ACTON •
MICKELSON •
van DAM, INC.

Consulting Scientists, Engineers, and Geologists

February 7, 1995

Mr. Terrence A. Fox
Ultramar Inc.
525 West Third Street
Hanford, California 93230

19024.04/7

Subject: Ground Water Monitoring Report, Fourth Quarter 1994
Beacon Station #604--1619 West First Street, Livermore, California

Dear Mr. Fox:

Acton • Mickelson • van Dam, Inc. (AMV), has been authorized by Ultramar Inc. (Ultramar), to continue a hydrogeologic investigation of ground water conditions at Beacon Station #604, located at 1619 West First Street, Livermore, California (Figures 1 and 2). The investigation is intended to assess the distribution of petroleum hydrocarbon constituents in ground water beneath the site. This letter report summarizes the results of monitoring activities performed on December 14, 1994, including water level measurements, subjective analysis for the presence of liquid-phase hydrocarbon (LPH), and ground water sampling. The procedures used to purge and sample monitoring wells and measure water levels are described in Enclosure A.

Ground Water Level Measurements, Hydraulic Gradient, and Flow Direction

Depth to ground water was measured in monitoring wells MW-1 through MW-7 on December 14, 1994. Depth to ground water ranged from 37.62 (MW-3) to 40.99 (MW-6) feet below the top of respective well casings. Ground water level measurements from this sampling event, as well as previous ground water depth measurements, are presented in Table 1. Ground water elevations declined an average of approximately 3.76 feet between August 12 and December 14, 1994. The inferred direction of ground water flow was generally toward the northwest (Figure 3) which is consistent with previous monitoring events. Ground water gradient at the site on December 14, 1994, was calculated to be approximately 0.02 foot per foot. Measurable layers of (LPH) have not been detected in any monitoring well during this or previous quarters at the site.

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Ground Water Sample Analytical Results

Ground water samples were collected from monitoring wells MW-1 through MW-7 on December 14, 1994, using the procedures outlined in Enclosure A. Field observations and ground water sampling documentation are presented in Enclosure B. Ground water samples were submitted to a state-certified laboratory for analysis of benzene, toluene, ethylbenzene, xylenes (BTEX), and total petroleum hydrocarbons as gasoline (TPHg). Ground water sample analytical results from this sampling event and previous events are compiled in Table 2. Copies of the certified laboratory analytical reports from this sampling event are presented in Enclosure C.

Discussion

Benzene concentrations in ground water ranged from 18,000 micrograms per liter (μg/l) in the sample collected from monitoring well MW-6 to less than 0.50 μg/l in samples collected from monitoring wells MW-3 and MW-4. Compared to previous monitoring events, benzene concentrations in water samples collected on December 14, 1994, decreased in monitoring wells MW-3 and MW-7, and increased in monitoring wells MW-1, MW-2, MW-5, and MW-6. Concentrations of BTEX and TPHg remained below the method detection limits in the ground water sample collected from monitoring well MW-4. Benzene concentrations reported from the December 14, 1994, ground water sample analytical results are illustrated on Figure 4.

Remarks

The opinions and conclusions contained in this letter report represent our professional opinions. These opinions are based on currently available information and were developed in accordance with currently accepted hydrogeologic and engineering practices at this time. Other than this, no warranty is implied or intended.

AMV recommends that a copy of this quarterly monitoring report be forwarded to:

Ms. Eva Chu
Department of Environmental Health
Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, California 94612

Mr. Cecil Fox
California Regional Water Quality Control Board,
San Francisco Bay Region
2101 Webster Street, Room 500
Oakland, California 94612

If you have any questions, please call the undersigned at (916) 939-7550.

Sincerely,

ACTON • MICKELSON • van DAM, INC.

Todd J. Brown

Todd J. Brown
Staff Geologist

Dale A. van Dam

Dale A. van Dam, R.G.
California Registered Geologist #4632

TJB:DAvD:mjd
Enclosures

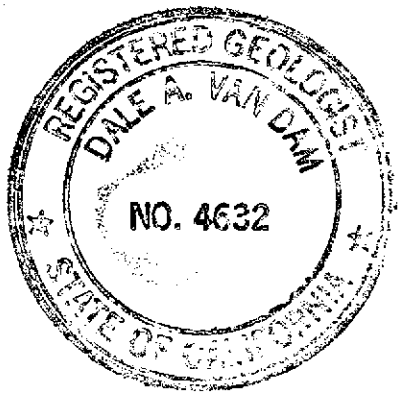


TABLE 1

HISTORIAL GROUND WATER ELEVATION DATA
Beacon Station #604
1619 West First Street, Livermore, California

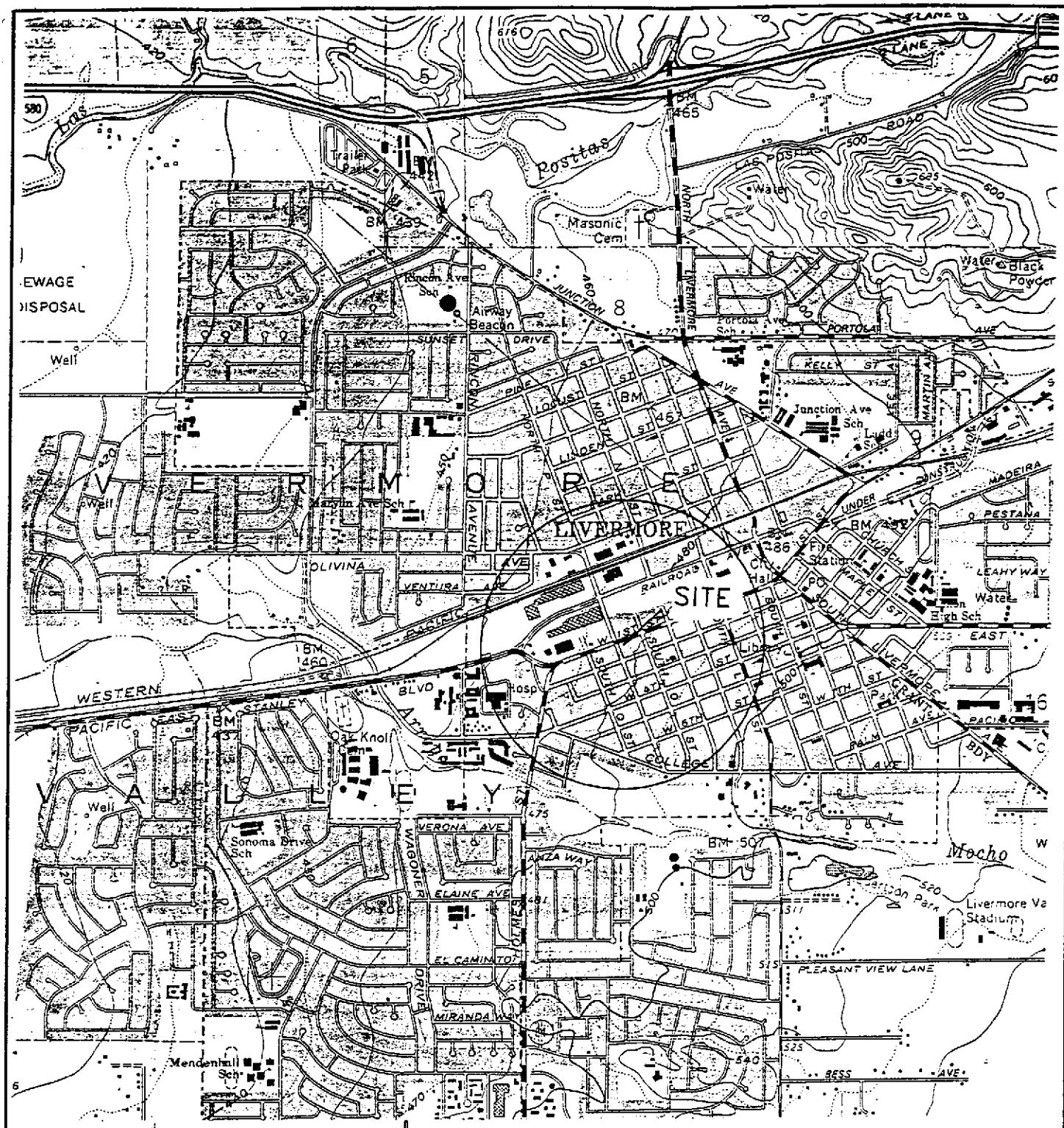
Monitoring Well	Date	Top of Riser (feet)	Depth to Top/Bottom of Screened Interval (feet)	Depth of Water (feet)	Ground Water Elevation (feet)	Physical Observation
MW-1	06-01-93	100.00	34/54	37.50	62.50	No Product
	06-22-93			38.46	61.54	No Product
	10-06-93			42.22	57.78	No Product
	01-13-94			34.52	65.48	No Product
	03-30-94			31.93	68.07	No Product
	04-25-94			33.49	66.51	No Product
	08-12-94			41.03	58.97	No Product
	12-14-94			38.63	61.37	No Product
MW-2	06-01-93	98.68	34/54	38.02	60.66	No Product
	06-22-93			39.07	59.61	No Product
	10-06-93			43.72	54.96	No Product
	01-13-94			35.85	62.83	No Product
	03-30-94			32.82	65.86	No Product
	04-25-94			34.76	63.92	No Product
	08-12-94			44.33	54.35	No Product
	12-14-94			40.00	58.68	No Product
MW-3	06-01-93	97.08	33/53	36.18	61.90	No Product
	06-22-93			37.11	61.97	No Product
	10-06-93			41.15	55.93	No Product
	01-13-94			33.95	63.13	No Product
	03-30-94			30.97	66.11	No Product
	04-25-94			32.46	64.62	No Product
	08-12-94			41.72	55.36	No Product
	12-14-94			37.62	59.46	No Product
MW-4	03-30-94	99.35	27/47	31.56	67.79	No Product
	04-25-94			32.73	66.62	No Product
	08-12-94			41.61	57.74	No Product
	12-14-94			38.11	61.24	No Product
MW-5	03-30-94	98.37	27/47	32.07	66.30	No Product
	04-25-94			33.65	64.72	No Product
	08-12-94			42.73	55.64	No Product
	12-14-94			38.89	59.48	No Product
MW-6	03-30-94	97.62	28/48	33.38	64.24	No Product
	04-25-94			35.49	62.13	No Product
	08-12-94			45.14	52.48	No Product
	12-14-94			40.99	56.63	No Product
MW-7	03-30-94	98.03	27/47	31.98	66.05	No Product
	04-25-94			33.56	64.47	No Product
	08-12-94			43.35	54.68	No Product
	12-14-94			39.34	58.69	No Product

Note: Monitoring well casing elevations were surveyed relative to an arbitrary bench mark at the top of the casing of monitoring well MW-1 with an assumed elevation of 100.00 feet.

