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Supplemental Ground Water Investigation and Semi-Annual Ground Water Monitoring Results Report

Getty Newark Terminal
86 Doremus Avenue
ISRA Case # 84455

Volume I

Prepared For:
Texaco Refining and Marketing Inc.
Avenue A and 1st Street
P.O. Box 335
Bayonne, New Jersey 07002

September 11, 1996

QUEST ENVIRONMENTAL, INC.

933500001

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1.0 Introduction

Texaco Refining and Marketing Inc. (TRMI) retained Quest Environmental, Inc. (Quest) to conduct a supplemental investigation of ground water quality at the Getty Petroleum Corp. Terminal in Newark, New Jersey (ISRA Case No. 84455). Quest conducted the investigation in response to the requirements of the New Jersey Department of Environmental Protection (NJDEP) correspondence to TRMI dated July 31, 1995. The supplemental investigation included:

1. Investigation of the source of product or product sheen in the vicinity of monitor wells MW-8 and MW-12 in the East Yard of the terminal.

2. Investigation of ground water quality along the northeast property boundary of the West Yard. Sampling was conducted for benzene, toluene, ethylbenzene, xylenes, tert-butyl alcohol (TBA), methyl tert-butyl ether (MTBE), Base Neutral compounds (BN) and lead.

Quest also completed a round of monitor well sampling for the semi-annual monitoring of ground water. This monitoring program involves the sampling of fourteen monitor wells twice per year for the temporal evaluation of ground water quality in previously identified areas of concern. This semi-annual sampling event is for the first half (January-June) of 1996.

Field activities were conducted on June 25-28, 1996. Section 2 describes the field sampling and analytical methods. Section 3 provides the data results, and Section 4 is a discussion of the results with conclusions.

The Getty Newark Terminal is a 14.5 acre petroleum storage facility that was sold by TRMI to Power Test Corporation in July 1984. Figure 1 is a site map of the terminal. In January 1985, TRMI executed an Administrative Consent Order (ACO) with the NJDEP. Power Test Corporation (Getty) has owned and operated the facility since 1985; however, TRMI is the current responsible party for site remediation under the ACO.

2.0 Field Activities

The following subsections describe field activities for the supplemental investigation and the monitor well sampling. Appendix A provides details of the sampling methods and analytical procedures.

2.1 Supplemental Investigation

Quest conducted the supplemental ground water investigation field activities from June 25-27, 1996. Ground water samples were collected at 15 locations within the West Yard and 13 locations within the East Yard. Sample designations "WY" refer to collection in the West Yard and "EY" to collection in the East Yard. Figure 2 shows sample locations which are designated as WY-1 through WY-12, V-7, V-13, V-19, EY-1 through EY-11, B-3, B-4 and B-6. Samples WY-1 through WY-10 were collected along the northeast property boundary of the West Yard, hydraulically downgradient of the tank basins. Samples V-7, V-13 and V-19 were collected within Tank Basins 10, 8 and 11, respectively. Samples WY-11 and WY-12 were collected adjacent to underground pipelines crossing under Doremus Avenue. These transfer pipelines lead from the West Yard aboveground storage tanks to the East Yard. Within the East Yard, sample points EY-1, EY-3, and EY-11 were collected at points downgradient of Tank Nos. 1, 3 and 7. Samples EY-5, EY-6 and EY-10 were collected just north of the tank yard, adjacent to a strip of aboveground piping and pumps. Samples EY-2, EY-4, EY-7 and EY-8 were collected at points adjacent to a Loading Rack for tanker trucks, and samples B-3, B-4 and B-6 were collected within Tank Basins No. 1, No. 5 and No. 2, respectively.

Most samples were collected using a truck-mounted Geoprobe and temporary well points. Table 1 summarizes well point depths and screened intervals. One well point, EY-9, was attempted east of the Loading Rack; however, an underground concrete pad in this area prevented drilling below 2 feet. Therefore, sample EY-9 was not collected. In addition, well points were not attempted between EY-3 and EY-5 because the locations of underground water and sewer lines were uncertain in this area. Ground water samples collected within tank basins were obtained by a hand auger and grab sampling since access to these areas was not available to the Geoprobe. Ground water samples were field screened on site for benzene, toluene, ethylbenzene, MTBE and TBA (volatile organic compounds) using a field gas chromatograph (GC). Appendix B provides an

Table 1 - Geoprobe Screened Interval and Well Point Depth

Location	Screened Interval (Ft.)	Total Depth (Ft.)
WY-1	1 - 4	4
WY-2	1 - 4	4
WY-3	1 - 4	4
WY-4	1 - 4	4
WY-5	1 - 5	5
WY-6	2 - 6	6
WY-7	2 - 6	6
WY-8	1 - 5	5
WY-9	1 - 5	5
WY-10	1 - 5	5
WY-11	1 - 5	5
WY-12	1 - 5	5
EY-1	1 - 5	5
EY-2	1 - 5	5
EY-3	1 - 5	5
EY-4	1 - 5	5
EY-5	1 - 5	5
EY-6	1 - 5	5
EY-7	1 - 5	5
EY-8	1 - 5	5
EY-9	Refusal at 2	----
EY-10	1 - 5	5
EY-11	1 - 5	5

Note: Depths are referenced from ground surface.

analytical data report for the field GC screening. A portion of the field samples were submitted to a certified laboratory for confirmation. The laboratory analysis included total xylenes in addition to the field GC-analyzed parameters. Samples were also observed for the presence of light non-aqueous phase liquid (LNAPL), and some samples were laboratory analyzed for Priority Pollutant Base Neutral's with a library search and Total Lead. Appendix A describes in detail the specific field sampling methods and sample analyses. Tables 2 and 3 provide a summary of sample analyses for the West and East Yard samples, respectively. A copy of the laboratory deliverables is attached in a separate bound document as Volume II.

In addition to the ground water sampling, three soil samples (B-1, B-5 and D-1) were collected at points within the tank basins. Sample B-1 was collected adjacent to the 8,000 gallon fuel additive tank in Tank Basin No. 1. This sample was collected in an area where soil was previously excavated to ground water and backfilled with clean fill. Sample B-5 was collected within an area of staining observed beneath a pipe valve leading to Tank No. 5. Sample D-1 was collected within another stained area adjacent to a 10,000 gallon diesel tank within Tank Basin No. 11. Figure 2 shows the soil sample locations. The staining in both areas appeared to be recent.

2.2 Monitor Well Sampling

Fourteen (14) of the fifteen (15) existing site monitor wells designated as MW-01 through MW-16 were sampled during this semi-annual sampling event (Figure 1). MW-02, located north of Tank No. 9, is not included in the sampling program. Ground water samples were collected using the procedures appearing in the *May 1992 NJDEP Field Sampling Procedures Manual.* Appendix A describes the sampling and analysis procedures and includes well sampling logs. Samples were analyzed for NJDEP-required parameters, which include volatile organic compounds (VO+15) including xylenes plus a forward library search, methyl tert-butyl ether (MTBE), tert-butyl alcohol (TBA), and Base Neutral organic compounds plus a forward library search (BN+15). Table 4 lists the analytical parameters and methods for each well sample plus field and trip blanks. A copy of the laboratory deliverables is attached in a separate bound document as Volume III of this report.

Table 2 - West Yard Sample Analysis Summary: Well Point/Borehole Ground Water and Soil Samples

Sample No.	Date	Laboratory ID.	Field Analysis	Laboratory Analysis
Ground Water				
WY-1	6/25/96	-	BTE, MTBE, TBA	-
WY-2	6/25/96	E12588-1	BTE, MTBE, TBA	BTEX, MTBE, TBA, BN+15, Lead
WY-3	6/25/96	-	BTE, MTBE, TBA	-
WY-4	6/25/96	E12588-2	BTE, MTBE, TBA	BTEX, MTBE, TBA, BN+15, Lead
WY-5	6/25/96	E12588-3	BTE, MTBE, TBA	BTEX, MTBE, TBA, BN+15, Lead
WY-6	6/25/96	-	BTE, MTBE, TBA	-
WY-7	6/25/96	E12588-4	BTE, MTBE, TBA	BTEX, MTBE, TBA, BN+15, Lead
WY-8	6/25/96	-	BTE, MTBE, TBA	-
WY-9	6/25/96	-	BTE, MTBE, TBA	-
WY-10	6/25/96	-	BTE, MTBE, TBA	-
WY-11	6/25/96	-	BTE, MTBE, TBA	-
WY-12	6/27/96	E12693-5	BTE, MTBE, TBA	BTEX, MTBE, TBA, BN+15
V-7	6/26/96	-	BTE, MTBE, TBA	-
V-13	6/26/96	-	BTE, MTBE, TBA	-
V-19	6/26/96	-	BTE, MTBE, TBA	-
Soil				
D-1	6/28/96	E12694-5	---	TPHC

Note:
BTE = Benzene, Toluene, Ethylbenzene
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
BN+15 = Base Neutrals plus a library search of fifteen tentatively identified compounds
MTBE = Methyl Tert Butyl Ether
TBA = Tertiary Butyl Alcohol
TPHC = Total Petroleum Hydrocarbons

Table 3 - East Yard Sample Analysis Summary: Well Point/Borehole Ground Water and Soil Samples

Sample	Date	Laboratory ID.	Field Analysis	Laboratory Analysis
Ground Water				
EY-1	6/27/96	-	BTE, MTBE, TBA	-
EY-2	6/27/96	E12693-2	BTE, MTBE, TBA	BTEX, MTBE, TBA
EY-3	6/27/96	-	BTE, MTBE, TBA	-
EY-4	6/27/96	-	BTE, MTBE, TBA	-
EY-5	6/27/96	E12693-1	BTE, MTBE, TBA	BTEX, MTBE, TBA
EY-6	6/26/96	-	BTE, MTBE, TBA	-
EY-7	6/27/96	E1269-4	BTE, MTBE, TBA	BTEX, MTBE, TBA
EY-8	6/26/96	-	BTE, MTBE, TBA	-
EY-9	-	-	No Sample	-
EY-10	6/27/96	E12693-3	BTE, MTBE, TBA	BTEX, MTBE, TBA
EY-11	6/27/96	-	BTE, MTBE, TBA	-
B-3	6/28/96	E12694-1	-	BTEX, MTBE, TBA
B-4	6/28/96	E12694-2	-	BTEX, MTBE, TBA
B-6	6/28/96	E12694-4	-	BTEX, MTBE, TBA
Soil				
B-1	6/28/96	E12694-3	-	BTEX, TPHC
B-5	8/14/96	E13816-1 E13816-2	-	BTEX, TPHC

Note:
BTE = Benzene, Toluene, Ethylbenzene
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
BN+15 = Base Neutrals plus a library search of fifteen tentatively identified compounds
MTBE = Methyl Tert Butyl Ether
TBA = Tertiary Butyl Alcohol
TPHC = Total Petroleum Hydrocarbons

Table 4 - Monitor Well Sample Analysis Summary

Laboratory ID.	Field Sample No.	Sampling Date	Analysis
E12699-1	MW-1	6/28/96	VO+15, MTBE, TBA
E12699-2	MW-3	6/28/96	VO+15, MTBE, TBA
E12697-1	MW-4	6/27/96	VO+15, MTBE, TBA, BN+15
E12699-3	MW-5	6/28/96	VO+15, MTBE, TBA
E12699-4	MW-6	6/28/96	VO+15, MTBE, TBA
E12697-2	MW-7	6/27/96	VO+15, MTBE, TBA
E12697-3	MW-8	6/27/96	VO+15, MTBE, TBA
E12697-4	MW-9	6/27/96	VO+15, MTBE, TBA, BN+15
E12699-5	MW-11	6/28/96	VO+15, MTBE, TBA
E12697-5	MW-12	6/27/96	VO+15, MTBE, TBA, BN+15
E12697-6	MW-13	6/27/96	VO+15, MTBE, TBA, BN+15
E12697-7	MW-14	6/27/96	VO+15, MTBE, TBA, BN+15
E12699-6	MW-15	6/28/96	VO+15, MTBE, TBA, BN+15
E12697-8	MW-16	6/27/96	VO+15, MTBE, TBA, BN+15
E12697-9	Field Blank	6/27/96	VO+15, MTBE, TBA, BN+15
E12699-7	Field Blank	6/28/96	VO+15, MTBE, TBA
E12697-10	Trip Blank	6/27/96	VO+15, MTBE, TBA
E12699-8	Trip Blank	6/28/96	VO+15, MTBE, TBA

Note:
VO+15 = Volatile Organic Compounds plus a library search of fifteen tentatively identified compounds
MTBE = Methyl Tert Butyl Ether
TBA = Tertiary Butyl Alcohol
BN+15 = Base Neutrals plus a library search of fifteen tentatively identified compounds

3.0 Results

The following subsections describe results of the supplemental investigation and the monitor well sampling.

3.1 Supplemental Investigation

3.1.1 Field GC Analysis versus Laboratory Analysis

Tables 5 and 6 provide the ground water sample results for volatile organic compounds (VOCs) from the field GC and laboratory analyses. For most samples from both West and East Yards, compound concentrations measured by the field GC are greater than the laboratory measurements, particularly for benzene and MTBE. The field GC data were collected as a screening analysis and are useful in detecting the presence of particular compounds and providing relative concentration values. Actual analyte concentrations should be closer to the magnitude measured by the laboratory.

3.1.2 West Yard Ground Water Samples

Samples WY-1 through WY-10, which were collected along the northeast property boundary, indicate the presence of BTEX, MTBE and TBA. No Light Non-Aqueous Phase Liquid (LNAPL) was observed in any of the samples. Field screening results indicate the highest concentrations in the vicinity of sample points WY-4, WY-5, and WY-6, which are situated in the mid-portion of the northeast property boundary (Figure 2). In this area, concentrations of benzene ranged from <1 to 120 ppb; toluene from 72 to 540 ppb; and MTBE from 410 to 4,600 ppb. Concentrations immediately upgradient of this area at WY-8, WY-9 and WY-10 were lower. Laboratory analysis of WY-2, WY-4, WY-5, and WY-7 confirmed the presence of these VOCs, but at overall lower levels. Tert-butyl alcohol (TBA) was measured at levels ranging from 1.5 to 29.1 ppb in laboratory samples, and total xylenes were measured in the range of 1.8 to 141 ppb. Class II-A ground water standards are exceeded for benzene (1 ppb) at WY-4, WY-5 and WY-7 and for total xylenes (40 ppb) at WY-5 in laboratory analyzed samples.

Samples collected from within the tank basins at V-7 (Tank 10) and V-19 (Tank 11) also indicated the presence of benzene, toluene, ethylbenzene, MTBE and TBA. The field screening results indicate that one or more of these compounds may be elevated in concentration at these locations, but these levels were not submitted to the laboratory for confirmatory analysis.

Table 5 - West Yard VOC Results of Geoprobe Well Point Samples - Field GC and Laboratory Analysis

Location	Method	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene(ug/L)	Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)
WY-1	Field	51	<5	<30	na	<10	nd
	Lab	na	na	na	na	na	na
WY-2	Field	57	43	<30	na	330	detected
	Lab	0.57	1.1	<0.17	1.8	5.3	1.5
WY-3	Field	<1	<5	<30	na	170	detected
	Lab	na	na	na	na	na	na
WY-4	Field	46	160	interference	na	410	detected
	Lab	1.4	2.3	<0.17	3.4	6.7	29.1
WY-5	Field	120	72	44	na	1,300	detected
	Lab	98.1	7.6	25.2	141	1.2	2.4
WY-6	Field	<1	540	130	na	4,600	detected
	Lab	na	na	na	na	na	na
WY-7	Field	<1	11	<30	na	25	detected
	Lab	3.9	<0.50	1.2	2.9	5.8	11.9
WY-8	Field	49	11	<30	na	130	detected
	Lab	na	na	na	na	na	na
WY-9	Field	3	20	<30	na	62	detected
	Lab	na	na	na	na	na	na
WY-10	Field	43	10	<30	na	<10	detected
	Lab	na	na	na	na	na	na
WY-11	Field	off scale	off scale	<30	off scale	off scale	off scale
	Lab	na	na	na	na	na	na
WY-12	Field	off scale	off scale	off scale	na	off scale	off scale
	Lab	512	54.8	91.4	94.2	81.6	<2.8
V-7	Field	<50	1,800	34	na	710	nd
	Lab	na	na	na	na	na	na
V-13	Field	<50	<10	6	na	<50	nd
	Lab	na	na	na	na	na	na
V-19	Field	270	230	69	na	840	detected
	Lab	na	na	na	na	na	na
Class II-A GWStandard	---	1	1,000	700	40	na	na

Notes:
nd = not detected
na = not analyzed
J = estimated value

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Table 6 - East Yard VOC Results of Geoprobe Well Point Samples - Field GC and Laboratory Analysis

Location	Method	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)
EY-1	Field	150	41	<10	na	270	detected
	Lab	na	na	na	na	na	na
EY-2	Field	5,600	13,000	1,100	na	85,000	nd
	Lab	4,100	5,040	643	2,880	97,600	16,200
EY-3	Field	2,000	260	<1,000	na	4,200	nd
	Lab	na	na	na	na	na	na
EY-4	Field	480	4,000	1,400	na	5,700	detected
	Lab	na	na	na	na	na	na
EY-5	Field	2,200	4,100	130	na	13,000	nd
	Lab	1,900	78.2	92.3	51.0	28.7	<14
EY-6	Field	<2,500	680	<250	na	4,300	detected
	Lab	na	na	na	na	na	na
EY-7	Field	830	710	270	na	5,100	nd
	Lab	449	32.3	137	290	346	762
EY-8	Field	off scale	off scale	off scale	off scale	off scale	off scale
	Lab	na	na	na	na	na	na
EY-10	Field	1,300	<1,000	<1,000	na	2,600	nd
	Lab	1,290	24.9	18.6	29.5	198	<14
EY-11	Field	<18	<10	67	na	<10	nd
	Lab	na	na	na	na	na	na
B-3	Field	na	na	na	na	na	na
	Lab	289	13.6	2,260	3,540	<8.2	<28
B-4	Field	na	na	na	na	na	na
	Lab	4,060	18,400	2,200	12,000	269	<140
B-6	Field	na	na	na	na	na	na
	Lab	2.4	3.7	12.2	14.8	3.5	nd
Class II-A GWStandard	---	1	1,000	700	40	na	na

Notes:
nd= not detected
na= not analyzed
J= estimated value

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Sample V-13, collected from within Tank Basin 8, exhibited nondetectable or trace levels of these compounds.

Two temporary well points (WY-11 and WY-12) were also completed on either side of underground pipelines that cross beneath Doremus Avenue toward the East Yard. The pipelines service the West Yard tanks. Samples analyzed by field GC indicated elevated concentrations of volatile organic compounds. Excluding ethylbenzene, compound concentrations were too high to be quantified by field GC at the selected sample dilutions. One sample, WY-12, was laboratory analyzed for confirmation and quantification of the VOC concentrations. An elevated benzene level of 512 ppb was detected. Lower concentrations (50-95 ppb) of toluene, ethylbenzene, total xylenes, and MTBE were measured. TBA was not detected.

Table 7 summarizes the results of BNs and Total Lead for samples WY-2, WY-4,WY-5 and WY-7, which were collected at points along the northeastern property boundary. Trace to low levels of some BNs were detected. None exceeded Class II-A Standards. Total Lead levels ranged from 1,940 to 7,190 ug/L.

Table 7 - West Yard Base Neutral And Lead Sample Results Summary for Well Points

Sample Points / Compounds	WY-2	WY-4	WY-5	WY-7	GW Standards
BASE NEUTRALS (ug/L)					
Acenaphthene	8.0	1.4	nd	0.88J	400
Anthracene	2.4	nd	nd	nd	2,000
Fluoranthene	2.4	nd	nd	nd	300
Fluorene	11.2	1.8	0.55J	nd	300
N-Nitrosodiphenylamine	4.0	6.6	nd	1.2J	20*
Phenanthrene	9.6	2.3	0.91	nd	na
Pyrene	2.0	nd	nd	nd	200
Bis(2-ethylhexyl)phthalate	nd	13.5	1.1 J	nd	30*
Naphthalene	nd	nd	5.4	4.4	na
Metals (ug/L)					
Lead	4,480	7,190	5,650	1,940	10*

Notes:
nd = not detected
na = not available
J = Estimated value below the method detection limit.
GW Standards = NJDEP Class II-A Ground Water Standards

* = NJDEP practical Quantitation Levels (PQLs)

3.1.3 East Yard Samples

Free Phase Product

A free phase product layer that was previously measured in monitor well MW-12 was not detected in any of the surrounding well points or boreholes which include EY-1, EY-3, B-3, B-4 and B-6. A product sheen, however, was noted in B-3, B-6, and B-4. This product layer first appeared in November 1992. The product was removed from MW-12 at that time. A product sheen has since been observed during every sampling event.

A free phase layer was also observed in well point EY-8, which is adjacent to the southeast corner of the Loading Rack. Product sheens were observed in the other well point samples surrounding the Loading Rack (EY-2, EY-4, and EY-7) The product layer or sheen, however, is not observed in downgradient wells MW-9, MW-14 and MW-16. Product sheens were also noted in well point samples north of the tank yard (EY-5, EY-6, and EY-10), located adjacent to potential sources which include pipelines and pumps, underground pipelines beneath Doremus Avenue, and the Vapor Recovery Unit within Tank Basin No. 5 as discussed in Section 4 of this report.

Dissolved VOCs in Loading Rack Area

Samples collected at points surrounding the Loading Rack revealed elevated concentrations of ground water BTEX, MTBE, and TBA (Table 6). The highest levels were measured in EY-2 where the laboratory analyzed sample revealed the following concentrations: benzene = 4,100 ppb; toluene = 5,040 ppb, ethylbenzene = 643 ppb; xylenes = 2,880 ppb; MTBE = 97,600 ppb; and TBA = 16,200 ppb. Lower but still elevated concentrations were measured in upgradient points EY-7 and EY-4. EY-8 was not laboratory analyzed due to the presence of a free product layer.

Dissolved VOCs in Tank Basin Area

Samples collected at points north of Tank Basin No. 5 (EY-5, E-6, and E-10) contained elevated ground water benzene concentrations (Table 6). Laboratory analyzed samples from EY-5 and

EY-10 indicated benzene concentrations of 1,900 ppb and 1,290 ppb, respectively. Concentrations of toluene, ethylbenzene, xylenes, and MTBE were detected but at significantly lower levels (< 200 ppb). TBA was not detected in the laboratory analyzed samples, although it was detectable by the field GC in EY-6. The laboratory analyzed sample collected at B-4, approximately 50 feet south of the above well points and located within Tank Basin No. 5, contained significantly elevated levels of BTEX: benzene = 4,060 ppb; ethylbenzene = 2,200 ppb; toluene = 18,400 ppb; and total xylenes 12,000 ppb. TBA was not detected at Sample B-4. This sample point is located just downgradient of a Vapor Recovery Unit.

Sample point B-6, collected adjacent to Tank No. 2, contained low levels of BTEX and MTBE. TBA was not detected. Sample point B-3, collected adjacent to the 8,000 gallon fuel additive tank, contained elevated levels of benzene (289 ppb), ethylbenzene (2,260 ppb) and total xylenes (3,540 ppb). MTBE and TBA were not detected at this location. Sample point EY-3, located approximately 30 feet downgradient of B-3 and outside the tank basin, was field screened only, indicating elevated levels of benzene (2,000 ppb) and MTBE (4,200 ppb).

Field GC analyzed samples collected from EY-1 and EY-11, also located outside the tank basins and south of EY-3, show overall decreasing concentrations of BTEX proceeding to the south from EY-1 to EY-11. MTBE and TBA are detectable in EY-1, but are less than detection limits in EY-11. Monitor wells MW-8, MW-12 and MW-7 confirm the presence of BTEX, MTBE and TBA in these sample points (see discussion in section 3.2).

3.1.4 Soil Samples

The results of soil samples collected from the East Yard (B-1 and B-5) and the West Yard (D-1) are summarized below in Table 8.

Table 8 - Soil Sample Results

Sample No.	Depth (Ft.)	Parameter	Result (mg/kg)	Residential SCC (mg/kg)	Impact to GW SCC (mg/kg)
B-1	1.0-1.5	Benzene	0.128	3	1
		Ethylbenzene	7.33	1,000	100
		Toluene	0.428	1,000	500
		Xylene	1.70	410	10
		TPHC	4,090	10,000	10,000
B-5	0-0.5	Benzene	<0.032	3	1
		Ethylbenzene	0.742	1,000	100
		Toluene	0.315	1,000	500
		Xylene	5.17	410	10
		TPHC	38,700	10,000	10,000
D-1	0-0.5	TPHC	8,570	10,000	10,000

Note:
Residential SCC = NJDEP Direct Contact Residential Soil Cleanup Criteria (SCC)
Impact to GW SCC = NJDEP Impact to Ground Water Soil Cleanup Criteria (SCC)

3.2 Monitor Well Sampling and Analysis

This section provides an overview of ground water flow and quality from the on-site monitor wells. Subsection 3.2.1 provides an evaluation of ground water flow; subsection 3.2.2 presents the results of free phase product measurements; subsection 3.2.3 presents the results of field parameter measurements; and subsection 3.2.4 presents the analytical results of ground water samples.

3.2.1 Ground Water Elevations and Flow

Table 9 provides monitor well specifications and ground water elevations calculated from depth to water level measurements obtained on June 27, 1996. Ground water is unconfined and under water table conditions. Water table elevations are highest in the West Yard in the vicinity of monitor well MW-15 (6.65 feet above MSL) and are lowest in wells MW-14 (3.59 feet above MSL) and MW-16 (3.36 feet above MSL) which are located in the East Yard adjacent to the Passaic River. Figure 1 includes elevation contours prepared from linear interpolation of the ground water elevations. Ground water flows from higher to lower elevations, perpendicular to the elevation contours as shown in Figure 1. The elevation contours indicate that ground water flow is toward the northeast in the West Yard and more toward an easterly direction in the East

Yard, which is bordered by the Passaic River to the east. The hydraulic gradient of the water table is shallow, ranging from approximately 0.002 ft/ft to 0.005 ft/ft. Ground water flow ascertained from the June 27, 1996 elevation contour map is consistent with previous contour maps.

Table 9 - Monitor Well Specifications, Ground Water Elevations and Product Measurements

Well No.	Well Depth (ft.)	Screen Interval (ft.)	Top of PVC Casing Elev. (ft.)	Depth to Top of Screen* (ft.)	Depth to Water* (ft.)	Ground Water Elev. (ft.)	Product Thickness (ft.)
MW-1	17	2-17	8.19	3.9	3.76	4.43	0
MW-2	na	na	8.44	na	3.10	5.34	0
MW-3	17	2-17	7.24	1.5	1.90	5.34	0
MW-4	10.5	0.5-10.5	6.97	1.2	1.58	5.39	0
MW-5	10.5	0.5-10.5	6.86	0.5	1.44	5.42	0
MW-6	10.5	0.5-10.5	6.5	0.5	1.00	5.5	0
MW-7	10.5	0.5-10.5	8.21	3.2	4.20	4.01	0
MW-8	17	2-17	6.86	1.6	2.70	4.16	0
MW-9	5.5	0.5-5.5	6.14	0.5	2.21	3.93	0
MW-11	20.5	0.5-10.5	6.69	0.5	1.42	5.27	0
MW-12	10.5	0.5-10.5	6.25	0.5	2.14	4.11	sheen
MW-13	10.5	0.5-10.5	6.28	0.5	1.49	4.79	0
MW-14	12	2-12	5.75	2	2.16	3.59	0
MW-15	17	3-17	16.47	5.6	9.82	6.65	0
MW-16	10	0.75-10	7.85	3.1	4.49	3.36	0

Notes:
(1) * measured from top of PVC casing.
(2) Ground water elevations are in feet above Mean Sea Level (MSL).
(3) Depth to water and product measurements were obtained on June 27, 1996.
(4) na = not available

3.2.2 Free Phase Product Measurements

Table 9 also shows the results of the free phase product measurements. There were no measurable free phase product layers recorded within any of the wells; however, well MW-12 was observed to have a sheen. Free phase product was previously detected in MW-12. It was first detected in November 1992 when 0.05 feet of product was measured. At that time, the product layer was removed and checked again six weeks later at which time there was no measurable layer. Subsequently, MW-12 was checked for free product on a monthly basis from July 1993 to December 1993 and on a quarterly to semi-annual basis since January 1994. Free product was not detected during any measuring event; however, a product sheen was observed in each case. It has been approximately 3 years since a measurable product layer was recorded. MW-13, which previously had shown a product sheen, was not noted to have one during this sampling event.

3.2.3 Field Parameter Measurements

Table 10 presents the results of the field parameter measurements which include pH, temperature, conductivity, and dissolved oxygen. The field measurements were recorded before and after purging and during sampling. Values of pH measured in the field range from 6.20 to 7.23 (S.U.), which is within the typical range for ground water (6-7.5). Temperatures of ground water samples range from approximately 11.1 to 22.0°C. Conductivity of ground water samples range from 0.52 to 113 mS/cm. Dissolved oxygen (D.O.) concentrations during sampling were low, ranging from approximately 0.3 to 2.9 mg/L.

Table 10 - Field Parameter Measurements

Monitor Well No.	Parameter	Prior to Purge	During Purge	After Purge
MW-1	pH (s.u.)	7.00	6.83	6.75
	Temperature (°C)	11.8	11.1	11.7
	Conductivity (mS/cm)	5.79	8.17	10.2
	Dissolved Oxygen (mg/L)	0.4	0.4	0.5
MW-3	pH (s.u.)	7.09	7.10	7.07
	Temperature (°C)	15.8	20.3	20.2
	Conductivity (mS/cm)	6.03	6.40	6.40
	Dissolved Oxygen (mg/L)	1.4	0.9	0.4
MW-4	pH (s.u.)	7.14	7.21	7.19
	Temperature (°C)	21.5	22.0	21.8
	Conductivity (mS/cm)	1.80	1.68	1.94
	Dissolved Oxygen (mg/L)	0.2	0.6	0.3
MW-5	pH (s.u.)	7.10	6.92	6.87
	Temperature (°C)	19.4	17.3	16.7
	Conductivity (mS/cm)	89.1	103	113
	Dissolved Oxygen (mg/L)	0.5	0.2	0.3
MW-6	pH (s.u.)	6.84	6.84	6.85
	Temperature (°C)	15.3	14.8	14.2
	Conductivity (mS/cm)	27.1	23.2	23.8
	Dissolved Oxygen (mg/L)	0.3	0.4	0.4
MW-7	pH (s.u.)	6.8	7.23	7.18
	Temperature (°C)	21.4	19.9	16.6
	Conductivity (mS/cm)	2.03	0.29	76.7
	Dissolved Oxygen (mg/L)	0.6	4.9	0.7
MW-8	pH (s.u.)	6.59	6.90	6.45
	Temperature (°C)	20.8	20.2	17.6
	Conductivity (mS/cm)	0.69	0.59	0.52
	Dissolved Oxygen (mg/L)	0.4	8.5	0.6

Table 10 - Field Parameter Measurements (continued)

Monitor Well No.	Parameter	Prior to Purge	During Purge	After Purge
MW-9	pH (s.u.)	na	7.13	6.65
	Temperature (°C)	na	26.1	19.2
	Conductivity (mS/cm)	na	0.7	7.84
	Dissolved Oxygen (mg/L)	na	6.2	0.4
MW-11	pH (s.u.)	6.85	6.77	6.78
	Temperature (°C)	18.5	14.6	14.5
	Conductivity (mS/cm)	2.78	6.03	7.14
	Dissolved Oxygen (mg/L)	1.1	1.3	1.0
MW-12	pH (s.u.)	6.39	6.79	6.82
	Temperature (°C)	18.3	19.0	17.1
	Conductivity (mS/cm)	2.37	2.46	1.81
	Dissolved Oxygen (mg/L)	0.4	2.3	2.9
MW-13	pH (s.u.)	6.84	7.05	7.07
	Temperature (°C)	15.6	20.2	20.2
	Conductivity (mS/cm)	3.07	2.56	3.15
	Dissolved Oxygen (mg/L)	0.7	0.4	0.4
MW-14	pH (s.u.)	6.51	6.51	6.5
	Temperature (°C)	14.7	20.5	20.5
	Conductivity (mS/cm)	7.10	2.6	2.56
	Dissolved Oxygen (mg/L)	0.2	0.3	0.3
MW-15	pH (s.u.)	6.46	6.28	6.71
	Temperature (°C)	15.3	14.6	14.3
	Conductivity (mS/cm)	5.62	7.19	6.91
	Dissolved Oxygen (mg/L)	1.4	0.2	0.59
MW-16	pH (s.u.)	7.04	6.64	6.2
	Temperature (°C)	17.9	19.4	20.2
	Conductivity (mS/cm)	4.70	1.92	2.29
	Dissolved Oxygen (mg/L)	0.1	1.4	1.3

3.2.4 Ground Water Sample Analytical Results

Tables 11 and 12 summarize the analytical results for the West Yard and East Yard wells, respectively. These tables compare the results with the NJDEP Class II-A Ground Water Quality Standards (GWQS) and the NJDEP Surface Water Quality Criteria. The NJDEP evaluates the site's impact to the Passaic River by comparing the results of MW-16 (monitor well closest to the river) with N.J.A.C. 7:9B-1.14 Surface Water Quality Standards applicable to saline estuarine waters. The Class II-A standards apply to ground water having a designated use as potable water or conversion to potable water and are shown only as a relative indicator of ground water quality at the site. The Practical Quantitation Limits (PQLs) listed in Tables 11 and Table 12 are the reliable detection limit for the named compound and are used as the standard if the health-based criteria (GWQS) are less than the PQL. Table 13 contrasts the sampling conducted in December 1995 with June 1996. There are no major changes in compound concentrations between the December and June 1996 sampling events.

