isomers (BETX). The results of these analyses and previous analyses are presented in Table 2 attached to this report. The most recent analytical results are also presented on the laboratory documents enclosed with this report.

The most recent analyses generally show lower concentrations of dissolved hydrocarbons from those of the analyses of December 1987; however, concentrations of all constituents in MW-3 remain above the maximum concentration levels of generally accepted drinking water standards. Cumulative results of concentrations of dissolved hydrocarbons and hydrocarbon constituents for water collected from monitoring wells MW-1 through MW-3 are presented graphically, to show the trend of each constituent with time, on Plates P-3 through P-6, enclosed with this letter report.

Because relatively high concentrations of dissolved hydrocarbon constituents are present in the ground water at the site, further work should be undertaken to evaluate the extent of the contamination and the usefulness of the ground water in the vicinity of the site. We recommend that additional ground-water monitoring wells be installed at selected locations offsite and in the downgradient direction in order to more fully delineate the extent of ground-water impact.



Source: U.S. Geological Survey
 7.5-Minute Quadrangle
 Hayward, California
 San Lorenzo, California
 Photorevised 1980



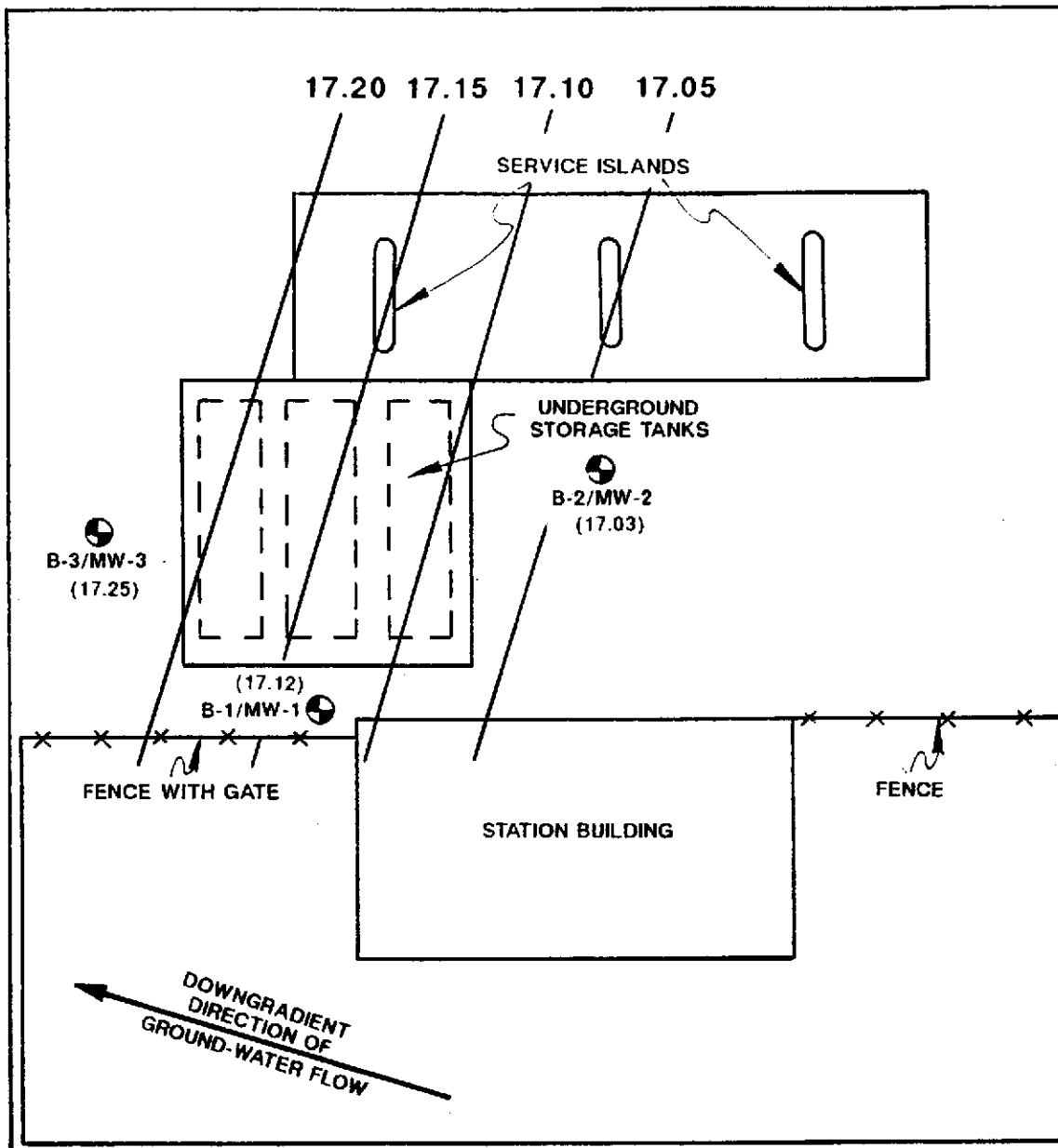
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SITE VICINITY MAP
Econo Gasoline Station
San Lorenzo, California