TABLE 2

GROUND WATER SAMPLE ANALYTICAL RESULTS
Beacon Station #604
1619 West First Street, Livermore, CA
Concentrations in micrograms per liter (μg/l)

Monitoring Well	Date Sampled	Benzene	Toluene	Ethylbenzene	Total Xylenes	TPHg*
MW-1	06-01-93	2,200	400	<50	4,900	27,000
	06-22-93	8,000	10,000	260	10,000	87,000
	10-06-93	4,700	6,500	740	5,300	40,000
	01-13-94	1,300	950	110	850	9,400
	04-25-94	1,500	1,800	290	1,700	11,000
	08-12-94	550	330	260	1,400	11,000
	12-14-94	1,000	1,200	320	1,500	11,000
MW-2	06-01-93	20,000	21,000	3,300	18,000	170,000
	06-22-93	19,000	22,000	3,500	18,000	160,000
	10-06-93	17,000	17,000	3,000	15,000	110,000
	01-13-94	20,000	19,000	2,300	14,000	93,000
	04-25-94	9,600	7,300	840	7,800	41,000
	08-12-94	11,000	11,000	2,300	11,000	59,000
	12-14-94	13,000	13,000	2,200	12,000	63,000
MW-3	06-01-93	4.6	<0.50	<0.50	1.9	270
	06-22-93	8.2	<0.50	<0.50	0.72	160
	10-06-93	57	110	24	120	740
	01-13-94	2.6	0.67	0.78	4.2	83
	04-25-94	0.75	3.2	0.50	3.6	60
	08-12-94	7.3	14	2.6	13	310
	12-14-94	<0.50	<0.50	<0.50	<0.50	75
MW-4	03-30-94	4.2	15	2.5	26	120
	04-25-94	<0.50	1.8	<0.50	2.1	65
	08-12-94	<0.50	<0.50	<0.50	<0.50	<50
	12-14-94	<0.50	<0.50	<0.50	<0.50	<50
MW-5	03-30-94	1,300	20	<13	160	7,500
	04-25-94	1,100	41	130	740	6,500
	08-12-94	420	2.9	41	98	4,000
	12-14-94	660	<2.5	33	13	4,800
MW-6	03-30-94	21,000	8,600	1,700	12,000	63,000
	04-25-94	22,000	12,000	2,300	16,000	77,000
	08-12-94	12,000	8,100	2,200	16,000	65,000
	12-14-94	18,000	9,500	2,200	14,000	65,000
MW-7	03-30-94	7,200	2,400	1,600	11,000	43,000
	04-25-94	3,900	1,000	940	6,900	30,000
	08-12-94	3,800	1,400	1,300	7,500	30,000
	12-14-94	3,600	1,200	900	6,400	31,000



General Notes

Base Map from U.S.G.S.
Livermore, California
7.5 Minute Topographic
Photorevised 1980

QUADRANGLE LOCATION

0 2,000

Approximate Scale
(in feet)

FIGURE 1

SITE LOCATION MAP

BEACON STATION #604
1619 WEST FIRST STREET
LIVERMORE, CALIFORNIA

Project No.	Drawn
19024	LMC
File No.	Prepared
FIG1	SAL
Revision	Reviewed

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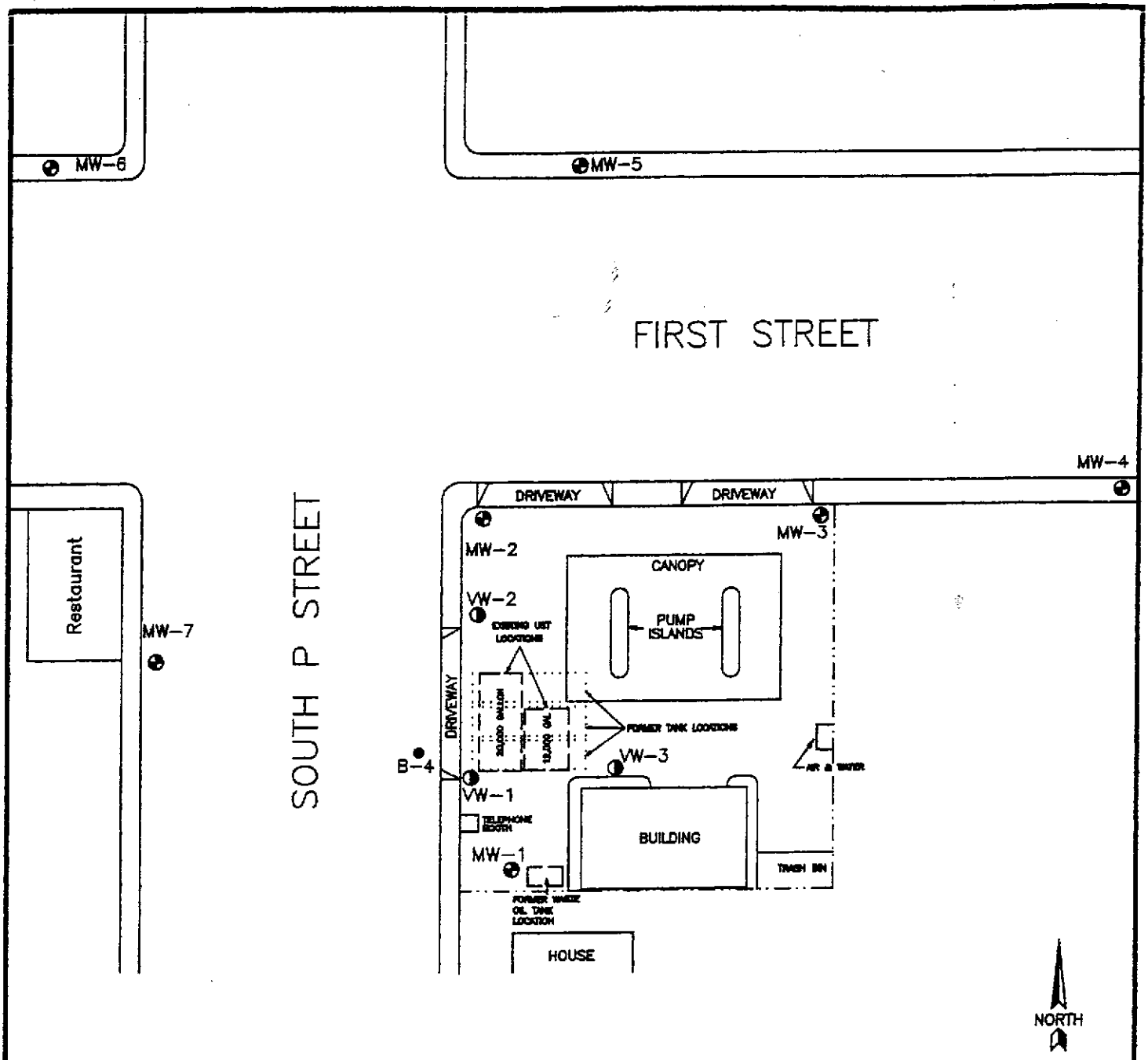

LEGEND

- VW-3 — VADOSE WELL LOCATION AND NUMBER
- MW-3 — MONITORING WELL LOCATION AND NUMBER
- B-4 — SOIL BORING LOCATION AND NUMBER
- PROPERTY BOUNDARY

FIGURE 2

SITE MAP

BEACON STATION #604
1619 WEST FIRST STREET
LIVERMORE, CALIFORNIA

Project No.	Drawn
19024.04	CCB
File No.	Prepared
IR04SM	TAD
Revision	Reviewed

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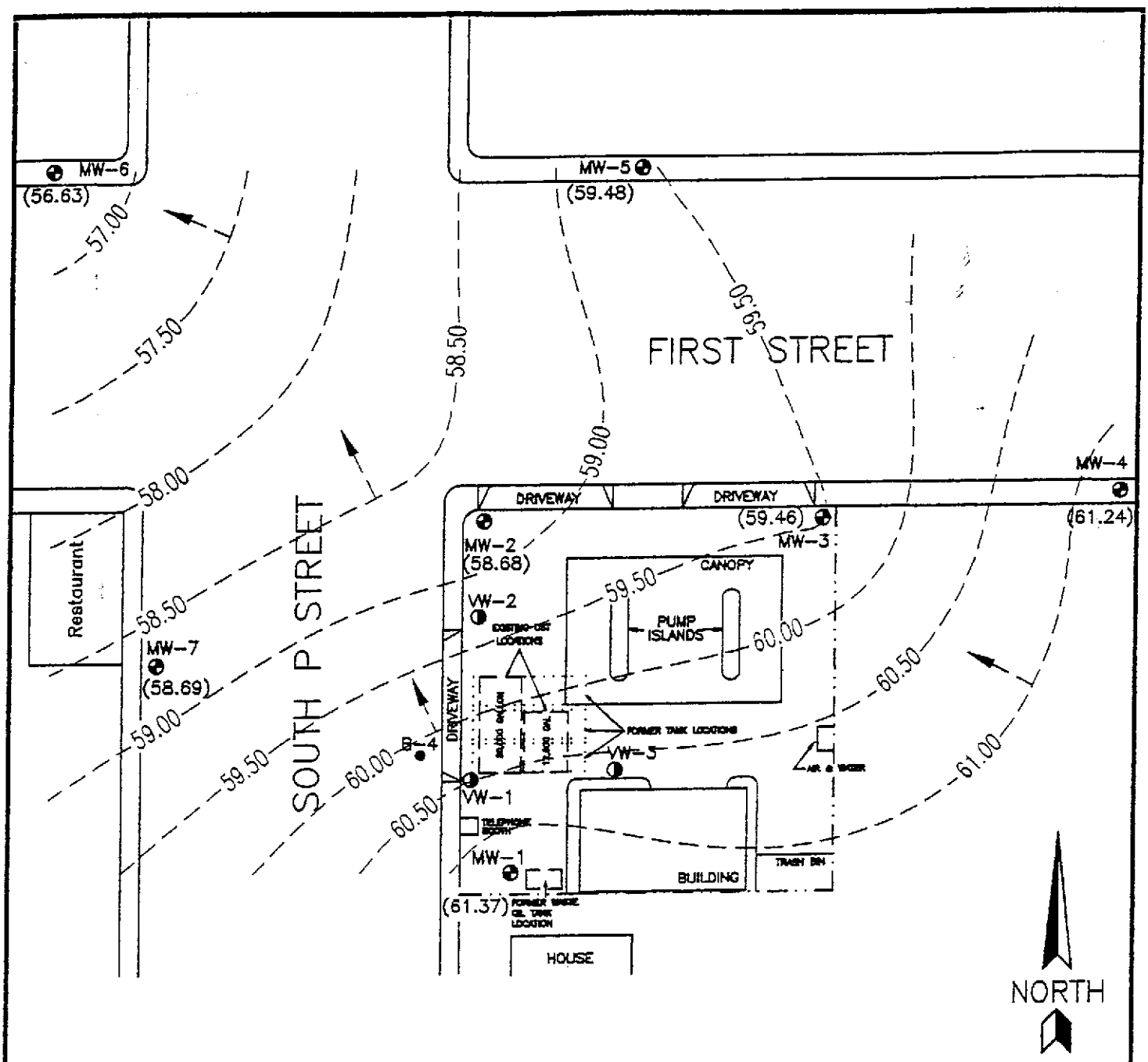