Field and Trip Blanks

Field and trip blank results are as follows: The field blank dated June 27, 1996 showed nondetectable levels of volatile organics (VO+15) including xylenes, MTBE, TBA, and BN+15. The trip blank for June 27, 1996 indicates nondetectable levels of volatile organics (VO+15) including xylenes, MTBE, and TBA.

The field blank dated June 28, 1996 showed nondetectable levels of volatile organics (VO+15) including xylenes, MTBE, and TBA.

Table 11- Sample Analytical Results for the West Yard Monitor Wells - June 1996

Monitor Well Samples	MW-1	MW-3	MW-4	MW-5	MW-6	MW-11	MW-13	MW-15	N.J.A.C. Class II-A GW Quality Standards (ug/L) GWQS	PQL	Surface Water Standards (ug/L)
Volatile Organics (ug/L)											
Benzene	0.8	640	nd	20.3	nd	112	4	0.42	0.2	1	71
Toluene	0.85	27	nd	1.2	1	6.5	nd	2.3	1,000	5	200,000
Ethylbenzene	nd	8.6	nd	nd	nd	1.7	nd	0.54	700	5	27,900
Xylenes (Total)	8.2	75.2	nd	5.8	3.9	18.2	2.4	2.2	40	2	NA
Chlorobenzene	nd	133	nd	nd	nd	nd	nd	nd	4	2	21,000
Chloroform	nd	nd	nd	nd	nd	3.7	nd	nd	6	1	470
MTBE	6.2	53.1	51.5	307	93.6	207	45.9	nd	NA	NA	NA
TBA	18.3	nd	nd	nd	nd	nd	21.8	nd	NA	NA	NA
Total Targeted VO	34.35	936.9	51.5	334.3	98.5	349.1	74.1	5.46	NA	NA	NA
Total VO TIC's (estimated)	0	1434	161	237	220	1579	140	0	NA	NA	NA
Base Neutrals (ug/L)											
Naphthalene	-	-	1.6	-	-	-	0.49	nd	NA	NA	NA
Acenapthene	-	-	0.98 J	-	-	-	1	0.92	400	10	NA
Benzidine	-	-	1.8	-	-	-	nd	nd	0.0002	50	0.0005
Diethyl phthalate	-	-	nd	-	-	-	0.71 J	nd	5,000	10	111,000
Fluorene	-	-	0.48 J	-	-	-	nd	nd	300	10	51,100
4-Chloroaniline	-	-	2.4	-	-	-	3.1	nd	NA	NA	NA
N-Nitrosodiphenylamine (1)	-	-	45.7	-	-	-	38.8	nd	7	20	16.2
Phenanthrene	-	-	nd	-	-	-	0.64 J	nd	NA	10	NA
Fluoranthene	-	-	0.51 J	-	-	-	nd	nd	300	10	393
Bis(2-ethylhexyl)Phthalate			nd	-	-	-	3.9	nd	3	30	5.92
Total Targeted BN	-	-	53.47	-	-	-	48.64	0.92	NA	NA	NA
Total BN TIC's (estimated)	-	-	25	-	-	-	175.3	151.3	NA	NA	NA

NOTES:

nd = Not Detected

"-" = Not Analyzed

NA = Not Available

TBA = Tertiary Butyl Alcohol

MTBE = Methyl Tert Butyl Ether

J = Estimated value below detection limit

* = Interim Criteria

GWQS = Ground Water Quality Standards

PQL = Practical Quantitation Limit

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Table 12- Sample Analytical Results for the East Yard Monitor Wells - June 1996

Monitor Well Samples	MW-7	MW-8	MW-9	MW-12	MW-14	MW-16	N.J.A.C. Class II-A GW Quality Standards (ug/L)		Surface Water Standards (ug/L)
							GWQS	PQL	
Volatile Organics (ug/L)									
Benzene	1.4	241	11.1	229	136	15.8	0.2	1	71
Toluene	nd	6.3	nd	7.4	8.5	nd	1,000	5	200,000
Ethylbenzene	nd	10.1	nd	9.7	3.7	1.5	700	5	27,900
Xylenes (Total)	nd	158	nd	70.5	5.8	nd	40	2	NA
1,1,2-Trichloroethane	nd	1.6	nd	nd	nd	nd	3	2	42
MTBE	15.5	58.7	nd	46.3	20.4	nd	NA	NA	NA
TBA	99.6	60.2	nd	297	26.6	nd	NA	NA	NA
Total Targeted VO	116.5	535.9	11.1	659.9	201	17.3	NA	NA	NA
Total VO TIC's (estimated)	40	1023	493	1474	1258	347	NA	NA	NA
Base Neutrals (ug/L)									
Acenaphthene	-	-	5.3	2.6	3	0.92 J	400	10	NA
Flourene	-	-	4	2.8	1.8	nd	300	10	51,100
Phenanthrene	-	-	2.7	2.9	0.74 J	nd	NA	10	NA
Anthracene	-	-	0.95 J	nd	nd	nd	2,000	10	108,000
Flouranthene	-	-	1.8	0.5 J	nd	nd	300	10	393
Pyrene	-	-	1.6	0.62 J	nd	nd	200	20	8,970
Chrysene	-	-	0.57 J	nd	nd	nd	.05*	20	0.031
Benzo(a)Anthracene	-	-	0.44 J	nd	nd	nd	NA	10	0.031
Bis(2-Ethylhexyl)Phthalate	-	-	-	28.9	1.9 J	nd	3	30	5.92
Total Targeted BN	-	-	17.36	38.32	7.44	0.92	NA	NA	NA
Total BN TIC's (estimated)	-	-	258.4	721	455	151.3	NA	NA	NA

NOTES:

nd = Not Detected

"-" = Not Analyzed

NA = Not Available

TBA = Tertiary Butyl Alcohol

MTBE = Methyl Tert Butyl Ether

J = Estimated value below detection limit

* = Interim Criteria

GWQS = Ground Water Quality Standards

PQL = Practical Quantitation Limit

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Texaco Newark 1996 semi gw rpt

Table 13- Monitor Well Sample Results- December 1995 vs June 1996

Monitor Well Samples	MW-1		MW-3		MW-4		MW-5		MW-6		MW-7		MW-8	
	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96
Volatile Organics (ug/L)														
Benzene	2.2	0.8	480	640	1.6	nd	31.9	20.3	1.7	nd	7.8	1.4	230	241
Toluene	1.2	0.85	47.6	27	nd	nd	1.4	1.2	1	1	nd	nd	8.5	6.3
Ethylbenzene	nd	nd	25.2	8.6	nd	nd	nd	nd	nd	nd	nd	nd	11.5	10.1
Xylenes (Total)	2.2	8.2	97.2	75.2	2.4	nd	7.9	5.8	3	3.9	nd	nd	203	158
Chlorobenzene	nd	nd	57.8	133	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	nd	nd	nd	nd	nd	nd	nd	nd	6.1	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	3.8	nd
1,1,2-Trichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.6
MTBE	18.1	6.2	-	53.1	-	51.5	-	307	nd	93.6	nd	15.5	-	58.7
TBA	-	18.3	-	nd	-	nd	-	nd	-	nd	nd	99.6	-	60.2
Total Targeted VO	23.7	34.35	707.8	936.9	4	51.5	41.2	334.3	11.8	98.5	7.8	116.5	218.3	535.9
Total VO TIC's (estimated)	10	0	2727	1434	53	161	283	237	18	220	46	40	1472	1023
Base Neutrals (ug/L)														
Naphthalene	-	-	-	-	nd	1.6	-	-	-	-	-	-	-	-
Acenaphthene	-	-	-	-	0.95 J	0.98 J	-	-	-	-	-	-	-	-
Benzidine	-	-	-	-	nd	1.8	-	-	-	-	-	-	-	-
Flourene	-	-	-	-	nd	0.48 J	-	-	-	-	-	-	-	-
4-Chloroaniline	-	-	-	-	nd	2.4	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	-	-	-	25.3	45.7	-	-	-	-	-	-	-	-
Fluoranthene	-	-	-	-	nd	0.51	-	-	-	-	-	-	-	-
Total Targeted BN	-	-	-	-	26.25	53.47	-	-	-	-	-	-	-	-
Total BN TIC's (estimated)	-	-	-	-	53.8	25	-	-	-	-	-	-	-	-

NOTES:

nd = Not Detected

"-" = Not Analyzed

J - Estimated value below detection limit

E = Exceeds calibration range

VO + 15 = Priority Pollutant Volatile Organics plus a forward library search of 15 tentatively identified compounds

BN + 15 = Base Neutral Organics plus a forward library search of 15 tentatively identified compounds

TBA = Tertiary Butyl Alcohol

MTBE = Methyl Tert Butyl Ether

Table 13 (Cont.)- Monitor Well Sample Results- December 1995 vs June 1996

Monitor Well Samples	MW-9		MW-11		MW-12		MW-13		MW-14		MW-15		MW-16	
	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96	Dec. '95	June '96
Volatile Organics (ug/L)														
Benzene	9.1	11.1	130	112	341	229	2.7	4	67.8	136	0.8	0.42	9.8	15.8
Toluene	nd	nd	5.1	6.5	12.5	7.4	0.87	nd	5	8.5	1.6	2.3	nd	nd
Ethylbenzene	nd	nd	1.4	1.7	23.9	9.7	nd	nd	2.4	3.7	nd	0.54	nd	1.5
Xylenes (Total)	0.91 J	nd	18.3	18.2	92.9	70.5	4.1	2.4	7.1	5.8	1.5	2.2	1.4	nd
Chloroform	nd	nd	nd	3.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MTBE	-	nd	-	207	99.8	46.3	48	45.9	-	20.4	-	nd	nd	nd
TBA	-	nd	-	nd	404	297	nd	21.8	-	26.6	-	nd	nd	nd
Total Targeted VO	10	11.1	1655	349.1	974	659.9	55.6	74.1	82.3	201	3.9	5.46	11.2	17.3
Total VO TIC's (estimated)	243	493	1498	1579	1558	1474	61	140	914	1258	3	0	399	347
Base Neutrals (ug/L)														
Naphthalene	nd	nd	-	-	nd	nd	nd	0.49 J	nd	nd	-	-	nd	nd
Acenaphthene	5	5.3	-	-	3	2.6	0.55 J	1 J	2.4	3	-	-	0.76 J	0.92 J
Diethyl phthalate	nd	nd	-	-	nd	nd	nd	0.71 J	nd	nd	-	-	nd	nd
Flourene	3.9	4	-	-	2.8	2.8	nd	nd	0.94 J	1.8	-	-	nd	nd
4-Chloroaniline	nd	nd	-	-	nd	nd	nd	3.1	nd	nd	-	-	nd	nd
N-Nitrosodiphenylamine (1)	nd	nd	-	-	nd	nd	20.9	38.8	nd	nd	-	-	nd	nd
Phenanthrene	3.2	2.7	-	-	2.2	2.9	nd	0.64 J	nd	0.74 J	-	-	nd	nd
Anthracene	2.1	0.95 J	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Flouranthene	4.4	1.8	-	-	nd	0.5 J	nd	nd	nd	nd	-	-	nd	nd
Pyrene	4.9	1.6	-	-	nd	0.62 J	nd	nd	nd	nd	-	-	nd	nd
Chrysene	2.1	0.57 J	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Benzo(a)Anthracene	2	0.44 J	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Bis(1-Ethylhexyl)Phthalate	0.57 J	nd	-	-	2.1	28.9	2.1	3.9	0.57 J	1.9 J	-	-	nd	nd
Benzo(b)Flouranthene	2.8	nd	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Benzo(k)Flouranthene	1.1	nd	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Benzo(a)Pyrene	2.3	nd	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Benzo(g,h,i)Perylene	2.3	nd	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Dibenz(a,h)anthracene	0.66 J	nd	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Indeno(1,2,3-cd)pyrene	2	nd	-	-	nd	nd	nd	nd	nd	nd	-	-	nd	nd
Total Targeted BN	39.3	17.36	-	-	10.1	38.32	23.5	48.64	3.91	7.44	-	-	0.76	0.92
Total BN TIC's (estimated)	418	258.4	-	-	681	721	144.8	175.3	401.5	455	-	-	186.9	151.3

NOTES:

nd = Not Detected
"-" = Not Analyzed
J - Estimated value below detection limit
E = Exceeds calibration range

VO + 15 = Priority Pollutant Volatile Organics plus a forward library search of 15 tentatively identified compounds
BN + 15 = Base Neutral Organics plus a forward library search of 15 tentatively identified compounds
TBA = Tertiary Butyl Alcohol
MTBE = Methyl Tert Butyl Ether

4.0 Discussion, Conclusions, and Recommendations

This section provides a discussion on ground water quality for ground water samples collected during this recent sampling event, prior sampling events and probable source areas for dissolved petroleum hydrocarbon plumes. Ground water in this region of Newark is currently classified as Class II-A, which applies to ground water having a primary designated use as potable water or conversion to potable water with conventional treatment. Ground water in this region, however, has not been used for drinking water for decades due to the industrial land use of the area and the proximity of saline waters of the Passaic River. It is possible that the region's ground water will be reclassified as non-potable (Class II-B/or Class III-B) sometime in the future. Notwithstanding, the site's ground water is compared to Class II-A Ground Water Quality Standards as a relative measure of ground water quality. Surface Water Quality Standards (SE-III) are compared to the furthest downgradient well (MW-16) to evaluate the impact to the Passaic River.

4.1 West Yard

Monitor wells, well points and borehole samples collected from within the West Yard are mainly hydraulically downgradient locations from aboveground storage tanks and pumps. These include boreholes V-7, V-13, and V-19, well points WY-1 through WY-10, and monitor wells MW-1, MW-3, MW-4, MW-5, MW-11, and MW-13. Temporary well point WY-12 was located adjacent to the underground pipelines crossing Doremus Avenue. Monitor well MW-06 is located downgradient of a former drum storage area, and MW-15 is located in the western corner of the West Yard. MW-15 is the site's upgradient monitor well. Depth to the water table is shallow, approximately 2 feet below ground surface, except in the area of MW-15 which is elevated approximately 5 to 8 feet above the tank basin area. Free phase product has not been detected in any of the samples collected from the wells or boreholes. Dissolved volatile organic compounds including BTEX, MTBE and TBA as well as some base neutral compounds have been detected in ground water. The following observations are drawn from the West Yard sampling results.

4.1.1 <u>Dissolved BTEX, MTBE and TBA Plumes</u>

Elevated levels (> 100 ug/L) of dissolved BTEX are detected in three areas of the West Yard. Figure

4 depicts these areas using data obtained primarily from laboratory analysis. These areas are: 1) at points WY-5 and WY-6 along the northeastern property border; 2) in the vicinity of monitor wells MW-03, MW-05, MW-11 and boring V-19, which are within the eastern central portion of the West Yard; and 3) adjacent to the underground pipelines at WY-12. Sample point V-7 also indicated the presence of an elevated toluene level based on the field GC screening. The low to nondetectable levels measured in MW-04 and MW-13 suggest that there are at least two separate plumes in the West Yard: one in the vicinity of WY-5 and WY-6 and the other in the vicinity of MW-03 and MW-11.

Class II-A Standards for benzene and total xylenes are exceeded at WY-5, along the northeastern property boundary. Ground water flow in this portion of the site is estimated to be toward the northeast. Concentrations east and west of WY-5 and WY-6 are lower or nondetectable. In addition, concentrations immediately upgradient of this area at WY-9, WY-10, and MW-13 are also significantly lower. The source of elevated levels at WY-5 and WY-6 is not known; however, an adjacent off-site source may be contributory. Junked vehicles are observed on the adjacent property at the fence along the entire northeast property border.

The elevated BTEX concentrations detected at WY-12 may be associated with those measured at MW-3/MW-11 or have a source related to the underground pipelines that cross beneath Doremus Avenue. The elevated BTEX levels at WY-12 would migrate toward the central portion of the East Yard based on estimated ground water flow directions.

At wells MW-03, MW-05, and MW-11, benzene and xylene concentrations also exceed the Class II-A standards. These wells are downgradient of pumps servicing the above ground gasoline tanks. While these wells are also located in the vicinity of a former underground gasoline pipeline rupture that occurred sometime during the early 1960's, these wells also contain MTBE (see below), which suggests a discharge since the mid-1980's. Additionally, the source of the elevated BTEX levels in this area is not believed to be residual contamination from the pipeline rupture because 30 years have passed since this discharge occurred. Levels should have diminished greatly since then due to dispersion, advection and natural degradation processes. A nearby upgradient source is a more likely possibility.

Upgradient well MW-15 contains trace levels of BTEX. These compounds may be migrating to this

area from the adjacent property to the southeast.

MTBE is detected in laboratory measured concentrations ranging from approximately 5 to 300 ug/L at most sample locations in the West Yard. Figure 5 depicts the distribution of MTBE concentrations. Field GC analysis generally detected higher concentrations compared to the laboratory analysis. The highest concentrations as measured by laboratory analysis are in the vicinity of MW-05 and MW-11. MTBE was not detected in upgradient well MW-15. TBA was detected in laboratory samples collected along or near the northeast property boundary. Low levels (< 30 ppb) were measured at MW-1, WY-2, WY-4, WY-5, WY-7 and MW-13. TBA was not detected in any of the other laboratory samples collected from upgradient locations.

MTBE and TBA are oxygenates used as a lead substitute for gasoline additives since the mid-1980's. MTBE behaves differently than other components in gasoline such as BTEX. MTBE does not adsorb to soil particles or biodegrade as readily as does BTEX under typical subsurface conditions. Dissolved MTBE advances at nearly the same rate as ground water compared to BTEX, which moves more slowly than ground water. Therefore, when present in a fuel discharge to ground water, MTBE will travel farther and faster than BTEX. The detection of MTBE without coexisting BTEX generally indicates an upgradient source. This is observed in monitor wells MW-04, MW-13, and MW-6 where trace or nondetectable BTEX concentrations exist with elevated MTBE concentrations (46-94 ppb).

4.1.2 Base Neutrals and Lead

Base Neutral compounds were analyzed in samples collected from WY-2, WY-4, WY-5, WY-7, MW-4 and MW-13. Trace to low levels were measured in the well point samples collected along the northeast property boundary. No BNs exceeded Class II-A standards at these downgradient locations. Therefore, elevated concentrations of BNs are not migrating off site along the northeastern property border.

Lead was analyzed from temporary well points WY-2, WY-4, WY-5 and WY-7 located along the northeastern property border. Elevated levels of Total Lead ranging from 1,940 ug/L to 7,190 ug/L were reported; however, samples collected from the temporary well point samples were noted to be turbid, which would cause the elevated concentrations. Samples collected from a properly

constructed and developed monitor well, which should filter out most of the turbidity, would yield lower, more representative concentrations of Total Lead in the ground water. Previous sampling results (June 1988) in nearby monitoring wells MW-4 and MW- 13 indicated non-detectable (<5ppb) Lead concentrations.

4.2 East Yard

Monitor well, well point and borehole samples were collected from within the East Yard mainly downgradient of the loading rack and in the vicinity of aboveground storage tanks and pumps. These include: samples collected from monitor wells MW-7, MW-8, MW-9, MW-12, MW-14 and MW-16; Geoprobe samples EY-1 through EY-11 (with the exception of EY-9); and borings B-3, B-4 and B-6.

4.2.1 Dissolved BTEX, MTBE and TBA Plumes

Monitor wells within the East Yard are situated within the easternmost portion at hydraulically downgradient locations. Low (< 100 ppb) to elevated concentrations (> 100-1000 ppb) of BTEX are detected at these well locations (Figure 4). Upgradient locations (i.e. from within tank basins and at the Loading Rack) were sampled at the temporary well points and boreholes to investigate potential upgradient sources for the BTEX concentrations detected at the downgradient well locations. At least three potential source locations have been identified where higher BTEX and MTBE concentrations or free product are detected. These locations are the Loading Rack, an area northeast of Tank No. 5, and the fuel additive tank east of Tank No. 1.

Loading Rack

Ground water samples collected at points surrounding the Loading Rack contained elevated concentrations of BTEX, MTBE and TBA, particularly at EY-2 where approximately 12,000 ppb of BTEX, 97,000 ppb of MTBE and 16,000 ppb of TBA were detected. These sample points are at locations adjacent to the catchdrains which collect runoff from the Loading Rack pad. The source of the product and elevated levels are not yet known. Given the magnitude of concentrations of BTEX and in particular MTBE and TBA, which are relatively recent additives to gasoline, a recent source is suspected. It is possible that the catch drains are cracked at several locations. Product

spills during loading operations that are collected by the catch drains may leak to soil and ground water where cracks are present. These catch basins are connected to underground storm sewer pipes that ultimately discharge to the oil/water separator located east of the garage building.

The elevated VOC concentrations decrease substantially at downgradient monitor wells MW-9, MW-14 and MW-16. MW-16, the furthest downgradient well, is used to evaluate impacts to ground water migrating from this area of the terminal to the Passaic River. The NJDEP requires that sampling results from MW-16 be compared to Surface Water Quality Standards to evaluate whether ground water is having an adverse impact on the Passaic River. Measured concentrations of regulated compounds at MW-16 to date have been less than Surface Water Quality Standards for the Passaic River (see Table 12).

Fuel Additive Tank Area

Ground water samples collected at MW-12 and B-3 near the fuel additive tank east of Tank No.1 contain elevated benzene, ethylbenzene, MTBE, and TBA. In addition, the soil sample collected at B-1 (1-1.5 feet) contained elevated total petroleum hydrocarbons and low BTEX levels. This area was previously excavated and backfilled with clean fill during remediation of the tank basins in 1990, which suggests that this clean fill area was contaminated after 1990 and could be a source of ground water contamination. Photo 3 of Appendix C is a copy of a photograph taken in June 1996 of the fuel additive tank. The photograph shows evidence of apparent leaks from the pump servicing the fuel additive tank that may be a source of petroleum hydrocarbons detected in soil and ground water in this area.

East of Tank No. 5

Ground water samples collected at sample points B-4, EY-5, EY-6 and EY-10 also exhibited elevated concentrations (>1000 ppb) of BTEX and MTBE. Sample B-4, which is located nearby a Vapor Recovery Unit located northeast of Tank No.5, exhibited extremely elevated levels of BTEX (approx. 36,000 ppb). EY-5, E-6, and E- 10 are located adjacent to above ground pipelines and pumps.

Review of site documents provided to TRMI by Getty indicated that in July 1988 a 2,000 gallon

gasoline spill was reported to have occurred at the Vapor Recovery Unit northeast of Tank No. 5. The spill was reported in Getty Petroleum Corporation's *On Shore Facility Response Plan* dated via cover letter February 15, 1995. Appendix D provides a copy of the spill history section that describes this past petroleum release. The report states that a 2,000 gallon gasoline spill occurred at the Vapor Recovery Unit on July 22, 1988. Photo 1 of Appendix C provides a photograph of the Vapor Recovery Unit. The spilled gasoline apparently was pumped from the basin immediately after the spill; however, no statements are provided regarding the impact to soil or ground water resulting from the discharge. It is suspected that the elevated levels detected in B-4 and perhaps at crossgradient locations EY-5, EY-6 and EY-10 are the result of residual contamination from this spill. The spill may also be a source of dissolved BTEX concentrations detected at downgradient locations (see Section 4.3).

4.2.2 Base Neutrals

Base Neutral compounds were analyzed in samples collected from East Yard monitor wells MW-9, MW-12, MW-14 and MW-16. However, unlike the West Yard, East Yard well samples were not analyzed for Lead. Trace to low levels were measured in the monitor wells located within paved portions of the site. No BNs exceeded Class II-A standards. No BNs were detected in MW-16, the well closest to the Passaic River. Therefore, elevated concentrations of BNs are not migrating off-site to the southeast towards the Passaic River.

4.3 Historic Ground Water Concentrations

Appendix E provides tables summarizing the chronological results of ground water samples collected from site monitoring wells. Ground water quality has been monitored for approximately twelve years beginning in December 1984. The monitoring results indicate varying trends over the course of the monitoring program. To depict these trends, total benzene, toluene, and ethylbenzene (BTE) concentrations versus time have been graphed. Figures 1 through 6 in Appendix F are graphs of total BTE levels for monitor wells MW-1 through MW-14. Total BTE was selected since they are components of product that has been stored and transferred at the terminal and they have been analyzed consistently in monitoring wells since the beginning of ground water monitoring. Xylenes have not been measured consistently during some earlier sampling events and, therefore, were not included.

In West Yard Wells (Figures 1, 2 and 3 of Appendix F), levels of total BTE were nondetectable to low during the 1984 and 1988 sampling events. A significant increase occurred subsequently during 1990-1991 sampling events for wells MW-3, MW-4, MW-5, MW-11 and MW-13. Fluctuating concentrations with overall decreasing trends occurred in these wells since 1992-1993. For East Yard Wells (Figures 4, 5, and 6), increasing concentrations of total BTE are observed in MW-7, MW-8, MW-9, and MW-14 between the 1984/1988 sampling events and the 1990-1991 sampling events. Overall stable or decreasing trends have taken place since 1991. The spike in concentration in MW-8, MW-12, and MW-14 during the June 1994 sampling event was not reproduced during latter sampling events.

Average BTE concentration trends for West Yard Wells and East Yards wells may be used to evaluate overall ground water quality at the site (Figure 7 of Appendix F). The plots indicate a substantial increase in concentrations between 1988 and 1991. This increase is followed by overall stable to decreasing trends in average concentrations. The June 1994 averages are substantially elevated compared to prior or post sampling events. This is due in part because a limited number of wells having higher VOC concentrations were sampled during that particular round. However, VOC concentrations reported for June 1994 were higher than the previous December 1993 sampling for these same wells and may be reflective of the site ground water quality in June 1994.

The gasoline spill reported to have occurred in July 1988 at the Vapor Recovery Unit is a suspected contributory source of the increasing BTE levels appearing in downgradient monitor wells during 1990-1991. A solute transport model was run in order to confirm that a BTEX spill at this upgradient location could migrate and produce the magnitude of benzene concentrations observed in downgradient wells during 1990 and 1991.

A two-dimensional solute transport equation was used to predict the persistence of benzene from a 1988 spill event near the vapor recovery system in the East Yard (Appendix G). Due to the complex character of the site (i.e. structural foundations, fill, multiple sources) and the lack of some specific parameters, the model was run only to predict the margin of time which one could expect to see influence from the spill on the East Yard's monitor wells (MW-12, MW-09, MW-14, MW-16). This rough calculation assumed isotropic conditions and an instantaneous spill event including terms for retardation, biodegradation and source decay. A scenario was drawn in which a residual concentration of 10 ppm existed inside Tank Basin No. 5 following a presumed cleanup of the 1988 spill. The input parameters for the equation were based on field measurements, published data, and

conservative assumptions. Appendix G lists the values of the parameters used in calibrating the equation.

Calculations were then performed to predict the influence of the spill on benzene concentrations for each year between 1989 and 1996. The results are displayed in the Table 14 below. These data suggest that based on the utilized input parameters, it is reasonable to expect the 1988 spill to effect the benzene concentrations in all the above mentioned monitor wells with peak influence in each well occurring sometime between 1993 and 1996.

Table 14 - Predicted vs Actual Benzene Concentrations in East Yard.

Well No.		1989	1990	1991	1992	1993	1994	1995	1996
MW-09	Predicted (ug/L)	40	125	170	192	202	205	205	204
	Actual* (ug/L)	-	nd	30	27	19	18	17	11
MW-12	Predicted (ug/L)	86	168	200	213	217	216	214	210
	Actual* (ug/L)	-	266	460	425	520	225	300	224
MW-14	Predicted (ug/L)	10	63	108	134	148	155	158	158
	Actual* (ug/L)	-	34	130	81	98	168	89	136
MW-16	Predicted (ug/L)	5	45	87	117	134	144	149	150
	Actual* (ug/L)	-	-	-	-	-	18	7	16

* - Yearly average
nd - not detected
"-" - not sampled

4.4 Conclusions

It is apparent from the historic ground water data that the site's ground water quality has degraded since Texaco transferred the property to Power Test Corporation in 1985, most significantly

beginning in 1990-1991. Spills and discharges since 1985 are believed to have contributed to the increasing concentration trends and worsening of ground water quality, particularly in the vicinity of MW-8 and MW-12 where product sheen has been observed. The following are believed to be possible contributory sources to site ground water:

- A 2,000-gallon gasoline spill occurring on July 22, 1988 at the Vapor Recovery Unit (Photograph 1 in Appendix C) that was reported in Getty's *On Shore Facility Response Plan*.

- Product-stained soil at sample point B-5, collected beneath a pipeline valve leading to Tank No. 5 (Photograph 2 in Appendix C), where 38,700 ppm of TPHC was detected.

- At sample point B-1 where 4,090 ppm of TPHC was detected in an area adjacent to a fuel additive tank (Photograph 3 in Appendix C) that was previously excavated and remediated by TRMI.

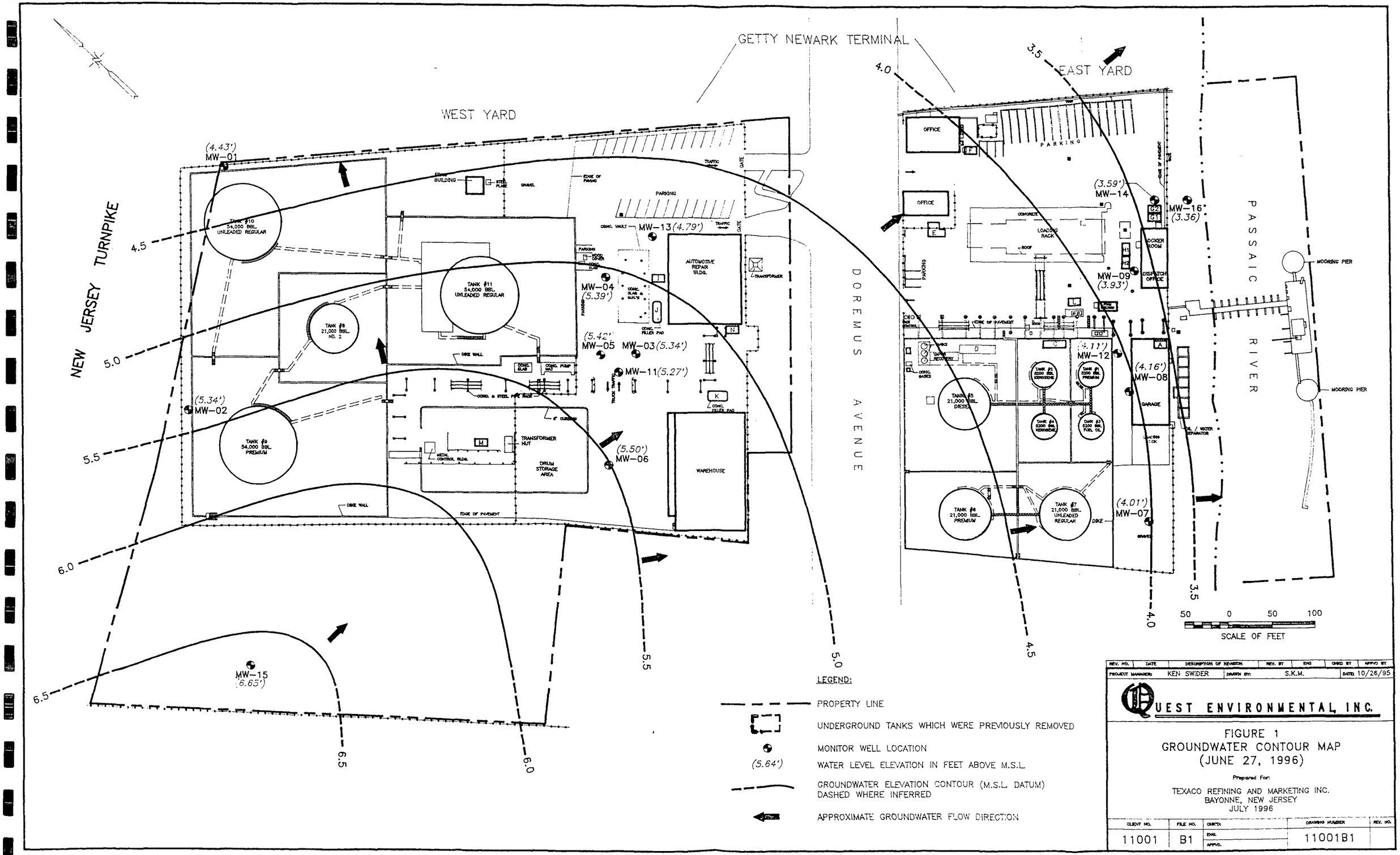
- Product-stained soil at sample point D-1 (West Yard), located adjacent to a 10,000-gallon diesel tank (Photograph 4 in Appendix C), where 8,570 ppm of TPHC was detected.