PLATE
P - 1

PROJECT NO. 87044-4

LEWELLING BOULEVARD



⊕ = Monitoring well location

17.20 / = Potentiometric surface depth measured in feet below top of casing of MW-1 on March 10, 1988

(17.25) = Depth of water below top of casing of MW-1 on March 10, 1988



Source: Measured by tape and compass



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GROUND-WATER POTENTIOMETRIC SURFACE MAP
March 1988

Econo Gasoline Station
San Lorenzo, California

PLATE

P - 2

PROJECT NO. 87044-4

TABLE 1

CUMULATIVE SUBJECTIVE ANALYSES
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

<u>Date</u>	<u>Well No.</u>	<u>Depth to Water</u>	<u>Floating Product</u>	<u>Sheen</u>	<u>Emulsion</u>
	MW-1:				
6/87		16.27	NONE	SLIGHT	NONE
7/87		16.96	NONE	NONE	NONE
8/87		17.28	NONE	NONE	NONE
9/87		17.62	NONE	NONE	NONE
12/87		17.54	NONE	NONE	NONE
3/88		17.12	NONE	NONE	NONE
	MW-2:				
6/87		15.62	NONE	STRONG	NONE
7/87		16.23	NONE	NONE	NONE
8/87		16.58	NONE	NONE	NONE
9/87		16.93	NONE	NONE	NONE
12/87		16.71	NONE	NONE	NONE
3/88		16.43	NONE	NONE	NONE
	MW-3:				
6/87		15.89	NONE	SLIGHT	NONE
7/87		16.48	NONE	NONE	NONE
8/87		16.80	NONE	NONE	NONE
9/87		17.13	NONE	NONE	NONE
12/87		16.90	NONE	NONE	NONE
3/88		16.68	NONE	NONE	NONE

Note: Depth to water measured in feet below top of casing.

TABLE 2

CUMULATIVE ANALYTICAL RESULTS
 for Ground-Water Samples Collected From
 Econo Gasoline Station
 44 Lewelling Boulevard
 San Lorenzo, California
 (Page 1 of 2)

Date	Sample I.D.	TPH	B	E	T	X	Det. Limit
MW-1:							
6/87	W-25-MW1	18.05▼	0.49	0.93	0.15	3.79	0.01
7/87	W-20-MW1	14.75▼	0.56	0.95	0.12	3.27	0.05
8/87	W-26-MW1	12.86▼	0.63	0.32	0.04	1.13	0.01
9/87	W-18-MW1	14.269▼	0.558	0.562	0.084	1.942	0.005
12/87	W-20-MW1	14.00*	0.200	0.273	0.138	0.777	0.005
3/88	W-19-MW1	7.3▲	0.07	0.34	0.04	0.94	0.01
MW-2:							
6/87	W-25-MW2	4.870▼	0.113	0.046	0.014	0.058	0.002
7/87	W-20-MW2	2.207▼	0.103	0.034	0.025	0.048	0.001
8/87	W-26-MW2	0.7560▼	0.0376	0.0082	0.0109	0.0111	0.0005
9/87	W-18-MW2	1.4825▼	0.0753	0.0164	0.0142	0.0276	0.0005
12/87	W-20-MW2	1.80*	0.0280	0.0381	0.0406	0.1003	0.0005
3/88	W-18-MW2	1.20♦	0.0092	0.0073	0.0031	0.0026	0.0005