LEGEND

- VW-3 — VADOSE WELL LOCATION AND NUMBER
- MW-3 — MONITORING WELL LOCATION AND NUMBER
- B-4 — SOIL BORING LOCATION AND NUMBER
- PROPERTY BOUNDARY
- (66.05) GROUND WATER ELEVATION (FEET)
- 68.00 GROUND WATER ELEVATION CONTOUR WITH INFERRED DIRECTION OF FLOW

0 40 80

Approximate Scale (in feet)

FIGURE 3

GROUND WATER TABLE CONTOUR MAP (12/14/94)

BEACON STATION #604
1619 WEST FIRST STREET
LIVERMORE, CALIFORNIA

Project No.	Drawn
19024.04	LMC
File No.	Prepared
QMC4WTC3	TJB
Revision	Reviewed

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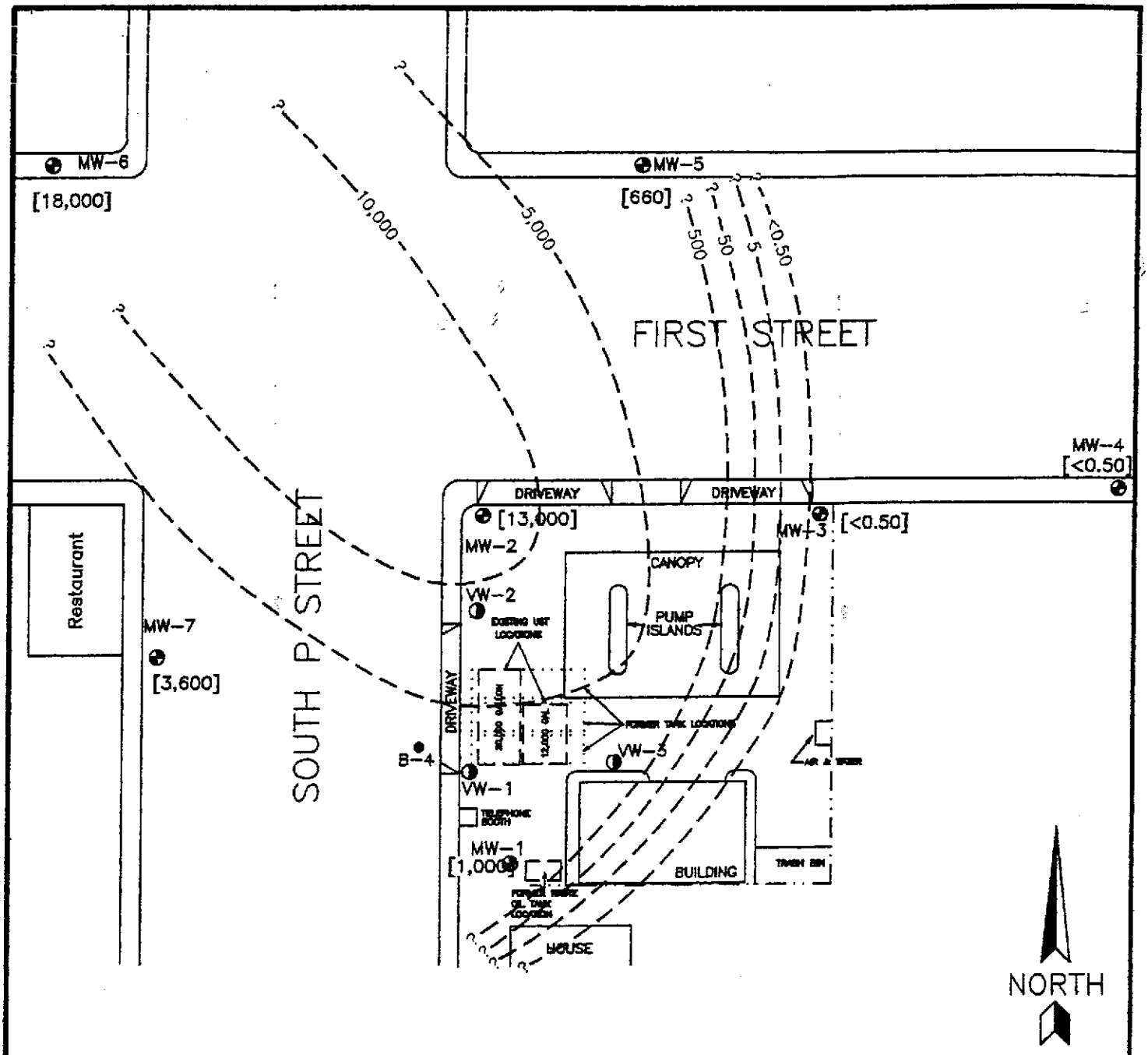

LEGEND

- VW-3 — VADOSE WELL LOCATION AND NUMBER
- MW-3 — MONITORING WELL LOCATION AND NUMBER
- B-4 — SOIL BORING LOCATION AND NUMBER
- — · · — PROPERTY BOUNDARY
- [4.2] — BENZENE CONCENTRATION IN MICROGRAMS PER/LITER
- 5 — BENZENE ISOCONCENTRATION CONTOUR IN MICROGRAMS PER/LITER

FIGURE 4
INFERRED DISTRIBUTION OF BENZENE IN GROUND WATER (12/14/94)

BEACON STATION #604
1619 WEST FIRST STREET
LIVERMORE, CALIFORNIA

Project No. 19024.04	Drawn CCB
File No. QMC4ICD4	Prepared TJB
Revision	Reviewed

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ENCLOSURE A

SAMPLING TECHNIQUES

ENCLOSURE A

SAMPLING TECHNIQUES

Proper sampling techniques were followed to assure that samples represented actual field conditions and that samples were labeled, preserved, and transported properly to retain sample integrity. This exhibit describes procedures followed by Acton • Mickelson • van Dam, Inc. (AMV), during collection of samples of subsurface soil and ground water. Sampling guidance documents from the American Society of Testing and Materials (ASTM), U.S. Environmental Protection Agency (EPA), and California Environmental Protection Agency (Cal-EPA) were followed for all sampling procedures. Actual sampling procedures employed were based on field conditions and may differ from those described here.

1.0 WATER LEVEL AND LIQUID-PHASE HYDROCARBON (LPH) THICKNESS MEASUREMENTS AND GROUND WATER SAMPLING

1.1 Water Level and LPH Thickness Measurements

The static water level and/or LPH thickness in each well was measured prior to purging or sampling.

The depth to water/product was measured using an electronic interface probe. The wire of the interface probe is marked at 0.01 foot intervals. One tone is emitted from the interface probe if LPH is encountered; another tone for water. The wire of the interface probe was lowered slowly until LPH or water was encountered. At this point, the mark on the interface wire opposite the permanent reference point on the top of the well casing was read to the nearest 0.01 foot and recorded. If the first encountered substance was LPH, the probe was lowered until the tone corresponding to water was emitted. This depth was also recorded. The difference between the two depths corresponds to the LPH thickness. The interface probe was rinsed in deionized water between measurements in different wells.

A permanent reference point was marked on the well casings. The permanent reference point on the well casings was surveyed to a common reference point. All well casing riser elevations are known to within 0.01 foot.

Prior to well development, a disposable bailer was used to collect a sample of LPH, if present in a well, for subjective analysis. The sample was collected by gently lowering the bailer approximately one-half the bailer length past the air/LPH interface. The appearance (color, opacity, "freshness") was described and noted on field notes.

If LPH was encountered in the well, it was removed by bailing or pumping and the approximate volume of LPH removed was recorded. LPH thickness was then remeasured. If LPH was still present, the thickness was recorded and the well was not sampled. If LPH was not present, the well was developed, purged, and sampled as described below.

1.2 Well Evacuation and Development

After the static water level in a well was determined and prior to collection of a ground water sample, stagnant water was removed from the well casing and the surrounding gravel pack by bailing, pumping, or with a vacuum truck. At least three casing volumes of water were removed from each well from which a sample was collected. The volume of water in the casing was determined from the known elevation of the water surface, the well bottom elevation (as measured when the well is installed), and the well diameter.

If the well was bailed or pumped during purging, samples were collected and field analyzed for pH, temperature, and specific conductance. The well was considered stabilized when repeated readings of the following parameters were within the ranges indicated as follows:

- Specific conductance ±10 percent of the reading range
- pH ±0.1 pH unit
- Temperature ±0.5° C.