- The Loading Rack where elevated concentrations of BTEX, MTBE and TBA are detected at adjacent sampling locations.

Investigation of ground water quality along the northeast property boundary of the West Yard indicated that Class II-A Standards for benzene and total xylenes are exceeded at WY-5.

FIGURES

933500037


GETTY NEWARK TERMINAL
WEST YARD
EAST YARD
NEW JERSEY TURNPIKE
DOREMUS AVENUE
PASSAIC RIVER
MOORING PIER
MOORING PIER
(4.43') MW-01
(5.34') MW-02
MW-13 (4.79')
MW-04 (5.39')
(5.42') MW-05
MW-03 (5.34')
MW-11 (5.27')
(5.50') MW-06
MW-15 (6.65')
(3.59') MW-14
MW-16 (3.36)
MW-09 (3.93')
(4.11') MW-12
(4.16') MW-08
(4.01') MW-07
TANK #10 54,000 BBL. UNLEADED REGULAR
TANK #8 21,000 BBL. NO. 2
TANK #11 54,000 BBL. UNLEADED REGULAR
TANK #9 54,000 BBL. PREMIUM
AUTOMOTIVE REPAIR BLDG.
WAREHOUSE
DRUM STORAGE AREA
TRANSFORMER HUT
METAL CONTROL BLDG.
OFFICE
OFFICE
PARKING
LOADING RACK
LOCKER ROOM
DISPATCH OFFICE
GARAGE
TANK #5 21,000 BBL. DIESEL
TANK #6 21,000 BBL. PREMIUM
TANK #7 21,000 BBL. UNLEADED REGULAR
TANK #2 6200 BBL. KEROSENE
TANK #1 6200 BBL. PREMIUM
TANK #4 6200 BBL. KEROSENE
TANK #3 6200 BBL. FUEL OIL
DIKE WALL
EDGE OF PAVEMENT
3.5
4.0
4.5
5.0
5.5
6.0
6.5
50 0 50 100
SCALE OF FEET
LEGEND:
PROPERTY LINE
UNDERGROUND TANKS WHICH WERE PREVIOUSLY REMOVED
MONITOR WELL LOCATION
(5.64') WATER LEVEL ELEVATION IN FEET ABOVE M.S.L.
GROUNDWATER ELEVATION CONTOUR (M.S.L. DATUM) DASHED WHERE INFERRED
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV. NO. | DATE | DESCRIPTION OF REVISION | REV. BY | ENG | CHKD BY | APPVD BY
PROJECT MANAGER: KEN SWIDER
DRAWN BY: S.K.M.
DATE: 10/26/95
QUEST ENVIRONMENTAL, INC.
FIGURE 1
GROUNDWATER CONTOUR MAP
(JUNE 27, 1996)
Prepared For:
TEXACO REFINING AND MARKETING INC.
BAYONNE, NEW JERSEY
JULY 1996
CLIENT NO. 11001
FILE NO. B1
CHK'D:
ENG.
APPVD.
DRAWING NUMBER 11001B1
REV. NO.

933500038

NOTICE ABOUT UNSCANNABLE MAP

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REV. NO.	DATE	DESCRIPTION OF REVISION	REV. BY	CHKD	CHKD BY	APPVD BY

PROJECT MANAGER	KEN SWIDER	DRAWN BY	S.K.M.	DATE	7/23/96

QUEST ENVIRONMENTAL, INC.

FIGURE 2
VOLATILE ORGANIC COMPOUND
SAMPLE RESULTS

Prepared For

TEXACO REFINING AND MARKETING INC.
BAYONNE, NEW JERSEY
JULY 1996

CLIENT NO.	FILE NO.	CHKD.	DRAWING NUMBER	REV. NO.
11001	C1	DRN. / APPVD.	11001C1	

933500039

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REV. NO.	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPV'D BY

PROJECT MANAGER: KEN SWIDER	DRAWN BY: S.K.M.	DATE: 7/23/96

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FIGURE 3
BASE NEUTRALS AND LEAD SAMPLE RESULTS

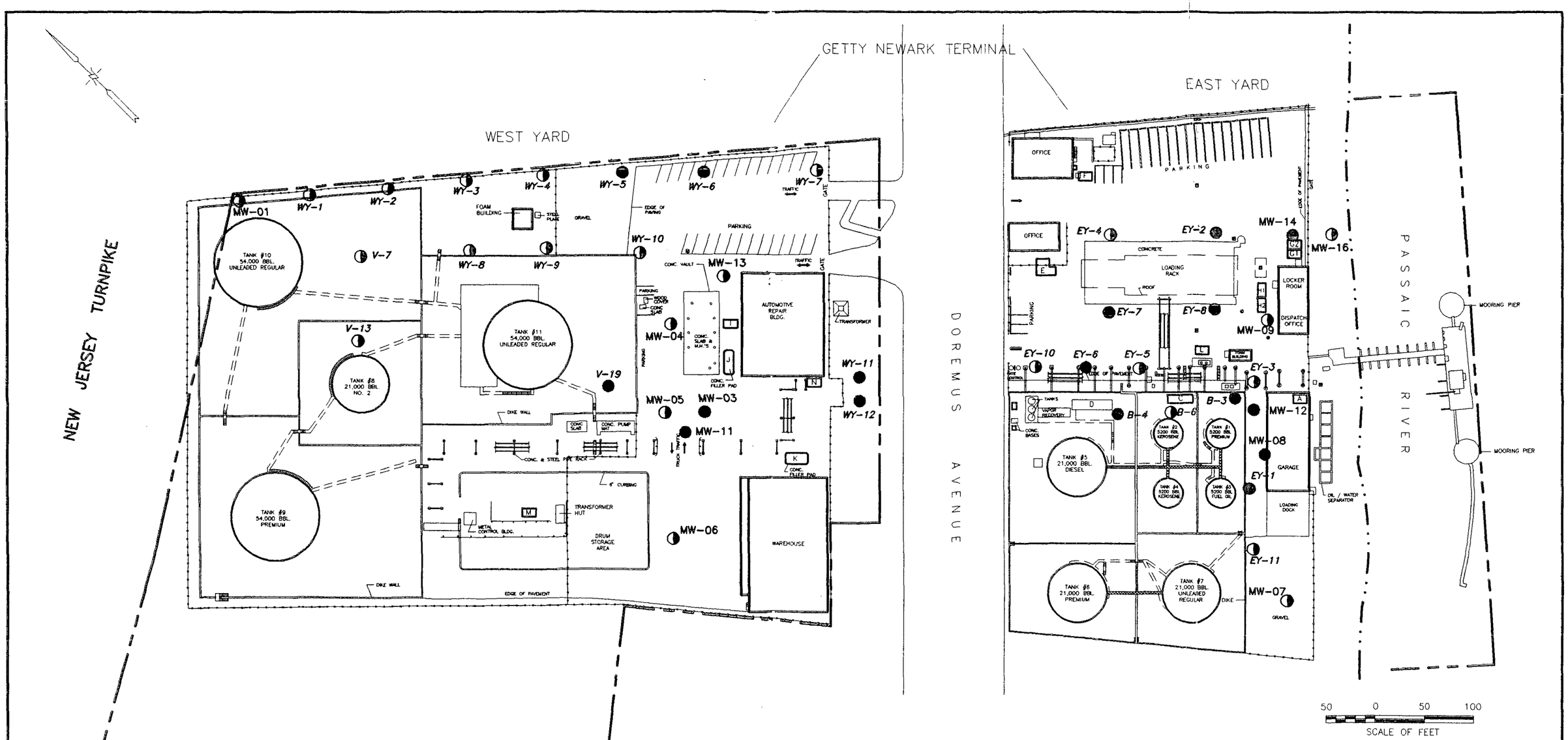
Prepared For:

TEXACO REFINING AND MARKETING INC.
BAYONNE, NEW JERSEY
JULY 1996

CLIENT NO.	FILE NO.	CHK'D:	DRAWING NUMBER	REV. NO.
11001	C2	ENG. APPV'D.	11001C2	

933500040

933500041



LEGEND:

PROPERTY LINE

UNDERGROUND TANKS WHICH WERE PREVIOUSLY REMOVED

> 10,000 ug/L BTEX

1,000-10,000 ug/L BTEX

100-1,000 ug/L BTEX

<100 ug/L BTEX

REV. NO.	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPV'D BY

PROJECT MANAGER: KEN SWIDER | DRAWN BY: S.K.M. | DATE: 10/26/95

QUEST ENVIRONMENTAL, INC.

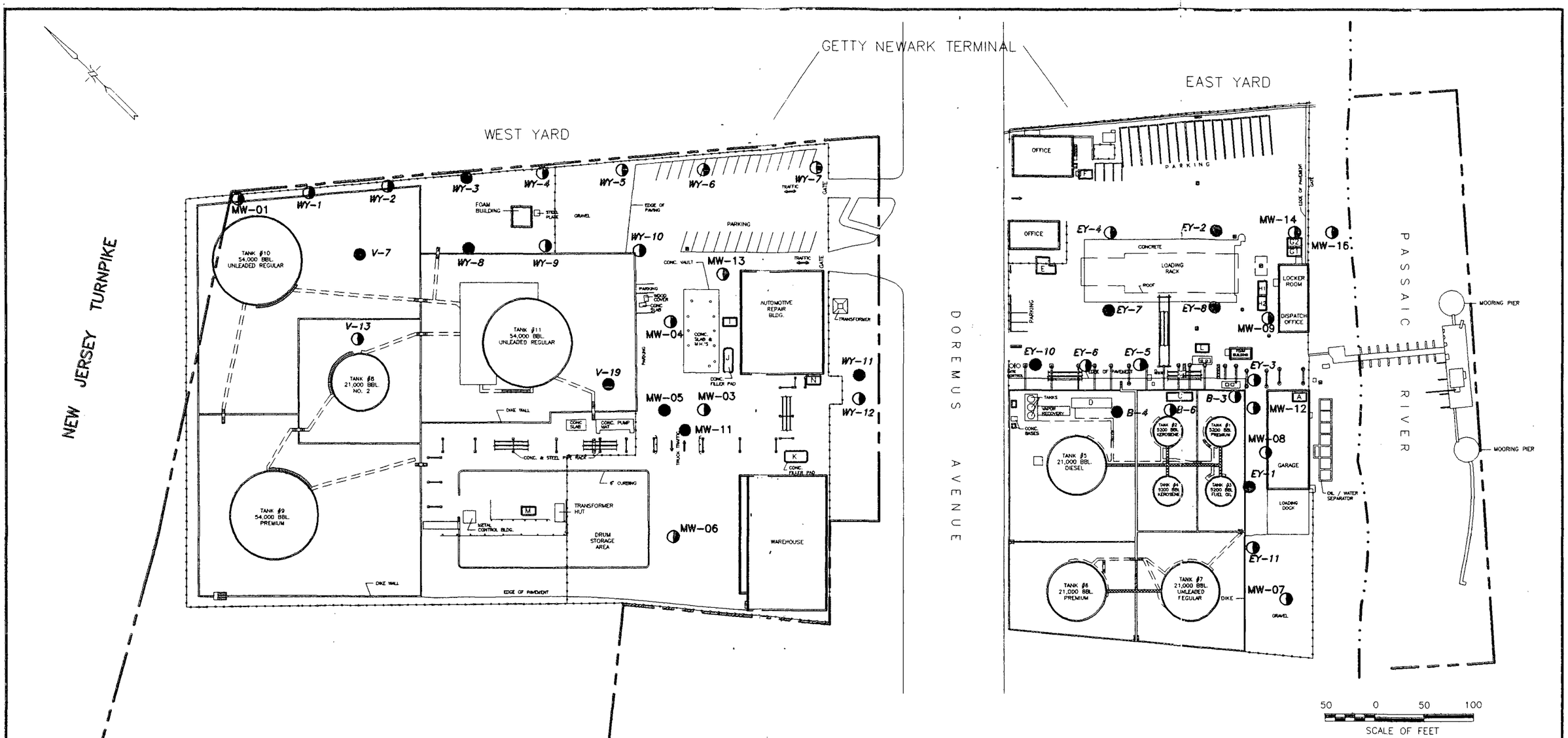
FIGURE 4
TOTAL BTEX CONCENTRATIONS IN GROUND WATER

Prepared For:

TEXACO REFINING AND MARKETING INC.
BAYONNE, NEW JERSEY
AUGUST 1996

CLIENT NO	FILE NO.	CHK'D:	DRAWING NUMBER	REV. NO.
11001	B4	ENG. / APPV'D.	11001B4	

933500042



LEGEND:

- PROPERTY LINE
- UNDERGROUND TANKS WHICH WERE PREVIOUSLY REMOVED
- > 10,000 ug/L MTBE
- 1,000–10,000 ug/L MTBE
- 100–1,000 ug/L MTBE
- <100 ug/L MTBE

REV. NO.	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHK'D BY	APPV'D BY

PROJECT MANAGER: KEN SWIDER | DRAWN BY: S.K.M. | DATE: 10/26/95

QUEST ENVIRONMENTAL, INC.

FIGURE 5
MTBE CONCENTRATIONS IN GROUND WATER

Prepared For:

TEXACO REFINING AND MARKETING INC.
BAYONNE, NEW JERSEY
AUGUST 1996

CLIENT NO.	FILE NO.	CHK'D:	DRAWING NUMBER	REV. NO.
11001	B3	ENG. / APPV'D.	11001B3	

APPENDIX A

Appendix A
Field Sampling and Analytical Methods

Appendix A - Field Sampling and Analytical Methods

Supplemental Field Investigations

On June 25 and 26, 1996, twenty-two (22) well point locations were installed at the Getty Newark terminal, to evaluate the shallow ground water quality at areas of the site described in Section 2. Well points were installed by a NJ-licensed well driller from Environmental Probe Investigations, Inc. (EPI) of Pipersville, Pennsylvania. EPI utilized a truck- mounted Geoprobe to install the temporary well points.

Quest Environmental, Inc. supervised the well point installation and collected ground water samples. Well points were constructed by first driving a two (2) inch diameter steel probe to the desired depth within the water bearing zone. The water table was approximately 2-3 feet below ground surface, and boreholes were driven at least three feet below the water table. The probe was then removed and a one (1) inch diameter well screen was placed within the borehole. When the well had recharged sufficiently, samples were collected via a dedicated bailer and were subsequently placed into sample jars. Samples were analyzed with a Field GC by a technician from O'Brien and Gere Engineer's, Inc. Confirmatory laboratory analysis was performed by Accutest Laboratories as described below.

The field GC was used to analyze samples for concentrations of Benzene, Toluene, Ethylbenzene, MTBE, and TBA (Appendix B). Accutest Laboratories analyzed samples for Benzene, Toluene, Ethylbenzene, Xylene, MTBE, TBA. Additionally, four (4) samples (WY-2, WY-4, WY-5, WY-7) were analyzed for Base Neutrals plus library search for 15 tentatively identified compounds (BN+15) and Total Lead.

Upon the completion of sampling, the well screens were pulled by the driller and the borehole was backfilled with bentonite hole plug and capped with asphalt.

Monitor Well Sampling

Monitor wells were sampled following the procedures in the *NJDEP Field Sampling Procedures Manual, May 1992.* Quest sampled monitor wells according to the following procedure:

1. The following information was recorded on a field sampling log: project name; date; weather condition; samplers; method of purging; field meter type; field meter calibration data; well numbers; and sampling/purging times. A copy of the field log appears at the end of this appendix.

2. Wells were first checked for a free product layer using an electronic oil/water interface probe. Then, the depth to water and depth to well bottom was measured from the inner well casings using an electronic water-gauging tape. The data was recorded on the field log.

3. Prior to purging and sampling each well, the volume of the water column was calculated using the well diameter and height of the water column. Monitor wells were purged approximately three volumes. Purging was accomplished using either a centrifugal pump with dedicated polyethylene tubing or a peristaltic pump with dedicated polyethylene tubing. Purging rates ranged from 0.2 to 1.5 gallons per minute depending on the recharge rates of the wells. Before, during and after purging the well, samples were collected to measure pH, temperature, conductivity, and dissolved oxygen using the field meter. The measurements were recorded on the field log.

4. Ground water samples were collected using new disposable, dedicated polyethylene bailers which were slowly lowered and retrieved from the wells using polypropylene rope. Ground water collected in each bailer was poured directly from the bailer into the appropriate sample containers. After sampling, a sample was measured for pH, temperature, conductivity, and dissolved oxygen.

5. Sample containers were labeled, logged on a chain-of-custody document, and placed in a sample shuttle containing ice packs.

A field blank was collected from a new bailer to ensure that no contaminants were introduced from the bailers into ground water samples. The field blank was collected by pouring demonstrated analyte-free water obtained from the laboratory into the bailer and collecting the rinsate directly into the sample containers. The field blank was logged on the chain-of-custody document and placed

into the sample shuttle. A trip blank accompanied samples in the sample shuttle during sampling and transport from and to the laboratory.

Soil Sampling

A total of three (3) soil samples were collected at soil sampling locations described in Section 2.

Samples were collected by hand auger. Sampling equipment was decontaminated in accordance with the procedures specified within the NJDEP *May 1992 Field Sampling Procedures Manual*, which includes:

- Laboratory grade glassware detergent and tap water scrub to remove visual contamination.
- Generous tap water rinse.
- Distilled and Deionized water rinse.

Decontamination was performed prior to initiation of sampling and following collection of each sample. Sampling personnel wore latex gloves while handling samples and sampling equipment. Samples were collected for TPHC and BTEX compounds. All sample containers were laboratory supplied. Samples were cooled by packing the sample container in ice during sampling and shipment to the laboratory.

Laboratory Analysis

Accutest Laboratories, located in Dayton, New Jersey (Certification No. 12129), performed the laboratory analysis of samples. Samples were analyzed for the following parameters and methods:

Parameter	Matrix	Method
Volatile Organic Compounds	Water	EPA Method 624
	Soil	EPA Method 8240
MTBE, TBA		EPA Method 624
Base Neutral Compounds	Water	EPA Method 625
TPHC	Soil	EPA Method 481.1m
Lead	Water	EPA Method 239.2

Samples were analyzed within the required holding times from the time of collection. NJ Reduced Data Deliverables per N.J.A.C. 7:26E were used for quality assurance. Volumes II and III of this report are copies of the laboratory deliverables.

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco / Gotty
Well #: MW-1
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ≈ 75°F
Personnel: JM JR

INITIAL MEASUREMENTS

PID (ppm): -
Product (inches): -

pH: 7.00 su
Temp: 11.8°C
Cond.: 5.79 mS
Dslvd. oxygen: 0.4 ppm

Total Depth: 18.84
Depth to Product: -
Depth to Water: 3.76
Water col. Height: 15.08
Conversion Factor: 0.6528
Gallons in Well: 9.8
Gallons to Purge: 29.5

WELL EVACUATION

Method:
- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☒ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.83 su
Temp: 11.1°C
Cond: 8.17 mS
Dslvd Oxygen: 0.4 ppm

Recharge Rate:
Purge Start: 815
Purge Stop: 850
Purge Time: 35
Purge Rate: 0.86 gpm
Gal. Purged: ~30 gal.

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.75 su
Temp: 11.7°C
Cond.: 10.2 mS
Dslvd Oxygen: 0.5 ppm

Sample Start: 900
Sample End: 900
Sample #: MW-1
Appearance:
Odor:

933500047

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW - 3
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ±75°F
Personnel: JR, JM

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 7.09 su
Temp: 15.8°C
Cond.: 6.03 mS
Dslvd. oxygen: 1.4 ppm

Total Depth: 18.15
Depth to Product: –
Depth to Water: 1.90
Water col. Height: 16.25
Conversion Factor: 0.6528
Gallons in Well: 10.6
Gallons to Purge: 31.8

WELL EVACUATION

Method:
- ☒ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 7.1 su
Temp: 20.3°C
Cond: 6.4 mS
Dslvd Oxygen: 0.9 ppm

Recharge Rate: –
Purge Start: 1133
Purge Stop: 1155
Purge Time: 22
Purge Rate: 1.45
Gal. Purged: 32

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 7.07
Temp: 20.2°C
Cond.: 6.4 mS
Dslvd Oxygen: 0.4 ppm

Sample Start: 1158
Sample End: 1158
Sample #: MW-3
Appearance: Clear
Odor: None

933500048

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-4
Location: Newark
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ± 75°F
Personnel: SR, JM

INITIAL MEASUREMENTS

PID (ppm): —
Product (inches): —

pH: 7.18 su
Temp: 21.5°C
Cond.: 1.80 mS
Dslvd. oxygen: 0.2 ppm

Total Depth: 10.6
Depth to Product: —
Depth to Water: 1.58
Water col. Height: 9.02
Conversion Factor: 0.6528
Gallons in Well: 5.9
Gallons to Purge: 17.6

WELL EVACUATION

Method:
- ☒ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 7.21 su
Temp: 22.0°C
Cond: 1.68 mS
Dslvd Oxygen: 0.6 ppm

Recharge Rate: —
Purge Start: 1450
Purge Stop: 1508
Purge Time: 18
Purge Rate: 1
Gal. Purged: 18

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 7.19 su
Temp: 21.8°C
Cond.: 1.94 mS
Dslvd Oxygen: 0.3 ppm

Sample Start: 1510
Sample End: 1510
Sample #: MW-4
Appearance:
Odor: H_2S

933500049

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-5
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny 75°F
Personnel: JM, R

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 7.10 su
Temp: 19.4°C
Cond.: 891 mS
Dslvd. oxygen: 0.5 ppm

Total Depth: 10.20
Depth to Product: –
Depth to Water: 1.44
Water col. Height: 8.76
Conversion Factor: 0.6528
Gallons in Well: 5.72
Gallons to Purge: 17.2

WELL EVACUATION

Method:
- ☒ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.92 su
Temp: 17.3°C
Cond: 103 mS
Dslvd Oxygen: 0.2 ppm

Recharge Rate: –
Purge Start: 1029
Purge Stop: 1052
Purge Time: 23
Purge Rate: 0.78 gpm
Gal. Purged: 18

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.87 su
Temp: 16.7°C
Cond.: 113 mS
Dslvd Oxygen: 0.3 ppm

Sample Start: 1055
Sample End: 1055
Sample #: MW-5
Appearance:
Odor:

933500050

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-6
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ± 75°F
Personnel: JM, JR

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 6.84 su
Temp: 15.3 °C
Cond.: 27.1 mS
Dslvd. oxygen: 0.3 ppm

Total Depth: 10.36
Depth to Product: –
Depth to Water: 1.00
Water col. Height: 9.36
Conversion Factor: 0.6528
Gallons in Well: 6.11
Gallons to Purge: 18.3

WELL EVACUATION

Method:
- ☒ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.84 su
Temp: 14.8 °C
Cond: 23.2 mS
Dslvd Oxygen: 0.4 ppm

Recharge Rate:
Purge Start: 1002
Purge Stop:
Purge Time:
Purge Rate:
Gal. Purged:

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.85 su
Temp: 14.2 °C
Cond.: 23.8 mS
Dslvd Oxygen: 0.4 ppm

Sample Start: 1020
Sample End: 1020
Sample #: MW-6
Appearance:
Odor:

933500051

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-7
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny I 75°F
Personnel: JM, JR

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 6.8 su
Temp: 21.4 °C
Cond.: 2.03 mS
Dslvd. oxygen: 0.6 ppm

Total Depth: 13.30
Depth to Product: –
Depth to Water: 4.20
Water col. Height: 9.1
Conversion Factor: 0.6528
Gallons in Well: 5.94
Gallons to Purge: 17.8

WELL EVACUATION

Method:
- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☒ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 7.23 su
Temp: 19.9 °C
Cond: 288 uS
Dslvd Oxygen: 4.9 ppm

Recharge Rate:
Purge Start: 1202
Purge Stop: 1313
Purge Time: 1hr 11min
Purge Rate: 0.21 gpm
Gal. Purged: 15

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 7.18 su
Temp: 16.6 °C
Cond.: 760.7 mS
Dslvd Oxygen: 0.7 ppm

Sample Start: 1315
Sample End: 1315
Sample #: MW-7
Appearance:
Odor: None

933500052

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-8
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ± 75°F
Personnel: JM, JR

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 6.59 su
Temp: 20.8°C
Cond.: 0.6 92 mS
Dslvd. oxygen: 0.4 ppm

Total Depth: 16.60
Depth to Product: –
Depth to Water: 2.70
Water col. Height: 13.90
Conversion Factor: 0.6528
Gallons in Well: 9.07
Gallons to Purge: 27.21

WELL EVACUATION

Method:
- ☒ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.90 su
Temp: 20.2°C
Cond: 590 µS
Dslvd Oxygen: 3.5 ppm

Recharge Rate:
Purge Start: 1030
Purge Stop: 1058
Purge Time: 28 min
Purge Rate: 0.89 gpm
Gal. Purged: 25 gl

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.45 su
Temp: 17.6°C
Cond.: 524 µS
Dslvd Oxygen: 0.6 ppm

Sample Start: 1105
Sample End: 1105
Sample #: MW-8
Appearance:
Odor: H_2SO_4

933500053

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-9
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ≈ 75°F
Personnel: JM JR

INITIAL MEASUREMENTS

PID (ppm): —
Product (inches): —

pH: NA
Temp: NA
Cond.: NA
Dslvd. oxygen: NA

Total Depth: 7.06
Depth to Product: —
Depth to Water: 2.21
Water col. Height: 4.85
Conversion Factor: 0.6528
Gallons in Well: 3.2
Gallons to Purge: 9.6

WELL EVACUATION

Method:
- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☒ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 7.13 su
Temp: 26.1°C
Cond: 699 µS
Dslvd Oxygen: 6.2 ppm

Recharge Rate: —
Purge Start: 1130
Purge Stop: 1140
Purge Time: 10 min.
Purge Rate: 0.96 gpm
Gal. Purged: 9.6

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.65 su
Temp: 19.2°C
Cond.: 7.84 mS
Dslvd Oxygen: 0.4 ppm

Sample Start: 1145
Sample End: 1145
Sample #: MW-9
Appearance:
Odor:

933500054

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-11
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ±80°F
Personnel: JR, JM

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 6.85 su
Temp: 18.5 °C
Cond.: 2.78 mS
Dslvd. oxygen: 1.1 ppm

Total Depth: 10.30
Depth to Product: –
Depth to Water: 1.42
Water col. Height: 8.88
Conversion Factor: 0.6528
Gallons in Well: 5.80
Gallons to Purge: 17.3

WELL EVACUATION

Method:
- ☒ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.77 su
Temp: 14.6 °C
Cond: 6.03 mS
Dslvd Oxygen: 1.3 ppm

Recharge Rate: –
Purge Start: 1108
Purge Stop: 1124
Purge Time: 16
Purge Rate: 1.06 gpm
Gal. Purged: 17

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.78 su
Temp: 14.5°C
Cond.: 7.14 mS
Dslvd Oxygen: 1.0 ppm

Sample Start: 1130
Sample End: 1130
Sample #: MW-11
Appearance: Clear
Odor: None

933500055

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-12
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ± 75°F
Personnel: JM, JR

INITIAL MEASUREMENTS

PID (ppm): -
Product (inches): -

pH: 6.39 su
Temp: 18.3 °C
Cond.: 2.37 mS
Dslvd. oxygen: 0.4 ppm

Total Depth: 10.54
Depth to Product: Sheen
Depth to Water: 2.14
Water col. Height: 8.4
Conversion Factor: 0.6528
Gallons in Well: 5.5
Gallons to Purge: 16.5

WELL EVACUATION

Method:
- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☒ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.79 su
Temp: 19.0 °C
Cond: 2.46 mS
Dslvd Oxygen: 2.3 ppm

Recharge Rate:
Purge Start: 1108
Purge Stop: 1135
Purge Time: 27 min
Purge Rate: 0.66 gpm
Gal. Purged: 18

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.82 su
Temp: 17.1 °C
Cond.: 1.81 mS
Dslvd Oxygen: 2.9 ppm

Sample Start: 1140
Sample End: 1140
Sample #: MW-12
Appearance: Clear
Odor: None

933500056

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-13
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ± 80°F
Personnel: R, JM

INITIAL MEASUREMENTS

PID (ppm):
Product (inches): –

pH: 6.84 su
Temp: 15.6°C
Cond.: 3.07 mS
Dslvd. oxygen: 0.7 ppm

Total Depth: 10.54
Depth to Product: –
Depth to Water: 1.49
Water col. Height: 9.05
Conversion Factor: 0.6528
Gallons in Well: 5.90
Gallons to Purge: 17.7

WELL EVACUATION

Method:
- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☒ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 7.05 su
Temp: 20.2°C
Cond: 2.56 mS
Dslvd Oxygen: 0.4 ppm

Recharge Rate: –
Purge Start: 1520
Purge Stop: 1545
Purge Time: 25 min
Purge Rate: 0.72 gpm
Gal. Purged: 18

SAMPLING

Withdrawal:
- ☐ Pump
- ☒ Bailer

pH: 7.07 su
Temp: 20.2°C
Cond.: 3.15 mS
Dslvd Oxygen: 0.4 ppm

Sample Start: 1550
Sample End: 1550
Sample #: MW-13
Appearance:
Odor:

933500057

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-14
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ± 75°F
Personnel: JM R

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 6.51 su
Temp: 14.7°C
Cond.: 7.10 mS
Dslvd. oxygen: 0.2 ppm

Total Depth: 11.34
Depth to Product: –
Depth to Water: 2.16
Water col. Height: 9.18
Conversion Factor: 0.6528
Gallons in Well: 6.0
Gallons to Purge: 18

WELL EVACUATION

Method:
- ☒ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.51 su
Temp: 20.5°C
Cond: 2.60 mS
Dslvd Oxygen: 0.3 ppm

Recharge Rate: –
Purge Start: 1400
Purge Stop: 1425
Purge Time: 25 min
Purge Rate: 0.72 gpm
Gal. Purged: 18

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.50 su
Temp: 20.5°C
Cond.: 2.56 mS
Dslvd Oxygen: 0.3 ppm

Sample Start: 1430
Sample End: 1430
Sample #: MW-14
Appearance:
Odor:

933500058

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-15
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny = 75°F
Personnel: R, JM

INITIAL MEASUREMENTS

PID (ppm): -
Product (inches): -

pH: 6.46 su
Temp: 15.3°C
Cond.: 5.62 mS
Dslvd. oxygen: 1.4 ppm

Total Depth: 18.82
Depth to Product: -
Depth to Water: 9.82
Water col. Height: 9.00
Conversion Factor: 0.6528
Gallons in Well: 5.9
Gallons to Purge: 17.6

WELL EVACUATION

Method:
- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☒ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.28 su
Temp: 14.6°C
Cond: 7.19 mS
Dslvd Oxygen: 0.2 ppm

Recharge Rate:
Purge Start: 911
Purge Stop: 935
Purge Time: 24
Purge Rate: 0.75 gpm
Gal. Purged: 18

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.71 su
Temp: 14.3°C
Cond.: 6.91 mS
Dslvd Oxygen: 0.5 ppm

Sample Start: 945
Sample End: 945
Sample #: MW-15
Appearance: Clear
Odor: H_2S

933500059

GROUNDWATER FIELD SAMPLING RECORD
QUEST ENVIRONMENTAL, INC.