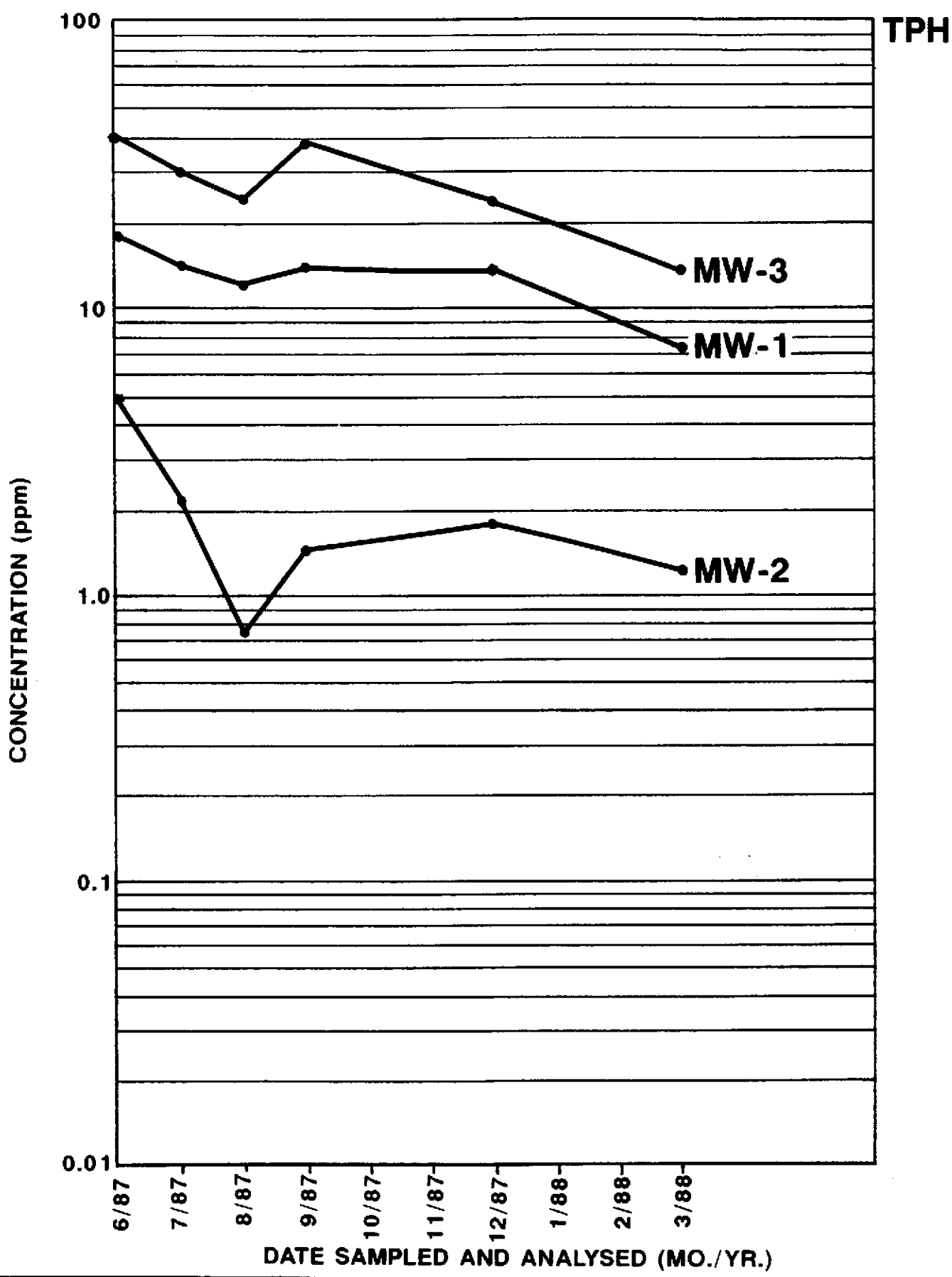
Note: All results in parts per million (ppm)
 I.D.: Sample Identifier
 Det. Limit: Detection Limit
 TPH: Total petroleum hydrocarbons (by EPA modified 8015)
 BETX: Benzene, ethylbenzene, toluene, and total xylene isomers
 ▼ = Total volatile hydrocarbons (by EPA method 602)
 ▲ = Detection limit of 0.2 ppm
 * = Detection limit of 0.05 ppm
 ♦ = Detection limit of 0.02 ppm