After stabilization, and after at least three well volumes were evacuated, a sample was collected for analysis. The field container used for well stabilization measurements, and the pH, temperature, and conductivity probes were rinsed between wells with deionized water.

All purge water was containerized and properly handled and documented for disposal. If the containers were stored on site, a label specifying the date of purging, source, and the known or suspected nature of the contents was affixed to each container.

1.3 Sample Collection, Preservation, and Handling

After purging, a new polyethylene disposable bailer was used to collect samples for analysis. The bailer was attached to a new disposable rope and lowered slowly into the water to avoid agitation of the collected sample. Containers for volatile organics analyses were filled completely so no airspace remained in the vial after sealing.

All sample containers were prewashed and prepared at the analyzing laboratory in accordance with quality assurance/quality control protocols of the laboratory. Only sample containers appropriate for the intended analyses were used.

After sample collection, the samples were placed into coolers with ice packs. Internal temperature of the cooler was maintained at approximately 4 degrees Celsius. Samples were kept in coolers during transport to the analyzing laboratory.

2.0 DECONTAMINATION AND DISPOSAL PROCEDURES

2.1 Equipment Decontamination

Sampling equipment was decontaminated as follows:

1. Prior to individual sample collection, any sampling device was cleaned in a TSP solution and rinsed twice in clean water. Any visible soil residue was removed.

2. Water sampling containers were cleaned and prepared by the respective analytical laboratories.

3. Field monitoring equipment (pH, conductivity, or temperature probes) was rinsed with clean water prior to use and between samples.

3.0 FIELD MEASUREMENTS

Field data were collected during various sampling and monitoring activities; this section describes routine procedures followed by personnel performing field measurements. The methods presented below are intended to ensure that field measurements are consistent and reproducible when performed by various individuals.

3.1 Conductivity, Temperature, and pH

Specific conductance, water temperature, and pH measurements were made when a water sample was collected. Regardless of the sample collection method, a representative water sample was placed in a transfer bottle used solely for field parameter determinations. A conventional pH meter with a combination electrode or equivalent was used for field-specific conductance measurements. Temperature measurements were performed using standard thermometers or equivalent temperature meters. Combination instruments capable of measuring two or all three of the parameters may have also been used.

All instruments were calibrated in accordance with manufacturer methods. The values for conductivity standards and pH buffers used in calibration were recorded daily in a field notebook. All probes were thoroughly cleaned and rinsed with fresh water prior to any measurements, in accordance with Section 3.1.

4.0 SAMPLE CUSTODY

This section describes standard operating procedures for sample custody and custody documentation. Sample custody procedures were followed through sample collection, transfer, analysis, and ultimate disposal. The purpose of these procedures is to assure that (1) the integrity of samples was maintained during their collection, transportation, and storage prior to analysis and (2) post-analysis sample material was properly disposed of. Sample custody is divided into field procedures and laboratory procedures, as described below.

4.1 Field Custody Procedures

Sample quantities, types, and locations were determined before the actual fieldwork commenced. As few people as possible handled samples. The field sampler was personally responsible for the care and custody of the collected samples until they were properly transferred.

4.1.1 Field Documentation

Each sample was labeled and sealed properly immediately after collection. Sample identification documents were carefully prepared so that identification and chain-of-custody records could be maintained and sample disposition could be controlled. Forms were filled out with waterproof ink. The following sample identification documents were utilized.

- Sample labels
- Field notebook
- Chain-of-custody forms

4.1.2 Sample Labels

Sample labels provide identification of samples. Preprinted sample labels were provided. Where necessary, the label was protected from water and solvents with clean label-protection tape. Each label contained the following information:

- Name of collector
- Date and time of collection
- Place of collection
- AMV project number
- Sample number
- Preservative (if any)

4.1.3 Field Notebook

Information pertinent to a field survey, measurements, and/or sampling were recorded in a bound notebook. Entries in the notebook may have included the following:

- Name and title of author, date and time of entry, and physical/environmental conditions during field activity.
- Location of sampling or measurement activity.
- Name(s) and title(s) of field crew.
- Type of sampled or measured media (e.g., soil, ground water, air, etc.)
- Sample collection or measurement method(s).
- Number and volume of sample(s) taken.
- Description of sampling point(s).
- Description of measuring reference points.
- Date and time of collection or measurement.
- Sample identification number(s).
- Sample preservative (if any).
- Sample distribution (e.g., laboratory).
- Field observations/comments.
- Field measurements data (pH, etc.).

4.1.4 Chain-of-Custody Record

A chain-of-custody record was filled out for and accompanied every sample and every shipment of samples to the analytical laboratories in order to establish the documentation necessary to trace sample possession from the time of collection. The record contained the following information:

- Sample or station number or sample I.D.
- Signature of collector, sampler, or recorder.
- Date and time of collection.
- Place of collection.
- Sample type.
- Signatures of persons involved in the chain of possession.
- Inclusive dates of possession.

The laboratory portion of the form was completed by laboratory personnel and contains the following information:

- Name of person receiving the sample.
- Laboratory sample number.
- Date and time of sample receipt.
- Analyses requested.
- Sample condition and temperature.

4.1.5 Sample Transfer and Shipment

Samples were always accompanied by a chain-of-custody record. When transferring samples, the individuals relinquishing and receiving the samples signed, dated, and noted the time on the chain-of-custody record. Samples were packaged properly for shipment and dispatched to the

appropriate laboratory for analysis. The chain-of-custody record accompanied each shipment. The method of shipment, courier name(s), and other pertinent information was entered in the chain-of-custody record.

4.2 Laboratory Custody Procedures

A designated sample custodian accepted custody of the shipped samples and verified that the information on the sample label matched that on the chain-of-custody record. Information regarding method of delivery and sample conditions was also checked on the chain-of-custody record. The custodian then entered the appropriate data into the laboratory sample tracking system. The laboratory custodian may have used the sample number on the sample label or may have assigned a unique laboratory number to each sample. The custodian then transferred the sample(s) to the proper analyst(s) or stored the sample(s) in the appropriate secure area.

Laboratory personnel are responsible for the care and custody of samples from the time they are received until the sample is exhausted. Once at the laboratory, the samples are handled in accordance with U.S. Environmental Protection Agency SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Third Edition, for the intended analyses. All data sheets, chromatographs, and laboratory records were filed as part of the permanent documentation.

4.3 Corrections to Documentation

Original data recorded in field notebooks, chain-of-custody records, and other forms were written in ink. These documents were not altered, destroyed, or discarded, even if they were illegible or contained inaccuracies that required a replacement document.

If an error was made or found on a document, the individual making the corrections did so by crossing a single line through the error, entering the correct information, and initialing and dating the change. The erroneous information was obliterated. Any subsequent error(s) discovered on a document were corrected. All corrections were initialed and dated.

4.4 Sample Storage and Disposal

Samples and extracts were retained by the analytical laboratory for 60 days after a written report was issued by the laboratory. Unless notified by the program manager, excess or unused samples were disposed of by the laboratory in an appropriate manner consistent with applicable government regulations.

ENCLOSURE B

FIELD NOTES

ACTON • MICKELSON • van DAM, INC.

GROUND WATER LEVEL DATA

Project Name Beacon #604, 1619 West First Street, Livermore Project Number 19024.04

Date 12-14-94 Field Crew TJB Measuring Device and Number Interface Probe

Well No.	Time	Depth to Product (feet)	Depth to Ground Water (feet)	Product Thickness (feet)	Reference Elevation (feet)	Ground Water Elevation (feet)	Physical Observations/Comments
MW-1	10:18		38.63		100.00	61.37	
MW-2	10:05		40.00		98.68	58.68	
MW-3	9:55		37.62		97.08	59.46	
MW-4	9:30		38.11		99.35	61.24	
MW-5	9:36		38.89		98.37	59.48	
MW-6	9:40		40.99		97.62	56.63	
MW-7	9:47		39.34		98.03	58.69	

Signature Todd J. Brown

ACTON • MICKELSON • van DAM, INC.

SAMPLING/DEVELOPMENT INFORMATION

Sampling/Development Point MW-1
Sample I.D.
Describe Sampling/Development Point Monitoring Well

Project Name Recon #604
Project No. 1902 4.04
Work Order #
Date 12-14-94
Field Crew TJB

Well Depth 53.5 feet below MP
Depth to Water (below MP) 38.63 feet
Discharge Rate gpm
Number of borehole volumes evacuated before sampling: >4

Casing Diameter 4" inches
Time 10:18 (AM)/PM

Sampling/Development Method:
Tap ___ X Bailer ___ Centrifugal Pump
Submersible ___ Other

Pump intake or bailer set at ___ feet below MP.

Sample Appearance: Clear
Note any Sampling Problems: None
Note any Equipment Washing: Recon. bailer Used disposable bailer
Samples Collected/Time: 3 40ml. VOA's @ 6 P.M. for TPH-g/BTEX

EVACUATION/STABILIZATION TEST DATA

Time	pH (units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C) °F	Water Level (nearest 0.01 foot)	Cumulative Volume of Water Removed from Well (gallons)	Pumping Rate (gpm)
4:25	7.78	9.40	59.4 °F		10 gal.	
4:33	7.73	9.61	61.3 °F		20 gal.	
4:50	7.67	9.33	59.8 °F		30 gal.	
5:15	7.71	9.45	59.4 °F		40 gal.	

Bailing Start Time 4:20 P.M. WL 38.63
Bailing Stop Time 5:15 P.M. WL 46.48

Comments:

Signature Todd J. Brown Date 12-14-94

ACTON • MICKELSON • van DAM, INC.

SAMPLING/DEVELOPMENT INFORMATION

Sampling/Development Point MW-2
Sample I.D.
Describe Sampling/Development Point Monitoring Well

Project Name Becon #604
Project No. 19024.04
Work Order #
Date 12-14-94
Field Crew TJB

Well Depth 54 feet below MP
Depth to Water (below MP) 40.00 feet
Discharge Rate gpm
Number of borehole volumes evacuated before sampling: 74

Casing Diameter 4" inches
Time 10:05 (AM)/PM

Sampling/Development Method:
_____ Tap
_____ Submersible
_X_ Bailer
_____ Other
_____ Centrifugal Pump

Pump intake or bailer set at _____ feet below MP.