Project: Texaco
Well #: MW-16
Location: Newark, NJ
Permit #:

Date: 6/27/96
Well Dia.: 4"
Weather: Sunny ±80°F
Personnel: JM, JR

INITIAL MEASUREMENTS

PID (ppm): –
Product (inches): –

pH: 7.04 su
Temp: 17.9°C
Cond.: 4.70 mS
Dslvd. oxygen: 0.1 ppm

Total Depth: 13.10
Depth to Product: –
Depth to Water: 4.49
Water col. Height: 8.61
Conversion Factor: 0.6528
Gallons in Well: 5.62
Gallons to Purge: 16.9

WELL EVACUATION

Method:
- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☒ Peristaltic Pump
- ☐ Hand Bailer
- ☐ Other _____

Conversion Factors:

Diameter	Gal/Ft.
☐ 2"	0.1632
☒ 4"	0.6528
☐ 6"	1.4688

pH: 6.64 su
Temp: 19.4°C
Cond: 1.92 mS
Dslvd Oxygen: 1.4 ppm

Recharge Rate: –
Purge Start: 1328
Purge Stop: 1350
Purge Time: 22 min
Purge Rate: 0.77 gal/min
Gal. Purged: 17

SAMPLING

Withdrawal:
- ☐ Pump _____
- ☒ Bailer _____

pH: 6.2 su
Temp: 20.2°C
Cond.: 2.29 mS
Dslvd Oxygen: 1.3 ppm

Sample Start: 1355
Sample End: 1355
Sample #: MW-16
Appearance: Clear
Odor: H_2S

933500060

APPENDIX B

933500061

Appendix B
Field GC Results Report

To: NR Wilkinson *cc:* VC Burrows
From: AD Crabb ADC
Re: EPI Field GC Support
File: 6383.003 #2
Date: July 11, 1996

O'Brien & Gere Engineers, Inc. provided field analytical support to EPI in accordance with our letter proposal to Mr. Tom Widmeier dated June 21, 1996. The scope of work included screening of groundwater samples for t-butyl alcohol, methyl-t-butyl ether, benzene, toluene, and ethylbenzene at a 86 Doremus Avenue in Newark, New Jersey (Site). Screening was accomplished with a portable gas chromatograph (GC). Although soil samples were specified in the initial scope of work, none were submitted to O'Brien & Gere for screening.

Texaco Corp. hired Quest Environmental, an environmental consultant from Annandale, New Jersey, to delineate an area of concern at the Site. Quest hired EPI to collect samples using a geoprobe, and EPI retained O'Brien & Gere to conduct in-field screening of the samples.

EPI advanced soil probes and installed temporary piezometer wells. Quest collected groundwater samples from the temporary piezometer wells at locations identified by Quest. A total of thirty-two samples were collected, including seven locations which were re-sampled and diluted by O'Brien & Gere to bring the results within the calibration range of the GC. Quest maintained a record of sample collection. Along with the ground water samples, instrument and syringe blanks were used by O'Brien & Gere to confirm the absence of target compounds in the GC and the sample injection syringe.

Sample concentrations were established by comparison of the screening results to prepared standards and a calibration curve. The calibration curves were developed using standards provided by ChemService. Standards were prepared at three concentrations, ranging from 100 ug/l to 1,200 ug/l. A best fit curve was generated using linear regression analysis and at least three points, including 0 ug/l. The detection limit was estimated as two times the error in the 0 ug/l concentration, as calculated by linear regression analysis. R-squared values (a measure of the quality-of-fit of the calibration curves) were generally greater than 90%, with the exception for t-butylalcohol which did not provide a stable baseline for quantification. While initial results for t-butylalcohol indicated high concentrations of this compound, final results were revised to indicate that the compound was "Detected" or "Not Detected", based on a qualitative evaluation.

Groundwater from 40 ml vials was analyzed using one of the following two procedures:

- When low concentrations of target compounds were expected, a 5 ml aliquot of sample was removed from the sample vial leaving a 5 ml air bubble within the vial. After 30 minutes, 20 to 100 ul of headspace was injected into the GC.

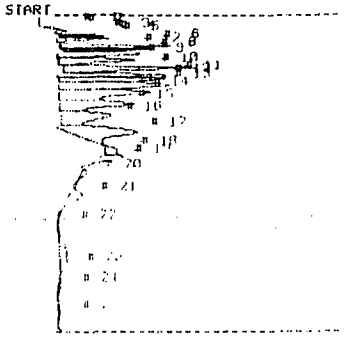
- When high concentrations of VOC's were likely to be present in the samples, a 10 ml aliquot of sample was removed from the sample vial leaving a 10 ml air bubble within the vial. 4.4 ml of this 10 ml aliquot was then placed in a second 40 ml vial and diluted to fill the vial. A 10 ml aliquot of sample was removed from the second vial. 4.4 ml of this 10 ml aliquot was then placed in a third 40 ml vial and diluted to fill the vial. This procedure resulted in three vials at the following dilutions: undiluted, 1:10 dilution, and 1:100 dilution. After 30 minutes, 20 to 100 ul of air from the headspace in the vial was injected into the GC. Results were reported from the dilution level which provided the best instrument response, as judged by baseline performance and maximum peak height.

Table 1 summarizes the results of the screening analyses. Results are provided in ug/l. Attached are the sample chromatograms which were obtained during the screening process. The chromatograms may be correlated to the summary table using the GC Run # which is printed by the GC as ANALYSIS # on the chromatogram.

The concentrations provided during this program are approximate by nature, as this procedure is intended to be used for field screening only. EPI may wish to conduct confirmation testing using GC/MS analysis at a certified laboratory for more conclusive identification of compounds present in these samples, as well as identification of compounds which were not targeted during this screening program.

Table 1 *Summary of GC screening results (ug/l)*

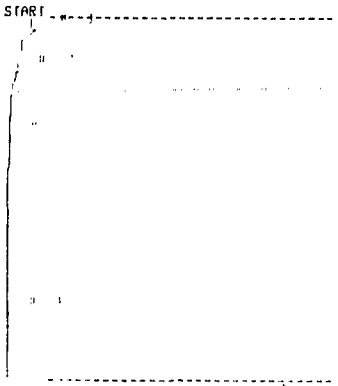
Sample	Analysis Date	Run #	Dilution Factor	TBA	MTBE	Benzene	Toluene	Ethyl benzene
EY-01	06/26/96	39	10	Detected	<250	<300	20	<300
EY-01	06/27/96	26	1	Detected	270	150	41	<10
EY-02	06/26/96	20	10	Detected	10000	2200	3600	180
EY-02	06/27/96	13	100	Not Detected	85000	5600	13000	1100
EY-03	06/27/96	19	100	Not Detected	4200	2000	260	<1000
EY-04	06/26/96	24	100	Detected	48000	<5000	26000	4200
EY-04	06/27/96	31	10	Detected	5700	480	4000	1400
EY-05	06/26/96	37	20	Off Scale	Off Scale	Off Scale	Off Scale	Off Scale
EY-05	06/27/96	9	100	Not Detected	13000	2200	4100	130
EY-06	06/26/96	30	10	Detected	4300	<2500	680	<250
EY-07	06/26/96	32	10	Detected	5200	1300	3700	210
EY-07	06/27/96	16	100	Not Detected	5100	830	710	270
EY-08	06/26/96	26	10	Off Scale	Off Scale	Off Scale	Off Scale	Off Scale
EY-10	06/26/96	34	10	Detected	Off Scale	Off Scale	Off Scale	Off Scale
EY-10	06/27/96	6	100	Not Detected	2600	1300	<1000	<1000
EY-11	06/26/96	41	10	Detected	<250	<300	<10	<300
EY-11	06/27/96	29	1	Not Detected	30	<18	<10	67
V-07	06/26/96	13	1	Not Detected	710	<50	1800	34
V-13	06/26/96	15	1	Not Detected	<50	<50	<10	6
V-19	06/26/96	16	1	Detected	840	270	230	69
WY-01	06/25/96	37	1	Not Detected	<10	51	<5	<30
WY-02	06/25/96	21	1	Detected	330	57	43	<30
WY-03	06/25/96	12	1	Detected	170	<1	<5	<30
WY-04	06/25/96	14	1	Detected	410	46	160	Interference
WY-05	06/25/96	26	1	Detected	1300	120	72	44
WY-06	06/25/96	29	1	Detected	4600	<1	540	130
WY-07	06/25/96	31	1	Detected	25	<1	11	<30
WY-08	06/25/96	19	1	Detected	130	49	11	<30
WY-09	06/25/96	23	1	Detected	62	3	20	<30
WY-10	06/25/96	17	1	Detected	<10	43	10	<30
WY-11	06/25/96	40	1	Off Scale	Off Scale	Off Scale	Off Scale	<30
WY-12	06/25/96	34	1	Off Scale	Off Scale	Off Scale	Off Scale	Off Scale



STOP @ 484.1
SAMPLE LIBRARY 3 JUN 26 1996 13:11
ANALYSIS # 20 EY-2 1-10 DILUTN
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 2.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 550.0 Sec
CYCLE TIME 0 Min

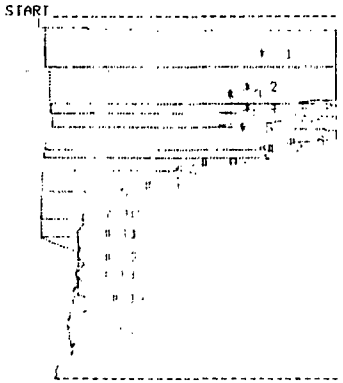
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.1	64.4 mVS
UNKNOWN	2	25.1	26.0 mVS
UNKNOWN	3	30.8	293.8 mVS
UNKNOWN	4	33.7	424.1 mVS
UNKNOWN	5	37.0	601.7 mVS
UNKNOWN	6	49.1	1.5 VS
UNKNOWN	7	53.5	1.1 VS
UNKNOWN	8	59.7	1.9 VS
UNKNOWN	9	71.1	1.9 VS
UNKNOWN	10	84.1	2.9 VS
UNKNOWN	11	96.1	2.3 VS
UNKNOWN	12	100.6	2.0 VS
UNKNOWN	13	111.1	3.3 VS
UNKNOWN	14	123.6	3.6 VS
UNKNOWN	15	142.0	2.7 VS
UNKNOWN	16	160.2	2.6 VS
UNKNOWN	17	185.7	3.0 VS
UNKNOWN	18	214.8	461.2 mVS
UNKNOWN	19	225.0	938.2 mVS
UNKNOWN	20	243.3	202.3 mVS
UNKNOWN	21	283.5	678.7 mVS
UNKNOWN	22	328.8	8.0 mVS
UNKNOWN	23	388.2	1.1 VS
UNKNOWN	24	420.1	88.1 mVS
UNKNOWN	25	481.6	102.9 mVS



STOP @ 550.0
SAMPLE LIBRARY 3 JUN 26 1996 13:20
ANALYSIS # 21 SYRINGE BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 46.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 550.0 Sec
CYCLE TIME 0 Min

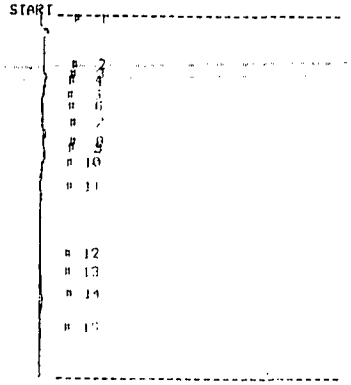
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.2	15.8 mVS
UNKNOWN	3	186.2	14.7 mVS
UNKNOWN	4	448.4	34.8 mVS
UNKNOWN	5	501.8	8.8 mVS



STOP @ 550.0
SAMPLE LIBRARY 3 JUN 26 1996 13:31
ANALYSIS # 22 EY-4
INTERNAL TEMP 30 EPI-DOREMUS AVE
GAIN 2 10 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 550.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	49.8	540.3 VS
UNKNOWN	2	104.1	66.3 VS
UNKNOWN	3	138.1	12.0 VS
UNKNOWN	4	156.1	16.5 VS
UNKNOWN	5	182.4	45.0 VS
UNKNOWN	6	210.0	8.8 VS
UNKNOWN	7	228.2	10.7 VS
UNKNOWN	8	243.7	12.0 VS
UNKNOWN	9	275.9	8.1 VS
UNKNOWN	10	317.1	3.2 VS
UNKNOWN	11	346.6	1.3 VS
UNKNOWN	12	381.2	197.1 mVS
UNKNOWN	13	409.1	178.2 mVS
UNKNOWN	14	443.6	1.8 VS
UNKNOWN	15	496.6	496.9 mVS



STOP @ 550.0
SAMPLE LIBRARY 3 JUN 26 1996 13:43
ANALYSIS # 23 SYRINGE BLANK
INTERNAL TEMP 30 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 4.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 550.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.3	36.0 mVS
UNKNOWN	2	93.7	13.8 mVS
UNKNOWN	3	108.4	25.2 mVS
UNKNOWN	4	119.2	17.0 mVS
UNKNOWN	5	138.8	0.6 mVS
UNKNOWN	6	155.6	51.8 mVS
UNKNOWN	7	181.2	140.5 mVS
UNKNOWN	8	208.8	18.3 mVS
UNKNOWN	10	241.6	32.1 mVS
UNKNOWN	11	275.9	51.4 mVS
UNKNOWN	12	378.2	7.6 mVS
UNKNOWN	13	405.8	14.2 mVS
UNKNOWN	14	440.0	193.8 mVS
UNKNOWN	15	492.7	35.9 mVS

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START

STOP @ 1200.0
SAMPLE LIBRARY 3 JUN 25 1996 [illegible]
ANALYSIS # 1 SYRINGE BLANK
INTERNAL TEMP 25 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 30.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1200.3 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/HTD

UNKNOWN 1 [illegible]

START

STOP @ 1200.4
SAMPLE LIBRARY 3 JUN 25 1996 10:21
ANALYSIS # 2 100 PPB STANDARD
INTERNAL TEMP 25 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 20.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1200.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/HTD

UNKNOWN 1 [illegible]
UNKNOWN 2 [illegible]
UNKNOWN 3 [illegible]
UNKNOWN 4 [illegible]
UNKNOWN 5 [illegible]
UNKNOWN 6 [illegible]
UNKNOWN 7 [illegible]

START

STOP @ 600.0
SAMPLE LIBRARY 3 JUN 25 1996 10:34
ANALYSIS # 3 50 PPB STANDARD
INTERNAL TEMP 26 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 20.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 600.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/HTD

UNKNOWN 1 [illegible]
UNKNOWN 2 [illegible]
UNKNOWN 3 [illegible]
UNKNOWN 4 [illegible]
UNKNOWN 5 [illegible]
UNKNOWN 6 [illegible]
UNKNOWN 7 [illegible]

START

STOP @ 600.0
SAMPLE LIBRARY 3 JUN 25 1996 10:42
ANALYSIS # 4 50 PPB STANDARD
INTERNAL TEMP 25 EPI DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET 20.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/HTD

UNKNOWN 1 13.1 866.0 mVS
UNKNOWN 2 30.7 453.0 mVS
UNKNOWN 3 48.1 97.4 mVS
UNKNOWN 4 68.2 5.0 VS
UNKNOWN 5 94.3 240.0 mVS
UNKNOWN 6 151.2 4.2 VS
UNKNOWN 7 [illegible] 204.0 mVS

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START [illegible]

STOP # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 10:50
ANALYSIS # 5 50 PPB STANDARD
INTERNAL TEMP 26 EPI DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET	50.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	6.12 0 mV/Sec
WINDOW	10 Percent
MINIMUM AREA	5 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	450.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME	PEAK	R.T.	AREA/HTS
UNKNOWN	2	[illegible]	[illegible] mVS
UNKNOWN	3	[illegible]	[illegible] mVS
UNKNOWN	4	[illegible]	[illegible] mVS
UNKNOWN	6	[illegible]	[illegible] VS
UNKNOWN	7	[illegible]	[illegible] mVS
UNKNOWN	8	[illegible]	[illegible]
UNKNOWN	9	[illegible]	[illegible]

25 ppb

STOP # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 10:58
ANALYSIS # 6 [illegible] PPB STANDARD
INTERNAL TEMP 25 EPI DOREMUS AVE
GAIN 10 100 UL INJECTION

COMPOUND NAME	PEAK	R.T.	AREA/HTS
UNKNOWN	1	[illegible]	[illegible]
UNKNOWN	2	[illegible]	[illegible]
UNKNOWN	3	[illegible]	[illegible] mVS
UNKNOWN	4	[illegible]	[illegible]
UNKNOWN	5	[illegible]	[illegible] mVS
UNKNOWN	6	[illegible]	[illegible] mVS
UNKNOWN	7	[illegible]	[illegible] mVS
UNKNOWN	8	[illegible]	[illegible] VS
UNKNOWN	10	[illegible]	[illegible] mVS

START [illegible]

STOP # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 11:3
ANALYSIS # 7 SYRINGE BLANK
INTERNAL TEMP 25 EPI DOREMUS AVE
GAIN 10 100 UL INJECTION

COMPOUND NAME	PEAK	R.T.	AREA/HTS
UNKNOWN	1	[illegible]	[illegible] mVS

STOP #

STOP # 112.1
SAMPLE LIBRARY 3 JUN 25 1996 11:6
ANALYSIS # 8 SYRINGE BLANK
INTERNAL TEMP 26 EPI DOREMUS AVE
GAIN 10 100 UL INJECTION

COMPOUND NAME	PEAK	R.T.	AREA/HTS
UNKNOWN	1	13.3	1.4 VS
UNKNOWN	2	21.2	230.2 mVS
UNKNOWN	3	[illegible]	[illegible] mVS
UNKNOWN	[illegible]	[illegible]	[illegible]

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START [illegible]

STOP # 205.2
SAMPLE LIBRARY 3 JUN 25 1996 11:10
ANALYSIS # 9 SYRINGE BLANK
INTERNAL TEMP 27 EPI DOREMUS AVE
GAIN 10 100 UL INJECTION

COMPOUND NAME	PEAK	R.T.	AREA/HTS
UNKNOWN	1	3.1	5.2 mVS
UNKNOWN	2	19.4	1.5 VS
UNKNOWN	3	24.4	1.0 VS
UNKNOWN	4	53.3	18.4 mVS
UNKNOWN	5	63.1	23.3 mVS
UNKNOWN	6	[illegible]	[illegible] mVS

STOP #

STOP # 181.3
SAMPLE LIBRARY 3 JUN 25 1996 11:14
ANALYSIS # 10 SYRINGE BLANK
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 10 100 UL INJECTION

COMPOUND NAME	PEAK	R.T.	AREA/HTS
UNKNOWN	1	3.1	5.2 mVS
UNKNOWN	2	19.2	1.4 VS
UNKNOWN	3	24.2	1.0 VS
UNKNOWN	4	53.3	18.3 mVS
UNKNOWN	5	63.1	23.1 mVS
UNKNOWN	6	[illegible]	[illegible] mVS

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START

SAMPLE LIBRARY 3 JUN 25 1996 11:22
ANALYSIS # 11 SYRINGE BLANK
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 11:30
ANALYSIS # 12 ~~SYRINGE BLANK~~
INTERNAL TEMP 22 WY-3
GAIN 2 100 UL INJECTION

START

SAMPLE LIBRARY 3 JUN 25 1996 11:34
ANALYSIS # 13 SYRINGE BLANK
INTERNAL TEMP 28 WY-3
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 11:42
ANALYSIS # 14 ~~SYRINGE BLANK~~
INTERNAL TEMP 28 WY-4
GAIN 2 100 UL INJECTION

START

Plotter feed

SAMPLE LIBRARY 3 JUN 25 1996 11:42
ANALYSIS # 15 SYRINGE BLANK
INTERNAL TEMP 28 EPI-NEWARK
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 11:48
ANALYSIS # 16 SYRINGE BLANK
INTERNAL TEMP 28 EPI NEWARK
GAIN 2 100 UL INJECTION

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START

SAMPLE LIBRARY 3 JUN 25 1996 12: 0
ANALYSIS # 12 WY-10
INTERNAL TEMP 28 EPI-NEWARK
GAIN 2 100 UL INJECTION

COMPOUND NAME	PEAK	R.T.	AREA/FIN
UNKNOWN	1	[illegible]	8.6 [illegible]
UNKNOWN	2	[illegible]	10.5 mUS
UNKNOWN	3	[illegible]	9.2 mUS
UNKNOWN	4	[illegible]	[illegible] mUS
UNKNOWN	5	88.6	15.1 mUS
UNKNOWN	2	150.4	132.3 mUS
UNKNOWN	8	[illegible]	[illegible] mUS
UNKNOWN	9	[illegible]	[illegible] mUS

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SAMPLE LIBRARY 3 JUN 25 1996 12:9
ANALYSIS # 18 STRINGE BLANK
INTERNAL TEMP 28 EPI-NEWARK
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 12:12
ANALYSIS # 19 WY-8
INTERNAL TEMP 28 EPI-NEWARK
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 12:25
ANALYSIS # 20 STRINGE BLANK
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

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SAMPLE LIBRARY 3 JUN 25 1996 12:33
ANALYSIS # 21 WY-2
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

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SAMPLE LIBRARY 3 JUN 25 1996 12:41
ANALYSIS # 22 SYRINGE BLANK
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 12:50
ANALYSIS # 23 WY-9
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 13: 9
ANALYSIS # 24 SYRINGE BLANK
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

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SAMPLE LIBRARY 3 JUN 25 1996 13:18
ANALYSIS # 25 WY-5
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

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SAMPLE LIBRARY 3 JUN 25 1996 13:27
ANALYSIS # 26 WY-5
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 13:46
ANALYSIS # 27 SYRINGE BLANK
INTERNAL TEMP 29 EPI-NEWARK
GAIN 2 100 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 13:46
ANALYSIS # 28 SYRINGE BLANK
INTERNAL TEMP 30 EPI-NEWARK
GAIN 2 100 UL INJECTION

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SAMPLE LIBRARY 3 JUN 25 1996 13:52
ANALYSIS # 29 WY-6
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

	1	18.1	35.8	05
	2	47.7	11.1	05
	3	52.1	6.7	05
	4	85.3	36.2	05
	5	102.1	9.0	05
	6	115.6	5.6	05
	7	127.[illegible]	4.7	0[illegible]
	8	142.8	9.4	05
	9	151.2	8.4	05
	10	16[illegible].7	10.1	05
	11	3[illegible].6	12.4	05
	12	2[illegible].7	3.5	05
	13	[illegible]	2.8	05
	14	[illegible]	2.[illegible]	05

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SIGN # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 [illegible]
ANALYSIS # 30 STRINGE BLANK
INTERNAL TEMP 30 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

SIGN # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 [illegible]
ANALYSIS # 31 WY-2
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

SIGN # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 14:43
ANALYSIS # 32 STRINGE BLANK
INTERNAL TEMP 30 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

Resample + Dilute

SIGN # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 14:51
ANALYSIS # 33 WY-12
INTERNAL TEMP 30 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

933500072

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Resample + Delete

SAMPLE LIBRARY 3 JUN 25 1996 15: 2
ANALYSIS # 34 WT 12
INTERNAL TEMP 30 EPI DOREMUS AVE
GAIN 10 UL INJECTION

SAMPLE LIBRARY 3 JUN 25 1996 15:11
ANALYSIS # 35 INSTRUMENT BLANK
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 ~~10 UL~~ No INJECTION

OFFSET	21.0	mV
CHART SPEED	0.	cM/Min
SLOPE SENS.	6 12 6	mV/Sec
WINDOW +/-	10	Percent
MINIMUM AREA	5	mVSec
TIMER DELAY	10.0	Sec
ANALYSIS TIME	450.0	Sec
CYCLE TIME	0	Min

SAMPLE LIBRARY 3 JUN 25 1996 15:23
ANALYSIS # 36 SPRINGE BLANK
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET	16.0	mV
CHART SPEED	0.5	cM/Min
SLOPE SENS.	6 12 6	mV/Sec
WINDOW +/-	10	Percent
MINIMUM AREA	5	mVSec
TIMER DELAY	10.0	Sec
ANALYSIS TIME	450.0	Sec
CYCLE TIME	0	Min

SAMPLE LIBRARY 3 JUN 25 1996 15:32
ANALYSIS # 32 WT 1
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET	15.0	mV
CHART SPEED	0.5	cM/Min
SLOPE SENS.	6 12 6	mV/Sec
WINDOW +/-	10	Percent
MINIMUM AREA	5	mVSec
TIMER DELAY	10.0	Sec
ANALYSIS TIME	450.0	Sec
CYCLE TIME	0	Min

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START

STOP # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 15:39
ANALYSIS # 38 SYRINGE BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 15.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/FM
UNKNOWN	1	18.4	[illegible]

START

STOP # [illegible]
SAMPLE LIBRARY 3 JUN 25 1996 15:40
ANALYSIS # 39 SYRINGE BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 15.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/FM
UNKNOWN	1	18.2	2.8 uVS
UNKNOWN	2	58.4	521.0 uVS
UNKNOWN	3	[illegible]	14.2 uVS
UNKNOWN	4	113.1	9.8 uVS
UNKNOWN	5	113.2	[illegible] uVS
UNKNOWN	6	131.2	12.9 uVS
UNKNOWN	8	224.5	31.4 mVS
UNKNOWN	[illegible]	[illegible]	[illegible] mVS

START

STOP # 4[illegible]
SAMPLE LIBRARY 3 JUN 25 1996 15:53
ANALYSIS # 40 WY-11
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 10 UL INJECTION

OFFSET 50.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/FM
UNKNOWN	1	18.2	2.8 uVS
UNKNOWN	2	58.4	521.0 uVS
UNKNOWN	3	[illegible]	14.2 uVS
UNKNOWN	4	113.1	9.8 uVS
UNKNOWN	5	113.2	[illegible] uVS
UNKNOWN	6	131.2	12.9 uVS
UNKNOWN	8	224.5	31.4 mVS
UNKNOWN	[illegible]	[illegible]	[illegible] mVS

START

STOP # 385.9
SAMPLE LIBRARY 3 JUN 25 1996 16: 0
ANALYSIS # 41 INJECTION BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 22.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/FM
UNKNOWN	1	18.8	38.9 mVS
UNKNOWN	2	34.8	26.0 mVS
UNKNOWN	3	51.4	60.1 mVS
UNKNOWN	4	60.4	[illegible] mVS
UNKNOWN	5	68.2	51.4 mVS
UNKNOWN	6	88.6	12.2 mVS
UNKNOWN	7	101.8	63.2 mVS
UNKNOWN	8	114.1	23.0 mVS
UNKNOWN	9	131.2	158.3 mVS
UNKNOWN	10	159.2	231.0 mVS
UNKNOWN	11	190.2	15.1 mVS
UNKNOWN	12	[illegible]	36.1 mVS

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6/25/96

SAMPLE LIBRARY 3 JUN 25 1996 16: 2
ANALYSIS # 42 INJECTION BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 18.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

SAMPLE LIBRARY 3 JUN 25 1996 16:15
ANALYSIS # 43 100 PPB STANDARD
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 16.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

6/25/96

SAMPLE LIBRARY 3 JUN 25 1996 16:23
ANALYSIS # 44 100 PPB STANDARD
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET 53.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 450.0 Sec
CYCLE TIME 0 Min

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4/26/96

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FIELD: 31
POWER: 42

SAMPLE	9.5	10.0
CAL	0.0	0.0
EVENT 3	0.0	60.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

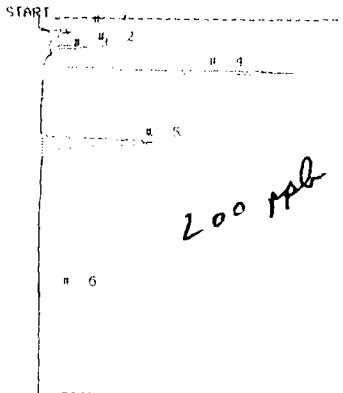
SAMPLE LIBRARY 3 JUN 26 1996 9:42
ANALYSIS # 1 INSTRUMENT BLANK
INTERNAL TEMP 24 EPI-DOREMUS AVE
GAIN 2 NO INJECTION

OFFSET	2.0 mV
CHART SPEED	0.5 cM/Min
SLOPE SENS.	6 12 6 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	5 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	600.0 Sec
CYCLE TIME	0 Min

100 ppb

SAMPLE LIBRARY 3 JUN 26 1996 9:54
ANALYSIS # 2 100 PPB STANDARD
INTERNAL TEMP 24 EPI-DOREMUS AVE
GAIN 5 100 UL INJECTION

OFFSET	30.0 mV
CHART SPEED	0.5 cM/Min
SLOPE SENS.	6 12 6 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	5 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	600.0 Sec
CYCLE TIME	0 Min



200 ppb

SAMPLE LIBRARY 3 JUN 26 1996 10:19
INTERNAL TEMP 23 100 PPB STANDARD
GAIN 2 100 UL INJECTION

OFFSET	0.5 cM/Min
CHART SPEED	6 12 6 mV/Sec
SLOPE SENS.	
WINDOW +/-	10 Percent
MINIMUM AREA	5 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	600.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	47.1	598.8 mVS
UNKNOWN	3	58.1	14.4 mVS
UNKNOWN	4	84.2	4.8 VS
UNKNOWN	5	195.7	4.6 VS
UNKNOWN	6	431.1	29.3 mVS

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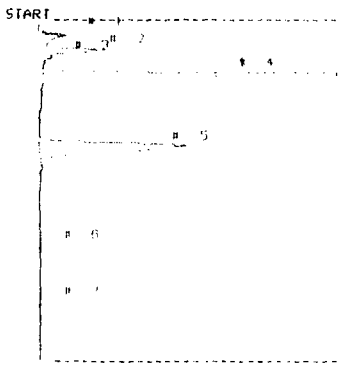
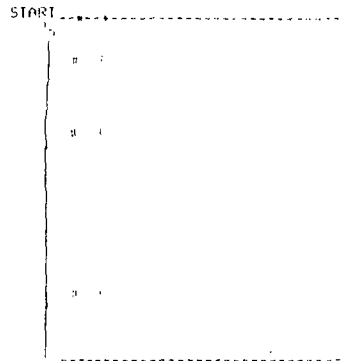


STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 10:20
ANALYSIS # 4 600 PPB STANDARD
INTERNAL TEMP 26 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

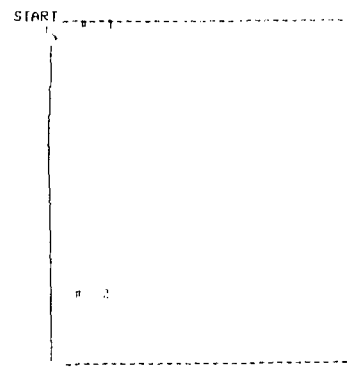
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	23.3	35.8 mVS
UNKNOWN	2	42.5	296.8 mVS
UNKNOWN	3	52.9	12.2 mVS
UNKNOWN	4	83.8	8.1 VS
UNKNOWN	5	195.2	6.4 VS
UNKNOWN	6	343.9	6.1 mVS
UNKNOWN	7	430.0	61.6 mVS



STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 10:30
ANALYSIS # 5 STRINGE BLANK
INTERNAL TEMP 26 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.9	38.6 mVS
UNKNOWN	3	193.2	18.3 mVS
UNKNOWN	4	437.7	148.7 mVS



STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 10:40
ANALYSIS # 6 STRINGE BLANK
INTERNAL TEMP 26 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	23.5	43.3 mVS
UNKNOWN	2	432.2	36.0 mVS

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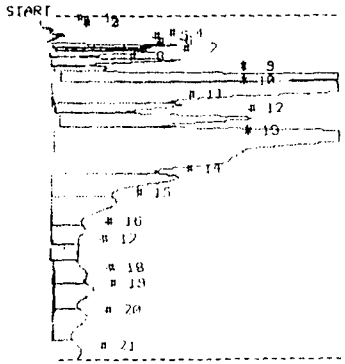

STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 10:54
ANALYSIS # 7 U-7
INTERNAL TEMP 27 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.5	85.3 mVS
UNKNOWN	2	28.5	42.2 mVS
UNKNOWN	3	31.5	36.5 mVS
UNKNOWN	4	46.7	1.7 VS
UNKNOWN	5	50.7	1.2 VS
UNKNOWN	6	57.1	2.0 VS
UNKNOWN	7	69.9	3.2 VS
UNKNOWN	8	81.4	1.5 VS
UNKNOWN	9	95.4	19.6 VS
UNKNOWN	10	112.4	31.7 VS
UNKNOWN	11	139.6	4.7 VS
UNKNOWN	12	160.2	10.0 VS
UNKNOWN	13	185.8	77.9 VS
UNKNOWN	14	250.7	10.3 VS
UNKNOWN	15	286.7	6.6 VS
UNKNOWN	16	329.5	3.0 VS
UNKNOWN	17	356.5	2.0 VS
UNKNOWN	18	398.2	3.6 VS
UNKNOWN	19	423.4	4.2 VS
UNKNOWN	20	464.0	4.4 VS

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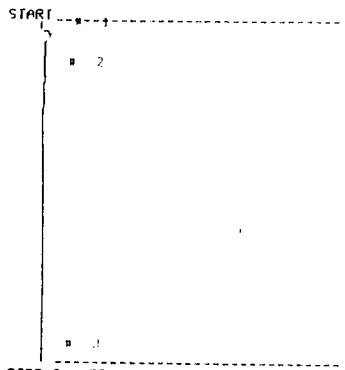
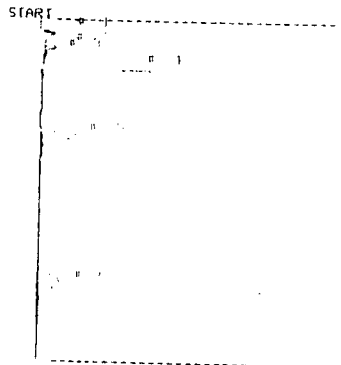


STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 11:13
ANALYSIS # 8 SYRINGE BLANK
INTERNAL TEMP 22 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

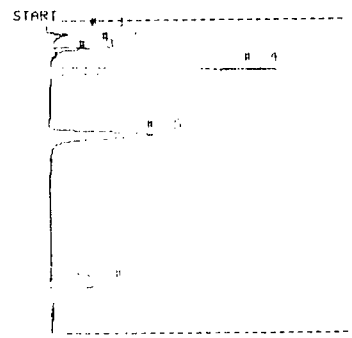
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.8	49.1 mVS
UNKNOWN	3	510.9	8.2 mVS



STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 11:24
ANALYSIS # 9 100 PPB STANDARD
INTERNAL TEMP 22 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

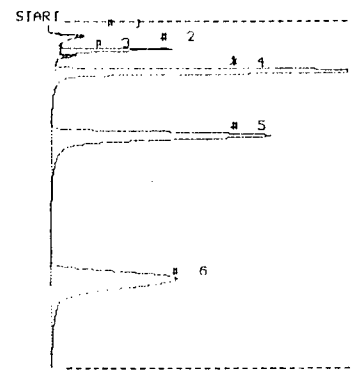
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.9	40.8 mVS
UNKNOWN	2	45.3	125.2 mVS
UNKNOWN	4	78.5	1.8 VS
UNKNOWN	5	182.2	1.5 VS
UNKNOWN	6	409.1	1.6 VS



STOP @ 475.6
SAMPLE LIBRARY 3 JUN 26 1996 11:33
ANALYSIS # 10 200 PPB STANDARD
INTERNAL TEMP 22 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.0	40.1 mVS
UNKNOWN	2	44.9	494.8 mVS
UNKNOWN	3	54.9	15.5 mVS
UNKNOWN	4	78.3	4.1 VS
UNKNOWN	5	180.7	3.8 VS
UNKNOWN	6	405.8	4.5 VS



STOP @ 529.8
SAMPLE LIBRARY 3 JUN 26 1996 11:43
ANALYSIS # 11 600 PPB STANDARD
INTERNAL TEMP 22 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 600.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.5	53.6 mVS
UNKNOWN	2	44.7	1.7 VS
UNKNOWN	3	54.5	232.9 mVS
UNKNOWN	4	78.4	15.4 VS
UNKNOWN	5	180.2	9.8 VS
UNKNOWN	6	402.5	12.1 VS

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START

STOP @ 442.3
SAMPLE LIBRARY 3 JUN 26 1996 11:50
ANALYSIS # 12 STRINGE BLANK
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 600.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.8	61.5 mVS
UNKNOWN	2	398.2	40.8 mVS

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 26 1996 12: 3
ANALYSIS # 13 V-2
INTERNAL TEMP 27 EPI-DOREMUS AVE
GAIN 2 50 UL STANDARD

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.3	42.0 mVS
UNKNOWN	2	22.5	19.6 mVS
UNKNOWN	3	30.4	19.8 mVS
UNKNOWN	4	44.2	1.0 VS
UNKNOWN	5	48.5	226.2 mVS
UNKNOWN	6	54.3	1.1 VS
UNKNOWN	7	66.3	1.8 VS
UNKNOWN	8	76.7	232.8 mVS
UNKNOWN	9	89.5	5.6 VS
UNKNOWN	10	103.2	15.1 VS
UNKNOWN	11	131.6	1.1 VS
UNKNOWN	12	149.8	3.1 VS
UNKNOWN	13	174.2	14.5 VS
UNKNOWN	14	233.4	220.8 mVS
UNKNOWN	15	266.8	411.2 mVS
UNKNOWN	16	306.2	121.0 mVS
UNKNOWN	17	333.1	13.2 mVS
UNKNOWN	18	370.2	94.2 mVS
UNKNOWN	19	394.2	319.2 mVS
UNKNOWN	20	432.2	412.3 mVS
UNKNOWN	21	482.3	1.2 VS

4/26/96

START

STOP @ 540.3
SAMPLE LIBRARY 3 JUN 26 1996 12:15
ANALYSIS # 14 STRINGE BLANK
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL STANDARD

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	23.3	45.2 mVS

START

STOP @ 466.5
SAMPLE LIBRARY 3 JUN 26 1996 12:23
ANALYSIS # 15 V-13
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.6	53.8 mVS
UNKNOWN	4	172.2	10.2 mVS
UNKNOWN	6	342.1	28.4 mVS
UNKNOWN	7	389.2	24.2 mVS
UNKNOWN	8	424.5	35.0 mVS

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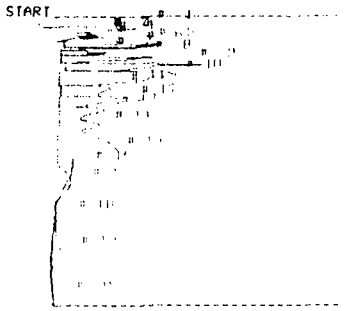
START

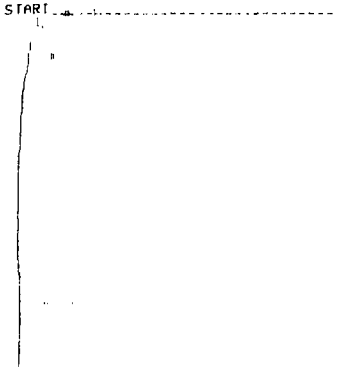


STOP @ 440.2
SAMPLE LIBRARY 3 JUN 26 1996 12:32
ANALYSIS # 18 V-19
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 580.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.5	560.3 mVS
UNKNOWN	2	22.2	145.1 mVS
UNKNOWN	3	29.9	156.2 mVS
UNKNOWN	4	32.8	289.2 mVS
UNKNOWN	5	43.9	1.2 VS
UNKNOWN	6	47.2	1.3 VS
UNKNOWN	7	56.1	230.6 mVS
UNKNOWN	8	63.9	1.9 VS
UNKNOWN	9	74.9	3.3 VS
UNKNOWN	10	91.0	6.4 VS
UNKNOWN	11	111.4	2.1 VS
UNKNOWN	12	123.2	2.3 VS
UNKNOWN	13	145.6	2.1 VS
UNKNOWN	14	162.2	1.9 VS
UNKNOWN	15	205.8	5.2 VS
UNKNOWN	16	223.2	584.1 mVS
UNKNOWN	17	254.9	224.8 mVS
UNKNOWN	18	302.7	22.6 mVS
UNKNOWN	19	358.3	682.3 mVS
UNKNOWN	20	428.9	63.0 mVS

START

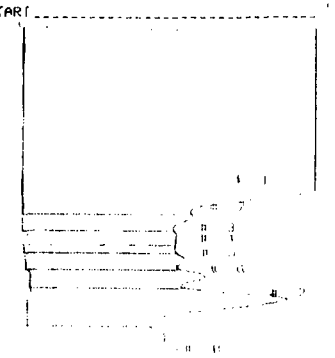


STOP @ 550.5
SAMPLE LIBRARY 3 JUN 26 1996 12:41
ANALYSIS # 17 SYRINGE BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 34.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	19.9	22.3 mVS

START

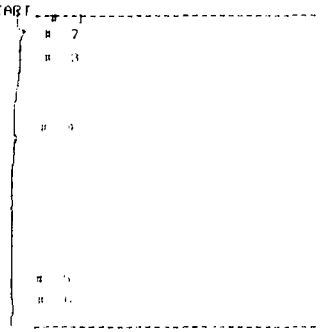


STOP @ 660.0
SAMPLE LIBRARY 3 JUN 26 1996 12:53
ANALYSIS # 18 EY-2
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 560.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	143.2	1.3 KVS
UNKNOWN	2	305.9	13.0 VS
UNKNOWN	3	336.2	10.3 VS
UNKNOWN	4	352.9	5.6 VS
UNKNOWN	5	374.2	13.0 VS
UNKNOWN	6	402.5	15.8 VS
UNKNOWN	7	438.8	33.2 VS

START

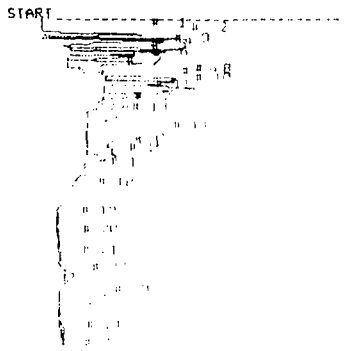


STOP @ 428.2
SAMPLE LIBRARY 3 JUN 26 1996 13: 2
ANALYSIS # 19 SYRINGE BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 14.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 550.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.6	33.2 mVS
UNKNOWN	3	84.4	9.6 mVS
UNKNOWN	4	190.2	113.2 mVS
UNKNOWN	5	422.3	12.1 mVS

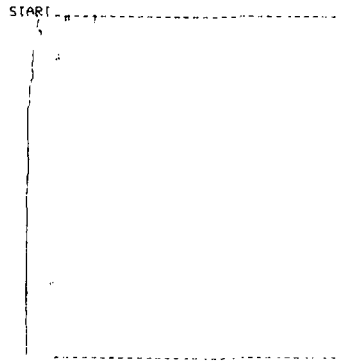
933500080



STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 13:54
ANALYSIS # 24 EY-4 1-100 DILUT
INTERNAL TEMP 30 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

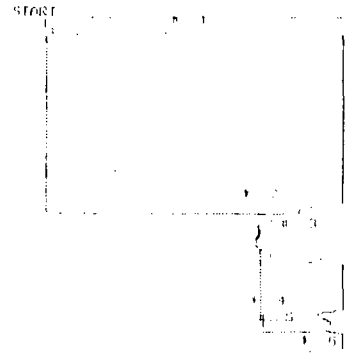
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.2	1.3 VS
UNKNOWN	2	30.7	601.1 mVS
UNKNOWN	3	48.3	1.4 VS
UNKNOWN	4	52.3	1.2 VS
UNKNOWN	5	58.3	1.4 VS
UNKNOWN	6	69.5	1.6 VS
UNKNOWN	7	82.0	210.9 mVS
UNKNOWN	8	90.2	1.3 VS
UNKNOWN	9	92.9	1.2 VS
UNKNOWN	10	108.4	2.4 VS
UNKNOWN	11	119.6	823.5 mVS
UNKNOWN	12	132.6	201.2 mVS
UNKNOWN	13	154.8	316.2 mVS
UNKNOWN	14	180.2	4.2 VS
UNKNOWN	15	207.0	1.0 VS
UNKNOWN	16	217.2	1.0 VS
UNKNOWN	17	239.5	300.0 mVS
UNKNOWN	18	272.4	500.9 mVS
UNKNOWN	19	313.9	49.5 mVS
UNKNOWN	20	344.0	43.8 mVS
UNKNOWN	21	375.2	38.0 mVS
UNKNOWN	22	402.5	849.8 mVS
UNKNOWN	23	435.5	3.6 VS
UNKNOWN	24	482.5	248.2 mVS



STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 14: 2
ANALYSIS # 25 STRINGE BLANK
INTERNAL TEMP 30 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 22.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

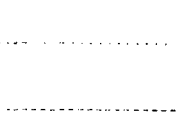
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.4	34.4 mVS
UNKNOWN	3	101.1	32.1 mVS



STOP @ 520.0
SAMPLE LIBRARY 3 JUN 26 1996 14:11
ANALYSIS # 26 EY-8 1-10 DILUTN
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.6	1.3 VS
UNKNOWN	2	159.7	12.8 KVS
UNKNOWN	3	333.1	30.9 mVS
UNKNOWN	4	416.3	372.8 VS
UNKNOWN	5	422.2	4.5 VS



STOP @ 101.0
SAMPLE LIBRARY 3 JUN 26 1996 14:14
ANALYSIS # 27 STRINGE BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 102.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 520.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.7	54.5 mVS

933500081

START

STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 14:22
ANALYSIS # 28 STRINGE BLANK
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 48.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.2	50.5 mVS
UNKNOWN	2	61.1	27.8 mVS
UNKNOWN	4	152.4	53.4 mVS
UNKNOWN	5	180.2	114.2 mVS
UNKNOWN	6	229.5	306.3 mVS
UNKNOWN	7	313.9	1.6 mVS
UNKNOWN	8	400.3	611.2 mVS
UNKNOWN	9	434.4	1.1 mVS

START

STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 14:30
ANALYSIS # 29 STRINGE BLANK
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 9.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	23.4	21.2 mVS
UNKNOWN	2	336.2	31.9 mVS
UNKNOWN	3	408.0	474.6 mVS

START

EY-6 1:10

STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 14:39
ANALYSIS # 30 ~~STRINGE BLANK~~
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 [illegible] UL INJECTION
20

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.6	27.8 mVS
UNKNOWN	2	30.4	15.5 mVS
UNKNOWN	3	49.3	247.6 mVS
UNKNOWN	4	57.1	161.1 mVS
UNKNOWN	5	59.1	44.8 mVS
UNKNOWN	6	70.3	219.0 mVS
UNKNOWN	7	88.9	213.5 mVS
UNKNOWN	8	96.1	383.4 mVS
UNKNOWN	9	100.9	281.5 mVS
UNKNOWN	10	110.5	440.6 mVS
UNKNOWN	11	123.6	9.8 mVS
UNKNOWN	12	143.2	505.1 mVS
UNKNOWN	13	161.2	123.2 mVS
UNKNOWN	14	182.2	224.0 mVS
UNKNOWN	15	228.0	546.9 mVS
UNKNOWN	16	253.5	52.0 mVS
UNKNOWN	17	283.5	6.2 mVS
UNKNOWN	18	369.2	181.6 mVS
UNKNOWN	19	428.9	2.2 mVS

START

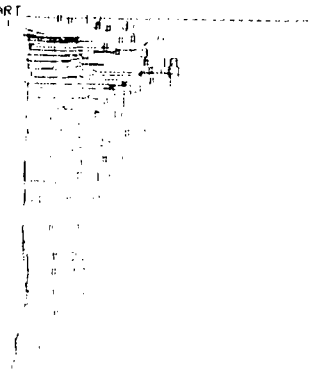
STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 14:48
ANALYSIS # 31 EY-6 1-10
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.2	37.2 mVS

933500082

START

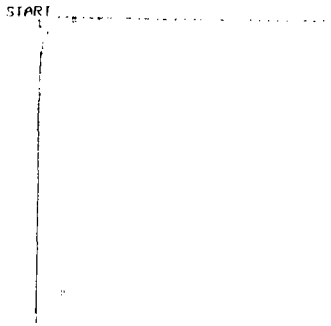


STOP @ 580.0
SAMPLE LIBRARY 3 JUN 26 1996 14:58
ANALYSIS # 32 EY-7 1-10 DILUTN
INTERNAL TEMP 22 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 580.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.0	29.6 mVS
UNKNOWN	2	25.0	130.9 mVS
UNKNOWN	3	31.3	491.1 mVS
UNKNOWN	4	34.2	455.1 mVS
UNKNOWN	5	37.2	805.2 mVS
UNKNOWN	6	50.3	1.5 VS
UNKNOWN	7	54.5	1.1 VS
UNKNOWN	8	63.5	1.5 VS
UNKNOWN	9	73.1	1.8 VS
UNKNOWN	10	86.5	3.3 VS
UNKNOWN	11	93.4	2.2 VS
UNKNOWN	12	104.5	2.1 VS
UNKNOWN	13	115.3	3.0 VS
UNKNOWN	14	128.4	2.9 VS
UNKNOWN	15	148.0	2.7 VS
UNKNOWN	16	162.2	2.0 VS
UNKNOWN	17	194.2	6.1 VS
UNKNOWN	18	236.4	6.0 VS
UNKNOWN	19	261.9	2.4 VS
UNKNOWN	20	298.2	1.2 VS
UNKNOWN	21	344.0	22.6 mVS
UNKNOWN	22	382.2	616.7 mVS
UNKNOWN	23	411.3	218.2 mVS
UNKNOWN	24	441.2	415.3 mVS
UNKNOWN	25	476.0	388.2 mVS

START

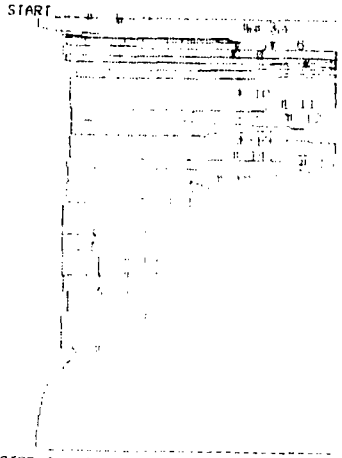


STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 15:2
ANALYSIS # 33 STRINGE BLANK
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.0	42.5 mVS

START



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 26 1996 15:18
ANALYSIS # 34 EY 10 1 10 DILUT
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	20.9	21.1 mVS
UNKNOWN	2	25.1	311.4 mVS
UNKNOWN	3	31.5	1.4 VS
UNKNOWN	4	34.7	1.2 VS
UNKNOWN	5	37.2	2.5 VS
UNKNOWN	6	52.6	25.1 VS
UNKNOWN	7	62.0	2.9 VS
UNKNOWN	8	73.3	8.7 VS
UNKNOWN	9	86.0	3.4 VS
UNKNOWN	10	114.5	162.2 VS
UNKNOWN	11	148.0	8.7 VS
UNKNOWN	12	169.2	12.8 VS
UNKNOWN	13	198.0	49.5 VS
UNKNOWN	14	226.2	9.0 VS
UNKNOWN	15	236.4	13.7 VS
UNKNOWN	16	261.2	11.1 VS
UNKNOWN	17	298.2	3.5 VS
UNKNOWN	18	342.1	2.4 VS
UNKNOWN	19	368.2	4.4 VS
UNKNOWN	20	411.3	3.3 VS
UNKNOWN	21	438.8	4.2 VS
UNKNOWN	22	473.6	8.2 VS

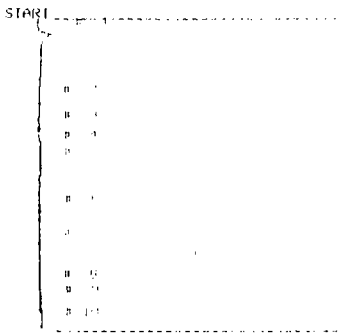
START

STOP @ 81.1
SAMPLE LIBRARY 3 JUN 26 1996 15:20
ANALYSIS # 35 EY-10 1-10 DILUT
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 1.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM

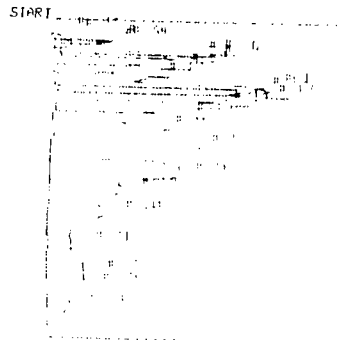
933500083



STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 15:30
ANALYSIS # 36 SYRINGE BLANK
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

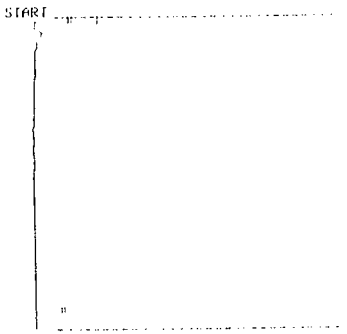
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.9	38.2 mVS
UNKNOWN	4	196.2	55.2 mVS
UNKNOWN	5	224.4	8.0 mVS
UNKNOWN	6	238.2	29.2 mVS
UNKNOWN	7	410.0	12.0 mVS



STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 15:38
ANALYSIS # 37 EY-5 1-20 DILUTN
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

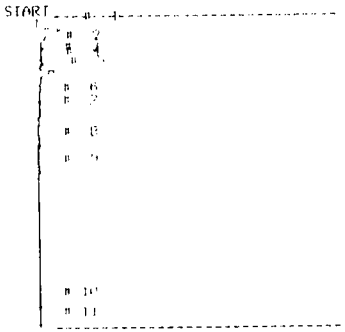
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.3	36.2 mVS
UNKNOWN	2	25.0	22.6 mVS
UNKNOWN	3	31.1	431.4 mVS
UNKNOWN	4	34.2	615.9 mVS
UNKNOWN	5	37.3	672.1 mVS
UNKNOWN	6	50.1	2.2 VS
UNKNOWN	7	54.3	2.2 VS
UNKNOWN	8	60.3	3.2 VS
UNKNOWN	9	72.9	3.6 VS
UNKNOWN	10	85.3	3.3 VS
UNKNOWN	11	99.4	4.5 VS
UNKNOWN	12	104.2	5.0 VS
UNKNOWN	13	115.0	2.7 VS
UNKNOWN	14	120.9	2.9 VS
UNKNOWN	15	142.2	5.9 VS
UNKNOWN	16	162.2	6.4 VS
UNKNOWN	17	193.2	11.8 VS
UNKNOWN	18	234.6	14.0 VS
UNKNOWN	19	259.0	6.0 VS
UNKNOWN	20	295.5	6.4 VS
UNKNOWN	21	343.0	1.9 VS
UNKNOWN	22	386.2	4.7 VS
UNKNOWN	23	406.9	3.4 VS
UNKNOWN	24	440.0	2.5 VS



STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 15:48
ANALYSIS # 38 SYRINGE BLANK
INTERNAL TEMP 22 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 2.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.6	36.2 mVS



STOP @ 480.0
SAMPLE LIBRARY 3 JUN 26 1996 15:58
ANALYSIS # 39 EY-1 1-10 DILUTN
INTERNAL TEMP 27 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 480.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	20.6	80.6 mVS
UNKNOWN	2	49.5	22.1 mVS
UNKNOWN	3	64.3	2.4 mVS
UNKNOWN	4	72.9	26.2 mVS
UNKNOWN	5	86.2	236.1 mVS
UNKNOWN	7	142.6	20.9 mVS
UNKNOWN	8	194.2	20.6 mVS
UNKNOWN	9	236.4	25.4 mVS
UNKNOWN	10	443.6	6.1 mVS

933500084

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 10:27
ANALYSIS # 5 SYRINGE BLANK
INTERNAL TEMP 28 EPI DORENDUS AVE
GAIN 2 100 UL BLANK

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	34.5	51.0 mVS
UNKNOWN	2	243.2	58.0 mVS
UNKNOWN	3	[illegible]	170.7 mVS

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 10:40
ANALYSIS # 6 EPI 10 1-100 DILUT
INTERNAL TEMP 28 EPI DORENDUS AVE
GAIN 2 100 UL EPI DILUT

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	31.3	31.6 mVS
UNKNOWN	2	32.8	18.8 mVS
UNKNOWN	3	42.1	15.1 mVS
UNKNOWN	4	60.9	23.1 mVS
UNKNOWN	5	66.5	14.4 mVS
UNKNOWN	6	78.5	[illegible] mVS
UNKNOWN	7	90.4	31.6 mVS
UNKNOWN	8	105.2	382.4 mVS
UNKNOWN	9	121.6	64.5 mVS
UNKNOWN	10	147.0	146.0 mVS
UNKNOWN	11	181.2	67.5 mVS
UNKNOWN	12	205.2	86.7 mVS
UNKNOWN	13	237.0	153.5 mVS
UNKNOWN	14	[illegible]	[illegible] mVS
UNKNOWN	15	[illegible]	15.0 mVS
UNKNOWN	16	312.9	16.1 mVS
UNKNOWN	17	324.5	70.1 mVS
[illegible]	18	[illegible]	[illegible] mV

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 10:52
ANALYSIS # 7 EPI 10 1-10 DILUT
INTERNAL TEMP 28 EPI DORENDUS AVE
GAIN [illegible] 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	25.0	180.1 mVS
UNKNOWN	2	30.1	320.2 mVS
UNKNOWN	3	32.9	631.0 mVS
UNKNOWN	4	37.2	331.1 mVS
UNKNOWN	5	46.9	[illegible] mVS
UNKNOWN	6	58.9	1.4 VS
UNKNOWN	7	66.3	960.1 mVS
UNKNOWN	8	74.1	961.3 mVS
UNKNOWN	9	80.1	1.6 VS
UNKNOWN	10	105.1	3.6 VS
UNKNOWN	11	121.2	2.4 VS
UNKNOWN	12	147.6	1.8 VS
UNKNOWN	13	161.2	3.9 VS
UNKNOWN	14	174.8	1.8 VS
UNKNOWN	15	193.7	2.0 VS
UNKNOWN	16	203.4	2.1 VS
UNKNOWN	17	234.6	3.6 VS
UNKNOWN	18	271.7	3.0 VS
UNKNOWN	19	280.7	2.9 VS
UNKNOWN	20	316.3	399.7 mVS
UNKNOWN	21	355.6	219.0 mVS
UNKNOWN	22	[illegible]	1.4 VS
UNKNOWN	23	[illegible]	612.0 mVS
UNKNOWN	24	[illegible]	32.1 mVS
UNKNOWN	[illegible]	[illegible]	3.5 mVS

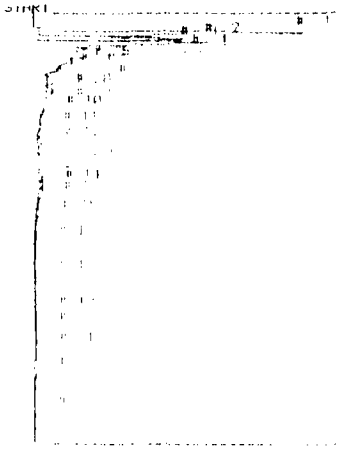
START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 11:4
ANALYSIS # 8 SYRINGE BLANK
INTERNAL TEMP 28 EPI DORENDUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	31.3	31.6 mVS
UNKNOWN	2	322.9	5.0 mVS

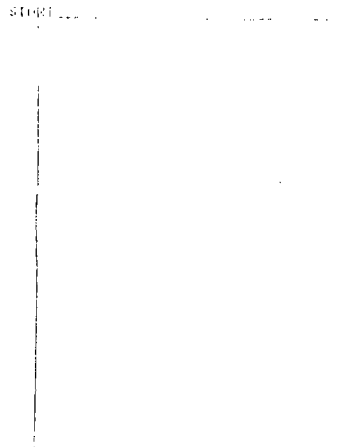
933500085



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 12:1
ANALYSIS # 13 EY-2 1-100 DILUT
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 7 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

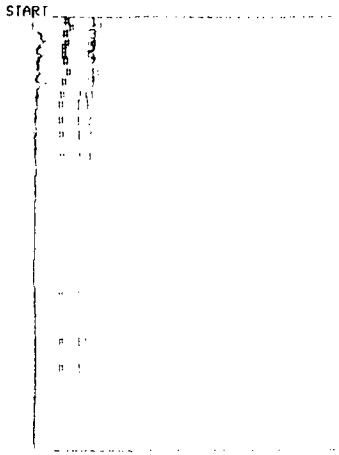
COMPOUND NAME	PEAK	R.T.	AREA/FIT
UNKNOWN	1	21.1	4.5 uS
UNKNOWN	2	41.5	2.5 uS
UNKNOWN	3	46.7	179.0 mVS
UNKNOWN	4	55.1	2.4 uS
UNKNOWN	5	26.3	122.8 mVS
UNKNOWN	6	88.0	1.0.8 mVS
UNKNOWN	7	103.0	1.6 uS
UNKNOWN	8	110.6	1[illegible].6 mVS
UNKNOWN	9	133.9	261.9 mVS
UNKNOWN	10	152.4	[illegible] mVS
UNKNOWN	11	176.7	60.0 mVS
UNKNOWN	12	198.2	166.5 mVS
UNKNOWN	13	241.0	2.1 uS
UNKNOWN	14	265.4	228.2 mVS
UNKNOWN	15	280.5	505.2 mVS
UNKNOWN	16	303.1	73.5 mVS
UNKNOWN	17	[illegible]	11.5 mVS
UNKNOWN	18	361.2	2.0 mVS
UNKNOWN	19	461.6	6.2 mVS
UNKNOWN	20	466.	[illegible] mVS
UNKNOWN	21	[illegible]	[illegible] mVS



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 12:15
ANALYSIS # 14 STRINGE BLANK
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

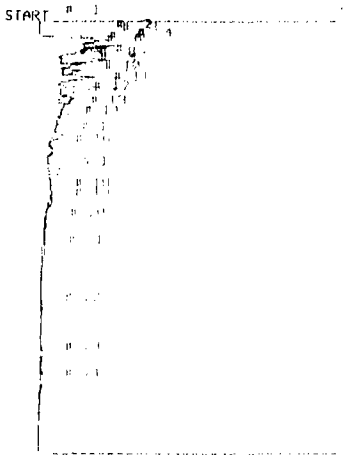
COMPOUND NAME	PEAK	R.T.	AREA/FIT
UNKNOWN	1	[illegible]	[illegible] mVS



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 12:22
ANALYSIS # 15 EY-2 1-100 DILUT
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 7 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/FIT
UNKNOWN	1	22.2	43.2 mVS
UNKNOWN	2	32.6	1[illegible].4 mVS
UNKNOWN	3	36.5	23.1 mVS
UNKNOWN	4	60.1	61.4 mVS
UNKNOWN	5	65.2	11.3 mVS
UNKNOWN	6	72.1	10.4 mVS
UNKNOWN	7	88.0	22.6 mVS
UNKNOWN	8	103.3	1[illegible].4 mVS
UNKNOWN	9	110.0	11.3 mVS
UNKNOWN	10	130.0	34.4 mVS
UNKNOWN	11	142.8	11.2 mVS
UNKNOWN	12	176.2	10.4 mVS
UNKNOWN	13	192.2	11.5 mVS
UNKNOWN	14	231.0	82.2 mVS
UNKNOWN	15	444.8	33.6 mVS
UNKNOWN	16	[illegible]	22.4 mVS
UNKNOWN	17	[illegible]	38.3 mVS



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 12:30
ANALYSIS # 16 EY-2 1-100 DILUT
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET 31.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/FIT
UNKNOWN	1	2.3	6.1 mVS
UNKNOWN	2	25.2	160.6 mVS
UNKNOWN	3	30.1	82.0 mVS
UNKNOWN	4	32.5	334.5 mVS
UNKNOWN	5	41.9	118.3 mVS
UNKNOWN	6	46.5	113.0 mVS
UNKNOWN	7	59.9	212.0 mVS
UNKNOWN	8	65.2	355.4 mVS
UNKNOWN	9	76.3	500.4 mVS
UNKNOWN	10	82.2	236.5 mVS
UNKNOWN	11	103.3	1.2 uS
UNKNOWN	12	118.0	368.2 mVS
UNKNOWN	13	130.0	305.8 mVS
UNKNOWN	14	152.4	127.5 mVS
UNKNOWN	15	176.2	293.3 mVS
UNKNOWN	16	192.2	169.8 mVS
UNKNOWN	17	230.4	588.4 mVS
UNKNOWN	18	264.0	16.3 mVS
UNKNOWN	19	278.2	46.0 mVS
UNKNOWN	20	308.3	40.0 mVS
UNKNOWN	21	354.2	35.3 mVS
UNKNOWN	22	410.0	8.1 mVS
UNKNOWN	23	515.1	1[illegible].2 mVS
UNKNOWN	24	546.5	226.1 mVS

933500086

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 27 1996 11:15
ANALYSIS # 3 EY-5 1-100 DILUT
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MM
UNKNOWN	1	33.7	50.3 mVS
UNKNOWN	2	52.5	96.3 mVS
UNKNOWN	3	62.1	11.6 mVS
UNKNOWN	4	65.3	98.1 mVS
UNKNOWN	5	69.3	322.2 mVS
UNKNOWN	6	65.2	226.0 mVS
UNKNOWN	7	73.1	394.0 mVS
UNKNOWN	8	88.3	943.8 mVS
UNKNOWN	9	103.6	613.8 mVS
UNKNOWN	10	110.3	552.2 mVS
UNKNOWN	11	125.6	465.4 mVS
UNKNOWN	12	135.4	718.9 mVS
UNKNOWN	13	152.8	496.9 mVS
UNKNOWN	14	176.2	262.0 mVS
UNKNOWN	15	198.2	222.8 mVS
UNKNOWN	16	230.4	681.8 mVS
UNKNOWN	17	266.1	555.0 mVS
UNKNOWN	18	280.3	517.6 mVS
UNKNOWN	19	339.9	68.1 mVS
UNKNOWN	20	352.3	161.3 mVS
UNKNOWN	22	460.4	60.1 mVS
UNKNOWN	23	[illegible]	50.5 mVS
UNKNOWN	24	[illegible]	22.3 mVS
UNKNOWN	[illegible]	[illegible]	26.1 mVS
UNKNOWN	27	[illegible]	62.5 mVS