TABLE 2

CUMULATIVE ANALYTICAL RESULTS
 for Ground-Water Samples Collected From
 Econo Gasoline Station
 44 Lewelling Boulevard
 San Lorenzo, California
 (Page 2 of 2)

Date	Sample I.D.	TPH	B	E	T	X	Det. Limit
MW-3:							
6/87	W-25-MW3	40.3▼	5.4	1.7	3.9	5.2	0.1
7/87	W-20-MW3	30.32▼	6.88	1.58	7.08	4.77	0.05
8/87	W-26-MW3	25.62▼	5.93	1.24	4.18	3.37	0.05
9/87	W-18-MW3	38.21▼	8.54	1.02	6.66	3.74	0.05
12/87	W-20-MW3	25.00	4.24	0.89	2.53	1.86	0.05
3/88	W-18-MW3	13.4▲	3.21	0.94	0.95	0.95	0.05

Note: All results in parts per million (ppm)
 I.D.: Sample Identifier
 Det. Limit: Detection Limit
 TPH: Total petroleum hydrocarbons (by EPA modified 8015)
 BETX: Benzene, ethylbenzene, toluene, and total xylene isomers
 ▼ = Total volatile hydrocarbons (by EPA method 8020/602)
 ▲ = Detection limit of 0.2 ppm
 * = Detection limit of 0.05 ppm
 ◆ = Detection limit of 0.02 ppm