Sample Appearance: Clear
Note any Sampling Problems: None
Note any Equipment Washing: Decon. bailer Used disposable bailer
Samples Collected/Time: 3 40ml VOA's @ 5:25 for TPH-g/BTEX

EVACUATION/STABILIZATION TEST DATA

Time	pH (units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C) °F	Water Level (nearest 0.01 foot)	Cumulative Volume of Water Removed from Well (gallons)	Pumping Rate (gpm)
3:30	7.98	10,06	64.2 °F		10	
3:42	7.85	9.04	62.9 °F		20	
3:57	7.81	9.83	59.7 °F		30	
4:15	7.81	10,70	61.4 °F		40	

Bailing Start Time 3:20 P.M. WL 40.00
Bailing Stop Time 4:15 P.M. WL 41.79

Comments:

Signature Todd J. Brown
Date 12-14-94

ACTON • MICKELSON • van DAM, INC.

SAMPLING/DEVELOPMENT INFORMATION

Sampling/Development Point MW-3
Sample I.D.
Describe Sampling/Development Point Monitoring Well

Project Name Beacon #604
Project No. 19024.04
Work Order #
Date 12-14-94
Field Crew TSB

Well Depth 52 feet below MP
Depth to Water (below MP) 37.62 feet
Discharge Rate gpm
Number of borehole volumes evacuated before sampling: > 4

Casing Diameter 4" inches
Time 9:55 AM/PM

Sampling/Development Method:
_____ Tap
_____ Submersible
X Bailer
_____ Other
_____ Centrifugal Pump

Pump intake or bailer set at _____ feet below MP.

Sample Appearance: clear
Note any Sampling Problems: None
Note any Equipment Washing: Decon. bailer Used disposable bailer
Samples Collected/Time: 3 40 ml VOA's 2:43 P.M. for TPH$_g$/BTEX

EVACUATION/STABILIZATION TEST DATA

Time	pH (units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C) °F	Water Level (nearest 0.01 foot)	Cumulative Volume of Water Removed from Well (gallons)	Pumping Rate (gpm)
12:45	7.79	10.13	65.6 °F		10	
1:03	7.82	9.95	62.9 °F		20	
1:20	7.80	9.94	61.9 °F		30	
1:30	7.78	9.20	61.8 °F		40	

Bailing Start Time 12:35 P.M. WL 37.62
Bailing Stop Time 1:30 P.M. WL 40.56

Comments:

Signature Todd J. Brown
Date 12-14-94

ACTON • MICKELSON • van DAM, INC.

SAMPLING/DEVELOPMENT INFORMATION

Sampling/Development Point: MW-4
Sample I.D.:
Describe Sampling/Development Point: Monitoring Well

Project Name: Beacon #604
Project No.: 19024.04
Work Order #:
Date: 12-14-94
Field Crew: TJB

Well Depth: 47 feet below MP
Depth to Water (below MP): 38.11 feet
Discharge Rate: gpm
Number of borehole volumes evacuated before sampling:

Casing Diameter: 2" inches
Time: 9:30 (AM)/PM

Sampling/Development Method:
_____ Tap
_____ Submersible
X Disposable Bailer
_____ Other
_____ Centrifugal Pump

Pump intake or bailer set at _____ feet below MP.

Sample Appearance: Clear
Note any Sampling Problems: None
Note any Equipment Washing: Used disposable bailer
Samples Collected/Time: 340ml VOA's @ 1:42 for TPHg / BTEX

EVACUATION/STABILIZATION TEST DATA

Time	pH (units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C) °F	Water Level (nearest 0.01 foot)	Cumulative Volume of Water Removed from Well (gallons)	Pumping Rate (gpm)
10:26	8.04	9.96	61.4 °F		2	
10:38	8.01	10.05	64.3 °F		4	
10:55	7.85	9.99	62.3 °F		6	

Bailing Start Time: 10:26 A.M. WL: 38.11
Bailing Stop Time: 10:55 A.M. WL: 43.37

Comments:

Signature: Todd J. Brown
Date: 12-14-94

ACTON • MICKELSON • van DAM, INC.

SAMPLING/DEVELOPMENT INFORMATION

Sampling/Development Point: MW-5
Sample I.D.:
Describe Sampling/Development Point: Monitoring Well

Project Name: Beacon #604
Project No.: 19024.04
Work Order #:
Date: 12-14-94
Field Crew: TJB

Well Depth: 47 feet below MP
Depth to Water (below MP): 38.89 feet
Discharge Rate: gpm
Number of borehole volumes evacuated before sampling: > 4

Casing Diameter: 2" inches
Time: 9:36 (AM)/PM

Sampling/Development Method:
_____ Tap
_____ Submersible
X Bailer (Disposable)
_____ Other
_____ Centrifugal Pump

Pump intake or bailer set at _____ feet below MP.

Sample Appearance: Clear
Note any Sampling Problems: None
Note any Equipment Washing: Used disposable bailer
Samples Collected/Time: 3 40 ml VOA's @ 1:58 for TPHg/BTEX

EVACUATION/STABILIZATION TEST DATA

Time	pH (units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C) °F	Water Level (nearest 0.01 foot)	Cumulative Volume of Water Removed from Well (gallons)	Pumping Rate (gpm)
11:00	8.27	11.71	61.6 °F		1.5	
11:10	7.73	12.07	62.7 °F		3	
11:20	7.98	11.58	63.9 °F		5.5	

Bailing Start Time 11:00 A.M. WL 38.89
Bailing Stop Time 11:20 A.M. WL 42.38

Comments:

Signature: Todd J. Brown
Date: 12-14-94

ACTON • MICKELSON • van DAM, INC.

SAMPLING/DEVELOPMENT INFORMATION

Sampling/Development Point MW-6
Sample I.D.
Describe Sampling/Development Point Monitoring Well

Project Name Beacon #604
Project No. 19024.04
Work Order #
Date 12-14-94
Field Crew TJB

Well Depth 48 feet below MP
Depth to Water (below MP) 40.99 feet
Discharge Rate gpm
Number of borehole volumes evacuated before sampling: > 4

Casing Diameter 2" inches
Time 9:40 AM/PM

Sampling/Development Method:
_____ Tap
_____ Submersible
X Bailer (Disposable)
_____ Other
_____ Centrifugal Pump

Pump intake or bailer set at _____ feet below MP.

Sample Appearance: clear
Note any Sampling Problems: None
Note any Equipment Washing: Used disposable bailer
Samples Collected/Time: 3 40 ml VOA's @ 2:20 for TPH$_g$/BTEX

EVACUATION/STABILIZATION TEST DATA

Time	pH (units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C) °F	Water Level (nearest 0.01 foot)	Cumulative Volume of Water Removed from Well (gallons)	Pumping Rate (gpm)
11:25	8.15	11.97	64.3 °F		2 gal.	
11:35	7.89	12.01	65.3 °F		4 gal.	
11:47	7.91	11.89	62.9 °F		6 gal.	

Bailing Start Time 11:25 A.M. WL 40.99
Bailing Stop Time 11:47 A.M. WL 42.17

Comments:

Signature Todd J. Brown
Date 12-14-94

ACTON • MICKELSON • van DAM, INC.

SAMPLING/DEVELOPMENT INFORMATION

Sampling/Development Point: MW-7
Sample I.D.:
Describe Sampling/Development Point: Monitoring Well

Project Name: Beacon #604
Project No.: 19024.04
Work Order #:
Date: 12-14-94
Field Crew: TJB

Well Depth: 47 feet below MP
Depth to Water (below MP): 39.34 feet
Discharge Rate: gpm
Number of borehole volumes evacuated before sampling: > 4

Casing Diameter: 2" inches
Time: 9:47 AM/PM

Sampling/Development Method:
_____ Tap
_____ Submersible
X Disposable Bailer
_____ Other
_____ Centrifugal Pump

Pump intake or bailer set at _____ feet below MP.

Sample Appearance: clear
Note any Sampling Problems: None
Note any Equipment Washing: Used disposable bailer
Samples Collected/Time: 3 40 ml VOA's @ 2:32 for TPHg/BTEX

EVACUATION/STABILIZATION TEST DATA

Time	pH (units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C) °F	Water Level (nearest 0.01 foot)	Cumulative Volume of Water Removed from Well (gallons)	Pumping Rate (gpm)
11:55	7.94	10.96	61.5 °F		1	
12:04	7.82	11.17	63.1 °F		2.5	
12:13	7.79	9.98	63.8 °F		3.5	
12:20	7.78	9.98	64.5 °F		5.0	

Bailing Start Time: 11:55 A.M. WL: 39.34
Bailing Stop Time: 12:20 P.M. WL: 41.52

Comments:

Signature: Todd J. Brown
Date: 12-14-94

DAILY FIELD REPORT

ACTON • MICKELSON • van DAM, INC.

Project No. 19024.04	Date: 12-14-94
Project Name: Beacon #604	Project Location: 1619 West First Street Livermore, CA
Weather: Cold, Rain	Field Crew: TJB

Today's Work Activities:

5:30 - 8 A.M. Drive to Livermore Beacon site.
8 A.M. - 8:30 A.M. Check out site, wait for Henry Sanchez of Sanchez & Sons
8:30 - 9:00 A.M. Talk w/ Henry Sanchez / call JEM / raining - unable to do concrete work, shoot for tomorrow to do job.
9 - 9:30 Set up to do O.M. / talk to store manager / open drums
9:30 - 10:26 Take round of Water level measurements
10:26 - 10:55 Bail MW-4 / Sample @ 1:42
11:00 - 11:20 Hand Bail MW-5 / decon w/ TSP, rinse, Alconox rinse for all wells Collect Sample for MW5 @ 1:58 P.M.
11:25 - 11:47 Hand Bail MW-6 / decon / Sample @ 2:20
11:55 - 12:20 Hand Bail MW-7 / decon / Sample @ 2:32
12:35 - 1:30 Hand Bail MW-3 / decon / Sample @ 2:43
1:30 - 1:40 Set up to sample 1:40 - 2:45 Sample Wells
2:45 - 3:15 Lunch break
3:20 - 4:15 Hand Bail MW-2 / decon. Sample @ 5:25
4:20 - 5:15 Hand Bail MW-1 / decon Sample @ 6
5:05 - 6 Decon all equipment, monitor well, clean van, ready to Sample, slow recharge, Sample MW-1, pack and drive to motel. Drill next day at Beacon 719

Signature Todd J. Brown Date 12-14-94

ENCLOSURE C

GROUND WATER SAMPLE ANALYTICAL RESULTS

WEST LABORATORY

December 21, 1994
Sample Log 10966

Dale van Dam
Acton, Mickelson & van Dam
4511 Golden Foothill Parkway, Suite 1
El Dorado Hills, CA 95762

Subject: Analytical Results for 8 Water Samples
Identified as: Project # 19024.04 (Beacon 604)
Received: 12/15/94

Dear Mr. van Dam:

Analysis of the sample(s) referenced above has been completed. This report is written to confirm results communicated on December 21, 1994 and describes procedures used to analyze the samples.