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 27 1996 11:27
ANALYSIS # 10 EY-5 1-10 DILUTN
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MM
UNKNOWN	1	24.2	125.1 mVS
UNKNOWN	2	30.2	114.4 mVS
UNKNOWN	3	32.4	60.6 mVS
UNKNOWN	4	41.9	[illegible] mVS
UNKNOWN	5	45.9	1.2 VS
UNKNOWN	6	53.9	3.4 VS
UNKNOWN	7	65.3	2.9 VS
UNKNOWN	8	73.1	4.3 VS
UNKNOWN	9	82.2	4.8 VS
UNKNOWN	10	102.2	6.2 VS
UNKNOWN	11	110.0	5.5 VS
UNKNOWN	12	1[illegible].8	6.2 VS
UNKNOWN	13	1[illegible].2	3.6 VS
UNKNOWN	14	1[illegible].6	10.2 VS
UNKNOWN	15	1[illegible].2	2.2 VS
UNKNOWN	16	1[illegible].2	2.9 VS
UNKNOWN	17	223.6	14.2 VS
UNKNOWN	18	264.0	6.2 VS
UNKNOWN	19	276.6	10.3 VS
UNKNOWN	20	305.1	2.0 VS
UNKNOWN	21	347.5	2.0 VS
UNKNOWN	22	401.4	1.4 VS
UNKNOWN	23	[illegible]	3.1 VS
UNKNOWN	24	422.2	3.5 VS
UNKNOWN	25	511.6	1.2 VS
[illegible]	[illegible]	[illegible]	[illegible] mVS

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 27 1996 11:38
ANALYSIS # 11 STRINGE BLANK
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MM
UNKNOWN	1	32.2	43.2 mVS

START

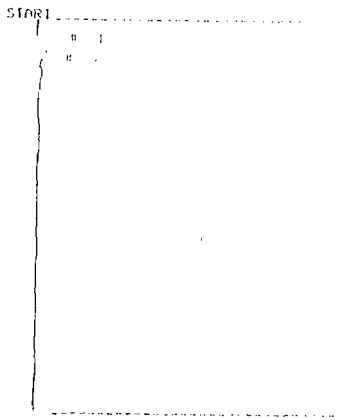
Gain Switched from 10 to 2

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 27 1996 11:50
ANALYSIS # 12 EY-2 1-100 DILUT
INTERNAL TEMP 28 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 53.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MM
UNKNOWN	2	31.0	12.9 VS
UNKNOWN	3	41.4	11.4 VS
UNKNOWN	4	53.3	2.6 VS
UNKNOWN	5	75.5	181.3 mVS
UNKNOWN	6	82.4	105.9 mVS
UNKNOWN	7	103.0	1.5 VS
UNKNOWN	8	118.0	152.6 mVS
UNKNOWN	9	124.4	23.3 mVS
UNKNOWN	10	138.0	248.3 mVS
UNKNOWN	11	151.6	25.8 mVS
UNKNOWN	12	175.2	56.0 mVS
UNKNOWN	13	198.2	161.9 mVS
UNKNOWN	14	232.8	2.1 VS
UNKNOWN	15	264.2	215.0 mVS
UNKNOWN	16	278.2	204.3 mVS
UNKNOWN	17	307.5	23.5 mVS
UNKNOWN	18	350.2	42.5 mVS.
UNKNOWN	20	453.2	58.7 mVS
UNKNOWN	21	484.9	9.4 mVS
UNKNOWN	22	517.4	63.3 mVS
UNKNOWN	23	[illegible]	[illegible] mVS

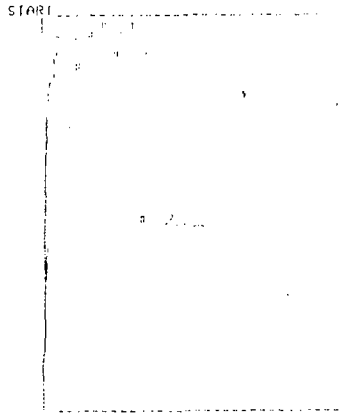
933500087



STOP @ 600.0
SAMPLE LIBRARY 3 JUN 22 1996 9:06
ANALYSIS # 1 SYRINGE BLANK
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cm/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 600.0 Sec
CYCLE TIME 0 Min

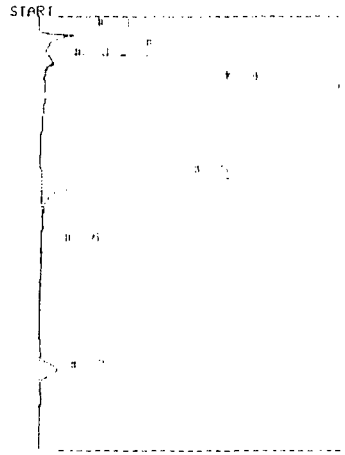
COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	49.3	30.1 mVS
UNKNOWN	2	29.7	2.5 mVS



STOP @ 600.0
SAMPLE LIBRARY 3 JUN 22 1996 9:50
ANALYSIS # 2 200 PPB STANDARD
INTERNAL TEMP 22 EPI-DOREMUS AVE
GAIN 5 100 UL INJECTION

OFFSET 23.0 mV
CHART SPEED 0.5 cm/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 600.0 Sec
CYCLE TIME 0 Min

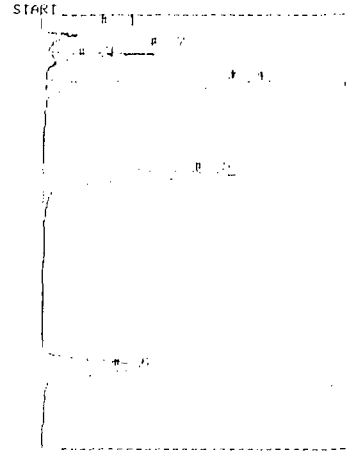
COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	32.0	22.0 mVS
UNKNOWN	2	49.9	29.2 mVS
UNKNOWN	3	29.6	301.3 mVS
UNKNOWN	4	32.9	12.1 mVS
UNKNOWN	5	109.4	12.4 VS
UNKNOWN	6	190.2	21.1 mVS
UNKNOWN	7	276.8	2.9 VS



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 10:3
ANALYSIS # 3 600 PPB STANDARD
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cm/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 600.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	23.9	20.9 mVS
UNKNOWN	2	61.2	1.6 VS
UNKNOWN	3	25.3	12.8 mVS
UNKNOWN	4	108.6	12.3 VS
UNKNOWN	5	250.2	10.1 VS
UNKNOWN	6	352.9	2.5 mVS
UNKNOWN	7	549.5	1.2 VS



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 10:15
ANALYSIS # 4 1200PPB STANDARD
INTERNAL TEMP 28 EPI-DOREMUS AVE
GAIN 2 50 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cm/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 600.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	30.3	23.2 mVS
UNKNOWN	2	61.5	1.7 VS
UNKNOWN	4	107.8	17.1 VS
UNKNOWN	5	242.2	9.9 VS

933500088

START

Syringe Blank

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 12:50
ANALYSIS # 17 ~~EY-3 1-100 DILUT~~
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET 31.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MIN
UNKNOWN	1	2.2	6.4 mVS
UNKNOWN	2	30.0	212.1 mVS
UNKNOWN	3	32.4	11.5 mVS
UNKNOWN	4	53.5	8.5 mVS
UNKNOWN	5	84.2	6.2 mVS
UNKNOWN	6	101.5	5.1 mVS
UNKNOWN	7	513.5	2.6 mVS

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 13:1
ANALYSIS # 18 EY-3 1-100 DILUT
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MIN
UNKNOWN	1	25.4	46.0 mVS
UNKNOWN	2	31.0	82.7 mVS
UNKNOWN	3	32.1	13.1 mVS
UNKNOWN	4	46.3	49.5 mVS
UNKNOWN	5	58.3	25.5 mVS
UNKNOWN	6	75.2	11.6 mVS
UNKNOWN	7	86.5	32.6 mVS
UNKNOWN	8	101.8	553.9 mVS
UNKNOWN	9	135.6	12.7 mVS
UNKNOWN	10	172.2	7.3 mVS
UNKNOWN	11	226.2	32.7 mVS
UNKNOWN	12	[illegible]	[illegible] mVS

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 13:13
ANALYSIS # 19 EY-3 1-100 DILUT
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET 30.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MIN
UNKNOWN	1	25.0	313.0 mVS
UNKNOWN	2	30.6	542.1 mVS
UNKNOWN	3	36.2	80.0 mVS
UNKNOWN	5	45.5	137.6 mVS
UNKNOWN	6	58.1	530.4 mVS
UNKNOWN	7	74.9	136.4 mVS
UNKNOWN	8	85.3	212.2 mVS
UNKNOWN	9	100.3	2.1 mVS
UNKNOWN	10	133.0	114.2 mVS
UNKNOWN	11	146.8	23.2 mVS
UNKNOWN	12	169.2	79.7 mVS
UNKNOWN	13	190.7	35.5 mVS
UNKNOWN	14	223.2	214.5 mVS
UNKNOWN	15	294.7	5.9 mVS
UNKNOWN	16	450.8	20.3 mVS
UNKNOWN	17	472.2	34.0 mVS
UNKNOWN	18	534.1	13.7 mVS

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 13:25
ANALYSIS # 20 SYRINGE BLANK
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET 30.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/MIN
UNKNOWN	1	10.6	8.2 mVS
UNKNOWN	2	12.6	12.9 mVS
UNKNOWN	3	21.0	11.1 mVS
UNKNOWN	4	29.6	394.9 mVS
UNKNOWN	5	36.8	206.5 mVS
UNKNOWN	6	58.1	15.9 mVS
UNKNOWN	7	84.2	7.2 mVS
UNKNOWN	8	101.2	11.4 mVS
UNKNOWN	9	223.2	9.6 mVS
UNKNOWN	10	527.1	80.8 mVS
UNKNOWN	11	606.3	49.4 mVS

933500089

START

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 13:36
ANALYSIS # 21 EY-1 1-100 DILUT
INTERNAL TEMP 29 EPT DUPEDUS AVE
GAIN 10 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	[illegible]	[illegible]
UNKNOWN	2	13.2	[illegible]
UNKNOWN	3	25.3	129.3 mVS
UNKNOWN	4	36.8	6.1 mVS
UNKNOWN	5	[illegible]	[illegible]
UNKNOWN	6	[illegible]	[illegible]
UNKNOWN	7	[illegible]	[illegible]
UNKNOWN	8	[illegible]	[illegible]
UNKNOWN	9	[illegible]	[illegible]
UNKNOWN	10	[illegible]	[illegible]
UNKNOWN	11	[illegible]	[illegible]
UNKNOWN	12	[illegible]	[illegible]
UNKNOWN	13	[illegible]	[illegible]
UNKNOWN	14	[illegible]	[illegible]
UNKNOWN	15	[illegible]	[illegible]

STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 13:38
ANALYSIS # 22 SYRINGE BLANK
INTERNAL TEMP 29 EPT DUPEDUS AVE
GAIN 10 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	29.3	193.0 mVS
UNKNOWN	2	36.5	62.2 mVS
UNKNOWN	3	52.1	3.6 mVS
UNKNOWN	4	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]

START

STOP @ 30.2
SAMPLE LIBRARY 3 JUN 22 1996 13:51
ANALYSIS # 23 EY-1 UNDILUTED
INTERNAL TEMP 29 EPT DUPEDUS AVE
GAIN 10 100 UL INJECTION

OFFSET 28.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

START

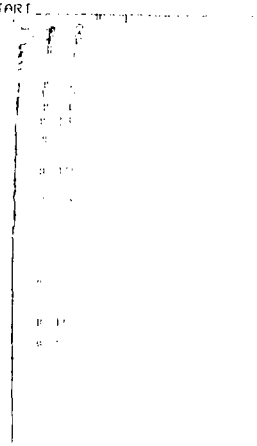
STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 14:5
ANALYSIS # 24 SYRINGE BLANK
INTERNAL TEMP 29 EPT DUPEDUS AVE
GAIN 2 100 UL INJECTION

OFFSET 2.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	29.3	22.0 mVS
UNKNOWN	2	36.4	11.2 mVS

933500090

START

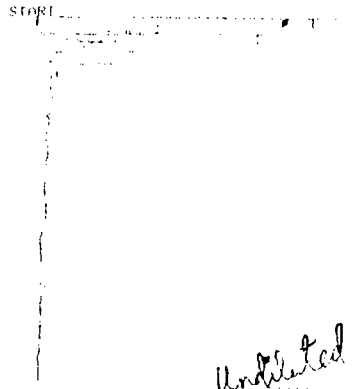


STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 14:16
ANALYSIS # 25 EY-1 1-10 DILUTN
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	24.5	800.1 mVS
UNKNOWN	2	41.4	21.0 mVS
UNKNOWN	3	52.3	62.1 mVS
UNKNOWN	5	71.1	41.0 mVS
UNKNOWN	6	84.4	184.3 mVS
UNKNOWN	7	99.0	426.9 mVS
UNKNOWN	8	129.6	51.1 mVS
UNKNOWN	9	144.1	10.6 mVS
UNKNOWN	10	162.2	66.8 mVS
UNKNOWN	11	186.7	5.2 mVS
UNKNOWN	12	312.2	66.4 mVS
UNKNOWN	13	264.2	46.5 mVS
UNKNOWN	14	337.5	13.4 mVS
UNKNOWN	15	433.3	19.2 mVS
UNKNOWN	16	471.1	6.2 mVS
UNKNOWN	1	[illegible]	13.[illegible] mVS

START



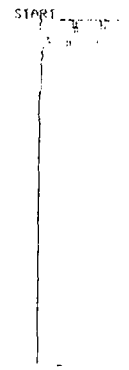
Undiluted

STOP @ [illegible]
SAMPLE LIBRARY 3 JUN 22 1996 14:22
ANALYSIS # 26 EY 1 [illegible]
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	26.2	3.0 mVS
UNKNOWN	2	38.2	3.2 mVS
UNKNOWN	3	40.1	28.3 mVS
UNKNOWN	4	[illegible]	[illegible] mVS
UNKNOWN	5	[illegible]	360.1 mVS
UNKNOWN	6	63.2	188.2 mVS
UNKNOWN	7	[illegible]	[illegible] mVS
UNKNOWN	8	83.1	305.2 mVS
UNKNOWN	9	89.2	7.2 mVS
UNKNOWN	10	118.0	316.5 mVS
UNKNOWN	11	130.4	402.2 mVS
UNKNOWN	12	146.0	92.3 mVS
UNKNOWN	13	168.2	542.4 mVS
UNKNOWN	14	188.2	30.3 mVS
UNKNOWN	15	213.0	324.9 mVS
UNKNOWN	16	233.5	36.6 mVS
UNKNOWN	17	266.0	455.0 mVS
UNKNOWN	18	309.9	142.3 mVS
UNKNOWN	19	329.5	7.7 mVS
UNKNOWN	[illegible]	1[illegible]	426.4 mVS
UNKNOWN	[illegible]	[illegible]	[illegible] mVS
UNKNOWN	[illegible]	[illegible]	[illegible] mVS

START

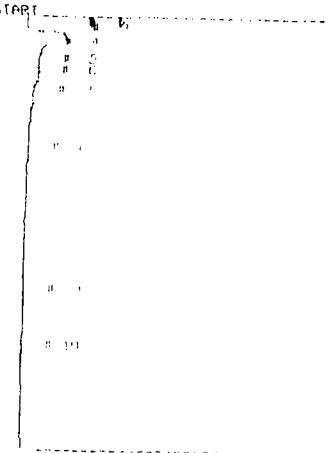


STOP @ 526.0
SAMPLE LIBRARY 3 JUN 22 1996 14:36
ANALYSIS # 27 SYRINGE BLANK
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.6	21.0 mVS
UNKNOWN	2	26.0	14.4 mVS
UNKNOWN	3	30.1	10.1 mVS

START



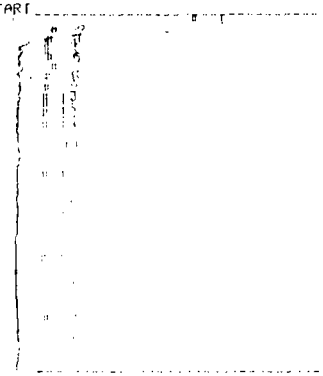
STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 14:42
ANALYSIS # 28 EY-11 1-100 DILU
INTERNAL TEMP 29 EPI-DOREMUS AVE
GAIN 10 100 UL INJECTION

OFFSET 29.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	26.0	110.1 mVS
UNKNOWN	3	36.3	11.7 mVS
UNKNOWN	4	52.2	6.4 mVS
UNKNOWN	5	84.2	10.5 mVS
UNKNOWN	6	101.2	27.7 mVS
UNKNOWN	7	172.4	37.1 mVS
UNKNOWN	8	220.2	10.4 mVS
UNKNOWN	9	432.2	16.7 mVS
UNKNOWN	10	524.3	11.7 mVS

933500091

START

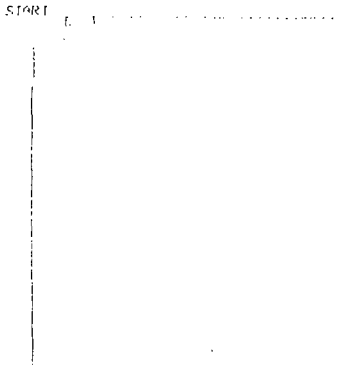


STOP @ 551.2
SAMPLE LIBRARY 3 JUN 22 1996 14:58
ANALYSIS # 29 EY-11 UNDILUTED
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PCT
UNKNOWN	1	21.9	4.4 mVS
UNKNOWN	2	41.2	5.1 mVS
UNKNOWN	3	52.5	49.2 mVS
UNKNOWN	5	94.1	6.4 mVS
UNKNOWN	6	95.0	95.4 mVS
UNKNOWN	7	98.3	242.9 mVS
UNKNOWN	8	111.2	16.0 mVS
UNKNOWN	9	130.8	13.8 mVS
UNKNOWN	10	141.4	17.9 mVS
UNKNOWN	12	168.2	43.3 mVS
UNKNOWN	13	188.2	14.1 mVS
UNKNOWN	14	219.6	109.6 mVS
UNKNOWN	15	264.0	33.1 mVS
UNKNOWN	16	306.2	36.4 mVS
UNKNOWN	18	397.2	19.5 mVS
UNKNOWN	19	434.4	13.2 mVS
UNKNOWN	20	482.5	63.0 mVS

START

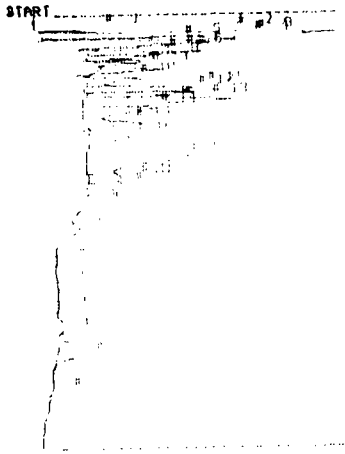


STOP @ 550.0
SAMPLE LIBRARY 3 JUN 22 1996 15:2
ANALYSIS # 30 SYRINGE BLANK
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PCT
UNKNOWN	1	29.6	71.4 mVS
UNKNOWN	2	36.3	11.3 mVS
UNKNOWN	3	57.4	8.5 mVS

START

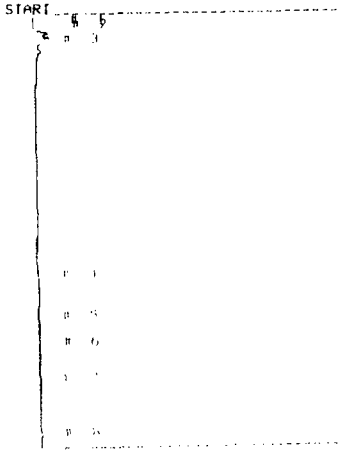


STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 15:19
ANALYSIS # 31 EY-4 1-10 DILUTI
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PCT
UNKNOWN	1	24.9	100.7 mVS
UNKNOWN	2	30.0	5.4 VS
UNKNOWN	3	32.3	8.9.1 mVS
UNKNOWN	4	39.2	3.9 mVS
UNKNOWN	6	58.3	1.6 VS
UNKNOWN	7	60.5	1.3 VS
UNKNOWN	8	70.9	383.0 mVS
UNKNOWN	9	85.9	1.2 VS
UNKNOWN	10	98.8	1.4 VS
UNKNOWN	11	110.7	2.4 VS
UNKNOWN	12	118.9	2.2 VS
UNKNOWN	13	132.0	4.9 VS
UNKNOWN	14	141.4	2.2 VS
UNKNOWN	15	162.2	1.2 VS
UNKNOWN	16	182.2	1.4 VS
UNKNOWN	17	218.4	6.6 VS
UNKNOWN	18	249.3	1.9 VS
UNKNOWN	19	262.6	1.6 VS
UNKNOWN	20	285.9	663.7 mVS
UNKNOWN	21	328.6	250.1 mVS
UNKNOWN	22	378.2	80.1 mVS
UNKNOWN	23	413.5	129.2 mVS
UNKNOWN	24	452.8	29.1 mVS
UNKNOWN	25	484.9	481.9 mVS
UNKNOWN	[illegible]	[illegible]	[illegible] VS

START



STOP @ 660.0
SAMPLE LIBRARY 3 JUN 22 1996 15:31
ANALYSIS # 32 SYRINGE BLANK
INTERNAL TEMP 29 EPI DOREMUS AVE
GAIN 2 100 UL INJECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cM/Min
SLOPE SENS. 6 12 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 660.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PCT
UNKNOWN	1	29.5	34.5 mVS
UNKNOWN	2	36.6	25.6 mVS
UNKNOWN	3	57.7	45.3 mVS
UNKNOWN	6	521.5	16.9 mVS

933500092

START

STOP @ 500.0
SAMPLE LIBRARY 3 JUN 22 1996 15:41
ANALYSIS # 33 200 PPB STANDARD
INTEGRAT MODE 29 EPI-DORENDUS AVE
GAIN 2 DOUBLE DETECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cm/min
SCOPE SENS. 6 12 6 mV/Sec
WINDOW % 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 220.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/HT
UNKNOWN	1	28.3	45.0 mVS
UNKNOWN	2	57.2	324.0 mVS
UNKNOWN	3	69.9	26.2 mVS
UNKNOWN	4	90.8	3.4 VS
UNKNOWN	5	102.4	18.6 mVS
UNKNOWN	6	201.3	5.2 VS
UNKNOWN	7	196.2	[illegible]

START

STOP @ 600.0
SAMPLE LIBRARY 3 JUN 22 1996 15:[illegible]
ANALYSIS # 34 600 PPB STANDARD
INTEGRAT MODE 29 EPI-DORENDUS AVE
GAIN 2 DOUBLE DETECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cm/min
SCOPE SENS. 6 12 6 mV/Sec
WINDOW % 10 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 220.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/HT
UNKNOWN	1	[illegible]	[illegible] mVS
UNKNOWN	2	[illegible]	[illegible] VS
UNKNOWN	3	[illegible]	[illegible] mVS
UNKNOWN	4	90.4	12.1 VS
UNKNOWN	5	131.2	18.5 mVS
UNKNOWN	6	220.0	10.3 VS
UNKNOWN	7	161.3	11.0 VS

START

STOP @ 593.0
SAMPLE LIBRARY 3 JUN 22 1996 16:[illegible]4
ANALYSIS # [illegible] 1200 PPB STD
INTEGRAT MODE 29 EPI-DORENDUS AVE
GAIN 2 DOUBLE DETECTION

OFFSET 0.0 mV
CHART SPEED 0.5 cm/min
SCOPE SENS. 6 12 6 mV/Sec
WINDOW % 14 Percent
MINIMUM AREA 5 mVSec
TIMER DELAY 10.4 Sec
ANALYSIS TIME 220.4 Sec
CYCLE TIME 0 Min

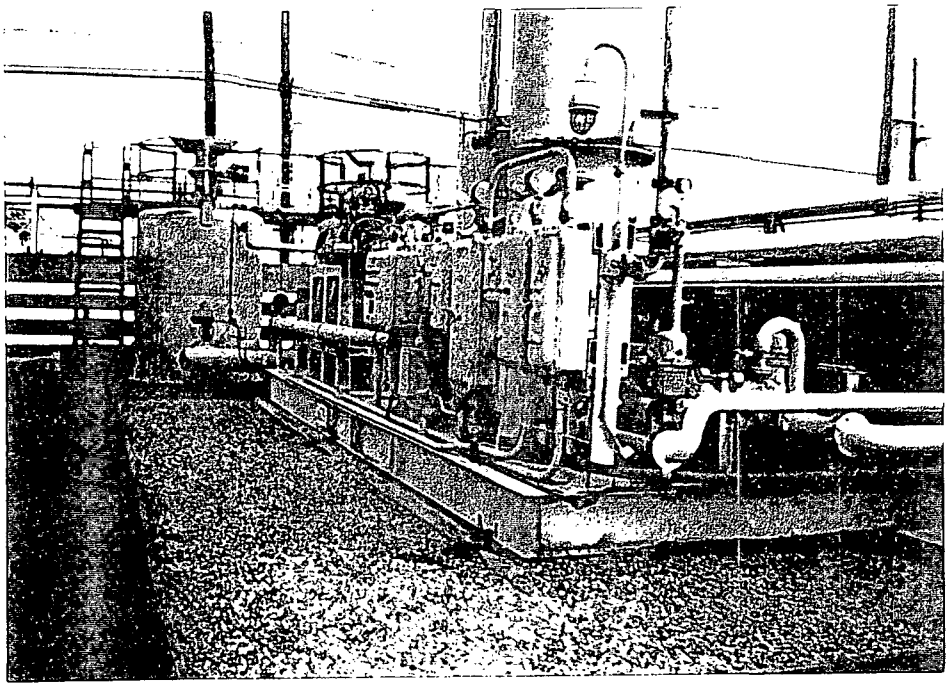
COMPOUND NAME	PEAK	R.T.	AREA/HT
UNKNOWN	1	29.2	18.2 mVS
UNKNOWN	2	57.3	1.7 VS
UNKNOWN	3	69.9	205.5 mVS
UNKNOWN	4	90.6	16.2 VS
UNKNOWN	5	220.0	[illegible] VS

933500093

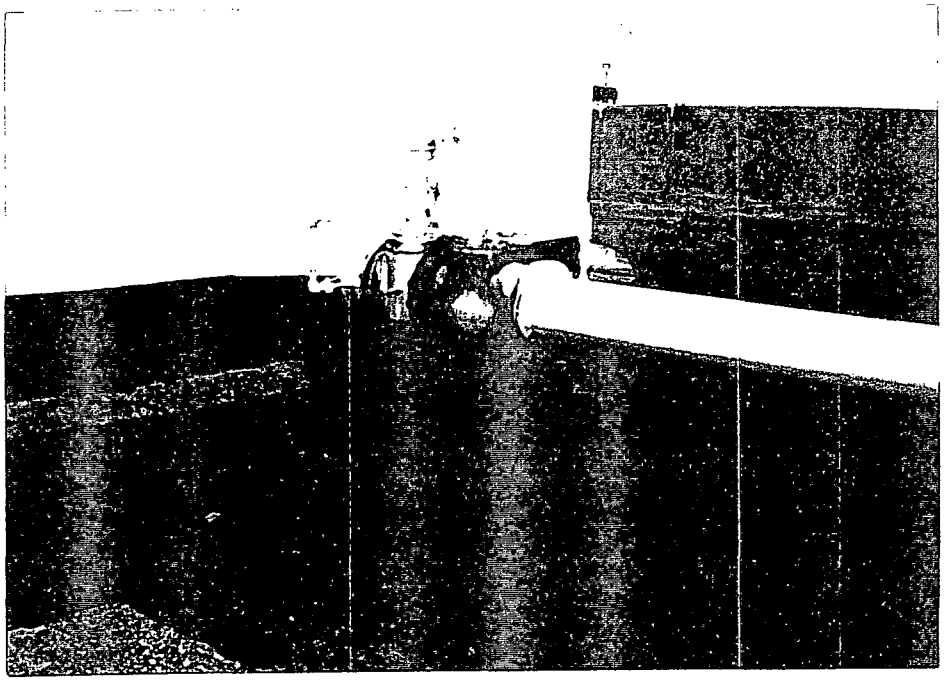
APPENDIX C

933500094

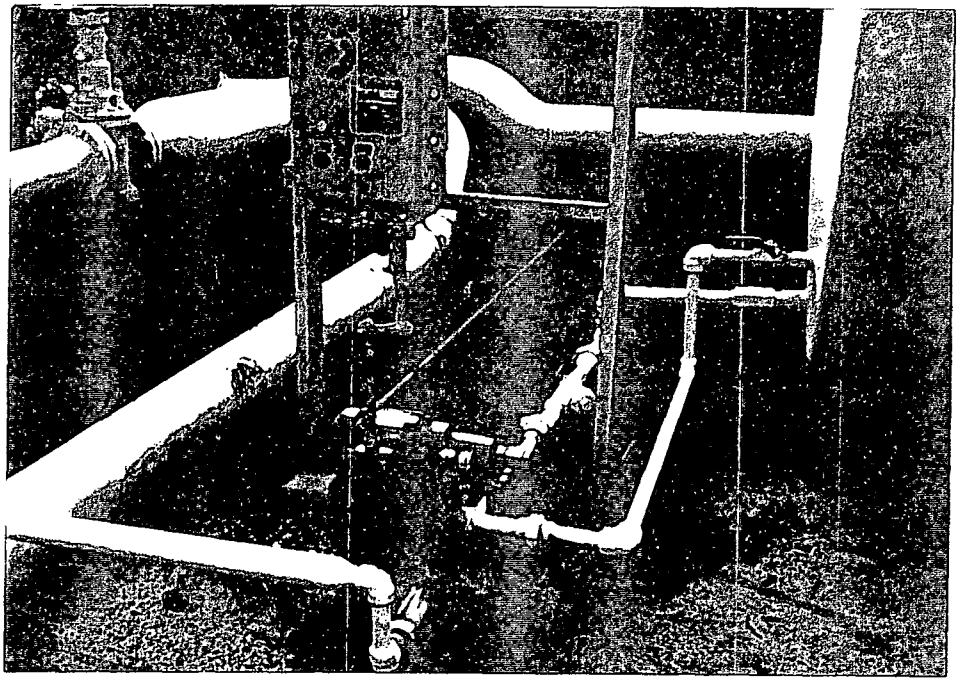
Appendix C
Site Photographs



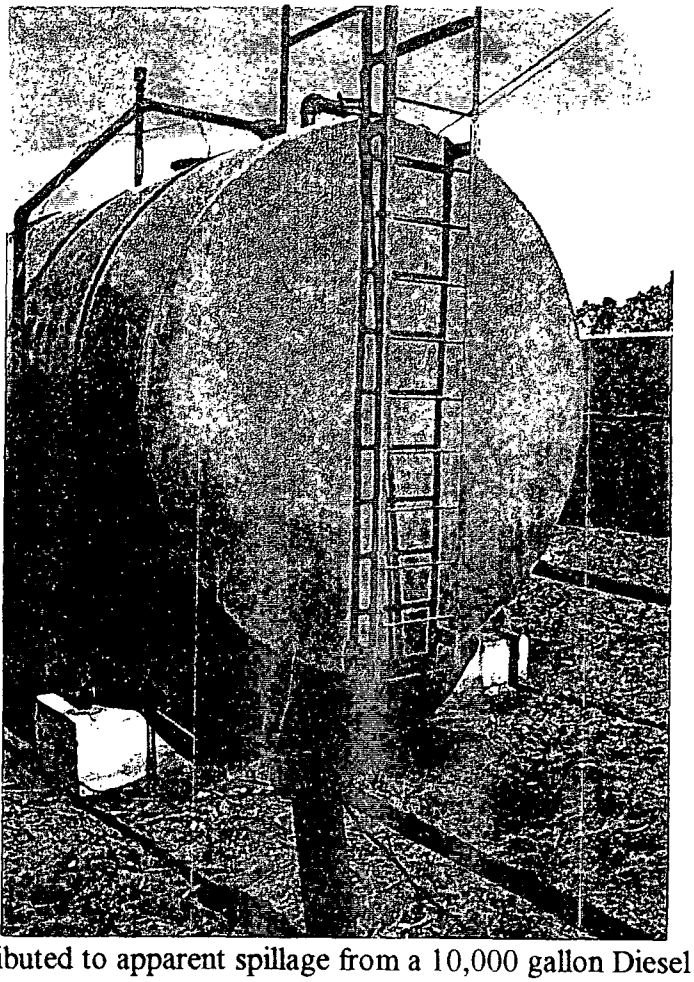
1.0 Vapor Recovery Unit located within Basin No.5, where in June 1988, a 2,000 gallon gasoline spill occurred and was reported by Getty.