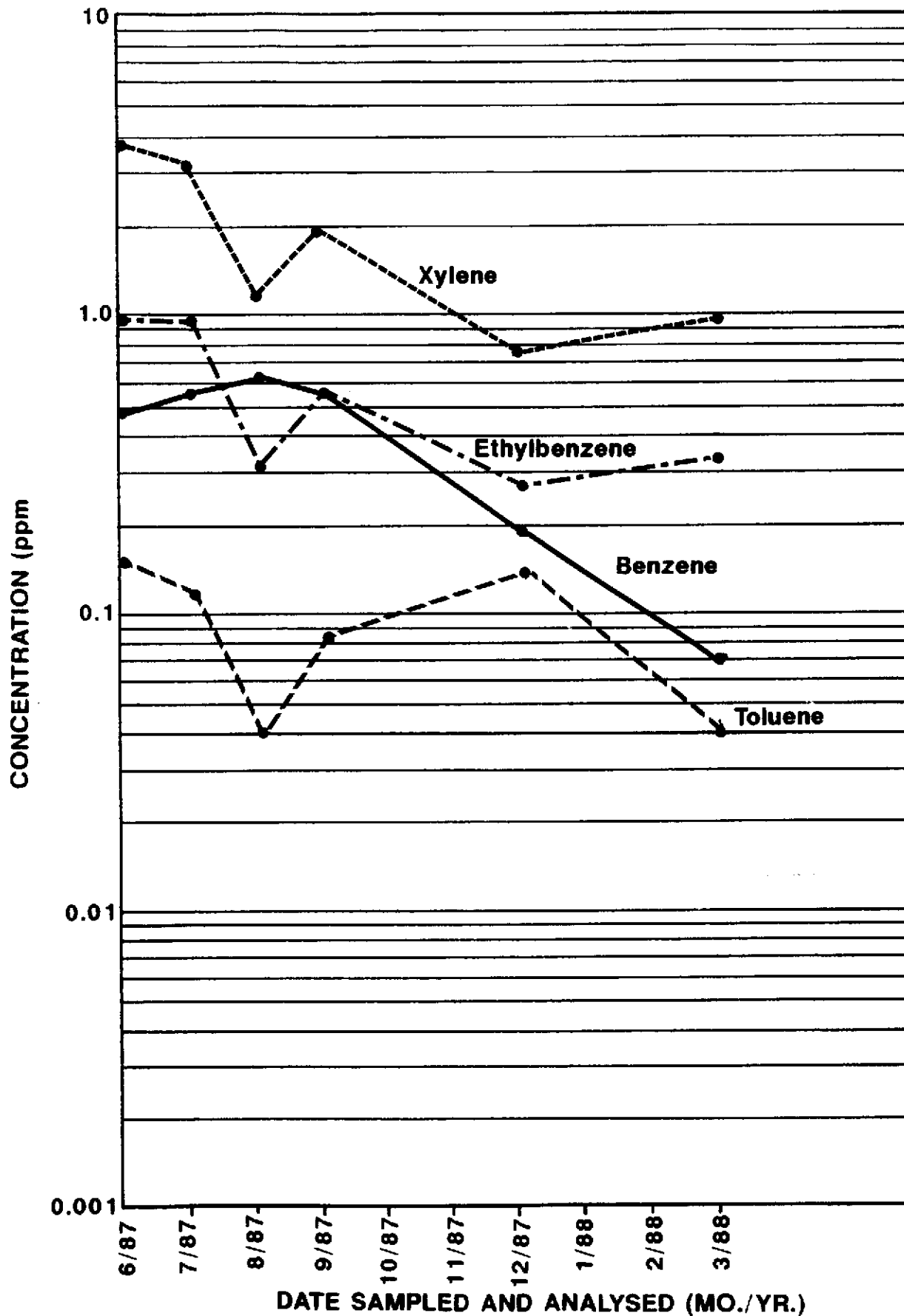


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**CUMULATIVE TPH
CONCENTRATION GRAPH
Econo Gasoline Station
San Lorenzo, California**