Sample(s) were received in 40-milliliter glass vials sealed with TFE lined septae and plastic screw-caps. Each sample was transported and received under documented chain of custody and stored at 4 degrees C until analysis was performed.

Sample(s) were analyzed using the following method(s):

"BTEX" (EPA Method 602/Purge-and-Trap)
"TPH as Gasoline" (Modified EPA Method 8015/Purge-and-Trap)

Please refer to the following table(s) for summarized analytical results and contact us at 916-753-9500 if you have questions regarding procedures or results. The chain-of-custody document is enclosed.

Approved by:

Mitra Sarkhosh
Senior Chemist

WEST LABORATORY

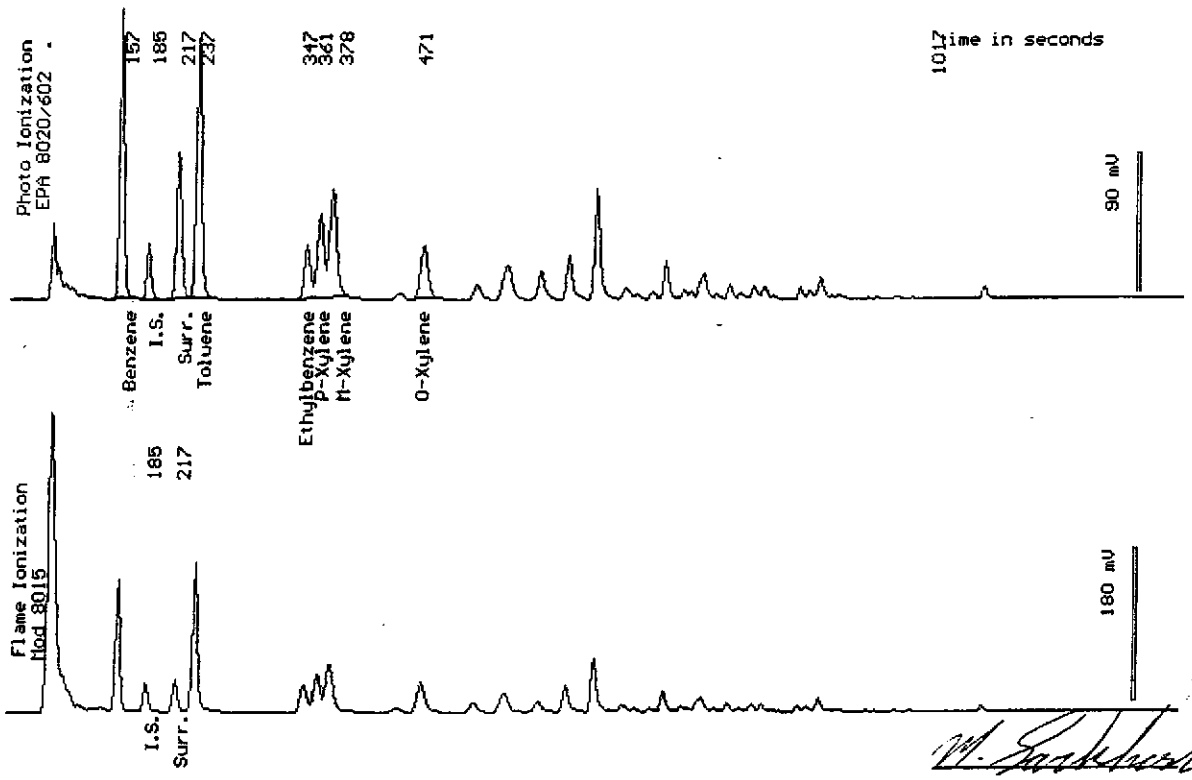
Sample Log 10966

10966-1

Sample: **MW1**

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:10 QC Batch : 4109N
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(5.0)	1000
Toluene	(5.0)	1200
Ethylbenzene	(5.0)	320
Total Xylenes	(5.0)	1500
TPH as Gasoline	(500)	11000
Surrogate Recovery		104 %



Date Analyzed: 12-20-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

WEST LABORATORY

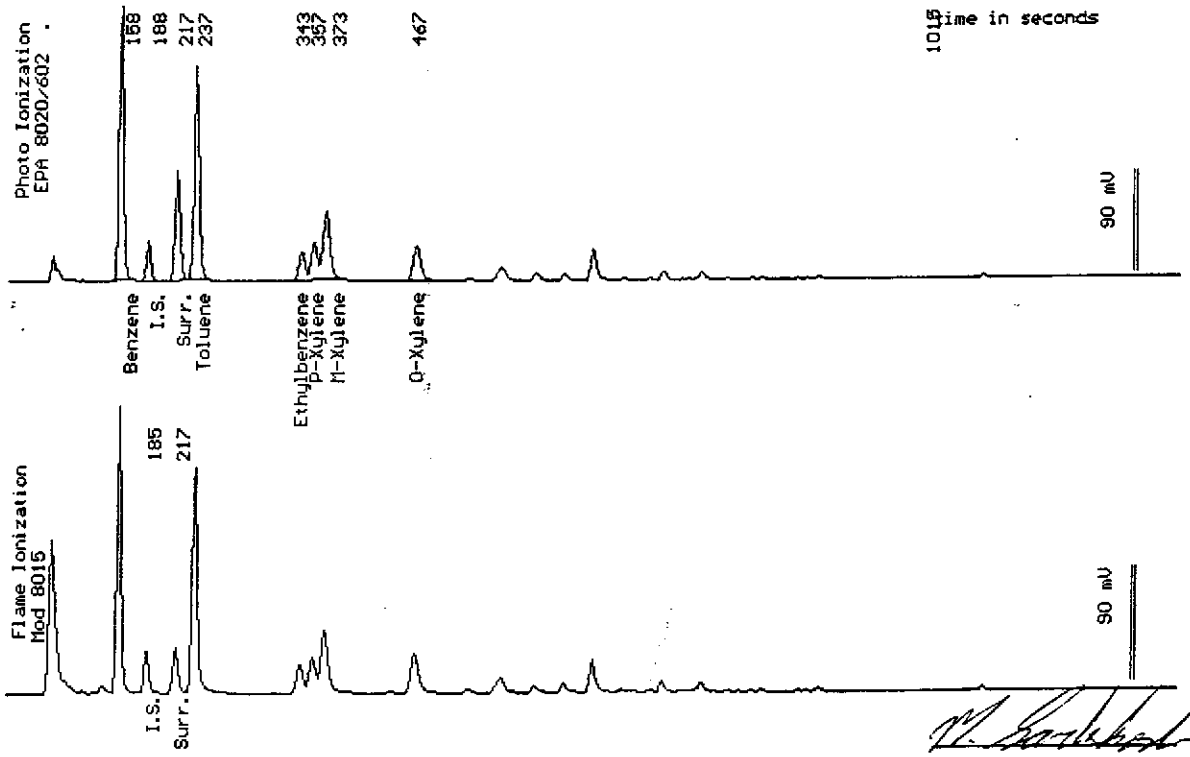
Sample Log 10966

10966-2

Sample: **MW2**

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:100 QC Batch : 4109N
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(50)	13000
Toluene	(50)	13000
Ethylbenzene	(50)	2200
Total Xylenes	(50)	12000
TPH as Gasoline	(5000)	63000
Surrogate Recovery		102 %



Date Analyzed: 12-20-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

WEST LABORATORY

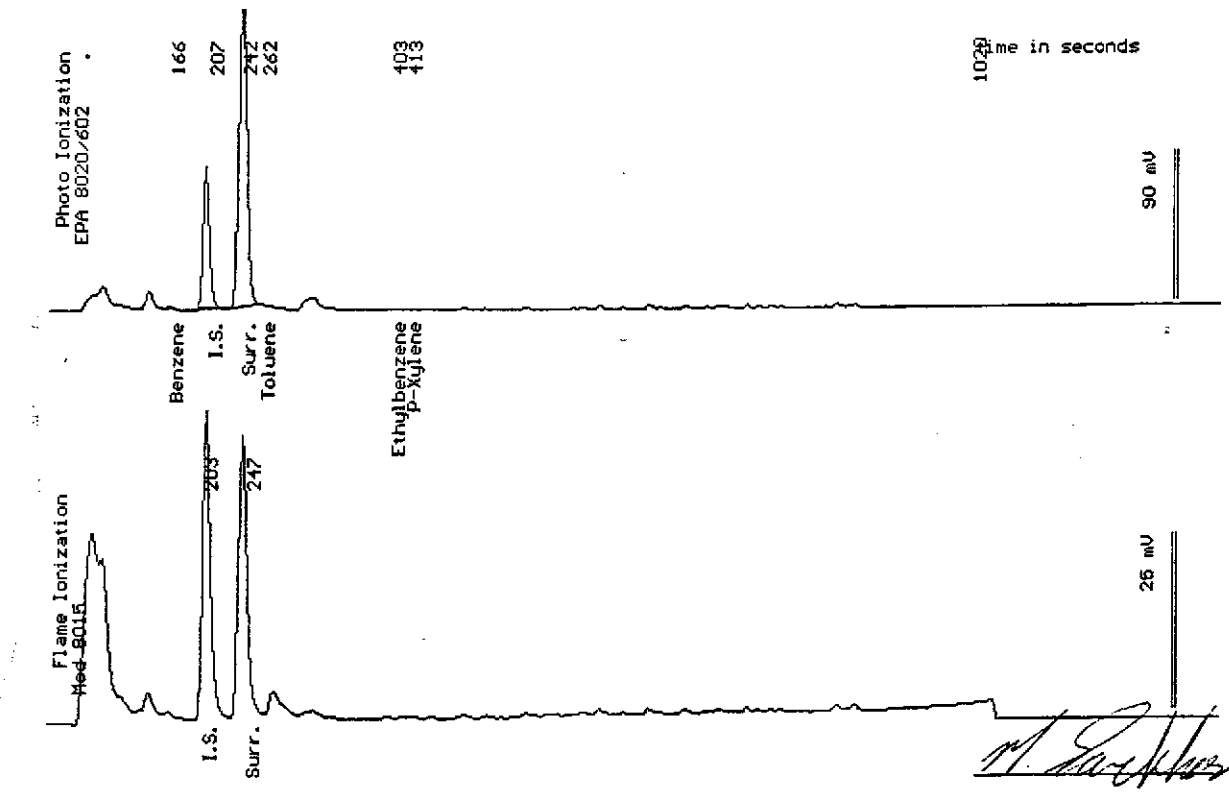
Sample Log 10966

10966-3

Sample: **MW3**

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:1 QC Batch : 2110Q
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	75
Surrogate Recovery		102 %