2.0 Soil staining attributed to apparent on-going leakage from valve attached to Diesel Tank No. 5.



3.0 Soil staining attributed to apparent on-going leakage from the piping of the Additive Tank in Tank Basin No.1.



4.0 Staining attributed to apparent spillage from a 10,000 gallon Diesel Tank.

APPENDIX D

Appendix D

Documentation of July 1988 Gasoline Spill at Vapor Recovery Unit

1.4.4 **SPILL HISTORY**

1985 Power Test Corporation bought this terminal from Texaco, Inc. The following is a history or reportable spills from the facility since 1985.

Date: 7/22/88

Product: Gasoline

Amount: 2,000 Gallons

Cause: Actuator valve on supply side of vapor recovery unit failed causing an overflow.

Clean Up Action: Product pumped from dike area with vacuum truck. Auchter Industrial Vacuum Services

Enforcement: None

During normal rounds supervisor on duty noticed vapors near the vapor recovery unit. Once spill was found, supervisor closed all manual valves to stop flow of product. All product was contained in the dike area.

APPENDIX
E

933500101

Appendix E
Chronology of Monitor Well Sampling Results

TABLE 1
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-1
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-1

SAMPLE DATE: / PARAMETERS:	12/10/84	6/1/88	5/31/90	11/12/90	5/15/91	11/27/91	5/15/92	11/04/92	6/15/93	12/17/93	6/15/93	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Chloromethane	—	—	—	—	—	—	4J	—	—	*	*	10 J	–	–	–
Carbon Disulfide	—	—	—	—	—	—	—	—	—	*	*	13 J	–	–	–
Benzene	—	—	11	—	—	—	—	—	—	*	*	4 J	–	2.2	0.8
Toluene	—	—	3J	—	—	6	—	—	—	*	*	—	1.2	1.2	0.85
Total Xylenes	—	13	*	*	*	*	3J	—	*	*	*	—	1	2.2	8.2
MTBE	—	*	*	*	4 j	*	*	*	*	*	*	11 J	6.6	18.1	6.2
TBA	*	*	*	*	*	*	*	*	*	*	*	*	*	*	18.3
TOTAL TARGETED VOC	—	—	14	—	—	6	11	—	—	*	*	38	8.8	27.1	16.05
BASE NEUTRAL ORGANICS (ug/L)															
Pyrene	*	—	1J	—	—	—	—	—	—	—	*	*	–	–	–
Bis(2-Ethylhexyl)phthalate	*	—	—	—	1J	1J	1J	3 J	—	—	*	*	–	–	–
Di-n-butylphthalate	*	—	—	—	—	—	—	—	1 J	—	*	*	–	–	–
Acenaphthene	*	—	—	—	—	—	—	1 J	2 J	2 J	*	*	–	–	–
Benzo(b)fluoranthene	*	—	—	—	—	—	—	—	16	—	*	*	–	–	–
Benzo(k)fluoranthene	*	—	—	—	—	—	—	—	23	—	*	*	–	–	–
Benzo(g,h,i)perylene	*	—	—	—	—	—	—	—	3 J	—	*	*	–	–	–
Dibenz(a,h)anthracene	*	—	—	—	—	—	—	—	4 J	—	*	*	–	–	–
TOTAL TARGETED BN	*	—	1	—	1	1	1	4	47	2	*	*	–	–	–
pH	7.5	*	7.3	7.2	7.40	6.80	7.24	6.86	7.12	7.13	*	6.87	7.2	7.16	6.75

mw-1.wk3

Note:
(1) " — " – signifies not detected.
(2) " * " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

933500103

TABLE 2
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-3
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-3

SAMPLE DATE: / PARAMETERS:	12/10/84	2/22/85	6/1/88	5/31/90	11/12/90	5/15/91	11/27/91	5/15/92	11/05/92	6/15/93	12/17/93	6/13/94	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)																
Benzene	79	—	—	—	460	930	500	520	560	480	540	1,000	380	360	480	640
Toluene	79	—	—	14J	73J	110	51	100	47	39	42	100	33	44	47.6	27
Chlorobenzene	15	—	—	54	—	110	39J	130	54	46	48	160/92	34	–	–	–
Ethylbenzene	—	—	—	—	—	120	—	120	31	—	—	39	13 J	11	25.2	8.6
Total Xylenes	*	*	140	*	*	*	*	300	140	*	82	260	49	81	97.2	75.2
MTBE	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	53.1
TBA	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	–
TOTAL TARGETED VOC	173	–	140	68	533	1,270	590	1310	832	565	712	1525	509	496	650	750.8
BASE NEUTRAL ORGANICS (ug/L)																
Naphthalene	*	—	36	20	14	10J	*	12	4 J	5 J	4 J	*	*	–	–	–
Acenaphthene	*	—	—	4J	3J	2J	*	3J	4 J	4 J	3 J	*	*	–	–	–
Fluorene	*	—	—	5J	4J	3J	*	5J	5J	6 J	4 J	*	*	–	–	–
Phenanthrene	*	—	—	—	—	—	*	—	—	—	3 J	*	*	–	–	–
N-Nitrosodiphenylamine	*	—	—	—	—	1J	*	—	—	2 J	—	*	*	–	–	–
Phenanthrene	*	—	—	4J	3J	2J	*	3J	2 J	4 J	—	*	*	–	–	–
Di-n-butylphthalate	*	—	—	—	—	—	*	1J	—	—	—	*	*	–	–	–
Pyrene	*	—	—	1J	—	—	*	—	—	—	—	*	*	–	–	–
Bis(2-Ethylhexyl)phthalate	*	40	—	—	—	—	*	1J	6 J	1 J	—	*	*	–	–	–
TOTAL TARGETED BN	*	40	36	34	24	< 18	*	25	21	22	14	*	*	–	–	–
pH	7.9	*	*	7.0	7.3	6.97	*	7.01	6.93	6.98	7.17	7.13	7.12	7.5	6.90	7.07

mw-3.wk3

Note:
(1) " — " – signifies not detected.
(2) " * " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

933500104

TABLE 3
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-4
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW – 4

SAMPLE DATE: / PARAMETERS:	12/10/84	6/1/88	5/31/90	11/12/90	5/14/91	11/27/91	5/15/92	11/04/92	6/15/93	12/17/93	6/13/94	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Chloromethane	–	–	–	–	–	–	–	–	–	•	•	2 J	–	–	–
1,1 – Dichloroethane	–	–	1J	–	–	–	–	–	–	•	•	–	–	–	–
1,2 – Dichloroethene	–	–	1J	–	–	–	–	–	–	•	•	–	–	–	–
Trichloroethylene	–	–	6	–	–	–	–	–	–	•	•	–	–	–	–
Benzene	–	–	40	–	11	19	10	5	8	•	•	3 J	–	1.6	–
Toluene	–	–	5	4J	3J	2J	–	–	–	•	•	–	–	–	–
Chlorobenzene	–	–	2J	–	–	–	–	–	–	•	•	–	–	–	–
Ethylbenzene	–	–	2J	–	–	–	–	–	–	•	•	–	–	–	–
Total Xylenes	–	14	•	•	•	•	5	–	•	•	•	–	–	2.4	–
MTBE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	51.5
TBA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	–
TOTAL TARGETED VOC	–	14	57	4	14	21	15	5	8	•	•	<3	–	4	–
BASE NEUTRAL ORGANICS (ug/L)															
Naphthalene	•	–	3J	3J	2J	•	–	–	–	–	•	–	–	–	1.6
Acenaphthene	•	–	–	–	1J	•	–	–	–	–	•	–	–	0.95 J	0.98 J
N – Nitrosodiphenylamine	•	–	110	190	63	•	42	48	94	67	•	34	31	25.3	45.7
Phenanthrene	•	16	1J	–	2J	•	–	–	–	–	•	–	–	–	– –
Anthracene	•	–	–	–	1J	•	–	–	–	–	•	–	–	–	– –
Fluoranthene	•	–	1J	–	3J	•	–	–	–	–	•	–	–	–	0.51 J
Benzidine	•	–	–	–	8J	•	–	6 J	–	–	•	–	–	–	1.8
Pyrene	•	–	1J	–	3J	•	–	–	–	–	•	–	–	–	– –
Benzo(a)anthracene	•	–	–	–	1J	•	–	–	–	–	•	–	–	–	– –
Chrysene	•	–	–	–	1J	•	–	–	–	–	•	–	–	–	– –
Bis(2 – Ethylhexyl)phthalate	•	–	–	–	4J	•	–	7 J	1 J	–	•	4 J	1.1 J	–	– –
Di – n – butylphthalate	•	–	–	–	–	•	–	–	1 J	–	•	2 J	–	–	– –
Benzo(b)fluoranthene	•	–	–	–	1J	•	–	–	–	–	•	–	–	–	–
TOTAL TARGETED BN	•	16	116	193	90	•	42	61	96	67	•	40	32.1	26.2	50.59
pH	7.6	•	7.6	8.1	7.40	•	7.16	7.55	7.13	7.07	•	7.31	7.4	7.18	7.19

mw – 4.wk3

Note:
(1) " – " – signifies not detected.
(2) " • " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

933500105

TABLE 4
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-5
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL - NEWARK, NEW JERSEY

MW-5

SAMPLE DATE / PARAMETERS:	12/10/84	6/1/88	5/31/90	11/12/90	5/15/91	11/27/91	5/15/92	11/05/92	6/15/93	12/17/93	6/13/94	12/21/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Benzene	–	13	—	—	71	65	55	56	29	60	8	56	41	31.9	20.3
Toluene	–	—	—	2J	3J	2J	—	—	—	—	2	2 J	3.6	1.4	1.2
Ethylbenzene	–	—	—	—	—	—	—	—	—	—	5	—	–	–	–
Total Xylenes	–	10	*	*	*	*	12	12	*	9	5	11	10	7.9	5.8
MTBE	*	*	*	*	*	*	*	*	*	*	*	*	*	*	307
TBA	*	*	*	*	*	*	*	*	*	*	*	*	*	*	–
TOTAL TARGETED VOC	–	23	—	2	74	67	67	68	29	69	20	69	54.6	40.3	334.3
BASE NEUTRAL ORGANICS (ug/L)															
Acenaphthene	*	—	—	—	1J	*	—	—	1 J	—	*	*	*	*	*
Fluorene	*	—	1J	—	—	*	—	—		—	*	*	*	*	*
N-Nitrosodiphenylamine	*	—	3J	2J	2J	*	2J	2J	2 J	—	*	*	*	*	*
Bis(2-Ethylhexyl)phthalate	*	—	—	—	—	*	2J	6 J	2 J	—	*	*	*	*	*
TOTAL TARGETED BN	*	—	4	2	3	*	4	8	5	—	*	*	*	*	*
pH	7.7	*	7.1	7.3	7.06	*	7.08	6.87	6.99	7.20	7.10	7.09	7.4	7.32	6.87

mw-5.wk3

Note:
(1) "—"-signifies not detected.
(2) " * "-signifies not analyzed.
(3) E-exceeds calibration curve.
(4) B-the analyte is found in the blank as well as the sample.
(5) J-the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

933500106

TABLE 5
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-6
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-6

SAMPLE DATE: / PARAMETERS:	12/10/84	6/1/88	5/31/90	11/12/90	5/15/91	11/27/91	5/15/92	11/4-5/92	6/15/93	12/17/93	6/13/94	12/21/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Benzene	—	—	11	6J	—	—	—	•	—	•	•	—	–	1.7	–
Bromoform	—	—	—	4J	—	—	—	•	—	•	•	—	–	–	–
Toluene	—	—	2J	—	2J	2J	—	•	4 J	•	•	—	1.1	1	1
Total Xylenes	—	7	•	•	•	•	—	•	•	•	•	3 J	4.7	3	3.9
MTBE	•	•	•	•	•	•	4J	•	—	•	•	—	–	–	93.6
TBA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	–
TOTAL TARGETED VOC		7	13	10	2	2	4	•	4	•	•	3	1.1	2.7	98.5
BASE NEUTRAL ORGANICS (ug/L)															
Acenaphthene	•	—	2 J	—	2J	3 J	—	•	5 J	3 J	•	•	•	•	•
Di-n-butylphthalate	•	—	1J	—	—	—	—	•	2 J	—	•	•	•	•	•
Bis(2-ethylhexyl)phthalate	•	—	—	—	—	—	—	•	2 J	—	•	•	•	•	•
Fluoranthene	•	—	1J	—	—	—	—	•	—	—	•	•	•	•	•
Pyrene	•	—	1J	—	—	—	—	•	—	—	•	•	•	•	•
TOTAL TARGETED BN	•	—	5	—	2	3	—	•	9	3	•	•	•	•	•
pH	6.9	•	8.4	7.2	7.13	6.96	7.28	•	6.80	7.10	•	7.17	7.5	7.04	6.85

mw-6.wk3

Note:
(1) "—"–signifies not detected.
(2) " * "–signifies not analyzed.
(3) E–exceeds calibration curve.
(4) B–the analyte is found in the blank as well as the sample.
(5) J–the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample are indicated above. All other compounds were not detected.

933500107

TABLE 6
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-7
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-7

SAMPLE DATE: / PARAMETERS:	12/10/84	6/1/88	5/31/90	11/12/90	5/14/91	11/27/91	5/14/92	11/04/92	6/14/93	12/17/93	6/13/94	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Benzene	–	–	38	–	28	–	9	–	–	*	*	2 J	–	7.8	1.4
Tetrachloroethene	–	69	–	–	–	–	–	–	–	*	*	–	–	–	–
Toluene	–	–	4J	–	3JB	3 J	–	–	–	*	*	–	–	–	–
Total Xylenes	–	38	*	*	*	*	–	–	*	*	*	–	–	–	–
MTBE	*	*	*	*	*	*	*	*	*	*	*	*	–	–	15.5
TBA	*	*	*	*	*	*	*	*	*	*	*	*	–	–	99.6
TOTAL TARGETED VOC	–	107	42	–	28	3	9	–	–	*	*	2	–	7.8	116.5
BASE NEUTRAL ORGANICS (ug/L)															
Acenaphthene	*	15	5J	3J	5J	3 J	–	–	4 J	–	*	*	–	–	–
Fluorene	*	8	1J	1J	2J	2 J	–	–	1 J	–	*	*	–	–	–
Phenanthrene	*	9	–	–	2J	–	–	–	–	–	*	*	–	–	–
Bis(2-Ethylhexyl)phthalate	*	–	–	–	2J	2 J	1J	6 J	4 J	–	*	*	–	–	–
Diethyl phthalate	*	–	–	1J	–	–	–	–	–	–	*	*	–	–	–
TOTAL TARGETED BN	*	32	6	5	11	7	1	6	9	–	*	*	–	–	–
pH	6.8	*	7.1	7.4	7.39	6.84	*	6.86	6.78	7.10	*	7.07	7.16	7.85	7.18

mw-7.wk3

Note:
(1) "–"–signifies not detected.
(2) "*"–signifies not analyzed.
(3) E–exceeds calibration curve.
(4) B–the analyte is found in the blank as well as the sample.
(5) J–the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

933500108

TABLE 7
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-8
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-8

SAMPLE DATE: / PARAMETERS:	12/10/84	2/22/85	6/1/88	5/31/90	11/12/90	5/14/91	11/27/91	5/14/92	11/04/92	6/14/93	12/17/93	6/13/94	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)																
Chloroethane	–	–	–	–	–	–	–	37	52	–	–	–	–	–	–	–
1,2-Dichloroethene	–	–	–	4J	–	–	–	160	–	–	–	–	–	–	3.8	–
Benzene	–	–	–	15	–	–	280	220	230	340	300	1,000	300	310	230	241
Toluene	–	–	–	–	–	97B	6	620E	5	6	–	49	6 J	21	8.5	6.3
Ethylbenzene	–	–	–	64	–	23	4J	24	–	–	–	46	–	140	11.5	10.1
Total Xylenes	–	–	–	*	*	*	*	–	19	*	–	70	–	310	203	158
MTBE	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	58.7
TBA	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	60.2
TOTAL TARGETED VOC	–	–	–	83	–	30	290	1,061	306	346	300	1,165	306	781	456.8	534.3
BASE NEUTRAL ORGANICS (ug/L)																
Isophorone	*	–	–	110	–	–	–	69	–	–	–	*	*	*	*	*
Naphthalene	*	39	–	–	–	–	–	5J	–	1 J	–	*	*	*	*	*
Acenaphthene	*	–	–	3J	2J	2J	2 J	1J	2 J	3 J	2J	*	*	*	*	*
Anthracene	*	–	–	–	–	–	–	–	2 J	–	–	*	*	*	*	*
Diethyl phthalate	*	–	–	10J	2J	–	–	–	–	–	–	*	*	*	*	*
Fluorene	*	–	–	2J	2J	2J	1 J	1J	1 J	2 J	1 J	*	*	*	*	*
N-Nitrosodiphenylamine	*	–	–	2J	1J	1J	–	–	–	2 J	–	*	*	*	*	*
Phenanthrene	*	–	–	3J	2J	3J	1 J	2J	2 J	3 J	2J	*	*	*	*	*
Di-n-butylphthalate	*	–	–	1J	1J	–	5 J	–	1 J	–	–	*	*	*	*	*
Pyrene	*	–	–	1J	–	–	–	–	–	–	–	*	*	*	*	*
Bis(2-Ethylhexyl)phthalate	*	26	–	1J	–	–	–	–	11	–	–	*	*	*	*	*
Bis(2-chloroethyl)ether	*	–	–	–	–	–	–	–	–	2 J	–	*	*	*	*	*
TOTAL TARGETED BN	*	65	<MDL	133	10	8	9	78	20	15	5	*	*	*	*	*
pH	6.8	*	*	6.7	6.8	6.64	6.52	*	6.58	6.63	6.85	6.87	6.99	6.7	6.45	6.45

mw-8.wk3

Note:
(1) "—" – signifies not detected.
(2) " * " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample are indicated above. All other compounds were not detected.

TABLE 8
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-9
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-9

SAMPLE DATE: / PARAMETERS:	12/10/84	6/1/88	5/31/90	11/12/90	5/14/91	11/27/91	5/14/92	11/04/92	6/14/93	12/17/93	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)														
Benzene	–	–	–	–	24	35	18	36	19	*	18	24	9.1	11.1
Toluene	–	–	–	–	10	3 J	–	–	5 J	*	1 J	1.3	–	–
Total Xylenes	–	54	*	*	*	*	–	–	*	*	–	2.4	0.91 J	–
MTBE	*	*	*	*	*	*	*	*	*	*	*	*	*	–
TBA	*	*	*	*	*	*	*	*	*	*	*	*	*	–
TOTAL TARGETED VOC	–	54	–	–	34	36	18	36	24	*	19	27.7	10.01	11.1
BASE NEUTRAL ORGANICS (ug/L)														
Acenaphthene	*	–	–	6J	6J	7 J	7J	6 J	*	8 J	12	5	5	5.3
Fluorene	*	–	–	6J	6J	5 J	8J	3 J	*	8 J	12	4	3.9	4
N-Nitrosodiphenylamine	*	–	–	–	6J	4 J	–	–	*	–	–	–	–	–
Phenanthrene	*	–	–	6J	11	2 J	9J	–	*	13	17	2 J	3.2	2.7
Anthracene	*	–	–	1J	3J	–	1J	–	*	4 J	6 J	0.6 J	2.1	0.95 J
Di-N-Butylphthalate	*	–	–	–	–	–	–	–	*	–	1 J	–	–	–
Fluoranthene	*	–	2J	1J	6J	4 J	2J	–	*	20	23	2	4.4	1.8
Pyrene	*	–	3J	1J	6J	3 J	1J	3 J	*	24	26	2	4.9	1.6
Benzo(a)anthracene	*	–	1J	–	2J	–	–	1 J	*	9 J	10 J	–	0.57 J	0.44 J
Chrysene	*	–	1J	–	3J	–	–	–	*	8 J	10	–	2.1	0.57 J
Bis(2-Ethylhexyl)phthalate	*	–	1J	–	4J	2 J	–	11 J	*	1 J	3 J	–	0.57 J	–
Di-nioctyl phthalate	*	–	–	–	–	–	–	1 J	*	–	–	–	–	–
Benzo(b)fluoranthene	*	–	1J	–	2J	–	–	–	*	7 J	10 J	–	2.8	–
Benzo(k)fluoranthene	*	–	–	–	1J	–	–	–	*	8 J	7 J	–	1.1	–
Benzo(a)pyrene	*	–	1J	–	2J	–	–	–	*	8 J	10	–	2.6	–
Indeno(1,2,3-cd)pyrene	*	–	–	–	1J	–	–	–	*	4 J	5 J	–	2	–
Benzo(g,h,i)perylene	*	–	–	–	1J	–	–	–	*	4 J	5 J	–	2.3	–
Dibenz(a,h)anthracene	*	–	–	–	–	–	–	–	*	–	2 J	–	0.66 J	–
TOTAL TARGETED BN	*	–	10	21	60	27	28	25	*	126	159	15.6	38.2	17.36
pH	7.3	*	6.9	6.8	6.78	6.53	*	7.04	6.78	6.91	6.85	6.77	7.12	6.65

mw-9.wk3

Note:
(1) "—" – signifies not detected.
(2) "*" – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

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TABLE 9
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-11
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-11

SAMPLE DATE: / PARAMETERS:	12/10/84	6/1/88	5/31/90	11/12/90	5/15/91	11/27/91	5/15/92	11/05/92	6/15/93	12/17/93	6/13/94	12/21/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Carbon Disulfide	–	–	–	–	–	–	–	–	–	–	–	4 J	–	–	–
Benzene	–	490	53	240	120	200	120	230	110	150	81	130	130	130	112
Toluene	–	–	7	–	7	8	5	–	5	6	20	5 J	7.3	5.1	6.5
Ethylbenzene	–	–	–	–	–	–	–	–	–	–	13	–	1.5	1.4	1.7
Total Xylenes	–	560	•	•	•	•	19	22 J	•	20	33	14 J	7	18.3	18.2
MTBE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	207
TBA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	–
Chloroform	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3.7
TOTAL TARGETED VOC	< MDL	1,050	60	240	127	218	144	252	115	176	147	153	154.8	154.8	349.1
BASE NEUTRAL ORGANICS (ug/L)															
Naphthalene	•	85	–	–	–	–	–	–	–	–	•	•	•	•	•
Acenaphthene	•	49	–	3J	4J	–	4J	–	4 J	3J	•	•	•	•	•
Fluorene	•	–	–	4J	6J	–	6J	–	4 J	4J	•	•	•	•	•
N-Nitrosodiphenylamine	•	380	13	–	8J	2 J	–	–	5 J	–	•	•	•	•	•
Phenanthrene	•	160	–	–	–	–	6J	–	2 J	3 J	•	•	•	•	•
Anthracene	•	41	14	–	9J	–	–	–	–	–	•	•	•	•	•
Fluoranthene	•	–	3J	–	1J	2 J	–	–	–	–	•	•	•	•	•
Benzidine	•	–	–	–	18J	–	–	–	–	–	•	•	•	•	•
Pyrene	•	45	2J	–	1J	–	–	–	–	–	•	•	•	•	•
Di-n-butylphthalate	•	–	–	–	–	–	–	–	1 J	–	•	•	•	•	•
Bis(2-Ethylhexyl)phthalate	•	420	1J	–	1J	–	–	1 J	1 J	–	•	•	•	•	•
TOTAL TARGETED BN	•	1,261	33	7	48	4	16	1	17	10	•	•	•	•	•
pH	7.6	•	7.0	7.2	6.92	6.75	7.02	6.95	6.82	7.10	6.97	7.25	7.3	6.70	6.78

Note:
(1) "–" – signifies not detected.
(2) " • " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample are indicated above. All other compounds were not detected.

mw-11.wk3

933500111

TABLE 10
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLING: MW-12
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-12

SAMPLE DATE / PARAMETERS:	2/10/86	6/1/88	5/31/90	11/12/90	5/14/91	11/27/91	5/14/92	11/04/92	6/14/93	12/17/93	6/13/94	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Chloroethane	–	–	–	–	–	–	17	–	*	–	–	–	–	–	–
Carbon Disulfide	–	–	–	–	–	–	–	–	–	–	–	2 J	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	19	–	*	–	–	–	–	–	–
1,2-Dichloroethene	–	–	2J	–	–	–	51	–	*	–	–	–	–	–	–
Benzene	1,500	–	11	520	430	490	410	440	*	520	230	220	260	341	229
1,1,2,2-Tetrachloroethane	–	–	–	–	–	–	280	–	*	–	–	–	–	–	–
Toluene	100	–	3JB	43J	55B	20J	–	21 J	*	20 J	1,300	8	15	12.5	7.4
Ethylbenzene	45	–	–	–	55	28	32	30	*	27	52	12	22	23.9	9.7
Methyl T-Butyl Ether	*	*	*	*	*	*	32	–	*	–	290	140	220	99.8	46.3
T-Butyl Alcohol	*	*	*	*	*	*	360	–	*	–	*	390	570	404	297
Total Xylenes	210	7	*	*	*	*	100	110	*	100	33	54	98	92.9	70.5
TOTAL TARGETED VOC (ug/L)	1,855	7	3	563	485	538	1,310	601	*	667	1,905	826	1185	974.1	659.9
BASE NEUTRAL ORGANICS (ug/L)															
Isophorone	*	–	–	–	–	–	48	6 J	*	–	*	–	–	–	–
Nitrobenzene	*	–	–	–	12	–	–	–	*	–	*	–	–	–	–
Naphthalene	*	–	–	61	80	8 J	11	8 J	*	10 J	*	–	–	–	–
Acenaphthene	*	–	–	3J	18	2 J	2J	6 J	*	5 J	*	5 J	–	3	2.6
Diethyl phthalate	*	–	–	1J	–	–	–	–	*	1J	*	–	–	–	–
Fluorene	*	–	–	5J	–	3 J	3J	11	*	8 J	*	10	–	2.8	2.8
Phenanthrene	*	–	37	6J	–	2 J	6J	19	*	16	*	14	1.3 J	2.2	2.9
Anthracene	*	–	5J	–	–	–	–	2 J	*	–	*	–	–	–	–
Fluoranthene	*	–	8J	1J	15	–	–	4 J	*	3 J	*	4 J	1.2 J	–	0.5 J
Pyrene	*	–	10J	1J	18	–	1J	5 J	*	4 J	*	5 J	–	–	0.62 J
Benzo(a)anthracene	*	–	3J	–	6J	–	–	2 J	*	1 J	*	2 J	–	–	0.44 J
Chrysene	*	–	4J	–	7J	–	–	2 J	*	2 J	*	2 J	–	–	–
Benzo(b)fluoranthene	*	–	2J	–	2J	–	–	–	*	–	*	–	–	–	–
Benzo(k)fluoranthene	*	–	–	–	2J	–	–	–	*	–	*	–	–	–	–
Benzo(a)pyrene	*	–	2J	–	3J	–	–	–	*	–	*	–	–	–	–
Indeno(1,2,3-cd)pyrene	*	–	1J	–	1J	–	–	–	*	–	*	–	–	–	–
Benzo(g,h,i)perylene	*	–	1J	–	1J	–	–	–	*	–	*	–	–	–	–
Bis(2-Ethylhexyl)phthalate	*	–	1J	–	1J	–	2J	10 J	*	2 J	*	(42)	1.4 J	2.1	–
Di-n-butyl phthalate	*	–	–	–	–	–	–	1 J	*	–	*	2 J	–	–	–
TOTAL TARGETED BN	*	15	74	78	166	15	73	76	*	52	*	44	3.9	10.1	9.86
pH	*	*	6.9	7.0	6.65	6.50	*	6.66	*	6.90	7.00	6.85	6.57	6.51	6.82

mw-12.wk3

Note:
(1) " — " – signifies not detected.
(2) " * " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

933500112

TABLE 11
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-13
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW-13

SAMPLE DATE / PARAMETERS:	2/10/86	6/1/88	5/31/90	11/12/90	5/14/91	11/27/91	5/15/92	11/05/92	6/15/93	12/17/93	6/13/94	12/22/95	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)															
Carbon Disulfide	*	–	–	–	–	–	–	–	–	–	–	2 J	–	–	–
Benzene	*	–	14	–	–	26	16	25	–	19	30	14	7.7	2.7	4
4-Methyl-2-Pentanone	*	–	–	–	–	–	–	–	–	–	–	2 J	–	–	–
Toluene	*	–	3J	–	–	9	–	5 J	–	–	3	2 J	–	0.87	–
Total Xylenes	*	53	*	*	*	*	11	14	*	–	8	5 J	3.8	4.1	2.4
MTBE	*	*	*	*	*	*	–	44	96	–	27	57	19	48	45.9
TBA	*	*	*	*	*	*	*	*	*	*	*	–	–	–	21.8
TOTAL TARGETED VOC	*	53	17	< MDL	< MDL	35	27	88	96	19	68	82	11.5	7.67	74.1
BASE NEUTRAL ORGANICS (ug/L)															
Naphthalene	*	–	5 J	–	–	–	–	1J	–	–	*	3 J	–	–	0.49 J
Acenaphthene	*	–	–	–	1J	–	–	–	1 J	–	*	–	0.60 J	0.55 J	1 J
Fluorene	*	–	2J	–	–	–	–	–	–	–	*	2 J	0.80 J	–	–
1,2-Diphenylhydrazine	*	–	–	–	–	–	–	–	–	–	–	1 J	–	–	–
N-Nitrosodiphenylamine	*	–	24	110	43	54	31	27	36	15	*	19	17	20.9	38.8
Phenanthrene	*	22	4J	–	–	–	–	–	–	–	*	2 J	0.70 J	–	0.64 J
Anthracene	*	–	1J	–	–	–	–	–	–	–	*	–	–	–	–
Fluoranthene	*	–	5J	–	–	–	–	–	–	–	*	–	–	–	–
Benzidine	*	–	–	–	9J	–	–	4 J	17 J	–	*	–	–	–	–
Pyrene	*	–	5J	–	–	–	–	–	–	–	*	–	–	–	–
Benzo(a)anthracene	*	–	3J	–	–	–	–	–	–	–	*	–	–	–	–
Chrysene	*	–	3J	–	–	–	–	–	–	–	*	–	–	–	–
Benzo(b)fluoranthene	*	–	2J	–	–	–	–	–	–	–	*	–	–	–	–
Benzo(a)pyrene	*	–	2J	–	–	–	–	–	–	–	*	–	–	–	–
Di-n-butyl-phthalate	*	–	–	–	–	3 J	–	–	1 J	–	*	1 J	0.70 J	–	–
Benzidine	*	–	–	–	–	–	–	–	–	1 J	*	–	–	–	–
Bis(2-Ethylhexyl)phthalate	*	–	14	7J	3J	–	–	4 J	1 J	–	*	5 J	1.7 J	2.1	3.9
Diethyl phthalate	*	–	–	–	–	–	–	–	–	–	*	–	–	–	0.71 J
4-Chloraniline	*	–	–	–	–	–	–	–	–	–	*	–	–	–	3.1
TOTAL TARGETED BN	*	22	70	110	56	57	31	36	56	16	*	32	21.5	23.55	48.64
pH	*	*	7.2	7.7	7.23	6.85	7.19	6.93	7.03	7.26	7.16	7.20	7.9	7.20	7.07

mw-13.wk3

Note:
(1) " – " – signifies not detected.
(2) " * " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

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TABLE 12
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW–14
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL – NEWARK, NEW JERSEY

MW–14

SAMPLE DATE: / PARAMETERS:	6/1/88	5/31/90	11/12/90	5/14/91	11/27/91	5/14/92	11/04/92	6/14/93	12/17/93	6/13/94	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)														
Benzene	39	56	12	150	110	86	76	65	130	250	85	110	67.8	136
Toluene	5	1J	–	–	6	4J	—	4 J	9	25	5 J	7.2	5	8.5
Ethylbenzene	–	–	–	–	6	7	—	5	9	16	3 J	4.2	2.4	3.7
Total Xylenes	21	•	•	•	•	7	—	•	6	17	5 J	5.6	7.1	5.8
MTBE	•	•	•	•	•	•	•	•	•	•	•	–	–	20.4
TBA	•	•	•	•	•	•	•	•	•	•	•	–	–	26.6
TOTAL TARGETED VOC	65	57	12	150	128	104	76	74	154	308	98	127	82.3	345.5
BASE NEUTRAL ORGANICS (ug/L)														
Naphthalene	11	–	–	–	–	–	–	–	–	•	–	–	–	–
Acenaphthene	–	–	1J	2J	–	1J	–	3 J	2 J	•	1 J	2	2.4	3
Fluorene	–	–	–	1J	–	–	–	2 J	–	•	–	1 J	0.94 J	1.8
Anthracene	–	1J	–	–	–	–	–	–	–	•	–	–	–	–
Bis(2-Ethylhexyl)phthalate	–	1J	–	1J	–	–	5 J	44	–	•	4 J	–	0.57 J	1.9 J
Di-n-butylphthalate	–	–	–	–	2 J	–	–	–	–	•	2 J	–	–	–
TOTAL TARAGET BN	11	2	1	4	2	1	5	49	2	•	7	3	3.91	6.7
pH	•	6.6	6.7	6.48	6.22	•	6.65	6.50	6.54	7.16	6.79	6.49	6.93	6.5

mw–14.wk3

Note:
(1) "—" – signifies not detected.
(2) " • " – signifies not analyzed.
(3) E – exceeds calibration curve.
(4) B – the analyte is found in the blank as well as the sample.
(5) J – the compound is detected but less than the method detection limit (MDL).
(6) Only those compounds detected in at least one sample (date) are indicated above. All other compounds were not detected.

TABLE 13
CHRONOLOGY OF ANALYTICAL RESULTS
GROUNDWATER SAMPLES: MW-15
TEXACO REFINING AND MARKETING INC.
GETTY TERMINAL-NEWARK, NEW JERSEY

MONITORING WELL MW-15

Parameters / Sample Date:	12/21/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)				
Methylene Chloride	6	–	–	–
Carbon Disulfide	2 J	–	–	–
Benzene	1 J	–	0.8	0.42
Toluene	2 J	2.2	1.6	2.3
Ethylbenzene	–	–	–	0.54
Xylenes (Total)	3 J	2.8	1.5	2.2
TOTAL TARGETED VOC	20	5	3.9	5.46
BASE NEUTRAL ORGANICS (ug/L)				
Acenaphthene	*	*	*	0.92 J
pH	6.81	7.1	6.86	6.2

Notes:

(1) "–" – signifies not detected.

(2)"*" – signifies not analyzed.

(3) E– exceedes calibration curve.

(4)B– the analyte is found in the bank as well as the sample.

(5)J– the compound is detected but is less than the method detection limit (MDL)

(6) Only those compounds detected in at least one sample (date) are indicated above.
All other compounds were not detected.

TABLE 14

CHRONOLOGY OF ANALYTICAL RESULTS

GROUNDWATER SAMPLES: MW-16

TEXACO REFINING AND MARKETING INC.

GETTY TERMINAL-NEWARK, NEW JERSEY

MONITORING WELL MW-16

SAMPLE DATE: / PARAMETERS:	12/22/94	6/5/95	12/6/95	6/27/96
VOLATILE ORGANICS (ug/L)				
Methylene Chloride	6	–	–	–
Acetone	9 J	–	–	–
Benzene	18	3.9	9.8	15.8
Toluene	1 J	2.8	–	–
Ethylbenzene	1 J	1.6	–	1.5
Xylenes (Total)	2 J	–	1.4	–
MTBE	–	2.2	–	–
TBA	–	*	*	–
TOTAL TARGETED VOC	37	10.5	11.2	17.3
BASE NEUTRAL ORGANICS (ug/L)				
Acenaphthene	1 J	–	0.76 J	0.92 J
Fluorene	1 J	–	–	–
Di-N-Butylphthalate	6 J	–	–	–
Pyrene	1 J	–	–	–
Bis(2-Ethylhexyl)Phthalate	7 J	–	–	–
TOTAL TARGETED BN	16	–	0.76	0.92
pH	6.56	6.38	6.86	6.2

Note:

(1)"–" – signifies not detected. All other compounds were not detected

(2)"*" – signifies not analyzed.

(3)E– exceeds calibration curve.

(4)B– the analyte is found in the blank as well as the sample.

(5)J– the compound is detected but less than the method detection limit (MDL).

(6) Only those compounds detected in at least one sample (date) are indicated above.

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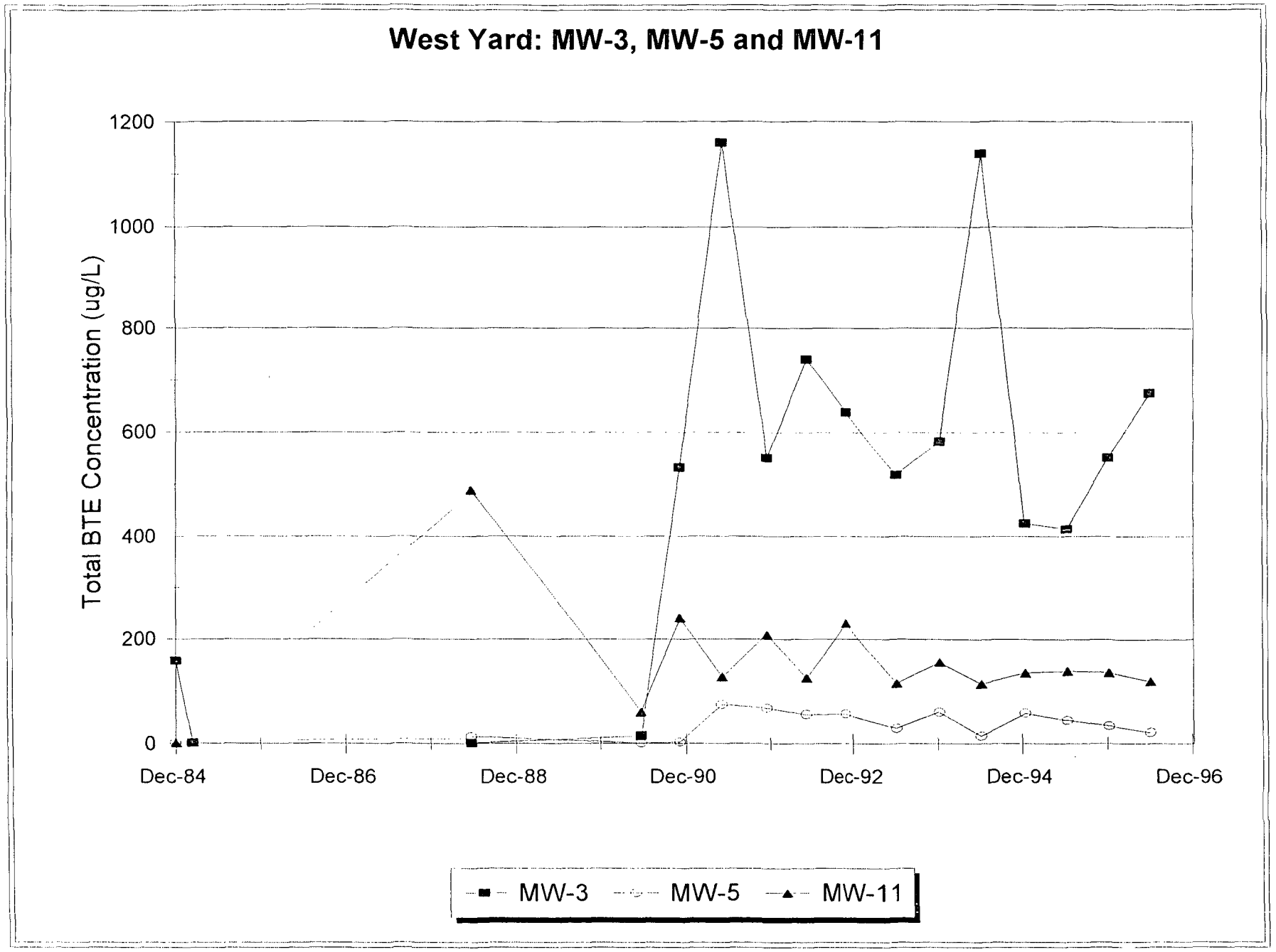
Appendix F

Graphs of Temporal Concentrations of Total Benzene, Toluene, and Ethylbenzene in Monitor Well Samples

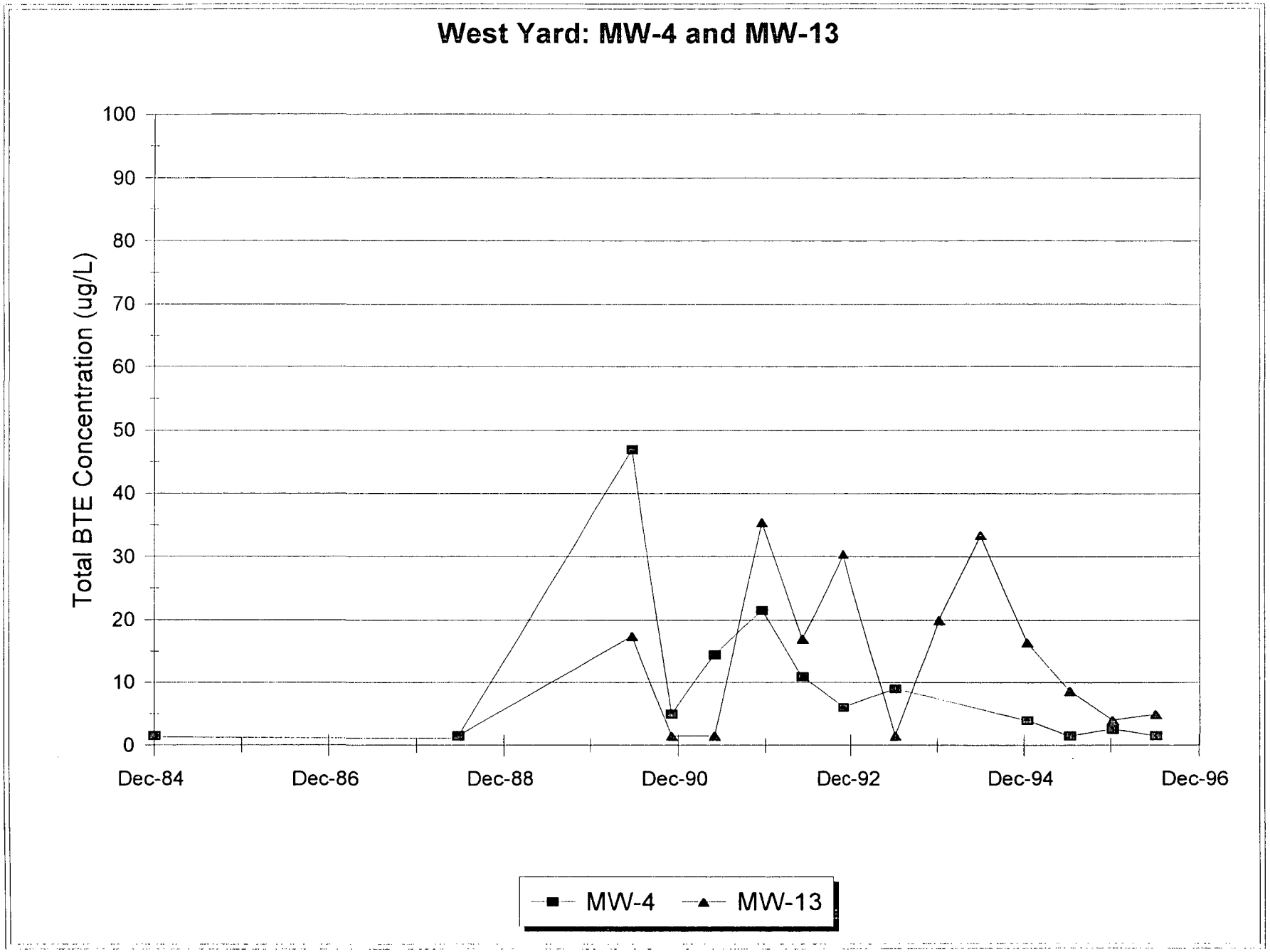
Figure 1 - Temporal Concentrations of Total Benzene, Toluene, and Ethylbenzene (BTE): MW-3, MW-5 and MW-11



Downgradient of Product Pumps

933500119

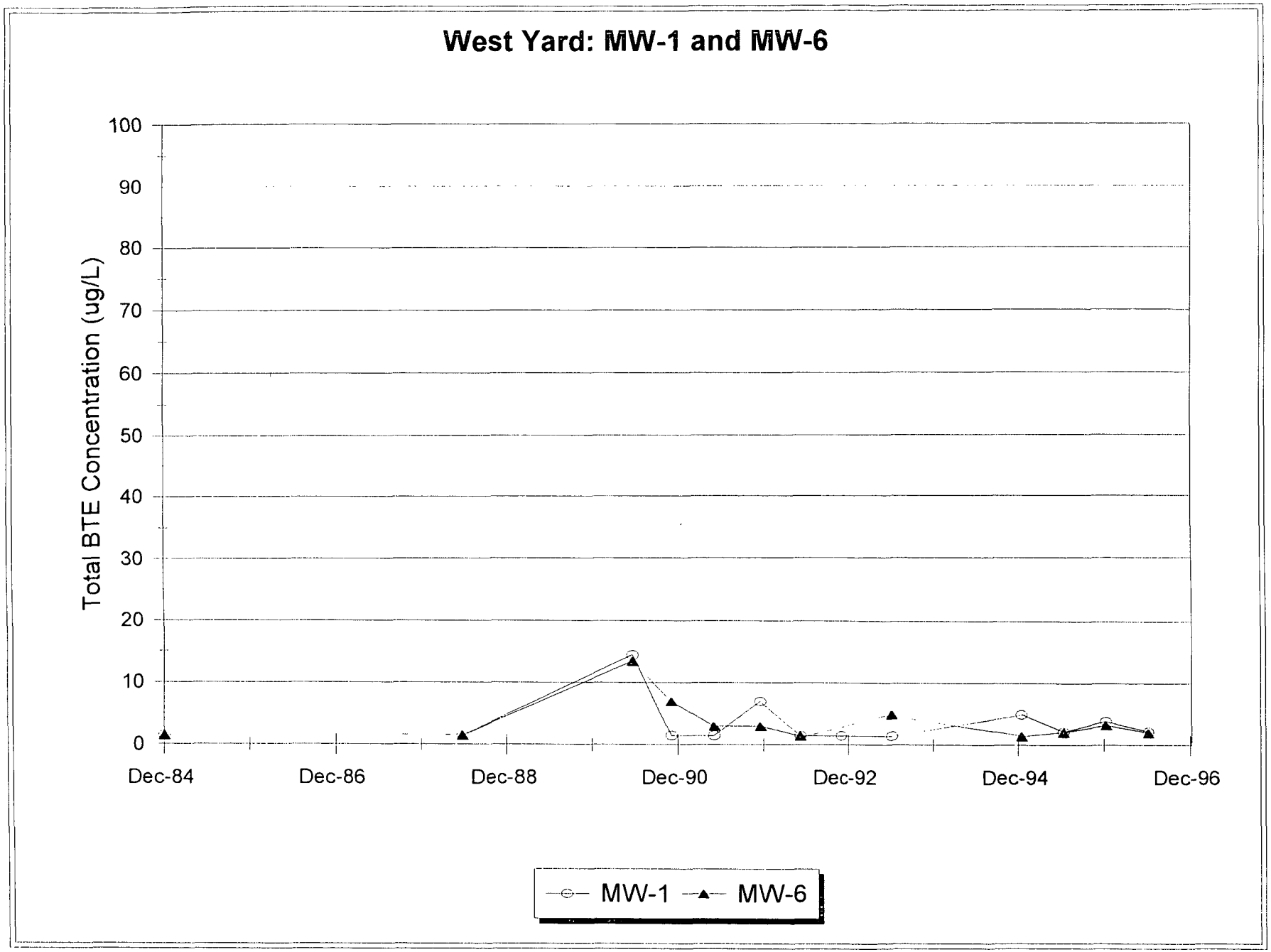
Figure 2 - Temporal Concentrations of Total Benzene, Toluene, and Ethylbenzene (BTE): MW-4 and MW-13



Downgradient of Tank No. 11

933500120

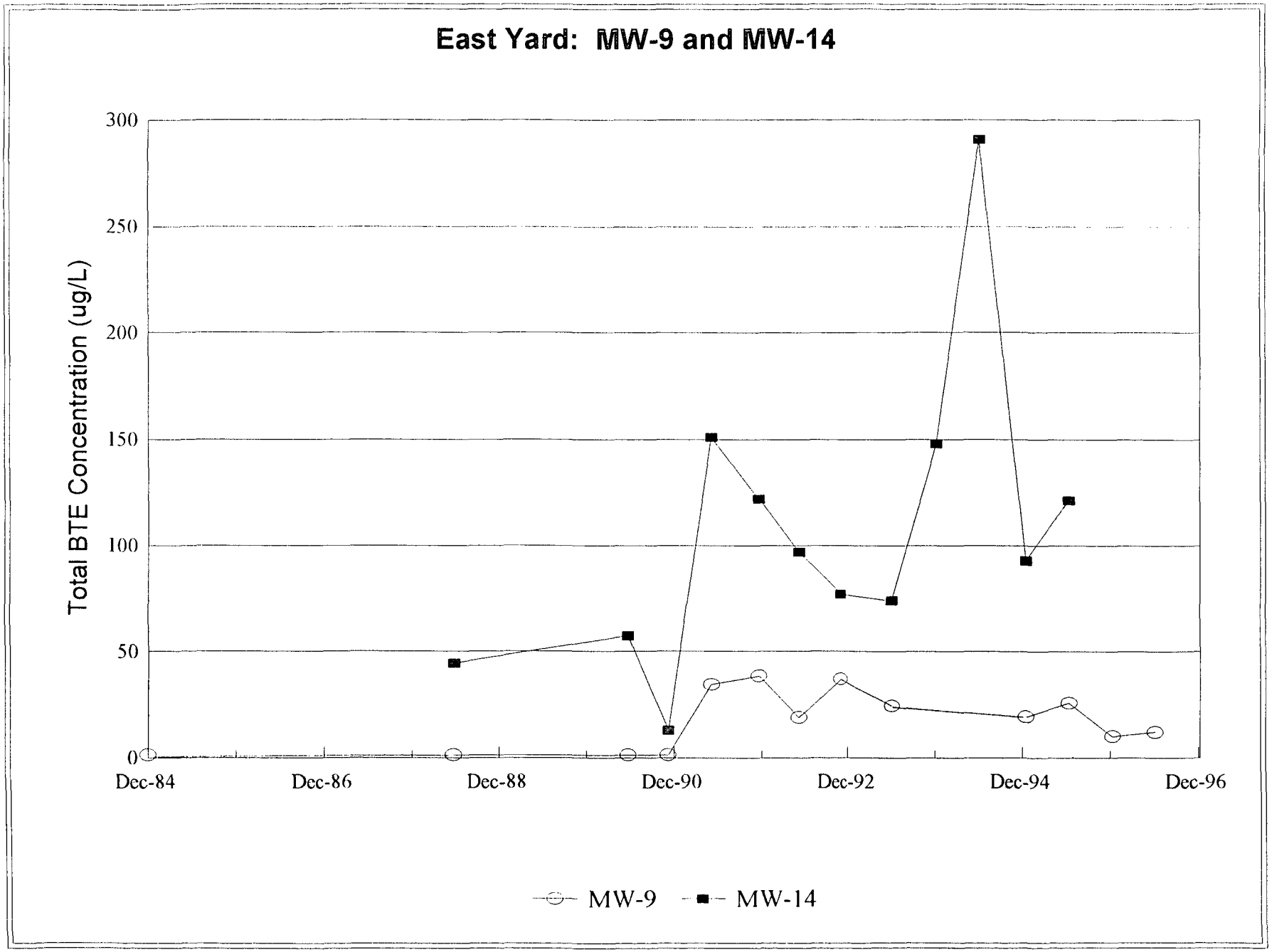
Figure 3 - Temporal Concentrations of Total Benzene, Toluene, and Ethylbenzene (BTE): MW-1 and MW-6



Downgradient of Tank No. 10 and Former Drum Storage Area

933500121

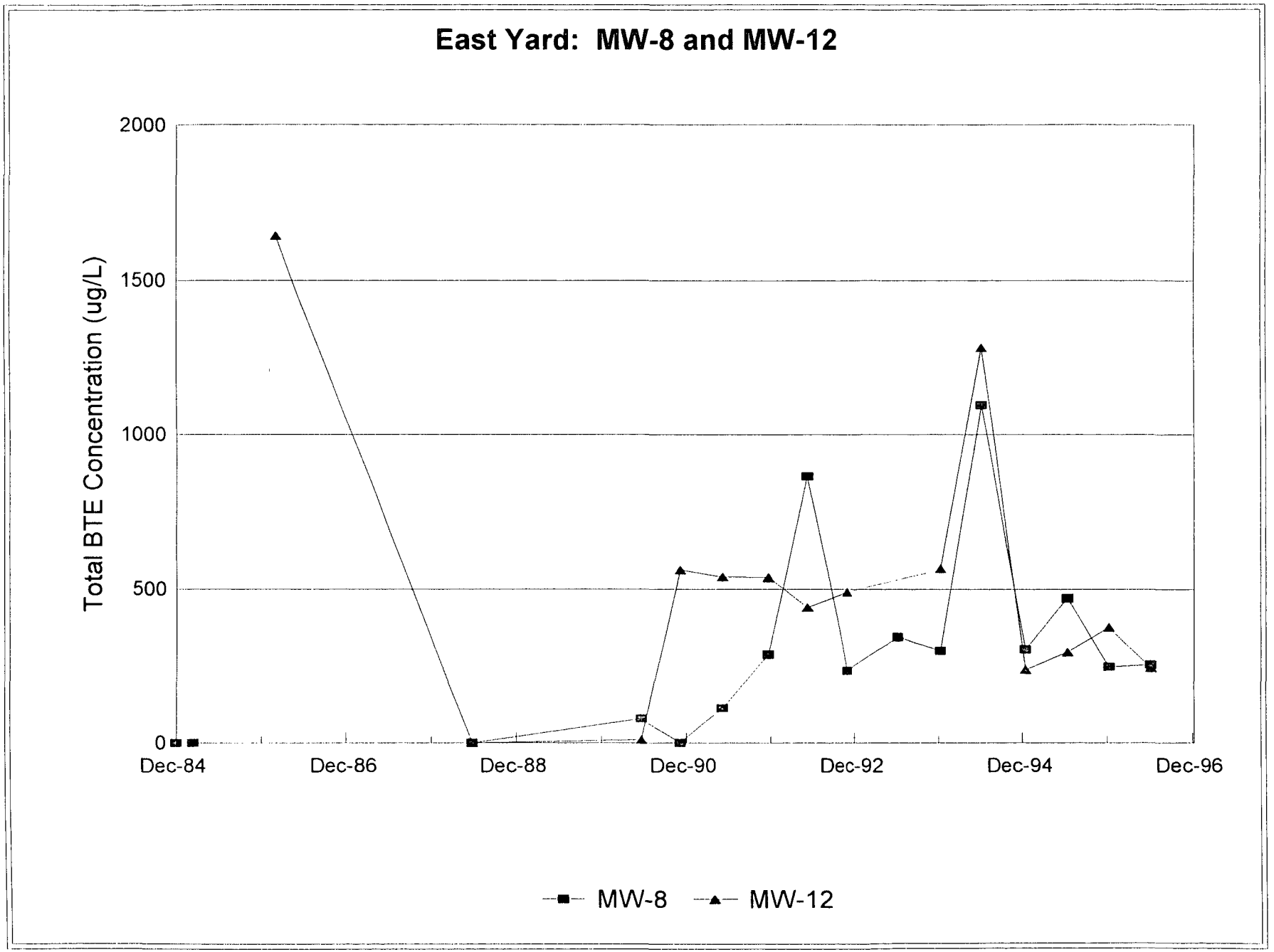
Figure 4 - Temporal Concentrations of Total Benzene, Toluene, and Ethylbenzene (BTE): MW-9 and MW-14



Downgradient of the Loading Rack

933500122

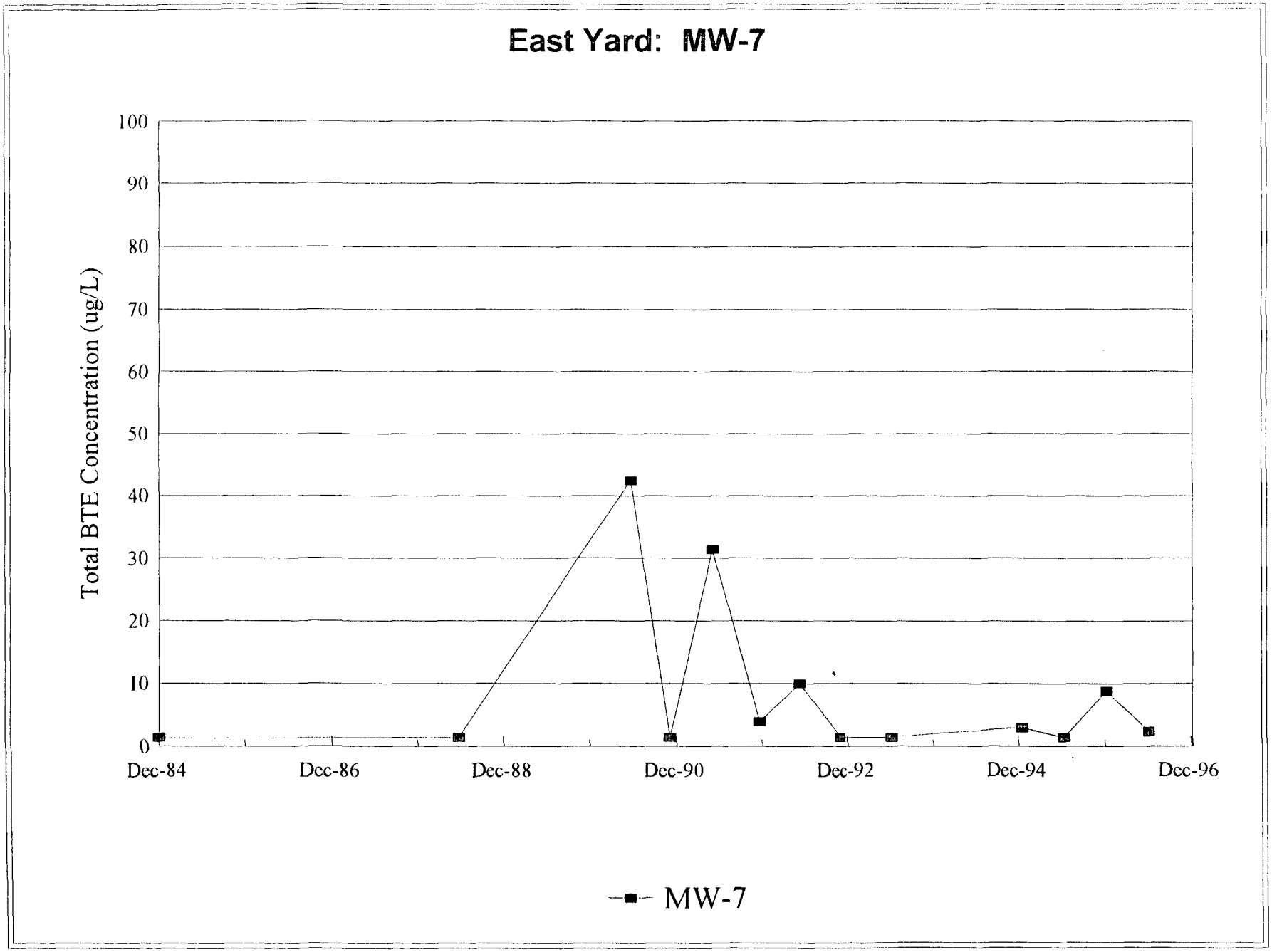
Figure 5. Temporal Concentrations of Total Benzene, Toluene, and Ethylbenzene (BTE), MW-8 and MW-12



Downgradient of Tank Nos. 1 and 3

933500123

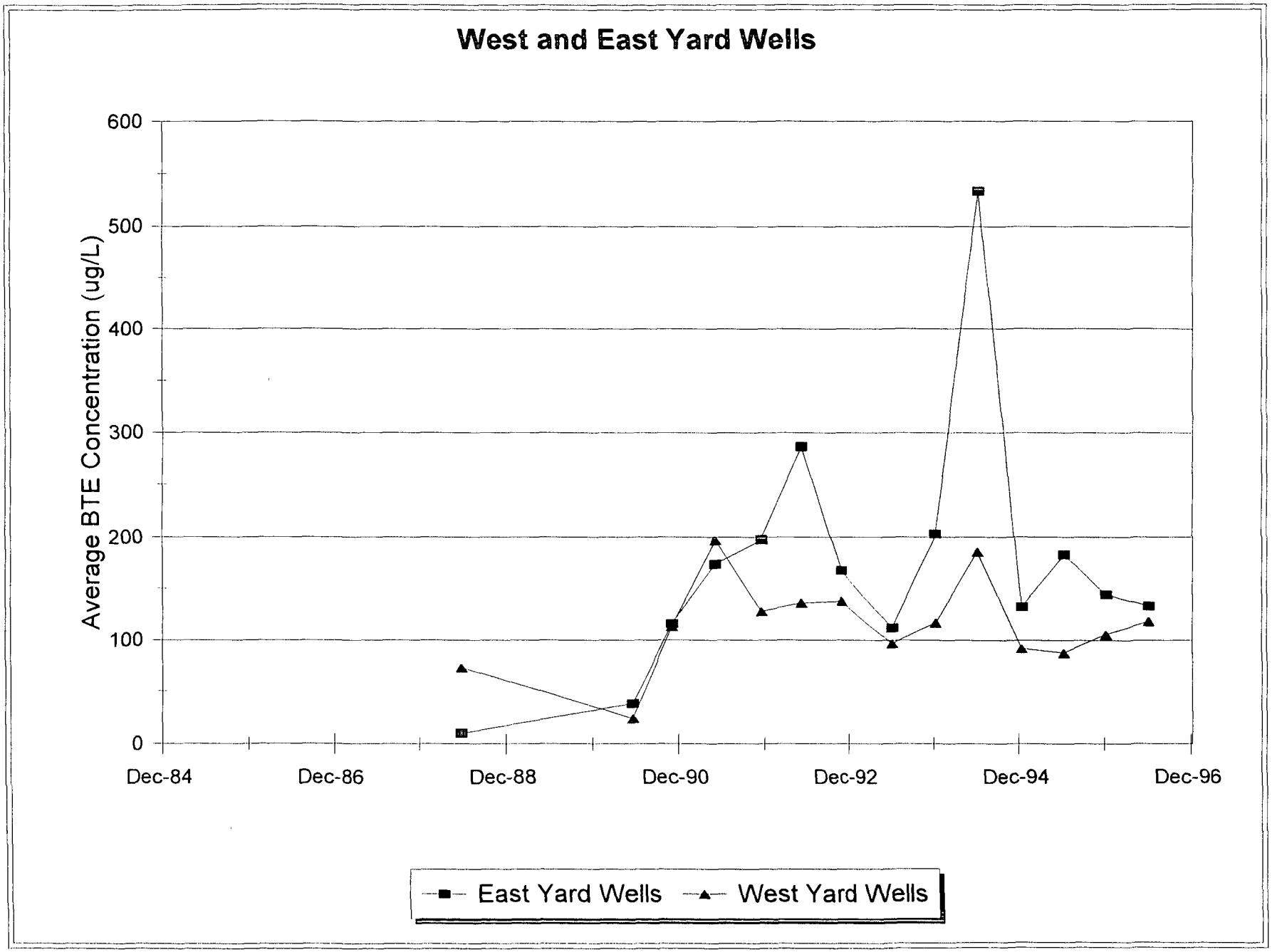
Figure 6 - Temporal Concentrations of Total Benzene, Toluene, and Ethylbenzene (BTE): MW-7



Downgradient of Tank No. 7

933500124

Figure 7 Temporal Concentrations of Average Total Benzene, Toluene, and Ethylbenzene (BTE) - West and East Yard Wells



933500125

APPENDIX
G

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Appendix G

Two Dimensional Solute Transport Model

TDAST software for two dimensional transport of a solute under steady state isotropic conditions, was used for predicting benzene concentrations downgradient of a source. The software was derived from the following equation.

$$D_l \frac{d^2C}{dx} + D_t \frac{d^2C}{dy^2} - v\frac{dC}{dx} - yRdC = Rd\frac{dC}{dt}$$

The input parameters required for the equation were:

x	distance from the source in the x direction to the well (L).
y	distance from the source in the y direction to the well (L).
t	time elapsed from t=0 (T).
Dx	Dispersion in the x direction (L^2/T)
Dy	Dispersion in the y direction (L^2/T)
Vx	average linear velocity in the x direction (L/T)
Vy	average linear velocity in the y direction (L/T)
A	length of source(L)
R	Retardation
a	Source decay
y	degradation coefficient

The following values were used.

Dx	1.2 m^2/day	(Assumed diffusion)
Dy	1.2 m^2/day	(Assumed diffusion)
Vx	0.09 m/day	From field observations
Vy	0.08 m/day	From field observations
A	0.76 m	(Assumed a 25ft^2 spill area)
R	4.8	(Assumed a 1% fom, foc=0.58*fom, foc*Koc, log Koc for Benzene=1.69)
a	0.00031	(lnCo/C=kt. Where Co=10ppm and C= 4.06ppm)
y	0.00031	(Assumed to be equal to a)
Co	10mg/l	(Assumed contamination at the source)