**PLATE
P - 3**

PROJECT NO. 87044-4

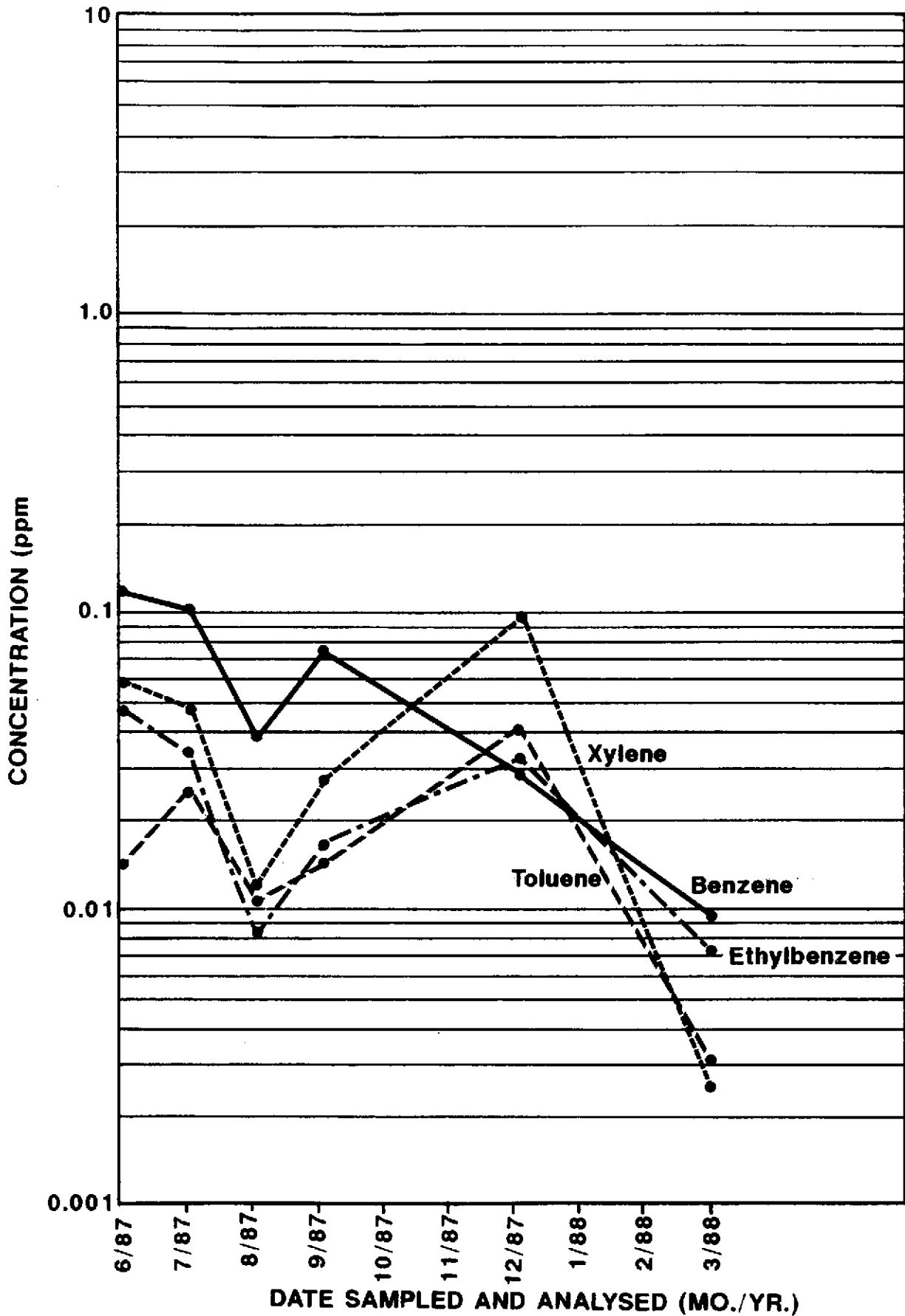


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PROJECT NO. 87044-4

CUMULATIVE BETX
CONCENTRATION GRAPH
Well MW-1
Econo Gasoline Station
San Lorenzo, California