Date Analyzed: 12-21-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

WEST LABORATORY

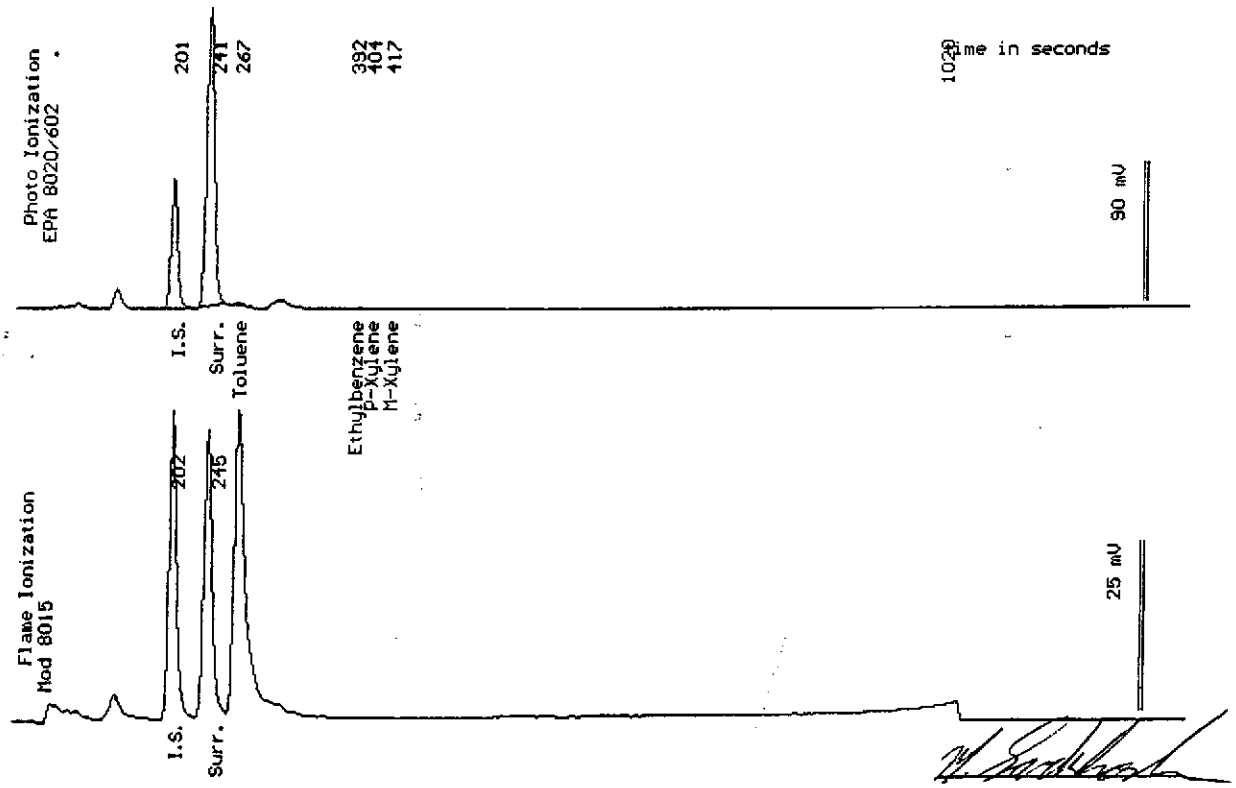
Sample Log 10966

10966-4

Sample: **MW4**

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:1 QC Batch : 2110N
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	<50
Surrogate Recovery		103 %



Date Analyzed: 12-20-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

WESTLAB LABORATORY

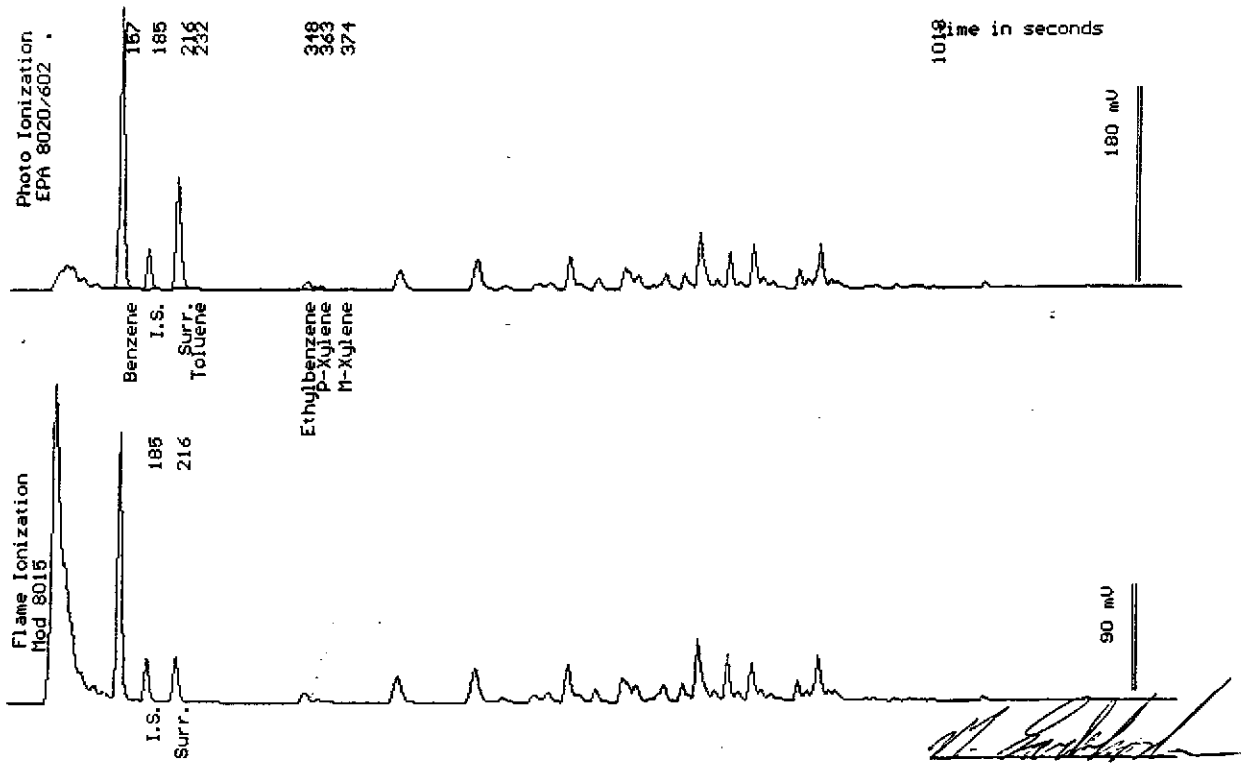
Sample Log 10966

10966-5

Sample: **MW5**

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:5 QC Batch : 4109N
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(2.5)	660
Toluene	(2.5)	<2.5
Ethylbenzene	(2.5)	33
Total Xylenes	(2.5)	13
TPH as Gasoline	(250)	4800
Surrogate Recovery		102 %



Date Analyzed: 12-20-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

WEST LABORATORY

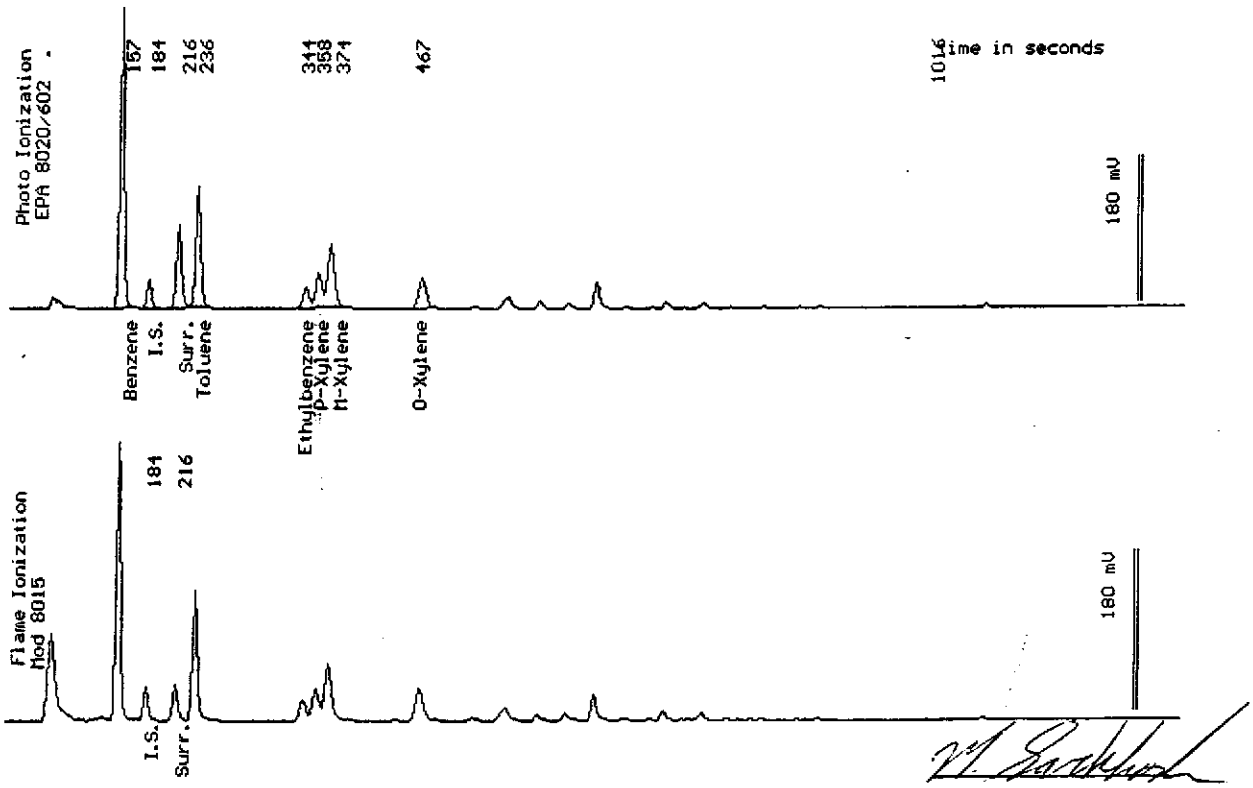
Sample Log 10966

10966-6

Sample: **MW6**

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:100 QC Batch : 4109N
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(50)	18000
Toluene	(50)	9500
Ethylbenzene	(50)	2200
Total Xylenes	(50)	14000
TPH as Gasoline	(5000)	65000
Surrogate Recovery		102 %



Date Analyzed: 12-20-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

WEST LABORATORY

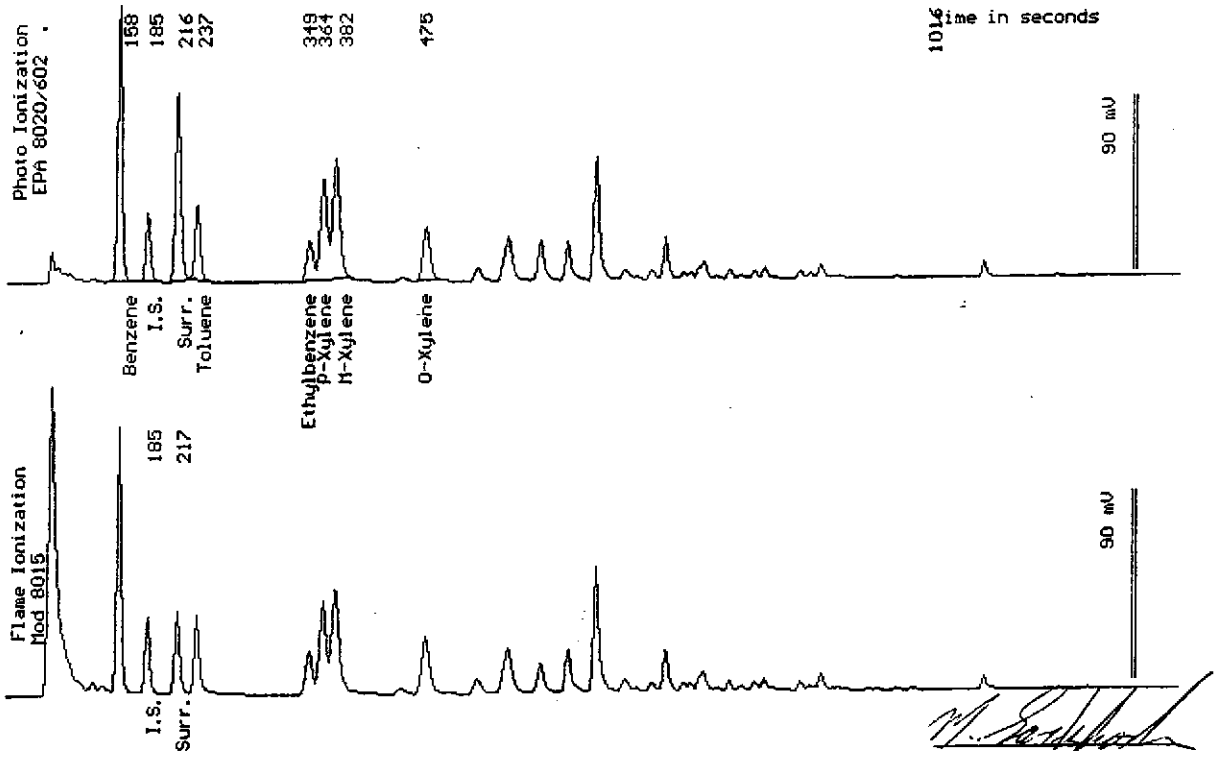
Sample Log 10966

10966-7

Sample: **MW7**

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:50 QC Batch : 4109N
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(25)	3600
Toluene	(25)	1200
Ethylbenzene	(25)	900
Total Xylenes	(25)	6400
TPH as Gasoline	(2500)	31000
Surrogate Recovery		100 %



Date Analyzed: 12-20-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

WEST LABORATORY

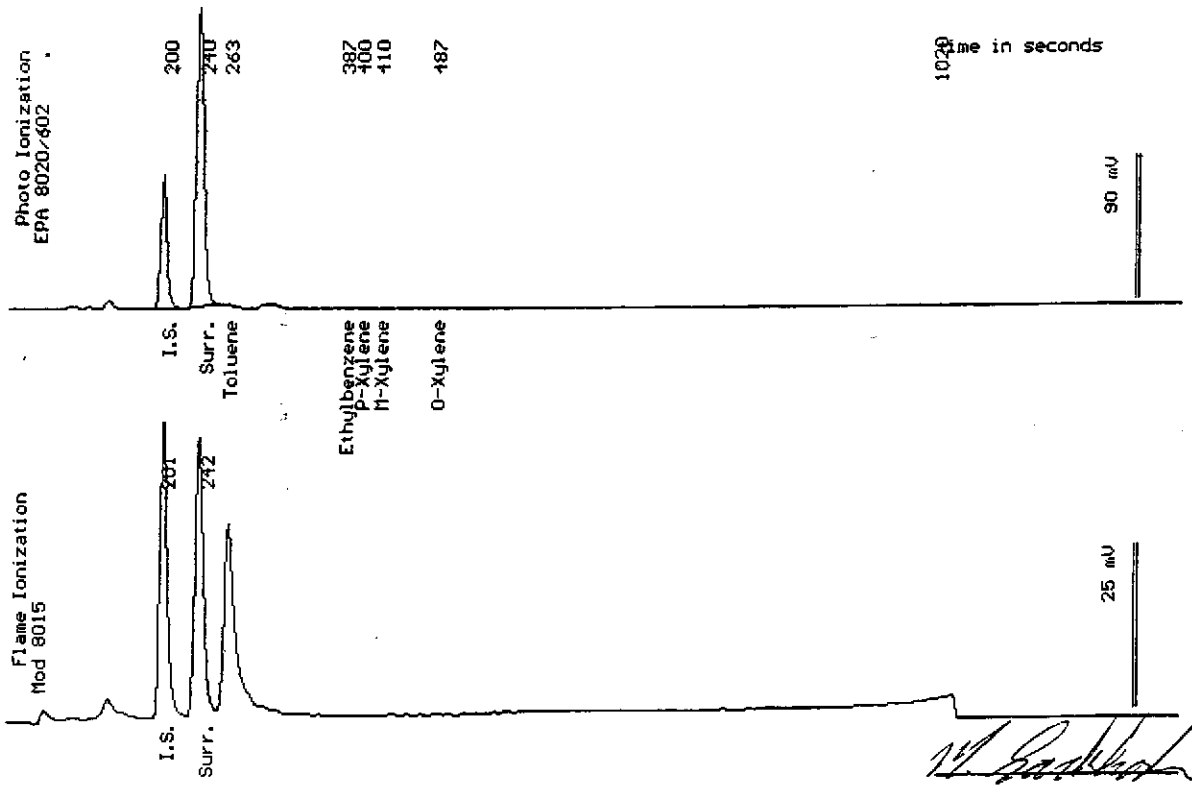
Sample Log 10966

10966-8

Sample: Trip Blank

From : Project # 19024.04 (Beacon 604)
Sampled : 12/14/94
Dilution : 1:1 QC Batch : 2110N
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	<50
Surrogate Recovery		104 %



Date Analyzed: 12-20-94
Column : 0.53mm ID X 30m DBWAX (J&W Scientific)

Mitra Sarkhosh
Senior Chemist

Ultramar Inc.
CHAIN OF CUSTODY REPORT

BEACON

Beacon Station No.	Sampler (Print Name)			ANALYSES										Date	Form No.
#604	Todd J. Brown													12-14-94	1 of 1
Project No.	Sampler (Signature)														
19024.04	Todd J. Brown													1 wk TAT	
Project Location	Affiliation														
1619 West First St, Livermore	AMV, Inc.														
Sample No./Identification	Date	Time	Lab No.	BTEX	TPH (gasoline)	TPH (diesel)							No. of Containers	REMARKS	
MW1	12-14-94	18:00		X	X								3	VOA's	
MW2	↓	17:25		↓	↓								↓		
MW3		14:43													
MW4		13:42													
MW5		13:58													
MW6		14:20													
MW7	↓	14:32													
Trip blank	↓	—		↓	↓								1		

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Todd J. Brown	12-15-94	3:15	Troy D. Zupan / WEST	12-15	15:15
Troy D. Zupan / WEST	12-15	17:10			
			John Kelso	12/15-94	17:10

Report To: Dale Van Dam of AMV, Inc. Call Todd Brown for Ultramar contact name.

Bill to: ULTRAMAR INC.
525 West Third Street
Hanford, CA 93230
Attention:

RECEIVED
DATE 12/15-94 TIME 17:10
TEMP 0°C
INITIAL JS

WHITE: Return to Client with Report YELLOW: Laboratory Copy PINK: Originator Copy

WEST. LAB

32-8003 1/90