PLATE
P - 4

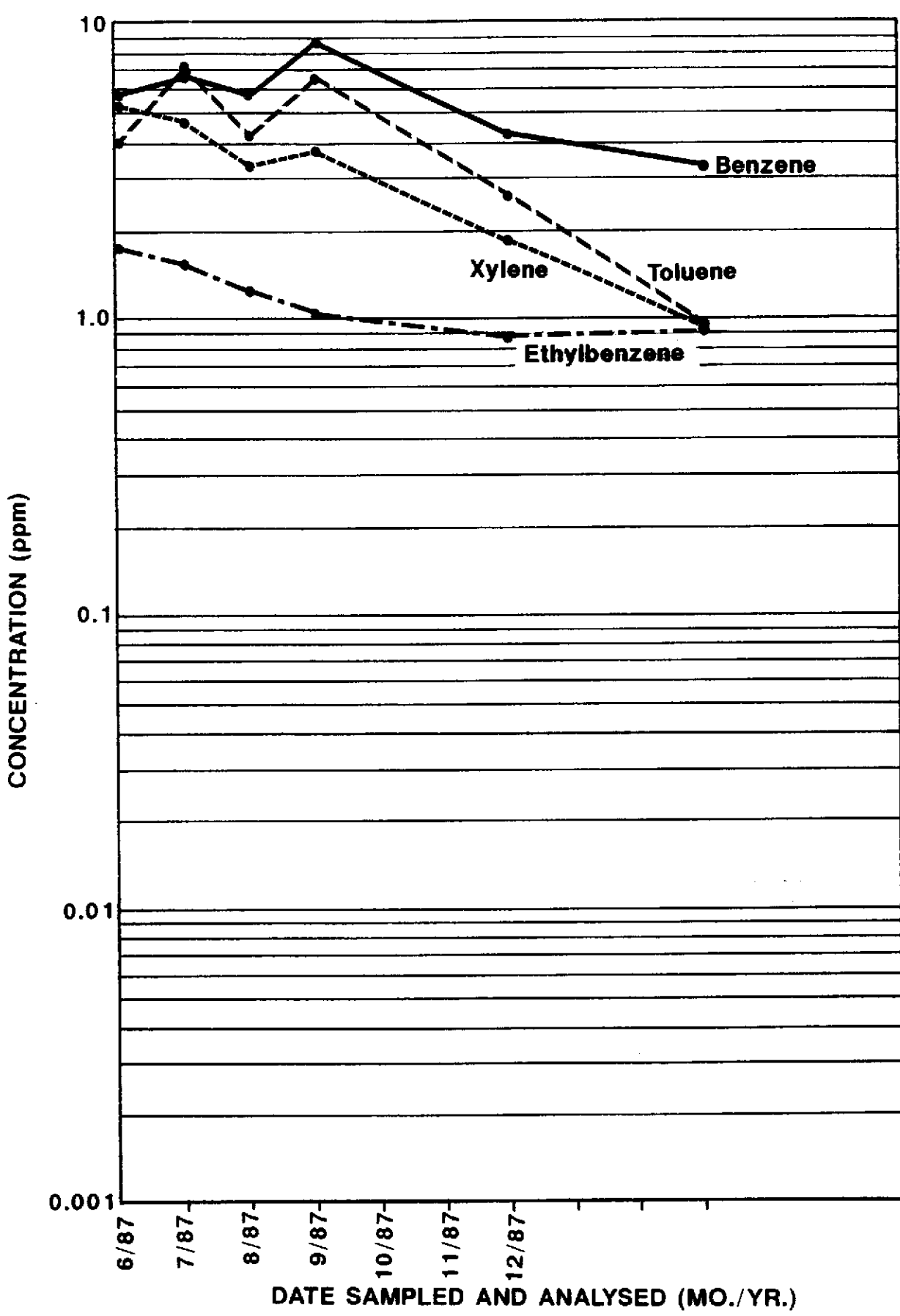


Applied GeoSystems
4075 Mission Blvd., Suite B, Hayward, CA 94539-4415, 651-1906

**CUMULATIVE BETX
CONCENTRATION GRAPH**
Well MW-2
Econo Gasoline Station
San Lorenzo, California

PLATE
P - 5

PROJECT NO. 87044-4

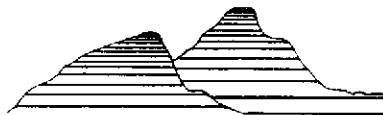


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**CUMULATIVE BETX
 CONCENTRATION GRAPH
 Well MW-3
 Econo Gasoline Station
 San Lorenzo, California**

**PLATE
 P - 6**

PROJECT NO. 87044-4



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ANALYSIS REPORT

Report Prepared for: Applied GeoSystems
 43255 Mission Blvd.
 Fremont, CA 94539
 Attention: John T. Lambert

Date Received: 3-10-88
 Laboratory Number: 03027W01
 Project: 87044-4
 Sample: W-19-MW1
 Matrix: Water

0212lab.frm

Parameter	Result		Detection Limit		Date Analyzed	Notes
	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)		
TVH as Gasoline						NR
TPH as Gasoline		7.3		0.2	03-16-88	
TEH as Diesel						NR
Benzene		0.07		0.01	03-16-88	
Toluene		0.04		0.01	03-16-88	
Ethylbenzene		0.34		0.01	03-16-88	
Total Xylenes		0.94		0.01	03-16-88	

mg/kg = milligrams per kilogram = parts per million (ppm).

mg/L = milligrams per liter = ppm.

ND = Not detected. Compound(s) may be present at concentrations below the detection limit.

NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

3-29-88

Date Reported



Applied GeoSystems

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ANALYSIS REPORT

Report Prepared for: Applied GeoSystems
 43255 Mission Blvd.
 Fremont, CA 94539
 Attention: John T. Lambert

Date Received: 3-10-88
 Laboratory Number: 03027W02
 Project: 87044-4
 Sample: W-18-MW2
 Matrix: Water

0212lab.frm

Parameter	Result		Detection Limit		Date Analyzed	Notes
	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)		
TVH as Gasoline						NR
TPH as Gasoline		1.20		0.02	03-16-88	
TEH as Diesel						NR
Benzene		0.0092		0.0005	03-16-88	
Toluene		0.0031		0.0005	03-16-88	
Ethylbenzene		0.0073		0.0005	03-16-88	
Total Xylenes		0.0026		0.0005	03-16-88	

mg/kg = milligrams per kilogram = parts per million (ppm).

mg/L = milligrams per liter = ppm.

ND = Not detected. Compound(s) may be present at concentrations below the detection limit.

NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

3-29-88

Date Reported



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ANALYSIS REPORT

Report Prepared for: Applied GeoSystems
 43255 Mission Blvd.
 Fremont, CA 94539
 Attention: John T. Lambert

Date Received: 3-10-88
 Laboratory Number: 03027W03
 Project: 87044-4
 Sample: W-18-MW3
 Matrix: Water

0212lab.frm

Parameter	Result		Detection Limit		Date Analyzed	Notes
	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)		
TVH as Gasoline						NR
TPH as Gasoline		13.4		0.2	03-16-88	
TEH as Diesel						NR
Benzene		3.21		0.05	03-16-88	
Toluene		0.95		0.05	03-16-88	
Ethylbenzene		0.94		0.05	03-16-88	
Total Xylenes		0.95		0.05	03-16-88	

mg/kg = milligrams per kilogram = parts per million (ppm).

mg/L = milligrams per liter = ppm.

ND = Not detected. Compound(s) may be present at concentrations below the detection limit.

NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

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Tia Tran, Laboratory Supervisor

3-29-88

Date Reported

APPLIED GEOSYSTEMS IS CERTIFIED BY THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY